TRUCK CRANE

OPERATOR'S MANUAL

ZOOMLION

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ZOOMLION

ZLJ5550JQZ100A Truck Crane Operator's Manual

Edition 2 August 2022

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.

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:

DANGER	Refers to a dangerous situation which, if not avoided, will cause death or injury.
WARNING	Refers to a possible dangerous situation which, if not avoided, could cause death or injury.
CAUTION	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 nameplates

1.1.1 Models

Model in automobile industry: ZLJ5550JQZ100A

Model in engineering industry: ZTC1000A7

Chassis model: ZLJ5606JQZV6

1.1.2 Nameplates

For nameplate of crane, refer to Figure 1-1.

For nameplate of chassis, refer to Figure 1-2.

The crane is equipped with WP12.400E62 engine.

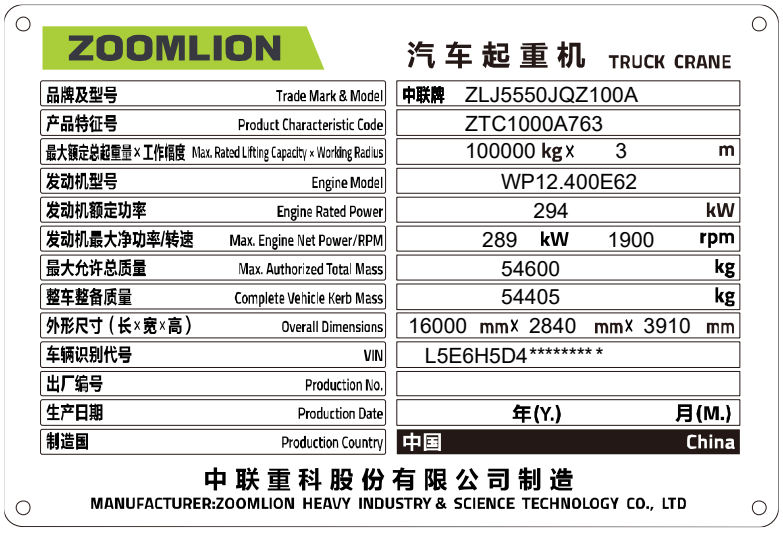


Figure 1-1 Nameplate of crane

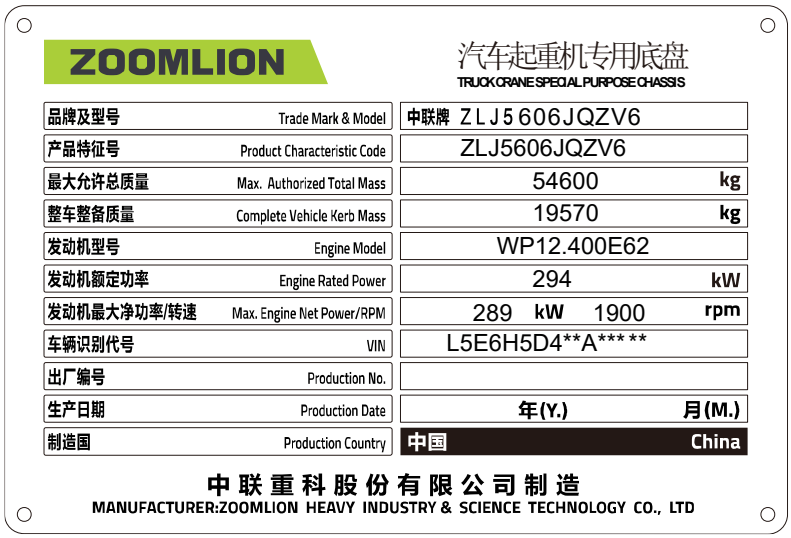


Figure 1-2 Nameplate of chassis

1.1.3 Nameplates installation locations

The nameplate of crane is installed on the left side of operator's cab.

The nameplate of chassis is installed on the right longitudinal beam of chassis frame.

For exact locations, please refer to Figure 1-4 and 1-5.

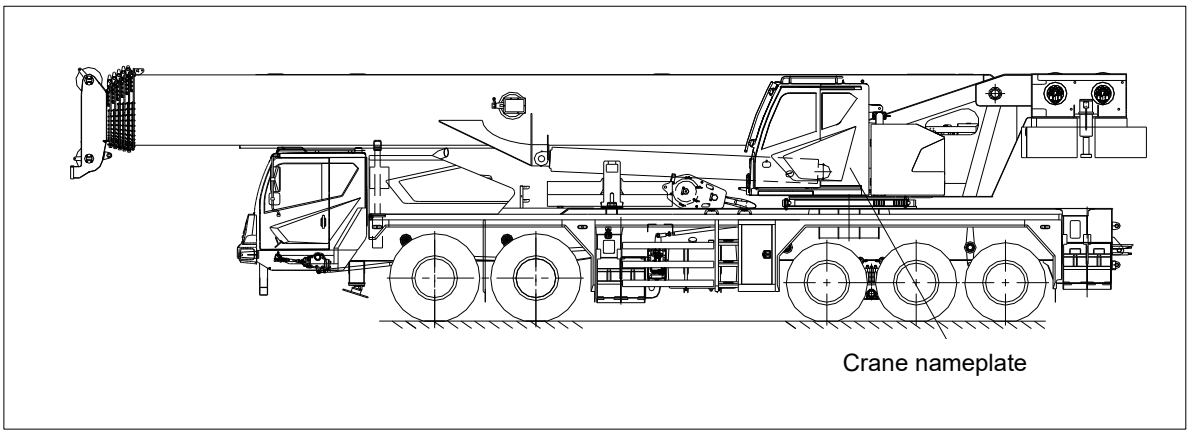


Figure 1-3 Crane nameplate location

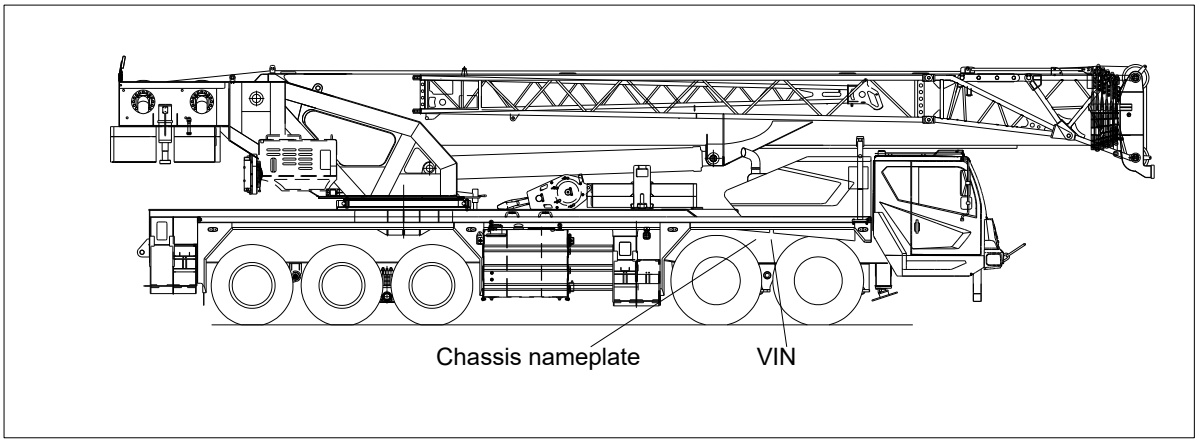


Figure 1-4 Chassis nameplate location

1.1.4 Vehicle identification number (VIN) and its locations

The VIN of ZLJ5550JQZ100A is L5E6H5D4××A××××××, and is stamped in the crane nameplate, chassis nameplate and right longitudinal beam of chassis frame.

The exact location is shown in Figure 1-5.

1.1.5 Engine model and manufacturer

Engine model: WP12.400E62

Manufacturer: WEICHAI POWER Co., Ltd.

1.1.6 Engine code, nameplate and their locations

WP12.400E62

The engine code is stamped on the right part of engine near the lower plane of air compressor (needing to scrape the paint).

The engine nameplate is installed on the left part of engine.

The exact locations are shown In Figures 1-6 and 1-7.

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

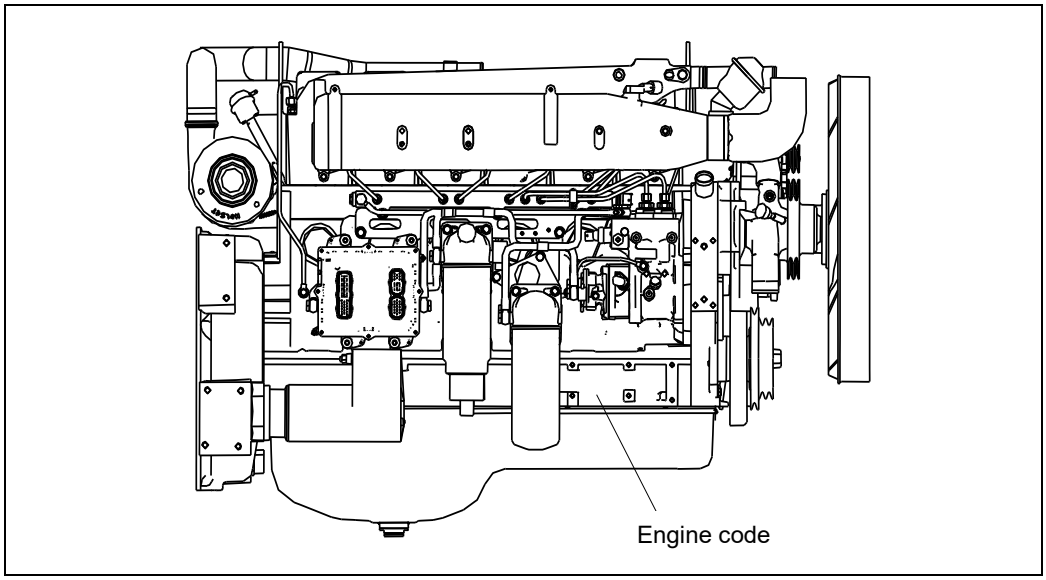


Figure 1-6 Engine code location

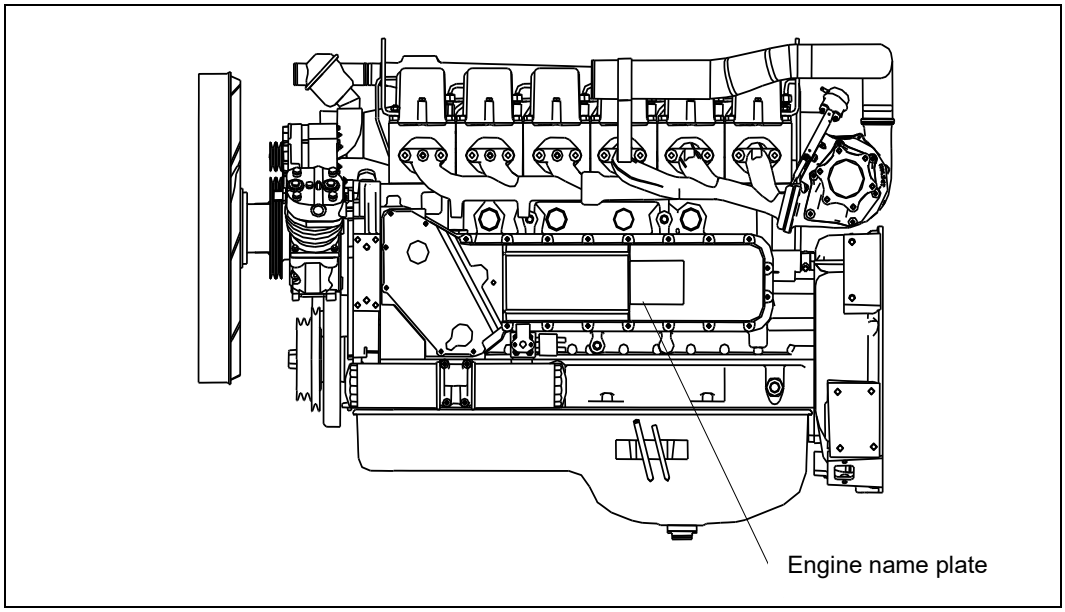


Figure 1-7 Engine nameplate location

Please provide the above information when contacting Zoomlion for service.

1.2 Crane components and product description

1.2.1 Crane components

1.2.1.1 Crane chassis

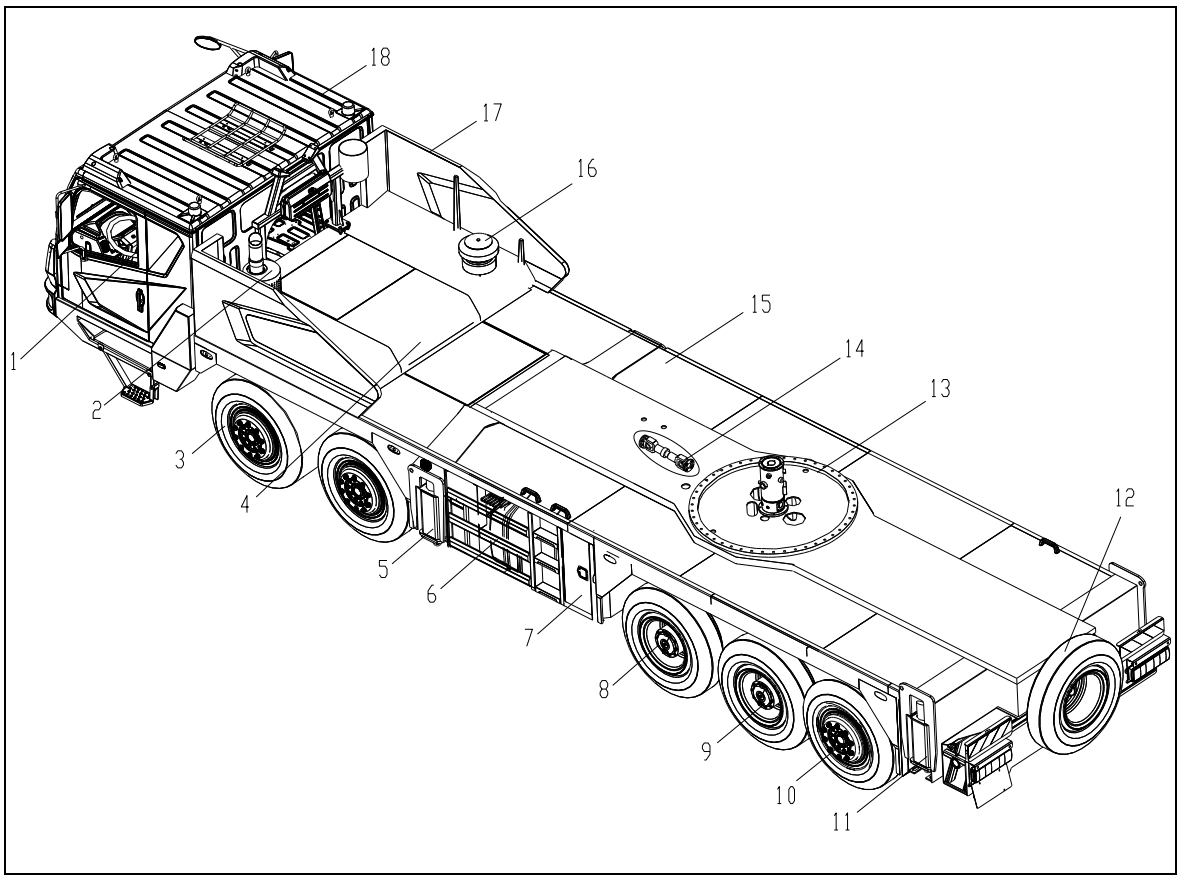


Figure 1-7 Main components of crane chassis

Pos.	Description	Pos.	Description
1	Clutch	10	5th outrigger
2	Exhaust system	11	Rear outrigger box
3	Front axle	12	Spare tire
4	Engine housing	13	Chassis frame assy.
5	Front outrigger box	14	Propeller shaft
6	Guard rail	15	Platform
7	Toolbox	16	Air intake system
8	Intermediate axle	17	Boarding
9	Rear axle	18	Driver's cab

1.2.1.2 Complete vehicle

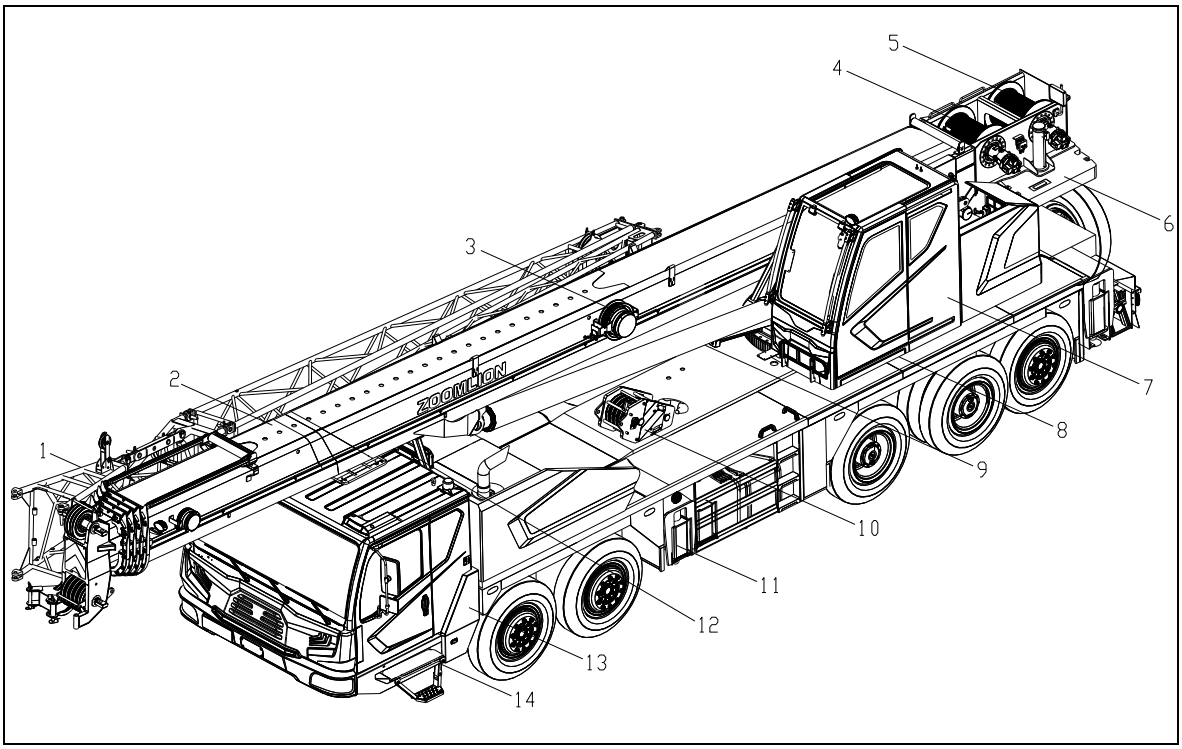


Figure 1-8 Main components of complete vehicle

Pos.	Description	Pos.	Description
1	Jib	8	Slewing gear
2	Telescopic boom	9	Derricking gear
3	Length indicator	10	Main hook
4	Auxiliary winch	11	Outrigger beam
5	Main winch	12	Auxiliary hook
6	Fixed counterweight	13	Special purpose chassis
7	Operator's cab	14	The 5th outrigger

1.2.2 Product description

1.2.2.1 Crane chassis

Driver's cab

The low-mounted full-width sheet steel cab offers a comfortable and functional working environment.
The control elements and displays are ergonomically arranged. Thus a safe and fatigue free working is assured.
The cab has the following features:

– Front-mounted instrument console
– Hydraulically cushioned seat with upper backrest
– Sun visor and manually operated windows
– Sleeper berth, cab heater and A/C
– Height and position adjustable steering wheel.

Chassis frame

Distortion resistant and load-bearing box structure welded from high tensile steel

Engine

Special purpose high-pressure common-rail electronic fuel injection diesel engine for construction machinery

Clutch

Dry type single-plate pull-type clutch

Transmission

10-speed mechanical transmission with contrate gear output
The main and auxiliary transmissions are installed with a synchronizer.

Suspension

Axle 1 and 2 are installed with parallel leaf spring suspensions, Axle 3 and 4 are with leaf spring + balance beam + thrust rod balance suspension, and Axle 5 is with guiding air suspension.

Wheels

Special wheel rim and inflated tires
385/95 R25 (Axle 1 and 2)
325/95R24 (Axle 3 and 4)
325/95R24 or 415/80R22 (Axle 5)

Steering

Including a dual-channel integral circulating ball-type power steering gear, steering pump and steering drive mechanism

Brakes

It consists of a service brake (driving brake), a parking brake (emergency brake) and an auxiliary brake.
Service brake: a dual-circuit compressed air brake acting on all wheel hubs
Parking brake: a spring-loaded brake acting on wheel hubs of Axle 2, 3 and 4.
Auxiliary brake: variable valve exhaust brake (VVEB).
Brake pedal travel: 95 mm

Propeller shaft	Styre series open-type propeller shaft assy. with contrate gear connected

1.2.2.2 Crane superstructure

Operator's cab	The sheet steel cab offers a comfortable and functional working environment. The cab can be tilted backwards by 20° during operation. The cab has the following features: - Adjustable seat with headrest - Air conditioning and cab heater - Adjustable instrument console - Pilot-operated joysticks – Sun visor, windshield wiper and washer system.
Boom and telescoping system	7-section (1 basic boom, 6 telescopic sections) boom All boom sections are telescoped independently in order driven by a set of single cylinder pinning mechanism. Low-alloy and high-tensile steel provides the boom with excellent bending resistance. The built-in slide blocks with compensation technology applied have the guidance capability and lifting capacity improved.
Derricking gear	A front-mounted oil cylinder with a balance valve
Hoist gear	Consisting of a hydraulic motor, winch balance valve, dual-unit winch brake valve, winch reducer, hoisting limit switch, lowering limit switch and hoist rope
Slewing gear	Consisting of a hydraulic motor, slewing damping valve, slewing reducer and slewing bearing.
Hydraulic system	Electrical proportional control, with proportional speed-regulating function Driven by a variable pump and a gear pump
Load moment limiter	It is composed of a main unit, pressure sensor, length sensor and angle sensor.

1.2.3 Boom system

It includes the telescopic boom and jib.

Boom includes 1 basic boom and 6 telescopic sections.

Boom length: 13.7m - 75m

Jib length: 10.4 m, 17.5 m

When the fully extended telescopic boom is fitted with jib (3 angles: 0°, 15° and 30°), the boom length is L=68.9m+10.4m=79.3m or L=68.9m+17.5m=86.4m.

Refer to Figure 1-9.

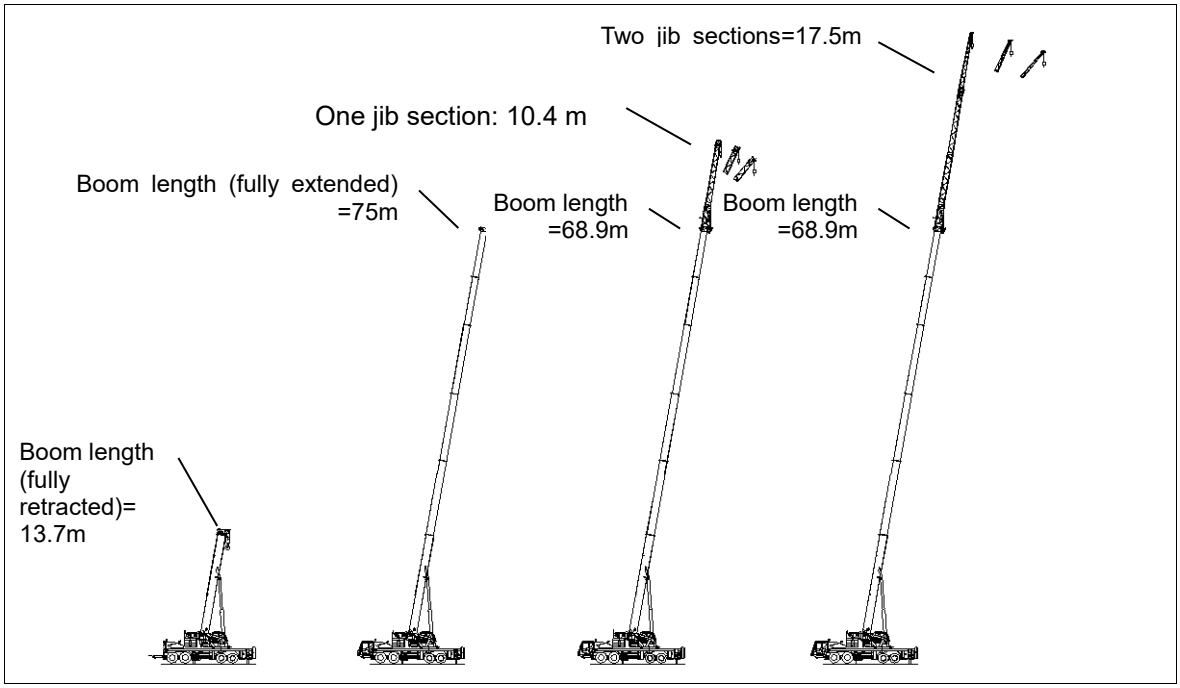


Figure 1-9 Boom lengths

A 9.5 m extension is optional.

When the fully extended boom is fitted with the extension, and the jib (angle: 0°), the boom length is L=68.9m+9.5m+17.5m=95.9m.

Refer to Figure 1-10.

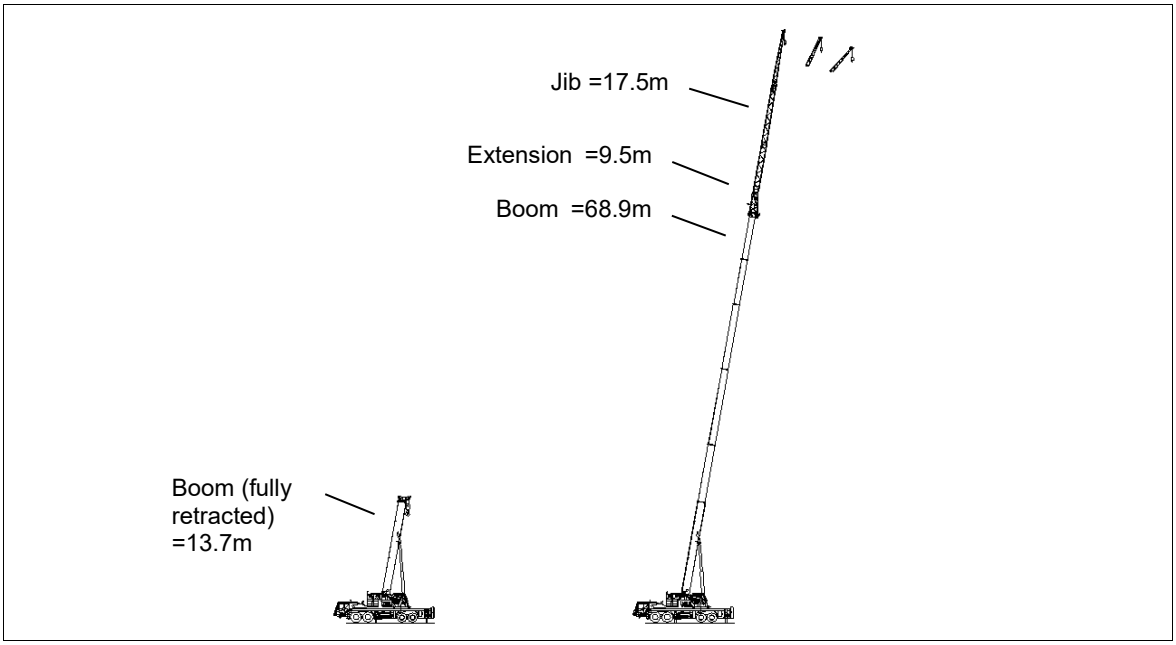


Figure 1-10 Boom lengths with optional extension

Tip boom: optional, 3.0 m

Different length combinations of boom and the tip boom can meet your needs. Refer to Figure 1-11.

Note: Before you begin a lift operation with the tip boom, assemble it at an angle of 30°. Assemble it at an angle of 0° during driving.

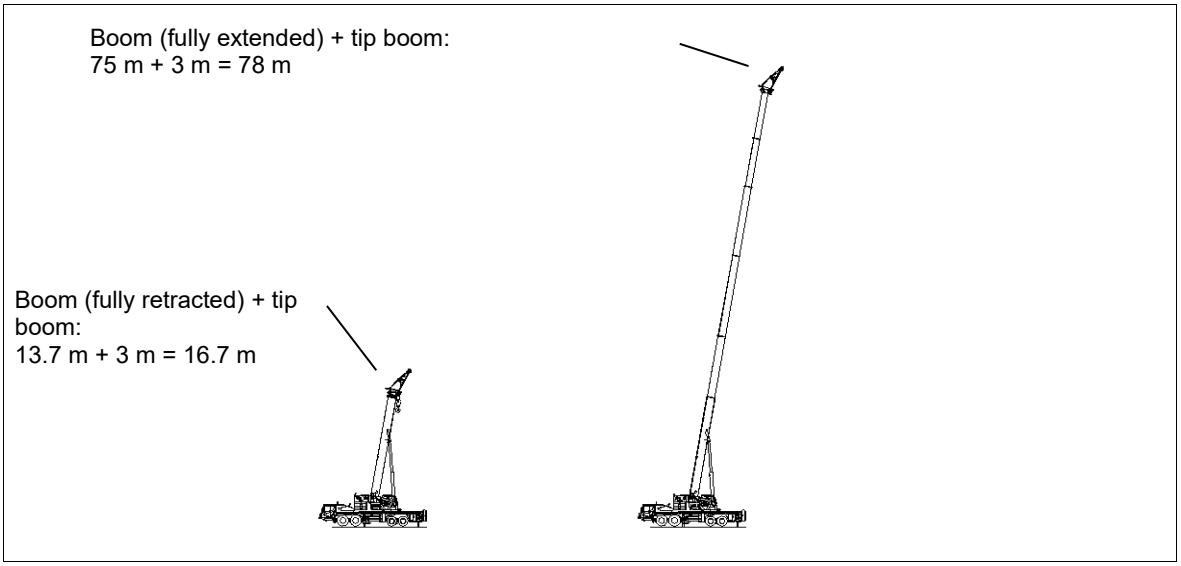


Figure 1-11 Boom lengths with optional tip boom

1.3 Technical data

1.3.1 Overall view

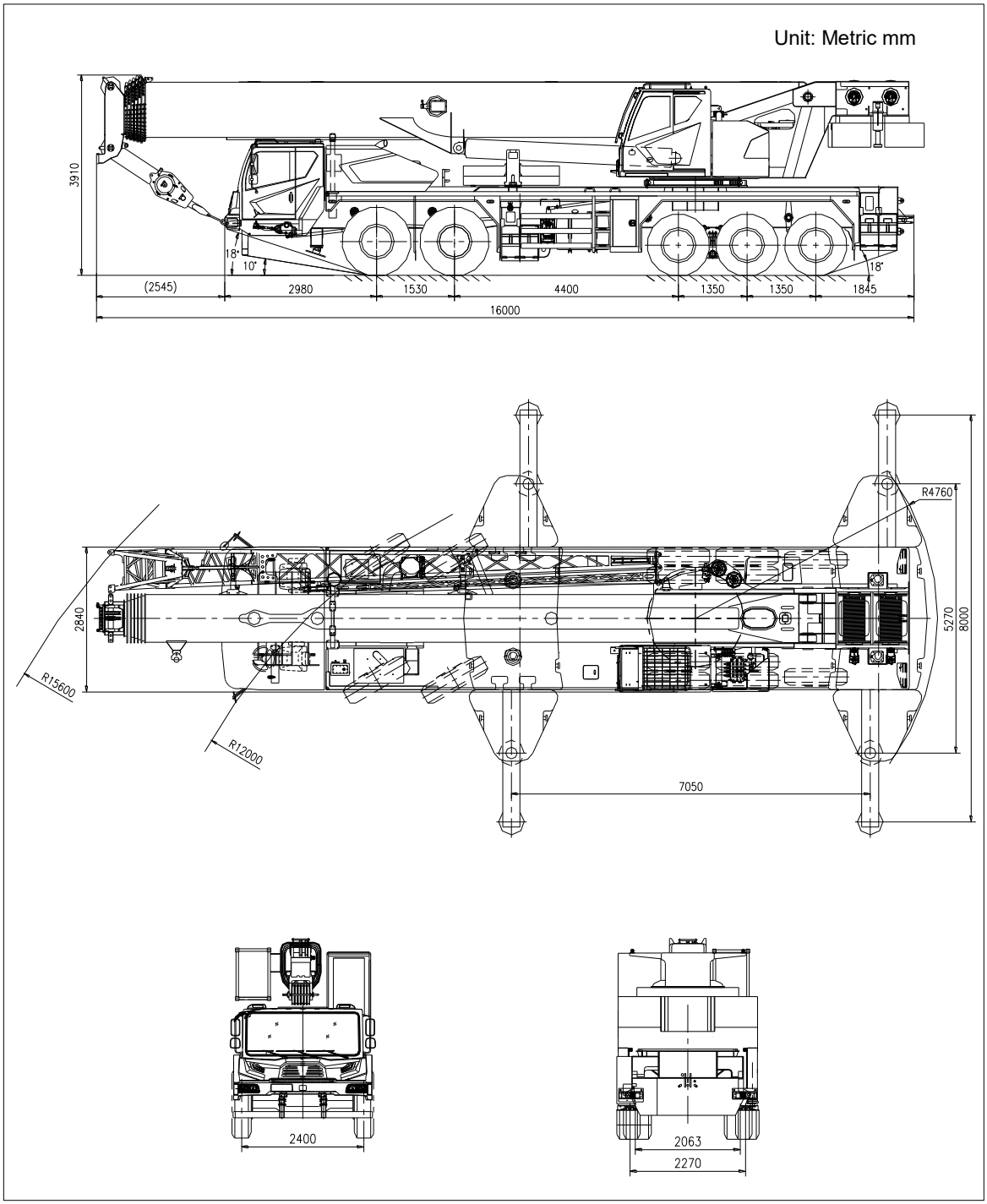


Figure 1-12 Overall view

1.3.2 Protection devices

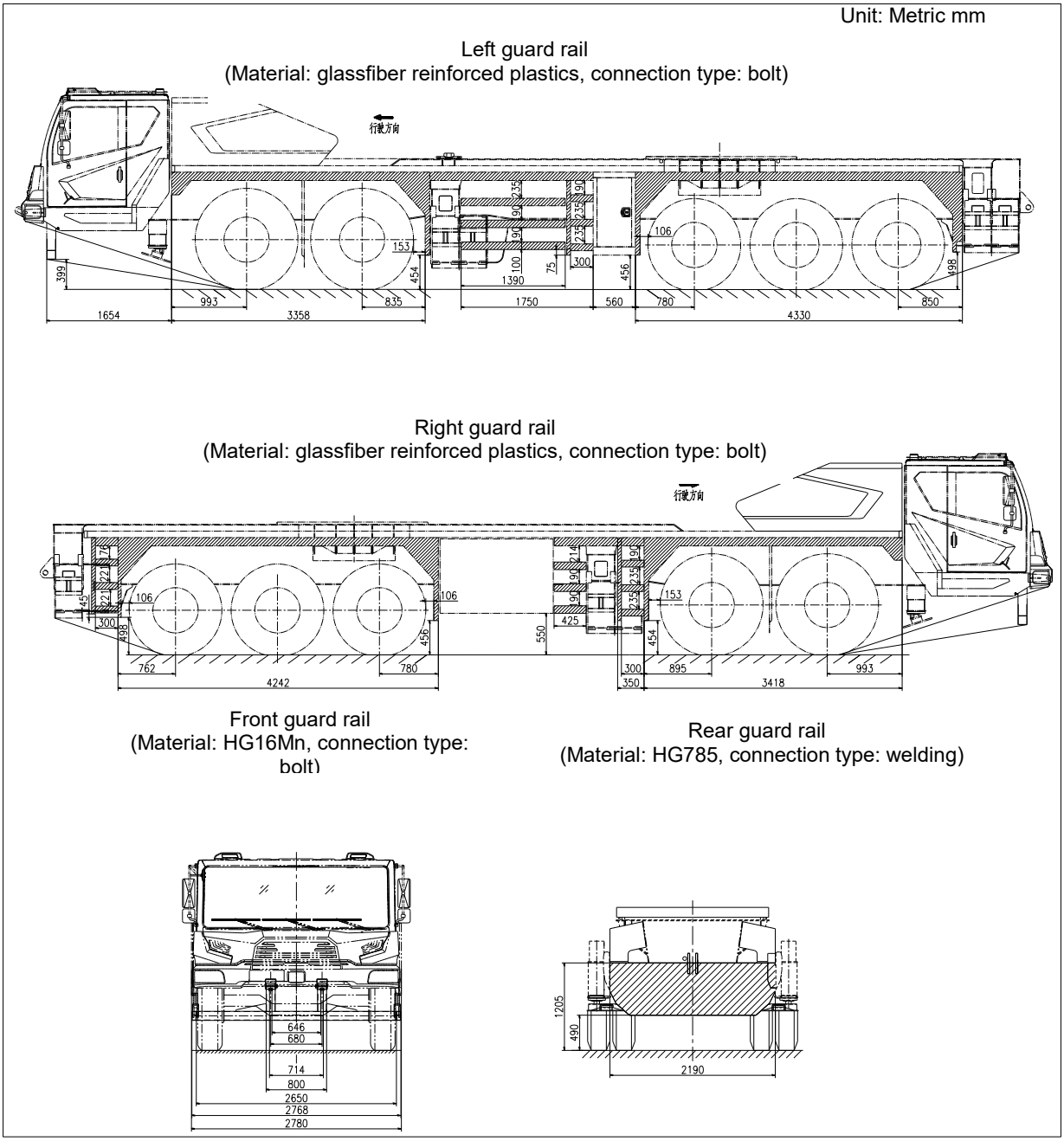


Figure 1-13 Protection devices

1.3.3 Technical data

Table 1-1 Technical data

Item			Value	Remarks
Work performance	Max. rated lifting capacity	kg	100000	
	Max. load moment of basic boom	kN.m	3880	
	Max. load moment of boom (fully extended)	kN.m	1592	
	Max. lifting height of basic boom	m	15.1	
	Max. lifting height of boom (fully extended)	m	75.6	
	Max. lifting height with the jib installed	m	86.7	Boom length: 68.9m
	Max. lifting height of jib (with an 9.5m optional extension)	m	96.1	Boom length: 68.9m
	Max. hoist rope speed (main winch)	m/min	≤130	Drum 4th layer
	Max. hoist rope speed (auxiliary winch)	m/min	≤110	Drum 2nd layer
	Boom derricking up time	s	80	
	Boom telescoping out time	s	820	
	Slewing speed	r/min	0-1.6	
Driving	Max. driving speed	km/h	85	
	Max. gradeability	%	42	
	Min. turning diameter	m	24	
	Min. ground clearance	mm	282	
	Limits for exhaust pollutants and smoke		Comply with related standards	GB3847-2018, GB17691-2018 (Chinese National Stage VI)
	Fuel consumption per hundred kilometers	L	46	

Table 1-1 ***(continued)***

Item			Value	Remarks
Mass	Front / rear overhang angle	°	10/18	
	Brake distance	m	≤10	Initial speed: 30 km/h
	Deadweight in driving condition	kg	54600	
	Complete vehicle kerb mass	kg	54405	
	Load of axle 1 and 2	kg	24000	
	Load of axle 3 and 4	kg	20600	
	Load of axle 5	kg	10000	
Dimensions	Overall dimensions (L × W × H)	mm	16000×2840×3910	
	Outrigger spread (L)	m	7.05	
	Outrigger spread (W)	m	Fully extended: 8.0, Intermediately extended: 5.27	
	Boom length	m	13.7-75	
	Boom angle	°	-1-80	
	Jib length	m	10.4, 17.5	
	Angle	°	0, 15, 30	
	Front / rear overhang	mm	2980 / 1845	
	Number of axles		5	
	Wheelbase	mm	1530+4400+1350+1350	
	Treads Front	mm	2400/2400	
	Treads Rear	mm	2063/2063/2270	
	Tail slewing radius	mm	4760	

Table 1-1 ***(continued)***

Item			Value	Remarks
Wheel alignment	King pin inclination angle	°	5	
	Wheel caster angle	°	2	
	Wheel camber angle	°	1	
Engine	Model		WP12.400E62	
	Type		6-cylinder in line, turbo-charged, inter-cooling	
	Fuel type		Light diesel	
	Displacement	ml	11596	
	Rated power / RPM	kW/r/min	294/1900	
	Max. torque / RPM	N.m/r/min	2000/1000-1400	
Manual Transmission	Model		10JSD200TB	
	Type		Mechanical stepped speed change	
	Operating method		Mechanical manual operation	
	Number of speeds		10 forward speeds and 2 reverse speeds	
	Speed ratio		Forward speeds: 12.74/9.43/6.67/4.83/ 3.53/2.64/1.95/1.38/1. 00/0.73 Reverse speeds: 13.73/2.84	
Automatic transmission	Model		10JZSD200A	
	Type		Mechanical stepped speed change	
	Operating method		Integrated mechanical manual and automatic operation	
	Number of speeds		10 forward speeds and 2 reverse speeds	
	Speed ratio		Forward speeds: 12.74/9.43/6.67/4.83/ 3.53/2.64/1.95/1.38/1. 00/0.73 Reverse speeds: 13.73/2.84	
Steering system	Steering type		Steering wheel	

	Outer diameter of steering wheel		mm	480	
	Steering column			Universal coupling	
	Steering gear	Model		SF120-04a-Z/Y	
		Type		Integral circulating hydraulic power steering gear	
	Steering pump	Model		QC40/15-WP12N1	
		Type		Gear pump	
Drive axle	Drive type			10×6	Part-time 3WD for Zoomlion axles; Real-time 3WD for Hande axles
	Speed ratio			5.73 (Zoomlion axles) 5.92 (Hande axles)	
Number of leaf springs (front/rear)				12/12/10/-	An air suspension is installed for Axle 5
Cab capacity				3	
Fuel tank capacity			L	400	
Hydraulic oil tank capacity			L	740	

1.3.4 Work parameters

1.3.4.1 Max. support strength per outrigger

When the crane is working within the rated lifting capacities, the max. support strength per outrigger is 90 tons.

1.3.4.2 Hook

Table 1-2 Hook configurations

Hook model (t)	Number of pulleys	Max. reeving	Weight (kg)	Remarks
90	7	13	1070	Straight shank double hook (optional)
80	6	13	685	Optional
70	6	13	689	Optional
60	6	12	670	Optional
60	6	12	662	Anchor hook (standard)
35	3	6	380	Optional
6.5	-	1	200	Standard

1.3.4.3 Rope specification

Table 1-3 Rope specification

Type of rope	Standard code	Specification	Length
Main hoist rope	YB/T5359-2010	GT15Z(35W×K7)-20mm-1960- left	340000 mm
Auxiliary hoist rope	YB/T5359-2010	GT15Z(35W×K7)-20mm-1960- left	220000 mm

1.3.4.4 Standard rope reevings

Table 1-4 Standard rope reevings for various boom lengths

Boom length (m)	13.7-18.3	22.9-27.5	27.5-32.1	32.1-36.7	36.7-41.3
Reeving	12	12	11	8	6
Boom length (m)	41.3-45.9	45.9-50.5	55.1-75.0	68.9+9.5	68.9+10.4
Reeving	5	4	3	1	1
Boom length (m)	68.9+17.5	68.5+9.5+10.4	68.9+9.5+17.5		
Reeving	1	1	1		

CAUTION

(1) 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.

(2) Max. permissible lifting capacity of single wire rope is 7700 kg.

1.3.5 Rated capacity charts

This crane is provided with several rated capacity charts. The operator should select proper rated lifting load referring to resp. rated capacity charts according to actual working conditions. As for the details, please refer to the tables below.

a） When lifting rated capacity ≤60t, a 60t hook should be used;

b） When 60t＜rated lifting capacity ≤70t, a 70t hook should be used;

c） When 70t ＜ rated lifting capacity ≤80t, a 80t hook should be used.

d） When lifting capacity ＞80t, a 90t hook should be used. When the reeving factor is 13, an additional device should be used.

Table 1-5 Rated capacity chart (with boom only)

Unit: ton

Outriggers fully extended to 8m, 40 t full counterweight, over side or rear working area														
Radius (m)	Boom length (m)												Radius (m)	
	13.7 ★	18.3	18.3	18.3	18.3	18.3 ★	22.9	22.9	22.9	22.9	22.9	22.9 ★		
3.0	100.0	40.5	65.0	85.0	85.0	85.0							3.0	
3.5	92.0	38.5	60.0	82.0	82.0	82.0	28.0	42.0	60.0	73.0	76.0	76.0	3.5	
4.0	85.0	36.0	56.0	77.0	79.0	79.0	26.0	39.0	56.0	68.0	73.0	73.0	4.0	
4.5	80.0	34.5	52.0	72.0	77.0	77.0	24.5	37.0	52.0	63.0	70.0	70.0	4.5	
5.0	74.0	33.0	49.0	67.0	71.0	71.0	23.0	34.5	49.0	60.0	68.0	68.0	5.0	
6.0	66.0	31.0	43.0	58.0	63.0	63.0	21.0	31.0	43.0	56.0	63.0	63.0	6.0	
7.0	56.0	27.5	38.0	53.0	54.0	54.0	19.0	28.0	39.0	47.5	54.0	54.0	7.0	
8.0	48.0	25.5	35.0	46.0	47.0	47.0	17.0	25.0	35.0	43.0	48.0	48.0	8.0	
9.0	42.0	23.5	32.0	40.5	41.5	42.0	16.0	23.0	32.0	39.5	42.0	42.0	9.0	
10.0	36.5	22.0	29.0	36.0	37.0	37.5	15.0	21.0	29.5	36.0	38.0	38.0	10.0	
11.0		21.0	27.0	34.5	36.0	35.5	13.8	19.5	27.5	33.5	34.0	33.5	11.0	
12.0		20.0	25.0	29.0	30.0	29.5	13.0	18.5	25.5	31.0	31.5	30.5	12.0	
14.0		18.0	22.0	24.5	25.5	25.0	11.5	16.0	22.5	27.0	27.5	26.5	14.0	
16.0							10.3	14.5	20.0	24.0	23.5	22.5	16.0	
18.0							9.3	13.0	18.0	20.5	19.7	18.4	18.0	
Reeving	12	12					12						Reeving	
Hook	60t anchor hook												Hook	
Telescoping mode Ⅰ	1	1	1	1	1	1	1	1	1	1	1	2	Ⅰ	Telescoping mode
Telescoping mode Ⅱ	1	1	1	1	1	2	1	1	1	1	2	2	Ⅱ	Telescoping mode
Telescoping mode Ⅲ	1	1	1	1	2	1	1	1	1	2	2	1	Ⅲ	Telescoping mode
Telescoping mode Ⅳ	1	1	1	2	1	1	1	1	2	2	1	1	Ⅳ	Telescoping mode
Telescoping mode Ⅴ	1	1	2	1	1	1	1	2	2	1	1	1	Ⅴ	Telescoping mode
Telescoping mode Ⅵ	1	2	1	1	1	1	3	2	1	1	1	1	Ⅵ	Telescoping mode

Table 1-6 Rated capacity chart (with boom only)

Unit: ton

Outriggers fully extended to 8m, 40 t full counterweight, over side or rear working area														
Radius (m)	Boom length (m)												Radius (m)	
	27.5	27.5	27.5	27.5	27.5	27.5 ★	32.1	32.1	32.1	32.1	32.1	32.1 ★		
3.0													3.0	
3.5													3.5	
4.0													4.0	
4.5	22.5	22.5	40.5	56.0	67.0	67.0							4.5	
5.0	21.5	21.5	38.5	52.0	64.0	64.0							5.0	
6.0	19.0	19.0	34.5	46.5	58.0	58.0	16.5	21.0	23.5	37.5	52.0	53.0	6.0	
7.0	17.4	17.4	31.5	42.0	52.0	52.0	15.0	19.0	21.0	34.0	48.0	50.0	7.0	
8.0	15.8	15.8	28.8	38.0	46.0	46.0	13.7	17.5	19.0	31.5	43.5	46.0	8.0	
9.0	14.5	14.5	26.5	34.5	41.0	41.0	12.6	16.2	17.6	29.5	40.5	42.0	9.0	
10.0	13.4	13.4	24.5	31.8	37.0	36.5	11.6	15.0	16.2	27.5	37.0	37.5	10.0	
11.0	12.4	12.4	23.0	29.4	32.5	32.0	10.7	14.0	15.0	25.5	33.5	34.0	11.0	
12.0	11.5	11.5	21.5	27.4	30.5	30.5	10.0	13.0	14.0	24.0	30.5	31.0	12.0	
14.0	10.3	10.1	19.0	23.8	27.0	25.5	8.8	11.6	12.2	21.5	25.5	26.5	14.0	
16.0	9.2	9.0	17.0	21.1	24.7	23.2	7.8	10.3	10.8	19.0	23.0	23.5	16.0	
18.0	8.3	8.1	15.4	18.9	20.5	19.1	7.0	9.4	9.6	17.0	21.0	19.8	18.0	
20.0	7.5	7.4	14.0	17.2	17.2	15.8	6.3	8.5	8.7	15.5	18.0	16.5	20.0	
22.0	6.8	6.7	13.0	15.6	14.6	13.2	5.7	7.8	7.9	14.0	15.4	14.0	22.0	
24.0							5.2	7.1	7.2	13.0	13.3	11.9	24.0	
26.0							4.8	6.5	6.6	12.0	11.5	10.1	26.0	
Reeving	11						9						Reeving	
Hook	60t anchor hook												Hook	
Telescoping mode Ⅰ	1	1	1	1	1	2	1	1	1	1	1	2	Ⅰ	Telescoping mode
Ⅱ	1	1	1	1	2	2	1	1	1	1	2	2	Ⅱ	
Ⅲ	1	1	1	2	2	2	1	1	1	2	2	2	Ⅲ	
Ⅳ	1	1	2	2	2	1	1	2	3	2	2	2	Ⅳ	
Ⅴ	2	3	2	2	1	1	3	3	2	2	2	1	Ⅴ	
Ⅵ	3	2	2	1	1	1	3	2	2	2	1	1	Ⅵ	

Table 1-7 Rated capacity chart (with boom only)

Unit: ton

Outriggers fully extended to 8m, 40 t full counterweight, over side or rear working area														
Radius (m)	Boom length (m)												Radius (m)	
	36.7	36.7	36.7	36.7	36.7	36.7 ★	41.3	41.3	41.3	41.3	41.3	41.3 ★		
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	16.0	19.0	23.0	23.5	37.5	48.0							7.0	
8.0	15.0	17.1	21.0	21.5	35.0	46.0	15.0	18.0	19.5	23.5	30.0	37.0	8.0	
9.0	13.8	15.6	19.5	19.5	32.5	42.0	14.0	16.8	18.0	22.0	27.8	34.8	9.0	
10.0	12.8	14.4	18.0	18.0	30.5	39.0	12.8	15.4	16.5	20.3	25.7	32.5	10.0	
11.0	11.9	13.3	16.6	16.6	28.7	36.0	11.8	14.3	15.4	18.9	23.8	30.5	11.0	
12.0	11.2	12.3	15.5	15.5	27.2	33.0	11.0	13.3	14.2	17.6	22.0	28.8	12.0	
14.0	9.8	10.7	13.6	13.5	24.2	28.0	9.6	11.6	12.3	15.4	19.3	25.7	14.0	
16.0	8.8	9.5	12.0	11.8	21.5	24.0	8.4	10.3	10.8	13.7	17.1	23.0	16.0	
18.0	7.9	8.4	10.7	10.5	19.3	20.6	7.5	9.2	9.6	12.3	15.2	20.8	18.0	
20.0	7.2	7.6	9.6	9.5	17.5	17.3	6.7	8.3	8.6	11.0	13.7	18.0	20.0	
22.0	6.5	6.8	8.7	8.6	16.0	14.7	6.1	7.5	7.7	10.0	12.4	15.4	22.0	
24.0	6.0	6.2	7.9	7.8	14.0	12.6	5.5	6.8	7.0	9.2	11.3	13.2	24.0	
26.0	5.5	5.6	7.3	7.1	12.2	10.9	5.0	6.2	6.3	8.4	10.3	11.5	26.0	
28.0	5.1	5.2	6.7	6.5	10.8	9.5	4.6	5.7	5.8	7.8	9.5	10.1	28.0	
30.0	4.7	4.8	6.1	6.0	9.6	8.3	4.2	5.2	5.3	7.2	8.8	8.9	30.0	
32.0							3.9	4.8	4.9	6.7	8.1	7.9	32.0	
34.0							3.6	4.4	4.5	6.2	7.2	7.0	34.0	
Reeving	8						6						Reeving	
Hook	60t anchor hook												Hook	
Telescoping mode Ⅰ	1	1	1	1	1	2	1	1	1	1	1	2	Ⅰ	Telescoping mode
Ⅱ	1	1	1	1	2	2	1	1	1	2	3	2	Ⅱ	
Ⅲ	1	1	2	3	2	2	1	2	3	3	2	2	Ⅲ	
Ⅳ	2	3	3	2	2	2	3	3	3	2	2	2	Ⅳ	
Ⅴ	3	3	2	2	2	2	3	3	2	2	2	2	Ⅴ	
Ⅵ	3	2	2	2	2	1	3	2	2	2	2	2	Ⅵ	

Table 1-8 Rated capacity chart (with boom only)

Unit: ton

Outriggers fully extended to 8m, 40 t full counterweight, over side or rear working area														
Radius (m)	Boom length (m)												Radius (m)	
	45.9	45.9	45.9	45.9	45.9	45.9 ★		50.5	50.5	50.5	50.5	50.5 ★		
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	14.5	16.0	19.5	23.0	27.0	27.5							9.0	
10.0	13.5	15.0	18.0	21.5	25.5	26.0							10.0	
11.0	12.6	13.8	16.8	20.0	24.0	24.5		12.5	14.5	17.0	20.0	21.5	11.0	
12.0	11.8	12.8	15.6	18.7	22.5	23.0		11.5	13.5	16.0	19.0	20.5	12.0	
14.0	10.3	11.0	13.6	16.5	19.7	20.3		10.2	12.0	14.0	17.0	18.0	14.0	
16.0	9.2	9.7	12.0	14.5	17.4	18.0		9.0	10.8	12.5	15.3	16.2	16.0	
18.0	8.2	8.6	10.7	13.0	15.6	16.2		8.0	9.6	11.3	13.7	14.6	18.0	
20.0	7.4	7.7	9.6	11.8	14.0	14.4		7.2	8.6	10.2	12.5	13.2	20.0	
22.0	6.7	6.9	8.7	10.7	12.6	13.0		6.4	7.7	9.2	11.3	11.9	22.0	
24.0	6.1	6.2	7.8	9.7	11.3	11.7		5.8	7.0	8.3	10.2	10.7	24.0	
26.0	5.5	5.6	7.1	8.9	10.3	10.6		5.3	6.4	7.7	9.3	9.6	26.0	
28.0	5.1	5.1	6.5	8.1	9.5	9.5		4.8	5.8	7.1	8.5	8.7	28.0	
30.0	4.7	4.7	6.0	7.4	8.7	8.4		4.4	5.3	6.5	7.7	7.9	30.0	
32.0	4.3	4.3	5.5	6.8	7.7	7.4		4.0	4.9	6.0	7.1	7.1	32.0	
34.0	4.0	3.9	5.1	6.3	6.8	6.5		3.7	4.5	5.5	6.5	6.4	34.0	
36.0	3.7	3.6	4.7	5.8	6.0	5.7		3.4	4.2	5.1	6.0	5.6	36.0	
38.0	3.5	3.3	4.4	5.4	5.3	5.0		3.1	3.9	4.7	5.4	4.9	38.0	
40.0								2.9	3.6	4.3	4.8	4.3	40.0	
42.0								2.7	3.3	4.0	4.2	3.7	42.0	
Reeving	5							4					Reeving	
Hook	60t anchor hook												Hook	
Telescoping mode Ⅰ	1	1	1	1	2	3		1	1	1	2	3	Ⅰ	Telescoping mode
Ⅱ	1	1	2	3	3	2		1	2	3	3	3	Ⅱ	
Ⅲ	2	3	3	3	2	2		3	3	3	3	2	Ⅲ	
Ⅳ	3	3	3	2	2	2		3	3	3	2	2	Ⅳ	
Ⅴ	3	3	2	2	2	2		3	3	2	2	2	Ⅴ	
Ⅵ	3	2	2	2	2	2		3	2	2	2	2	Ⅵ	

Table 1-9 Rated capacity chart (with boom only)

Unit: ton

Outriggers fully extended to 8m, 40 t full counterweight, over side or rear working area														
Radius (m)	Boom length (m)												Radius (m)	
	55.1	55.1	55.1	55.1. ★	59.7	59.7	59.7 ★		64.3	64.3 ★	68.9 ★	75.0 ★		
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	12.5	14.0	16.5	18.0									12.0	
14.0	11.0	12.6	14.8	16.2	11.0	13.0	14.0						14.0	
16.0	9.8	11.2	13.2	14.7	10.0	11.5	12.6		10.0	11.0			16.0	
18.0	8.8	10.1	11.8	13.2	9.2	10.5	11.6		9.5	10.0	8.8		18.0	
20.0	8.0	9.1	10.7	11.8	8.4	9.5	10.6		8.7	9.2	8.2	6.8	20.0	
22.0	7.2	8.3	9.8	10.6	7.7	8.7	9.8		8.0	8.5	7.7	6.7	22.0	
24.0	6.5	7.6	9.0	9.8	7.0	8.0	9.0		7.4	7.9	7.2	6.6	24.0	
26.0	5.9	6.9	8.2	9.0	6.4	7.4	8.3		6.8	7.3	6.7	6.2	26.0	
28.0	5.4	6.3	7.6	8.2	5.9	6.8	7.6		6.3	6.8	6.3	5.8	28.0	
30.0	5.0	5.8	7.0	7.4	5.4	6.3	7.0		5.8	6.3	5.8	5.4	30.0	
32.0	4.6	5.4	6.5	6.7	5.0	5.8	6.4		5.4	5.9	5.4	5.0	32.0	
34.0	4.2	5.0	6.0	6.1	4.6	5.4	5.8		5.0	5.5	5.0	4.7	34.0	
36.0	3.9	4.6	5.5	5.5	4.3	5.0	5.3		4.6	5.1	4.7	4.4	36.0	
38.0	3.6	4.2	5.0	5.0	4.0	4.6	4.8		4.3	4.7	4.4	4.1	38.0	
40.0	3.3	3.9	4.6	4.4	3.7	4.3	4.3		4.0	4.3	4.1	3.8	40.0	
42.0	3.1	3.6	4.3	3.8	3.4	4.0	4.0		3.7	3.9	3.8	3.5	42.0	
44.0	2.9	3.3	3.9	3.3	3.1	3.7	3.6		3.5	3.6	3.5	3.2	44.0	
46.0	2.7	3.1	3.4	2.8	2.9	3.4	3.1		3.2	3.3	3.2	2.9	46.0	
48.0	2.5	2.9	3.0	2.4	2.7	3.1	2.7		3.0	3.0	2.9	2.7	48.0	
50.0					2.5	2.9	2.3		2.8	2.7	2.7	2.5	50.0	
52.0					2.3	2.6	2.0		2.6	2.3	2.5	2.3	52.0	
54.0									2.4	1.9	2.3	2.2	54.0	
56.0									2.2	1.6	2.0	2.0	56.0	
58.0											1.7	1.7	58.0	
60.0											1.4	1.5	60.0	
62.0												1.3	62.0	
64.0												1.0	64.0	
Reeving	3								3				Reeving	
Hook	60t anchor hook												Hook	
Telescoping mode Ⅰ	1	1	2	3	1	2	3		2	3	3	4	Ⅰ	Telescoping mode
Ⅱ	2	3	3	3	3	3	3		3	3	3	4	Ⅱ	
Ⅲ	3	3	3	3	3	3	3		3	3	3	4	Ⅲ	
Ⅳ	3	3	3	2	3	3	3		3	3	3	4	Ⅳ	
Ⅴ	3	3	2	2	3	3	2		3	3	3	4	Ⅴ	
Ⅵ	3	2	2	2	3	2	2		3	2	3	4	Ⅵ	

Table 1-10 Rated capacity chart (with boom only)

Unit: ton

Outriggers fully extended to 8m, 27 t counterweight, over side or rear working area														
Radius (m)	Boom length (m)												Radius (m)	
	13.7 ★	18.3	18.3	18.3	18.3	18.3 ★	22.9	22.9	22.9	22.9	22.9	22.9 ★		
3.0	100.0	40.5	65.0	85.0	85.0	85.0							3.0	
3.5	92.0	38.5	60.0	82.0	82.0	82.0	28.0	42.0	60.0	73.0	76.0	76.0	3.5	
4.0	85.0	36.0	56.0	77.0	79.0	79.0	26.0	39.0	56.0	68.0	73.0	73.0	4.0	
4.5	80.0	34.5	52.0	72.0	77.0	77.0	24.5	37.0	52.0	63.0	70.0	70.0	4.5	
5.0	74.0	33.0	49.0	67.0	71.0	71.0	23.0	34.5	49.0	60.0	68.0	68.0	5.0	
6.0	65.0	31.0	43.0	58.0	63.0	63.0	21.0	31.0	43.0	56.0	63.0	63.0	6.0	
7.0	55.0	27.5	38.0	53.0	54.0	52.0	19.0	28.0	39.0	47.5	54.0	54.0	7.0	
8.0	45.0	25.5	35.0	46.0	47.0	45.0	17.0	25.0	35.0	43.0	48.0	48.0	8.0	
9.0	39.0	23.5	32.0	40.5	39.5	39.5	16.0	23.0	32.0	39.5	40.0	40.0	9.0	
10.0	34.0	22.0	29.0	36.0	35.0	35.0	15.0	21.0	29.5	36.0	36.0	36.0	10.0	
11.0		21.0	27.0	32.5	33.5	33.0	13.8	19.5	27.5	33.5	33.0	32.0	11.0	
12.0		20.0	25.0	27.0	27.5	27.0	13.0	18.5	25.5	31.0	30.5	29.0	12.0	
14.0		18.0	22.0	22.5	23.0	22.5	11.5	16.0	22.5	23.5	23.0	21.5	14.0	
16.0							10.3	14.5	19.5	19.0	18.0	16.5	16.0	
18.0							9.3	13.0	15.5	15.0	14.0	12.5	18.0	
Reevin	12	12					12						Reevin	
Hook	60t anchor hook												Hook	
Telescoping mode Ⅰ	1	1	1	1	1	1	1	1	1	1	1	2	Ⅰ	Telescoping mode
Ⅱ	1	1	1	1	1	2	1	1	1	1	2	2	Ⅱ	
Ⅲ	1	1	1	1	2	1	1	1	1	2	2	1	Ⅲ	
Ⅳ	1	1	1	2	1	1	1	1	2	2	1	1	Ⅳ	
Ⅴ	1	1	2	1	1	1	1	2	2	1	1	1	Ⅴ	
Ⅵ	1	2	1	1	1	1	3	2	1	1	1	1	Ⅵ	

Table 1-11 Rated capacity chart (with boom only)

Unit: ton

Outriggers fully extended to 8m, 27 t counterweight, over side or rear working area														
Radius (m)	Boom length (m)												Radius (m)	
	27.5	27.5	27.5	27.5	27.5	27.5 ★	32.1	32.1	32.1	32.1	32.1	32.1 ★		
3.0													3.0	
3.5													3.5	
4.0													4.0	
4.5	22.5	22.5	40.5	56.0	67.0	67.0							4.5	
5.0	21.5	21.5	38.5	52.0	64.0	64.0							5.0	
6.0	19.0	19.0	34.5	46.5	58.0	58.0	16.5	21.0	23.5	37.5	52.0	53.0	6.0	
7.0	17.4	17.4	31.5	42.0	52.0	52.0	15.0	19.0	21.0	34.0	48.0	50.0	7.0	
8.0	15.8	15.8	28.8	38.0	46.0	46.0	13.7	17.5	19.0	31.5	43.5	46.0	8.0	
9.0	14.5	14.5	26.5	34.5	41.0	40.0	12.6	16.2	17.6	29.5	40.5	42.0	9.0	
10.0	13.4	13.4	24.5	31.8	37.0	36.0	11.6	15.0	16.2	27.5	37.0	36.0	10.0	
11.0	12.4	12.4	23.0	29.4	32.0	31.5	10.7	14.0	15.0	25.5	33.5	33.0	11.0	
12.0	11.5	11.5	21.5	27.4	30.0	29.5	10.0	13.0	14.0	24.0	30.5	30.0	12.0	
14.0	10.3	10.1	19.0	23.8	24.0	22.5	8.8	11.6	12.2	21.5	24.5	23.0	14.0	
16.0	9.2	9.0	17.0	19.0	19.0	17.5	7.8	10.3	10.8	19.0	20.0	18.5	16.0	
18.0	8.3	8.1	15.4	16.5	15.5	14.0	7.0	9.4	9.6	17.0	16.0	14.5	18.0	
20.0	7.5	7.4	14.0	13.5	12.5	11.0	6.3	8.5	8.7	14.0	13.0	11.5	20.0	
22.0	6.8	6.7	12.0	11.5	10.5	9.0	5.7	7.8	7.9	12.0	11.0	9.5	22.0	
24.0							5.2	7.1	7.2	10.5	9.5	8.0	24.0	
26.0							4.8	6.5	6.6	9.0	8.0	6.5	26.0	
Reeving	11						9						Reeving	
Hook	60t anchor hook												Hook	
Telescoping mode Ⅰ	1	1	1	1	1	2	1	1	1	1	1	2	Ⅰ	Telescoping mode
Ⅱ	1	1	1	1	2	2	1	1	1	1	2	2	Ⅱ	
Ⅲ	1	1	1	2	2	2	1	1	1	2	2	2	Ⅲ	
Ⅳ	1	1	2	2	2	1	1	2	3	2	2	2	Ⅳ	
Ⅴ	2	3	2	2	1	1	3	3	2	2	2	1	Ⅴ	
Ⅵ	3	2	2	1	1	1	3	2	2	2	1	1	Ⅵ	

Table 1-12 Rated capacity chart (with boom only)

Unit: ton

Outriggers fully extended to 8m, 27 t counterweight, over side or rear working area														
Radius (m)	Boom length (m)												Radius (m)	
	36.7	36.7	36.7	36.7	36.7	36.7 ★	41.3	41.3	41.3	41.3	41.3	41.3 ★		
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	16.0	19.0	23.0	23.5	37.5	48.0							7.0	
8.0	15.0	17.1	21.0	21.5	35.0	46.0	15.0	18.0	19.5	23.5	30.0	37.0	8.0	
9.0	13.8	15.6	19.5	19.5	32.5	42.0	14.0	16.8	18.0	22.0	27.8	34.8	9.0	
10.0	12.8	14.4	18.0	18.0	30.5	39.0	12.8	15.4	16.5	20.3	25.7	32.5	10.0	
11.0	11.9	13.3	16.6	16.6	28.7	34.0	11.8	14.3	15.4	18.9	23.8	30.5	11.0	
12.0	11.2	12.3	15.5	15.5	27.2	31.0	11.0	13.3	14.2	17.6	22.0	28.8	12.0	
14.0	9.8	10.7	13.6	13.5	24.2	24.0	9.6	11.6	12.3	15.4	19.3	24.5	14.0	
16.0	8.8	9.5	12.0	11.8	20.0	18.5	8.4	10.3	10.8	13.7	17.1	20.0	16.0	
18.0	7.9	8.4	10.7	10.5	17.0	15.5	7.5	9.2	9.6	12.3	15.2	16.5	18.0	
20.0	7.2	7.6	9.6	9.5	14.0	12.5	6.7	8.3	8.6	11.0	13.7	13.5	20.0	
22.0	6.5	6.8	8.7	8.6	12.0	10.5	6.1	7.5	7.7	10.0	11.5	11.0	22.0	
24.0	6.0	6.2	7.9	7.8	10.3	8.9	5.5	6.8	7.0	9.2	10.0	9.5	24.0	
26.0	5.5	5.6	7.3	7.1	8.7	7.5	5.0	6.2	6.3	8.4	8.8	8.3	26.0	
28.0	5.1	5.2	6.7	6.5	7.5	6.3	4.6	5.7	5.8	7.8	7.6	7.1	28.0	
30.0	4.7	4.8	6.1	6.0	6.5	5.3	4.2	5.2	5.3	6.7	6.5	6.0	30.0	
32.0							3.9	4.8	4.9	5.9	5.7	5.2	32.0	
34.0							3.6	4.4	4.5	5.2	4.9	4.4	34.0	
Reeving	8						6						Reeving	
Hook	60t anchor hook												Hook	
Telescoping mode Ⅰ	1	1	1	1	1	2	1	1	1	1	1	2	Ⅰ	Telescoping mode
Ⅱ	1	1	1	1	2	2	1	1	1	2	3	2	Ⅱ	
Ⅲ	1	1	2	3	2	2	1	2		3	2	2	Ⅲ	
Ⅳ	2	3	3	2	2	2	3	3	3	2	2	2	Ⅳ	
Ⅴ	3	3	2	2	2	2	3	3	2	2	2	2	Ⅴ	
Ⅵ	3	2	2	2	2	1	3	2	2	2	2	2	Ⅵ	

Table 1-13 Rated capacity chart (with boom only)

Unit: ton

Outriggers fully extended to 8m, 27 t counterweight, over side or rear working area														
Radius (m)	Boom length (m)												Radius (m)	
	45.9	45.9	45.9	45.9	45.9	45.9 ★		50.5	50.5	50.5	50.5	50.5 ★		
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	14.5	16.0	19.5	23.0	27.0	27.5							9.0	
10.0	13.5	15.0	18.0	21.5	25.5	26.0							10.0	
11.0	12.6	13.8	16.8	20.0	24.0	24.5		12.5	14.5	17.0	20.0	21.5	11.0	
12.0	11.8	12.8	15.6	18.7	22.5	23.0		11.5	13.5	16.0	19.0	20.5	12.0	
14.0	10.3	11.0	13.6	16.5	19.7	20.3		10.2	12.0	14.0	17.0	18.0	14.0	
16.0	9.2	9.7	12.0	14.5	17.4	18.0		9.0	10.8	12.5	15.3	16.2	16.0	
18.0	8.2	8.6	10.7	13.0	15.6	15.1		8.0	9.6	11.3	13.7	14.6	18.0	
20.0	7.4	7.7	9.6	11.8	13.0	12.5		7.2	8.6	10.2	12.5	13.0	20.0	
22.0	6.7	6.9	8.7	10.7	11.3	10.9		6.4	7.7	9.2	11.3	10.5	22.0	
24.0	6.1	6.2	7.8	9.7	9.6	9.2		5.8	7.0	8.3	9.5	9.0	24.0	
26.0	5.5	5.6	7.1	8.5	8.0	7.6		5.3	6.4	7.7	8.2	7.7	26.0	
28.0	5.1	5.1	6.5	7.5	6.9	6.5		4.8	5.8	7.1	7.0	6.5	28.0	
30.0	4.7	4.7	6.0	6.5	5.9	5.5		4.4	5.3	6.5	6.0	5.5	30.0	
32.0	4.3	4.3	5.5	5.6	5.0	4.6		4.0	4.9	6.0	5.1	4.6	32.0	
34.0	4.0	3.9	5.1	4.9	4.3	3.9		3.7	4.5	5.0	4.4	3.9	34.0	
36.0	3.7	3.6	4.7	4.2	3.6	3.2		3.4	4.2	4.4	3.7	3.2	36.0	
38.0	3.5	3.3	4.0	3.6	3.0	2.6		3.1	3.9	3.8	3.1	2.6	38.0	
40.0								2.9	3.6	3.3	2.6	2.1	40.0	
42.0								2.7	3.3	2.8	2.1	1.6	42.0	
Reeving	5							4					Reeving	
Hook	60t anchor hook												Hook	
Telescoping mode Ⅰ	1	1	1	1	2	3		1	1	1	2	3	Ⅰ	Telescoping mode
Ⅱ	1	1	2	3	3	2		1	2	3	3	3	Ⅱ	
Ⅲ	2	3	3	3	2	2		3	3	3	3	2	Ⅲ	
Ⅳ	3	3	3	2	2	2		3	3	3	2	2	Ⅳ	
Ⅴ	3	3	2	2	2	2		3	3	2	2	2	Ⅴ	
Ⅵ	3	2	2	2	2	2		3	2	2	2	2	Ⅵ	

Table 1-14 Rated capacity chart (with boom only)

Unit: ton

Outriggers fully extended to 8m, 27 t counterweight, over side or rear working area													
Radius (m)	Boom length (m)												Radius (m)
	55.1	55.1	55.1	55.1. ★	59.7	59.7	59.7 ★		64.3	64.3 ★	68.9 ★	75.0 ★	
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	12.5	14.0	16.5	18.0									12.0
14.0	11.0	12.6	14.8	16.2	11.0	13.0	14.0						14.0
16.0	9.8	11.2	13.2	14.7	10.0	11.5	12.6		10.0	11.0			16.0
18.0	8.8	10.1	11.8	13.2	9.2	10.5	11.6		9.5	10.0	8.8		18.0
20.0	8.0	9.1	10.7	11.8	8.4	9.5	10.6		8.7	9.2	8.2	6.8	20.0
22.0	7.2	8.3	9.8	10.6	7.7	8.7	9.8		8.0	8.5	7.7	6.7	22.0
24.0	6.5	7.6	9.0	9.3	7.0	8.0	9.0		7.4	7.9	7.2	6.6	24.0
26.0	5.9	6.9	8.2	7.9	6.4	7.4	8.3		6.8	7.3	6.7	6.2	26.0
28.0	5.4	6.3	7.3	6.7	5.9	6.8	7.0		6.3	6.8	6.3	5.8	28.0
30.0	5.0	5.8	6.3	5.7	5.4	6.3	6.0		5.8	6.3	5.8	5.4	30.0
32.0	4.6	5.4	5.4	4.8	5.0	5.8	5.1		5.4	5.4	5.4	5.0	32.0
34.0	4.2	5.0	4.6	4.0	4.6	5.0	4.4		5.0	4.7	5.0	4.7	34.0
36.0	3.9	4.6	4.0	3.4	4.3	4.3	3.7		4.6	4.0	4.5	4.4	36.0
38.0	3.6	4.2	3.4	2.8	4.0	3.7	3.1		4.2	3.5	3.9	4.0	38.0
40.0	3.3	3.6	2.9	2.3	3.7	3.2	2.6		3.7	2.9	3.3	3.4	40.0
42.0	3.1	3.2	2.5	1.9	3.4	2.7	2.1		3.2	2.4	2.8	2.9	42.0
44.0	2.9	2.7	2.0	1.4	3.1	2.3	1.7		2.8	2.0	2.4	2.5	44.0
46.0	2.7	2.3	1.6	1.0	2.7	1.9	1.3		2.4	1.7	2.0	2.1	46.0
48.0	2.5	2.0	1.3		2.4	1.6	1.0		2.0	1.3	1.6	1.7	48.0
50.0					2.1	1.3			1.7	1.0	1.3	1.4	50.0
52.0									1.4		1.0	1.1	52.0
54.0													54.0
56.0													56.0
58.0													58.0
60.0													60.0
62.0													62.0
Reeving	3								3				Reeving
Hook	60t anchor hook												Hook
Telescoping mode Ⅰ	1	1	2	3	1	2	3		2	3	3	4	Ⅰ Telescoping mode
Ⅱ	2	3	3	3	3	3	3		3	3	3	4	Ⅱ
Ⅲ	3	3	3	3	3	3	3		3	3	3	4	Ⅲ
Ⅳ	3	3	3	2	3	3	3		3	3	3	4	Ⅳ
Ⅴ	3	3	2	2	3	3	2		3	3	3	4	Ⅴ
Ⅵ	3	2	2	2	3	2	2		3	2	3	4	Ⅵ

Table 1-15 Rated capacity chart (with boom only)

Unit: ton

Outriggers fully extended to 8m, 23 t counterweight, over side or rear working area														
Radius (m)		Boom length (m)												Radius (m)
		13.7 ★	18.3	18.3	18.3	18.3	18.3 ★	22.9	22.9	22.9	22.9	22.9	22.9 ★	
3.0		100.0	40.5	65.0	85.0	85.0	85.0							3.0
3.5		92.0	38.5	60.0	82.0	82.0	82.0	28.0	42.0	60.0	73.0	76.0	76.0	3.5
4.0		85.0	36.0	56.0	77.0	79.0	79.0	26.0	39.0	56.0	68.0	73.0	73.0	4.0
4.5		80.0	34.5	52.0	72.0	77.0	77.0	24.5	37.0	52.0	63.0	70.0	70.0	4.5
5.0		74.0	33.0	49.0	67.0	71.0	71.0	23.0	34.5	49.0	60.0	68.0	68.0	5.0
6.0		65.0	31.0	43.0	58.0	63.0	63.0	21.0	31.0	43.0	56.0	63.0	63.0	6.0
7.0		54.0	27.5	38.0	53.0	54.0	52.0	19.0	28.0	39.0	47.5	54.0	54.0	7.0
8.0		44.0	25.5	35.0	46.0	46.0	45.0	17.0	25.0	35.0	43.0	46.0	46.0	8.0
9.0		37.0	23.5	32.0	40.5	39.5	39.0	16.0	23.0	32.0	39.5	40.0	40.0	9.0
10.0		32.0	22.0	29.0	36.0	35.0	34.5	15.0	21.0	29.5	36.0	36.0	36.0	10.0
11.0			21.0	27.0	32.5	32.0	31.5	13.8	19.5	27.5	33.5	32.0	31.0	11.0
12.0			20.0	25.0	27.0	26.5	26.0	13.0	18.5	25.5	28.0	27.0	26.0	12.0
14.0			18.0	22.0	21.5	21.0	20.5	11.5	16.0	22.5	21.0	20.0	19.0	14.0
16.0								10.3	14.5	18.0	17.0	16.0	15.0	16.0
18.0								9.3	13.0	14.5	13.5	12.5	11.5	18.0
Reevin		12	12					12						Reevin
Hook		60t anchor hook												Hook
Telescoping mode	Ⅰ	1	1	1	1	1	1	1	1	1	1	1	2	Ⅰ
	Ⅱ	1	1	1	1	1	2	1	1	1	1	2	2	Ⅱ
	Ⅲ	1	1	1	1	2	1	1	1	1	2	2	1	Ⅲ
	Ⅳ	1	1	1	2	1	1	1	1	2	2	1	1	Ⅳ
	Ⅴ	1	1	2	1	1	1	1	2	2	1	1	1	Ⅴ
	Ⅵ	1	2	1	1	1	1	3	2	1	1	1	1	Ⅵ

Table 1-16 Rated capacity chart (with boom only)

Unit: ton

Outriggers fully extended to 8m, 23 t counterweight, over side or rear working area														
Radius (m)	Boom length (m)												Radius (m)	
	27.5	27.5	27.5	27.5	27.5	27.5 ★	32.1	32.1	32.1	32.1	32.1	32.1 ★		
3.0													3.0	
3.5													3.5	
4.0													4.0	
4.5	22.5	22.5	40.5	56.0	67.0	67.0							4.5	
5.0	21.5	21.5	38.5	52.0	64.0	64.0							5.0	
6.0	19.0	19.0	34.5	46.5	58.0	58.0	16.5	21.0	23.5	37.5	52.0	53.0	6.0	
7.0	17.4	17.4	31.5	42.0	52.0	52.0	15.0	19.0	21.0	34.0	48.0	50.0	7.0	
8.0	15.8	15.8	28.8	38.0	46.0	46.0	13.7	17.5	19.0	31.5	43.5	46.0	8.0	
9.0	14.5	14.5	26.5	34.5	41.0	40.0	12.6	16.2	17.6	29.5	40.5	42.0	9.0	
10.0	13.4	13.4	24.5	31.8	37.0	36.0	11.6	15.0	16.2	27.5	37.0	36.0	10.0	
11.0	12.4	12.4	23.0	29.4	32.0	31.5	10.7	14.0	15.0	25.5	33.5	33.0	11.0	
12.0	11.5	11.5	21.5	27.0	28.5	27.0	10.0	13.0	14.0	24.0	29.0	28.0	12.0	
14.0	10.3	10.1	19.0	22.5	21.5	20.0	8.8	11.6	12.2	21.5	22.0	21.0	14.0	
16.0	9.2	9.0	17.0	18.0	17.0	15.5	7.8	10.3	10.8	19.0	17.5	16.5	16.0	
18.0	8.3	8.1	15.0	14.5	13.5	12.0	7.0	9.4	9.6	15.5	14.0	13.0	18.0	
20.0	7.5	7.4	13.0	12.0	11.0	9.5	6.3	8.5	8.7	13.0	11.5	10.5	20.0	
22.0	6.8	6.7	11.0	10.0	9.0	7.5	5.7	7.8	7.9	11.0	9.5	8.5	22.0	
24.0							5.2	7.1	7.2	9.5	8.0	7.0	24.0	
26.0							4.8	6.5	6.6	8.0	6.5	5.5	26.0	
Reeving	11						9						Reeving	
Hook	60t anchor hook												Hook	
Telescoping mode Ⅰ	1	1	1	1	1	2	1	1	1	1	1	2	Ⅰ	Telescoping mode
Ⅱ	1	1	1	1	2	2	1	1	1	1	2	2	Ⅱ	
Ⅲ	1	1	1	2	2	2	1	1	1	2	2	2	Ⅲ	
Ⅳ	1	1	2	2	2	1	1	2	3	2	2	2	Ⅳ	
Ⅴ	2	3	2	2	1	1	3	3	2	2	2	1	Ⅴ	
Ⅵ	3	2	2	1	1	1	3	2	2	2	1	1	Ⅵ	

Table 1-17 Rated capacity chart (with boom only)

Unit: ton

Outriggers fully extended to 8m, 23 t counterweight, over side or rear working area														
Radius (m)	Boom length (m)												Radius (m)	
	36.7	36.7	36.7	36.7	36.7	36.7 ★	41.3	41.3	41.3	41.3	41.3	41.3★		
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	16.0	19.0	23.0	23.5	37.5	48.0							7.0	
8.0	15.0	17.1	21.0	21.5	35.0	46.0	15.0	18.0	19.5	23.5	30.0	37.0	8.0	
9.0	13.8	15.6	19.5	19.5	32.5	42.0	14.0	16.8	18.0	22.0	27.8	34.8	9.0	
10.0	12.8	14.4	18.0	18.0	30.5	39.0	12.8	15.4	16.5	20.3	25.7	32.5	10.0	
11.0	11.9	13.3	16.6	16.6	28.7	34.0	11.8	14.3	15.4	18.9	23.8	30.5	11.0	
12.0	11.2	12.3	15.5	15.5	27.0	29.0	11.0	13.3	14.2	17.6	22.0	28.5	12.0	
14.0	9.8	10.7	13.6	13.5	23.5	22.0	9.6	11.6	12.3	15.4	19.3	23.0	14.0	
16.0	8.8	9.5	12.0	11.8	18.5	17.0	8.4	10.3	10.8	13.7	17.1	18.0	16.0	
18.0	7.9	8.4	10.7	10.5	15.0	13.5	7.5	9.2	9.6	12.3	15.0	14.5	18.0	
20.0	7.2	7.6	9.6	9.5	12.5	11.0	6.7	8.3	8.6	11.0	12.5	12.0	20.0	
22.0	6.5	6.8	8.7	8.6	10.8	9.4	6.1	7.5	7.7	10.0	10.5	10.0	22.0	
24.0	6.0	6.2	7.9	7.8	9.2	7.8	5.5	6.8	7.0	9.0	9.0	8.5	24.0	
26.0	5.5	5.6	7.3	7.1	7.7	6.3	5.0	6.2	6.3	7.8	7.5	7.1	26.0	
28.0	5.1	5.2	6.7	6.5	6.7	5.3	4.6	5.7	5.8	6.8	6.5	6.1	28.0	
30.0	4.7	4.8	6.1	6.0	5.7	4.3	4.2	5.2	5.3	5.8	5.5	5.1	30.0	
32.0							3.9	4.8	4.9	5.0	4.7	4.3	32.0	
34.0							3.6	4.3	4.4	4.3	4.0	3.6	34.0	
Reeving	8						6						Reeving	
Hook	60t anchor hook												Hook	
Telescoping mode Ⅰ	1	1	1	1	1	2	1	1	1	1	1	2	Ⅰ	Telescoping mode
Ⅱ	1	1	1	1	2	2	1	1	1	2	3	2	Ⅱ	
Ⅲ	1	1	2	3	2	2	1	2	3	3	2	2	Ⅲ	
Ⅳ	2	3	3	2	2	2	3	3	3	2	2	2	Ⅳ	
Ⅴ	3	3	2	2	2	2	3	3	2	2	2	2	Ⅴ	
Ⅵ	3	2	2	2	2	1	3	2	2	2	2	2	Ⅵ	

Table 1-18 Rated capacity chart (with boom only)

Unit: ton

Outriggers fully extended to 8m, 23 t counterweight, over side or rear working area														
Radius (m)	Boom length (m)												Radius (m)	
	45.9	45.9	45.9	45.9	45.9	45.9 ★		50.5	50.5	50.5	50.5	50.5 ★		
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	14.5	16.0	19.5	23.0	27.0	27.5							9.0	
10.0	13.5	15.0	18.0	21.5	25.5	26.0							10.0	
11.0	12.6	13.8	16.8	20.0	24.0	24.5		12.5	14.5	17.0	20.0	21.5	11.0	
12.0	11.8	12.8	15.6	18.7	22.5	23.0		11.5	13.5	16.0	19.0	20.5	12.0	
14.0	10.3	11.0	13.6	16.5	19.7	20.0		10.2	12.0	14.0	17.0	18.0	14.0	
16.0	9.2	9.7	12.0	14.5	17.0	17.5		9.0	10.8	12.5	15.3	16.0	16.0	
18.0	8.2	8.6	10.7	13.0	14.5	14.0		8.0	9.6	11.3	13.5	14.0	18.0	
20.0	7.4	7.7	9.6	11.8	12.0	11.5		7.2	8.6	10.2	12.0	11.5	20.0	
22.0	6.7	6.9	8.7	10.5	10.0	9.5		6.4	7.7	9.2	10.0	9.5	22.0	
24.0	6.1	6.2	7.8	9.0	8.4	8.0		5.8	7.0	8.3	8.5	8.0	24.0	
26.0	5.5	5.6	7.1	7.6	7.0	6.6		5.3	6.4	7.5	7.0	6.5	26.0	
28.0	5.1	5.1	6.5	6.6	6.0	5.6		4.8	5.8	6.7	6.0	5.5	28.0	
30.0	4.7	4.7	5.9	5.6	5.0	4.6		4.4	5.3	5.8	5.1	4.6	30.0	
32.0	4.3	4.3	5.1	4.7	4.1	3.7		4.0	4.9	5.0	4.3	3.8	32.0	
34.0	4.0	3.9	4.4	4.0	3.4	3.0		3.7	4.5	4.3	3.6	3.1	34.0	
36.0	3.7	3.6	3.8	3.4	2.8	2.4		3.4	4.0	3.7	3.0	2.5	36.0	
38.0	3.5	3.3	3.3	2.9	2.3	1.9		3.1	3.7	3.2	2.5	2.0	38.0	
40.0								2.9	3.2	2.7	2.0	1.5	40.0	
42.0								2.7	2.7	2.2	1.5	1.0	42.0	
Reeving	5							4					Reeving	
Hook	60t anchor hook												Hook	
Telescoping mode Ⅰ	1	1	1	1	2	3		1	1	1	2	3	Ⅰ	Telescoping mode
Ⅱ	1	1	2	3	3	2		1	2	3	3	3	Ⅱ	
Ⅲ	2	3	3	3	2	2		3	3	3	3	2	Ⅲ	
Ⅳ	3	3	3	2	2	2		3	3	3	2	2	Ⅳ	
Ⅴ	3	3	2	2	2	2		3	3	2	2	2	Ⅴ	
Ⅵ	3	2	2	2	2	2		3	2	2	2	2	Ⅵ	

Table 1-19 Rated capacity chart (with boom only)

Unit: ton

Outriggers fully extended to 8m, 23 t counterweight, over side or rear working area														
Radius (m)	Boom length (m)												Radius (m)	
	55.1	55.1	55.1	55.1. ★	59.7	59.7	59.7 ★		64.3	64.3 ★	68.9 ★	75.0 ★		
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	12.5	14.0	16.5	18.0									12.0	
14.0	11.0	12.6	14.8	16.2	11.0	13.0	14.0						14.0	
16.0	9.8	11.2	13.2	14.7	10.0	11.5	12.6		10.0	11.0			16.0	
18.0	8.8	10.1	11.8	13.2	9.2	10.5	11.6		9.5	10.0	8.8		18.0	
20.0	8.0	9.1	10.7	11.8	8.4	9.5	10.6		8.7	9.2	8.2	6.8	20.0	
22.0	7.2	8.3	9.5	9.6	7.7	8.7	9.8		8.0	8.5	7.7	6.7	22.0	
24.0	6.5	7.6	8.9	8.2	7.0	8.0	8.5		7.4	7.9	7.2	6.6	24.0	
26.0	5.9	6.9	7.5	6.8	6.4	7.4	7.1		6.8	7.3	6.7	6.2	26.0	
28.0	5.4	6.3	6.4	5.7	5.9	6.5	6.0		6.3	6.4	6.3	5.8	28.0	
30.0	5.0	5.8	5.4	4.7	5.4	5.8	5.0		5.8	5.4	5.8	5.4	30.0	
32.0	4.6	5.0	4.6	3.9	5.0	5.0	4.2		5.3	4.6	5.1	5.0	32.0	
34.0	4.2	4.6	3.9	3.2	4.6	4.2	3.5		4.6	3.9	4.4	4.5	34.0	
36.0	3.9	4.0	3.3	2.6	4.3	3.6	2.9		4.0	3.3	3.8	3.9	36.0	
38.0	3.6	3.4	2.7	2.0	3.8	3.0	2.3		3.4	2.7	3.2	3.3	38.0	
40.0	3.3	2.9	2.2	1.5	3.3	2.5	1.8		2.9	2.2	2.7	2.8	40.0	
42.0	3.0	2.5	1.8	1.1	2.9	2.1	1.4		2.5	1.8	2.2	2.3	42.0	
44.0	2.7	2.1	1.4		2.5	1.7	1.0		2.1	1.4	1.8	1.9	44.0	
46.0					2.1	1.3			1.7	1.0	1.4	1.5	46.0	
48.0									1.4		1.1	1.2	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	
Reeving	3								3				Reeving	
Hook	60t anchor hook												Hook	
Telescoping mode Ⅰ	1	1	2	3	1	2	3		2	3	3	4	Ⅰ	Telescoping mode
Ⅱ	2	3	3	3	3	3	3		3	3	3	4	Ⅱ	
Ⅲ	3	3	3	3	3	3	3		3	3	3	4	Ⅲ	
Ⅳ	3	3	3	2	3	3	3		3	3	3	4	Ⅳ	
Ⅴ	3	3	2	2	3	3	2		3	3	3	4	Ⅴ	
Ⅵ	3	2	2	2	3	2	2		3	2	3	4	Ⅵ	

Table 1-20 Rated capacity chart (with boom only)

Unit: ton

Outriggers fully extended to 8m, 18 t counterweight, over side or rear working area														
Radius (m)	Boom length (m)												Radius (m)	
	13.7 ★	18.3	18.3	18.3	18.3	18.3 ★	22.9	22.9	22.9	22.9	22.9	22.9 ★		
3.0	100.0	40.5	65.0	85.0	85.0	85.0							3.0	
3.5	92.0	38.5	60.0	82.0	82.0	82.0	28.0	42.0	60.0	73.0	76.0	76.0	3.5	
4.0	85.0	36.0	56.0	77.0	79.0	79.0	26.0	39.0	56.0	68.0	73.0	73.0	4.0	
4.5	80.0	34.5	52.0	72.0	77.0	77.0	24.5	37.0	52.0	63.0	70.0	70.0	4.5	
5.0	74.0	33.0	49.0	67.0	71.0	71.0	23.0	34.5	49.0	60.0	68.0	68.0	5.0	
6.0	65.0	31.0	43.0	58.0	63.0	63.0	21.0	31.0	43.0	56.0	63.0	63.0	6.0	
7.0	53.0	27.5	38.0	53.0	54.0	52.0	19.0	28.0	39.0	47.5	54.0	54.0	7.0	
8.0	43.0	25.5	35.0	43.0	43.0	43.0	17.0	25.0	35.0	43.0	43.0	43.0	8.0	
9.0	36.0	23.5	32.0	36.5	36.5	36.5	16.0	23.0	32.0	36.5	36.5	36.5	9.0	
10.0	31.0	22.0	29.0	35.0	33.5	33.5	15.0	21.0	29.5	35.0	33.5	33.0	10.0	
11.0		21.0	27.0	29.0	28.5	27.5	13.8	19.5	27.5	29.5	28.5	27.0	11.0	
12.0		20.0	24.5	25.0	24.5	23.5	13.0	18.5	25.0	25.5	24.5	23.0	12.0	
14.0		18.0	19.0	18.5	18.0	17.0	11.5	16.0	19.0	18.5	17.5	16.0	14.0	
16.0							10.3	14.5	15.0	14.5	13.5	12.0	16.0	
18.0							9.3	13.0	12.5	12.0	11.0	9.5	18.0	
Reeving	12	12					12						Reeving	
Hook	60t anchor hook												Hook	
Telescoping mode I	1	1	1	1	1	1	1	1	1	1	1	2	I	Telescoping mode
Telescoping mode II	1	1	1	1	1	2	1	1	1	1	2	2	II	
Telescoping mode III	1	1	1	1	2	1	1	1	1	2	2	1	III	
Telescoping mode IV	1	1	1	2	1	1	1	1	2	2	1	1	IV	
Telescoping mode V	1	1	2	1	1	1	1	2	2	1	1	1	V	
Telescoping mode VI	1	2	1	1	1	1	3	2	1	1	1	1	VI	

Table 1-21 Rated capacity chart (with boom only)

Unit: ton

Outriggers fully extended to 8m, 18 t counterweight, over side or rear working area														
Radius (m)	Boom length (m)												Radius (m)	
	27.5	27.5	27.5	27.5	27.5	27.5 ★	32.1	32.1	32.1	32.1	32.1	32.1 ★		
3.0													3.0	
3.5													3.5	
4.0													4.0	
4.5	22.5	22.5	40.5	56.0	67.0	67.0							4.5	
5.0	21.5	21.5	38.5	52.0	64.0	64.0							5.0	
6.0	19.0	19.0	34.5	46.5	58.0	58.0	16.5	21.0	23.5	37.5	52.0	53.0	6.0	
7.0	17.4	17.4	31.5	42.0	52.0	52.0	15.0	19.0	21.0	34.0	48.0	50.0	7.0	
8.0	15.8	15.8	28.8	38.0	46.0	46.0	13.7	17.5	19.0	31.5	43.5	46.0	8.0	
9.0	14.5	14.5	26.5	34.5	41.0	40.0	12.6	16.2	17.6	29.5	40.5	42.0	9.0	
10.0	13.4	13.4	24.5	31.8	35.5	34.0	11.6	15.0	16.2	27.5	36.5	35.0	10.0	
11.0	12.4	12.4	23.0	29.4	29.5	28.0	10.7	14.0	15.0	25.5	31.0	29.0	11.0	
12.0	11.5	11.5	21.5	26.0	25.0	23.5	10.0	13.0	14.0	24.0	25.0	23.5	12.0	
14.0	10.3	10.1	19.0	20.0	19.0	17.5	8.8	11.6	12.2	21.0	20.0	18.5	14.0	
16.0	9.2	9.0	16.5	15.5	14.5	13.0	7.8	10.3	10.8	16.5	15.5	14.0	16.0	
18.0	8.3	8.1	13.5	12.5	11.5	10.0	7.0	9.4	9.6	13.5	12.5	11.0	18.0	
20.0	7.5	7.4	11.0	10.0	9.0	7.5	6.3	8.5	8.7	11.0	10.0	8.5	20.0	
22.0	6.8	6.7	9.5	8.5	7.5	6.0	5.7	7.8	7.9	9.5	8.5	7.0	22.0	
24.0							5.2	7.1	7.2	8.0	7.0	5.5	24.0	
26.0							4.5	6.5	6.5	6.9	5.9	4.4	26.0	
Reeving	11						9						Reeving	
Hook	60t anchor hook												Hook	
Telescoping mode Ⅰ	1	1	1	1	1	2	1	1	1	1	1	2	Ⅰ	Telescoping mode
Ⅱ	1	1	1	1	2	2	1	1	1	1	2	2	Ⅱ	
Ⅲ	1	1	1	2	2	2	1	1	1	2	2	2	Ⅲ	
Ⅳ	1	1	2	2	2	1	1	2	3	2	2	2	Ⅳ	
Ⅴ	2	3	2	2	1	1	3	3	2	2	2	1	Ⅴ	
Ⅵ	3	2	2	1	1	1	3	2	2	2	1	1	Ⅵ	

Table 1-22 Rated capacity chart (with boom only)

Unit: ton

Outriggers fully extended to 8m, 18 t counterweight, over side or rear working area													
Radius (m)	Boom length (m)												Radius (m)
	36.7	36.7	36.7	36.7	36.7	36.7 ★	41.3	41.3	41.3	41.3	41.3	41.3 ★	
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	16.0	19.0	23.0	23.5	37.5	48.0							7.0
8.0	15.0	17.1	21.0	21.5	35.0	46.0	15.0	18.0	19.5	23.5	30.0	37.0	8.0
9.0	13.8	15.6	19.5	19.5	32.5	42.0	14.0	16.8	18.0	22.0	27.8	34.8	9.0
10.0	12.8	14.4	18.0	18.0	30.5	35.0	12.8	15.4	16.5	20.3	25.7	32.5	10.0
11.0	11.9	13.3	16.6	16.6	28.7	30.0	11.8	14.3	15.4	18.9	23.8	30.0	11.0
12.0	11.2	12.3	15.5	15.5	27.0	25.0	11.0	13.3	14.2	17.6	22.0	26.0	12.0
14.0	9.8	10.7	13.6	13.5	19.0	18.5	9.6	11.6	12.3	15.4	19.0	20.0	14.0
16.0	8.8	9.5	12.0	11.8	15.0	14.5	8.4	10.3	10.8	13.7	16.0	15.5	16.0
18.0	7.9	8.4	10.7	10.5	12.0	11.5	7.5	9.2	9.6	12.3	13.0	12.5	18.0
20.0	7.2	7.6	9.6	9.5	11.0	9.8	6.7	8.3	8.6	10.5	10.5	10.0	20.0
22.0	6.5	6.8	8.7	8.6	9.0	7.8	6.1	7.5	7.7	9.2	8.9	8.5	22.0
24.0	6.0	6.2	7.9	7.7	7.6	6.4	5.5	6.8	7.0	7.8	7.5	7.1	24.0
26.0	5.5	5.6	7.0	6.8	6.5	5.3	5.0	6.2	6.3	6.6	6.3	5.9	26.0
28.0	5.1	5.2	6.0	5.8	5.5	4.3	4.6	5.7	5.8	5.6	5.3	4.9	28.0
30.0	4.5	4.6	5.2	5.0	4.7	3.5	4.2	5.2	5.0	4.7	4.4	4.0	30.0
32.0							3.9	4.7	4.5	4.0	3.7	3.3	32.0
34.0							3.5	4.2	3.9	3.4	3.1	2.7	34.0
Reeving	8						6						Reeving
Hook	60t anchor hook												Hook
Telescoping mode Ⅰ	1	1	1	1	1	2	1	1	1	1	1	2	Ⅰ Telescoping mode
Ⅱ	1	1	1	1	2	2	1	1	1	2	3	2	Ⅱ
Ⅲ	1	1	2	3	2	2	1	2	3	3	2	2	Ⅲ
Ⅳ	2	3	3	2	2	2	3	3	3	2	2	2	Ⅳ
Ⅴ	3	3	2	2	2	2	3	3	2	2	2	2	Ⅴ
Ⅵ	3	2	2	2	2	1	3	2	2	2	2	2	Ⅵ

Table 1-23 Rated capacity chart (with boom only)

Unit: ton

Outriggers fully extended to 8m, 18 t counterweight, over side or rear working area														
Radius (m)	Boom length (m)												Radius (m)	
	45.9	45.9	45.9	45.9	45.9	45.9 ★		50.5	50.5	50.5	50.5	50.5 ★		
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	14.5	16.0	19.5	23.0	27.0	27.5							9.0	
10.0	13.5	15.0	18.0	21.5	25.5	26.0							10.0	
11.0	12.6	13.8	16.8	20.0	24.0	24.5		12.5	14.5	17.0	20.0	21.5	11.0	
12.0	11.8	12.8	15.6	18.7	22.5	22.5		11.5	13.5	16.0	19.0	20.5	12.0	
14.0	10.3	11.0	13.6	16.5	19.0	19.0		10.2	12.0	14.0	17.0	18.0	14.0	
16.0	9.2	9.7	12.0	14.5	15.5	15.0		9.0	10.8	12.5	15.0	15.0	16.0	
18.0	8.2	8.6	10.7	13.0	12.5	12.0		8.0	9.6	11.3	12.5	12.0	18.0	
20.0	7.4	7.7	9.6	11.0	10.0	9.8		7.2	8.6	10.2	10.5	9.5	20.0	
22.0	6.7	6.9	8.7	9.0	8.5	8.0		6.4	7.7	9.0	8.5	8.0	22.0	
24.0	6.1	6.2	7.5	7.7	7.1	6.7		5.8	7.0	7.8	7.1	6.5	24.0	
26.0	5.5	5.6	6.8	6.5	5.9	5.5		5.3	6.4	6.7	6.0	5.4	26.0	
28.0	5.1	5.1	5.9	5.5	4.9	4.5		4.8	5.8	5.7	5.0	4.4	28.0	
30.0	4.7	4.7	5.0	4.6	4.0	3.6		4.4	5.2	4.8	4.1	3.5	30.0	
32.0	4.3	4.3	4.3	3.9	3.3	2.9		4.0	4.5	4.1	3.4	2.8	32.0	
34.0	4.0	3.9	3.6	3.2	2.6	2.2		3.7	4.0	3.5	2.8	2.2	34.0	
36.0	3.7	3.5	3.1	2.7	2.1	1.7		3.4	3.4	2.9	2.2	1.6	36.0	
38.0	3.3	3.0	2.6	2.2	1.6	1.2		3.1	2.9	2.4	1.7	1.1	38.0	
40.0								2.9	2.5	2.0	1.3		40.0	
42.0								2.5	2.1	1.6			42.0	
Reeving	5							4					Reeving	
Hook	60t anchor hook												Hook	
Telescoping mode Ⅰ	1	1	1	1	2	3		1	1	1	2	3	Ⅰ	Telescoping mode
Ⅱ	1	1	2	3	3	2		1	2	3	3	3	Ⅱ	
Ⅲ	2	3	3	3	2	2		3	3	3	3	2	Ⅲ	
Ⅳ	3	3	3	2	2	2		3	3	3	2	2	Ⅳ	
Ⅴ	3	3	2	2	2	2		3	3	2	2	2	Ⅴ	
Ⅵ	3	2	2	2	2	2		3	2	2	2	2	Ⅵ	

Table 1-24 Rated capacity chart (with boom only)

Unit: ton

Outriggers fully extended to 8m, 18 t counterweight, over side or rear working area														
Radius (m)	Boom length (m)												Radius (m)	
	55.1	55.1	55.1	55.1. ★	59.7	59.7	59.7 ★		64.3	64.3 ★	68.9 ★	75. 0 ★		
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	12.5	14.0	16.5	18.0									12.0	
14.0	11.0	12.6	14.8	16.2	11.0	13.0	14.0						14.0	
16.0	9.8	11.2	13.2	14.7	10.0	11.5	12.6		10.0	11.0			16.0	
18.0	8.8	10.1	11.8	12.4	9.2	10.5	11.6		9.5	10.0	8.8		18.0	
20.0	8.0	9.1	10.7	10.0	8.4	9.5	10.0		8.7	9.2	8.2	6.8	20.0	
22.0	7.2	8.3	8.9	8.2	7.7	8.5	8.5		8.0	8.5	7.7	6.7	22.0	
24.0	6.5	7.6	7.5	6.8	7.0	7.8	7.1		7.4	7.5	7.2	6.6	24.0	
26.0	5.9	6.8	6.3	5.6	6.4	6.7	5.9		6.8	6.3	6.7	6.2	26.0	
28.0	5.4	6.0	5.3	4.6	5.9	5.6	4.9		5.9	5.3	5.7	5.8	28.0	
30.0	5.0	5.2	4.4	3.7	5.3	4.7	4.0		5.2	4.4	4.8	4.9	30.0	
32.0	4.6	4.4	3.7	3.0	4.7	4.0	3.3		4.4	3.6	4.0	4.1	32.0	
34.0	4.2	3.7	3.0	2.3	4.2	3.4	2.7		3.8	3.0	3.4	3.5	34.0	
36.0	3.6	3.2	2.5	1.8	3.6	2.8	2.1		3.2	2.4	2.8	2.9	36.0	
38.0	3.3	2.8	2.0	1.3	3.1	2.3	1.6		2.7	1.9	2.3	2.4	38.0	
40.0	2.8	2.3	1.5		2.6	1.8	1.1		2.2	1.5	1.9	2.0	40.0	
42.0	2.4	1.9	1.1		2.2	1.4			1.8	1.1	1.4	1.5	42.0	
44.0											1.1	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	
Reeving	3								3				Reeving	
Hook	60t anchor hook												Hook	
Telescoping mode Ⅰ	1	1	2	3	1	2	3		2	3	3	4	Ⅰ	Telescoping mode
Ⅱ	2	3	3	3	3	3	3		3	3	3	4	Ⅱ	
Ⅲ	3	3	3	3	3	3	3		3	3	3	4	Ⅲ	
Ⅳ	3	3	3	2	3	3	3		3	3	3	4	Ⅳ	
Ⅴ	3	3	2	2	3	3	2		3	3	3	4	Ⅴ	
Ⅵ	3	2	2	2	3	2	2		3	2	3	4	Ⅵ	

Table 1-25 Rated capacity chart (with boom only)

Unit: ton

Outriggers fully extended to 8m, 13 t counterweight, over side or rear working area														
Radius (m)	Boom length (m)												Radius (m)	
	13.7 ★	18.3	18.3	18.3	18.3	18.3 ★	22.9	22.9	22.9	22.9	22.9	22.9 ★		
3.0	100.0	40.5	65.0	85.0	85.0	85.0							3.0	
3.5	92.0	38.5	60.0	82.0	82.0	82.0	28.0	42.0	60.0	73.0	76.0	76.0	3.5	
4.0	85.0	36.0	56.0	77.0	79.0	79.0	26.0	39.0	56.0	68.0	73.0	73.0	4.0	
4.5	80.0	34.5	52.0	72.0	77.0	77.0	24.5	37.0	52.0	63.0	70.0	70.0	4.5	
5.0	74.0	33.0	49.0	67.0	71.0	71.0	23.0	34.5	49.0	60.0	68.0	68.0	5.0	
6.0	65.0	31.0	43.0	58.0	63.0	63.0	21.0	31.0	43.0	56.0	63.0	63.0	6.0	
7.0	51.0	27.5	38.0	53.0	54.0	50.0	19.0	28.0	39.0	47.5	54.0	54.0	7.0	
8.0	41.0	25.5	35.0	46.0	45.0	43.0	17.0	25.0	35.0	43.0	47.0	45.0	8.0	
9.0	35.0	23.5	32.0	38.0	37.5	36.5	16.0	23.0	32.0	39.5	37.5	36.0	9.0	
10.0	29.0	22.0	29.0	31.0	30.5	29.5	15.0	21.0	29.5	31.0	30.0	28.5	10.0	
11.0		21.0	26.0	25.5	25.0	24.0	13.8	19.5	27.5	26.0	25.0	23.5	11.0	
12.0		20.0	22.0	21.5	21.0	20.0	13.0	18.5	23.0	22.0	21.0	19.5	12.0	
14.0		17.0	16.5	16.0	15.5	14.5	11.5	16.0	17.4	16.4	15.4	14.0	14.0	
16.0							10.3	14.0	13.5	12.5	11.5	10.1	16.0	
18.0							9.3	11.2	10.7	9.7	9.0	7.6	18.0	
Reeving	12	12					12						Reeving	
Hook	60t anchor hook												Hook	
Telescoping mode	Ⅰ	1	1	1	1	1	1	1	1	1	1	1	2	Ⅰ	Telescoping mode
	Ⅱ	1	1	1	1	1	2	1	1	1	1	2	2	Ⅱ	
	Ⅲ	1	1	1	1	2	1	1	1	1	2	2	1	Ⅲ	
	Ⅳ	1	1	1	2	1	1	1	1	2	2	1	1	Ⅳ	
	Ⅴ	1	1	2	1	1	1	1	2	2	1	1	1	Ⅴ	
	Ⅵ	1	2	1	1	1	1	3	2	1	1	1	1	Ⅵ	

Table 1-26 Rated capacity chart (with boom only)

Unit: ton

Outriggers fully extended to 8m, 13 t counterweight, over side or rear working area													
Radius (m)	Boom length (m)												Radius (m)
	27.5	27.5	27.5	27.5	27.5	27.5 ★	32.1	32.1	32.1	32.1	32.1	32.1 ★	
3.0													3.0
3.5													3.5
4.0													4.0
4.5	22.5	22.5	40.5	56.0	67.0	67.0							4.5
5.0	21.5	21.5	38.5	52.0	64.0	64.0							5.0
6.0	19.0	19.0	34.5	46.5	58.0	58.0	16.5	21.0	23.5	37.5	52.0	53.0	6.0
7.0	17.4	17.4	31.5	42.0	52.0	52.0	15.0	19.0	21.0	34.0	48.0	50.0	7.0
8.0	15.8	15.8	28.8	38.0	45.0	43.0	13.7	17.5	19.0	31.5	43.5	45.0	8.0
9.0	14.5	14.5	26.5	34.5	38.5	37.0	12.6	16.2	17.6	29.5	40.0	37.0	9.0
10.0	13.4	13.4	24.5	31.8	31.0	29.5	11.6	15.0	16.2	27.5	32.5	30.5	10.0
11.0	12.4	12.4	23.0	27.5	26.0	24.5	10.7	14.0	15.0	25.5	27.0	25.0	11.0
12.0	11.5	11.5	21.5	23.4	21.9	20.4	10.0	13.0	14.0	24.0	23.0	21.0	12.0
14.0	10.3	10.1	18.5	17.6	16.2	14.8	8.8	11.6	12.2	18.5	17.0	15.5	14.0
16.0	9.2	9.0	14.6	13.7	12.3	10.9	7.8	10.3	10.8	14.6	13.1	11.6	16.0
18.0	8.3	8.1	11.8	10.9	9.8	8.4	7.0	9.4	9.6	11.7	10.6	9.1	18.0
20.0	7.5	7.4	9.6	8.8	7.7	6.3	6.3	8.5	8.7	9.6	8.5	7.0	20.0
22.0	6.8	6.7	8.0	7.2	6.1	4.7	5.7	7.8	7.9	8.0	6.9	5.5	22.0
24.0							5.2	7.1	6.9	6.6	5.6	4.2	24.0
26.0							4.5	6.1	5.8	5.6	4.5	3.1	26.0
Reeving	11						9						Reeving
Hook	60t anchor hook												Hook
Telescoping mode Ⅰ	1	1	1	1	1	2	1	1	1	1	1	2	Ⅰ Telescoping mode
Ⅱ	1	1	1	1	2	2	1	1	1	1	2	2	Ⅱ
Ⅲ	1	1	1	2	2	2	1	1	1	2	2	2	Ⅲ
Ⅳ	1	1	2	2	2	1	1	2	3	2	2	2	Ⅳ
Ⅴ	2	3	2	2	1	1	3	3	2	2	2	1	Ⅴ
Ⅵ	3	2	2	1	1	1	3	2	2	2	1	1	Ⅵ

Table 1-27 Rated capacity chart (with boom only)

Unit: ton

Outriggers fully extended to 8m, 13 t counterweight, over side or rear working area														
Radius (m)	Boom length (m)												Radius (m)	
	36.7	36.7	36.7	36.7	36.7	36.7 ★	41.3	41.3	41.3	41.3	41.3	41.3 ★		
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	16.0	19.0	23.0	23.5	37.5	48.0							7.0	
8.0	15.0	17.1	21.0	21.5	35.0	46.0	15.0	18.0	19.5	23.5	30.0	37.0	8.0	
9.0	13.8	15.6	19.5	19.5	32.5	37.0	14.0	16.8	18.0	22.0	27.8	34.8	9.0	
10.0	12.8	14.4	18.0	18.0	30.5	31.0	12.8	15.4	16.5	20.3	25.7	32.0	10.0	
11.0	11.9	13.3	16.6	16.6	28.0	26.0	11.8	14.3	15.4	18.9	23.8	27.5	11.0	
12.0	11.2	12.3	15.5	15.5	24.0	22.0	11.0	13.3	14.2	17.6	22.0	23.4	12.0	
14.0	9.8	10.7	13.6	13.5	18.2	16.5	9.6	11.6	12.3	15.4	18.0	17.5	14.0	
16.0	8.8	9.5	12.0	11.8	14.2	12.7	8.4	10.3	10.8	13.7	14.0	13.5	16.0	
18.0	7.9	8.4	10.7	10.5	11.4	9.9	7.5	9.2	9.6	11.5	11.2	10.7	18.0	
20.0	7.2	7.6	9.6	9.5	9.3	7.8	6.7	8.3	8.6	9.4	9.1	8.6	20.0	
22.0	6.5	6.8	8.2	8.0	7.6	6.2	6.1	7.5	7.7	7.7	7.4	7.0	22.0	
24.0	6.0	6.2	6.9	6.7	6.3	4.9	5.5	6.8	6.9	6.4	6.1	5.7	24.0	
26.0	5.5	5.6	5.8	5.6	5.3	3.9	5.0	6.2	5.7	5.3	5.0	4.6	26.0	
28.0	5.1	5.2	4.9	4.7	4.4	3.0	4.6	5.3	4.9	4.4	4.1	3.7.	28.0	
30.0	4.5	4.6	4.1	3.9	3.6	2.2	4.2	4.5	4.1	3.6	3.3	3.0	30.0	
32.0							3.9	3.8	3.4	3.0	2.7	2.3	32.0	
34.0							3.5	3.2	2.8	2.4	2.2	1.8	34.0	
Reeving	8						6						Reeving	
Hook	60t anchor hook												Hook	
Telescoping mode Ⅰ	1	1	1	1	1	2	1	1	1	1	1	2	Ⅰ	Telescoping mode
Ⅱ	1	1	1	1	2	2	1	1	1	2	3	2	Ⅱ	
Ⅲ	1	1	2	3	2	2	1	2	3	3	2	2	Ⅲ	
Ⅳ	2	3	3	2	2	2	3	3	3	2	2	2	Ⅳ	
Ⅴ	3	3	2	2	2	2	3	3	2	2	2	2	Ⅴ	
Ⅵ	3	2	2	2	2	1	3	2	2	2	2	2	Ⅵ	

Table 1-28 Rated capacity chart (with boom only)

Unit: ton

Outriggers fully extended to 8m, 13 t counterweight, over side or rear working area														
Radius (m)	Boom length (m)												Radius (m)	
	45.9	45.9	45.9	45.9	45.9	45.9 ★		50.5	50.5	50.5	50.5	50.5 ★		
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	14.5	16.0	19.5	23.0	27.0	27.5							9.0	
10.0	13.5	15.0	18.0	21.5	25.5	26.0							10.0	
11.0	12.6	13.8	16.8	20.0	24.0	24.5		12.5	14.5	17.0	20.0	21.5	11.0	
12.0	11.8	12.8	15.6	18.7	22.5	22.5		11.5	13.5	16.0	19.0	20.5	12.0	
14.0	10.3	11.0	13.6	16.5	17.3	16.9		10.2	12.0	14.0	17.0	16.8	14.0	
16.0	9.2	9.7	12.0	14.2	13.4	13.0		9.0	10.8	12.5	13.6	13.0	16.0	
18.0	8.2	8.6	10.7	11.3	10.6	10.2		8.0	9.6	11.3	10.8	10.2	18.0	
20.0	7.4	7.7	9.6	9.2	8.5	8.1		7.2	8.6	9.5	8.7	8.1	20.0	
22.0	6.7	6.9	8.0	7.5	6.9	6.5		6.4	7.7	7.8	7.0	6.4	22.0	
24.0	6.1	6.2	6.6	6.2	5.6	5.2		5.8	7.0	6.5	5.7	5.1	24.0	
26.0	5.5	5.6	5.5	5.1	4.5	4.1		5.3	5.9	5.4	4.6	4.0	26.0	
28.0	5.1	5.1	4.6	4.2	3.6	3.2		4.8	5.0	4.5	3.7	3.1	28.0	
30.0	4.7	4.4	3.8	3.4	2.8	2.4		4.4	4.2	3.7	3.0	2.4	30.0	
32.0	4.3	3.8	3.2	2.8	2.2	1.8		4.0	3.5	3.0	2.3	1.8	32.0	
34.0	3.6	3.2	2.6	2.2	1.6	1.3		3.7	3.0	2.5	1.8	1.3	34.0	
36.0	3.1	2.7	2.1	1.7	1.1			3.1	2.4	1.9	1.2		36.0	
38.0	2.7	2.2	1.7	1.3				2.6	2.0	1.5			38.0	
40.0								2.2	1.6	1.1			40.0	
42.0								1.8	1.2				42.0	
Reeving	5							4					Reeving	
Hook	60t anchor hook												Hook	
Telescoping mode Ⅰ	1	1	1	1	2	3		1	1	1	2	3	Ⅰ	Telescoping mode
Ⅱ	1	1	2	3	3	2		1	2	3	3	3	Ⅱ	
Ⅲ	2	3	3	3	2	2		3	3	3	3	2	Ⅲ	
Ⅳ	3	3	3	2	2	2		3	3	3	2	2	Ⅳ	
Ⅴ	3	3	2	2	2	2		3	3	2	2	2	Ⅴ	
Ⅵ	3	2	2	2	2	2		3	2	2	2	2	Ⅵ	

Table 1-29 Rated capacity chart (with boom only)

Unit: ton

Outriggers fully extended to 8m, 13 t counterweight, over side or rear working area														
Radius (m)	Boom length (m)												Radius (m)	
	55.1	55.1	55.1	55.1. ★	59.7	59.7	59.7 ★		64.3	64.3 ★	68.9 ★	75.0 ★		
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	12.5	14.0	16.5	18.0									12.0	
14.0	11.0	12.6	14.8	16.2	11.0	13.0	14.0						14.0	
16.0	9.8	11.2	13.2	13.0	10.0	11.5	12.6		10.0	11.0			16.0	
18.0	8.8	10.1	11.0	10.3	9.2	10.5	10.5		9.5	10.0	8.8		18.0	
20.0	8.0	9.1	9.0	8.3	8.4	9.3	8.5		8.7	8.9	8.2	6.8	20.0	
22.0	7.2	8.2	7.3	6.6	7.7	7.7	6.9		8.0	7.2	7.5	6.5	22.0	
24.0	6.5	6.8	6.0	5.3	7.0	6.4	5.6		6.7	5.9	6.4	6.0	24.0	
26.0	5.9	5.7	4.9	4.2	6.1	5.2	4.5		5.7	4.9	5.3	5.2	26.0	
28.0	5.4	4.8	4.0	3.3	5.2	4.3	3.6		4.8	4.0	4.4	4.5	28.0	
30.0	4.6	4.0	3.2	2.5	4.4	3.5	2.8		4.0	3.2	3.6	3.7	30.0	
32.0	3.9	3.3	2.6	1.9	3.7	2.9	2.2		3.3	2.5	2.9	3.0	32.0	
34.0	3.3	2.7	2.0	1.3	3.1	2.3	1.6		2.7	1.9	2.3	2.4	34.0	
36.0	2.8	2.2	1.5		2.6	1.8	1.1		2.2	1.4	1.8	1.9	36.0	
38.0	2.4	1.8	1.1		2.2	1.4			1.7	1.0	1.4	1.5	38.0	
40.0	2.0	1.4			1.8	1.0			1.3		1.0	1.1	40.0	
42.0	1.6	1.0			1.4				1.0				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	
Reeving	3								3				Reeving	
Hook	60t anchor hook												Hook	
Telescoping mode Ⅰ	1	1	2	3	1	2	3		2	3	3	4	Ⅰ	Telescoping mode
Ⅱ	2	3	3	3	3	3	3		3	3	3	4	Ⅱ	
Ⅲ	3	3	3	3	3	3	3		3	3	3	4	Ⅲ	
Ⅳ	3	3	3	2	3	3	3		3	3	3	4	Ⅳ	
Ⅴ	3	3	2	2	3	3	2		3	3	3	4	Ⅴ	
Ⅵ	3	2	2	2	3	2	2		3	2	3	4	Ⅵ	

Table 1-30 Rated capacity chart (with boom only)

Unit: ton

Outriggers fully extended to 8m,2 t counterweight, over side or rear working area														
Radius (m)	Boom length (m)												Radius (m)	
	13.7 ★	18.3	18.3	18.3	18.3	18.3 ★	22.9	22.9	22.9	22.9	22.9	22.9 ★		
3.0	100.0	40.5	65.0	85.0	85.0	85.0							3.0	
3.5	92.0	38.5	60.0	82.0	82.0	82.0	28.0	42.0	60.0	73.0	76.0	76.0	3.5	
4.0	85.0	36.0	56.0	77.0	79.0	79.0	26.0	39.0	56.0	68.0	73.0	73.0	4.0	
4.5	80.0	34.5	52.0	72.0	77.0	77.0	24.5	37.0	52.0	63.0	70.0	70.0	4.5	
5.0	74.0	33.0	49.0	67.0	71.0	71.0	23.0	34.5	49.0	60.0	68.0	68.0	5.0	
6.0	65.0	31.0	43.0	58.0	63.0	63.0	21.0	31.0	43.0	52.0	63.0	60.0	6.0	
7.0	40.0	27.5	38.0	45.0	44.5	43.5	19.0	28.0	39.0	43.5	42.0	40.0	7.0	
8.0	30.0	25.5	35.0	34.0	33.5	32.5	17.0	25.0	35.0	33.5	32.5	31.0	8.0	
9.0	23.0	23.5	26.0	25.5	25.0	24.0	16.0	23.0	26.5	25.5	24.5	23.0	9.0	
10.0	18.0	21.5	21.0	20.5	20.0	19.0	15.0	21.0	21.5	20.5	19.5	18.0	10.0	
11.0		17.5	17.0	16.5	16.0	15.0	13.8	18.5	18.0	17.0	16.0	14.5	11.0	
12.0		14.0	13.5	13.0	12.5	11.5	13.0	15.5	15.0	14.0	13.0	11.5	12.0	
14.0		10.5	10.0	9.5	9.0	8.0	11.0	11.5	11.0	10.0	9.0	7.5	14.0	
16.0							9.0	8.8	8.0	7.0	6.5	5.0	16.0	
18.0							7.0	6.8	6.0	5.0	4.5	3.0	18.0	
Reeving	12	12					12						Reeving	
Hook	60t anchor hook												Hook	
Telescoping mode Ⅰ	1	1	1	1	1	1	1	1	1	1	1	2	Ⅰ	Telescoping mode
Telescoping mode Ⅱ	1	1	1	1	1	2	1	1	1	1	2	2	Ⅱ	Telescoping mode
Telescoping mode Ⅲ	1	1	1	1	2	1	1	1	1	2	2	1	Ⅲ	Telescoping mode
Telescoping mode Ⅳ	1	1	1	2	1	1	1	1	2	2	1	1	Ⅳ	Telescoping mode
Telescoping mode Ⅴ	1	1	2	1	1	1	1	2	2	1	1	1	Ⅴ	Telescoping mode
Telescoping mode Ⅵ	1	2	1	1	1	1	3	2	1	1	1	1	Ⅵ	Telescoping mode

Table 1-31 Rated capacity chart (with boom only)

Unit: ton

Outriggers fully extended to 8m,2 t counterweight, over side or rear working area														
Radius (m)	Boom length (m)												Radius (m)	
	27.5	27.5	27.5	27.5	27.5	27.5 ★	32.1	32.1	32.1	32.1	32.1	32.1 ★		
3.0													3.0	
3.5													3.5	
4.0													4.0	
4.5	22.5	22.5	40.5	56.0	67.0	67.0							4.5	
5.0	21.5	21.5	38.5	52.0	64.0	64.0							5.0	
6.0	19.0	19.0	34.5	46.5	58.0	58.0	16.5	21.0	23.5	37.5	52.0	50.0	6.0	
7.0	17.4	17.4	31.5	41.0	42.0	42.0	15.0	19.0	21.0	34.0	42.0	42.0	7.0	
8.0	15.8	15.8	28.8	34.0	33.0	31.0	13.7	17.5	19.0	31.0	32.5	31.0	8.0	
9.0	14.5	14.5	26.0	27.0	26.0	24.0	12.6	16.2	17.6	27.0	26.0	24.5	9.0	
10.0	13.4	13.4	23.0	22.0	21.0	19.0	11.6	15.0	16.2	22.5	21.5	20.0	10.0	
11.0	12.4	12.4	19.0	18.0	17.0	15.0	10.7	14.0	15.0	18.5	17.5	16.0	11.0	
12.0	11.5	11.5	16.0	15.0	14.0	12.0	10.0	13.0	14.0	15.0	14.5	13.0	12.0	
14.0	10.3	10.1	12.0	11.0	10.0	8.4	8.8	11.5	12.0	11.5	10.5	9.0	14.0	
16.0	9.0	8.8	9.0	8.0	7.0	5.6	7.8	9.7	9.3	9.1	8.1	6.5	16.0	
18.0	7.7	7.4	7.2	6.2	5.2	3.8	7.0	7.6	7.2	7.0	6.0	4.6	18.0	
20.0	6.0	5.7	5.5	4.5	3.5	2.3	6.0	6.0	5.6	5.4	4.4	3.0	20.0	
22.0	5.0	4.7	4.5	3.5	2.5	1.3	5.3	5.0	4.6	4.4	3.4	2.0	22.0	
24.0							4.3	4.0	3.6	3.4	2.4	1.0	24.0	
26.0							3.5	3.2	2.8	2.6	1.6		26.0	
Reeving	11						9						Reeving	
Hook	60t anchor hook												Hook	
Telescoping mode Ⅰ	1	1	1	1	1	2	1	1	1	1	1	2	Ⅰ	Telescoping mode
Ⅱ	1	1	1	1	2	2	1	1	1	1	2	2	Ⅱ	
Ⅲ	1	1	1	2	2	2	1	1	1	2	2	2	Ⅲ	
Ⅳ	1	1	2	2	2	1	1	2	3	2	2	2	Ⅳ	
Ⅴ	2	3	2	2	1	1	3	3	2	2	2	1	Ⅴ	
Ⅵ	3	2	2	1	1	1	3	2	2	2	1	1	Ⅵ	

Table 1-32 Rated capacity chart (with boom only)

Unit: ton

Outriggers fully extended to 8m,2 t counterweight, over side or rear working area														
Radius (m)	Boom length (m)												Radius (m)	
	36.7	36.7	36.7	36.7	36.7	36.7 ★	41.3	41.3	41.3	41.3	41.3	41.3 ★		
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	16.0	19.0	23.0	23.5	37.5	42.0							7.0	
8.0	15.0	17.1	21.0	21.5	35.0	32.5	15.0	18.0	19.5	23.5	30.0	33.0	8.0	
9.0	13.8	15.6	19.5	19.5	28.0	26.0	14.0	16.8	18.0	22.0	27.0	26.5	9.0	
10.0	12.8	14.4	18.0	18.0	23.0	21.0	12.8	15.4	16.5	20.3	22.5	22.0	10.0	
11.0	11.9	13.3	16.6	16.6	19.0	17.5	11.8	14.3	15.3	18.9	19.0	18.5	11.0	
12.0	11.2	12.3	15.0	15.0	16.0	14.5	11.0	13.3	14.2	16.0	15.7	15.2	12.0	
14.0	9.8	10.7	12.0	12.0	11.7	10.2	9.6	11.6	12.3	12.0	11.7	11.2	14.0	
16.0	8.8	9.3	9.5	9.0	8.7	7.5	8.4	10.0	9.5	9.0	8.7	8.3	16.0	
18.0	7.8	7.9	7.5	7.0	6.7	5.5	7.5	8.0	7.5	7.0	6.7	6.3	18.0	
20.0	6.8	6.3	5.9	5.7	5.4	4.0	6.7	6.4	6.0	5.5	5.2	4.7	20.0	
22.0	5.5	5.0	4.6	4.4	4.2	2.8	5.7	5.2	4.8	4.3	4.0	3.6	22.0	
24.0	4.5	4.0	3.6	3.4	3.2	1.8	4.7	4.2	3.8	3.3	3.0	2.6	24.0	
26.0	3.7	3.2	2.8	2.6	2.5	1.1	3.9	3.4	3.0	2.5	2.2	1.8	26.0	
28.0	3.0	2.5	2.1	1.9	1.8		3.2	2.8	2.4	1.9	1.6	1.2	28.0	
30.0	2.4	2.1	1.7	1.3	1.2		2.6	2.2	1.8	1.3	1.0		30.0	
32.0							2.1	1.7	1.3				32.0	
34.0							1.7	1.3					34.0	
Reeving	8						6						Reeving	
Hook	60t anchor hook												Hook	
Telescoping mode Ⅰ	1	1	1	1	1	2	1	1	1	1	1	2	Ⅰ	Telescoping mode
Ⅱ	1	1	1	1	2	2	1	1	1	2	3	2	Ⅱ	
Ⅲ	1	1	2	3	2	2	1	2	3	3	2	2	Ⅲ	
Ⅳ	2	3	3	2	2	2	3	3	3	2	2	2	Ⅳ	
Ⅴ	3	3	2	2	2	2	3	3	2	2	2	2	Ⅴ	
Ⅵ	3	2	2	2	2	1	3	2	2	2	2	2	Ⅵ	

Table 1-33 Rated capacity chart (with boom only)

Unit: ton

Outriggers fully extended to 8m,2 t counterweight, over side or rear working area														
Radius (m)	Boom length (m)												Radius (m)	
	45.9	45.9	45.9	45.9	45.9	45.9 ★		50.5	50.5	50.5	50.5	50.5 ★		
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	14.5	15.5	19.5	23.0	26.0	25.5							9.0	
10.0	13.5	14.5	18.0	21.5	21.0	20.5							10.0	
11.0	12.6	13.6	16.8	19.0	18.0	17.5		12.5	14.5	17.0	18.0	17.0	11.0	
12.0	11.8	12.7	15.6	16.0	15.3	14.8		11.5	13.5	16.0	15.4	14.7	12.0	
14.0	10.3	11.0	12.0	11.6	10.9	10.4		10.2	12.0	12.0	11.2	10.5	14.0	
16.0	9.2	9.7	9.4	9.0	8.3	7.8		9.0	9.5	8.9	8.1	7.6	16.0	
18.0	8.2	8.0	7.3	6.9	6.2	5.7		8.0	7.6	7.0	6.2	5.7	18.0	
20.0	6.9	6.4	5.7	5.3	4.6	4.2		6.8	6.1	5.5	4.7	4.2	20.0	
22.0	5.6	5.1	4.5	4.1	3.4	3.0		5.6	4.9	4.3	3.5	3.0	22.0	
24.0	4.6	4.1	3.5	3.1	2.4	2.0		4.5	3.8	3.3	2.5	2.0	24.0	
26.0	3.8	3.3	2.7	2.3	1.7	1.3		3.7	3.0	2.5	1.7	1.2	26.0	
28.0	3.1	2.6	2.0	1.6	1.0			3.0	2.3	1.9	1.1		28.0	
30.0	2.5	2.0	1.5	1.1				2.4	1.7	1.3			30.0	
32.0	2.0	1.5	1.0					2.0	1.3				32.0	
34.0	1.6	1.1						1.5					34.0	
36.0	1.2							1.1					36.0	
38.0													38.0	
40.0													40.0	
42.0													42.0	
Reeving	5							4					Reeving	
Hook	60t anchor hook												Hook	
Telescoping mode Ⅰ	1	1	1	1	2	3		1	1	1	2	3	Ⅰ	Telescoping mode
Ⅱ	1	1	2	3	3	2		1	2	3	3	3	Ⅱ	
Ⅲ	2	3	3	3	2	2		3	3	3	3	2	Ⅲ	
Ⅳ	3	3	3	2	2	2		3	3	3	2	2	Ⅳ	
Ⅴ	3	3	2	2	2	2		3	3	2	2	2	Ⅴ	
Ⅵ	3	2	2	2	2	2		3	2	2	2	2	Ⅵ	

Table 1-34 Rated capacity chart (with boom only)

Unit: ton

Outriggers fully extended to 8m,2 t counterweight, over side or rear working area														
Radius (m)	Boom length (m)												Radius (m)	
	55.1	55.1	55.1	55.1. ★	59.7	59.7	59.7 ★		64.3	64.3 ★	68.9 ★	75.0 ★		
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	12.5	14.0	15.5	14.5									12.0	
14.0	11.0	12.5	11.6	10.6	11.0	11.5	11.0						14.0	
16.0	9.8	9.6	8.7	8.0	10.0	9.0	8.2		9.0	8.5			16.0	
18.0	8.0	7.5	6.6	5.9	7.9	7.0	6.2		7.5	6.6	7.0		18.0	
20.0	6.4	5.9	5.0	4.3	6.4	5.5	4.7		5.8	5.0	5.5	5.5	20.0	
22.0	5.1	4.7	3.8	3.1	5.1	4.2	3.5		4.6	3.8	4.2	4.3	22.0	
24.0	4.1	3.7	2.8	2.1	4.1	3.2	2.5		3.6	2.8	3.2	3.3	24.0	
26.0	3.2	2.8	2.0	1.2	3.2	2.3	1.6		2.8	2.0	2.4	2.5	26.0	
28.0	2.6	2.2	1.4		2.6	1.7	1.0		2.1	1.3	1.7	1.8	28.0	
30.0	2.0	1.6			2.0	1.1			1.5		1.1	1.2	30.0	
32.0	1.5	1.1			1.5				1.0				32.0	
34.0	1.2				1.0								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	
Reeving	3								3				Reeving	
Hook	60t anchor hook												Hook	
Telescoping mode Ⅰ	1	1	2	3	1	2	3		2	3	3	4	Ⅰ	Telescoping mode
Ⅱ	2	3	3	3	3	3	3		3	3	3	4	Ⅱ	
Ⅲ	3	3	3	3	3	3	3		3	3	3	4	Ⅲ	
Ⅳ	3	3	3	2	3	3	3		3	3	3	4	Ⅳ	
Ⅴ	3	3	2	2	3	3	2		3	3	3	4	Ⅴ	
Ⅵ	3	2	2	2	3	2	2		3	2	3	4	Ⅵ	

Table 1-35 Rated capacity chart (with tip boom)

Unit: ton

Outriggers fully extended to 8m, 40 t full counterweight, over side or rear working area														
Radius (m)	Tip boom length: 3m; angle: 30°												Radius (m)	
	13.7 ★	18.3	18.3	18.3	18.3	18.3 ★	22.9	22.9	22.9	22.9	22.9	22.9 ★		
3.0	18.0												3.0	
3.5	16.0												3.5	
4.0	16.0	16.0	16.0	16.0	16.0	16.0							4.0	
4.5	16.0	16.0	16.0	16.0	16.0	16.0							4.5	
5.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	5.0	
6.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	6.0	
7.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	7.0	
8.0	15.5	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	8.0	
9.0	15.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	9.0	
10.0	14.5	15.5	15.5	15.5	15.5	15.5	16.0	16.0	16.0	16.0	16.0	16.0	10.0	
11.0	14.0	15.0	15.0	15.0	15.0	15.0	16.0	16.0	16.0	16.0	16.0	16.0	11.0	
12.0	13.5	14.5	14.5	14.5	14.5	14.5	16.0	15.0	16.0	16.0	16.0	16.0	12.0	
14.0		14.0	14.0	14.0	14.0	14.0	15.5	13.0	15.5	15.5	15.5	15.5	14.0	
16.0		13.5	13.5	13.5	13.5	13.5	15.0	12.0	15.0	15.0	15.0	15.0	16.0	
18.0							14.0	11.0	14.0	14.0	14.0	14.0	18.0	
20.0							13.0	10.0	13.0	13.0	13.0	13.0	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	
Reeving	3												Reeving	
Hook	18t												Hook	
Telescoping mode Ⅰ	1	1	1	1	1	1	1	1	1	1	1	2	Ⅰ	Telescoping mode
Ⅱ	1	1	1	1	1	2	1	1	1	1	2	2	Ⅱ	
Ⅲ	1	1	1	1	2	1	1	1	1	2	2	1	Ⅲ	
Ⅳ	1	1	1	2	1	1	1	1	2	2	1	1	Ⅳ	
Ⅴ	1	1	2	1	1	1	1	2	2	1	1	1	Ⅴ	
Ⅵ	1	2	1	1	1	1	3	2	1	1	1	1	Ⅵ	

Table 1-36 Rated capacity chart (with tip boom)

Unit: ton

Outriggers fully extended to 8m, 40 t full counterweight, over side or rear working area													
Radius (m)	Tip boom length: 3m; angle: 30°												Radius (m)
	27.5	27.5	27.5	27.5	27.5	27.5 ★	32.1	32.1	32.1	32.1	32.1	32.1 ★	
3.0													3.0
3.5													3.5
4.0													4.0
4.5													4.5
5.0													5.0
6.0													6.0
7.0	14.0	14.0	16.0	16.0	16.0	16.0							7.0
8.0	13.0	13.0	16.0	16.0	16.0	16.0	11.0	13.0	15.0	16.0	16.0	16.0	8.0
9.0	12.0	12.0	16.0	16.0	16.0	16.0	10.0	12.0	13.0	16.0	16.0	16.0	9.0
10.0	11.0	11.0	16.0	16.0	16.0	16.0	9.5	11.5	12.5	16.0	16.0	16.0	10.0
11.0	10.0	10.0	16.0	16.0	16.0	16.0	9.0	11.0	12.0	16.0	16.0	16.0	11.0
12.0	9.0	9.0	15.5	16.0	16.0	16.0	8.0	10.0	11.0	16.0	16.0	16.0	12.0
14.0	8.0	8.0	15.0	16.0	16.0	16.0	7.5	9.0	10.0	15.0	16.0	16.0	14.0
16.0	7.0	7.0	13.5	15.5	16.0	16.0	6.5	8.0	9.0	14.0	16.0	16.0	16.0
18.0	6.5	6.5	12.0	15.0	15.5	15.5	6.0	7.5	8.0	13.0	16.0	16.0	18.0
20.0	6.0	6.0	11.0	14.5	14.0	14.0	5.5	7.0	7.5	12.0	15.0	15.0	20.0
22.0	5.5	5.5	10.5	12.5	12.0	12.0	5.0	6.4	7.0	11.5	13.0	13.0	22.0
24.0	5.0	5.0	10.0	12.0	11.5	11.0	4.5	5.9	6.4	11.0	12.0	11.0	24.0
26.0							4.2	5.5	5.8	10.0	11.0	10.0	26.0
28.0							3.8	5.1	5.3	9.5	9.8	8.8	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
Reeving	3												Reeving
Hook	18t												Hook
Telescoping mode Ⅰ	1	1	1	1	1	2	1	1	1	1	1	2	Ⅰ Telescoping mode
Ⅱ	1	1	1	1	2	2	1	1	1	1	2	2	Ⅱ
Ⅲ	1	1	1	2	2	2	1	1	1	2	2	2	Ⅲ
Ⅳ	1	1	2	2	2	1	1	2	3	2	2	2	Ⅳ
Ⅴ	2	3	2	2	1	1	3	3	2	2	2	1	Ⅴ
Ⅵ	3	2	2	1	1	1	3	2	2	2	1	1	Ⅵ

Table 1-37 Rated capacity chart (with tip boom)

Unit: ton

Outriggers fully extended to 8m, 40 t full counterweight, over side or rear working area														
Radius (m)	Tip boom length: 3m; angle: 30°												Radius (m)	
	36.7	36.7	36.7	36.7	36.7	36.7 ★	41.3	41.3	41.3	41.3	41.3	41.3 ★		
3.0													3.0	
3.5													3.5	
4.0													4.0	
4.5													4.5	
5.0													5.0	
6.0													6.0	
7.0													7.0	
8.0													8.0	
9.0	11.0	13.0	15.0	16.0	16.0	16.0							9.0	
10.0	10.5	12.0	14.0	15.0	16.0	16.0	10.5	12.5	14.0	16.0	16.0	16.0	10.0	
11.0	9.5	11.0	13.0	14.0	16.0	16.0	10.0	12.0	13.0	16.0	16.0	16.0	11.0	
12.0	9.0	10.0	12.0	13.0	16.0	16.0	9.5	11.0	12.0	15.0	16.0	16.0	12.0	
14.0	8.0	9.0	11.0	11.0	16.0	16.0	8.3	9.5	10.5	13.0	15.0	16.0	14.0	
16.0	7.0	8.0	10.5	10.5	15.0	16.0	7.3	8.5	9.0	11.0	14.5	15.0	16.0	
18.0	6.5	7.0	9.5	9.5	14.0	16.0	6.5	8.0	8.5	10.5	13.0	14.5	18.0	
20.0	6.0	6.5	8.5	8.5	13.0	15.0	5.8	7.0	7.5	9.5	11.0	14.0	20.0	
22.0	5.4	5.7	7.7	7.7	12.5	12.5	5.3	6.4	6.6	9.0	10.5	13.0	22.0	
24.0	4.9	5.2	7.0	7.0	11.0	11.0	4.8	5.8	6.0	8.0	9.5	12.5	24.0	
26.0	4.5	4.8	6.5	6.5	10.5	10.0	4.3	5.3	5.5	7.5	9.0	11.0	26.0	
28.0	4.2	4.5	6.0	6.0	10.0	9.0	3.9	4.8	5.0	6.7	8.0	9.5	28.0	
30.0	3.9	4.2	5.5	5.5	9.0	8.0	3.6	4.4	4.6	6.3	7.5	8.5	30.0	
32.0	3.6	3.7	5.0	5.0	7.8	7.0	3.3	4.0	4.2	5.7	7.0	7.5	32.0	
34.0							3.0	3.7	3.9	5.4	6.5	6.5	34.0	
36.0							2.8	3.5	3.6	5.0	6.3	5.9	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	
Reeving	3												Reeving	
Hook	18t												Hook	
Telescoping mode Ⅰ	1	1	1	1	1	2	1	1	1	1	1	2	Ⅰ	Telescoping mode
Ⅱ	1	1	1	1	2	2	1	1	1	2	3	2	Ⅱ	
Ⅲ	1	1	2	3	2	2	1	2	3	3	2	2	Ⅲ	
Ⅳ	2	3	3	2	2	2	3	3	3	2	2	2	Ⅳ	
Ⅴ	3	3	2	2	2	2	3	3	2	2	2	2	Ⅴ	
Ⅵ	3	2	2	2	2	1	3	2	2	2	2	2	Ⅵ	

Table 1-38 Rated capacity chart (with tip boom)

Unit: ton

Outriggers fully extended to 8m, 40 t full counterweight, over side or rear working area													
Radius (m)	Tip boom length: 3m; angle: 30°												Radius (m)
	45.9	45.9	45.9	45.9	45.9	45.9 ★		50.5	50.5	50.5	50.5	50.5 ★	
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	9.5	11.0	13.0	14.0	16.0	16.0							12.0
14.0	8.5	9.5	11.5	13.0	15.0	15.0		9.0	10.5	12.0	13.0	15.0	14.0
16.0	7.5	8.5	10.0	12.0	14.0	14.0		8.0	9.5	11.0	12.0	14.0	16.0
18.0	7.1	7.7	9.5	11.0	13.0	13.0		7.0	8.5	10.0	11.0	13.0	18.0
20.0	6.4	6.9	8.4	10.0	12.0	12.0		6.0	7.5	9.0	10.5	11.5	20.0
22.0	5.7	6.1	7.6	9.0	11.0	11.0		5.5	6.5	8.0	9.5	10.5	22.0
24.0	5.2	5.5	7.0	8.5	10.0	10.0		5.0	6.0	7.4	9.0	9.5	24.0
26.0	4.8	5.0	6.3	7.8	9.5	9.5		4.5	5.5	6.8	8.0	9.0	26.0
28.0	4.3	4.5	5.8	7.3	8.5	8.5		4.2	5.0	6.3	7.5	8.0	28.0
30.0	4.0	4.1	5.3	6.7	8.0	8.0		3.8	4.6	5.8	7.0	7.0	30.0
32.0	3.6	3.7	4.8	6.2	7.5	7.2		3.5	4.3	5.3	6.5	6.5	32.0
34.0	3.4	3.4	4.3	5.7	6.5	6.2		3.2	4.0	4.8	5.8	6.0	34.0
36.0	3.1	3.1	4.0	5.2	5.7	5.4		2.9	3.7	4.4	5.5	5.3	36.0
38.0	2.8	2.8	3.7	4.8	5.0	4.7		2.7	3.4	4.0	5.0	4.7	38.0
40.0	2.6	2.6	3.5	4.2	4.4	4.1		2.4	3.1	3.7	4.5	4.0	40.0
42.0								2.2	2.9	3.4	4.0	3.5	42.0
44.0								2.0	2.6	3.1	3.4	2.9	44.0
46.0													46.0
48.0													48.0
50.0													50.0
Reeving	3												Reeving
Hook	18t												Hook
Telescoping mode Ⅰ	1	1	1	1	2	3		1	1	1	2	3	Ⅰ Telescoping mode
Ⅱ	1	1	2	3	3	2		1	2	3	3	3	Ⅱ
Ⅲ	2	3	3	3	2	2		3	3	3	3	2	Ⅲ
Ⅳ	3	3	3	2	2	2		3	3	3	2	2	Ⅳ
Ⅴ	3	3	2	2	2	2		3	3	2	2	2	Ⅴ
Ⅵ	3	2	2	2	2	2		3	2	2	2	2	Ⅵ

Table 1-39 Rated capacity chart (with tip boom)

Unit: ton

Outriggers fully extended to 8m, 40 t full counterweight, over side or rear working area														
Radius (m)	Tip boom length: 3m; angle: 30°												Radius (m)	
	55.1	55.1	55.1	55.1 ★	59.7	59.7	59.7 ★		64.3	64.3 ★	68.9 ★	75.0 ★		
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	8.5	10.0	11.0	12.0	8.5	10.0	11.0						16.0	
18.0	7.5	9.0	10.0	11.0	8.0	9.0	10.0		8.0	9.0			18.0	
20.0	7.0	8.0	9.0	10.0	7.5	8.5	9.5		7.5	8.0	7.0		20.0	
22.0	6.3	7.4	8.5	9.5	6.5	7.5	8.5		7.0	7.5	7.0	5.5	22.0	
24.0	5.7	6.7	7.5	9.0	6.0	7.0	8.0		6.5	7.0	6.5	5.5	24.0	
26.0	5.2	6.1	7.0	8.4	5.5	6.5	7.4		6.0	6.5	6.0	5.5	26.0	
28.0	4.7	5.5	6.5	7.5	5.0	6.0	6.8		5.5	6.0	5.5	5.3	28.0	
30.0	4.3	5.1	6.0	6.8	4.7	5.5	6.3		5.0	5.5	5.0	4.9	30.0	
32.0	4.0	4.8	5.6	6.3	4.3	5.0	5.7		4.6	5.1	4.7	4.5	32.0	
34.0	3.7	4.4	5.2	5.5	4.0	4.6	5.3		4.3	4.8	4.4	4.2	34.0	
36.0	3.4	4.0	4.7	5.0	3.6	4.3	4.8		4.0	4.4	4.2	3.9	36.0	
38.0	3.1	3.7	4.4	4.5	3.3	4.0	4.4		3.7	4.1	3.9	3.6	38.0	
40.0	2.9	3.4	4.1	4.0	3.1	3.7	4.0		3.4	3.8	3.6	3.3	40.0	
42.0	2.6	3.1	3.8	3.5	2.8	3.4	3.6		3.2	3.5	3.3	3.0	42.0	
44.0	2.4	2.8	3.5	3.0	2.6	3.1	3.2		3.0	3.1	3.1	2.8	44.0	
46.0	2.2	2.6	3.1	2.5	2.4	2.8	2.8		2.8	2.9	2.9	2.6	46.0	
48.0	2.0	2.5	2.7	2.2	2.2	2.6	2.4		2.5	2.6	2.6	2.4	48.0	
50.0					2.0	2.4	2.0		2.3	2.3	2.4	2.2	50.0	
52.0					1.9	2.3	1.7		2.1	1.8	2.1	2.0	52.0	
54.0									1.9	1.5	1.8	1.8	54.0	
56.0									1.8	1.3	1.6	1.6	56.0	
58.0											1.3	1.3	58.0	
60.0											1.0	1.1	60.0	
Reeving	3							2					Reeving	
Hook	18t												Hook	
Telescoping mode Ⅰ	1	1	2	3	1	2	3		2	3	3	4	Ⅰ	Telescoping mode
Ⅱ	2	3	3	3	3	3	3		3	3	3	4	Ⅱ	
Ⅲ	3	3	3	3	3	3	3		3	3	3	4	Ⅲ	
Ⅳ	3	3	3	2	3	3	3		3	3	3	4	Ⅳ	
Ⅴ	3	3	2	2	3	3	2		3	3	3	4	Ⅴ	
Ⅵ	3	2	2	2	3	2	2		3	2	3	4	Ⅵ	

Table 1-40 Rated capacity chart (with tip boom)

Unit: ton

Outriggers fully extended to 8m, 27 t counterweight, over side or rear working area														
Radius (m)	Tip boom length: 3m; angle: 30°												Radius (m)	
	13.7 ★	18.3	18.3	18.3	18.3	18.3 ★	22.9	22.9	22.9	22.9	22.9	22.9 ★		
3.0	18.0												3.0	
3.5	16.0												3.5	
4.0	16.0	16.0	16.0	16.0	16.0	16.0							4.0	
4.5	16.0	16.0	16.0	16.0	16.0	16.0							4.5	
5.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	5.0	
6.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	6.0	
7.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	7.0	
8.0	15.5	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	8.0	
9.0	15.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	9.0	
10.0	14.5	15.5	15.5	15.5	15.5	15.5	16.0	16.0	16.0	16.0	16.0	16.0	10.0	
11.0	14.0	15.0	15.0	15.0	15.0	15.0	16.0	16.0	16.0	16.0	16.0	16.0	11.0	
12.0	13.5	14.5	14.5	14.5	14.5	14.5	16.0	15.0	16.0	16.0	16.0	16.0	12.0	
14.0		14.0	14.0	14.0	14.0	14.0	15.5	13.0	15.5	15.5	15.5	15.5	14.0	
16.0		13.5	13.5	13.5	13.5	13.5	15.0	12.0	15.0	15.0	15.0	15.0	16.0	
18.0							14.0	11.0	14.0	14.0	14.0	14.0	18.0	
20.0							13.0	10.0	13.0	13.0	12.5	11.5	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	
Reeving	3												Reeving	
Hook	18t												Hook	
Telescoping mode Ⅰ	1	1	1	1	1	1	1	1	1	1	1	2	Ⅰ	Telescoping mode
Ⅱ	1	1	1	1	1	2	1	1	1	1	2	2	Ⅱ	
Ⅲ	1	1	1	1	2	1	1	1	1	2	2	1	Ⅲ	
Ⅳ	1	1	1	2	1	1	1	1	2	2	1	1	Ⅳ	
Ⅴ	1	1	2	1	1	1	1	2	2	1	1	1	Ⅴ	
Ⅵ	1	2	1	1	1	1	3	2	1	1	1	1	Ⅵ	

Table 1-41 Rated capacity chart (with tip boom)

Unit: ton

Outriggers fully extended to 8m, 27 t counterweight, over side or rear working area														
Radius (m)	Tip boom length: 3m; angle: 30°												Radius (m)	
	27.5	27.5	27.5	27.5	27.5	27.5 ★	32.1	32.1	32.1	32.1	32.1	32.1 ★		
3.0													3.0	
3.5													3.5	
4.0													4.0	
4.5													4.5	
5.0													5.0	
6.0													6.0	
7.0	14.0	14.0	16.0	16.0	16.0	16.0							7.0	
8.0	13.0	13.0	16.0	16.0	16.0	16.0	11.0	13.0	15.0	16.0	16.0	16.0	8.0	
9.0	12.0	12.0	16.0	16.0	16.0	16.0	10.0	12.0	13.0	16.0	16.0	16.0	9.0	
10.0	11.0	11.0	16.0	16.0	16.0	16.0	9.5	11.5	12.5	16.0	16.0	16.0	10.0	
11.0	10.0	10.0	16.0	16.0	16.0	16.0	9.0	11.0	12.0	16.0	16.0	16.0	11.0	
12.0	9.0	9.0	15.5	16.0	16.0	16.0	8.0	10.0	11.0	16.0	16.0	16.0	12.0	
14.0	8.0	8.0	15.0	16.0	16.0	16.0	7.5	9.0	10.0	15.0	16.0	16.0	14.0	
16.0	7.0	7.0	13.5	15.5	16.0	15.5	6.5	8.0	9.0	14.0	16.0	15.5	16.0	
18.0	6.5	6.5	12.0	15.0	15.5	15.0	6.0	7.5	8.0	13.0	15.5	15.0	18.0	
20.0	6.0	6.0	11.0	14.0	13.0	12.0	5.5	7.0	7.5	12.0	13.5	12.5	20.0	
22.0	5.5	5.5	10.5	12.0	11.0	10.0	5.0	6.4	7.0	11.5	11.5	10.5	22.0	
24.0	5.0	5.0	10.0	10.0	9.0	8.0	4.5	5.9	6.4	10.5	9.5	8.5	24.0	
26.0							4.2	5.5	5.8	9.0	8.0	7.0	26.0	
28.0							3.8	5.1	5.3	8.0	7.0	6.0	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	
Reeving	3												Reeving	
Hook	18t												Hook	
Telescoping mode Ⅰ	1	1	1	1	1	2	1	1	1	1	1	2	Ⅰ	Telescoping mode
Ⅱ	1	1	1	1	2	2	1	1	1	1	2	2	Ⅱ	
Ⅲ	1	1	1	2	2	2	1	1	1	2	2	2	Ⅲ	
Ⅳ	1	1	2	2	2	1	1	2	3	2	2	2	Ⅳ	
Ⅴ	2	3	2	2	1	1	3	3	2	2	2	1	Ⅴ	
Ⅵ	3	2	2	1	1	1	3	2	2	2	1	1	Ⅵ	

Table 1-42 Rated capacity chart (with tip boom)

Unit: ton

Outriggers fully extended to 8m, 27 t counterweight, over side or rear working area														
Radius (m)	Tip boom length: 3m; angle: 30°												Radius (m)	
	36.7	36.7	36.7	36.7	36.7	36.7 ★	41.3	41.3	41.3	41.3	41.3	41.3 ★		
3.0													3.0	
3.5													3.5	
4.0													4.0	
4.5													4.5	
5.0													5.0	
6.0													6.0	
7.0													7.0	
8.0													8.0	
9.0	11.0	13.0	15.0	16.0	16.0	16.0							9.0	
10.0	10.5	12.0	14.0	15.0	16.0	16.0	10.5	12.5	14.0	16.0	16.0	16.0	10.0	
11.0	9.5	11.0	13.0	14.0	16.0	16.0	10.0	12.0	13.0	16.0	16.0	16.0	11.0	
12.0	9.0	10.0	12.0	13.0	16.0	16.0	9.5	11.0	12.0	15.0	16.0	16.0	12.0	
14.0	8.0	9.0	11.0	11.0	16.0	16.0	8.3	9.5	10.5	13.0	15.0	16.0	14.0	
16.0	7.0	8.0	10.5	10.5	15.0	16.0	7.3	8.5	9.0	11.0	14.5	15.0	16.0	
18.0	6.5	7.0	9.5	9.5	14.0	15.5	6.5	8.0	8.5	10.5	13.0	14.5	18.0	
20.0	6.0	6.5	8.5	8.5	13.0	13.0	5.8	7.0	7.5	9.5	11.0	13.5	20.0	
22.0	5.4	5.7	7.7	7.7	12.0	11.0	5.3	6.4	6.6	9.0	10.5	11.5	22.0	
24.0	4.9	5.2	7.0	7.0	10.5	9.3	4.8	5.8	6.0	8.0	9.5	10.0	24.0	
26.0	4.5	4.8	6.5	6.5	9.0	7.8	4.3	5.3	5.5	7.5	9.0	8.5	26.0	
28.0	4.2	4.5	6.0	6.0	7.8	6.6	3.9	4.8	5.0	6.7	7.6	7.2	28.0	
30.0	3.9	4.2	5.5	5.5	6.8	5.6	3.6	4.4	4.6	6.3	6.6	6.2	30.0	
32.0	3.6	3.7	5.0	5.0	5.8	4.6	3.3	4.0	4.2	5.7	5.7	5.3	32.0	
34.0							3.0	3.7	3.9	5.2	4.9	4.5	34.0	
36.0							2.8	3.5	3.6	4.5	4.2	3.8	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	
Reeving	3												Reeving	
Hook	18t												Hook	
Telescoping mode Ⅰ	1	1	1	1	1	2	1	1	1	1	1	2	Ⅰ	Telescoping mode
Ⅱ	1	1	1	1	2	2	1	1	1	2	3	2	Ⅱ	
Ⅲ	1	1	2	3	2	2	1	2	3	3	2	2	Ⅲ	
Ⅳ	2	3	3	2	2	2	3	3	3	2	2	2	Ⅳ	
Ⅴ	3	3	2	2	2	2	3	3	2	2	2	2	Ⅴ	
Ⅵ	3	2	2	2	2	1	3	2	2	2	2	2	Ⅵ	

Table 1-43 Rated capacity chart (with tip boom) Unit: ton

Outriggers fully extended to 8m, 27 t counterweight, over side or rear working area														
Radius (m)	Tip boom length: 3m; angle: 30°												Radius (m)	
	45.9	45.9	45.9	45.9	45.9	45.9 ★		50.5	50.5	50.5	50.5	50.5 ★		
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	9.5	11.0	13.0	14.0	16.0	16.0							12.0	
14.0	8.5	9.5	11.5	13.0	15.0	15.0		9.0	10.5	12.0	13.0	15.0	14.0	
16.0	7.5	8.5	10.0	12.0	14.0	14.0		8.0	9.5	11.0	12.0	14.0	16.0	
18.0	7.1	7.7	9.5	11.0	13.0	13.0		7.0	8.5	10.0	11.0	13.0	18.0	
20.0	6.4	6.9	8.4	10.0	12.0	12.0		6.0	7.5	9.0	10.5	11.5	20.0	
22.0	5.7	6.1	7.6	9.0	11.0	11.0		5.5	6.5	8.0	9.5	10.5	22.0	
24.0	5.2	5.5	7.0	8.5	9.5	9.5		5.0	6.0	7.4	9.0	9.5	24.0	
26.0	4.8	5.0	6.3	7.8	8.4	8.0		4.5	5.5	6.8	8.0	8.0	26.0	
28.0	4.3	4.5	5.8	7.3	7.2	6.8		4.2	5.0	6.3	7.2	6.7	28.0	
30.0	4.0	4.1	5.3	6.7	6.1	5.7		3.8	4.6	5.8	6.2	5.7	30.0	
32.0	3.6	3.7	4.8	5.6	5.2	4.8		3.5	4.3	5.3	5.3	4.8	32.0	
34.0	3.4	3.4	4.3	4.9	4.5	4.1		3.2	4.0	4.8	4.5	4.0	34.0	
36.0	3.1	3.1	4.0	4.2	3.8	3.4		2.9	3.7	4.4	3.9	3.4	36.0	
38.0	2.8	2.8	3.7	3.6	3.2	2.8		2.7	3.4	3.8	3.3	2.8	38.0	
40.0	2.6	2.6	3.5	3.0	2.6	2.2		2.4	3.1	3.2	2.7	2.2	40.0	
42.0								2.2	2.9	2.8	2.1	1.6	42.0	
44.0								2.0	2.6	2.4	1.7	1.2	44.0	
46.0													46.0	
48.0													48.0	
50.0													50.0	
Reeving	3												Reeving	
Hook	18t												Hook	
Telescoping mode Ⅰ	1	1	1	1	2	3		1	1	1	2	3	Ⅰ	Telescoping mode
Ⅱ	1	1	2	3	3	2		1	2	3	3	3	Ⅱ	
Ⅲ	2	3	3	3	2	2		3	3	3	3	2	Ⅲ	
Ⅳ	3	3	3	2	2	2		3	3	3	2	2	Ⅳ	
Ⅴ	3	3	2	2	2	2		3	3	2	2	2	Ⅴ	
Ⅵ	3	2	2	2	2	2		3	2	2	2	2	Ⅵ	

Table 1-44 Rated capacity chart (with tip boom)

Unit: ton

Outriggers fully extended to 8m, 27 t counterweight, over side or rear working area													
Radius (m)	Tip boom length: 3m; angle: 30°												Radius (m)
	55.1	55.1	55.1	55.1 ★	59.7	59.7	59.7 ★		64.3	64.3 ★	68.9 ★	75.0 ★	
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	8.5	10.0	11.0	12.0	8.5	10.0	11.0						16.0
18.0	7.5	9.0	10.0	11.0	8.0	9.0	10.0		8.0	9.0			18.0
20.0	7.0	8.0	9.0	10.0	7.5	8.5	9.5		7.5	8.0	7.0		20.0
22.0	6.3	7.4	8.5	9.5	6.5	7.5	8.5		7.0	7.5	7.0	5.5	22.0
24.0	5.7	6.7	7.5	9.0	6.0	7.0	8.0		6.5	7.0	6.5	5.5	24.0
26.0	5.2	6.1	7.0	8.0	5.5	6.5	7.4		6.0	6.5	6.0	5.5	26.0
28.0	4.7	5.5	6.5	7.0	5.0	6.0	6.8		5.5	6.0	5.5	5.3	28.0
30.0	4.3	5.1	6.0	5.8	4.7	5.5	6.2		5.0	5.5	5.0	4.9	30.0
32.0	4.0	4.8	5.5	4.9	4.3	5.0	5.2		4.6	5.1	4.7	4.5	32.0
34.0	3.7	4.4	4.8	4.2	4.0	4.6	4.4		4.3	4.8	4.4	4.2	34.0
36.0	3.4	4.0	4.0	3.4	3.6	4.3	3.7		4.0	4.0	4.2	3.9	36.0
38.0	3.1	3.7	3.4	2.8	3.3	3.8	3.1		3.7	3.5	3.9	3.6	38.0
40.0	2.9	3.4	2.8	2.2	3.1	3.2	2.5		3.4	2.8	3.3	3.3	40.0
42.0	2.6	3.1	2.4	1.8	2.8	2.7	2.0		3.0	2.4	2.8	3.0	42.0
44.0	2.4	2.7	2.0	1.4	2.6	2.3	1.6		2.7	2.0	2.3	2.5	44.0
46.0	2.2	2.3	1.6	1.0	2.4	1.9	1.2		2.2	1.6	1.9	2.1	46.0
48.0	2.0	1.9	1.2		2.2	1.5	1.0		1.8	1.2	1.5	1.7	48.0
50.0					1.8	1.2			1.5		1.2	1.3	50.0
52.0											1.0	1.0	52.0
54.0													54.0
56.0													56.0
58.0													58.0
60.0													60.0
Reeving	3							2					Reeving
Hook	18t												Hook
Telescoping mode Ⅰ	1	1	2	3	1	2	3		2	3	3	4	Ⅰ
Telescoping mode Ⅱ	2	3	3	3	3	3	3		3	3	3	4	Ⅱ
Telescoping mode Ⅲ	3	3	3	3	3	3	3		3	3	3	4	Ⅲ
Telescoping mode Ⅳ	3	3	3	2	3	3	3		3	3	3	4	Ⅳ
Telescoping mode Ⅴ	3	3	2	2	3	3	2		3	3	3	4	Ⅴ
Telescoping mode Ⅵ	3	2	2	2	3	2	2		3	2	3	4	Ⅵ

Table 1-45 Rated capacity chart (with tip boom)

Unit: ton

Outriggers fully extended to 8m, 23 t counterweight, over side or rear working area														
Radius (m)	Tip boom length: 3m; angle: 30°												Radius (m)	
	13.7 ★	18.3	18.3	18.3	18.3	18.3 ★	22.9	22.9	22.9	22.9	22.9	22.9 ★		
3.0	18.0												3.0	
3.5	16.0												3.5	
4.0	16.0	16.0	16.0	16.0	16.0	16.0							4.0	
4.5	16.0	16.0	16.0	16.0	16.0	16.0							4.5	
5.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	5.0	
6.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	6.0	
7.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	7.0	
8.0	15.5	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	8.0	
9.0	15.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	9.0	
10.0	14.5	15.5	15.5	15.5	15.5	15.5	16.0	16.0	16.0	16.0	16.0	16.0	10.0	
11.0	14.0	15.0	15.0	15.0	15.0	15.0	16.0	16.0	16.0	16.0	16.0	16.0	11.0	
12.0	13.5	14.5	14.5	14.5	14.5	14.5	16.0	15.0	16.0	16.0	16.0	16.0	12.0	
14.0		14.0	14.0	14.0	14.0	14.0	15.5	13.0	15.5	15.5	15.5	15.5	14.0	
16.0		13.5	13.5	13.5	13.5	13.5	15.0	12.0	15.0	15.0	15.0	15.0	16.0	
18.0							14.0	11.0	14.0	14.0	14.0	13.0	18.0	
20.0							13.0	10.0	12.5	12.0	11.5	10.3	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	
Reeving	3												Reeving	
Hook	18t												Hook	
Telescoping mode Ⅰ	1	1	1	1	1	1	1	1	1	1	1	2	Ⅰ	Telescoping mode
Ⅱ	1	1	1	1	1	2	1	1	1	1	2	2	Ⅱ	
Ⅲ	1	1	1	1	2	1	1	1	1	2	2	1	Ⅲ	
Ⅳ	1	1	1	2	1	1	1	1	2	2	1	1	Ⅳ	
Ⅴ	1	1	2	1	1	1	1	2	2	1	1	1	Ⅴ	
Ⅵ	1	2	1	1	1	1	3	2	1	1	1	1	Ⅵ	

Table 1-46 Rated capacity chart (with tip boom)

Unit: ton

Outriggers fully extended to 8m, 23 t counterweight, over side or rear working area													
Radius (m)	Tip boom length: 3m; angle: 30°												Radius (m)
	27.5	27.5	27.5	27.5	27.5	27.5 ★	32.1	32.1	32.1	32.1	32.1	32.1 ★	
3.0													3.0
3.5													3.5
4.0													4.0
4.5													4.5
5.0													5.0
6.0													6.0
7.0	14.0	14.0	16.0	16.0	16.0	16.0							7.0
8.0	13.0	13.0	16.0	16.0	16.0	16.0	11.0	13.0	15.0	16.0	16.0	16.0	8.0
9.0	12.0	12.0	16.0	16.0	16.0	16.0	10.0	12.0	13.0	16.0	16.0	16.0	9.0
10.0	11.0	11.0	16.0	16.0	16.0	16.0	9.5	11.5	12.5	16.0	16.0	16.0	10.0
11.0	10.0	10.0	16.0	16.0	16.0	16.0	9.0	11.0	12.0	16.0	16.0	16.0	11.0
12.0	9.0	9.0	15.5	16.0	16.0	16.0	8.0	10.0	11.0	16.0	16.0	16.0	12.0
14.0	8.0	8.0	15.0	16.0	16.0	16.0	7.5	9.0	10.0	15.0	16.0	16.0	14.0
16.0	7.0	7.0	13.5	15.5	15.5	15.5	6.5	8.0	9.0	14.0	15.5	15.5	16.0
18.0	6.5	6.5	12.0	15.0	14.5	13.0	6.0	7.5	8.0	13.0	15.0	14.0	18.0
20.0	6.0	6.0	11.0	12.5	12.0	10.5	5.5	7.0	7.5	12.0	12.5	11.3	20.0
22.0	5.5	5.5	10.5	10.5	10.0	8.5	5.0	6.4	7.0	11.3	10.5	9.3	22.0
24.0	5.0	5.0	9.5	9.0	8.3	7.0	4.5	5.9	6.4	9.7	8.9	7.7	24.0
26.0							4.2	5.5	5.8	8.5	7.7	6.3	26.0
28.0							3.8	5.1	5.3	7.3	6.5	5.1	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
Reeving	3												Reeving
Hook	18t												Hook
Telescoping mode Ⅰ	1	1	1	1	1	2	1	1	1	1	1	2	Ⅰ Telescoping mode
Ⅱ	1	1	1	1	2	2	1	1	1	1	2	2	Ⅱ
Ⅲ	1	1	1	2	2	2	1	1	1	2	2	2	Ⅲ
Ⅳ	1	1	2	2	2	1	1	2	3	2	2	2	Ⅳ
Ⅴ	2	3	2	2	1	1	3	3	2	2	2	1	Ⅴ
Ⅵ	3	2	2	1	1	1	3	2	2	2	1	1	Ⅵ

Table 1-47 Rated capacity chart (with tip boom)

Unit: ton

Outriggers fully extended to 8m, 23 t counterweight, over side or rear working area													
Radius (m)	Tip boom length: 3m; angle: 30°												Radius (m)
	36.7	36.7	36.7	36.7	36.7	36.7 ★	41.3	41.3	41.3	41.3	41.3	41.3 ★	
3.0													3.0
3.5													3.5
4.0													4.0
4.5													4.5
5.0													5.0
6.0													6.0
7.0													7.0
8.0													8.0
9.0	11.0	13.0	15.0	16.0	16.0	16.0							9.0
10.0	10.5	12.0	14.0	15.0	16.0	16.0	10.5	12.5	14.0	16.0	16.0	16.0	10.0
11.0	9.5	11.0	13.0	14.0	16.0	16.0	10.0	12.0	13.0	16.0	16.0	16.0	11.0
12.0	9.0	10.0	12.0	13.0	16.0	16.0	9.5	11.0	12.0	15.0	16.0	16.0	12.0
14.0	8.0	9.0	11.0	11.0	16.0	16.0	8.3	9.5	10.5	13.0	15.0	16.0	14.0
16.0	7.0	8.0	10.5	10.5	15.0	15.5	7.3	8.5	9.0	11.0	14.5	15.0	16.0
18.0	6.5	7.0	9.5	9.5	14.0	14.5	6.5	8.0	8.5	10.5	13.0	14.5	18.0
20.0	6.0	6.5	8.5	8.5	13.0	12.0	5.8	7.0	7.5	9.5	11.0	12.5	20.0
22.0	5.4	5.7	7.7	7.7	11.0	10.0	5.3	6.4	6.6	9.0	10.5	10.1	22.0
24.0	4.9	5.2	7.0	7.0	9.5	8.3	4.8	5.8	6.0	8.0	9.4	9.0	24.0
26.0	4.5	4.8	6.5	6.5	8.2	7.0	4.3	5.3	5.5	7.5	8.0	7.6	26.0
28.0	4.2	4.5	6.0	6.0	7.0	5.8	3.9	4.8	5.0	6.7	6.8	6.4	28.0
30.0	3.9	4.2	5.5	5.5	6.0	4.8	3.6	4.4	4.6	6.1	5.9	5.5	30.0
32.0	3.6	3.7	5.0	5.0	5.2	4.0	3.3	4.0	4.2	5.2	5.0	4.6	32.0
34.0							3.0	3.7	3.9	4.5	4.3	3.9	34.0
36.0							2.8	3.5	3.6	3.9	3.6	3.3	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
Reeving	3												Reeving
Hook	18t												Hook
Telescoping mode Ⅰ	1	1	1	1	1	2	1	1	1	1	1	2	Ⅰ Telescoping mode
Ⅱ	1	1	1	1	2	2	1	1	1	2	3	2	Ⅱ
Ⅲ	1	1	2	3	2	2	1	2	3	3	2	2	Ⅲ
Ⅳ	2	3	3	2	2	2	3	3	3	2	2	2	Ⅳ
Ⅴ	3	3	2	2	2	2	3	3	2	2	2	2	Ⅴ
Ⅵ	3	2	2	2	2	1	3	2	2	2	2	2	Ⅵ

Table 1-48 Rated capacity chart (with tip boom)

Unit: ton

Outriggers fully extended to 8m, 23 t counterweight, over side or rear working area													
Radius (m)	Tip boom length: 3m; angle: 30°												Radius (m)
	45.9	45.9	45.9	45.9	45.9	45.9 ★		50.5	50.5	50.5	50.5	50.5 ★	
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	9.5	11.0	13.0	14.0	16.0	16.0							12.0
14.0	8.5	9.5	11.5	13.0	15.0	15.0		9.0	10.5	12.0	13.0	15.0	14.0
16.0	7.5	8.5	10.0	12.0	14.0	14.0		8.0	9.5	11.0	12.0	14.0	16.0
18.0	7.1	7.7	9.5	11.0	13.0	13.0		7.0	8.5	10.0	11.0	13.0	18.0
20.0	6.4	6.9	8.4	10.0	12.0	12.0		6.0	7.5	9.0	10.5	11.5	20.0
22.0	5.7	6.1	7.6	9.0	10.5	10.1		5.5	6.5	8.0	9.5	10.0	22.0
24.0	5.2	5.5	7.0	8.5	8.9	8.5		5.0	6.0	7.4	9.0	8.5	24.0
26.0	4.8	5.0	6.3	7.8	7.5	7.1		4.5	5.5	6.8	7.6	7.1	26.0
28.0	4.3	4.5	5.8	6.9	6.3	6.0		4.2	5.0	6.3	6.4	5.9	28.0
30.0	4.0	4.1	5.3	5.9	5.3	5.0		3.8	4.6	5.8	5.5	5.0	30.0
32.0	3.6	3.7	4.8	5.1	4.5	4.2		3.5	4.3	5.3	4.6	4.1	32.0
34.0	3.4	3.4	4.3	4.3	3.7	3.4		3.2	4.0	4.5	3.8	3.3	34.0
36.0	3.1	3.1	4.1	3.7	3.1	2.8		2.9	3.7	3.9	3.2	2.7	36.0
38.0	2.8	2.8	3.5	3.1	2.5	2.2		2.7	3.4	3.3	2.6	2.1	38.0
40.0	2.6	2.6	3.0	2.6	2.0	1.7		2.4	3.1	2.8	2.1	1.6	40.0
42.0								2.2	2.8	2.3	1.7	1.2	42.0
44.0								2.0	2.4	1.9	1.3		44.0
46.0													46.0
48.0													48.0
50.0													50.0
Reeving	3												Reeving
Hook	18t												Hook
Telescoping mode Ⅰ	1	1	1	1	2	3		1	1	1	2	3	Ⅰ Telescoping mode
Ⅱ	1	1	2	3	3	2		1	2	3	3	3	Ⅱ
Ⅲ	2	3	3	3	2	2		3	3	3	3	2	Ⅲ
Ⅳ	3	3	3	2	2	2		3	3	3	2	2	Ⅳ
Ⅴ	3	3	2	2	2	2		3	3	2	2	2	Ⅴ
Ⅵ	3	2	2	2	2	2		3	2	2	2	2	Ⅵ

Table 1-49 Rated capacity chart (with tip boom) Unit: ton

Outriggers fully extended to 8m, 23 t counterweight, over side or rear working area														
Radius (m)	Tip boom length: 3m; angle: 30°												Radius (m)	
	55.1	55.1	55.1	55.1 ★	59.7	59.7	59.7 ★		64.3	64.3 ★	68.9 ★	75.0 ★		
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	8.5	10.0	11.0	12.0	8.5	10.0	11.0						16.0	
18.0	7.5	9.0	10.0	11.0	8.0	9.0	10.0		8.0	9.0			18.0	
20.0	7.0	8.0	9.0	10.0	7.2	8.5	9.5		7.5	8.0	7.0		20.0	
22.0	6.3	7.4	8.5	9.5	6.5	7.5	8.5		7.0	7.5	7.0	5.5	22.0	
24.0	5.7	6.7	7.5	8.7	6.0	7.0	8.0		6.5	7.0	6.5	5.5	24.0	
26.0	5.2	6.1	7.0	7.2	5.5	6.5	7.4		6.0	6.5	6.0	5.5	26.0	
28.0	4.7	5.5	6.5	6.1	5.0	6.0	6.4		5.5	6.0	5.5	5.3	28.0	
30.0	4.3	5.1	5.7	5.1	4.7	5.5	5.4		5.0	5.5	5.0	4.9	30.0	
32.0	4.0	4.8	4.8	4.2	4.3	5.0	4.5		4.6	4.8	4.7	4.5	32.0	
34.0	3.7	4.4	4.1	3.5	4.0	4.4	3.8		4.3	4.0	4.4	4.2	34.0	
36.0	3.4	4.0	3.5	2.9	3.6	3.8	3.1		4.0	3.3	3.7	3.9	36.0	
38.0	3.1	3.6	2.9	2.3	3.3	3.2	2.5		3.6	2.8	3.2	3.3	38.0	
40.0	2.9	3.1	2.4	1.8	3.1	2.7	2.0		3.0	2.2	2.6	2.7	40.0	
42.0	2.6	2.6	1.9	1.3	2.8	2.2	1.5		2.6	1.9	2.2	2.3	42.0	
44.0	2.4	2.2	1.5		2.6	1.8	1.1		2.2	1.5	1.8	1.9	44.0	
46.0	2.2	1.8	1.1		2.2	1.4			1.8	1.1	1.4	1.5	46.0	
48.0	2.0	1.5			1.8	1.1			1.4		1.0	1.1	48.0	
50.0					1.5				1.1				50.0	
52.0													52.0	
54.0													54.0	
56.0													56.0	
58.0													58.0	
60.0													60.0	
Reeving	3								2				Reeving	
Hook	18t												Hook	
Telescoping mode Ⅰ	1	1	2	3	1	2	3		2	3	3	4	Ⅰ	Telescoping mode
Ⅱ	2	3	3	3	3	3	3		3	3	3	4	Ⅱ	
Ⅲ	3	3	3	3	3	3	3		3	3	3	4	Ⅲ	
Ⅳ	3	3	3	2	3	3	3		3	3	3	4	Ⅳ	
Ⅴ	3	3	2	2	3	3	2		3	3	3	4	Ⅴ	
Ⅵ	3	2	2	2	3	2	2		3	2	3	4	Ⅵ	

Table 1-50 Rated capacity chart (with tip boom)

Unit: ton

Outriggers fully extended to 8m, 18 t counterweight, over side or rear working area													
Radius (m)	Tip boom length: 3m; angle: 30°												Radius (m)
	13.7★	18.3	18.3	18.3	18.3	18.3 ★	22.9	22.9	22.9	22.9	22.9	22.9 ★	
3.0	18.0												3.0
3.5	16.0												3.5
4.0	16.0	16.0	16.0	16.0	16.0	16.0							4.0
4.5	16.0	16.0	16.0	16.0	16.0	16.0							4.5
5.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	5.0
6.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	6.0
7.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	7.0
8.0	15.5	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	8.0
9.0	15.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	9.0
10.0	14.5	15.5	15.5	15.5	15.5	15.5	16.0	16.0	16.0	16.0	16.0	16.0	10.0
11.0	14.0	15.0	15.0	15.0	15.0	15.0	16.0	16.0	16.0	16.0	16.0	16.0	11.0
12.0	13.5	14.5	14.5	14.5	14.5	14.5	16.0	15.0	16.0	16.0	16.0	16.0	12.0
14.0		14.0	14.0	14.0	14.0	14.0	15.5	13.0	15.5	15.5	15.5	15.5	14.0
16.0		13.5	13.5	13.5	13.5	13.5	15.0	12.0	15.0	15.0	15.0	14.0	16.0
18.0							14.0	11.0	13.5	13.0	12.0	11.0	18.0
20.0							12.0	10.0	11.0	10.5	9.5	8.5	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
Reeving	3												Reeving
Hook	18t												Hook
Telescoping mode Ⅰ	1	1	1	1	1	1	1	1	1	1	1	2	Ⅰ Telescoping mode
Ⅱ	1	1	1	1	1	2	1	1	1	1	2	2	Ⅱ
Ⅲ	1	1	1	1	2	1	1	1	1	2	2	1	Ⅲ
Ⅳ	1	1	1	2	1	1	1	1	2	2	1	1	Ⅳ
Ⅴ	1	1	2	1	1	1	1	2	2	1	1	1	Ⅴ
Ⅵ	1	2	1	1	1	1	3	2	1	1	1	1	Ⅵ

Table 1-51 Rated capacity chart (with tip boom)

Unit: ton

Outriggers fully extended to 8m, 18 t counterweight, over side or rear working area														
Radius (m)	Tip boom length: 3m; angle: 30°												Radius (m)	
	27.5	27.5	27.5	27.5	27.5	27.5 ★	32.1	32.1	32.1	32.1	32.1	32.1 ★		
3.0													3.0	
3.5													3.5	
4.0													4.0	
4.5													4.5	
5.0													5.0	
6.0													6.0	
7.0	14.0	14.0	16.0	16.0	16.0	16.0							7.0	
8.0	13.0	13.0	16.0	16.0	16.0	16.0	11.0	13.0	15.0	16.0	16.0	16.0	8.0	
9.0	12.0	12.0	16.0	16.0	16.0	16.0	10.0	12.0	13.0	16.0	16.0	16.0	9.0	
10.0	11.0	11.0	16.0	16.0	16.0	16.0	9.5	11.5	12.5	16.0	16.0	16.0	10.0	
11.0	10.0	10.0	16.0	16.0	16.0	16.0	9.0	11.0	12.0	16.0	16.0	16.0	11.0	
12.0	9.0	9.0	15.5	16.0	16.0	16.0	8.0	10.0	11.0	16.0	16.0	16.0	12.0	
14.0	8.0	8.0	15.0	16.0	16.0	15.5	7.5	9.0	10.0	15.0	16.0	15.5	14.0	
16.0	7.0	7.0	13.5	15.5	15.5	14.5	6.5	8.0	9.0	14.0	15.5	15.0	16.0	
18.0	6.5	6.5	12.0	13.5	12.5	11.5	6.0	7.5	8.0	13.0	13.4	12.0	18.0	
20.0	6.0	6.0	11.0	11.2	10.2	9.0	5.5	7.0	7.5	11.7	10.8	9.6	20.0	
22.0	5.5	5.5	10.0	9.3	8.3	7.1	5.0	6.4	7.0	10.0	9.0	7.8	22.0	
24.0	5.0	5.0	8.5	7.8	6.8	5.6	4.5	5.9	6.4	8.5	7.5	6.3	24.0	
26.0							4.2	5.5	5.8	7.2	6.2	5.0	26.0	
28.0							3.8	5.1	5.3	6.1	5.1	4.0	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	
Reevin	3												Reevin	
Hook	18t												Hook	
Telescoping mode Ⅰ	1	1	1	1	1	2	1	1	1	1	1	2	Ⅰ	Telescoping mode
Ⅱ	1	1	1	1	2	2	1	1	1	1	2	2	Ⅱ	
Ⅲ	1	1	1	2	2	2	1	1	1	2	2	2	Ⅲ	
Ⅳ	1	1	2	2	2	1	1	2	3	2	2	2	Ⅳ	
Ⅴ	2	3	2	2	1	1	3	3	2	2	2	1	Ⅴ	
Ⅵ	3	2	2	1	1	1	3	2	2	2	1	1	Ⅵ	

Table 1-52 Rated capacity chart (with tip boom)

Unit: ton

Outriggers fully extended to 8m, 18 t counterweight, over side or rear working area														
Radius (m)	Tip boom length: 3m; angle: 30°												Radius (m)	
	36.7	36.7	36.7	36.7	36.7	36.7 ★	41.3	41.3	41.3	41.3	41.3	41.3 ★		
3.0													3.0	
3.5													3.5	
4.0													4.0	
4.5													4.5	
5.0													5.0	
6.0													6.0	
7.0													7.0	
8.0													8.0	
9.0	11.0	13.0	15.0	16.0	16.0	16.0							9.0	
10.0	10.5	12.0	14.0	15.0	16.0	16.0	10.5	12.5	14.0	16.0	16.0	16.0	10.0	
11.0	9.5	11.0	13.0	14.0	16.0	16.0	10.0	12.0	13.0	16.0	16.0	16.0	11.0	
12.0	9.0	10.0	12.0	13.0	16.0	16.0	9.5	11.0	12.0	15.0	16.0	16.0	12.0	
14.0	8.0	9.0	11.0	11.0	16.0	16.0	8.3	9.5	10.5	13.0	15.0	16.0	14.0	
16.0	7.0	8.0	10.5	10.5	15.0	15.0	7.3	8.5	9.0	11.0	14.5	15.0	16.0	
18.0	6.5	7.0	9.5	9.5	14.0	12.5	6.5	8.0	8.5	10.5	13.0	13.5	18.0	
20.0	6.0	6.5	8.5	8.5	11.6	10.1	5.8	7.0	7.5	9.5	11.0	11.6	20.0	
22.0	5.4	5.7	7.7	7.7	9.7	8.2	5.3	6.4	6.6	9.0	9.5	9.1	22.0	
24.0	4.9	5.2	7.0	7.0	8.2	6.7	4.8	5.8	6.0	8.0	7.9	7.5	24.0	
26.0	4.5	4.8	6.5	6.5	6.9	5.6	4.3	5.3	5.5	6.9	6.7	6.3	26.0	
28.0	4.2	4.5	6.0	6.0	5.8	4.5	3.9	4.8	5.0	5.9	5.7	5.3	28.0	
30.0	3.9	4.2	5.4	5.2	5.0	3.7	3.6	4.4	4.6	5.0	4.8	4.4	30.0	
32.0	3.6	3.7	4.7	4.5	4.3	3.0	3.3	4.0	4.2	4.2	4.0	3.6	32.0	
34.0							3.0	3.7	3.9	3.6	3.4	3.0	34.0	
36.0							2.8	3.5	3.4	3.0	2.8	2.4	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	
Reeving	3												Reeving	
Hook	18t												Hook	
Telescoping mode Ⅰ	1	1	1	1	1	2	1	1	1	1	1	2	Ⅰ	Telescoping mode
Ⅱ	1	1	1	1	2	2	1	1	1	2	3	2	Ⅱ	
Ⅲ	1	1	2	3	2	2	1	2	3	3	2	2	Ⅲ	
Ⅳ	2	3	3	2	2	2	3	3	3	2	2	2	Ⅳ	
Ⅴ	3	3	2	2	2	2	3	3	2	2	2	2	Ⅴ	
Ⅵ	3	2	2	2	2	1	3	2	2	2	2	2	Ⅵ	

Table 1-53 Rated capacity chart (with tip boom)

Unit: ton

Outriggers fully extended to 8m, 18 t counterweight, over side or rear working area														
Radius (m)	Tip boom length: 3m; angle: 30°												Radius (m)	
	45.9	45.9	45.9	45.9	45.9	45.9 ★		50.5	50.5	50.5	50.5	50.5 ★		
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	9.5	11.0	13.0	14.0	16.0	16.0							12.0	
14.0	8.5	9.5	11.5	13.0	15.0	15.0		9.0	10.5	12.0	13.0	15.0	14.0	
16.0	7.5	8.5	10.0	12.0	14.0	14.0		8.0	9.5	11.0	12.0	14.0	16.0	
18.0	7.1	7.7	9.5	11.0	13.0	12.6		7.0	8.5	10.0	11.0	12.8	18.0	
20.0	6.4	6.9	8.4	10.0	10.9	10.5		6.0	7.5	9.0	10.5	10.4	20.0	
22.0	5.7	6.1	7.6	9.0	9.0	8.6		5.5	6.5	8.0	9.0	8.6	22.0	
24.0	5.2	5.5	7.0	8.0	7.4	7.0		5.0	6.0	7.4	7.6	7.0	24.0	
26.0	4.8	5.0	6.3	6.8	6.2	5.8		4.5	5.5	6.8	6.3	5.7	26.0	
28.0	4.3	4.5	5.8	5.7	5.1	4.8		4.2	5.0	5.9	5.2	4.6	28.0	
30.0	4.0	4.1	5.2	4.8	4.2	3.9		3.8	4.6	5.0	4.3	3.7	30.0	
32.0	3.6	3.7	4.4	4.0	3.5	3.2		3.5	4.3	4.2	3.6	3.0	32.0	
34.0	3.4	3.4	3.8	3.4	2.9	2.6		3.2	4.0	3.6	3.0	2.4	34.0	
36.0	3.1	3.1	3.2	2.8	2.3	2.0		2.9	3.5	3.0	2.4	1.8	36.0	
38.0	2.8	2.8	2.6	2.2	1.7	1.4		2.7	3.0	2.5	1.9	1.3	38.0	
40.0	2.6	2.6	2.2	1.8	1.3	1.0		2.4	2.5	2.0	1.4		40.0	
42.0								2.2	2.0	1.6	1.0		42.0	
44.0								2.0	1.7	1.3			44.0	
46.0													46.0	
48.0													48.0	
50.0													50.0	
Reeving	3												Reeving	
Hook	18t												Hook	
Telescoping mode Ⅰ	1	1	1	1	2	3		1	1	1	2	3	Ⅰ	Telescoping mode
Ⅱ	1	1	2	3	3	2		1	2	3	3	3	Ⅱ	
Ⅲ	2	3	3	3	2	2		3	3	3	3	2	Ⅲ	
Ⅳ	3	3	3	2	2	2		3	3	3	2	2	Ⅳ	
Ⅴ	3	3	2	2	2	2		3	3	2	2	2	Ⅴ	
Ⅵ	3	2	2	2	2	2		3	2	2	2	2	Ⅵ	

Table 1-54 Rated capacity chart (with tip boom)

Unit: ton

Outriggers fully extended to 8m, 18 t counterweight, over side or rear working area													
Radius (m)	Tip boom length: 3m; angle: 30°												Radius (m)
	55.1	55.1	55.1	55.1 ★	59.7	59.7	59.7 ★		64.3	64.3 ★	68.9 ★	75.0 ★	
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	8.5	10.0	11.0	12.0	8.5	10.0	11.0						16.0
18.0	7.5	9.0	10.0	11.0	8.0	9.0	10.0		8.0	9.0			18.0
20.0	7.0	8.0	9.0	10.0	7.2	8.5	9.5		7.5	8.0	7.0		20.0
22.0	6.3	7.4	8.5	8.6	6.5	7.5	8.5		7.0	7.5	7.0	5.5	22.0
24.0	5.7	6.7	7.5	7.2	6.0	7.0	7.5		6.5	7.0	6.5	5.5	24.0
26.0	5.2	6.1	6.5	5.9	5.5	6.5	6.2		6.0	6.5	6.0	5.5	26.0
28.0	4.7	5.5	5.5	4.9	5.0	5.8	5.1		5.5	5.5	5.5	5.3	28.0
30.0	4.3	5.1	4.6	4.0	4.7	4.9	4.2		5.0	4.6	5.0	4.9	30.0
32.0	4.0	4.6	3.8	3.2	4.3	4.1	3.4		4.5	3.8	4.2	4.3	32.0
34.0	3.7	3.9	3.1	2.5	4.0	3.5	2.8		3.8	3.1	3.5	3.6	34.0
36.0	3.4	3.3	2.6	2.0	3.6	2.9	2.2		3.2	2.5	2.9	3.0	36.0
38.0	3.1	2.8	2.1	1.5	3.1	2.4	1.7		2.7	2.0	2.4	2.5	38.0
40.0	2.8	2.3	1.6	1.0	2.6	1.9	1.2		2.2	1.5	1.9	2.0	40.0
42.0	2.4	1.9	1.2		2.2	1.5			1.8	1.1	1.4	1.5	42.0
44.0	2.0	1.5			1.8	1.1			1.4		1.0	1.1	44.0
46.0	1.7	1.2			1.5				1.1				46.0
48.0	1.4				1.2								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
Reeving	3								2				Reeving
Hook	18t												Hook
Telescoping mode Ⅰ	1	1	2	3	1	2	3		2	3	3	4	Ⅰ
Ⅱ	2	3	3	3	3	3	3		3	3	3	4	Ⅱ
Ⅲ	3	3	3	3	3	3	3		3	3	3	4	Ⅲ
Ⅳ	3	3	3	2	3	3	3		3	3	3	4	Ⅳ
Ⅴ	3	3	2	2	3	3	2		3	3	3	4	Ⅴ
Ⅵ	3	2	2	2	3	2	2		3	2	3	4	Ⅵ Telescoping mode

Table 1-55 Rated capacity chart (with tip boom)

Unit: ton

Outriggers fully extended to 8m, 13 t counterweight, over side or rear working area														
Radius (m)	Tip boom length: 3m; angle: 30°												Radius (m)	
	13.7 ★	18.3	18.3	18.3	18.3	18.3 ★	22.9	22.9	22.9	22.9	22.9	22.9 ★		
3.0	18.0												3.0	
3.5	16.0												3.5	
4.0	16.0	16.0	16.0	16.0	16.0	16.0							4.0	
4.5	16.0	16.0	16.0	16.0	16.0	16.0							4.5	
5.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	5.0	
6.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	6.0	
7.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	7.0	
8.0	15.5	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	8.0	
9.0	15.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	9.0	
10.0	14.5	15.5	15.5	15.5	15.5	15.5	16.0	16.0	16.0	16.0	16.0	16.0	10.0	
11.0	14.0	15.0	15.0	15.0	15.0	15.0	16.0	16.0	16.0	16.0	16.0	16.0	11.0	
12.0	13.5	14.5	14.5	14.5	14.5	14.5	16.0	15.0	16.0	16.0	16.0	16.0	12.0	
14.0		14.0	14.0	14.0	14.0	14.0	15.5	13.0	15.5	15.5	15.5	15.0	14.0	
16.0		13.5	13.5	13.5	13.0	12.5	15.0	12.0	14.0	13.5	12.7	11.7	16.0	
18.0							12.4	11.0	11.5	10.8	10.0	9.0	18.0	
20.0							10.2	9.7	9.4	8.7	7.9	6.8	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	
Reeving	3												Reeving	
Hook	18t												Hook	
Telescoping mode Ⅰ	1	1	1	1	1	1	1	1	1	1	1	2	Ⅰ	Telescoping mode
Ⅱ	1	1	1	1	1	2	1	1	1	1	2	2	Ⅱ	
Ⅲ	1	1	1	1	2	1	1	1	1	2	2	1	Ⅲ	
Ⅳ	1	1	1	2	1	1	1	1	2	2	1	1	Ⅳ	
Ⅴ	1	1	2	1	1	1	1	2	2	1	1	1	Ⅴ	
Ⅵ	1	2	1	1	1	1	3	2	1	1	1	1	Ⅵ	

Table 1-56 Rated capacity chart (with tip boom)

Unit: ton

Outriggers fully extended to 8m, 13 t counterweight, over side or rear working area													
Radius (m)	Tip boom length: 3m; angle: 30°												Radius (m)
	27.5	27.5	27.5	27.5	27.5	27.5 ★	32.1	32.1	32.1	32.1	32.1	32.1 ★	
3.0													3.0
3.5													3.5
4.0													4.0
4.5													4.5
5.0													5.0
6.0													6.0
7.0	14.0	14.0	16.0	16.0	16.0	16.0							7.0
8.0	13.0	13.0	16.0	16.0	16.0	16.0	11.0	13.0	15.0	16.0	16.0	16.0	8.0
9.0	12.0	12.0	16.0	16.0	16.0	16.0	10.0	12.0	13.0	16.0	16.0	16.0	9.0
10.0	11.0	11.0	16.0	16.0	16.0	16.0	9.5	11.5	12.5	16.0	16.0	16.0	10.0
11.0	10.0	10.0	16.0	16.0	16.0	16.0	9.0	11.0	12.0	16.0	16.0	16.0	11.0
12.0	9.0	9.0	15.5	16.0	16.0	16.0	8.0	10.0	11.0	16.0	16.0	16.0	12.0
14.0	8.0	8.0	15.0	15.5	15.5	15.5	7.5	9.0	10.0	15.0	15.5	15.5	14.0
16.0	7.0	7.0	13.5	14.5	13.5	12.0	6.5	8.0	9.0	14.0	14.0	12.8	16.0
18.0	6.5	6.5	12.0	11.5	10.5	9.4	6.0	7.5	8.0	12.0	11.0	9.8	18.0
20.0	6.0	6.0	10.0	9.4	8.4	7.3	5.5	7.0	7.5	10.0	9.0	7.8	20.0
22.0	5.5	5.5	8.4	7.7	6.8	5.6	5.0	6.4	7.0	8.4	7.4	6.2	22.0
24.0	5.0	5.0	7.0	6.3	5.5	4.2	4.5	5.9	6.4	7.0	6.0	4.8	24.0
26.0							4.2	5.5	5.8	5.9	4.9	3.7	26.0
28.0							3.8	5.1	5.2	5.0	4.0	2.8	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
Reeving	3												Reeving
Hook	18t												Hook
Telescoping mode Ⅰ	1	1	1	1	1	2	1	1	1	1	1	2	Ⅰ Telescoping mode
Ⅱ	1	1	1	1	2	2	1	1	1	1	2	2	Ⅱ
Ⅲ	1	1	1	2	2	2	1	1	1	2	2	2	Ⅲ
Ⅳ	1	1	2	2	2	1	1	2	3	2	2	2	Ⅳ
Ⅴ	2	3	2	2	1	1	3	3	2	2	2	1	Ⅴ
Ⅵ	3	2	2	1	1	1	3	2	2	2	1	1	Ⅵ

Table 1-57 Rated capacity chart (with tip boom)

Unit: ton

Outriggers fully extended to 8m, 13 t counterweight, over side or rear working area														
Radius (m)	Tip boom length: 3m; angle: 30°												Radius (m)	
	36.7	36.7	36.7	36.7	36.7	36.7 ★	41.3	41.3	41.3	41.3	41.3	41.3 ★		
3.0													3.0	
3.5													3.5	
4.0													4.0	
4.5													4.5	
5.0													5.0	
6.0													6.0	
7.0													7.0	
8.0													8.0	
9.0	11.0	13.0	15.0	16.0	16.0	16.0							9.0	
10.0	10.5	12.0	14.0	15.0	16.0	16.0	10.5	12.5	14.0	16.0	16.0	16.0	10.0	
11.0	9.5	11.0	13.0	14.0	16.0	16.0	10.0	12.0	13.0	16.0	16.0	16.0	11.0	
12.0	9.0	10.0	12.0	13.0	16.0	16.0	9.5	11.0	12.0	15.0	16.0	16.0	12.0	
14.0	8.0	9.0	11.0	11.0	16.0	15.5	8.3	9.5	10.5	13.0	15.0	15.5	14.0	
16.0	7.0	8.0	10.5	10.5	14.5	13.5	7.3	8.5	9.0	11.0	14.5	14.0	16.0	
18.0	6.5	7.0	9.5	9.5	12.0	10.5	6.5	8.0	8.5	10.5	11.8	11.3	18.0	
20.0	6.0	6.5	8.5	8.5	9.8	8.5	5.8	7.0	7.5	9.5	9.6	9.1	20.0	
22.0	5.4	5.7	7.7	7.7	8.1	6.8	5.3	6.4	6.6	8.1	7.9	7.4	22.0	
24.0	4.9	5.2	7.0	7.0	6.7	5.5	4.8	5.8	6.0	6.8	6.6	6.1	24.0	
26.0	4.5	4.8	6.1	5.9	5.6	4.4	4.3	5.3	5.5	5.6	5.4	5.0	26.0	
28.0	4.2	4.5	5.1	4.9	4.7	3.5	3.9	4.8	5.0	4.7	4.5	4.1	28.0	
30.0	3.9	4.2	4.3	4.1	3.9	2.7	3.6	4.4	4.3	3.9	3.7	3.3	30.0	
32.0	3.6	3.7	3.6	3.4	3.2	2.0	3.3	4.0	3.6	3.2	3.0	2.6	32.0	
34.0							3.0	3.4	3.0	2.6	2.4	2.0	34.0	
36.0							2.8	2.8	2.4	2.0	1.8	1.4	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	
Reeving	3												Reeving	
Hook	18t												Hook	
Telescoping mode Ⅰ	1	1	1	1	1	2	1	1	1	1	1	2	Ⅰ	Telescoping mode
Ⅱ	1	1	1	1	2	2	1	1	1	2	3	2	Ⅱ	
Ⅲ	1	1	2	3	2	2	1	2	3	3	2	2	Ⅲ	
Ⅳ	2	3	3	2	2	2	3	3	3	2	2	2	Ⅳ	
Ⅴ	3	3	2	2	2	2	3	3	2	2	2	2	Ⅴ	
Ⅵ	3	2	2	2	2	1	3	2	2	2	2	2	Ⅵ	

Table 1-58 Rated capacity chart (with tip boom)

Unit: ton

Outriggers fully extended to 8m, 13 t counterweight, over side or rear working area													
Radius (m)	Tip boom length: 3m; angle: 30°												Radius (m)
	45.9	45.9	45.9	45.9	45.9	45.9 ★		50.5	50.5	50.5	50.5	50.5 ★	
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	9.5	11.0	13.0	14.0	16.0	16.0							12.0
14.0	8.5	9.5	11.5	13.0	15.0	15.0		9.0	10.5	12.0	13.0	15.0	14.0
16.0	7.5	8.5	10.0	12.0	14.0	13.7		8.0	9.5	11.0	12.0	13.5	16.0
18.0	7.1	7.7	9.5	11.0	11.3	10.9		7.0	8.5	10.0	11.0	10.8	18.0
20.0	6.4	6.9	8.4	9.7	9.1	8.7		6.0	7.5	9.0	9.2	8.7	20.0
22.0	5.7	6.1	7.6	8.0	7.4	7.0		5.5	6.5	8.0	7.5	7.0	22.0
24.0	5.2	5.5	7.0	6.6	6.0	5.6		5.0	6.0	6.8	6.1	5.6	24.0
26.0	4.8	5.0	5.8	5.4	4.9	4.5		4.5	5.5	5.7	5.0	4.5	26.0
28.0	4.3	4.5	4.9	4.5	4.0	3.6		4.2	5.0	4.7	4.1	3.6	28.0
30.0	4.0	4.1	4.1	3.7	3.2	2.8		3.8	4.4	3.9	3.3	2.8	30.0
32.0	3.6	3.7	3.4	3.0	2.5	2.1		3.5	3.7	3.2	2.6	2.1	32.0
34.0	3.4	3.3	2.8	2.4	1.9	1.5		3.2	3.1	2.6	2.0	1.5	34.0
36.0	3.1	2.8	2.3	1.9	1.4	1.0		2.9	2.5	2.0	1.4		36.0
38.0	2.7	2.3	1.8	1.4				2.7	2.1	1.6	1.0		38.0
40.0	2.3	1.9	1.4	1.0				2.2	1.7	1.2			40.0
42.0								1.8	1.3				42.0
44.0								1.5	1.0				44.0
46.0													46.0
48.0													48.0
50.0													50.0
Reeving	3												Reeving
Hook	18t												Hook
Telescoping mode Ⅰ	1	1	1	1	2	3		1	1	1	2	3	Ⅰ Telescoping mode
Ⅱ	1	1	2	3	3	2		1	2	3	3	3	Ⅱ
Ⅲ	2	3	3	3	2	2		3	3	3	3	2	Ⅲ
Ⅳ	3	3	3	2	2	2		3	3	3	2	2	Ⅳ
Ⅴ	3	3	2	2	2	2		3	3	2	2	2	Ⅴ
Ⅵ	3	2	2	2	2	2		3	2	2	2	2	Ⅵ

Table 1-59 Rated capacity chart (with tip boom) Unit: ton

Outriggers fully extended to 8m, 13 t counterweight, over side or rear working area														
Radius (m)	Tip boom length: 3m; angle: 30°												Radius (m)	
	55.1	55.1	55.1	55.1 ★	59.7	59.7	59.7 ★		64.3	64.3 ★	68.9 ★	75.0 ★		
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	8.5	10.0	11.0	12.0	8.5	10.0	11.0						16.0	
18.0	7.5	9.0	10.0	11.0	8.0	9.0	10.0		8.0	9.0			18.0	
20.0	7.0	8.0	9.0	8.7	7.2	8.5	9.0		7.5	8.0	7.0		20.0	
22.0	6.3	7.4	7.6	7.1	6.5	7.5	7.3		7.0	7.5	6.5	5.5	22.0	
24.0	5.7	6.7	6.4	5.7	6.0	6.6	5.9		6.5	6.3	6.0	5.5	24.0	
26.0	5.2	6.0	5.2	4.5	5.5	5.6	4.9		5.9	5.1	5.4	5.0	26.0	
28.0	4.7	5.0	4.3	3.5	5.0	4.6	3.9		5.0	4.2	4.6	4.7	28.0	
30.0	4.3	4.2	3.5	2.8	4.6	3.8	3.1		4.2	3.4	3.7	3.8	30.0	
32.0	4.0	3.5	2.8	2.1	3.9	3.1	2.4		3.4	2.7	3.1	3.2	32.0	
34.0	3.4	2.9	2.2	1.5	3.2	2.5	1.8		2.8	2.1	2.5	2.6	34.0	
36.0	2.9	2.4	1.7	1.0	2.7	2.0	1.3		2.3	1.6	2.0	2.1	36.0	
38.0	2.4	1.9	1.2		2.2	1.5			1.8	1.1	1.5	1.6	38.0	
40.0	2.0	1.5			1.8	1.1			1.4		1.0	1.1	40.0	
42.0	1.6	1.1			1.4				1.0				42.0	
44.0	1.3				1.1								44.0	
46.0	1.0												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	
Reeving	3							2					Reeving	
Hook	18t												Hook	
Telescoping mode Ⅰ	1	1	2	3	1	2	3		2	3	3	4	Ⅰ	Telescoping mode
Ⅱ	2	3	3	3	3	3	3		3	3	3	4	Ⅱ	
Ⅲ	3	3	3	3	3	3	3		3	3	3	4	Ⅲ	
Ⅳ	3	3	3	2	3	3	3		3	3	3	4	Ⅳ	
Ⅴ	3	3	2	2	3	3	2		3	3	3	4	Ⅴ	
Ⅵ	3	2	2	2	3	2	2		3	2	3	4	Ⅵ	

Table 1-60 Rated capacity chart (with tip boom)

Unit: ton

Outriggers fully extended to 8m,2 t counterweight, over side or rear working area														
Radius (m)	Tip boom length: 3m; angle: 30°												Radius (m)	
	13.7 ★	18.3	18.3	18.3	18.3	18.3 ★	22.9	22.9	22.9	22.9	22.9	22.9 ★		
3.0	18.0												3.0	
3.5	16.0												3.5	
4.0	16.0	16.0	16.0	16.0	16.0	16.0							4.0	
4.5	16.0	16.0	16.0	16.0	16.0	16.0							4.5	
5.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	5.0	
6.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	6.0	
7.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	7.0	
8.0	15.5	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	8.0	
9.0	15.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	9.0	
10.0	14.5	15.5	15.5	15.5	15.5	15.5	16.0	16.0	16.0	16.0	16.0	16.0	10.0	
11.0	14.0	15.0	15.0	15.0	15.0	15.0	16.0	16.0	15.5	15.5	15.5	15.5	11.0	
12.0	13.5	14.5	14.5	14.5	14.5	14.5	15.5	15.0	15.0	15.0	15.0	13.8	12.0	
14.0		12.0	11.5	11.3	10.8	10.3	13.0	12.5	12.0	11.5	10.5	9.3	14.0	
16.0		9.0	8.5	8.3	7.8	7.3	10.0	9.5	9.0	8.5	7.8	6.6	16.0	
18.0							7.9	7.5	7.0	6.4	5.7	4.5	18.0	
20.0							6.2	6.0	5.4	4.8	4.0	2.8	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	
Reeving	3												Reeving	
Hook	18t												Hook	
Telescoping mode Ⅰ	1	1	1	1	1	1	1	1	1	1	1	2	Ⅰ	Telescoping mode
Ⅱ	1	1	1	1	1	2	1	1	1	1	2	2	Ⅱ	
Ⅲ	1	1	1	1	2	1	1	1	1	2	2	1	Ⅲ	
Ⅳ	1	1	1	2	1	1	1	1	2	2	1	1	Ⅳ	
Ⅴ	1	1	2	1	1	1	1	2	2	1	1	1	Ⅴ	
Ⅵ	1	2	1	1	1	1	3	2	1	1	1	1	Ⅵ	

Table 1-61 Rated capacity chart (with tip boom)

Unit: ton

Outriggers fully extended to 8m,2 t counterweight, over side or rear working area														
Radius (m)	Tip boom length: 3m; angle: 30°												Radius (m)	
	27.5	27.5	27.5	27.5	27.5	27.5 ★	32.1	32.1	32.1	32.1	32.1	32.1 ★		
3.0													3.0	
3.5													3.5	
4.0													4.0	
4.5													4.5	
5.0													5.0	
6.0													6.0	
7.0	14.0	14.0	16.0	16.0	16.0	16.0							7.0	
8.0	13.0	13.0	16.0	16.0	16.0	16.0	11.0	13.0	15.0	16.0	16.0	16.0	8.0	
9.0	12.0	12.0	16.0	16.0	16.0	16.0	10.0	12.0	13.0	16.0	16.0	16.0	9.0	
10.0	11.0	11.0	16.0	16.0	16.0	16.0	9.5	11.5	12.5	16.0	16.0	16.0	10.0	
11.0	10.0	10.0	16.0	16.0	15.5	15.5	9.0	11.0	12.0	16.0	15.5	15.5	11.0	
12.0	9.0	9.0	15.5	15.5	15.0	14.0	8.0	10.0	11.0	15.5	15.0	14.5	12.0	
14.0	8.0	8.0	13.0	12.0	11.0	10.0	7.5	9.0	10.0	13.0	12.0	10.5	14.0	
16.0	7.0	7.0	10.0	9.2	8.2	7.0	6.5	8.0	9.0	10.0	9.0	7.5	16.0	
18.0	6.5	6.5	7.9	7.1	6.1	4.9	6.0	7.5	8.0	7.8	6.8	5.5	18.0	
20.0	6.0	6.0	6.2	5.4	4.6	3.4	5.5	6.7	6.5	6.2	5.2	3.9	20.0	
22.0	5.4	5.2	5.0	4.2	3.4	2.2	5.0	5.4	5.2	4.9	4.0	2.7	22.0	
24.0	4.4	4.2	4.0	3.2	2.4	1.2	4.5	4.3	4.1	3.8	2.9	1.6	24.0	
26.0							3.9	3.5	3.3	3.0	2.1		26.0	
28.0							3.2	2.8	2.6	2.3	1.4		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	
Reeving	3												Reeving	
Hook	18t												Hook	
Telescoping mode Ⅰ	1	1	1	1	1	2	1	1	1	1	1	2	Ⅰ	Telescoping mode
Ⅱ	1	1	1	1	2	2	1	1	1	1	2	2	Ⅱ	
Ⅲ	1	1	1	2	2	2	1	1	1	2	2	2	Ⅲ	
Ⅳ	1	1	2	2	2	1	1	2	3	2	2	2	Ⅳ	
Ⅴ	2	3	2	2	1	1	3	3	2	2	2	1	Ⅴ	
Ⅵ	3	2	2	1	1	1	3	2	2	2	1	1	Ⅵ	

Table 1-62 Rated capacity chart (with tip boom)

Unit: ton

Outriggers fully extended to 8m,2 t counterweight, over side or rear working area														
Radius (m)	Tip boom length: 3m; angle: 30°												Radius (m)	
	36.7	36.7	36.7	36.7	36.7	36.7 ★	41.3	41.3	41.3	41.3	41.3	41.3 ★		
3.0													3.0	
3.5													3.5	
4.0													4.0	
4.5													4.5	
5.0													5.0	
6.0													6.0	
7.0													7.0	
8.0													8.0	
9.0	11.0	13.0	15.0	16.0	16.0	16.0							9.0	
10.0	10.5	12.0	14.0	15.0	16.0	16.0	10.5	12.5	14.0	16.0	16.0	16.0	10.0	
11.0	9.5	11.0	13.0	14.0	16.0	15.5	10.0	12.0	13.0	16.0	16.0	15.5	11.0	
12.0	9.0	10.0	12.0	13.0	15.5	15.0	9.5	11.0	12.0	15.0	15.5	15.0	12.0	
14.0	8.0	9.0	11.0	11.0	12.5	11.3	8.3	9.5	10.5	12.5	12.3	11.9	14.0	
16.0	7.0	8.0	10.0	9.8	9.5	8.3	7.3	8.5	9.0	9.6	9.4	9.0	16.0	
18.0	6.5	7.0	8.0	7.8	7.5	6.2	6.5	8.0	8.0	7.5	7.3	6.8	18.0	
20.0	6.0	6.5	6.3	6.1	5.8	4.5	5.8	6.7	6.3	5.8	5.6	5.1	20.0	
22.0	5.4	5.5	5.1	4.9	4.6	3.3	5.3	5.4	5.0	4.5	4.3	3.8	22.0	
24.0	4.8	4.5	4.1	3.9	3.6	2.3	4.8	4.4	4.0	3.5	3.3	2.8	24.0	
26.0	3.9	3.6	3.2	3.0	2.7	1.5	4.0	3.5	3.2	2.7	2.5	2.0	26.0	
28.0	3.2	2.9	2.5	2.3	2.0		3.3	2.8	2.5	2.0	1.8	1.3	28.0	
30.0	2.6	2.3	1.9	1.7	1.4		2.7	2.2	1.9	1.4	1.2		30.0	
32.0	2.1	1.8	1.4	1.2			2.2	1.7	1.4				32.0	
34.0							1.7	1.2					34.0	
36.0							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	
Reeving	3												Reeving	
Hook	18t												Hook	
Telescoping mode Ⅰ	1	1	1	1	1	2	1	1	1	1	1	2	Ⅰ	Telescoping mode
Ⅱ	1	1	1	1	2	2	1	1	1	2	3	2	Ⅱ	
Ⅲ	1	1	2	3	2	2	1	2	3	3	2	2	Ⅲ	
Ⅳ	2	3	3	2	2	2	3	3	3	2	2	2	Ⅳ	
Ⅴ	3	3	2	2	2	2	3	3	2	2	2	2	Ⅴ	
Ⅵ	3	2	2	2	2	1	3	2	2	2	2	2	Ⅵ	

Table 1-63 Rated capacity chart (with tip boom)

Unit: ton

Outriggers fully extended to 8m,2 t counterweight, over side or rear working area														
Radius (m)	Tip boom length: 3m; angle: 30°												Radius (m)	
	45.9	45.9	45.9	45.9	45.9	45.9 ★		50.5	50.5	50.5	50.5	50.5 ★		
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	9.5	11.0	13.0	14.0	16.0	15.5							12.0	
14.0	8.5	9.5	11.5	12.5	11.9	11.5		9.0	10.5	12.0	12.0	11.2	14.0	
16.0	7.5	8.5	10.0	9.5	8.9	8.5		8.0	9.5	9.5	9.0	8.4	16.0	
18.0	7.1	7.7	7.8	7.3	6.7	6.3		7.0	8.1	7.6	6.8	6.2	18.0	
20.0	6.4	6.7	6.1	5.7	5.1	4.7		6.0	6.4	5.9	5.2	4.6	20.0	
22.0	5.7	5.4	4.8	4.4	3.8	3.4		5.5	5.1	4.6	3.9	3.3	22.0	
24.0	4.8	4.3	3.8	3.4	2.8	2.4		4.7	4.1	3.6	2.9	2.3	24.0	
26.0	3.9	3.4	2.9	2.5	2.0	1.6		3.8	3.2	2.7	2.0	1.5	26.0	
28.0	3.2	2.7	2.2	1.8	1.3			3.1	2.5	2.0	1.3		28.0	
30.0	2.6	2.1	1.6	1.2				2.5	1.9	1.4			30.0	
32.0	2.1	1.6	1.1					2.0	1.4				32.0	
34.0	1.6	1.1						1.5					34.0	
36.0	1.2							1.1					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	
Reeving	3												Reeving	
Hook	18t												Hook	
Telescoping mode Ⅰ	1	1	1	1	2	3		1	1	1	2	3	Ⅰ	Telescoping mode
Ⅱ	1	1	2	3	3	2		1	2	3	3	3	Ⅱ	
Ⅲ	2	3	3	3	2	2		3	3	3	3	2	Ⅲ	
Ⅳ	3	3	3	2	2	2		3	3	3	2	2	Ⅳ	
Ⅴ	3	3	2	2	2	2		3	3	2	2	2	Ⅴ	
Ⅵ	3	2	2	2	2	2		3	2	2	2	2	Ⅵ	

Table 1-64 Rated capacity chart (with tip boom) Unit: ton

Outriggers fully extended to 8m, 2 t counterweight, over side or rear working area													
Radius (m)	Tip boom length: 3m; angle: 30°												Radius (m)
	55.1	55.1	55.1	55.1 ★	59.7	59.7	59.7 ★		64.3	64.3 ★	68.9 ★	75.0 ★	
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	8.5	10.0	9.0	8.5	8.5	9.5	8.5						16.0
18.0	7.5	8.0	7.0	6.4	8.0	7.4	6.7		7.5	7.0			18.0
20.0	6.8	6.3	5.4	4.8	6.6	5.8	5.1		6.1	5.5	5.5		20.0
22.0	5.5	5.0	4.1	3.5	5.3	4.5	3.8		4.7	4.1	4.6	4.5	22.0
24.0	4.4	3.9	3.1	2.5	4.3	3.5	2.7		3.8	3.1	3.5	3.6	24.0
26.0	3.6	3.1	2.3	1.7	3.4	2.6	1.8		3.0	2.3	2.6	2.7	26.0
28.0	2.8	2.3	1.5		2.7	1.9	1.1		2.2	1.5	1.9	2.0	28.0
30.0	2.2	1.7			2.1	1.3			1.6		1.2	1.3	30.0
32.0	1.7	1.2			1.5				1.1				32.0
34.0	1.3				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
Reeving	3								2				Reeving
Hook	18t												Hook
Telescoping mode Ⅰ	1	1	2	3	1	2	3		2	3	3	4	Ⅰ Telescoping mode
Ⅱ	2	3	3	3	3	3	3		3	3	3	4	Ⅱ
Ⅲ	3	3	3	3	3	3	3		3	3	3	4	Ⅲ
Ⅳ	3	3	3	2	3	3	3		3	3	3	4	Ⅳ
Ⅴ	3	3	2	2	3	3	2		3	3	3	4	Ⅴ
Ⅵ	3	2	2	2	3	2	2		3	2	3	4	Ⅵ

Table 1-65 Rated capacity chart (with boom only)

Unit: ton

Outriggers intermediately extended to 5.3m, 40 t full counterweight, over side or rear working area														
Radius (m)	Boom length (m)												Radius (m)	
	13.7 ★	18.3	18.3	18.3	18.3	18.3 ★	22.9	22.9	22.9	22.9	22.9	22.9 ★		
3.0	95.0	40.5	65.0	85.0	85.0	85.0							3.0	
3.5	90.0	38.5	60.0	82.0	82.0	82.0	28.0	42.0	60.0	73.0	76.0	76.0	3.5	
4.0	85.0	36.0	56.0	77.0	79.0	79.0	26.0	39.0	56.0	68.0	73.0	73.0	4.0	
4.5	80.0	34.5	52.0	72.0	77.0	77.0	24.5	37.0	52.0	63.0	70.0	70.0	4.5	
5.0	74.0	33.0	49.0	67.0	71.0	71.0	23.0	34.5	49.0	60.0	68.0	68.0	5.0	
6.0	60.0	31.0	43.0	58.0	63.0	63.0	21.0	31.0	43.0	56.0	63.0	63.0	6.0	
7.0	50.0	27.5	38.0	52.0	54.0	54.0	19.0	28.0	39.0	47.5	54.0	54.0	7.0	
8.0	40.0	25.5	35.0	45.0	45.0	45.0	17.0	25.0	35.0	43.0	45.0	44.0	8.0	
9.0	35.0	23.5	32.0	35.0	35.0	35.0	16.0	23.0	32.0	39.0	37.0	36.0	9.0	
10.0	30.0	22.0	29.0	30.0	30.0	30.0	15.0	21.0	29.5	32.0	31.0	30.0	10.0	
11.0		21.0	24.5	25.0	24.5	24.0	13.8	19.5	27.5	27.0	26.0	25.0	11.0	
12.0		20.0	19.5	20.0	19.5	19.0	13.0	18.5	25.0	23.5	22.5	21.5	12.0	
14.0		18.0	17.5	18.0	17.5	17.0	11.5	16.0	19.0	18.5	17.5	16.5	14.0	
16.0							10.3	14.5	15.0	14.5	13.5	12.5	16.0	
18.0							9.3	13.0	12.5	12.0	11.0	10.0	18.0	
Reeving	12	12					12						Reeving	
Hook	60t anchor hook												Hook	
Telescoping mode Ⅰ	1	1	1	1	1	1	1	1	1	1	1	2	Ⅰ	Telescoping mode
Ⅱ	1	1	1	1	1	2	1	1	1	1	2	2	Ⅱ	
Ⅲ	1	1	1	1	2	1	1	1	1	2	2	1	Ⅲ	
Ⅳ	1	1	1	2	1	1	1	1	2	2	1	1	Ⅳ	
Ⅴ	1	1	2	1	1	1	1	2	2	1	1	1	Ⅴ	
Ⅵ	1	2	1	1	1	1	3	2	1	1	1	1	Ⅵ	

Table 1-66 Rated capacity chart (with boom only)

Unit: ton

Outriggers intermediately extended to 5.3m,40 t full counterweight, over side or rear working area														
Radius (m)	Boom length (m)												Radius (m)	
	27.5	27.5	27.5	27.5	27.5	27.5 ★	32.1	32.1	32.1	32.1	32.1	32.1 ★		
3.0													3.0	
3.5													3.5	
4.0													4.0	
4.5	22.5	22.5	40.5	56.0	67.0	67.0							4.5	
5.0	21.5	21.5	38.5	52.0	64.0	64.0							5.0	
6.0	19.0	19.0	34.5	46.5	58.0	58.0	16.5	21.0	23.5	37.5	52.0	53.0	6.0	
7.0	17.4	17.4	31.5	42.0	52.0	52.0	15.0	19.0	21.0	34.0	48.0	50.0	7.0	
8.0	15.8	15.8	28.8	38.0	45.0	45.0	13.7	17.5	19.0	31.5	43.5	44.0	8.0	
9.0	14.5	14.5	26.5	34.5	36.0	36.0	12.6	16.2	17.6	29.5	39.0	37.5	9.0	
10.0	13.4	13.4	24.5	31.8	30.0	30.0	11.6	15.0	16.2	27.5	33.0	31.5	10.0	
11.0	12.4	12.4	23.0	29.4	27.0	26.0	10.7	14.0	15.0	25.5	28.0	27.0	11.0	
12.0	11.5	11.5	21.5	24.5	23.5	22.5	10.0	13.0	14.0	23.5	24.0	23.0	12.0	
14.0	10.3	10.1	19.0	19.0	18.0	17.0	8.8	11.6	12.2	20.0	19.0	18.0	14.0	
16.0	9.2	9.0	16.0	15.5	14.5	13.5	7.8	10.3	10.8	15.5	15.0	14.0	16.0	
18.0	8.3	8.1	13.5	12.5	11.5	10.5	7.0	9.4	9.6	13.0	12.5	11.5	18.0	
20.0	7.5	7.4	11.5	10.5	9.5	8.5	6.3	8.5	8.7	11.0	10.0	9.0	20.0	
22.0	6.8	6.7	10.0	9.0	8.0	7.0	5.7	7.8	7.9	9.5	8.5	7.5	22.0	
24.0							5.2	7.1	7.2	8.0	7.0	6.0	24.0	
26.0							4.8	6.5	6.6	7.0	6.0	5.0	26.0	
Reeving	11						9						Reeving	
Hook	60t anchor hook												Hook	
Telescoping mode Ⅰ	1	1	1	1	1	2	1	1	1	1	1	2	Ⅰ	Telescoping mode
Ⅱ	1	1	1	1	2	2	1	1	1	1	2	2	Ⅱ	
Ⅲ	1	1	1	2	2	2	1	1	1	2	2	2	Ⅲ	
Ⅳ	1	1	2	2	2	1	1	2	3	2	2	2	Ⅳ	
Ⅴ	2	3	2	2	1	1	3	3	2	2	2	1	Ⅴ	
Ⅵ	3	2	2	1	1	1	3	2	2	2	1	1	Ⅵ	

Table 1-67 Rated capacity chart (with boom only)

Unit: ton

Outriggers intermediately extended to 5.3m,40 t full counterweight, over side or rear working area														
Radius (m)	Boom length (m)												Radius (m)	
	36.7	36.7	36.7	36.7	36.7	36.7 ★	41.3	41.3	41.3	41.3	41.3	41.3 ★		
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	16.0	19.0	23.0	23.5	37.5	48.0							7.0	
8.0	15.0	17.1	21.0	21.5	35.0	45.0	15.0	18.0	19.5	23.5	30.0	37.0	8.0	
9.0	13.8	15.6	19.5	19.5	32.5	38.0	14.0	16.8	18.0	22.0	27.8	34.8	9.0	
10.0	12.8	14.4	18.0	18.0	30.5	32.0	12.8	15.4	16.5	20.3	25.7	32.0	10.0	
11.0	11.9	13.3	16.6	16.6	28.0	28.0	11.8	14.3	15.4	18.9	23.8	28.0	11.0	
12.0	11.2	12.3	15.5	15.5	25.0	24.0	11.0	13.3	14.2	17.6	22.0	24.0	12.0	
14.0	9.8	10.7	13.6	13.5	19.5	18.5	9.6	11.6	12.3	15.4	19.0	19.0	14.0	
16.0	8.8	9.5	12.0	11.8	16.0	15.0	8.4	10.3	10.8	13.7	16.0	15.5	16.0	
18.0	7.9	8.4	10.7	10.5	13.0	12.0	7.5	9.2	9.6	12.3	13.0	12.5	18.0	
20.0	7.2	7.6	9.6	9.5	11.0	10.0	6.7	8.3	8.6	11.0	11.0	10.5	20.0	
22.0	6.5	6.8	8.7	8.6	9.5	8.2	6.1	7.5	7.7	9.7	9.5	9.1	22.0	
24.0	6.0	6.2	7.9	7.8	8.2	6.9	5.5	6.8	7.0	8.3	8.1	7.7	24.0	
26.0	5.5	5.6	7.2	7.1	7.0	5.7	5.0	6.2	6.3	7.1	6.9	6.5	26.0	
28.0	5.1	5.2	6.5	6.5	6.1	4.8	4.6	5.7	5.8	6.1	5.9	5.5	28.0	
30.0	4.7	4.7	5.7	5.5	5.3	4.0	4.2	5.2	5.3	5.2	5.0	4.6	30.0	
32.0							3.9	4.8	4.9	4.5	4.3	3.9	32.0	
34.0							3.6	4.4	4.3	3.8	3.6	3.2	34.0	
Reeving	8						6						Reeving	
Hook	60t anchor hook												Hook	
Telescoping mode Ⅰ	1	1	1	1	1	2	1	1	1	1	1	2	Ⅰ	Telescoping mode
Ⅱ	1	1	1	1	2	2	1	1	1	2	3	2	Ⅱ	
Ⅲ	1	1	2	3	2	2	1	2	3	3	2	2	Ⅲ	
Ⅳ	2	3	3	2	2	2	3	3	3	2	2	2	Ⅳ	
Ⅴ	3	3	2	2	2	2	3	3	2	2	2	2	Ⅴ	
Ⅵ	3	2	2	2	2	1	3	2	2	2	2	2	Ⅵ	

Table 1-68 Rated capacity chart (with boom only)

Unit: ton

Outriggers intermediately extended to 5.3m,40 t full counterweight, over side or rear working area														
Radius (m)	Boom length (m)												Radius (m)	
	45.9	45.9	45.9	45.9	45.9	45.9 ★		50.5	50.5	50.5	50.5	50.5 ★		
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	14.5	16.0	19.5	23.0	27.0	27.5							9.0	
10.0	13.5	15.0	18.0	21.5	25.5	26.0							10.0	
11.0	12.6	13.8	16.8	20.0	24.0	24.5		12.5	14.5	17.0	20.0	21.5	11.0	
12.0	11.8	12.8	15.6	18.7	22.5	23.0		11.5	13.5	16.0	19.0	20.5	12.0	
14.0	10.3	11.0	13.6	16.5	19.0	19.0		10.2	12.0	14.0	17.0	18.0	14.0	
16.0	9.2	9.7	12.0	14.5	15.0	14.0		9.0	10.8	12.5	15.0	15.0	16.0	
18.0	8.2	8.6	10.7	13.0	12.5	12.0		8.0	9.6	11.3	13.0	12.5	18.0	
20.0	7.4	7.7	9.6	11.0	10.5	10.0		7.2	8.6	10.2	10.5	10.0	20.0	
22.0	6.7	6.9	8.7	9.5	9.0	8.5		6.4	7.7	9.2	9.0	8.5	22.0	
24.0	6.1	6.2	7.8	8.0	7.5	7.0		5.8	7.0	8.3	7.7	7.2	24.0	
26.0	5.5	5.6	7.1	7.0	6.3	6.1		5.3	6.4	7.1	6.5	6.0	26.0	
28.0	5.1	5.1	6.3	6.0	5.3	5.1		4.8	5.8	6.1	5.5	5.0	28.0	
30.0	4.7	4.7	5.5	5.2	4.5	4.3		4.4	5.3	5.3	4.7	4.2	30.0	
32.0	4.3	4.3	4.5	4.2	3.5	3.3		4.0	4.9	4.5	3.9	3.4	32.0	
34.0	4.0	3.9	4.0	3.7	3.0	2.8		3.7	4.5	3.9	3.3	2.8	34.0	
36.0	3.7	3.6	3.5	3.2	2.5	2.3		3.4	3.8	3.3	2.7	2.2	36.0	
38.0	3.5	3.3	3.0	2.7	2.0	1.8		3.1	3.3	2.8	2.2	1.7	38.0	
40.0								2.9	2.8	2.3	1.7	1.2	40.0	
42.0								2.7	2.5	2.0	1.4	1.0	42.0	
Reeving	5							4					Reeving	
Hook	60t anchor hook												Hook	
Telescoping mode Ⅰ	1	1	1	1	2	3		1	1	1	2	3	Ⅰ	Telescoping mode
Ⅱ	1	1	2	3	3	2		1	2	3	3	3	Ⅱ	
Ⅲ	2	3	3	3	2	2		3	3	3	3	2	Ⅲ	
Ⅳ	3	3	3	2	2	2		3	3	3	2	2	Ⅳ	
Ⅴ	3	3	2	2	2	2		3	3	2	2	2	Ⅴ	
Ⅵ	3	2	2	2	2	2		3	2	2	2	2	Ⅵ	

Table 1-69 Rated capacity chart (with boom only)

Unit: ton

Outriggers intermediately extended to 5.3m,40 t full counterweight, over side or rear working area														
Radius (m)	Boom length (m)												Radius (m)	
	55.1	55.1	55.1	55.1. ★	59.7	59.7	59.7 ★		64.3	64.3 ★	68.9 ★	75.0 ★		
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	12.5	14.0	16.5	18.0									12.0	
14.0	11.0	12.6	14.8	16.2	11.0	13.0	14.0						14.0	
16.0	9.8	11.2	13.2	14.7	10.0	11.5	12.6		10.0	11.0			16.0	
18.0	8.8	10.1	11.8	12.5	9.2	10.5	11.6		9.5	10.0	8.8		18.0	
20.0	8.0	9.1	10.7	10.5	8.4	9.5	10.6		8.7	9.2	8.2	6.8	20.0	
22.0	7.2	8.3	9.5	8.5	7.7	8.7	9.0		8.0	8.5	7.7	6.7	22.0	
24.0	6.5	7.6	8.0	7.4	7.0	8.0	7.7		7.4	7.9	7.2	6.6	24.0	
26.0	5.9	6.9	6.8	6.2	6.4	7.2	6.5		6.8	6.9	6.7	6.2	26.0	
28.0	5.4	6.3	5.8	5.2	5.9	6.2	5.5		6.3	5.8	6.3	5.8	28.0	
30.0	5.0	5.8	4.8	4.2	5.4	5.3	4.6		5.5	5.0	5.5	5.4	30.0	
32.0	4.6	5.0	4.1	3.5	5.0	4.5	3.8		4.9	4.2	4.7	4.8	32.0	
34.0	4.2	4.2	3.5	2.9	4.6	3.9	3.2		4.2	3.5	4.0	4.1	34.0	
36.0	3.9	3.7	3.0	2.4	4.1	3.3	2.6		3.6	2.9	3.4	3.5	36.0	
38.0	3.6	3.1	2.4	1.8	3.6	2.8	2.1		3.1	2.4	2.9	3.0	38.0	
40.0	3.3	2.8	2.1	1.5	3.1	2.3	1.6		2.7	2.0	2.4	2.5	40.0	
42.0	2.8	2.3	1.6	1.0	2.7	1.9	1.2		2.3	1.6	2.0	2.1	42.0	
44.0	2.4	1.9	1.2		2.3	1.5			1.9	1.2	1.6	1.7	44.0	
46.0									1.5		1.2	1.3	46.0	
48.0											0.9	1.0	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												1.0	62.0	
Reeving	3								3				Reeving	
Hook	60t anchor hook												Hook	
Telescoping mode Ⅰ	1	1	2	3	1	2	3		2	3	3	4	Ⅰ	Telescoping mode
Ⅱ	2	3	3	3	3	3	3		3	3	3	4	Ⅱ	
Ⅲ	3	3	3	3	3	3	3		3	3	3	4	Ⅲ	
Ⅳ	3	3	3	2	3	3	3		3	3	3	4	Ⅳ	
Ⅴ	3	3	2	2	3	3	2		3	3	3	4	Ⅴ	
Ⅵ	3	2	2	2	3	2	2		3	2	3	4	Ⅵ	

Table 1-70 Rated capacity chart (with boom only)

Unit: ton

Outriggers intermediately extended to 5.3m,27 t counterweight, over side or rear working area														
Radius (m)	Boom length (m)												Radius (m)	
	13.7★	18.3	18.3	18.3	18.3	18.3 ★	22.9	22.9	22.9	22.9	22.9	22.9 ★		
3.0	95.0	40.5	65.0	85.0	85.0	85.0							3.0	
3.5	90.0	38.5	60.0	82.0	82.0	82.0	28.0	42.0	60.0	73.0	76.0	76.0	3.5	
4.0	85.0	36.0	56.0	77.0	79.0	79.0	26.0	39.0	56.0	68.0	73.0	73.0	4.0	
4.5	77.0	34.5	52.0	72.0	76.5	76.5	24.5	37.0	52.0	63.0	70.0	70.0	4.5	
5.0	68.0	33.0	49.0	67.0	68.0	68.0	23.0	34.5	49.0	60.0	68.0	67.0	5.0	
6.0	55.0	31.0	43.0	58.0	56.0	56.0	21.0	31.0	43.0	56.0	56.0	56.0	6.0	
7.0	42.0	27.5	38.0	46.5	46.0	45.5	19.0	28.0	39.0	47.5	46.0	45.0	7.0	
8.0	32.0	25.5	34.0	37.0	36.5	36.0	17.0	25.0	35.0	37.0	36.0	35.0	8.0	
9.0	27.0	23.5	30.5	30.0	29.5	29.0	16.0	23.0	31.0	30.0	29.0	28.0	9.0	
10.0	22.0	22.0	25.5	25.0	24.5	24.0	15.0	21.0	26.0	25.0	24.0	23.0	10.0	
11.0		20.0	21.5	21.0	20.5	20.0	13.8	19.5	22.0	21.0	20.0	19.0	11.0	
12.0		19.0	18.5	18.0	17.5	17.0	13.0	18.0	19.0	18.0	17.0	16.0	12.0	
14.0		14.5	14.0	13.5	13.0	12.5	11.5	15.5	15.0	14.0	13.0	12.0	14.0	
16.0							10.3	12.5	12.0	11.0	10.0	9.0	16.0	
18.0							9.3	10.0	9.5	8.5	7.5	6.5	18.0	
Reeving	12	12					12						Reeving	
Hook	60t anchor hook												Hook	
Telescoping mode Ⅰ	1	1	1	1	1	1	1	1	1	1	1	2	Ⅰ	Telescoping mode
Ⅱ	1	1	1	1	1	2	1	1	1	1	2	2	Ⅱ	
Ⅲ	1	1	1	1	2	1	1	1	1	2	2	1	Ⅲ	
Ⅳ	1	1	1	2	1	1	1	1	2	2	1	1	Ⅳ	
Ⅴ	1	1	2	1	1	1	1	2	2	1	1	1	Ⅴ	
Ⅵ	1	2	1	1	1	1	3	2	1	1	1	1	Ⅵ	

Table 1-71 Rated capacity chart (with boom only)

Unit: ton

Outriggers intermediately extended to 5.3m,27 t counterweight, over side or rear working area														
Radius (m)	Boom length (m)												Radius (m)	
	27.5	27.5	27.5	27.5	27.5	27.5 ★	32.1	32.1	32.1	32.1	32.1	32.1 ★		
3.0													3.0	
3.5													3.5	
4.0													4.0	
4.5	22.5	22.5	40.5	56.0	67.0	67.0							4.5	
5.0	21.5	21.5	38.5	52.0	64.0	64.0							5.0	
6.0	19.0	19.0	34.5	46.5	57.0	56.0	16.5	21.0	23.5	37.5	52.0	52.0	6.0	
7.0	17.4	17.4	31.5	42.0	46.5	45.0	15.0	19.0	21.0	34.0	45.5	44.5	7.0	
8.0	15.8	15.8	28.8	37.0	37.0	35.5	13.7	17.5	19.0	31.5	37.0	36.0	8.0	
9.0	14.5	14.5	26.5	31.0	30.0	28.5	12.6	16.2	17.6	29.5	30.5	29.5	9.0	
10.0	13.4	13.4	24.5	26.5	25.5	24.0	11.6	15.0	16.2	27.5	25.5	24.5	10.0	
11.0	12.4	12.4	22.0	22.5	21.5	20.0	10.7	14.0	15.0	23.0	22.0	21.0	11.0	
12.0	11.5	11.5	20.0	19.5	18.5	17.0	10.0	13.0	14.0	20.0	19.0	18.0	12.0	
14.0	10.3	10.1	15.5	15.0	14.0	12.5	8.8	11.6	12.2	15.5	14.5	13.5	14.0	
16.0	9.2	9.0	12.5	12.0	11.0	9.5	7.8	10.3	10.8	12.5	11.5	10.5	16.0	
18.0	8.3	8.1	10.0	9.5	8.5	7.0	7.0	9.4	9.6	10.0	9.0	8.0	18.0	
20.0	7.5	7.4	8.5	8.0	7.0	5.5	6.3	8.5	8.5	8.5	7.5	6.5	20.0	
22.0	6.8	6.7	7.0	6.5	5.5	4.0	5.7	7.5	7.5	7.0	6.0	5.0	22.0	
24.0							5.2	6.5	6.3	6.0	5.0	3.8	24.0	
26.0							4.8	5.5	5.3	5.0	4.0	2.8	26.0	
Reeving	11						9						Reeving	
Hook	60t anchor hook												Hook	
Telescoping mode Ⅰ	1	1	1	1	1	2	1	1	1	1	1	2	Ⅰ	Telescoping mode
Ⅱ	1	1	1	1	2	2	1	1	1	1	2	2	Ⅱ	
Ⅲ	1	1	1	2	2	2	1	1	1	2	2	2	Ⅲ	
Ⅳ	1	1	2	2	2	1	1	2	3	2	2	2	Ⅳ	
Ⅴ	2	3	2	2	1	1	3	3	2	2	2	1	Ⅴ	
Ⅵ	3	2	2	1	1	1	3	2	2	2	1	1	Ⅵ	

Table 1-72 Rated capacity chart (with boom only)

Unit: ton

Outriggers intermediately extended to 5.3m,27 t counterweight, over side or rear working area														
Radius (m)	Boom length (m)												Radius (m)	
	36.7	36.7	36.7	36.7	36.7	36.7 ★	41.3	41.3	41.3	41.3	41.3	41.3 ★		
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	16.0	19.0	23.0	23.5	37.5	44.0							7.0	
8.0	15.0	17.1	21.0	21.5	35.0	36.0	15.0	18.0	19.5	23.5	30.0	36.0	8.0	
9.0	13.8	15.6	19.5	19.5	32.5	30.0	14.0	16.8	18.0	22.0	27.8	31.0	9.0	
10.0	12.8	14.4	18.0	18.0	27.0	25.5	12.8	15.4	16.5	20.3	25.0	26.5	10.0	
11.0	11.9	13.3	16.6	16.6	23.0	21.5	11.8	14.3	15.4	18.9	23.0	22.5	11.0	
12.0	11.2	12.3	15.5	15.5	20.0	18.5	11.0	13.3	14.2	17.6	20.0	19.5	12.0	
14.0	9.8	10.7	13.6	13.5	15.5	14.0	9.6	11.6	12.3	15.0	15.0	14.5	14.0	
16.0	8.8	9.5	12.0	11.8	12.5	11.0	8.4	10.3	10.8	12.5	12.0	11.5	16.0	
18.0	7.9	8.4	10.5	10.2	10.0	8.5	7.5	9.2	9.6	10.0	9.5	9.0	18.0	
20.0	7.2	7.6	9.0	8.7	8.4	7.1	6.7	8.3	8.6	8.5	8.0	7.5	20.0	
22.0	6.5	6.8	7.5	7.3	7.0	5.7	6.1	7.5	7.5	7.0	6.8	6.3	22.0	
24.0	6.0	6.2	6.3	6.1	5.8	4.5	5.5	6.5	6.3	5.9	5.7	5.2	24.0	
26.0	5.5	5.4	5.3	5.1	4.8	3.5	5.0	5.7	5.3	4.9	4.7	4.2	26.0	
28.0	5.1	4.9	4.5	4.3	4.0	2.7	4.6	4.9	4.5	4.1	3.9	3.4	28.0	
30.0	4.7	4.2	3.8	3.6	3.3	2.0	4.2	4.1	3.7	3.3	3.1	2.6	30.0	
32.0							3.9	3.5	3.1	2.7	2.5	2.0	32.0	
34.0							3.6	3.0	2.6	2.2	2.0	1.5	34.0	
Reeving	8						6						Reeving	
Hook	60t anchor hook												Hook	
Telescoping mode Ⅰ	1	1	1	1	1	2	1	1	1	1	1	2	Ⅰ	Telescoping mode
Ⅱ	1	1	1	1	2	2	1	1	1	2	3	2	Ⅱ	
Ⅲ	1	1	2	3	2	2	1	2	3	3	2	2	Ⅲ	
Ⅳ	2	3	3	2	2	2	3	3	3	2	2	2	Ⅳ	
Ⅴ	3	3	2	2	2	2	3	3	2	2	2	2	Ⅴ	
Ⅵ	3	2	2	2	2	1	3	2	2	2	2	2	Ⅵ	

Table 1-73 Rated capacity chart (with boom only)

Unit: ton

Outriggers intermediately extended to 5.3m,27 t counterweight, over side or rear working area														
Radius (m)	Boom length (m)												Radius (m)	
	45.9	45.9	45.9	45.9	45.9	45.9 ★		50.5	50.5	50.5	50.5	50.5 ★		
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	14.5	16.0	19.5	23.0	27.0	27.0							9.0	
10.0	13.5	15.0	18.0	21.5	25.0	25.5							10.0	
11.0	12.6	13.8	16.8	20.0	22.0	22.0		12.5	14.5	17.0	20.0	21.5	11.0	
12.0	11.8	12.8	15.6	18.0	19.0	18.5		11.5	13.5	16.0	19.0	19.0	12.0	
14.0	10.3	11.0	13.6	15.5	15.0	14.5		10.2	12.0	14.0	15.0	14.5	14.0	
16.0	9.2	9.7	12.0	12.0	11.5	11.0		9.0	10.8	12.5	12.0	11.5	16.0	
18.0	8.2	8.6	10.5	10.0	9.5	9.2		8.0	9.6	10.0	9.5	9.0	18.0	
20.0	7.4	7.7	8.7	8.3	7.7	7.4		7.2	8.6	8.5	8.0	7.4	20.0	
22.0	6.7	6.9	7.3	6.9	6.3	6.0		6.4	7.5	7.0	6.5	5.9	22.0	
24.0	6.1	6.2	6.1	5.7	5.1	4.8		5.8	6.5	6.0	5.3	4.8	24.0	
26.0	5.5	5.5	5.1	4.7	4.1	3.8		5.3	5.5	5.0	4.3	3.8	26.0	
28.0	5.1	4.8	4.3	3.9	3.3	3.0		4.8	4.7	4.2	3.5	3.0	28.0	
30.0	4.5	4.0	3.5	3.1	2.5	2.2		4.4	4.0	3.5	2.8	2.3	30.0	
32.0	3.9	3.5	3.0	2.6	2.0	1.7		3.8	3.3	2.8	2.1	1.6	32.0	
34.0	3.4	3.0	2.5	2.1	1.5	1.2		3.4	2.8	2.3	1.6	1.1	34.0	
36.0	2.9	2.5	2.0	1.6	1.0			2.9	2.3	1.8	1.1		36.0	
38.0	2.5	2.1	1.6	1.2				2.5	1.9	1.4			38.0	
40.0								2.1	1.5	1.0			40.0	
42.0								1.7	1.1				42.0	
Reeving	5							4					Reeving	
Hook	60t anchor hook												Hook	
Telescoping mode Ⅰ	1	1	1	1	2	3		1	1	1	2	3	Ⅰ	Telescoping mode
Ⅱ	1	1	2	3	3	2		1	2	3	3	3	Ⅱ	
Ⅲ	2	3	3	3	2	2		3	3	3	3	2	Ⅲ	
Ⅳ	3	3	3	2	2	2		3	3	3	2	2	Ⅳ	
Ⅴ	3	3	2	2	2	2		3	3	2	2	2	Ⅴ	
Ⅵ	3	2	2	2	2	2		3	2	2	2	2	Ⅵ	

Table 1-74 Rated capacity chart (with boom only)

Unit: ton

Outriggers intermediately extended to 5.3m,27 t counterweight, over side or rear working area													
Radius (m)	Boom length (m)												Radius (m)
	55.1	55.1	55.1	55.1. ★	59.7	59.7	59.7 ★		64.3	64.3 ★	68.9 ★	75.0 ★	
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	12.5	14.0	16.5	18.0									12.0
14.0	11.0	12.6	14.8	15.0	11.0	13.0	14.0						14.0
16.0	9.8	11.2	12.5	11.5	10.0	11.5	12.0		10.0	11.0			16.0
18.0	8.8	10.1	10.0	9.4	9.2	10.5	9.5		9.5	10.0	8.8		18.0
20.0	8.0	9.1	8.2	7.6	8.4	8.6	7.9		8.7	8.3	8.2	6.8	20.0
22.0	7.2	7.4	6.7	6.1	7.5	7.1	6.4		7.5	6.8	7.4	6.7	22.0
24.0	6.5	6.2	5.5	4.9	6.7	5.9	5.2		6.3	5.6	6.0	6.1	24.0
26.0	5.9	5.2	4.5	3.9	5.7	4.9	4.2		5.3	4.6	5.0	5.1	26.0
28.0	4.9	4.4	3.7	3.1	4.9	4.1	3.4		4.4	3.7	4.1	4.2	28.0
30.0	4.2	3.7	3.0	2.4	4.2	3.4	2.7		3.7	3.0	3.4	3.5	30.0
32.0	3.6	3.1	2.4	1.8	3.5	2.7	2.0		3.1	2.4	2.8	2.9	32.0
34.0	3.1	2.6	1.9	1.3	3.0	2.2	1.5		2.5	1.8	2.2	2.3	34.0
36.0	2.6	2.1	1.4		2.5	1.7	1.0		2.1	1.4	1.8	1.9	36.0
38.0	2.2	1.7	1.0		2.1	1.3			1.6	1.0	1.4	1.5	38.0
40.0	1.9	1.4			1.7				1.3			1.0	40.0
42.0	1.5	1.0			1.3								42.0
44.0	1.2				1.0								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												1.0	62.0
Reeving	3								3				Reeving
Hook	60t anchor hook												Hook
Telescoping mode Ⅰ	1	1	2	3	1	2	3		2	3	3	4	Ⅰ Telescoping mode
Ⅱ	2	3	3	3	3	3	3		3	3	3	4	Ⅱ
Ⅲ	3	3	3	3	3	3	3		3	3	3	4	Ⅲ
Ⅳ	3	3	3	2	3	3	3		3	3	3	4	Ⅳ
Ⅴ	3	3	2	2	3	3	2		3	3	3	4	Ⅴ
Ⅵ	3	2	2	2	3	2	2		3	2	3	4	Ⅵ

Table 1-75 Rated capacity chart (with boom only)

Unit: ton

Outriggers intermediately extended to 5.3m,23 t counterweight, over side or rear working area														
Radius (m)	Boom length (m)												Radius (m)	
	13.7 ★	18.3	18.3	18.3	18.3	18.3 ★	22.9	22.9	22.9	22.9	22.9	22.9 ★		
3.0	95.0	40.5	65.0	85.0	85.0	85.0							3.0	
3.5	90.0	38.5	60.0	82.0	82.0	82.0	28.0	42.0	60.0	73.0	76.0	76.0	3.5	
4.0	85.0	36.0	56.0	77.0	79.0	79.0	26.0	39.0	56.0	68.0	73.0	73.0	4.0	
4.5	75.0	34.5	52.0	72.0	75.0	75.0	24.5	37.0	52.0	63.0	70.0	70.0	4.5	
5.0	66.0	33.0	49.0	67.0	66.0	66.0	23.0	34.5	49.0	60.0	66.0	66.0	5.0	
6.0	53.0	30.2	43.0	53.0	53.0	53.0	21.0	31.0	43.0	53.0	53.0	53.0	6.0	
7.0	40.0	27.5	38.0	43.0	42.0	41.5	19.0	28.0	39.0	43.0	42.0	40.0	7.0	
8.0	30.0	25.5	34.0	34.0	33.0	32.5	17.0	25.0	35.0	34.5	33.5	31.5	8.0	
9.0	26.0	23.5	28.0	27.5	27.0	26.5	16.0	23.0	29.0	28.0	27.0	25.0	9.0	
10.0	21.0	22.0	23.0	22.5	22.0	21.5	15.0	21.0	24.0	23.0	22.0	20.0	10.0	
11.0		20.0	19.5	19.0	18.5	18.0	13.8	19.5	20.5	19.5	18.5	17.0	11.0	
12.0		17.5	17.0	16.5	16.0	15.5	13.0	18.0	17.8	17.0	16.0	14.5	12.0	
14.0		13.0	12.5	12.0	11.5	11.0	11.5	14.0	13.5	12.7	11.7	10.4	14.0	
16.0							10.3	11.0	10.5	9.7	9.0	8.7	16.0	
18.0							9.3	9.1	8.6	7.8	7.1	5.8	18.0	
Reeving	12	12					12						Reeving	
Hook	60t anchor hook												Hook	
Telescoping mode Ⅰ	1	1	1	1	1	1	1	1	1	1	1	2	Ⅰ	Telescoping mode
Ⅱ	1	1	1	1	1	2	1	1	1	1	2	2	Ⅱ	
Ⅲ	1	1	1	1	2	1	1	1	1	2	2	1	Ⅲ	
Ⅳ	1	1	1	2	1	1	1	1	2	2	1	1	Ⅳ	
Ⅴ	1	1	2	1	1	1	1	2	2	1	1	1	Ⅴ	
Ⅵ	1	2	1	1	1	1	3	2	1	1	1	1	Ⅵ	

Table 1-76 Rated capacity chart (with boom only)

Unit: ton

Outriggers intermediately extended to 5.3m,23 t counterweight, over side or rear working area														
Radius (m)	Boom length (m)												Radius (m)	
	27.5	27.5	27.5	27.5	27.5	27.5 ★	32.1	32.1	32.1	32.1	32.1	32.1 ★		
3.0													3.0	
3.5													3.5	
4.0													4.0	
4.5	22.5	22.5	40.5	56.0	67.0	67.0							4.5	
5.0	21.5	21.5	38.5	52.0	64.0	64.0							5.0	
6.0	19.0	19.0	34.5	46.5	54.5	52.5	16.5	21.0	23.5	37.5	52.0	50.5	6.0	
7.0	17.4	17.4	31.5	42.0	43.0	41.0	15.0	19.0	21.0	34.0	42.0	40.5	7.0	
8.0	15.8	15.8	28.8	35.0	34.0	32.0	13.7	17.5	19.0	31.5	34.0	32.5	8.0	
9.0	14.5	14.5	26.5	29.0	28.0	26.0	12.6	16.2	17.6	29.5	28.5	27.0	9.0	
10.0	13.4	13.4	24.5	24.0	23.0	21.5	11.6	15.0	16.2	25.0	24.0	22.5	10.0	
11.0	12.4	12.4	21.5	20.5	19.5	18.0	10.7	14.0	15.0	21.5	20.5	19.0	11.0	
12.0	11.5	11.5	18.5	17.5	16.5	15.0	10.0	13.0	14.0	18.8	17.8	16.3	12.0	
14.0	10.3	10.1	14.5	13.5	12.5	11.0	8.8	11.6	12.2	14.5	13.5	12.1	14.0	
16.0	9.2	9.0	11.5	10.5	9.5	8.3	7.8	10.3	10.8	11.5	10.5	9.1	16.0	
18.0	8.3	8.1	9.5	8.5	7.5	6.3	7.0	9.4	9.6	9.5	8.5	7.1	18.0	
20.0	7.5	7.4	7.8	7.0	6.0	4.8	6.3	8.4	8.0	7.7	6.7	5.3	20.0	
22.0	6.8	6.7	6.5	5.7	4.7	3.5	5.7	7.0	6.8	6.5	5.5	4.1	22.0	
24.0							5.2	5.9	5.7	5.4	4.5	3.1	24.0	
26.0							4.8	5.0	4.8	4.5	3.6	2.2	26.0	
Reeving	11						9						Reeving	
Hook	60t anchor hook												Hook	
Telescoping mode Ⅰ	1	1	1	1	1	2	1	1	1	1	1	2	Ⅰ	Telescoping mode
Ⅱ	1	1	1	1	2	2	1	1	1	1	2	2	Ⅱ	
Ⅲ	1	1	1	2	2	2	1	1	1	2	2	2	Ⅲ	
Ⅳ	1	1	2	2	2	1	1	2	3	2	2	2	Ⅳ	
Ⅴ	2	3	2	2	1	1	3	3	2	2	2	1	Ⅴ	
Ⅵ	3	2	2	1	1	1	3	2	2	2	1	1	Ⅵ	

Table 1-77 Rated capacity chart (with boom only)

Unit: ton

Outriggers intermediately extended to 5.3m,23 t counterweight, over side or rear working area														
Radius (m)	Boom length (m)												Radius (m)	
	36.7	36.7	36.7	36.7	36.7	36.7 ★	41.3	41.3	41.3	41.3	41.3	41.3 ★		
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	16.0	19.0	23.0	23.5	37.5	40.5							7.0	
8.0	15.0	17.1	21.0	21.5	35.0	33.0	15.0	18.0	19.5	23.5	30.0	34.0	8.0	
9.0	13.8	15.6	19.5	19.5	29.5	28.0	14.0	16.8	18.0	22.0	27.8	28.5	9.0	
10.0	12.8	14.4	18.0	18.0	25.0	23.5	12.8	15.4	16.5	20.3	25.0	24.5	10.0	
11.0	11.9	13.3	16.6	16.6	21.5	20.0	11.8	14.3	15.4	18.9	21.3	20.8	11.0	
12.0	11.2	12.3	15.5	15.5	18.5	17.0	11.0	13.3	14.2	17.6	18.5	18.0	12.0	
14.0	9.8	10.7	13.6	13.5	14.0	12.5	9.6	11.6	12.3	14.0	13.7	13.2	14.0	
16.0	8.8	9.5	12.0	11.8	11.5	10.0	8.4	10.3	10.8	11.5	11.2	10.7	16.0	
18.0	7.9	8.4	9.5	9.3	9.0	7.7	7.5	9.2	9.6	9.2	9.0	8.5	18.0	
20.0	7.2	7.6	8.0	7.8	7.5	6.2	6.7	8.3	8.0	7.5	7.3	6.8	20.0	
22.0	6.5	6.8	6.7	6.5	6.2	4.9	6.1	7.1	6.7	6.2	6.0	5.5	22.0	
24.0	6.0	6.0	5.6	5.4	5.1	3.8	5.5	6.0	5.6	5.1	4.9	4.4	24.0	
26.0	5.5	5.1	4.7	4.5	4.2	2.9	5.0	5.1	4.7	4.2	4.0	3.5	26.0	
28.0	4.7	4.4	4.0	3.8	3.5	2.2	4.6	4.3	3.9	3.4	3.2	2.8	28.0	
30.0	4.0	3.7	3.3	3.1	2.8	1.5	4.1	3.6	3.2	2.7	2.5	2.1	30.0	
32.0							3.6	3.1	2.7	2.2	2.0	1.6	32.0	
34.0							3.1	2.6	2.2	1.7	1.5	1.1	34.0	
Reeving	8						6						Reeving	
Hook	60t anchor hook												Hook	
Telescoping mode Ⅰ	1	1	1	1	1	2	1	1	1	1	1	2	Ⅰ	Telescoping mode
Ⅱ	1	1	1	1	2	2	1	1	1	2	3	2	Ⅱ	
Ⅲ	1	1	2	3	2	2	1	2	3	3	2	2	Ⅲ	
Ⅳ	2	3	3	2	2	2	3	3	3	2	2	2	Ⅳ	
Ⅴ	3	3	2	2	2	2	3	3	2	2	2	2	Ⅴ	
Ⅵ	3	2	2	2	2	1	3	2	2	2	2	2	Ⅵ	

Table 1-78 Rated capacity chart (with boom only)

Unit: ton

Outriggers intermediately extended to 5.3m,23 t counterweight, over side or rear working area														
Radius (m)	Boom length (m)												Radius (m)	
	45.9	45.9	45.9	45.9	45.9	45.9 ★		50.5	50.5	50.5	50.5	50.5 ★		
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	14.5	16.0	19.5	23.0	27.0	27.0							9.0	
10.0	13.5	15.0	18.0	21.5	23.5	23.0							10.0	
11.0	12.6	13.8	16.8	20.0	20.5	20.1		12.5	14.5	17.0	20.0	19.5	11.0	
12.0	11.8	12.8	15.6	18.0	17.3	16.9		11.5	13.5	16.0	18.0	17.4	12.0	
14.0	10.3	11.0	13.6	14.3	13.6	13.2		10.2	12.0	14.0	13.7	13.1	14.0	
16.0	9.2	9.7	11.5	11.6	10.4	10.0		9.0	10.8	11.5	10.8	10.2	16.0	
18.0	8.2	8.6	9.5	9.1	8.4	8.0		8.0	9.6	9.3	8.6	8.0	18.0	
20.0	7.4	7.7	7.8	7.4	6.7	6.3		7.2	8.1	7.6	6.9	6.3	20.0	
22.0	6.7	6.9	6.4	6.0	5.4	5.0		6.4	6.8	6.3	5.6	5.1	22.0	
24.0	6.1	5.9	5.3	4.9	4.3	3.9		5.8	5.6	5.1	4.4	3.9	24.0	
26.0	5.5	5.0	4.4	4.0	3.4	3.0		5.3	4.7	4.2	3.5	3.0	26.0	
28.0	4.6	4.2	3.6	3.2	2.6	2.2		4.6	4.0	3.5	2.8	2.3	28.0	
30.0	4.0	3.6	3.0	2.6	2.0	1.6		3.9	3.3	2.8	2.1	1.6	30.0	
32.0	3.4	3.0	2.5	2.1	1.5	1.1		3.3	2.7	2.2	1.5	1.0	32.0	
34.0	2.9	2.5	2.0	1.6	1.0			2.8	2.2	1.7	1.0		34.0	
36.0	2.4	2.0	1.5	1.1				2.4	1.8	1.3			36.0	
38.0	2.0	1.6	1.1					2.0	1.4				38.0	
40.0								1.6	1.0				40.0	
42.0								1.3					42.0	
Reeving	5							4					Reeving	
Hook	60t anchor hook												Hook	
Telescoping mode Ⅰ	1	1	1	1	2	3		1	1	1	2	3	Ⅰ	Telescoping mode
Ⅱ	1	1	2	3	3	2		1	2	3	3	3	Ⅱ	
Ⅲ	2	3	3	3	2	2		3	3	3	3	2	Ⅲ	
Ⅳ	3	3	3	2	2	2		3	3	3	2	2	Ⅳ	
Ⅴ	3	3	2	2	2	2		3	3	2	2	2	Ⅴ	
Ⅵ	3	2	2	2	2	2		3	2	2	2	2	Ⅵ	

Table 1-79 Rated capacity chart (with boom only)

Unit: ton

Outriggers intermediately extended to 5.3m,23 t counterweight, over side or rear working area														
Radius (m)	Boom length (m)												Radius (m)	
	55.1	55.1	55.1	55.1. ★	59.7	59.7	59.7 ★		64.3	64.3 ★	68.9 ★	75.0 ★		
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	12.5	14.0	16.5	17.0									12.0	
14.0	11.0	12.6	14.0	13.3	11.0	13.0	13.0						14.0	
16.0	9.8	11.2	11.0	10.3	10.0	11.5	10.5		10.0	10.0			16.0	
18.0	8.8	9.6	8.9	8.2	9.2	9.3	8.6		9.0	8.3	8.8		18.0	
20.0	8.0	8.0	7.3	6.6	8.4	7.5	6.8		7.8	7.1	7.5	6.5	20.0	
22.0	7.2	6.6	5.9	5.2	7.0	6.2	5.5		6.5	5.8	6.2	6.3	22.0	
24.0	6.1	5.5	4.8	4.1	5.9	5.1	4.4		5.5	4.8	5.1	5.2	24.0	
26.0	5.1	4.5	3.8	3.2	4.9	4.1	3.4		4.5	3.8	4.2	4.3	26.0	
28.0	4.3	3.7	3.0	2.4	4.1	3.3	2.6		3.7	3.0	3.4	3.5	28.0	
30.0	3.7	3.1	2.4	1.8	3.5	2.7	2.0		3.1	2.3	2.7	2.8	30.0	
32.0	3.1	2.5	1.8	1.2	2.9	2.1	1.4		2.5	1.7	2.1	2.2	32.0	
34.0	2.6	2.0	1.3		2.4	1.6			2.0	1.2	1.6	1.7	34.0	
36.0	2.1	1.6			1.9	1.1			1.5		1.2	1.3	36.0	
38.0	1.7	1.2			1.5				1.1				38.0	
40.0	1.4				1.2								40.0	
42.0	1.1												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												1.0	62.0	
Reeving	3								3				Reeving	
Hook	60t anchor hook												Hook	
Telescoping mode Ⅰ	1	1	2	3	1	2	3		2	3	3	4	Ⅰ	Telescoping mode
Ⅱ	2	3	3	3	3	3	3		3	3	3	4	Ⅱ	
Ⅲ	3	3	3	3	3	3	3		3	3	3	4	Ⅲ	
Ⅳ	3	3	3	2	3	3	3		3	3	3	4	Ⅳ	
Ⅴ	3	3	2	2	3	3	2		3	3	3	4	Ⅴ	
Ⅵ	3	2	2	2	3	2	2		3	2	3	4	Ⅵ	

Table 1-80 Rated capacity chart (with boom only)

Unit: ton

Outriggers intermediately extended to 5.3m,18 t counterweight, over side or rear working area														
Radius (m)	Boom length (m)												Radius (m)	
	13.7★	18.3	18.3	18.3	18.3	18.3 ★	22.9	22.9	22.9	22.9	22.9	22.9 ★		
3.0	95.0	40.5	65.0	85.0	85.0	85.0							3.0	
3.5	90.0	38.5	60.0	82.0	82.0	82.0	28.0	42.0	60.0	73.0	76.0	76.0	3.5	
4.0	80.0	36.0	56.0	77.0	79.0	79.0	26.0	39.0	56.0	68.0	73.0	73.0	4.0	
4.5	68.0	34.5	52.0	68.0	68.0	68.0	24.5	37.0	52.0	63.0	68.0	68.0	4.5	
5.0	60.0	33.0	49.0	60.0	60.0	68.0	23.0	34.5	49.0	60.0	60.0	60.0	5.0	
6.0	47.0	30.2	43.0	47.0	47.0	47.0	21.0	31.0	43.0	47.0	47.0	47.0	6.0	
7.0	35.0	27.5	38.0	37.5	36.5	35.5	19.0	28.0	39.0	38.5	37.5	35.7	7.0	
8.0	27.0	25.5	30.0	29.5	28.5	28.0	17.0	25.0	31.0	30.1	29.1	27.5	8.0	
9.0	22.0	23.5	24.5	24.0	23.0	22.5	16.0	23.0	25.4	24.5	23.5	21.9	9.0	
10.0	18.0	20.5	20.0	19.5	19.0	18.5	15.0	21.0	21.2	20.3	19.3	17.9	10.0	
11.0		17.5	17.0	16.5	16.0	15.5	13.8	18.5	17.9	17.1	16.1	14.7	11.0	
12.0		15.0	14.5	14.0	13.5	13.0	13.0	16.0	15.4	14.6	13.6	12.2	12.0	
14.0		11.0	10.5	10.0	9.5	9.0	11.5	12.2	11.6	10.9	10.0	8.6	14.0	
16.0							10.0	9.6	9.0	8.3	7.5	6.2	16.0	
18.0							8.0	7.6	7.0	6.3	5.5	4.2	18.0	
Reeving	12	12					12						Reeving	
Hook	60t anchor hook												Hook	
Telescoping mode Ⅰ	1	1	1	1	1	1	1	1	1	1	1	2	Ⅰ	Telescoping mode
Ⅱ	1	1	1	1	1	2	1	1	1	1	2	2	Ⅱ	
Ⅲ	1	1	1	1	2	1	1	1	1	2	2	1	Ⅲ	
Ⅳ	1	1	1	2	1	1	1	1	2	2	1	1	Ⅳ	
Ⅴ	1	1	2	1	1	1	1	2	2	1	1	1	Ⅴ	
Ⅵ	1	2	1	1	1	1	3	2	1	1	1	1	Ⅵ	

Table 1-81 Rated capacity chart (with boom only)

Unit: ton

Outriggers intermediately extended to 5.3m,18 t counterweight, over side or rear working area														
Radius (m)	Boom length (m)												Radius (m)	
	27.5	27.5	27.5	27.5	27.5	27.5 ★	32.1	32.1	32.1	32.1	32.1	32.1 ★		
3.0													3.0	
3.5													3.5	
4.0													4.0	
4.5	22.5	22.5	40.5	56.0	67.0	67.0							4.5	
5.0	21.5	21.5	38.5	52.0	64.0	62.0							5.0	
6.0	19.0	19.0	34.5	46.5	48.0	46.0	16.5	21.0	23.5	37.5	47.0	45.0	6.0	
7.0	17.4	17.4	31.5	39.0	37.5	35.5	15.0	19.0	21.0	34.0	37.5	35.5	7.0	
8.0	15.8	15.8	28.8	31.0	29.9	28.2	13.7	17.5	19.0	31.5	30.0	28.0	8.0	
9.0	14.5	14.5	26.5	25.5	24.4	22.7	12.6	16.2	17.6	26.5	25.3	23.6	9.0	
10.0	13.4	13.4	22.0	21.0	19.9	18.3	11.6	15.0	16.2	22.3	21.1	19.4	10.0	
11.0	12.4	12.4	19.0	18.1	17.0	15.4	10.7	14.0	15.0	19.0	17.8	16.2	11.0	
12.0	11.5	11.5	16.4	15.5	14.5	12.9	10.0	13.0	14.0	16.4	15.2	13.7	12.0	
14.0	10.3	10.1	12.6	11.7	10.7	9.3	8.8	11.6	12.2	12.6	11.5	10.0	14.0	
16.0	9.2	9.0	10.0	9.1	8.1	6.7	7.8	10.3	10.2	9.9	8.9	7.4	16.0	
18.0	8.3	8.1	8.0	7.2	6.2	4.9	7.0	8.5	8.2	7.9	6.9	5.5	18.0	
20.0	7.0	6.8	6.5	5.7	4.7	3.4	6.3	6.9	6.7	6.4	5.4	4.1	20.0	
22.0	5.7	5.5	5.2	4.4	3.5	2.2	5.7	5.7	5.5	5.2	4.2	2.9	22.0	
24.0							5.2	4.7	4.5	4.2	3.3	2.0	24.0	
26.0							4.3	3.9	3.7	3.4	2.5	1.2	26.0	
Reeving	11						9						Reeving	
Hook	60t anchor hook												Hook	
Telescoping mode Ⅰ	1	1	1	1	1	2	1	1	1	1	1	2	Ⅰ	Telescoping mode
Ⅱ	1	1	1	1	2	2	1	1	1	1	2	2	Ⅱ	
Ⅲ	1	1	1	2	2	2	1	1	1	2	2	2	Ⅲ	
Ⅳ	1	1	2	2	2	1	1	2	3	2	2	2	Ⅳ	
Ⅴ	2	3	2	2	1	1	3	3	2	2	2	1	Ⅴ	
Ⅵ	3	2	2	1	1	1	3	2	2	2	1	1	Ⅵ	

Table 1-82 Rated capacity chart (with boom only)

Unit: ton

Outriggers intermediately extended to 5.3m,18 t counterweight, over side or rear working area														
Radius (m)	Boom length (m)												Radius (m)	
	36.7	36.7	36.7	36.7	36.7	36.7 ★	41.3	41.3	41.3	41.3	41.3	41.3 ★		
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	16.0	19.0	23.0	23.5	37.5	35.5							7.0	
8.0	15.0	17.1	21.0	21.5	31.2	29.2	15.0	18.0	19.5	23.5	30.0	29.5	8.0	
9.0	13.8	15.6	19.5	19.5	26.3	24.5	14.0	16.8	18.0	22.0	25.5	25.0	9.0	
10.0	12.8	14.4	18.0	18.0	22.0	20.3	12.8	15.4	16.5	20.3	21.8	21.3	10.0	
11.0	11.9	13.3	16.6	16.6	18.7	17.1	11.8	14.3	15.4	18.9	18.5	18.0	11.0	
12.0	11.2	12.3	15.5	15.5	16.1	14.5	11.0	13.3	14.2	16.2	15.9	15.4	12.0	
14.0	9.8	10.7	12.9	12.6	12.3	10.8	9.6	11.6	12.3	12.4	12.1	11.6	14.0	
16.0	8.8	9.5	10.2	9.9	9.6	8.2	8.4	10.3	10.2	9.7	9.4	9.0	16.0	
18.0	7.9	8.4	8.2	7.9	7.6	6.3	7.5	8.5	8.1	7.7	7.4	7.0	18.0	
20.0	7.2	7.1	6.7	6.4	6.1	4.8	6.7	7.0	6.6	6.2	5.9	5.5	20.0	
22.0	6.2	5.9	5.5	5.2	5.0	3.7	6.1	5.8	5.4	5.0	4.7	4.3	22.0	
24.0	5.2	4.9	4.5	4.2	4.0	2.7	5.3	4.8	4.4	4.0	3.7	3.3	24.0	
26.0	4.4	4.1	3.7	3.4	3.2	1.9	4.5	4.0	3.6	3.2	2.9	2.5	26.0	
28.0	3.7	3.4	3.0	2.7	2.5	1.2	3.8	3.3	2.9	2.5	2.3	1.9	28.0	
30.0	3.1	2.8	2.4	2.1	1.9		3.2	2.7	2.3	1.9	1.7	1.3	30.0	
32.0							2.7	2.2	1.8	1.4	1.2		32.0	
34.0							2.2	1.7	1.4	1.0			34.0	
Reeving	8						6						Reeving	
Hook	60t anchor hook												Hook	
Telescoping mode Ⅰ	1	1	1	1	1	2	1	1	1	1	1	2	Ⅰ	Telescoping mode
Ⅱ	1	1	1	1	2	2	1	1	1	2	3	2	Ⅱ	
Ⅲ	1	1	2	3	2	2	1	2	3	3	2	2	Ⅲ	
Ⅳ	2	3	3	2	2	2	3	3	3	2	2	2	Ⅳ	
Ⅴ	3	3	2	2	2	2	3	3	2	2	2	2	Ⅴ	
Ⅵ	3	2	2	2	2	1	3	2	2	2	2	2	Ⅵ	

Table 1-83 Rated capacity chart (with boom only)

Unit: ton

Outriggers intermediately extended to 5.3m,18 t counterweight, over side or rear working area														
Radius (m)	Boom length (m)												Radius (m)	
	45.9	45.9	45.9	45.9	45.9	45.9 ★		50.5	50.5	50.5	50.5	50. 5★		
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	14.5	16.0	19.5	23.0	24.5	24.0							9.0	
10.0	13.5	15.0	18.0	21.5	20.9	20.4							10.0	
11.0	12.6	13.8	16.8	18.6	17.8	17.4		12.5	14.5	17.0	17.5	17.0	11.0	
12.0	11.8	12.8	15.6	16.1	15.3	14.9		11.5	13.5	16.0	15.4	14.8	12.0	
14.0	10.3	11.0	12.7	12.2	11.5	11.1		10.2	12.0	12.4	11.6	11.0	14.0	
16.0	9.2	9.7	10.0	9.5	8.9	8.5		9.0	10.3	9.8	9.0	8.4	16.0	
18.0	8.2	8.6	8.0	7.5	6.9	6.5		8.0	8.3	7.8	7.0	6.4	18.0	
20.0	7.4	7.0	6.4	6.0	5.4	5.0		7.2	6.8	6.3	5.5	4.9	20.0	
22.0	6.2	5.8	5.2	4.8	4.2	3.8		6.2	5.5	5.0	4.3	3.7	22.0	
24.0	5.2	4.8	4.2	3.8	3.2	2.8		5.2	4.5	4.0	3.3	2.8	24.0	
26.0	4.4	4.0	3.4	3.0	2.4	2.0		4.3	3.7	3.2	2.5	2.0	26.0	
28.0	3.7	3.3	2.7	2.3	1.7	1.3		3.6	3.0	2.5	1.8	1.3	28.0	
30.0	3.1	2.7	2.1	1.7	1.1			3.0	2.4	1.9	1.2		30.0	
32.0	2.6	2.2	1.6	1.2				2.5	1.9	1.4			32.0	
34.0	2.1	1.7	1.2					2.0	1.5	1.0			34.0	
36.0	1.7	1.3						1.6	1.1				36.0	
38.0	1.4	1.0						1.3					38.0	
40.0								1.0					40.0	
42.0													42.0	
Reeving	5							4					Reeving	
Hook	60t anchor hook												Hook	
Telescoping mode Ⅰ	1	1	1	1	2	3		1	1	1	2	3	Ⅰ	Telescoping mode
Ⅱ	1	1	2	3	3	2		1	2	3	3	3	Ⅱ	
Ⅲ	2	3	3	3	2	2		3	3	3	3	2	Ⅲ	
Ⅳ	3	3	3	2	2	2		3	3	3	2	2	Ⅳ	
Ⅴ	3	3	2	2	2	2		3	3	2	2	2	Ⅴ	
Ⅵ	3	2	2	2	2	2		3	2	2	2	2	Ⅵ	

Table 1-84 Rated capacity chart (with boom only)

Unit: ton

Outriggers intermediately extended to 5.3m,18 t counterweight, over side or rear working area													
Radius (m)	Boom length (m)												Radius (m)
	55.1	55.1	55.1	55.1 ★	59.7	59.7	59.7 ★		64.3	64.3 ★	68.9 ★	75.0 ★	
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	12.5	14.0	15.5	14.5									12.0
14.0	11.0	12.6	12.0	11.2	11.0	12.0	11.5						14.0
16.0	9.8	10.0	9.1	8.4	10.0	9.6	8.9		9.5	9.0			16.0
18.0	8.8	8.2	7.3	6.6	8.5	7.6	6.9		8.0	7.0	7.0		18.0
20.0	7.2	6.6	5.8	5.1	7.0	6.1	5.4		6.6	5.8	6.2	6.0	20.0
22.0	6.0	5.4	4.6	3.9	5.8	4.9	4.2		5.3	4.5	5.0	5.1	22.0
24.0	4.9	4.3	3.6	2.9	4.7	3.9	3.2		4.3	3.5	4.0	4.1	24.0
26.0	4.1	3.5	2.8	2.1	3.9	3.1	2.4		3.5	2.7	3.1	3.2	26.0
28.0	3.4	2.8	2.1	1.4	3.2	2.4	1.7		2.8	2.0	2.4	2.5	28.0
30.0	2.8	2.2	1.5		2.6	1.8	1.1		2.2	1.4	1.8	1.9	30.0
32.0	2.3	1.7	1.0		2.1	1.3			1.6		1.3	1.4	32.0
34.0	1.8	1.3			1.6				1.2				34.0
36.0	1.4				1.2								36.0
38.0	1.1												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												1.0	62.0
Reeving	3								3				Reeving
Hook	60t anchor hook												Hook
Telescoping mode Ⅰ	1	1	2	3	1	2	3		2	3	3	4	Ⅰ Telescoping mode
Ⅱ	2	3	3	3	3	3	3		3	3	3	4	Ⅱ
Ⅲ	3	3	3	3	3	3	3		3	3	3	4	Ⅲ
Ⅳ	3	3	3	2	3	3	3		3	3	3	4	Ⅳ
Ⅴ	3	3	2	2	3	3	2		3	3	3	4	Ⅴ
Ⅵ	3	2	2	2	3	2	2		3	2	3	4	Ⅵ

Table 1-85 Rated capacity chart (with boom only)

Unit: ton

Outriggers intermediately extended to 5.3m,13 t counterweight, over side or rear working area														
Radius (m)	Boom length (m)												Radius (m)	
	13.7 ★	18.3	18.3	18.3	18.3	18.3 ★	22.9	22.9	22.9	22.9	22.9	22.9 ★		
3.0	95.0	40.5	65.0	85.0	85.0	85.0							3.0	
3.5	90.0	38.5	60.0	82.0	82.0	82.0	28.0	42.0	60.0	73.0	76.0	76.0	3.5	
4.0	85.0	36.0	56.0	77.0	79.0	77.0	26.0	39.0	56.0	68.0	73.0	73.0	4.0	
4.5	74.0	34.5	52.0	72.0	76.0	74.0	24.5	37.0	52.0	63.0	68.0	65.0	4.5	
5.0	62.0	33.0	49.0	61.0	60.0	59.0	23.0	34.5	49.0	60.0	59.0	56.0	5.0	
6.0	41.0	30.2	43.0	44.5	43.5	42.5	21.0	31.0	43.0	42.0	42.0	40.0	6.0	
7.0	30.0	27.5	33.4	32.9	32.2	31.2	19.0	28.0	34.0	33.0	32.0	30.2	7.0	
8.0	23.0	25.5	26.0	25.5	24.8	24.0	17.0	25.0	26.9	25.9	24.9	23.1	8.0	
9.0	18.5	21.0	20.6	20.1	19.5	18.8	16.0	22.5	21.7	20.8	19.8	18.2	9.0	
10.0	15.0	17.6	17.2	16.7	16.1	15.4	15.0	18.7	18.0	17.1	16.1	14.6	10.0	
11.0		14.7	14.3	13.9	13.3	12.7	13.8	15.8	15.1	14.3	13.3	11.9	11.0	
12.0		12.5	12.1	11.7	11.1	10.5	13.0	13.5	12.9	12.1	11.2	9.8	12.0	
14.0		9.2	8.8	8.4	7.9	7.3	10.5	10.2	9.6	8.8	8.0	6.6	14.0	
16.0							8.1	7.8	7.2	6.5	5.7	4.4	16.0	
18.0							6.4	6.1	5.5	4.8	4.0	2.7	18.0	
Reeving	12	12					12						Reeving	
Hook	60t anchor hook												Hook	
Telescoping mode Ⅰ	1	1	1	1	1	1	1	1	1	1	1	2	Ⅰ	Telescoping mode
Ⅱ	1	1	1	1	1	2	1	1	1	1	2	2	Ⅱ	
Ⅲ	1	1	1	1	2	1	1	1	1	2	2	1	Ⅲ	
Ⅳ	1	1	1	2	1	1	1	1	2	2	1	1	Ⅳ	
Ⅴ	1	1	2	1	1	1	1	2	2	1	1	1	Ⅴ	
Ⅵ	1	2	1	1	1	1	3	2	1	1	1	1	Ⅵ	

Table 1-86 Rated capacity chart (with boom only)

Unit: ton

Outriggers intermediately extended to 5.3m,13 t counterweight, over side or rear working area														
Radius (m)	Boom length (m)												Radius (m)	
	27.5	27.5	27.5	27.5	27.5	27.5 ★	32.1	32.1	32.1	32.1	32.1	32.1 ★		
3.0													3.0	
3.5													3.5	
4.0													4.0	
4.5	22.5	22.5	40.5	56.0	67.0	65.0							4.5	
5.0	21.5	21.5	38.5	52.0	56.0	54.0							5.0	
6.0	19.0	19.0	34.5	43.0	41.5	39.5	16.5	21.0	23.5	37.5	41.0	39.0	6.0	
7.0	17.4	17.4	31.5	34.0	32.5	30.5	15.0	19.0	21.0	34.0	33.0	31.0	7.0	
8.0	15.8	15.8	28.0	26.8	25.7	23.7	13.7	17.5	19.0	28.0	26.6	24.6	8.0	
9.0	14.5	14.5	23.0	21.8	20.7	19.0	12.6	16.2	17.6	23.0	21.7	19.9	9.0	
10.0	13.4	13.4	19.2	18.1	17.0	15.3	11.6	15.0	16.2	19.1	17.9	16.2	10.0	
11.0	12.4	12.4	16.2	15.3	14.2	12.6	10.7	14.0	15.0	16.2	15.0	13.4	11.0	
12.0	11.5	11.5	13.9	13.0	11.9	10.4	10.0	13.0	14.0	13.9	12.7	11.2	12.0	
14.0	10.3	10.1	10.6	9.7	8.7	7.2	8.8	11.0	10.7	10.4	9.4	8.0	14.0	
16.0	8.7	8.5	8.2	7.4	6.4	5.0	7.8	8.7	8.4	8.1	7.1	5.7	16.0	
18.0	7.0	6.8	6.5	5.7	4.7	3.3	7.0	7.0	6.7	6.4	5.4	4.0	18.0	
20.0	5.6	5.4	5.1	4.3	3.3	2.0	6.0	5.6	5.3	5.0	4.1	2.7	20.0	
22.0	4.5	4.3	4.1	3.3	2.3	1.0	4.9	4.5	4.3	4.0	3.1	1.7	22.0	
24.0							4.0	3.6	3.4	3.1	2.2		24.0	
26.0							3.3	2.9	2.7	2.4	1.5		26.0	
Reeving	11						9						Reeving	
Hook	60t anchor hook												Hook	
Telescoping mode Ⅰ	1	1	1	1	1	2	1	1	1	1	1	2	Ⅰ	Telescoping mode
Ⅱ	1	1	1	1	2	2	1	1	1	1	2	2	Ⅱ	
Ⅲ	1	1	1	2	2	2	1	1	1	2	2	2	Ⅲ	
Ⅳ	1	1	2	2	2	1	1	2	3	2	2	2	Ⅳ	
Ⅴ	2	3	2	2	1	1	3	3	2	2	2	1	Ⅴ	
Ⅵ	3	2	2	1	1	1	3	2	2	2	1	1	Ⅵ	

Table 1-87 Rated capacity chart (with boom only)

Unit: ton

Outriggers intermediately extended to 5.3m,13 t counterweight, over side or rear working area														
Radius (m)	Boom length (m)												Radius (m)	
	36.7	36.7	36.7	36.7	36.7	36.7 ★	41.3	41.3	41.3	41.3	41.3	41.3 ★		
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	16.0	19.0	23.0	23.5	33.0	31.0							7.0	
8.0	15.0	17.1	21.0	21.5	27.0	25.0	15.0	18.0	19.5	23.5	26.0	25.5	8.0	
9.0	13.8	15.6	19.5	19.5	22.6	20.6	14.0	16.8	18.0	22.0	22.0	21.4	9.0	
10.0	12.8	14.4	18.0	18.0	18.8	17.1	12.8	15.4	16.5	18.9	18.6	18.0	10.0	
11.0	11.9	13.3	16.6	16.0	15.6	14.0	11.8	14.3	15.4	16.0	15.7	15.1	11.0	
12.0	11.2	12.3	14.2	14.0	13.6	12.0	11.0	13.3	14.2	13.7	13.4	12.9	12.0	
14.0	9.8	10.7	10.8	10.6	10.2	8.7	9.6	11.2	10.8	10.3	10.0	9.5	14.0	
16.0	8.8	8.9	8.4	8.2	7.9	6.4	8.4	8.8	8.4	7.9	7.6	7.1	16.0	
18.0	7.5	7.1	6.6	6.4	6.1	4.7	7.5	7.0	6.6	6.2	5.9	5.4	18.0	
20.0	6.1	5.8	5.3	5.1	4.8	3.4	6.2	5.7	5.3	4.9	4.6	4.1	20.0	
22.0	5.0	4.7	4.2	4.0	3.7	2.4	5.1	4.6	4.2	3.8	3.5	3.1	22.0	
24.0	4.1	3.8	3.3	3.1	2.8	1.6	4.2	3.7	3.3	2.9	2.6	2.2	24.0	
26.0	3.4	3.1	2.6	2.4	2.1		3.5	3.0	2.6	2.2	1.9	1.5	26.0	
28.0	2.8	2.5	2.0	1.8	1.5		2.9	2.4	2.0	1.6	1.3		28.0	
30.0	2.2	1.9	1.5	1.3	1.0		2.3	1.8	1.4	1.1			30.0	
32.0							1.9	1.4	1.0				32.0	
34.0							1.5	1.0					34.0	
Reeving	8						6						Reeving	
Hook	60t anchor hook												Hook	
Telescoping mode Ⅰ	1	1	1	1	1	2	1	1	1	1	1	2	Ⅰ	Telescoping mode
Ⅱ	1	1	1	1	2	2	1	1	1	2	3	2	Ⅱ	
Ⅲ	1	1	2	3	2	2	1	2	3	3	2	2	Ⅲ	
Ⅳ	2	3	3	2	2	2	3	3	3	2	2	2	Ⅳ	
Ⅴ	3	3	2	2	2	2	3	3	2	2	2	2	Ⅴ	
Ⅵ	3	2	2	2	2	1	3	2	2	2	2	2	Ⅵ	

Table 1-88 Rated capacity chart (with boom only)

Unit: ton

Outriggers intermediately extended to 5.3m,13 t counterweight, over side or rear working area														
Radius (m)	Boom length (m)												Radius (m)	
	45.9	45.9	45.9	45.9	45.9	45.9 ★		50.5	50.5	50.5	50.5	50.5 ★		
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	14.5	16.0	19.5	21.5	20.7	20.2							9.0	
10.0	13.5	15.0	18.0	18.5	17.7	17.2							10.0	
11.0	12.6	13.8	16.3	15.8	15.1	14.6		12.5	14.5	15.5	15.0	14.0	11.0	
12.0	11.8	12.8	14.0	13.5	12.8	12.3		11.5	13.5	13.5	12.7	12.1	12.0	
14.0	10.3	11.0	10.6	10.1	9.4	9.0		10.2	11.0	10.4	9.6	9.0	14.0	
16.0	9.2	8.8	8.1	7.7	7.0	6.6		9.0	8.6	8.0	7.2	6.6	16.0	
18.0	7.5	7.0	6.4	6.0	5.3	4.9		7.5	6.8	6.2	5.5	4.9	18.0	
20.0	6.1	5.6	5.1	4.7	4.0	3.6		6.1	5.4	4.9	4.2	3.6	20.0	
22.0	5.0	4.5	4.0	3.6	3.0	2.6		5.0	4.3	3.8	3.1	2.6	22.0	
24.0	4.1	3.6	3.1	2.7	2.1	1.7		4.1	3.4	2.9	2.2	1.7	24.0	
26.0	3.4	2.9	2.4	2.0	1.4	1.0		3.3	2.7	2.2	1.5	1.0	26.0	
28.0	2.8	2.3	1.8	1.4				2.7	2.1	1.6			28.0	
30.0	2.2	1.8	1.3					2.2	1.6	1.1			30.0	
32.0	1.7	1.3						1.7	1.1				32.0	
34.0	1.4	1.0						1.3					34.0	
36.0	1.0												36.0	
38.0													38.0	
40.0													40.0	
42.0													42.0	
Reeving	5							4					Reeving	
Hook	60t anchor hook												Hook	
Telescoping mode Ⅰ	1	1	1	1	2	3		1	1	1	2	3	Ⅰ	Telescoping mode
Ⅱ	1	1	2	3	3	2		1	2	3	3	3	Ⅱ	
Ⅲ	2	3	3	3	2	2		3	3	3	3	2	Ⅲ	
Ⅳ	3	3	3	2	2	2		3	3	3	2	2	Ⅳ	
Ⅴ	3	3	2	2	2	2		3	3	2	2	2	Ⅴ	
Ⅵ	3	2	2	2	2	2		3	2	2	2	2	Ⅵ	

Table 1-89 Rated capacity chart (with boom only)

Unit: ton

Outriggers intermediately extended to 5.3m,13 t counterweight, over side or rear working area														
Radius (m)	Boom length (m)												Radius (m)	
	55.1	55.1	55.1	55.1. ★	59.7	59.7	59.7 ★		64.3	64.3 ★	68.9 ★	75.0 ★		
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	12.5	13.5	12.5	12.0									12.0	
14.0	11.0	10.5	9.6	8.9	10.5	10.0	9.2						14.0	
16.0	9.0	8.4	7.5	6.8	8.5	7.7	6.9		8.0	7.5			16.0	
18.0	7.2	6.6	5.8	5.1	7.0	6.2	5.4		6.5	5.7	6.0		18.0	
20.0	5.8	5.2	4.4	3.7	5.6	4.8	4.0		5.2	4.4	4.8	4.9	20.0	
22.0	4.7	4.1	3.3	2.7	4.5	3.7	3.0		4.1	3.3	3.7	3.8	22.0	
24.0	3.8	3.2	2.4	1.8	3.6	2.8	2.1		3.2	2.4	2.8	2.9	24.0	
26.0	3.1	2.5	1.7	1.1	2.9	2.1	1.4		2.4	1.7	2.1	2.2	26.0	
28.0	2.4	1.9	1.1		2.2	1.4			1.8	1.1	1.5	1.6	28.0	
30.0	1.9	1.4			1.7				1.3			1.0	30.0	
32.0	1.4				1.3								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												1.0	62.0	
Reeving	3								3				Reeving	
Hook	60t anchor hook												Hook	
Telescoping mode Ⅰ	1	1	2	3	1	2	3		2	3	3	4	Ⅰ	Telescoping mode
Ⅱ	2	3	3	3	3	3	3		3	3	3	4	Ⅱ	
Ⅲ	3	3	3	3	3	3	3		3	3	3	4	Ⅲ	
Ⅳ	3	3	3	2	3	3	3		3	3	3	4	Ⅳ	
Ⅴ	3	3	2	2	3	3	2		3	3	3	4	Ⅴ	
Ⅵ	3	2	2	2	3	2	2		3	2	3	4	Ⅵ	

Table 1-90 Rated capacity chart (with boom only)

Unit: ton

Outriggers intermediately extended to 5.3m, 2 t counterweight, over side or rear working area														
Radius (m)	Boom length (m)												Radius (m)	
	13.7 ★	18.3	18.3	18.3	18.3	18.3 ★	22.9	22.9	22.9	22.9	22.9	22.9 ★		
3.0	95.0	40.5	65.0	85.0	85.0	85.0							3.0	
3.5	90.0	38.5	60.0	82.0	80.0	79.0	28.0	42.0	60.0	73.0	76.0	74.0	3.5	
4.0	68.0	36.0	56.0	66.0	65.0	64.0	26.0	39.0	56.0	63.0	61.0	59.0	4.0	
4.5	51.0	34.5	52.0	51.0	50.0	49.0	24.5	37.0	52.0	50.0	48.0	46.0	4.5	
5.0	40.0	33.0	42.5	41.5	40.5	39.5	23.0	34.5	41.5	40.5	39.0	37.0	5.0	
6.0	27.0	30.2	30.0	29.3	28.5	27.5	21.0	31.0	30.0	29.0	27.6	25.6	6.0	
7.0	19.0	22.0	21.6	21.0	20.4	19.5	19.0	23.5	22.5	21.5	20.4	18.4	7.0	
8.0	14.0	16.8	16.4	15.8	15.2	14.4	17.0	18.0	17.3	16.3	15.2	13.5	8.0	
9.0	10.5	13.0	12.6	12.1	11.6	10.9	14.5	14.2	13.5	12.5	11.5	10.0	9.0	
10.0	8.2	10.5	10.1	9.6	9.1	8.4	12.0	11.7	11.0	10.1	9.1	7.6	10.0	
11.0		8.6	8.2	7.7	7.2	6.5	10.0	9.7	9.0	8.1	7.1	5.7	11.0	
12.0		7.0	6.6	6.2	5.7	5.0	8.4	8.1	7.4	6.6	5.6	4.2	12.0	
14.0		4.7	4.3	3.9	3.4	2.7	6.0	5.7	5.0	4.3	3.4	2.0	14.0	
16.0							4.3	4.0	3.4	2.7	1.8		16.0	
18.0							3.0	2.7	2.1	1.4			18.0	
Reeving	12	12					12						Reeving	
Hook	60t anchor hook												Hook	
Telescoping mode Ⅰ	1	1	1	1	1	1	1	1	1	1	1	2	Ⅰ	Telescoping mode
Ⅱ	1	1	1	1	1	2	1	1	1	1	2	2	Ⅱ	
Ⅲ	1	1	1	1	2	1	1	1	1	2	2	1	Ⅲ	
Ⅳ	1	1	1	2	1	1	1	1	2	2	1	1	Ⅳ	
Ⅴ	1	1	2	1	1	1	1	2	2	1	1	1	Ⅴ	
Ⅵ	1	2	1	1	1	1	3	2	1	1	1	1	Ⅵ	

Table 1-91 Rated capacity chart (with boom only)

Unit: ton

Outriggers intermediately extended to 5.3m, 2 t counterweight, over side or rear working area														
Radius (m)	Boom length (m)												Radius (m)	
	27.5	27.5	27.5	27.5	27.5	27.5 ★	32.1	32.1	32.1	32.1	32.1	32.1 ★		
3.0													3.0	
3.5													3.5	
4.0													4.0	
4.5	22.5	22.5	40.5	49.0	47.0	45.0							4.5	
5.0	21.5	21.5	38.5	40.5	38.5	36.5							5.0	
6.0	19.0	19.0	30.6	29.4	27.4	25.4	16.5	21.0	23.5	29.5	28.0	26.0	6.0	
7.0	17.4	17.4	23.6	22.4	21.0	19.0	15.0	19.0	21.0	23.0	21.5	19.5	7.0	
8.0	15.8	15.8	18.5	17.4	16.1	14.3	13.7	17.5	18.8	18.4	17.0	15.1	8.0	
9.0	14.5	14.5	14.8	13.7	12.6	10.9	12.6	15.5	15.2	14.8	13.5	11.7	9.0	
10.0	12.7	12.4	12.1	11.1	10.0	8.3	11.6	12.7	12.4	12.1	10.8	9.2	10.0	
11.0	10.6	10.3	10.0	9.1	8.0	6.4	10.7	10.6	10.3	10.0	8.8	7.2	11.0	
12.0	9.0	8.7	8.4	7.5	6.4	4.9	9.5	9.0	8.7	8.4	7.2	5.7	12.0	
14.0	6.6	6.3	6.0	5.2	4.1	2.7	7.0	6.5	6.3	6.0	4.9	3.4	14.0	
16.0	4.9	4.6	4.3	3.5	2.5	1.1	5.2	4.8	4.6	4.3	3.3	1.8	16.0	
18.0	3.6	3.4	3.1	2.3	1.3		4.0	3.6	3.4	3.1	2.1		18.0	
20.0	2.6	2.4	2.1	1.3			3.0	2.6	2.4	2.1	1.1		20.0	
22.0	1.9	1.7	1.4				2.2	1.8	1.6	1.3			22.0	
24.0							1.6	1.2	1.0				24.0	
26.0							1.1						26.0	
Reeving	11						9						Reeving	
Hook	60t anchor hook												Hook	
Telescoping mode Ⅰ	1	1	1	1	1	2	1	1	1	1	1	2	Ⅰ	Telescoping mode
Ⅱ	1	1	1	1	2	2	1	1	1	1	2	2	Ⅱ	
Ⅲ	1	1	1	2	2	2	1	1	1	2	2	2	Ⅲ	
Ⅳ	1	1	2	2	2	1	1	2	3	2	2	2	Ⅳ	
Ⅴ	2	3	2	2	1	1	3	3	2	2	2	1	Ⅴ	
Ⅵ	3	2	2	1	1	1	3	2	2	2	1	1	Ⅵ	

Table 1-92 Rated capacity chart (with boom only)

Unit: ton

Outriggers intermediately extended to 5.3m, 2 t counterweight, over side or rear working area														
Radius (m)	Boom length (m)												Radius (m)	
	36.7	36.7	36.7	36.7	36.7	36.7 ★	41.3	41.3	41.3	41.3	41.3	41.3 ★		
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	16.0	19.0	22.7	22.4	22.0	20.0							7.0	
8.0	15.0	17.1	18.4	18.1	17.6	15.8	15.0	18.0	18.0	17.0	16.5	16.0	8.0	
9.0	13.8	15.6	15.1	14.8	14.4	12.6	14.0	15.4	14.9	14.3	13.9	13.3	9.0	
10.0	12.8	13.0	12.4	12.1	11.7	10.0	12.8	12.9	12.4	11.8	11.5	10.9	10.0	
11.0	11.3	10.9	10.3	10.0	9.6	8.1	11.4	10.8	10.3	9.7	9.4	8.9	11.0	
12.0	9.6	9.2	8.7	8.4	8.0	6.5	9.7	9.1	8.6	8.1	7.8	7.3	12.0	
14.0	7.1	6.7	6.2	6.0	5.7	4.2	7.2	6.6	6.2	5.7	5.4	4.9	14.0	
16.0	5.4	5.0	4.5	4.3	4.0	2.6	5.5	4.9	4.5	4.0	3.7	3.2	16.0	
18.0	4.1	3.7	3.3	3.1	2.8	1.4	4.2	3.7	3.3	2.8	2.5	2.0	18.0	
20.0	3.1	2.7	2.3	2.1	1.8		3.2	2.7	2.3	1.8	1.6	1.1	20.0	
22.0	2.3	1.9	1.6	1.4	1.1		2.4	1.9	1.5	1.1			22.0	
24.0	1.7	1.3	1.0				1.8	1.3					24.0	
26.0	1.2						1.3						26.0	
28.0													28.0	
30.0													30.0	
32.0													32.0	
34.0													34.0	
Reeving	8						6						Reeving	
Hook	60t anchor hook												Hook	
Telescoping mode Ⅰ	1	1	1	1	1	2	1	1	1	1	1	2	Ⅰ	Telescoping mode
Ⅱ	1	1	1	1	2	2	1	1	1	2	3	2	Ⅱ	
Ⅲ	1	1	2	3	2	2	1	2	3	3	2	2	Ⅲ	
Ⅳ	2	3	3	2	2	2	3	3	3	2	2	2	Ⅳ	
Ⅴ	3	3	2	2	2	2	3	3	2	2	2	2	Ⅴ	
Ⅵ	3	2	2	2	2	1	3	2	2	2	2	2	Ⅵ	

Table 1-93 Rated capacity chart (with boom only)

Unit: ton

Outriggers intermediately extended to 5.3m, 2 t counterweight, over side or rear working area														
Radius (m)	Boom length (m)												Radius (m)	
	45.9	45.9	45.9	45.9	45.9	45.9 ★		50.5	50.5	50.5	50.5	50.5 ★		
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	14.5	15.0	14.0	13.5	12.8	12.3							9.0	
10.0	13.3	12.7	11.9	11.4	10.7	10.2							10.0	
11.0	11.4	10.8	10.0	9.5	8.8	8.3		11.0	10.0	9.5	8.5	8.0	11.0	
12.0	9.7	9.1	8.4	7.9	7.2	6.7		9.5	8.7	8.2	7.3	6.7	12.0	
14.0	7.2	6.6	6.0	5.5	4.8	4.4		7.1	6.3	5.8	5.0	4.4	14.0	
16.0	5.4	4.9	4.3	3.8	3.1	2.8		5.3	4.6	4.1	3.3	1.7	16.0	
18.0	4.1	3.6	3.0	2.6	1.9	1.6		4.0	3.3	2.8	2.1	1.5	18.0	
20.0	3.1	2.6	2.1	1.7	1.0			3.0	2.4	1.9	1.2		20.0	
22.0	2.3	1.8	1.3					2.2	1.6	1.1			22.0	
24.0	1.7	1.2						1.6	1.0				24.0	
26.0	1.2							1.1					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	
Reeving	5							4					Reeving	
Hook	60t anchor hook												Hook	
Telescoping mode Ⅰ	1	1	1	1	2	3		1	1	1	2	3	Ⅰ	Telescoping mode
Ⅱ	1	1	2	3	3	2		1	2	3	3	3	Ⅱ	
Ⅲ	2	3	3	3	2	2		3	3	3	3	2	Ⅲ	
Ⅳ	3	3	3	2	2	2		3	3	3	2	2	Ⅳ	
Ⅴ	3	3	2	2	2	2		3	3	2	2	2	Ⅴ	
Ⅵ	3	2	2	2	2	2		3	2	2	2	2	Ⅵ	

Table 1-94 Rated capacity chart (with boom only)

Unit: ton

Outriggers intermediately extended to 5.3m, 2 t counterweight, over side or rear working area													
Radius (m)	Boom length (m)												Radius (m)
	55.1	55.1	55.1	55.1. ★	59.7	59.7	59.7 ★		64.3	64.3 ★	68.9 ★	75.0 ★	
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	9.0	8.5	7.5	7.0									12.0
14.0	6.8	6.2	5.3	4.5	6.5	5.5	4.5						14.0
16.0	5.1	4.5	3.6	2.9	4.9	3.9	3.1		4.5	3.5			16.0
18.0	3.8	3.2	2.3	1.6	3.6	2.7	1.9		3.1	2.3	2.7		18.0
20.0	2.8	2.2	1.4		2.6	1.7	1.0		2.1	1.3	1.7	1.8	20.0
22.0	2.0	1.4			1.8				1.3			1.0	22.0
24.0	1.3				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												1.0	62.0
Reeving	3								3				Reeving
Hook	60t anchor hook												Hook
Telescoping mode Ⅰ	1	1	2	3	1	2	3		2	3	3	4	Ⅰ Telescoping mode
Ⅱ	2	3	3	3	3	3	3		3	3	3	4	Ⅱ
Ⅲ	3	3	3	3	3	3	3		3	3	3	4	Ⅲ
Ⅳ	3	3	3	2	3	3	3		3	3	3	4	Ⅳ
Ⅴ	3	3	2	2	3	3	2		3	3	3	4	Ⅴ
Ⅵ	3	2	2	2	3	2	2		3	2	3	4	Ⅵ

Table 1-95 Rated capacity chart (with jib/extension)

Unit: ton

Boom angle (°)	Boom + jib/extension (m)								
	Outriggers fully extended, over side or rear working area, 40 t full counterweight								
	68.9+9.5	68.9+10.4			68.9+17.5			68.9+9.5+10.4	68.9+9.5+17.5
	0°	0°	15°	30°	0°	15°	30°	0°	0°
80	5.0	4.5	4.0	3.5	3.0	2.5	2.0	2.6	2.0
78	5.0	4.5	4.0	3.5	3.0	2.5	1.8	2.6	1.8
76	4.6	4.0	3.8	3.4	3.0	2.2	1.7	2.4	1.6
74	4.3	3.8	3.6	3.2	2.8	2.0	1.7	2.2	1.5
72	4.0	3.6	3.4	3.0	2.6	1.9	1.6	2.0	1.4
70	3.7	3.4	3.2	2.8	2.4	1.8	1.6	1.8	1.4
68	3.4	3.1	2.9	2.6	2.3	1.8	1.6	1.6	1.3
66	3.2	2.9	2.7	2.5	2.2	1.7	1.6	1.5	1.2
64	3.0	2.7	2.5	2.4	2.1	1.7	1.5	1.4	1.1
62	2.8	2.5	2.3	2.2	2.0	1.6	1.5	1.3	1.0
60	2.6	2.3	2.1	2.0	1.9	1.6	1.4	1.2	0.9
58	2.5	2.1	2.0	1.9	1.7	1.5	1.4	1.1	
56	2.3	1.9	1.8	1.7	1.5	1.4	1.3		
54	2.1	1.8	1.7	1.6	1.4	1.3	1.2		
52	2.0	1.6	1.5	1.4	1.3	1.2	1.1		
50	1.8	1.5	1.4	1.3	1.2	1.1	1.0		
48	1.7	1.3	1.2	1.1	1.1	1.0	0.9		
46	1.5	1.2	1.1	1.0	1.0				
44	1.4	1.0							
42	1.2								
Reeving	1								
Hook	6.5t								

Table 1-96 Rated capacity chart (with jib/extension)

Unit: ton

Boom angle (°)	Boom + jib/extension (m)								
	Outriggers fully extended, over side or rear working area, 27 t counterweight								
	68.9+9.5	68.9+10.4			68.9+17.5			68.9+9.5+10.4	68.9+9.5+17.5
	0°	0°	15°	30°	0°	15°	30°	0°	0°
80	5.0	4.5	4.0	3.5	3.0	2.5	2.0	2.6	2.0
78	5.0	4.5	4.0	3.5	3.0	2.5	1.8	2.6	1.8
76	4.6	4.0	3.8	3.4	3.0	2.2	1.7	2.4	1.6
74	4.3	3.8	3.6	3.2	2.8	2.0	1.7	2.2	1.5
72	4.0	3.6	3.4	3.0	2.6	1.9	1.6	2.0	1.4
70	3.7	3.4	3.2	2.8	2.4	1.8	1.6	1.8	1.4
68	3.4	3.1	2.9	2.6	2.3	1.8	1.6	1.6	1.3
66	3.2	2.9	2.7	2.5	2.2	1.7	1.6	1.5	1.2
64	3.0	2.7	2.5	2.4	2.1	1.7	1.5	1.4	1.1
62	2.8	2.4	2.3	2.2	2.0	1.6	1.5	1.3	1.0
60	2.4	2.1	2.0	1.9	1.8	1.6	1.4	1.1	0.9
58	2.0	1.8	1.7	1.6	1.5	1.4	1.3		
56	1.7	1.5	1.4	1.3	1.2	1.1	1.0		
54	1.4	1.2	1.1	1.0	1.0				
52									
50									
48									
46									
44									
42									
Reeving	1								
Hook	6.5t								

Table 1-97 Rated capacity chart (with jib/extension)

Unit: ton

Boom angle (°)	Boom + jib/extension (m)								
	Outriggers fully extended, over side or rear working area, 23 t counterweight								
	68.9+9.5	68.9+10.4			68.9+17.5			68.9+9.5+10.4	68.9+9.5+17.5
	0°	0°	15°	30°	0°	15°	30°	0°	0°
80	5.0	4.5	4.0	3.5	3.0	2.5	2.0	2.6	2.0
78	5.0	4.5	4.0	3.5	3.0	2.5	1.8	2.6	1.8
76	4.6	4.0	3.8	3.4	3.0	2.2	1.7	2.4	1.6
74	4.3	3.8	3.6	3.2	2.8	2.0	1.7	2.2	1.5
72	4.0	3.6	3.4	3.0	2.6	1.9	1.6	2.0	1.4
70	3.7	3.4	3.2	2.8	2.4	1.8	1.6	1.8	1.4
68	3.4	3.1	2.9	2.6	2.3	1.8	1.6	1.6	1.3
66	3.2	2.9	2.7	2.5	2.2	1.7	1.6	1.5	1.2
64	2.8	2.5	2.3	2.2	2.1	1.7	1.5	1.4	1.1
62	2.4	2.0	1.9	1.8	1.8	1.6	1.5	1.0	0.9
60	2.0	1.6	1.5	1.4	1.4	1.3	1.2		
58	1.6	1.3	1.2	1.1	1.1	1.0	1.0		
56	1.3	1.0							
54	1.0								
52									
50									
48									
46									
44									
42									
Reeving	1								
Hook	6.5t								

Table 1-98 Rated capacity chart (with jib/extension)

Unit: ton

Boom angle (°)	Boom + jib/extension (m)								
	Outriggers fully extended, over side or rear working area, 18 t counterweight								
	68.9+9.5	68.9+10.4			68.9+17.5			68.9+9.5+10.4	68.9+9.5+17.5
	0°	0°	15°	30°	0°	15°	30°	0°	0°
80	5.0	4.5	4.0	3.5	3.0	2.5	2.0	2.6	2.0
78	5.0	4.5	4.0	3.5	3.0	2.5	1.8	2.6	1.8
76	4.6	4.0	3.8	3.4	3.0	2.2	1.7	2.4	1.6
74	4.3	3.8	3.6	3.2	2.8	2.0	1.7	2.2	1.5
72	4.0	3.6	3.4	3.0	2.6	1.9	1.6	2.0	1.4
70	3.5	3.4	3.2	2.8	2.4	1.8	1.6	1.8	1.4
68	3.0	2.9	2.7	2.6	2.3	1.8	1.6	1.6	1.3
66	2.5	2.4	2.2	2.1	2.0	1.7	1.6	1.3	1.1
64	2.2	1.9	1.8	1.7	1.6	1.4	1.3		
62	1.8	1.5	1.4	1.3	1.3	1.1	1.0		
60	1.4	1.1	1.0	1.0					
58	1.0								
56									
54									
52									
50									
48									
46									
44									
42									
Reeving	1								
Hook	6.5t								

Table 1-99 Rated capacity chart (with jib/extension)

Unit: ton

Boom angle (°)	Boom + jib/extension (m)								
	Outriggers fully extended, over side or rear working area, 13 t counterweight								
	68.9+9.5	68.9+10.4			68.9+17.5			68.9+9.5+10.4	68.9+9.5+17.5
	0°	0°	15°	30°	0°	15°	30°	0°	0°
80	5.0	4.5	4.0	3.5	3.0	2.5	2.0	2.6	2.0
78	5.0	4.5	4.0	3.5	3.0	2.5	1.8	2.6	1.8
76	4.6	4.0	3.8	3.4	3.0	2.2	1.7	2.4	1.6
74	4.3	3.8	3.5	3.2	2.8	2.0	1.7	2.2	1.5
72	3.7	3.4	3.1	3.0	2.6	1.9	1.6	2.0	1.4
70	3.1	3.8	2.5	2.4	2.3	1.8	1.6	1.5	1.3
68	2.5	2.2	2.0	1.9	1.8	1.6	1.5	1.1	0.9
66	2.0	1.7	1.5	1.4	1.4	1.2	1.1		
64	1.5	1.2	1.1	1.0	1.0	0.9	0.8		
62	1.1								
60									
58									
56									
54									
52									
50									
48									
46									
44									
42									
Reeving	1								
Hook	6.5t								

Table 1-100 Rated capacity chart (with jib/extension)

Unit: ton

Boom angle (°)	Boom + jib/extension (m)								
	Outriggers fully extended, over side or rear working area, 2 t counterweight								
	68.9+9.5	68.9+10.4			68.9+17.5			68.9+9.5+10.4	68.9+9.5+17.5
	0°	0°	15°	30°	0°	15°	30°	0°	0°
80	5.0	4.5	4.0	3.5	3.0	2.5	2.0	2.6	2.0
78	4.5	4.0	3.6	3.3	3.0	2.5	1.8	2.3	1.8
76	3.5	3.3	2.9	2.7	2.7	2.2	2.0	1.8	1.5
74	2.7	2.5	2.2	2.0	2.0	1.7	1.5	1.3	1.1
72	2.0	1.7	1.5	1.4	1.4	1.2	1.0		
70	1.3	1.1	1.0	0.9	0.9				
68	0.8								
66									
64									
62									
60									
58									
56									
54									
52									
50									
48									
46									
44									
42									
Reeving	1								
Hook	6.5t								

1.3.6 Lifting height charts

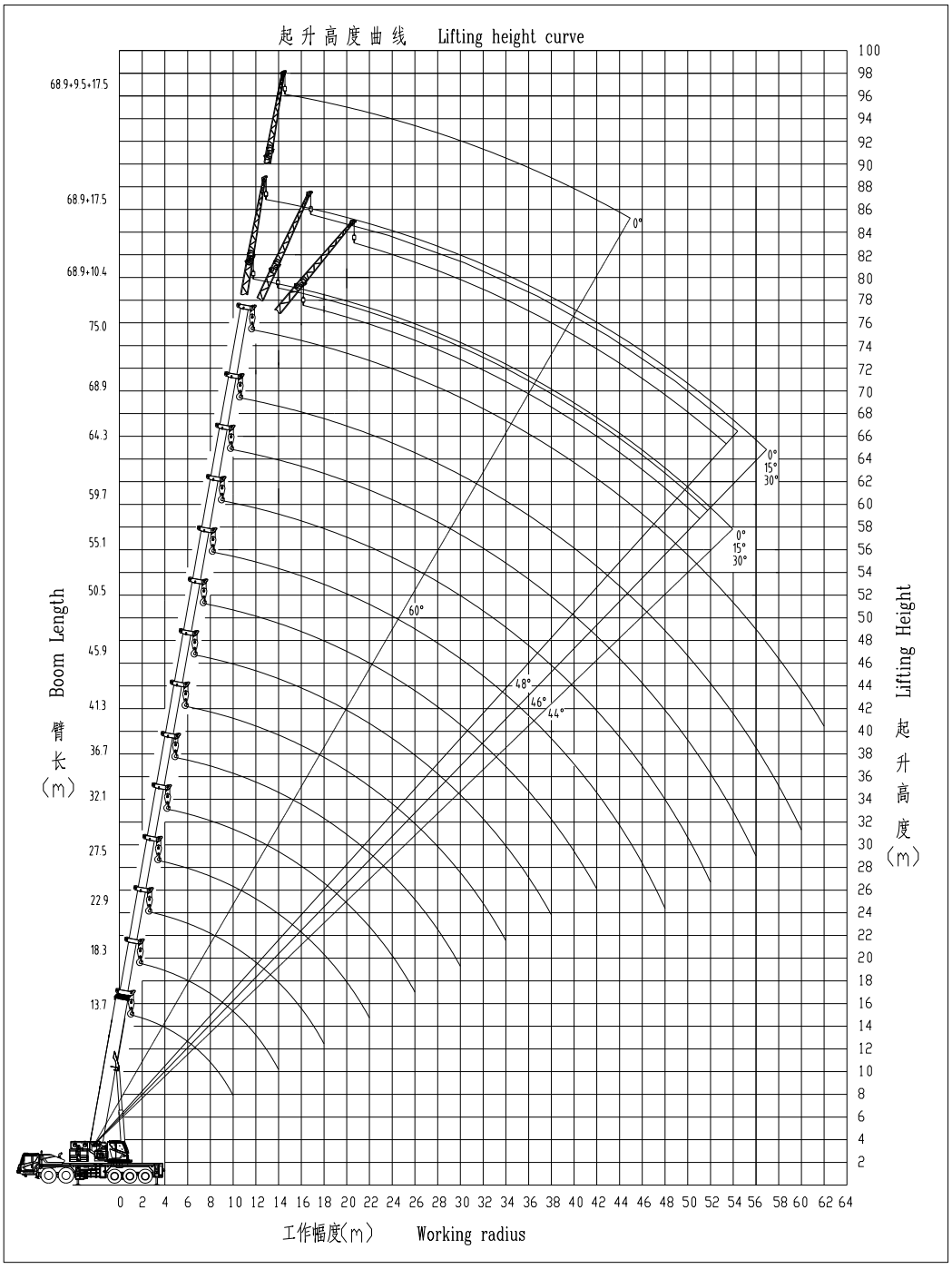


Figure 1-14 Lifting height chart for boom + jib + extension

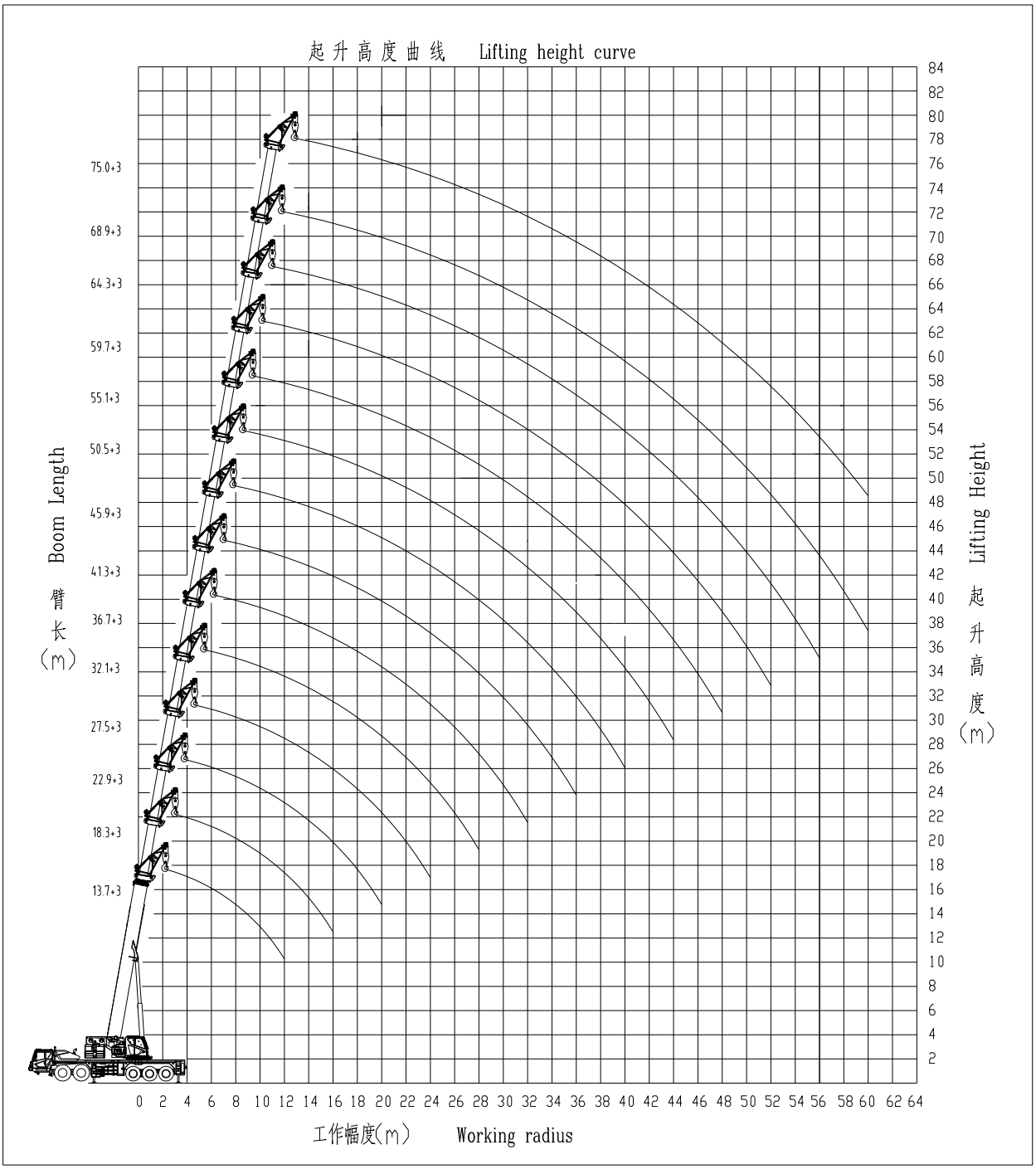


Figure 1-15 Lifting height chart for boom + tip boom

CAUTION

(1) The outrigger beams of Outriggers must be extended (to a uniform length on both sides) to the extent stated in the rated capacity chart. All wheels must be raised clear of the ground.

(2) When you set up the 5th outrigger, the values in the rated capacity charts are suitable for 360° full range operation. Extend the 5th outrigger when you lift a load over front.

(3) The values given in the rated capacity charts 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 (Main hook: 662 kg, auxiliary hook: 200 kg) and slings.

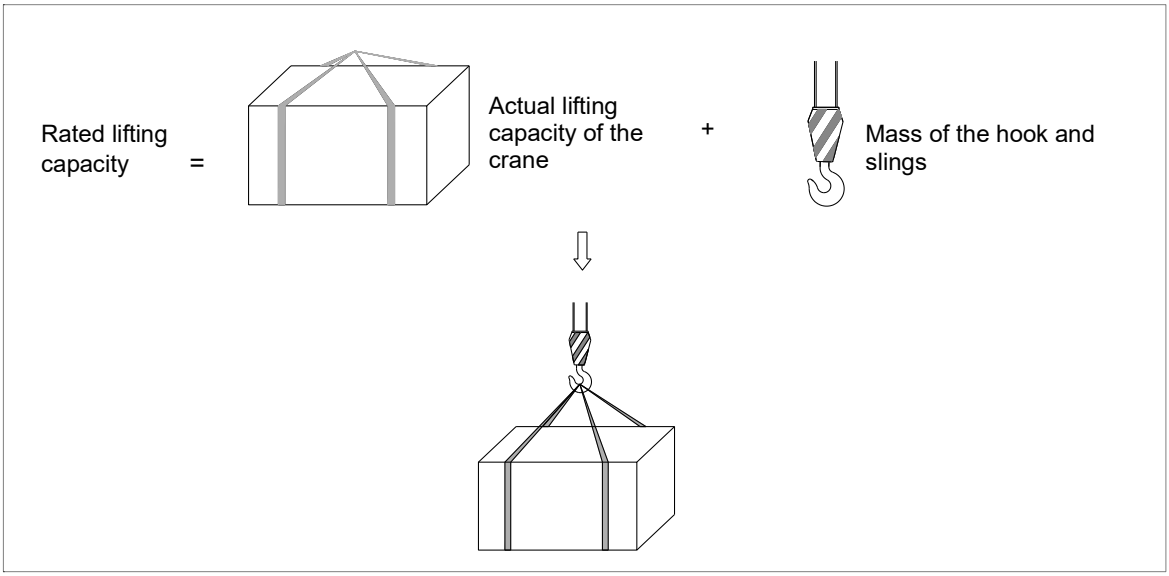


Figure 1-15 Rated lifting capacity

(4) The working radius in rated capacity chart is measured from hook center to slewing centerline. Its unit is metric meters.

(5) Use next lower rated capacity when working at radius between the figures on the rated capacity chart.

(6) The numbers I, II, III, IV and V 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 Maximum rated lifting capacity for the rooster sheave is 6500 kg. If the rated lifting capacity found out in the rated capacity chart is less than 6500 kg according to the actual working conditions, take the value in the rated capacity chart.
For example (OM: boom is fully extended to 75 m, with 38 tons counterweight):
The rated lifting capacity is 6500 kg when the working radius of 20 m.
The rated lifting capacity is 3800 kg when the working radius of 40 m.

(8) During operation, do not lift a load with both main hook and auxiliary hook simultaneously.

(9) All the working radius and lifting height in lifting height charts do not include the deflection of boom and jib.

(10) The working radius of the crane must be strictly limited within the range listed in the rated capacity chart. If the specified working radius is exceeded, the crane will tip over even without a load.

(11) Before crane operation, extend the outrigger beams (to a uniform length on both sides) to the extent stated in the rated capacity charts. After the outrigger beams are in position, install the retaining pins.

(12) Before you begin a lift operation, support the crane on outriggers.

(13) Level the crane with the support control unit prior to lifting loads, examine frequently and relevel when necessary during operation.

(14) The lifting capacity for the boom is the value calculated without jib assembled.

- When you use the boom with jib assembled:
  2.3 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:
  0.5 tons plus the mass of hook block and slings should be subtracted from the rated lifting capacities.

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

WARNING

If the boom is more than 30 m long, derrick the boom according to the lifting height chart, even if the crane is without a load. Otherwise, the crane may topple.

1.3.7 Working areas

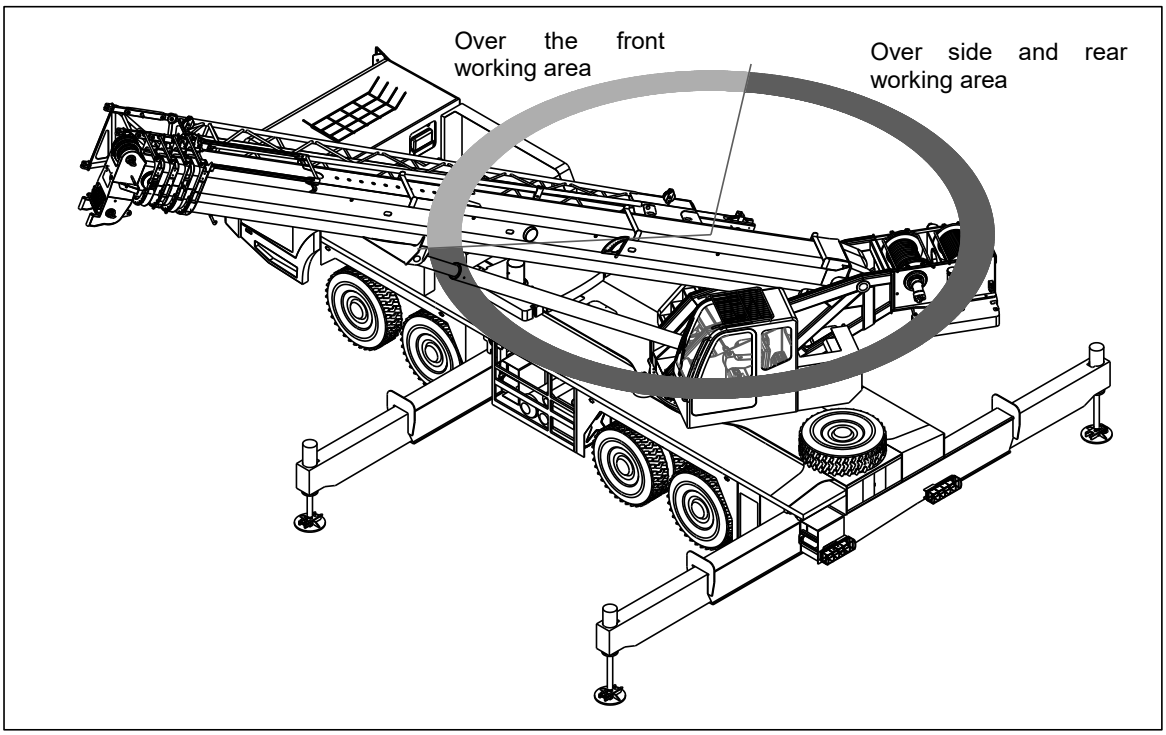


Figure 1-16 Working areas

Appendix: more information

1 Technical data

Item			Value	Remarks
Power system	Change interval of fuel hose	Month	24	
Brake system	Rated work pressure of air reservoir	MPa	0.9	
	Response time of system	S	0.55	
Driver's cab	Position and backrest angle of seat	°	Center position, moving backwards for 7°	Measure the depth of seat cushion.
	Normal usage condition of seat backrest	°	7°	

2 Overall dimensions instructions

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

No.	Description	Position	Remarks
1	Left rearview mirror	Left front of driver's cab	
2	Left wide-angle mirror	Left front of driver's cab	
3	Right rearview mirror	Right front of driver's cab	
4	Right wide-angle mirror	Right front of driver's cab	
5	Right close-proximity mirror	Right front of driver's cab	
6	Right lower mirror	Right front of driver's cab	
7	Handrail of driver's cab	Sides of driver's cab	
8	Stairs of driver's cab	Sides of driver's cab	
9	Turn signal	Left and right bottoms of driver's cab	
10	Water chute	Left and right uppers of door of driver's cab	
11	Water chute	Left upper of door of operator's cab	
12	Outrigger pads	Under the sliding beams	Removed from the crane during traveling or pushed into the inner side of chassis frame
13	Illumination device-side marking light	Left and right square guard board	

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 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 specialized personnel.

⚠ DANGER

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

⚠ CAUTION

(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.

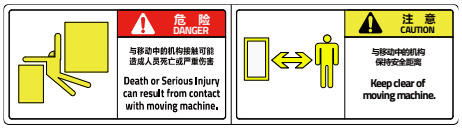
a) Read the operator's manual
This decal is only stuck on the right pane in operator's cab.

b) Do not telescope the boom with a suspended load.
This decal is only stuck on the right pane in the operator's cab.

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

d) No standing under the boom.
This decal is stuck on the sides of boom.

e) Be careful in the working radius.
This decal is stuck on the sides of fixed counterweight.



f) Fire extinguisher
It is on the side of driver's cab near the fender.

g) Keep clear of moving outriggers.
This decal is stuck on the sliding beam.

h) Always lock the door when not in use.
This decal is stuck on the lower right corner of left hood.

i) No step
This decal is on the roof of left hood.

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 work site. In particular:

a) Natural environment of work site
b) Work site and travel distance
c) Route
d) Height and width clearance measurements
e) Electric transmission lines
f) Space restrictions at the work 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 work 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) Jib
d) 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:
   - The work load and work speed must not be too high.
   - The maximum lifting capacity should not be larger than 80% of the rated 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 the 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) When the vehicle is driving for the first 2500 km – 3000 km, replace the engine oil.

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 or braking lining 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 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

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.

Make sure that only the personnel who are qualified and authorized 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, 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 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 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 signalman

The signalman is to transfer 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 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 selecting 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 ground with sufficient load bearing capacity.

c) The ground pressure should comply with the permitted and expected value under the crane 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:

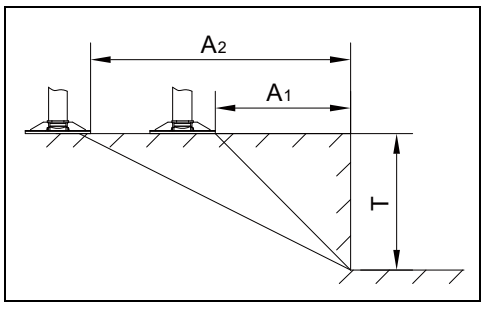
For non-cohesive and soft cohesive ground:

$A_2 = 2T$ (1)

For stiff or semi-solid cohesive ground:

$A_1 = T$ (2)

T refers to the depth of ditch.



DANGER

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 shown in Table 2-1, and it is for reference only.

Table 2-1 Load bearing capacity of the ground

Ser. No.	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 Coarse-grained sand to gravel	 1.5 2.0
	3. Cohesive ground: Sludgy Soft Firm Semi-compact Hard	 0 0.4 1.0 2.0 4.0
	4. Rock with few fissures, in healthy, unweathered condition and in a favorable location: In cohesive layer order In massive or column-style shape	 15 30
C	Artificially compacted ground:	
	1. Asphalt	5 – 15
	2. Concrete Concrete group B I Concrete group B II	 50 – 250 350 – 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.

CAUTION

Only strong materials may be used for the outrigger pad bases such as properly dimensioned wooden timbers.

In order to make sure that the pressure is evenly distributed over the base surface, the outrigger pads must be positioned 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 cylinder, extend the sliding beams to the specified positions.

c) Extend all the sliding beams according to the data in the lifting capacity table and secure them by pins.

d) Before operation, level the crane. Under any working conditions, the inclination angle α of the crane must not be more than 0.6°. Refer to Figure 2-1.

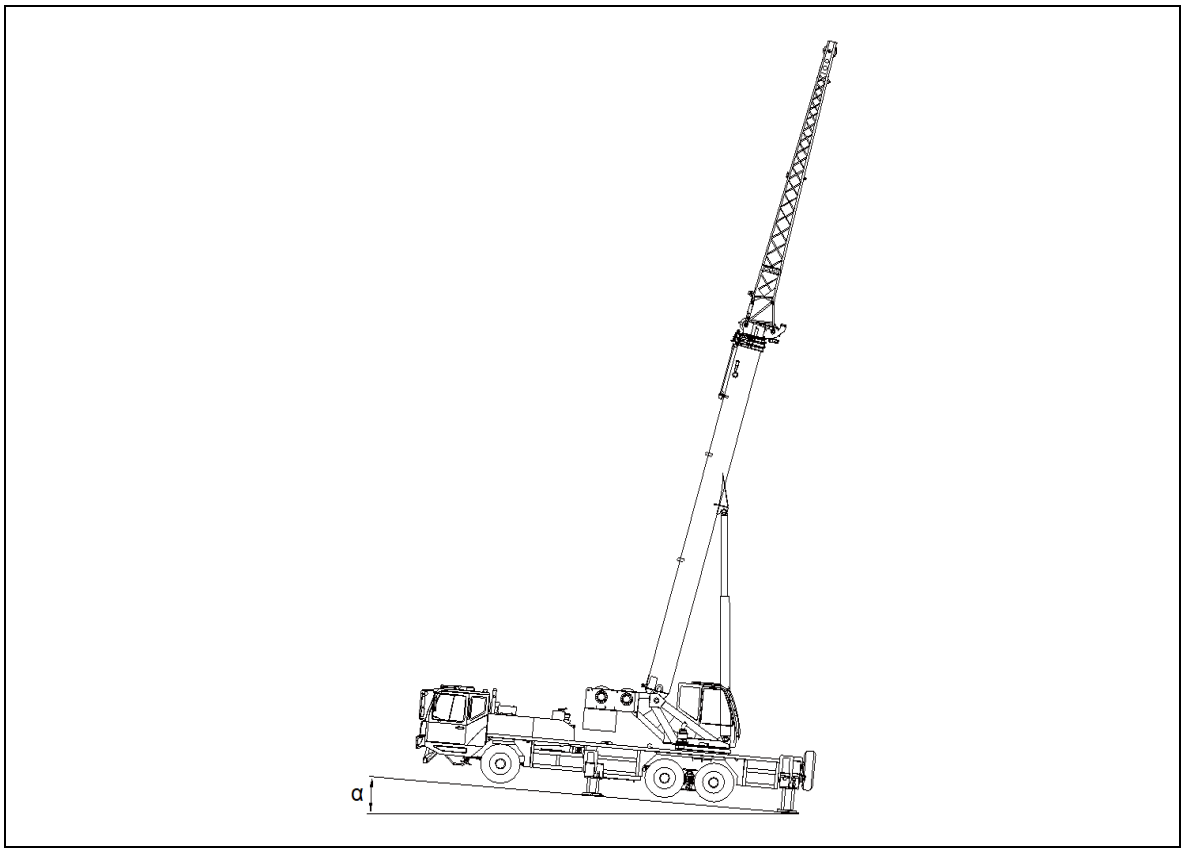


Figure 2-1 Inclination angle of crane

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:

a) The placement location has been selected in such a way that the crane can be operated with the least possible radius.
b) The load bearing capacity of the ground is adequate.
c) There is a sufficient safe distance to slopes or ditches.
d) All outriggers have been extended to the specified position.
e) The outriggers are secured with pins.
f) The outrigger pads are secured.
g) The crane has been leveled.
h) 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 from -20°C to 40°C.

NOTICE

Pay attention to the ambient temperature in the job-site.

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/m^2.

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 s 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 2-2.

Table 2-2 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: $p=0.625v_s^2$. (p represents wind pressure, unit: N/m^2, 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 2-3.

Table 2-3 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	

WARNING

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, height above sea level should not be higher than 2000 m.

If the height above sea level of job-site is between 2000 m and 4000 m, activate the highland mode switch in order to reduce a highland influence on the crane. For the details, please refer to 3.1.8.1 in Chapter 3.

If the height above sea level of job-site is above 4000 m, have the crane made to order in advance.

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:

- **Gradeability is reduced.**
- **Fuel consumption is increased.**
- **The boiling temperature of engine coolant decreases.**
- **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.

WARNING

During crane operation, stop working in case of thunderbolt or rainstorm. At the

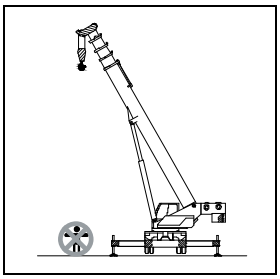
same time, fully retract and correctly stow the boom.

c) Strong electromagnetic fields are likely to be present if the construction site is close to a transmitter. Under this condition, be sure to consult a high frequency specialist or contact the local franchiser or the manufacturer.

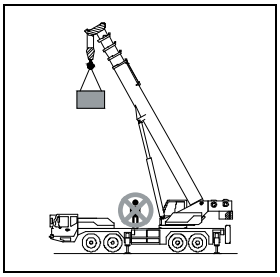
Electromagnetic field can pose direct or indirect danger, such as harmful effect on human organs due to radiation and make spark or electric arc, to persons, equipment and objects.

2.4.5 Points for attention for safe operation

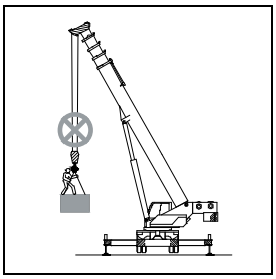
a) Personnel must stay away from the area below the boom.



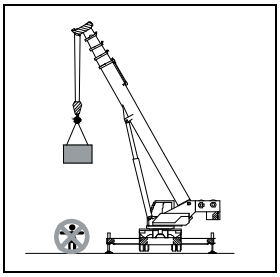
b) Do not let personnel on the slewing table while you operate the crane.



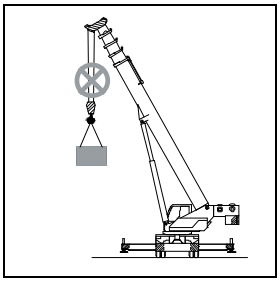
c) Do not move personnel on the load or other equipment used to lift.



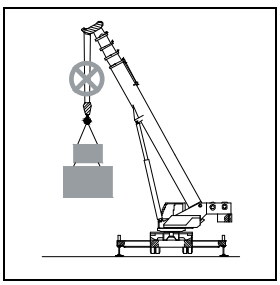
d) Do not move a load above personnel.



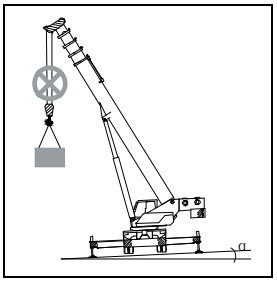
e) Support the crane on outriggers before operation.



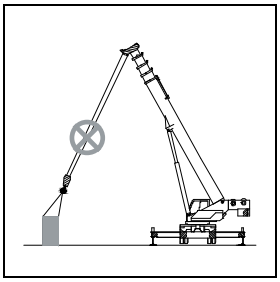
f) Do not lift a load that is above the capacity of the crane.



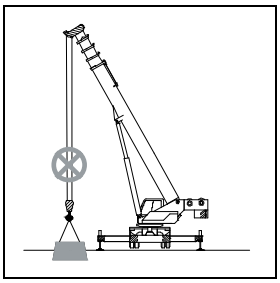
g) The crane, with extended outriggers, must be on the ground with a slope α of less than 0.6° during operation.



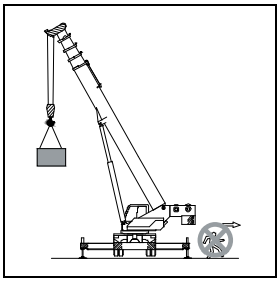
h) Do not pull load at an angle and do not lift a load that is not in balance.



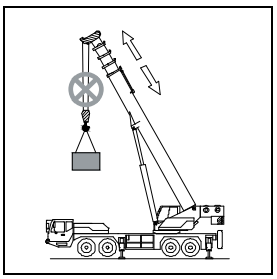
i) Do not try to lift a load that is buried or frozen on the ground.



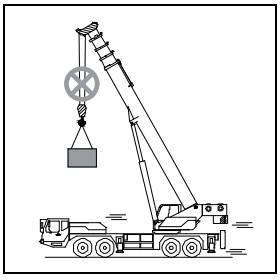
j) When the load is off the ground, the operator must stay in the cab.



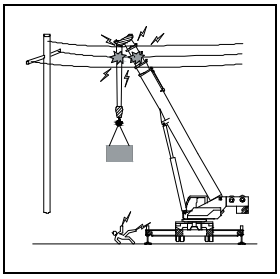
k) Do not telescope the boom with a suspended load.



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



m) When the job-site is near 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) When the load is off the ground, do not adjust the hoist gear brake.

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.

⚠ DANGER

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 that decreases the safe operation of the crane, such as failure of brake and safety devices or damage to wire rope.

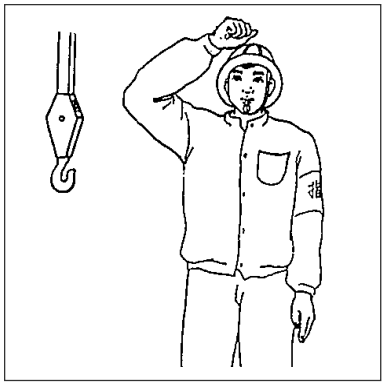
2.5 Hand signals

a) Start

Hold the right arm stretched vertically upwards. The palm faces forwards.

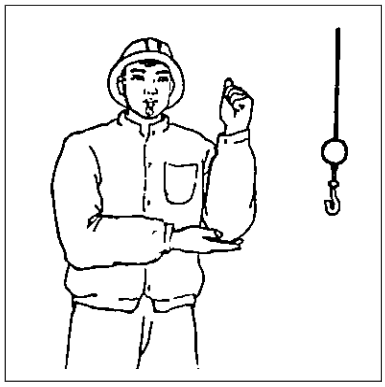
b) Use main winch

Tap fist on head, then use regular signal.



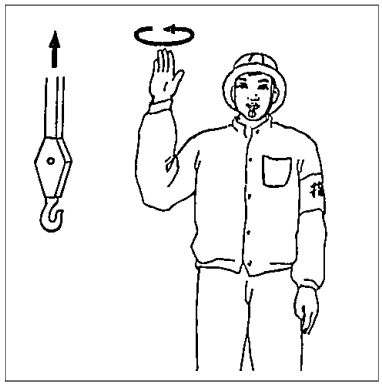
c) Use auxiliary winch

Tap elbow with one hand, then use regular signal.



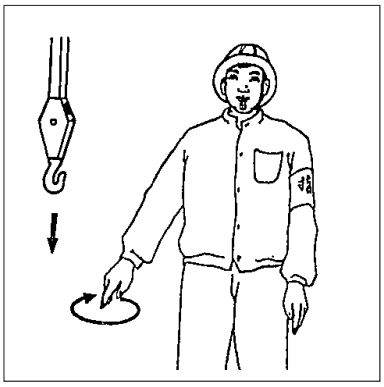
d) Lift the load

With forearm vertical, extended fingers pointing up, move hand in small horizontal circle.



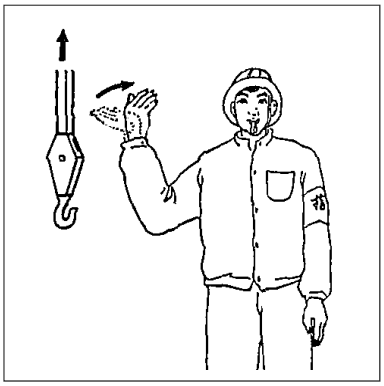
e) Lower the load

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

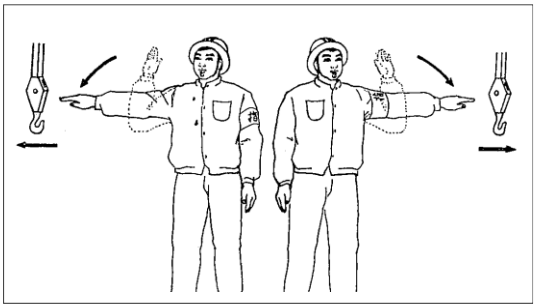
With forearm vertical, palm of the hand facing upwards, wave hand up repeatedly.



g) Rotate

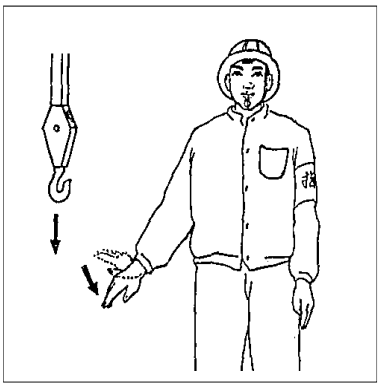
Turn left: With right forearm vertical, the palm of the hand facing outwards, lower the forearm sideways horizontally, fingers pointing in the direction of rotation.

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

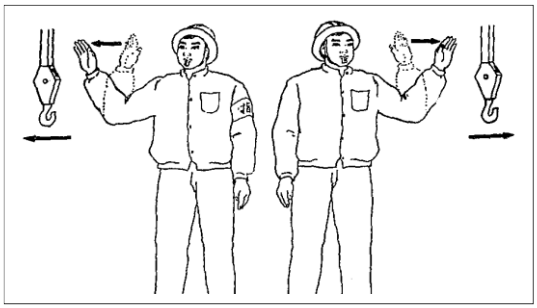
With arm extended downwards with a 30° angle to the body, palm of the hand facing downwards, wave hand down repeatedly.



i) Rotate slowly

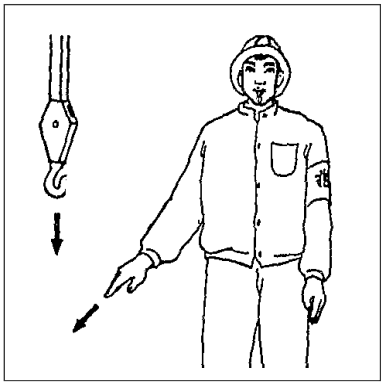
Turn left: With right forearm vertical, the palm of the hand facing outwards, move forearm horizontally and repeatedly, fingers pointing in the direction of rotation.

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.



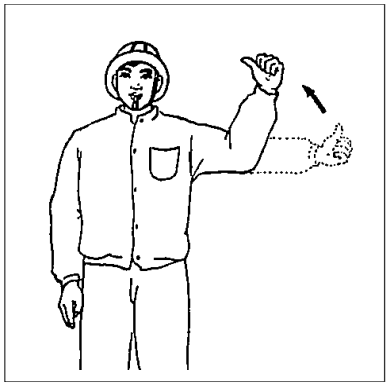
j) Indicate load lowering position

Extend the fingers to point at the position the load should fall on.



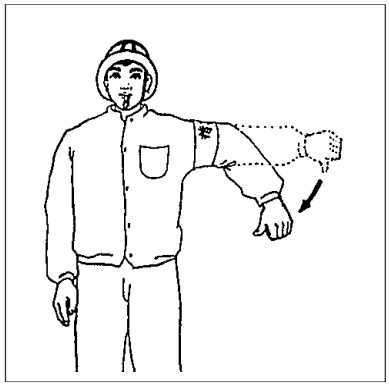
k) Raise boom

Arm extended, finger closed, thumb pointing upward.



l) Lower boom

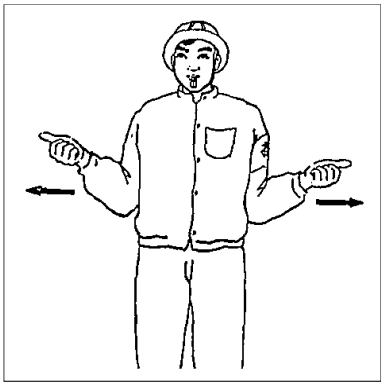
Arm extended, finger closed, thumb pointing downward.



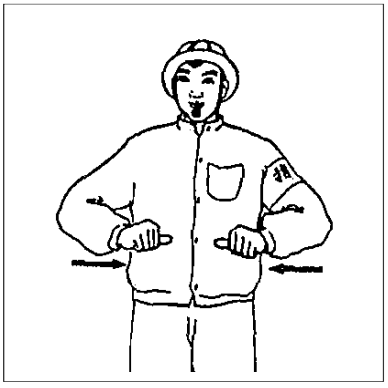
m) Raise boom slowly
Forearm extends in front of body with palm facing downwards, another hand moves up and down with thumb pointing upwards.

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

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

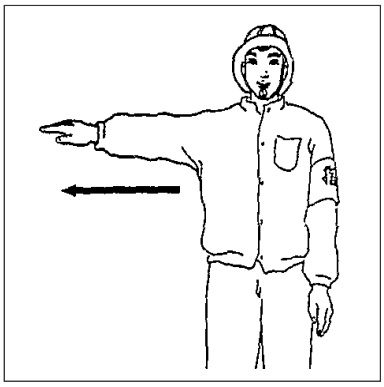


p) Retract boom
Both fists in front of body with thumbs pointing toward each other.



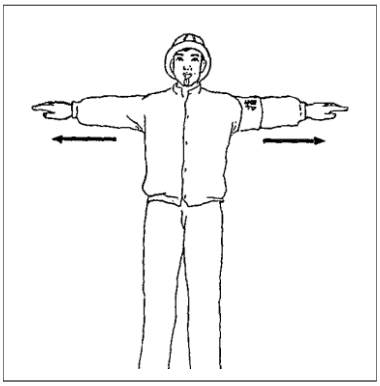
q) Stop

Arm extended, palm down, and move the arm back and forth horizontally.



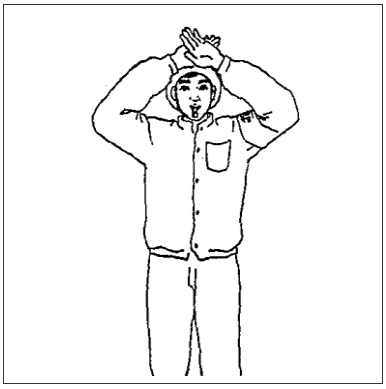
r) Emergency stop

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 Overview

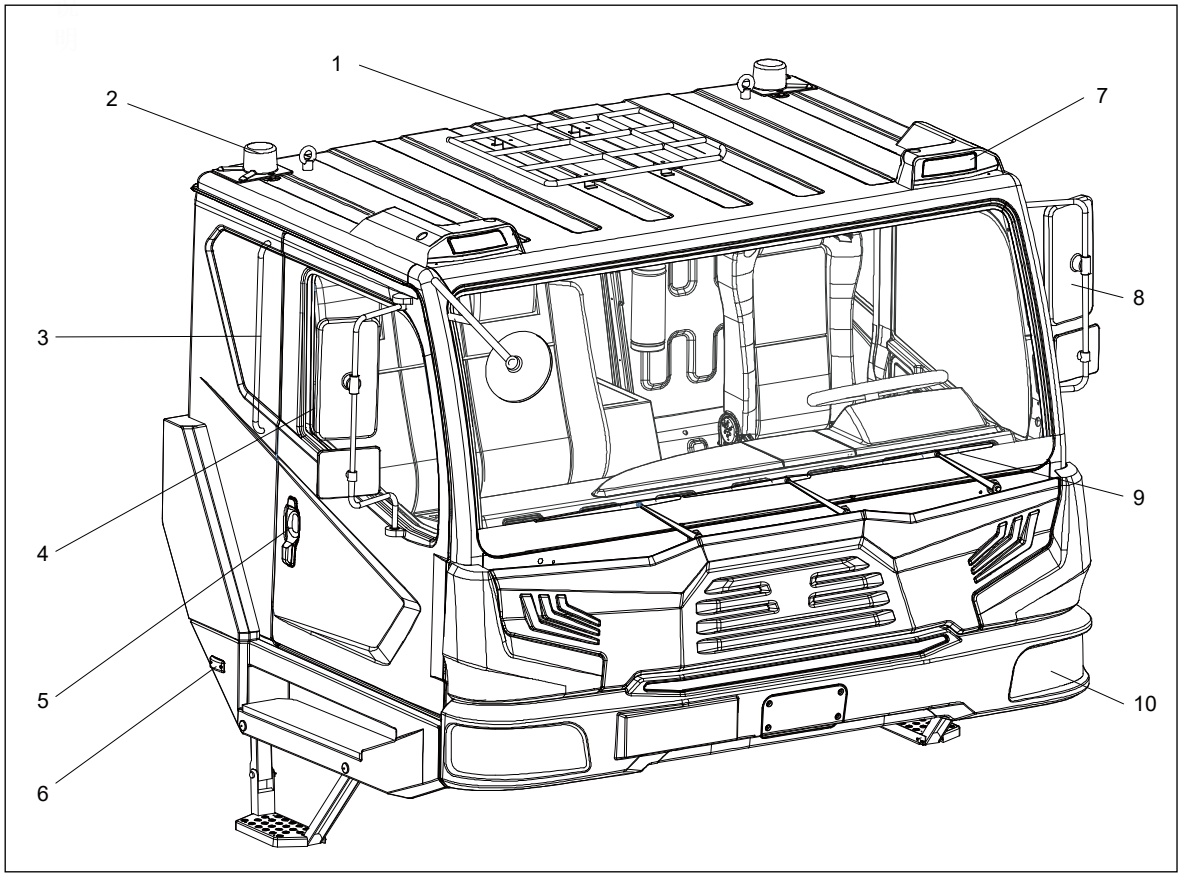


Figure 3-1 Cab exterior

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

The part marked with "a" is optional.

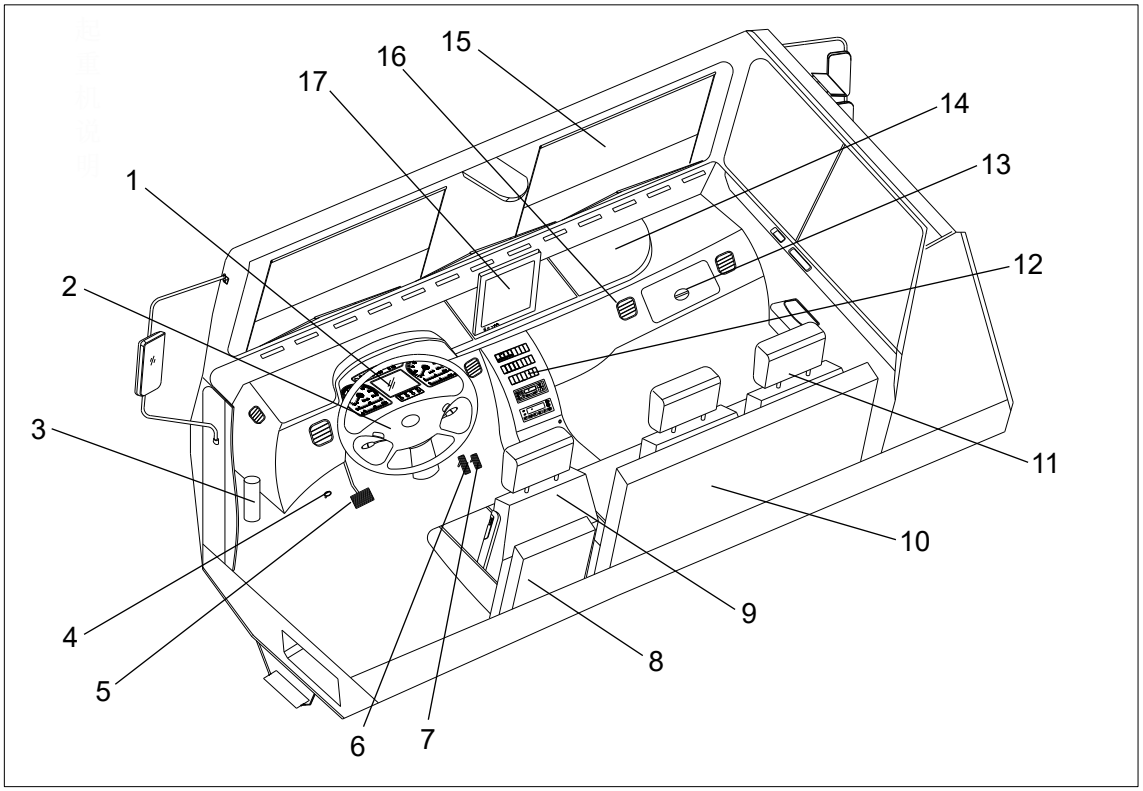


Figure 3-2 Cab interior

Pos.	Description	Pos.	Description
1	Instrument console	10	Sleep berth
2	Steering wheel assy.	11	Co-driver's seat
3	Oil reservoir, clutch (Not applicable to ATM)	12	Center console
4	Air horn switch	13	Center electric control box
5	Foot pedal (L): Clutch (Not applicable to ATM)	14	Toolbox
6	Foot pedal (M): Service brake	15	Sun visor
7	Foot pedal (R): Engine control	16	Air conditioner vent
8	Electrical control cabinet	17	LCD screen
9	Driver's seat		

3.1.2 Steering wheel assy.

See Figure 3-3.

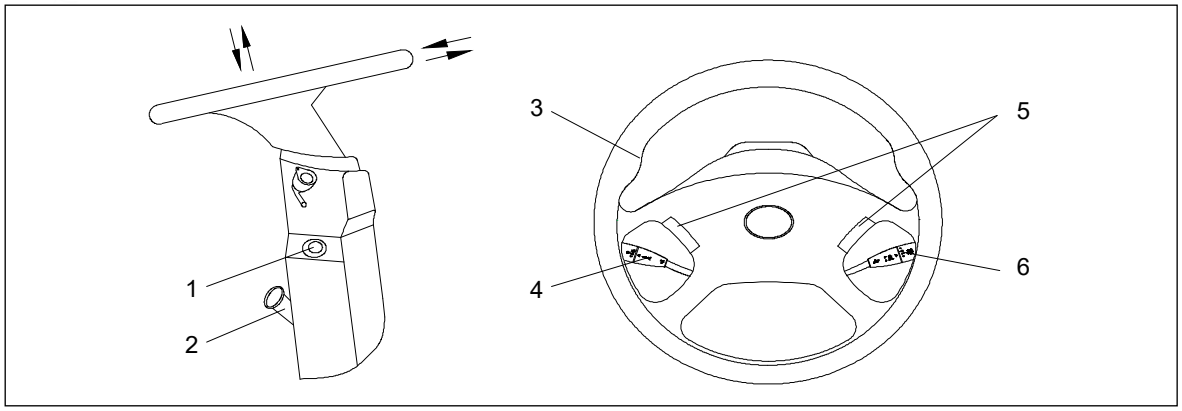


Figure 3-3 Steering wheel assy.

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

3.1.2.1 Steering wheel adjustment handle

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

You can adjust the steering wheel height and position when you pull the adjustment handle upwards.

CAUTION

1) **DO NOT adjust the steering wheel while you move the crane. This can kill you.**
2) **Pull the handle downwards to lock the steering wheel after adjustment.**

3.1.2.2 Left-hand steering column switch

See Figure 3-4.

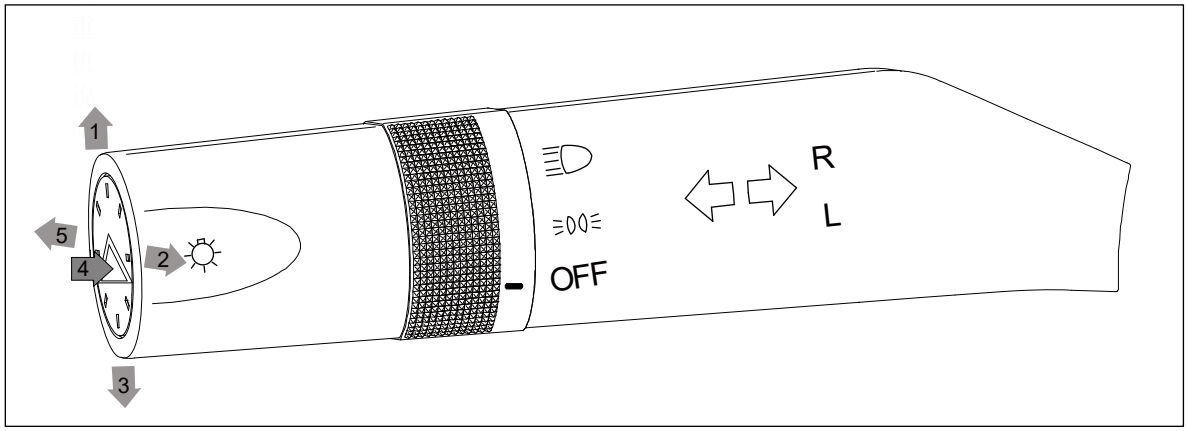


Figure 3-4 Left-hand steering column switch

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, once the headlamp flasher is on, the headlamp will light up.

c) Hazard light switch

Press the " △ " 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 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 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.

3.1.2.3 Right-hand steering column switch

See Figure 3-5.

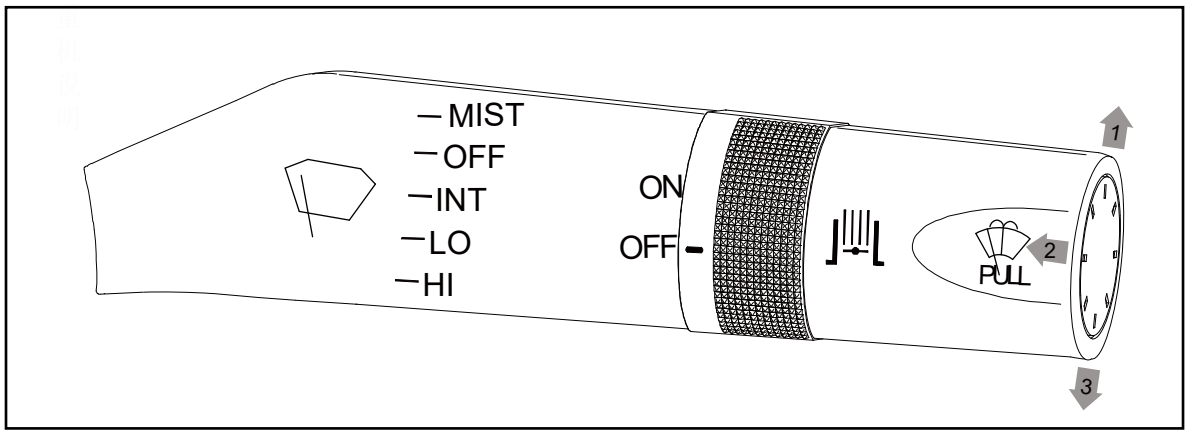


Figure 3-5 Right-hand steering column switch

a) Activate the windshield wiper

Jog the steering column switch forwards (in direction 1, MIST): activate the windshield wiper and automatically reset.

Jog the 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 the steering column switch (in direction 2). The washer and wiper begin to work. They will not stop working until the button is released.

CAUTION

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

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 sequence) 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 of chassis is electrified.

START A temporary position, use it to operate the starter. The key will return to position "ON" automatically after you release the key when the engine starts.

CAUTION

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

3.1.2.6 Power windows

1. Controls beside driver

Swich, left door window

Press it forwards:

Door windows manually rise.

Press it backwards:

There are two positions.

Shift 1: door windows manually descend.

Shift 2: door windows automatically descend.

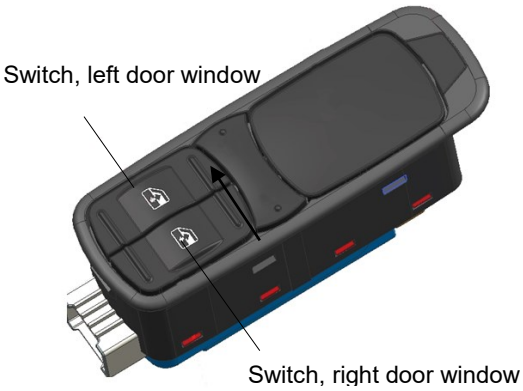
Switch, right door window

Press it forwards:

Door windows manually rise.

Press it backwards:

Door windows manually descend.



2. Controls beside co-driver

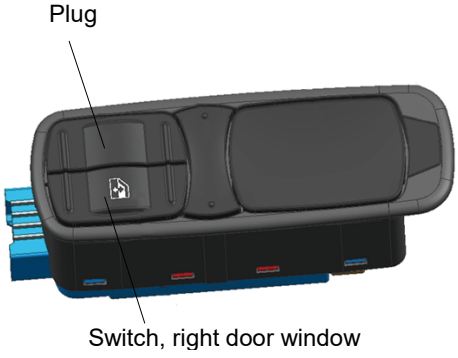
Switc, right door window

1) Press it forwards:

2) Door windows manually rise.

3) Press it backwards:

Door windows manually descend.



3.1.3 Instrument assy.

3.1.3.1 Instruments

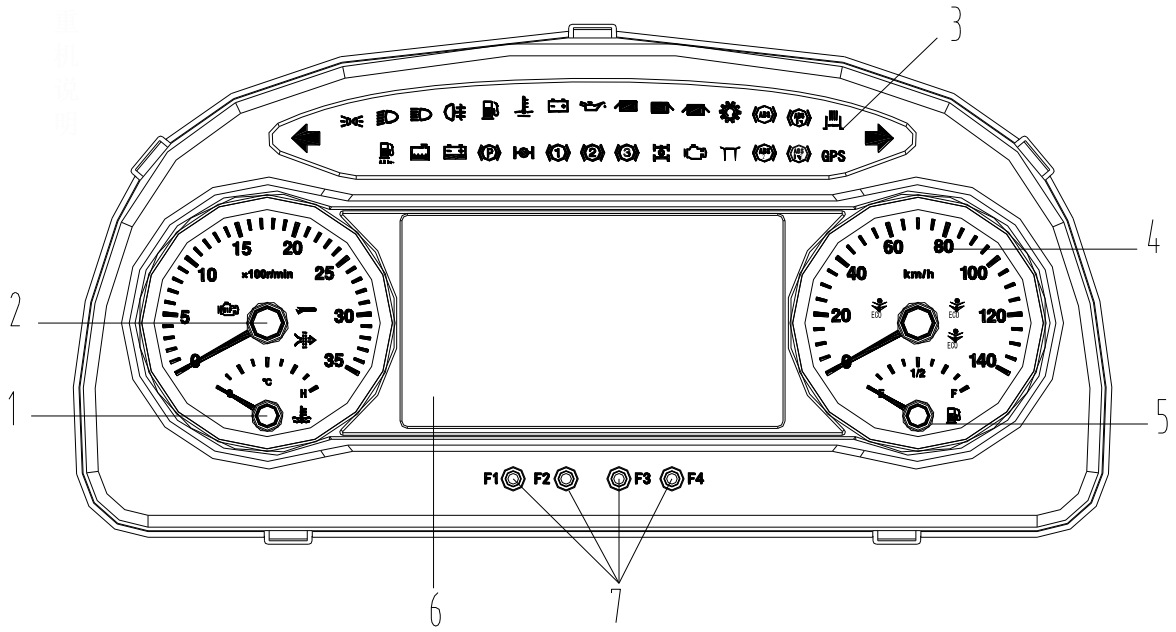
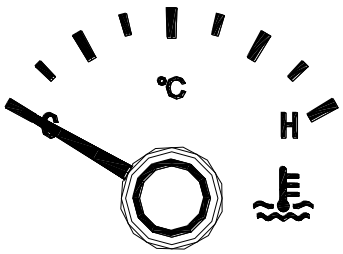


Figure 3-6 Instrument assy.

Pos.	Description	Pos.	Description
1	Engine coolant thermometer	5	Fuel level indicator
2	Engine tachometer	6	Main interface
3	Indicator lights	7	Operational buttons
4	Speedometer		

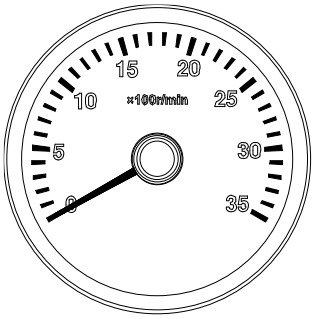
1. **Engine coolant thermometer**

When the ignition starter switch is in ON position, the engine coolant thermometer displays the engine coolant temperature. The pointer locates in the white sector when the crane is driving under normal condition; when the crane is driving in a hot area or up a slope, the pointer will move to the right red sector.



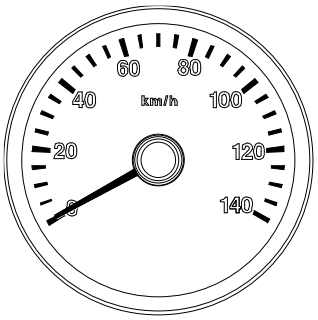
2. Engine tachometer

Displays engine speed (RPM).



3. Odometer

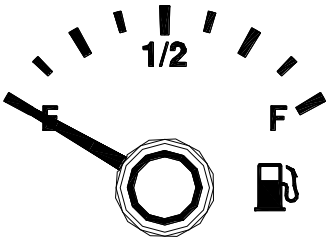
Displays the speed of the crane in kilometers per hour (km/h)



4. Fuel level indicator

Displays the level of remaining fuel in the fuel tank.

When the ignition starter switch is in ON position, the fuel gauge approximately displays the remaining fuel level in the fuel tank. "F" indicates a full tank while "E" indicates an empty tank.



CAUTION

Refill the fuel when the pointer is near "E" to ensure normal crane driving.

3.1.3.2 Control lights

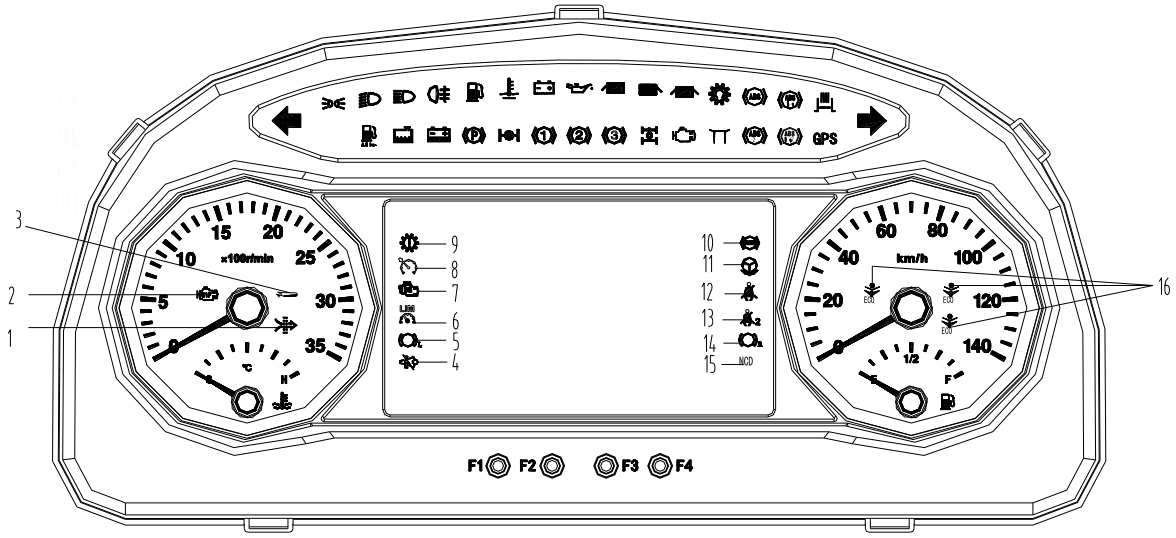
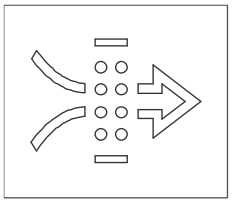


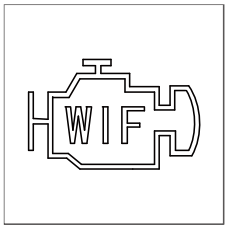
Figure 3-7 Instrument indications

Pos.	Description	Pos.	Description
1	Warning light Air filter clogged (Not used)	9	Warning light AMT (Not used)
2	Warning light Water in fuel	10	Control light ASR (Not used)
3	Control light Chassis maintenance	11	Control light Emergency steering (Not used)
4	Control light DPF regeneration/prohibition	12	Warning light Driver's seatbelt unfastened
5	Control light Left friction lining worn out	13	Warning light Co-driver's seatbelt unfastened
6	Warning light Overspeed	14	Control light Right friction lining worn out
7	Warning light Engine malfunction	15	Warning light Driver alarm system (or performance constraint system)
8	Cruise control light (Not used)	16	Control light Intelligent fuel efficiency mode (Not used)

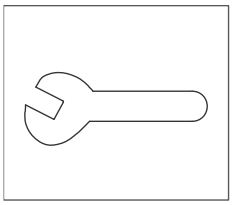
1. **Warning light**
   Air filter clogged
   (Not used).



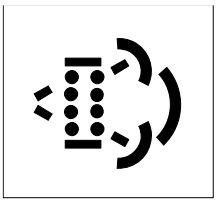
2. **Warning light**
   Water in fuel
   Illuminates:
   Indicating that the water level in the fuel coarse filter element's water collecting cup is too high.
   Discharge the water from the cup.



3. **Control light**
   Chassis maintenance
   Illuminates:
   Indicating that there is a component needing maintenance in the chassis.
   Check the component to be maintained on the screen and confirm the reminding.



4. **Control light**
   DPF regeneration
   Flashing in yellow:
   Indicating that the driver needs to park the crane to conduct DPF regeneration.
   Press the DPF regeneration switch after the crane is parked safely.
   Illuminates and remains on in red:
   Indicating that the chassis needs DPF regeneration from a repair facility.
   Drive the crane to a service station and have the DPF regenerated.
   During the regeneration process, the indicator light will illuminate and remain on in yellow first and then go off after the regeneration is completed.



5. Control light

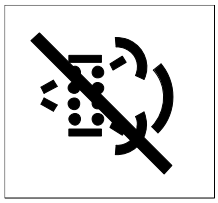
DPF regeneration prohibited

Illuminates and remains on in red:

Indicating that the DPF regeneration prohibition switch is pressed.

The DPF regeneration prohibition switch can automatically return to its original position after being pressed and then released.

When the switch is pressed, the prohibition is activated and this control light illuminates; when it is pressed again, the prohibition is deactivated and this control light goes off; and so on so forth.



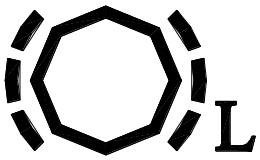
CAUTION

This switch should be used only in a special circumstance, such as driving the crane in an unsafe area. By pressing this switch, regeneration process is prohibited temporarily to avoid accident caused by hot air.

6. Control light

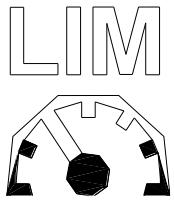
Left friction lining worn out

One or multiple friction linings at the left side of the axles are worn out. This control light illuminates when an open circuit is detected.



7. Overspeed warning light

This light illuminates when the vehicle speed exceeds the upper limit.



8. Warning light

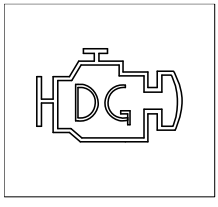
Engine error code displayed

Illuminates and remains on:

An engine malfunction occurs.

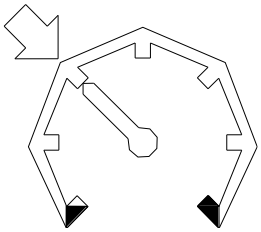
Bring the vehicle to a standstill and rectify it.

Read the error code in terms of operating instructions on the instrument.



9. Cruise indicator light

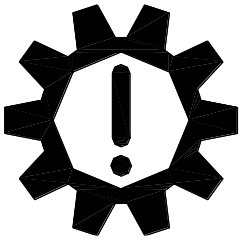
(Not used)



10. Warning light

Transmission malfunction

(Not used)



11. Control light

ASR

(Not used)

12. Control light

Emergency steering

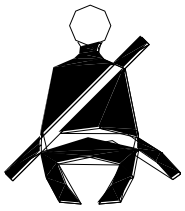
(Not used)

13. Warning light

Driver's seatbelt unfastened

Illuminates:

The driver's seatbelt is unfastened.

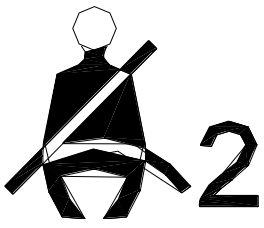


14. Warning light

Co-driver's seatbelt unfastened

Illuminates:

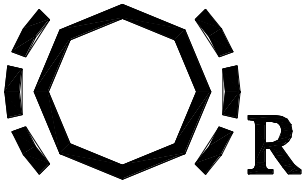
The co-driver's seatbelt is unfastened.



15. **Control light**

Right friction lining worn out

One or multiple friction linings at the right side of the axles are worn out. This control light illuminates when an open circuit is detected.



16. **Control light**

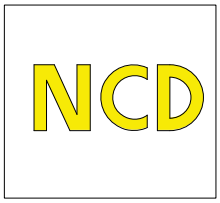
Driver alarming system activated

Flashing in yellow:

The driver alarming system is activated due to excessively low Adblue level.

Illuminates and remains on in yellow:

Indicating that the driver alarming system is activated due to other malfunctions.



17. **Control light**

Driver performance limitation system activated

Illuminates and remains on in red:

Initial driving performance limitation is activated (engine torque is limited to 75%).

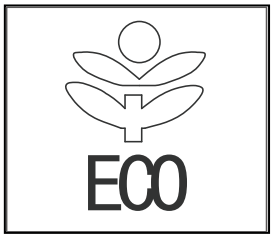
Flashing in red:

Primary driving performance limitation is activated (vehicle speed is limited to 20Km/h).

18. **Control light**

Engine operation mode

(Not used).



3.1.3.3 Control lights

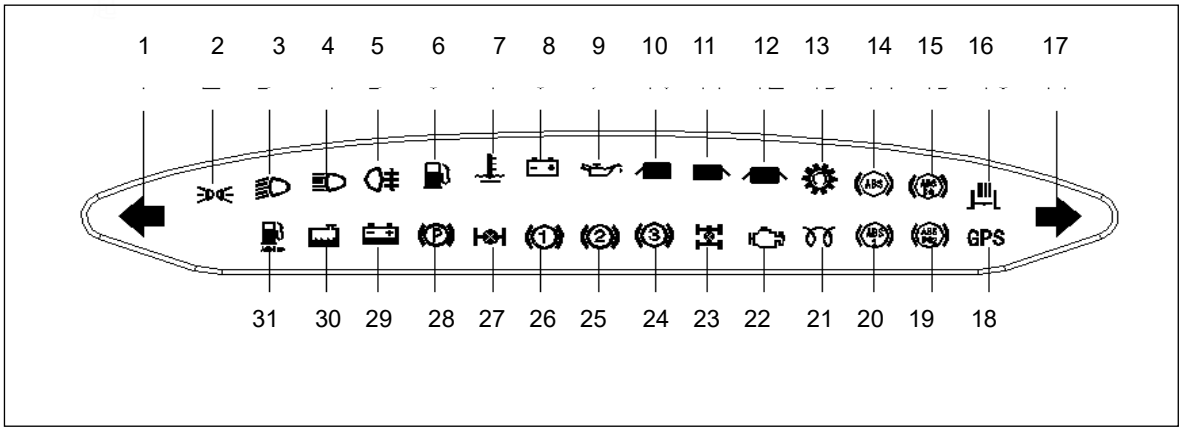


Figure 3-8 Display unit

Pos.	Description	Pos.	Description
1	Control light Vehicle direction of travel left	17	Control light Vehicle direction of travel right
2	Control light Lighting	18	Control light GPS status (Not used)
3	Control light Low beam	19	Control light ABS diagnosis malfunction
4	Control light High beam	20	Control light ABS 2 malfunction
5	Control light Rear fog light	21	Control light Engine preheating
6	Warning light Fuel level low	22	Control light Engine after-treatment malfunction
7	Warning light Engine coolant overtemperature	23	Control light Longitudinal differential lock
8	Control light Charging monitoring	24	Warning light Low pressure 3
9	Warning light Engine oil pressure low	25	Warning light Low pressure 2
10	Warning light Left door opened	26	Warning light Low pressure 1
11	Warning light Right door opened	27	Control light Transversal differential lock
12	Warning light Left and right doors opened	28	Control light Parking brake applied

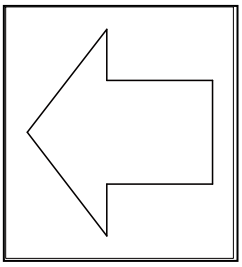
13	Control light PTO engaged	29	Warning light Power supply undervoltage
14	Control light ABS malfunction	30	Warning light Coolant level low
15	Control light ABS error code displayed	31	Warning light Adblue level low
16	Control light VVEB applied		

1 Control light

Vehicle direction of travel left

Illuminates:

The vehicle is to turn left.



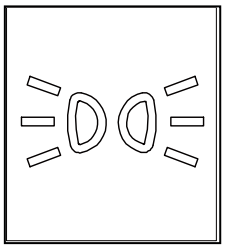
2 Control light

Lighting

Illuminates:

The left-hand steering column switch is rotated to the position.

The front width lamp, rear width lamp, corner marker light, license plate lamp, operating instrument lamp and side marker light are also ON.

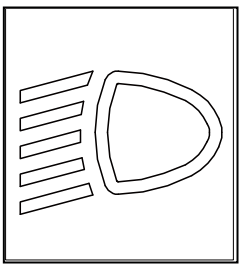


3 Control light

Low beam

Illuminates:

The low beam is ON.

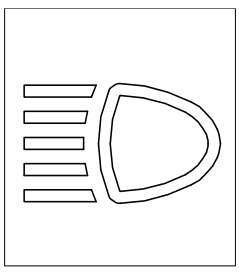


4 Control light

High beam

Illuminates:

The high beam or headlamp flasher is ON.

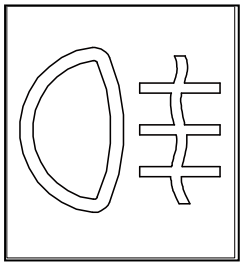


5 Control light

Rear fog light

Illuminates:

The rear fog light is ON.

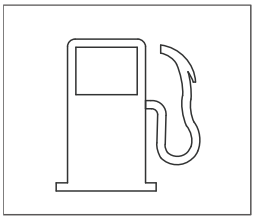


6 Warning light

Fuel level low

Illuminates:

The fuel level is lower than the set value (10%).

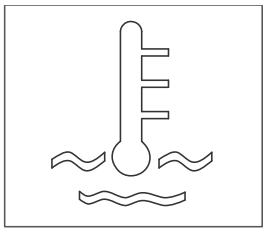


7 Warning light

Engine coolant temperature high

Illuminates:

Engine coolant temperature is higher than the set value (109℃).

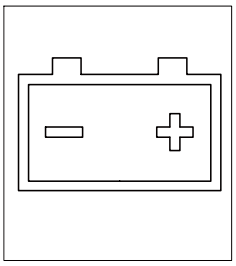


8 Control light

Charging monitoring

Illuminates:

The generator does not start or there is a charging circuit fault.



9 Warning light

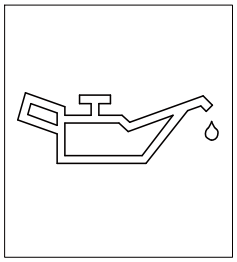
Engine oil pressure low

Illuminates:

Ignition starter switch is in position ON under normal condition.

Extinguishes:

Engine starts.



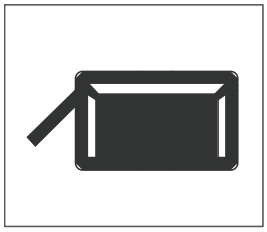
CAUTION

The warning light illuminates if the engine oil pressure is

low or the engine oil filter element is dirty. Immediately bring the crane to a standstill and rectify! Otherwise the engine will be damaged seriously!

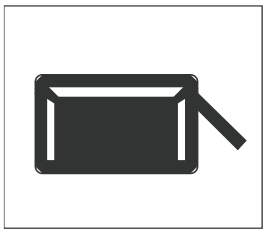
10 **Warning light**
Left door opened
Illuminates:

The left door is opened.



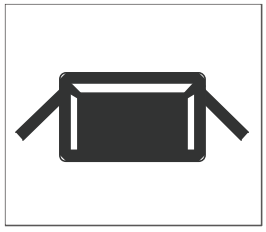
11 **Warning light**
Right door opened
Illuminates:

The right door is opened.



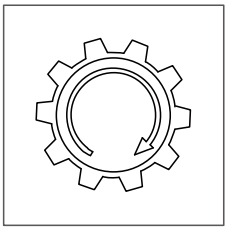
12 **Warning light**
Left and right doors opened
Illuminates:

The left and right doors are opened.

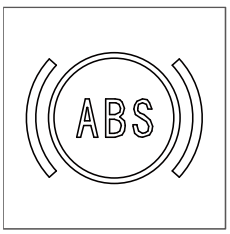


13 **Control light**
PTO engaged
Illuminates:

The PTO is engaged.



14 **Control light**
ABS malfunction
Illuminates:
The ABS malfunctions



15 Warning light

ABS error code displayed

Illuminates:

Indicates that there is a system failure.

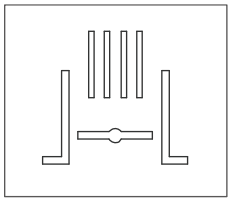
Switch on the ABS fault diagnosis switch to read the flash code.

16 Control light

VVEB applied

Illuminates:

The VVEB is working.



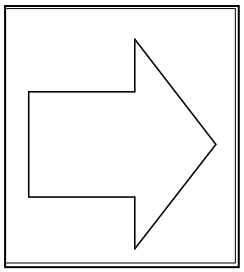
17 Control light

Vehicle direction of travel

right

Illuminates:

The vehicle is to turn right.



18 Control light

GPS state

This vehicle doesn't support this function.

19 Control light

ABS2 malfunction

Not used

20 Control light

ABS2 error code displayed

Not used.

21 Control light

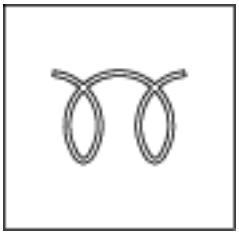
Diesel engine preheating system

Illuminates:

The engine is being preheated.

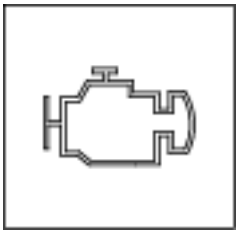
Note:

The preheating system works automatically and is controlled by the air intake temperature of the engine.



22 Control light

Engine after-treatment malfunction



1) When there is no after-treatment malfunction:

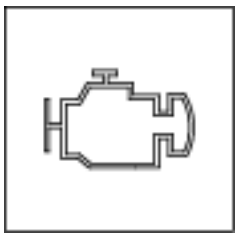
After the ignition starter switch is turned to ON position, this warning light first illuminates and remains on for 5 s, then it goes off for 10 s. After that, it flashes every 5 s.

After the engine is successfully started and there is no after-treatment malfunction, it will go off immediately.

2) Class C malfunction

When there is a malfunction which could possibly influence exhaustion performance but will not result in excessive emission:

After the ignition starter switch is turned to ON position, this warning light first illuminates and remains on for 5 s, then it goes off for 10 s. After that, it flashes twice every 5 s to indicating such a malfunction.



After the engine is successfully started and it will go off immediately.

Note:

A Class C malfunction will become a historic malfunction after three driving cycles.

3) Class B malfunction

Can be further divided into Class B1 and B2:

Class B1 malfunction: refers to a malfunction which will possibly result in excessive emission;

Class B2 malfunction: refers to a malfunction which will possibly influence emission adversely but will not result in excessive emission.

In case of a Class B malfunction, after the ignition starter switch is turned to ON position, this warning light first illuminates and remains on for 5 s, then it goes off for 10 s. After that, it flashes three times every 5 s to indicating such a malfunction. After the engine is successfully started and it will go off immediately.

Note:

A Class B malfunction will become a historic malfunction after two driving cycles.

4) Class A malfunction:

Refers to a malfunction which will result in excessive emission. After the ignition starter switch is turned to ON position, this warning light first illuminates and

remains on for 5 s, then it goes off for 10 s. After that, this indicator light remains on all the time.

After the engine is successfully started, this indicator light still remains on.

Note:

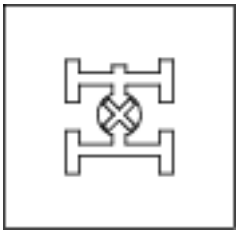
Class A malfunction will only become a historic malfunction after it has been eliminated and another two driving cycles are completed.

23 Control light

Longitudinal differential lock

Illuminates:

The button "Longitudinal and transversal differential locks" is switched on and the longitudinal differential is locked.



24 Control light

Low pressure 3

Illuminates:

The pressure of parking brake is lower than the set value (0.5 MPa).

25 Control light

Low pressure 2

Illuminates:

The pressure of service brake of rear axle is lower than the set value (0.5 MPa).

26 Control light

Low pressure 1

Illuminates:

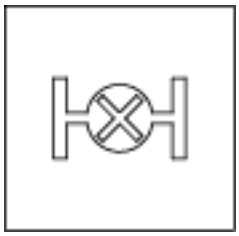
The pressure of service brake of front axle is lower than the set value (0.5 MPa).

27 Control light

Transversal differential lock

Illuminates:

The button "Longitudinal and transversal differential locks" is switched on and the transversal differential is locked.



28 Control light

Parking brake closed

Illuminates:

Parking brake is closed.

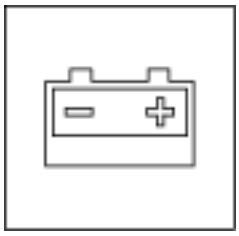
Do not start the vehicle until the parking brake is released and the control light extinguishes.

29 Warning light

Power supply voltage low

Illuminates:

The power supply voltage is lower than the setting value of 23V.

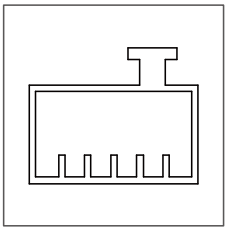


30 Warning light

Coolant level low

Illuminates:

The coolant level in the engine expansion tank is lower than the limit value.



NOTICE

Add coolant after the coolant

temperature is decreased, so as to avoid engine cylinder damage due to sudden temperature reduction.

31 Warning light

Adblue level low

Illuminates:

The Adblue level is lower than the setting value of 10%.

3.1.3.4 Main instrument interface

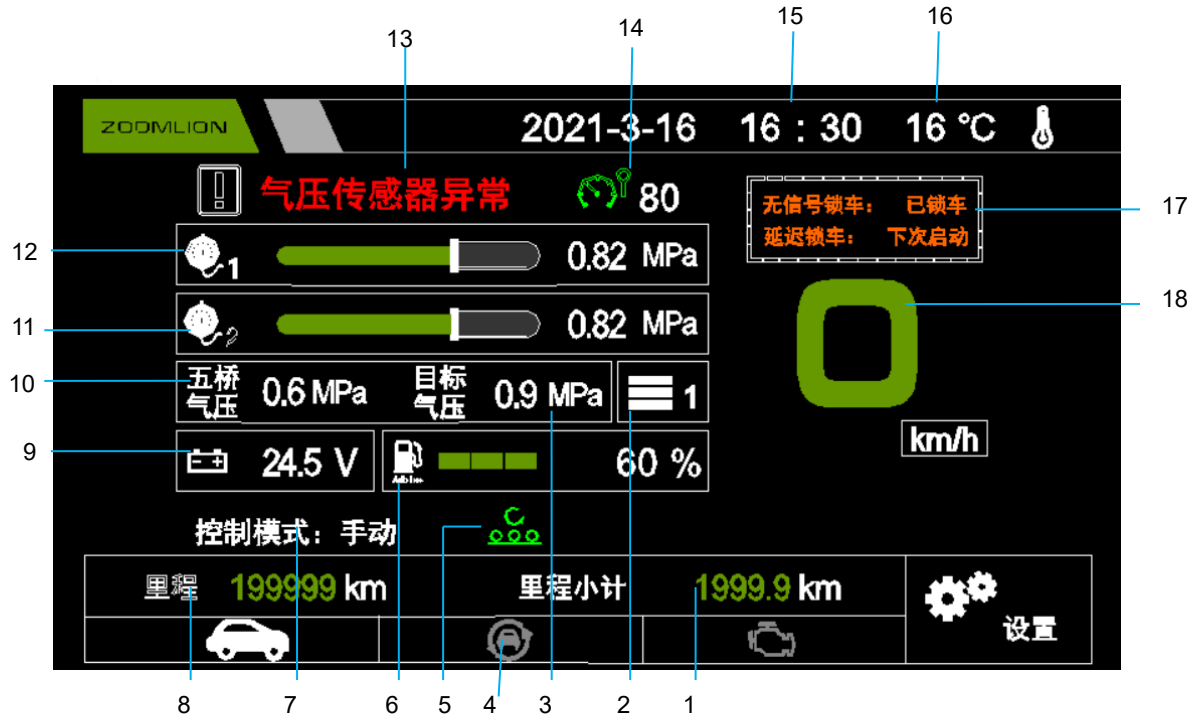
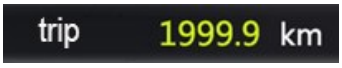


Figure 3-9 Main interface

Pos.	Description	Pos.	Description
1	Mileage subtotal	10	Current air pressure Axle 5 suspension
2	Number of counterweight plates	11	Indicator Low pressure 2
3	Target pressure, Axle 5	12	Indicator Low pressure 1
4	Interface indication (F1, F2 and F3 setting)	13	Text prompt area
5	Drive to position, Axle 5	14	Overspeed alarm
6	Adblue level	15	Time and date
7	Air pressure control mode (auto/manual) Axle 5 suspension	16	Ambient temperature
8	Mileage total	17	GPS prompt box (Not used)
9	Battery voltage	18	Vehicle speed digital display

1 Indicator
Mileage subtotal

Displays the mileage within the current driving cycle



2 Number of counterweight plates

Displays the number of detected counterweight plates on the chassis frame.

3 Target air pressure

Displays the target air pressure of Axle 5 suspension corresponding to current number of counterweight plates detected on the chassis frame.

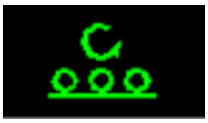
When an optional 415/80R22 tire is installed for Axle 5, the target air pressure is 0.6Mpa for one and above counterweight plates installed; and 0.5 Mpa for no counterweight plate installed.

When an optional 325/95R24 tire is installed, the target pressure is 0.5 Mpa for all the counterweight combinations.

4 Indicator
Drive-to-position, Axle 5 suspension

Illuminates:

The drive-to-position detection switch is connected after Axle 5 is switched over to the driving status (only applicable to part-time drive).



5 Adblue level

Displays current Adblue level.

6 Air pressure control mode, Axle 5 suspension

The two control modes, i.e. automatic and manual, can be switched over using the mode switch（A/M）.

Under the automatic mode, when the PTO is not engaged and the parking brake is applied, the 0.5/0.6Mpa switch and the air relief pressure switch are invalid. Air pressure of Axle 5 suspension is adjusted to the target value according to counterweight installed. When the PTO is engaged or during crane traveling, the automatic control mode is invalid.

Under the manual mode, when the parking brake is applied and the PTO is not engaged, the 0.5/0.6Mpa switch and the air relief pressure switch are valid. Air pressure of Axle 5 suspension can be adjusted manually.

Note: when an optional 325/95R24 tire is installed, the 0.6Mpa air charging switch is invalid.

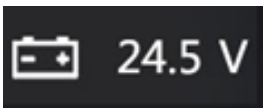
7 Mileage total

Displays the total mileage of the crane.

8 Battery voltage

Displays voltage of the generator when the engine is running;

Displays voltage of the batteries when the engine stops running.



9 Current air pressure, axle 5 suspension

Displays current air pressure of Axle 5 suspension.

10 Air pressure 2

Indicates air pressure of the front axle braking system.

11 Air pressure 1

Indicates air pressure of the rear axle braking system.

3. Text prompt area

Reminding of partial texts.

12 Speed limit (corresponds to counterweight installed)

- The highest traveling speed is limited to 50km/h when two counterweight plates are installed on the chassis frame.
- The speed limit is 85km/h when there is one or no counterweight plate installed.
- The speed limit is 10km/h when there is air pressure warning in the instrument panel.

13 Date

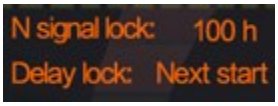
Displays current time and date.

14 Ambient temperature

Displays current ambient temperature detected by the engine.

15 GPS prompt box

Not used



16 Vehicle speed digital display

Displays the current vehicle speed.

3.1.3.5 Secondary instrument interface

Press function key F2 to enter the superstructure interface.

This interface displays the working hours and fuel consumption subtotal etc. of the superstructure.

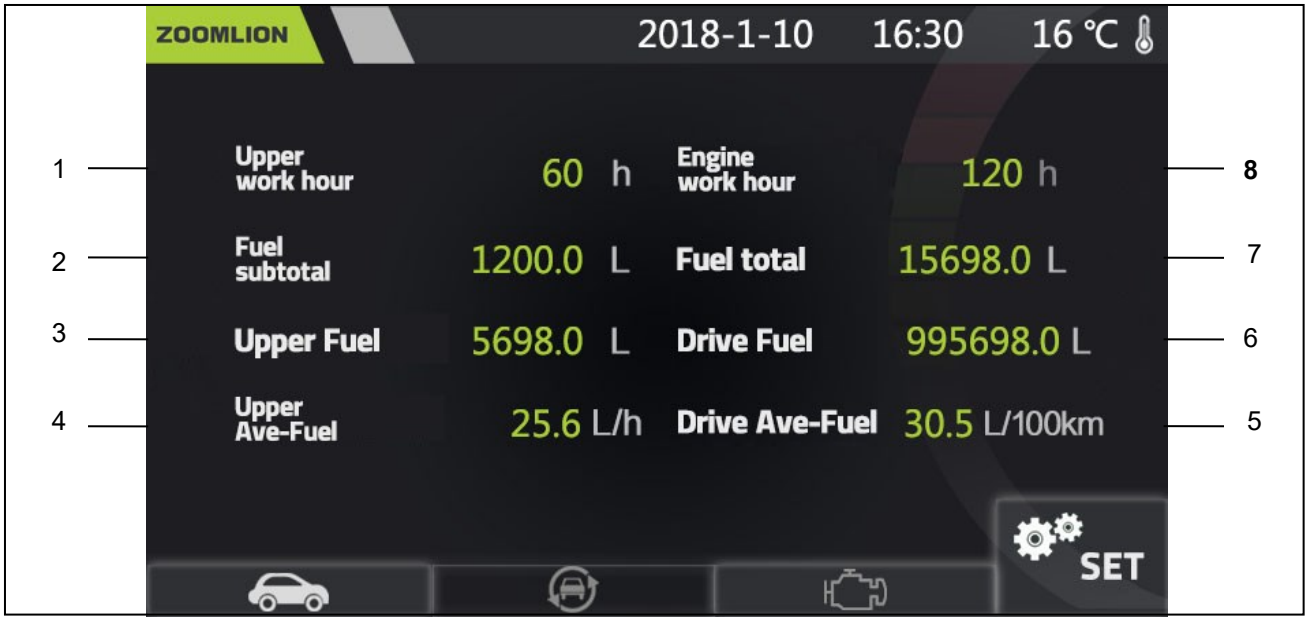


Figure 3-10 Secondary instrument interface

Pos.	Description	Pos.	Description
1	Superstructure working hours	5	Average driving fuel consumption
2	Fuel consumption subtotal	6	Accumulated driving fuel consumption
3	Accumulated fuel consumption of superstructure	7	Fuel consumption total
4	Average fuel consumption of superstructure	8	Engine working hours

1 Superstructure working hours
Displays the accumulated working hours of engine after PTO is engaged.

2 Fuel consumption subtotal
This value can be zeroed by the user and can be recorded from 0 from any moment.

3 Accumulated fuel consumption of superstructure
Displays the increased fuel consumption after the PTO is engaged.

4 Average fuel consumption of superstructure
Divide the accumulated fuel consumption of superstructure by superstructure working hours, and you get the average fuel consumption of superstructure.

5 Average driving fuel consumption
Divide the accumulated driving fuel consumption by the total driving distance, and you get the average driving fuel consumption.

6 Accumulated driving fuel consumption
Displays the accumulated fuel consumption during driving.

7 Fuel consumption total
Displays the total fuel consumption recorded by the engine.

8 Engine working hours
Displays the total working hours recorded by the engine.

3.1.3.6 Level 3 instrument interface

Press function key F3 to enter the chassis interface.

This interface displays some engine data. As shown in the following figure.

Figure 3-11 3rd instrument interface

Pos.	Description	Pos.	Description
1	Chassis accelerator pedal opening	6	Adblue level
2	Load percentage	7	Superstructure start signal (Not used)
3	Outrigger acceleration signal	8	PTO signal status
4	Engine oil pressure	9	Superstructure accelerator opening
5	Superstructure stop (Not used)		

3.1.3.7 System function setting interface

Press F4 in the main interface to enter the system function setting interface as shown in Figure 3-12.

Select an item by maneuvering F3 and F4.

Press F2 to confirm it and enter a sub-interface.

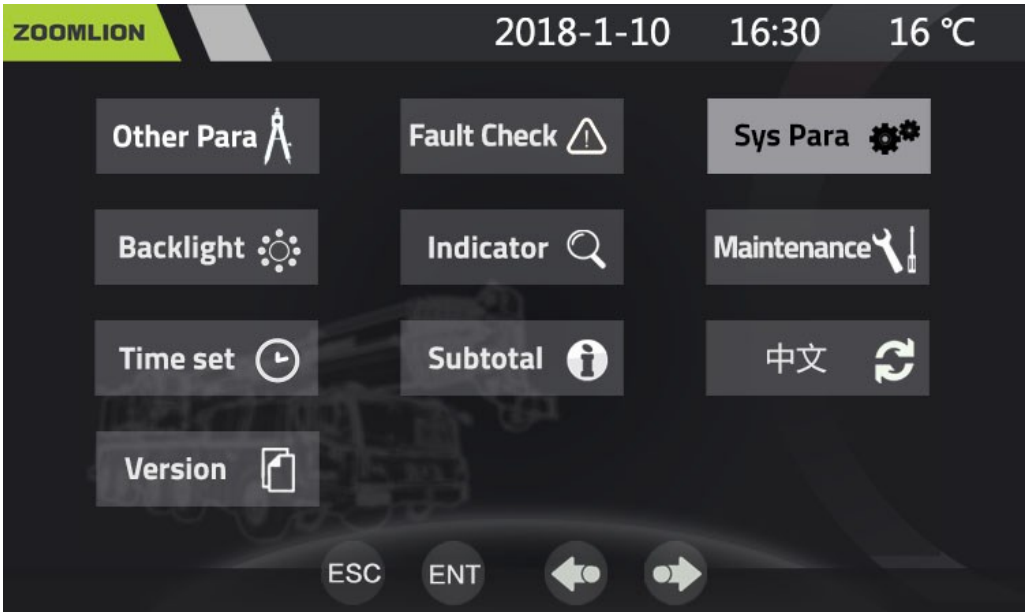


Figure 3-12 System function setting interface

a) The system parameter check interface is as shown in Figure 3-13.

Figure 3-13 System parameter check interface

b) The fault check interface is as shown in Figure 3-14.

Information related to instrument pin definition, GPS information (not applicable), engine malfunctions, ABS trouble code table and instrument CAN bus can be queried in this interface.

Figure 3-14 Fault check interface

c) System parameter settings

Press F3 and F4 in the system function interface to select the system parameter setting interface.

Press F2 to enter its sub-interface as shown in Figure 3-15.

Enter the password to enter the system parameters setting interface, in which all parameters have been pre-set ex factory.

Figure 3-15 System parameter setting interface

d) Zeroing of mileage subtotal

Press F3 and F4 in the system function interface to select the subtotal mileage clearing interface.

Press F2 to enter the sub-interface as shown in Figure 3-16.

Press F3 and F4 to select the "Fuel subtotal" and press F2 to zero it.

Press F1 to return to the system function interface.

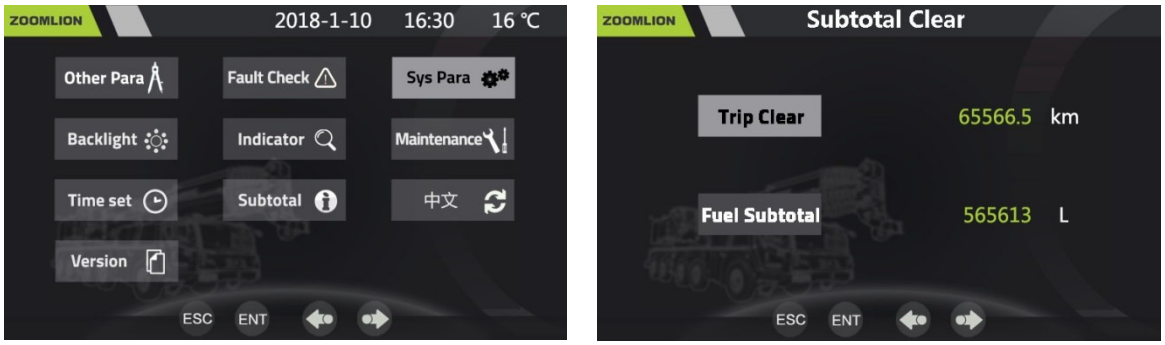


Figure 3-16 Mileage subtotal zeroing interface

e) Maintenance info interface

When the icon  appears in the interface, enter the maintenance info interface to query and confirm the maintenance item following steps below:

- Press F3 and F4 to select the "Maintenance Info" item in the system function interface.
- Press F2 to confirm the selection and enter the interface as shown in Figure 3-17.

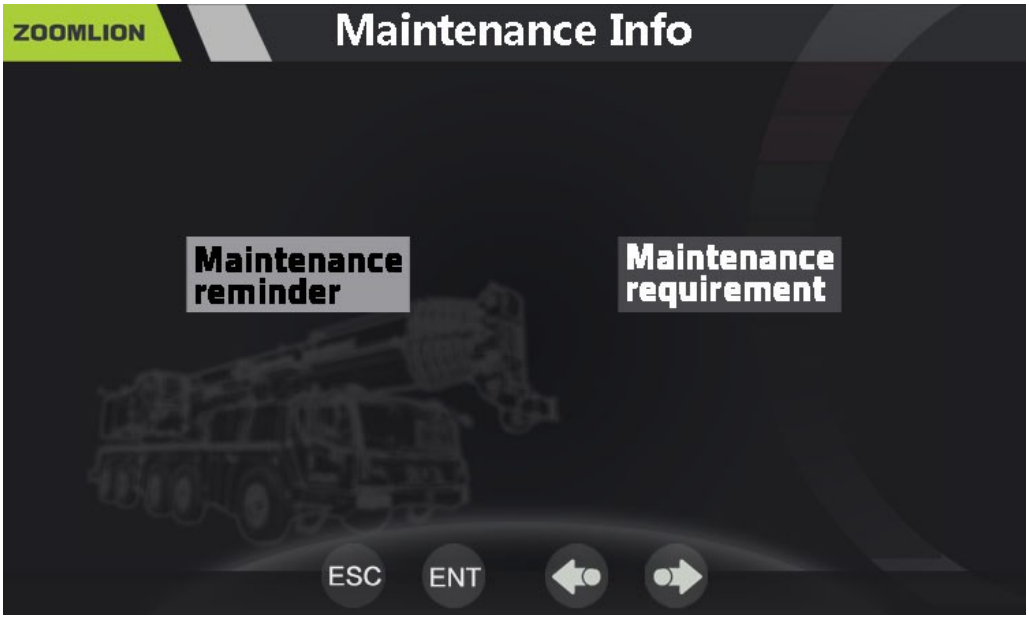


Figure 3-17 Maintenance info interface

In the maintenance info interface:

- Press F3 and F4 to select the item to be queried.
- Press F2 to confirm the selection and enter the sub-interface of the selected item.

The maintenance reminder query interface is as shown in Figure 3-18, which provides the information of the item currently needing maintenance.

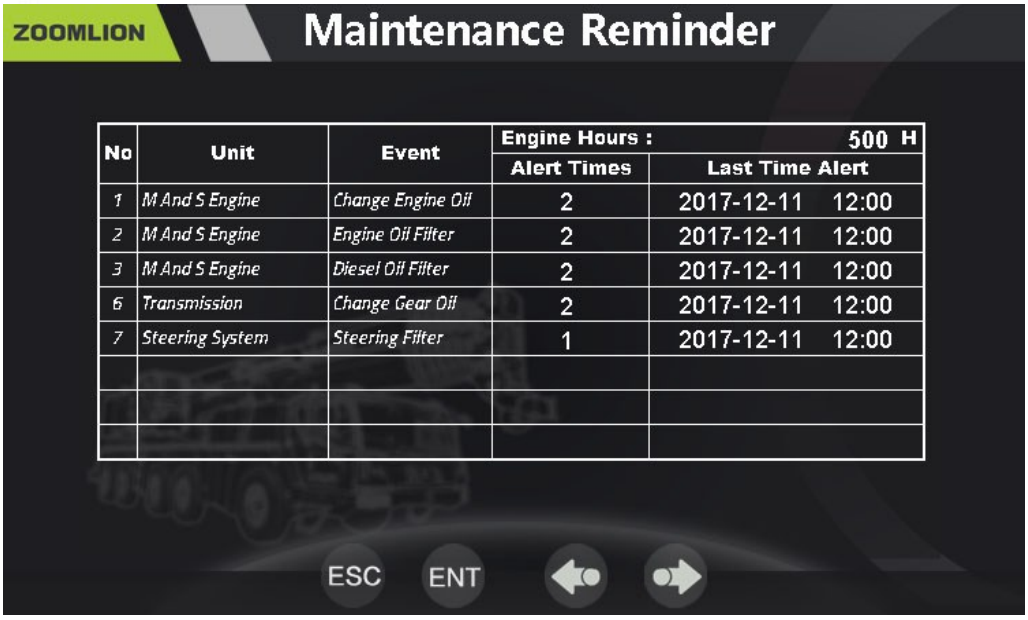


Figure 3-18 Maintenance reminder interface

Press "Maintenance requirement" in the maintenance info interface to enter the maintenance requirement interface as shown in Figure 3-19. It provides information of all components needing maintenance.

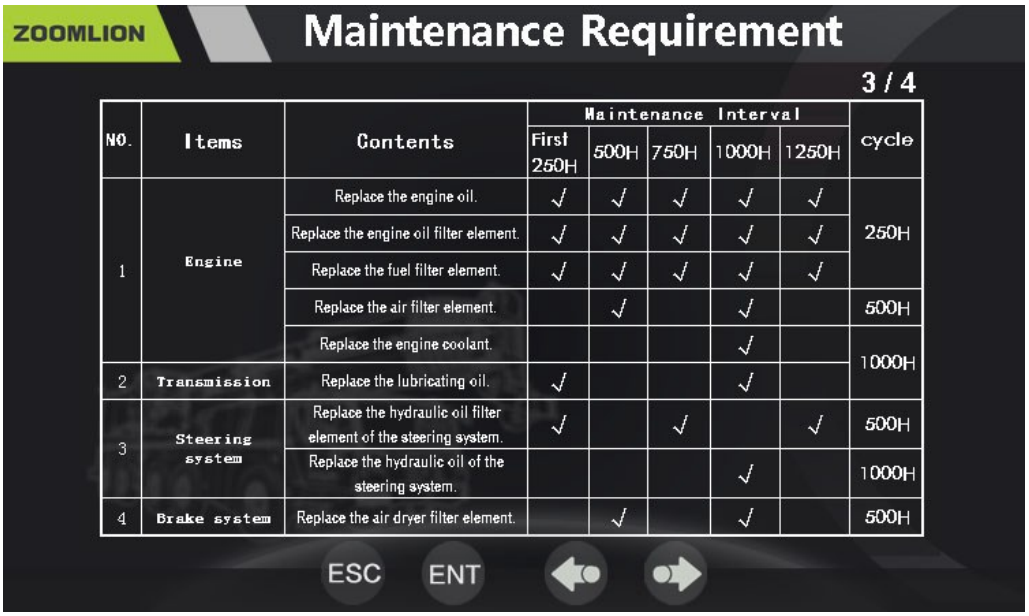


Figure 3-19 Maintenance requirement interface

Press F3 and F4 to go the next or previous page.

Press F2 to complete and confirm current maintenance.

g） Following operations can be conducted in the parameter setting interface:

- Backlight brightness adjustment;
- Time setting;
- Instrument software version query;
- Instrument load query;
- Chinese and English switchover.

3.1.4 Air horn button

It is located on the outside of clutch pedal and on the left side of driver.

Depressed: Air horn alarms.

Released: Air horn stops alarming.

3.1.5 Foot pedal (R): Engine control

It is an electron pedal.

Depressed: the vehicle accelerates.

Released: the vehicle decelerates.

3.1.6 Foot pedal (M): Service brake

Depressed: the vehicle decelerates or stops.

3.1.7 Foot pedal (L): Clutch

Depressed: the clutch is disengaged.

3.1.8 Center console

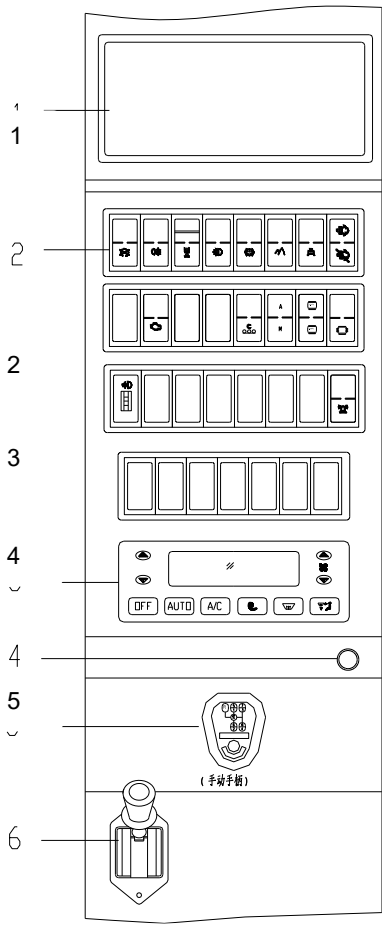


Figure 3-24 Center console

Pos.	Description	Pos.	Description
1	Reversing, navigation, radio player assembly	4	Cigarette lighter
2	Switch panel, center console	5	Gear lever
3	Control panel, A/C and cab heater	6	Hand brake

3.1.8.1 Keyboard

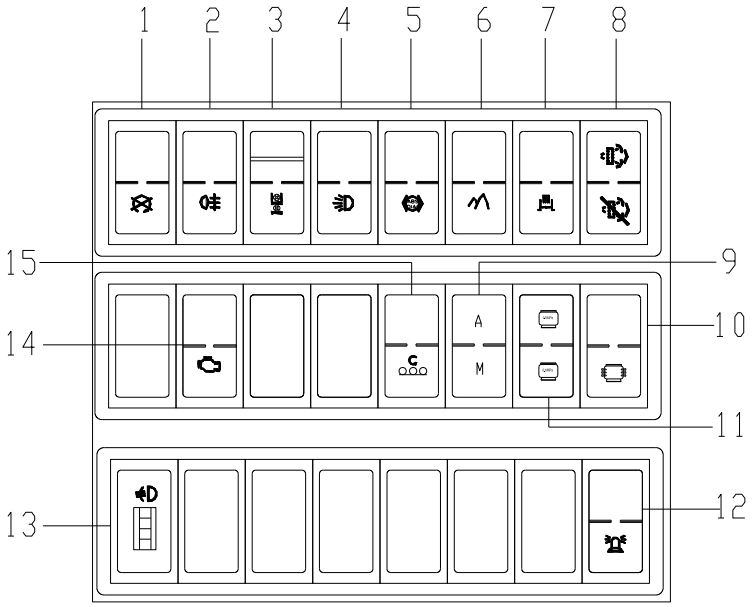


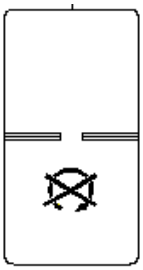
Figure 3-24 Keyboard

Pos.	Description	Pos.	Description
1	Button Engine stop	9	Control mode selections witch, axle 5 suspension
2	Button Rear fog light	10	Air relief switch
3	Button Longitudinal and transversal differential locks	11	0.5Mpa/ 0.6Mpa charging switch
4	Button Outrigger illumination switch	12	Rotating beacon switch (optional)
5	Button ABS fault diagnosis	13	Headlight beam adjustment switch
6	Button Highland mode	14	Button (optional decode input) Engine fault diagnosis
7	VVEB switch	15	Axle 5 drive switchover switch (Applicable to part-time drive)
8	DPF regeneration/prohibition switch		

1 **Button Engine stop**

Press and hold for 2 – 3 seconds:

The engine stops running.



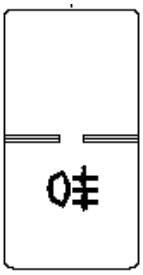
2 **Button Rear fog light**

Pressed:

The rear fog light is ON.

Note:

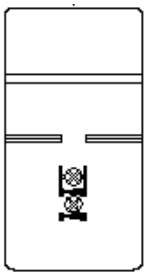
The rear fog light can be activated only when the high beam or low beam is activated.



3 **Button Longitudinal and transversal differential locks**

Pressed:

The longitudinal and transversal differential locks are activated.



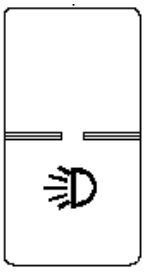
CAUTION

You can operate the button only when the vehicle is stationary.

4 **Button Outrigger illumination switch**

Pressed:

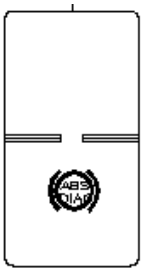
The outrigger illumination is ON during travelling. It is mainly used for worksite transition and illumination. After power take-off, it is invalid to switch on this button. However, you can switch on the work lamp switch on outrigger control box to light the outrigger illumination.



5 **Button ABS fault diagnosis**

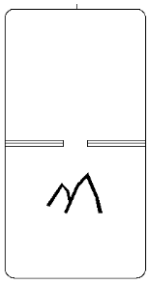
When the ABS gives an alarm, press and hold this switch for 1-3 s and then release it to read ABS flash code for further fault code.

For a Wabco ABS, press and hold this



switch for 3-3.6 s to clear historic faults.

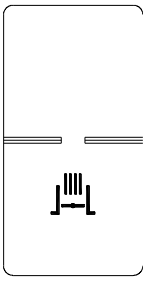
6 Button Highland mode



Pressed:

In order to avoid engine shutdown after the power takeoff is engaged for the superstructure when the vehicle works at the highland, engine idle speed will be automatically increased to the set value of 850 r/min after this button is pressed.

7 VVEB switch

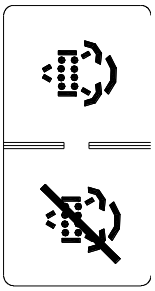


This is a two-position switch.

When the switch is pressed for once, Level 1 exhaust braking is executed; when it is pressed again, Level 2 exhaust braking is executed.

Note: when the ABS is working, the variable valve exhaust brake is invalid.

8 DPF regeneration/prohibition switch

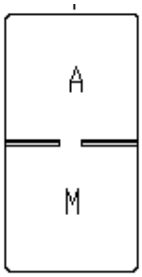


This is a two-part switch.

Press down the upper part to implement regeneration during parking;

Press down the lower part to prohibit the regeneration for special road conditions; press the lower part again to cancel the prohibition.

9 Control mode selections witch, axle 5 suspension



A: automatic; M: manual.

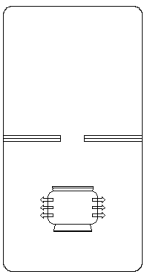
Under the automatic mode, when the PTO is not engaged and the parking brake is applied, the 0.5/0.6Mpa air charging switch and the air relief pressure switch are invalid. Air pressure of Axle 5 suspension is adjusted to the target value according to counterweight installed.

When the PTO is engaged or during crane traveling, the automatic control mode is invalid.

Under the manual mode, when the parking brake is applied and PTO is not engaged, the 0.5/0.6Mpa air charging switch and the air relief pressure switch are valid. Air pressure of Axle 5 suspension can be adjusted manually.

Note: when an optional 325/95R24 tire is installed, the 0.6Mpa air charging switch is invalid.

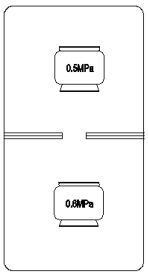
10 Air relief switch



Under manual mode, when the PTO is not engaged and the parking brake is applied, press this switch to relieve air from the axle 5 suspension.

When the parking brake is disengaged or the PTO is engaged, this switch is invalid.

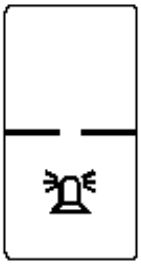
11 0.5Mpa/0.6Mpa air charging switch



Under the manual mode, when the parking brake is applied and the PTO is not engaged, when the air pressure is lower than 0.5 Mpa or 0.6Mpa, press the 0.5 Mpa or 0.6Mpa air charging switch to charge air into Axle 5 suspension to a target air pressure.

Note: when an optional 325/95R24 tire is installed, the 0.6Mpa air charging switch is invalid.

12 Button Rotating beacon



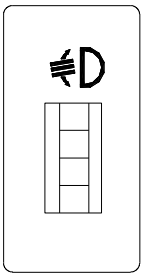
It is available for options.

Pressed:

The rotating beacon illuminates.

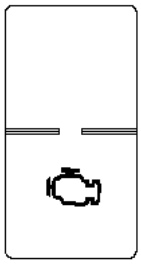
13 Headlight beam adjusting switch

To adjust the angle of the beams sent from the headlights.



14 Button Engine fault diagnosis

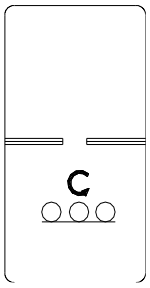
It is used for inputting standby switch to decode urgently after the engine automatically locks.



15 Axle 5 drive switchover switch

(Only applicable to part-time drive)

After the parking brake is applied, press this switch to switch over Axle 5 to the drive status.



3.1.8.2 Reversing display, navigation and radio assy.

Please refer to the manual of the media player delivered with the crane.

3.1.8.3 Gear shift joystick

The gear shift joystick is located at the right side of the driver's seat. It can be used to select and shift gears.

3.1.8.4 Parking brake lever

The parking brake leer can be used for parking braking and emergency braking.

CAUTION

The vehicle can only start off after the parking brake is disengaged and the parking brake indicator light has gone off!

3.1.8.5 Air pressure control for Axle 5 suspension

3.1.8.5.1 Control requirements

When an optional 325/95R24 tire is installed:

1. When the crane is travelling either with or without counterweight, the air pressure of Axle 5 suspension should be adjusted to 0.5±0.02Mpa (target value). Air pressure adjustment should be done when the parking brake is applied and the PTO is not engaged.
2. When the chassis frame is installed with two or above counterweight plates, the travelling speed of the crane should not exceed 50km/h. When the air pressure is lower than 0.40Mpa or higher than 0.7Mpa for a consecutive 5 min, the vehicle speed is automatically lowered to 10km/h gradually.

When an optional 415/80R22 tire is installed:

1. When the chassis frame is not installed with counterweight, , the air pressure of Axle 5 suspension should be adjusted to 0.5±0.02Mpa (target value). When the crane is travelling with counterweight, the air pressure should be adjusted to 0.6±0.02Mpa (target value). Air pressure adjustment should be done when the parking brake is applied and the PTO is not engaged.

When the chassis frame is installed with two or above counterweight plates, the travelling speed of the crane should not exceed 50km/h.

When the crane is travelling without counterweight, if air pressure is lower than 0.40Mpa or higher than 0.7Mpa for a consecutive 5 min, the vehicle speed will be lowered to 10km/h. When the crane is travelling with counterweight, if air pressure is lower than 0.50Mpa or higher than 0.7Mpa for a consecutive 5 min, the vehicle speed will be lowered to 10km/h.

3.1.8.5.2 Air pressure control mode

When an optional 325/95R24 is installed for Axle 5

Auto mode (air pressure control switch is in A position)

1. When the second counterweight plate is detected, and the first one is not, the number of counterweight is regarded as two by default, and the air pressure of Axle 5 suspension is automatically adjusted to 0.5±0.02Mpa. The travelling speed is limited to 50km/h, and an alarm for abnormal counterweight installation is given.

During vehicle traveling process, when air pressure is lower than 0.40Mpa or higher than 0.7Mpa for a consecutive 5 min, an air pressure abnormity alarm will be given, and the travelling speed is lowered to 10km/h gradually in 5 min.

In case of a faulty air pressure sensor, an alarm will be given and this auto mode is exited.

When the parking brake is applied and the PTO is not engaged, if air pressure of Axle 5 suspension fails to reach target value, an overpressure or underpressure alarm will be given. After 3 s, air relief or charging will be initiated. The crane can only be driven when the alarming icon disappear in the instrument panel.

Manual mode (air pressure control switch is in M position)

1. Under the manual mode, pressure adjustment cannot be done through automatic air relief or charging. The 0.5Mpa air charging or the air relief switch needs to be operated manually to initiate air relief or charging.

   Note: The 0.6Mpa air charging switch is invalid in such case. The above operation should be done when the parking brake is applied and the PTO is not engaged. There is no speed limit.

When the crane is travelling, and air pressure is lower than 0.40Mpa or higher than 0.7Mpa for a consecutive 5 min, an air pressure abnormity alarm will be given, and the travelling speed to lowered to 10km/h gradually in 5 min. Only after the parking brake is applied to adjust the air pressure to its normal range can corresponding speed limitation and alarm disappear, otherwise they will reappear after 5 min.

When an optional 325/95R24 is installed for Axle 5:

Auto mode (air pressure control switch is in A position)

1. When the second counterweight plate is detected, and the first one is not, the number of counterweight is regarded as two by default, and the air pressure of Axle 5 suspension is automatically adjusted to 0.6±0.02Mpa. The travelling speed is limited to 50km/h, and an alarm for abnormal counterweight installation is given.

When the crane is travelling without counterweight, if air pressure is lower than 0.40Mpa or higher than 0.7Mpa for a consecutive 5 min, an air pressure abnormity alarm will be given, and the travelling speed is lowered to 10km/h gradually in 5 min. When the crane is travelling with counterweight, if air pressure is lower than 0.50Mpa or higher than 0.7Mpa for a consecutive 5 min, an air pressure abnormity alarm will be given, and the travelling speed is lowered to 10km/h gradually in 5 min.

In case of a faulty air pressure sensor, an alarm will be given and this auto mode is exited.

When the parking brake is applied and the PTO is not engaged, if air pressure of Axle 5 suspension fails to reach target value, an overpressure or underpressure alarm will be given. After 3 s, air relief or charging will be initiated. The crane can only be driven when the alarming icon disappear in the instrument panel.

Manual mode (air pressure control switch is in M position)

1. Under the manual mode, pressure adjustment cannot be done through automatic air relief or charging. The 0.5Mpa/0.6Mpa air charging or the air relief switch needs to be operated manually to initiate air relief or charging.

   Note: The above operation should be done when the parking brake is applied and the PTO is not engaged. There is no speed limit.

2. When the crane is travelling, if air pressure is lower than 0.45Mpa or higher than 0.7Mpa for a consecutive 5 min, an air pressure abnormity alarm will be given, and the travelling speed is lowered to 10km/h gradually in 5 min. Only after the parking brake is applied to adjust the air pressure to its normal range can corresponding speed limitation and alarm disappear, otherwise they will reappear after 5 min.

When the crane is travelling without counterweight, air pressure of Axle 5 suspension should be adjusted to 0.5±0.02Mpa; When the crane is travelling with counterweight on the chassis frame, the air pressure should be adjusted according to tires installed for Axle 5, otherwise the axle and suspension will be overloaded, resulting in serious malfunction.

When the crane is travelling, the automatic mode should be activated. If the manual mode is activated, partial control would be lost, resulting in overloading of axle and suspension and serious malfunction.

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 the details, refer to Figure 3-22.

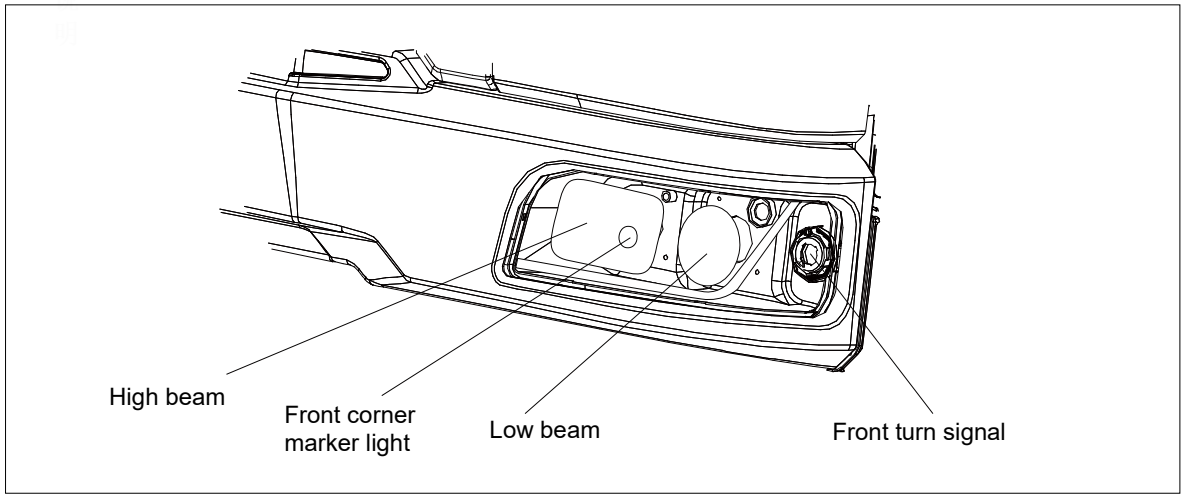


Figure 3-22 Front combination signals

3.1.9.2 Side turn signal

Take the signal on the left as an example. The signal on right side is the same as the left one. For the details, refer to Figure 3-23.

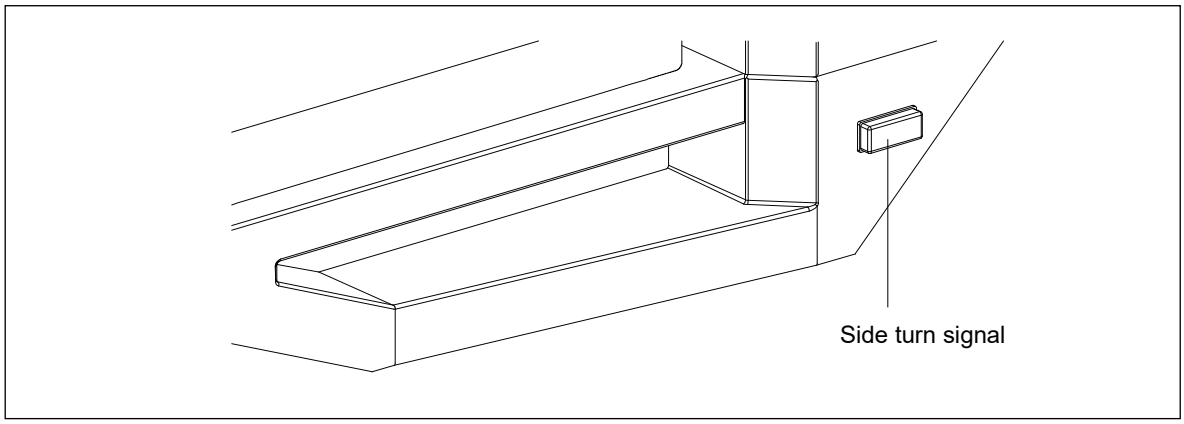
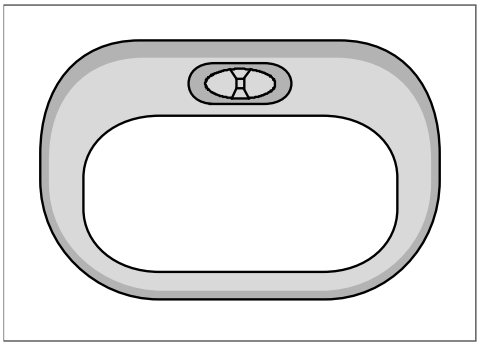


Figure 3-23 Side turn signal

3.1.9.3 Interior illumination



The interior illumination is located at the roof of the driver's cab, including small lamp & its button and door lamp & its button.

Small lamp & its button:

The direction of small lamp can be adjusted by pressing its edge. The small lamp button is a 2-position button.

Door lamp & its button:

The door lamp button is a 3-position button:

Center position: off

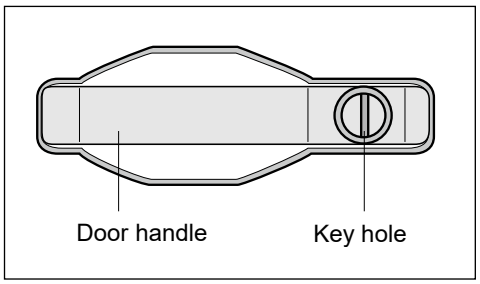
Left and right positions: on

The door lamp will light up automatically if any door is open. If the doors are closed well, the door lamp will extinguish. In addition, the door lamp can also be controlled manually.

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.



CAUTION

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

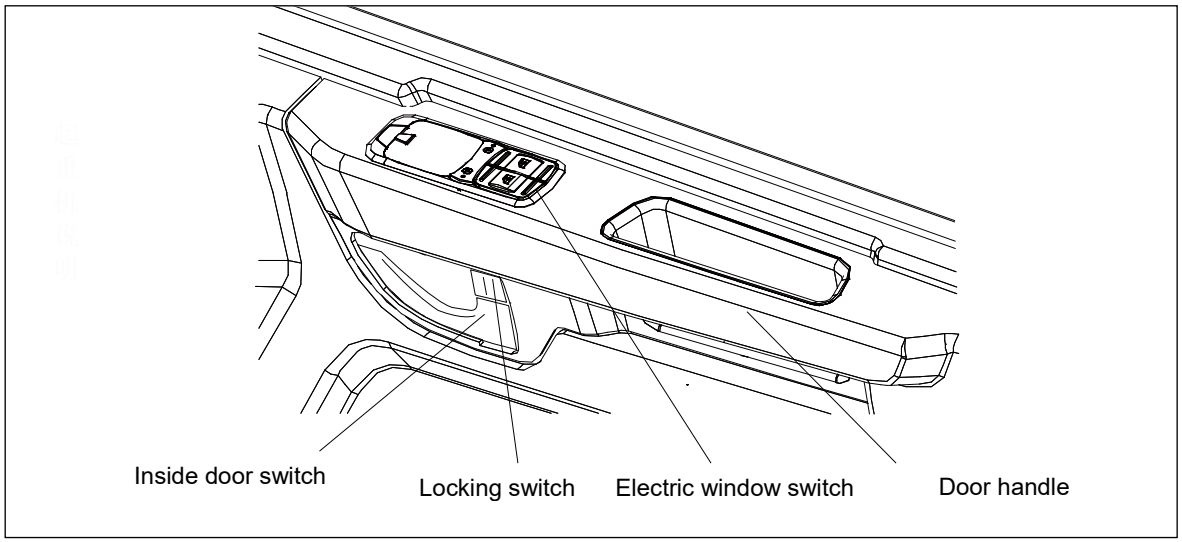


Figure 3-24 Door of driver's cab

c) Open the door from inside

Pull the inside door switch upwards and hold the handle to push the door outwards.

d) Lock the door from inside

The locking knob is on the lower edge of door window.

Press down the locking knob to lock the door from inside.

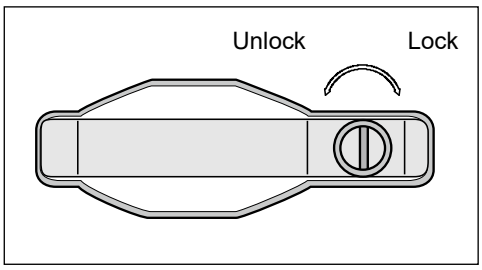
Pull the locking knob upwards before opening the door.

CAUTION

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

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.



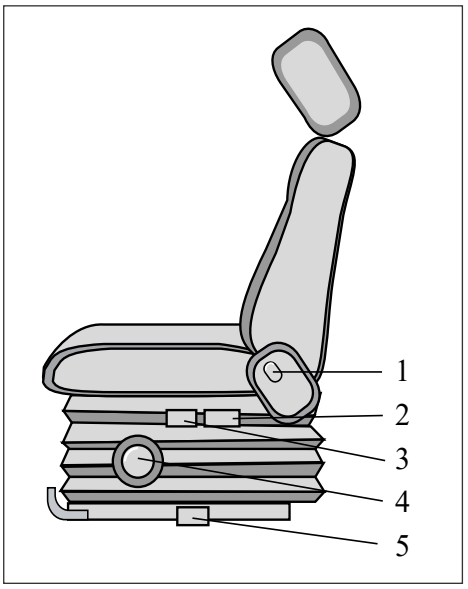
3.1.11 Seats in driver's cab

3.1.11.1 Seat adjustment

This crane is equipped with a suspension seat, which can be adjusted to suit any driver height or size before setting off.

When you adjust the stiffness of the seat, please set the red pointer within the range between 40 kg to 130 kg.

1. Switch, adjust backrest setting
2. Switch, adjust seat cushion angle (rear section)
3. Switch, adjust seat cushion angle (front section)
4. Rotary knob, adjust stiffness
5. Switch, adjust horizontal setting



3.1.11.2 Front and rear positions and backrest angle

Angle of driver's seat backrest is 97°, while that of the passenger's seat is 105°, as shown in Figure 3-25.

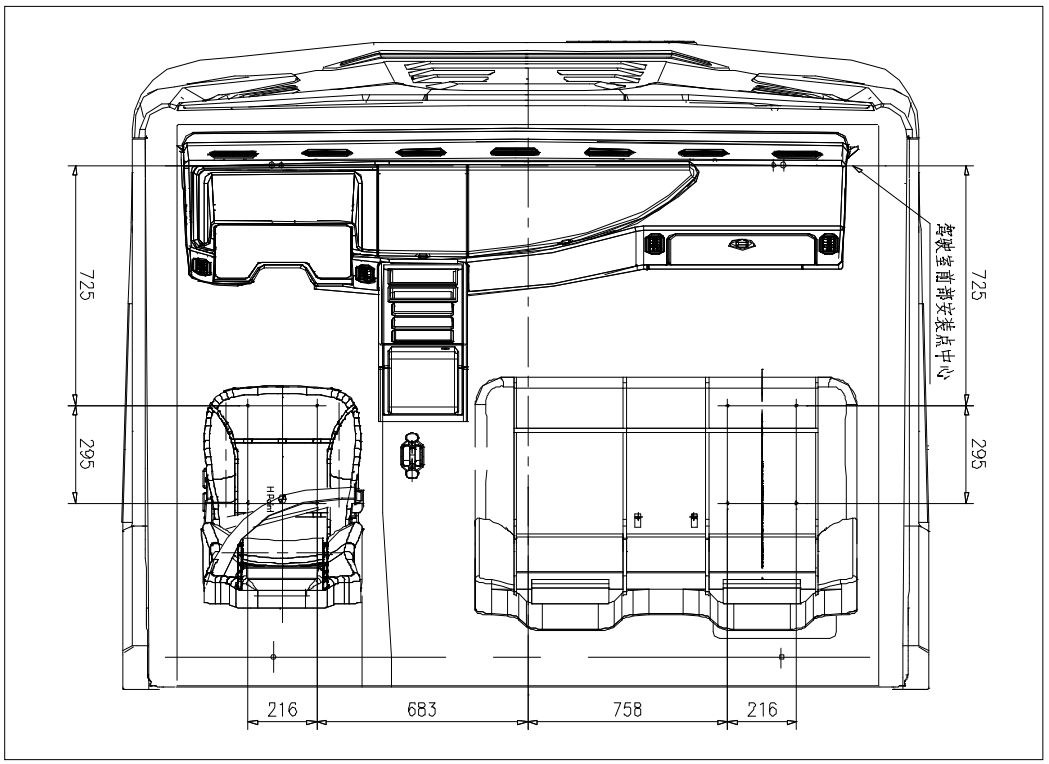


Figure 3-25 Front and rear positions and backrest angle

3.1.11.3 Putting on seat belt

Fasten and adjust the three-point seat belt to suitable position before setting off.

Insert tongue piece into belt lacer to fasten the belt.

Press the button to unfasten the belt.

CAUTION

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 driving.

3.1.11.4 Sleep berth

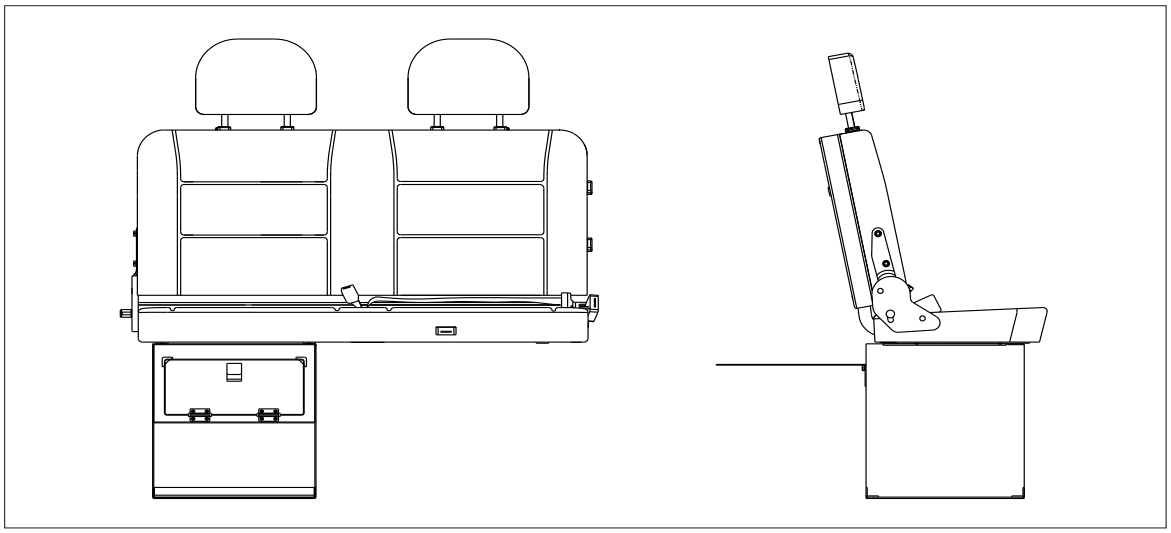


Figure 3-26 Sleep berth

The passenger's seat is connected with the driver's seat and can be used as a sleep berth.

Door lock handle: toggle the handle of the toolbox door outward to open the tool box plate.

Operate in reverse direction to close it.

3.1.12 Accessories

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 2

The toolbox 2 is in the instrument console of the driver's cab, in which there are two toolboxes in different sizes.

Press the switch to open the toolbox 2 and push down the cover to close it.

c) Cigarette lighter

Push-in the cigarette lighter for 3 to 5 sec. Pull it out to use it. After you use it, put it in its

initial position.

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

3.2 Before starting up the vehicle

3.2.1 Prerequisites

1. If the crane is used for the first time, make sure the crane is in proper working condition (without damage or abnormalities).

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. For details, please refer to the *Operation and Maintenance Manual for WP 10 ** Series Diesel Engine and Operation and Maintenance Manual for WP 12 ** Series Diesel Engine.*

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 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 AdBlue level

Examine the AdBlue level from the main interface on the instrument panel in the driver's cab..

When SCR system runs, if the following situations occur:

- **Does not add the AdBlue.**
- **The AdBlue is unqualified.**
- **The AdBlue is lower than 14%.**

The engine will give an alarm. And after the engine has been running for 60 min or when the engine starts next time, the engine output torque will be limited to 60% of max. value till the suitable AdBlue is added.

WARNING

If SCR system cannot return to normal work, the warning lights "SCR fault" and "Engine error code displayed" will stay on after the vehicle is electrified and engine starts.

WARNING

If the vehicle emissions cannot satisfy the emission standard, the local environmental protection administration and transportation department will punish the corresponding parties.

e) Examining the tires

1) Examine working conditions of the tires.

2) Examine air pressure and inflate tires to specified values (1 MPa for 385/95R25 and 325/95R24 tires; 0.93 MPa for 415/80R22 tires).

CAUTION

Do not exceed the maximum air pressure during inflation.

f) Examining the mounting connections

1) Make sure that the parts that follow are tight:

– Bolts in steering and drive systems

– Wheel bolts.

2) 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

– Retaining bolts of steering wheels

– Brake chambers of axles

– Pipes.

g) Examining the items that follow for damage:

– Door locks

– Doors

– Windows

– Operating mechanisms.

h) Examining the outside mirrors for proper position.

i) 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.

j) 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).

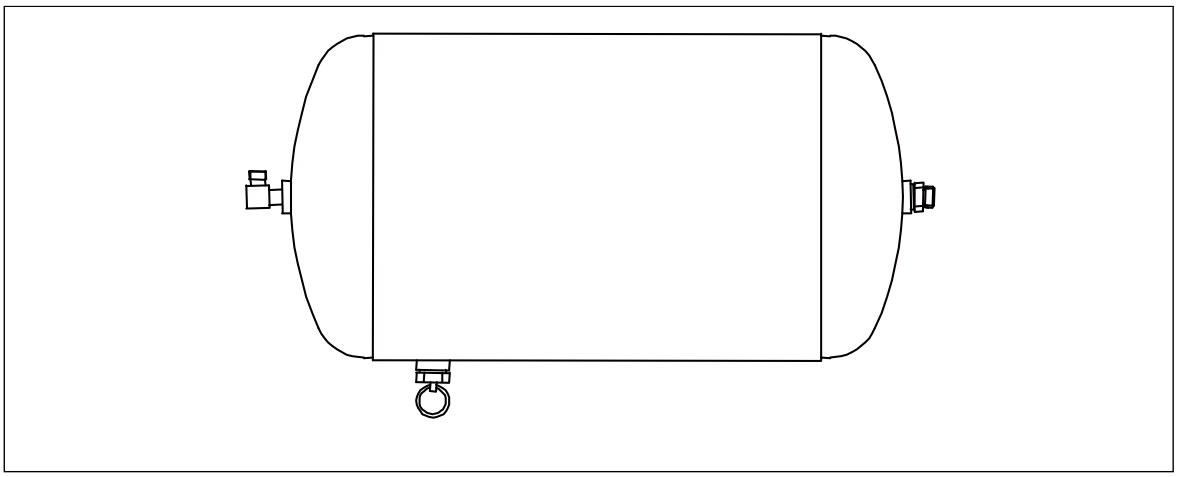


Figure 3-37 Air reservoir

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) Examine the air filter vacuum actuated indicator. If the light is in the red area, clean or replace the filter element.

(4) The rated working pressure for air reservoir is 0.9 Mpa.

CAUTION

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

k) 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 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.

l) Examining the lighting

Turn the ignition starter switch to the "ACC" position, and examine the lighting before setting off. Refer to Figure 3-28.

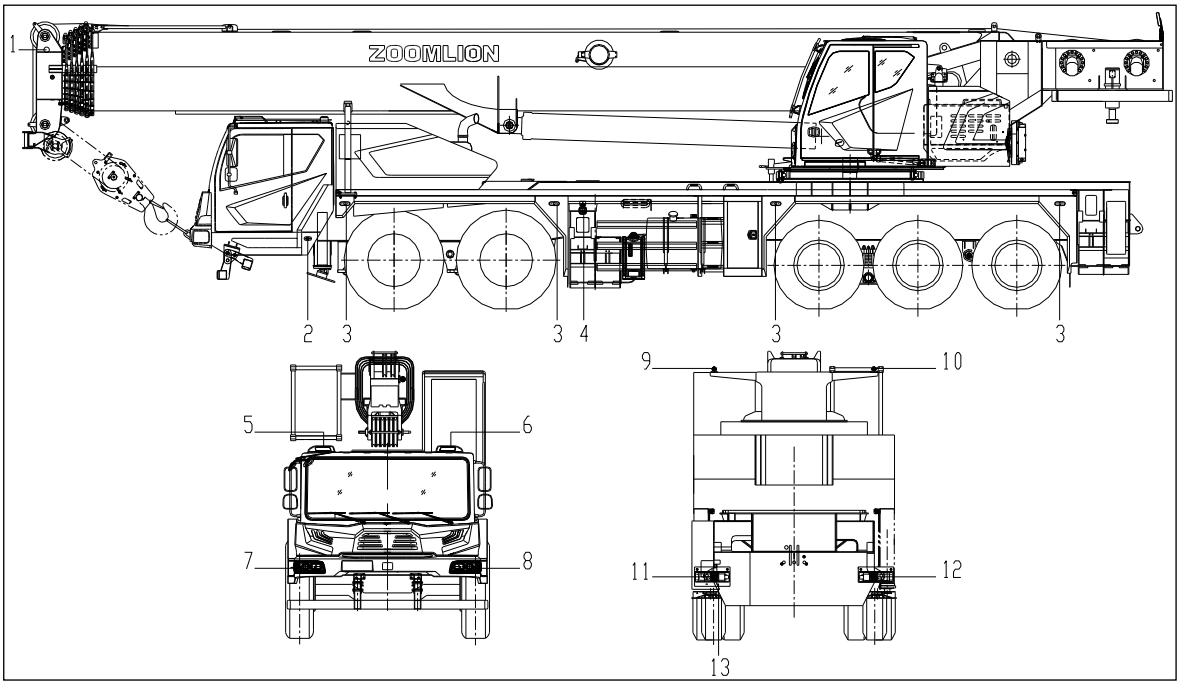


Figure 3-28 Vehicle lighting

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

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

Refer to Figure 3-34.

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

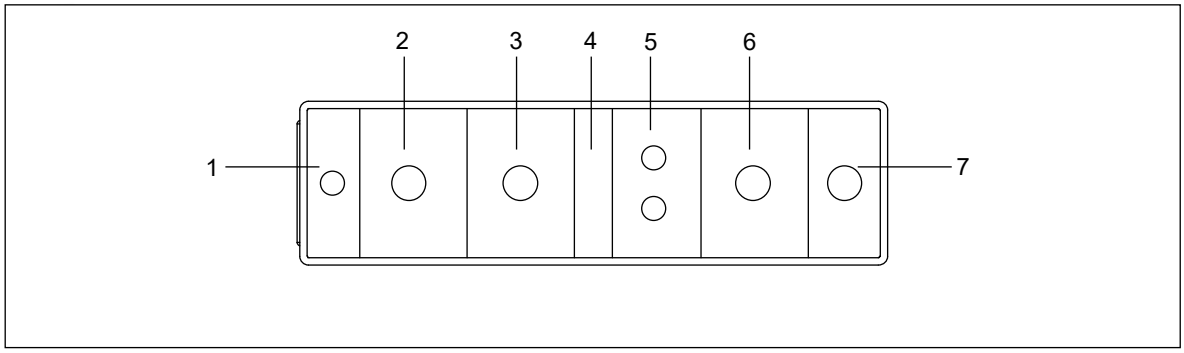


Figure 3-29 Left rear combination signals

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		

2) Right rear combination signals (on chassis frame right rear part)

The right rear combination signals are on the right rear of chassis frame..

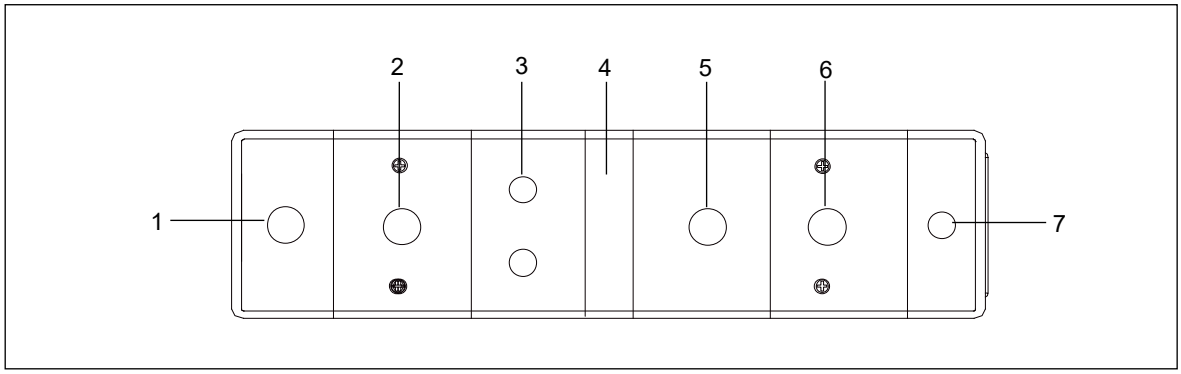


Figure 3-30 Right rear combination signals

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

Examine the following illuminations and warning devices before setting off.

1 Interior illumination

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

2 Sliding beam illumination

They are installed near the front outrigger boxes to supply illumination for sliding beams. It is convenient for the operator to observe working conditions of sliding beams at night.

3 Buzzer

The reversing light will illuminate and the buzzer will send out slow alarm when reversing gear is applied.

The warning light "Brake pressure low" will illuminate and the buzzer will send out slow alarm when the pressure of the air brake system is low.

The warning light "Engine coolant temperature high" will illuminate and the buzzer will send out slow alarm when the engine coolant temperature is high.

DANGER

Danger of accident if lighting is defective!

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

m) Driver's cab

1) Adjusting driver's seat

The driver's seat can be adjusted to suit any driver's height or size. Adjust the driver's seat before setting off.

– Backrest setting
– Seat cushion angle (rear section)
– Seat cushion angle (front section)
– Horizontal setting
– Damper.

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.

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.

4) 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
– Horn
– Rotating beacons
– Windshield wiper / washer system / windshield washing fluid container

DANGER

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

n) 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 General checks at vehicle start up

Examine the controls and instruments.

a) Examine the engine oil pressure gauge.
   1) Idle speed: The engine oil pressure must be more than 0.1 MPa.
   2) Engine RPM (1200 r/min.): The engine oil pressure must be not less than 0.35 MPa – 0.55 MPa.

b) 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!

c) Examine the thermometer.
   1) The pointer must point to the range (above 60°C). Do not drive the vehicle at high speed until the coolant temperature reaches 70°C.
   2) All of the warning lights should extinguish (including the control lights “low pressure”,

"parking brake closed", "engine exhaust brake", "longitudinal differential lock" and "transversal differential lock" etc.

d) Deactivate the PTO control lever.

e) Pressure of control air circuit of clutch should be more than the starting pressure.

f) If the longitudinal differential lock and the transversal differential lock are installed, disengage them before normal driving.

g) Make sure that the parking brake is released.

h) Start the vehicle at low speed and prevent the clutch from engaging when engine speed exceeds 1600 rpm.

3.3 Driving the crane

3.3.1 Starting and stopping the engine

3.3.1.1 Starting the engine

a) Examine the items that follow:
   1) Engine oil for correct level and make sure that it is clean
   2) Coolant for correct level
   3) Fuel tank for correct level
   4) AdBlue tank for correct level.

b) Before starting the engine, make sure the following prerequisites are met:
   1) Put the gear lever in neutral.
   2) Apply the parking brake.
   3) Turn the ignition starter switch to position "ON".
   4) Disengage the PTO (At this time, the control light "PTO engaged" does not illuminate).
   5) In winter, the engine will be preheated automatically (The control light "Diesel engine preheating system" lights up at the same time).
   6) After the control light "Diesel engine preheating system" extinguishes, depress the engine control pedal softly and turn the ignition starter switch to position S to start the engine.

   CAUTION

   (1) Turn the ignition starter switch to position S within 30 sec. after the control light "Diesel engine preheating system" extinguishes.

   (2) If you cannot start the engine in a maximum of 7 seconds, wait for 30 sec. Then try to start the engine again to avoid engine damage.
   If the engine cannot be started for three consecutive times, fix it right away.

   WARNING

   Depress the clutch pedal when you start the engine in order to avoid inadvertent starting of the vehicle.

c) Preheat the engine and examine instruments for functions:
   Release the engine control pedal slowly and run the engine at idle speed for several minutes to warm up the engine. At this time, examine the instruments and control / warning lights for functions.

CAUTION

(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, which may weaken engine performance.

(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 0.1 MPa when the engine runs at idle speed. With the engine warming up, the oil pressure is going to be stable gradually.

WARNING

Do not run the engine in a place where the 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.

3.3.1.2 Stopping the engine

a) Depress the service brake pedal slightly to decelerate the vehicle, at the same time, shift down the transmission to gear 1.

b) When the engine decelerates to the low speed, depress the clutch pedal and the service brake pedal at the same time to bring the vehicle to a standstill at the specified location.

CAUTION

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

c) Pull the parking brake hand lever backwards to the locking position to park the vehicle and then shift the transmission to neutral position.

d) Run the engine at idle speed for several minutes after the vehicle stops so as to cool the engine down gradually.

e) Press down the button “Engine Stop” for 2 to 3 sec. to stop the chassis engine.

f) Turn the ignition starter switch to position “LOCK” and pull it out after the engine is stopped about 30 seconds.

g) Do not keep the ignition starter switch in the "ON" or “ACC” position after you park the

crane. The battery drains in these conditions.

h) If you park the crane on a slope, you must put the chocks before and behind the wheels to avoid accident.

i) To prevent an accident when you park the crane in the dark, you must turn on the hazard lights.

3.3.2 Driving

a) Changing the idling speed

CAUTION

Depress the clutch pedal before shifting from "N" to "D". The engine RPM will be decreased a little after you select the required gear.

WARNING

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

b) Setting axle suspension

Unlock the axle suspension and level the vehicle.

CAUTION

(1) Do not release parking brake until the warning light "Brake pressure low" goes off (air pressure achieves 5.5 bar). Pull the hand lever again and fill compressed air until the warning light turns off!

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

c) 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) Retarder

The retarder is the engine exhaust brake.

WARNING

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

CAUTION

(1) Only operate the engine exhaust brake with engine running.

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

(3) On long descending gradients, select a switching stage that leaves further switching stages available for any other adjusting braking procedures which may be required. Correctly use the engine exhaust brake as possible as you can to relax the service brake.

WARNING

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

3.3.3 Important control instruments while driving

a) Examining the engine oil pressure

Engine oil pressure display on bar chart in display unit of 1 bar – 5.5 bar.

CAUTION

In case of low oil pressure (the engine oil pressure is below 0.06 MPa), 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.

CAUTION

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.

CAUTION

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 pointer points to the green range. The pointer will point to the red range when driving in high temperature area or climbing slopes. The coolant temperature should be between 70°C - 109°C. Do not drive the vehicle at high speed until the coolant temperature reaches 70°C.

DANGER

If the pointer points to the red range 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.

3.3.4 Manual transmission operation

The crane is fitted with a main transmission and an auxiliary transmission.

The main transmission is mechanically and manually controlled, and the auxiliary one is pneumatically controlled.

The gearshift air pressure should be more than 0.41 MPa.

For details, please refer to Figure 3-31.

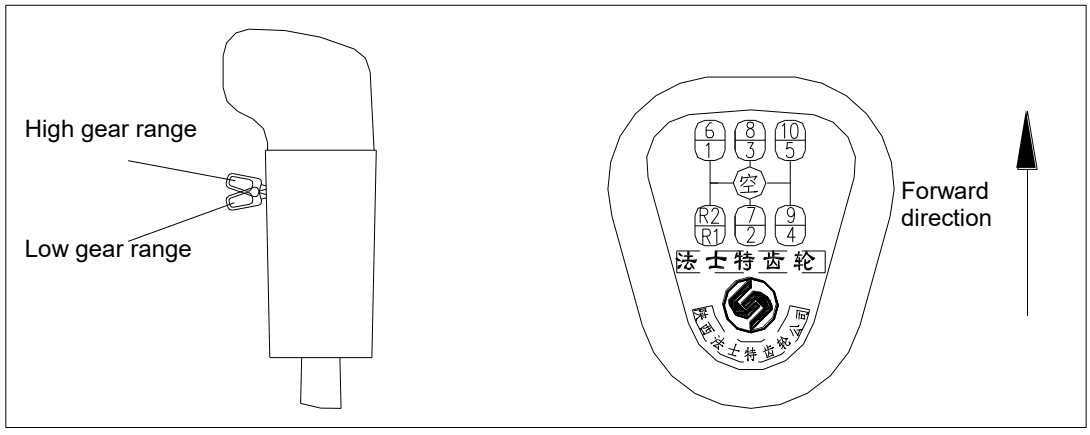


Figure 3-31 Transmission

3.3.4.1 Gear shifting

a) Move the gear lever to the 1st gear position and set the switch "Pre-selection of high / low gear range" into low gear range before you start the vehicle.

b) When you shift the gear, disengage the clutch completely and shift the gear lever in

position.

c) Both the high gear and low gear ranges have a neutral position, namely the neutral position between 7th and 8th gears in high gear range and between 2nd and 3rd gears in low gear range. Move the gear lever to the neutral position in the low gear range when you park the crane.

d) Stop the vehicle before you move the gear lever to the reverse gear to prevent transmission damage. When you engage the reverse gear, apply large force to overcome resistance of the reverse lock.

e) Do not skip a gear when you move through low gear range and high gear range. Otherwise, you will shorten the service life of synchronizer of auxiliary transmission.

You should use the switch "Pre-selection of high / low gear range" when you change gear between gears 5 and 6.

f) When you drive downwards a slope, do not shift gear between high and low gear range.

g) When you hear an unusual noise in the transmission or it is hard to move the steering wheel, stop the crane immediately. Correct the malfunction.

h) Do a check of the grease level of transmission after you stop the vehicle for several minutes.

The temperature of transmission should be between -40°C – 120°C during continuous working.

When the temperature exceeds 120°C, the grease will be decomposed and service life of transmission will be shortened.

3.3.4.2 Points for attention

Depress the clutch pedal when you shift the gears. When you downshift the gear, accelerate at the neutral position to make the connecting parts have the same rotational speed.

When you go down a long slope, shift the gear lever into low gears in time. Do not move the vehicle by stopping the engine or placing the gear lever into neutral.

3.3.5 Clutch operation

In the drive system, the clutch is a part directly connected with the engine. Its function is to effectively engage or disengage its driving and driven parts under driver's operation.

3.3.5.1 Points for attention

a) During driving, do not place the foot on clutch pedal if it is not used.

b) When you downshift the gear, depress the service brake pedal to decelerate the vehicle, and then depress the clutch pedal properly to change into proper gear.

When you shift the gear during driving, depress the clutch pedal and then release it rapidly. Otherwise there is a risk of increasing clutch abrasion.

c) Do not depress the clutch pedal as possible as you can except braking at low speed.

Only when the compressed air pressure P is above 0.4 MPa, can the clutch be completely disengaged.

3.3.6 Steering operation

a) 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.

b) 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.

c) If the vehicle is steered insufficiently, decrease the speed slowly while you turn the steering wheel in the same direction as the turn.

d) If you over-steer, release the engine control pedal or depress the service brake pedal while you turn the wheel in the opposite direction of the turn.

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 the neutral position to prevent an unstable condition.

e) Decrease the speed of the vehicle and move down the transmission gear if you have a sharp turn.

3.3.7 Brake operation

The brake system consists of driving brake (service brake), engine exhaust brake and emergency brake (parking brake). The emergency brake can also be selected to park the vehicle in normal condition and on slopes.

3.3.7.1 Operation

a) Driving 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 depress the service brake pedal to slow down stably or stop the vehicle.
2) Slow brake after rapid brake: when there is an accident in front, depress the service brake pedal rapidly and then depress 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, depress the engine control pedal to drive at normal speed.
3) Cadence brake: depress the service brake pedal 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 depress the service brake pedal 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 service life of each part shortens. Use more caution when the roads are wet or frozen.

b) Engine exhaust brake

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

The engine exhaust brake has the advantages below:

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

Note:

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

How to activate the engine exhaust brake:

- Release the engine control pedal.
- Press the VVEB switch on the center console, and the VVEB starts to work and the VVEB indicator light illuminates.

CAUTION

You can depress the clutch pedal or engine control pedal to temporarily deactivate the engine exhaust brake.

c) Emergency brake (parking brake)

If service brake fails or cannot be applied in time during driving, pull the parking brake hand lever backwards to the locking position to activate the emergency brake. Push the hand lever forwards to the unlocking position to deactivate the emergency brake.

CAUTION

(1) You can also use the emergency brake (namely parking brake) to park the vehicle in normal condition or on slopes.

(2) Deactivate the emergency brake before driving.

3.3.7.2 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 the narrow, frozen or muddy road or in a rainy / snowy day. Under the conditions, such as crossing the railway, driving under the 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 low gear range. Under this condition, the driving speed is mainly controlled by the traction resistance from the engine and with the assistance of engine exhaust brake and service brake. Do not move the vehicle with the transmission in 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 proper change interval of brake liquid should be 12 months or 10000 km.

g) The interval from depressing the brake pedal to the most adverse brake chamber is 0.55 s.

3.3.8 PTO operation

3.3.8.1 Engaging PTO

See Figure 3-32.

a) Open the shutoff gate valve on the hydraulic oil tank to connect the hydraulic oil tank and the oil lines.
b) Start the engine.
c) Examine the barometer to see if the air pressure is between 0.6 and 0.8 MPa after the engine runs stably.
d) Depress the clutch pedal.
e) Apply the parking brake and move the gear lever to the neutral position.
f) Pull out the PTO switch to engage the PTO, and then the control light I "PTO engaged" lights up.
g) Slowly release the clutch pedal, and the crane is ready to work.

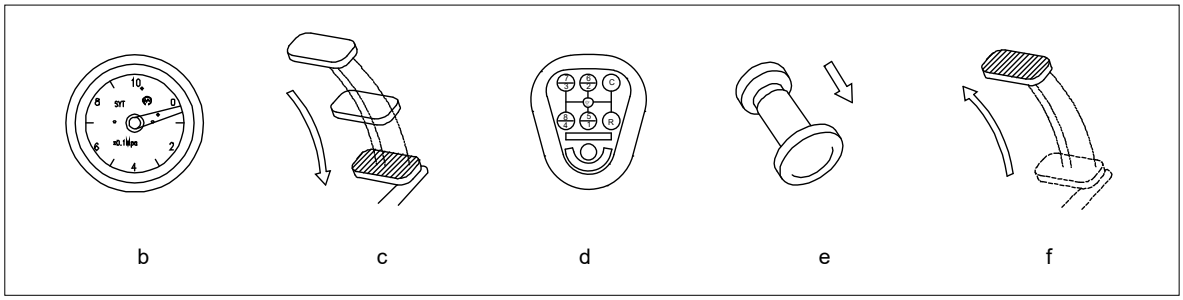


Figure 3-32 Engaging the PTO

3.3.8.2 Disengaging the PTO

See Figure 3-33.

a) Depress the clutch pedal.
b) Place the gear lever into neutral position. Press the PTO switch to deactivate the PTO, and then the control light I "PTO engaged" extinguishes.
c) Release the clutch pedal slowly, and then the crane is in non-working state.

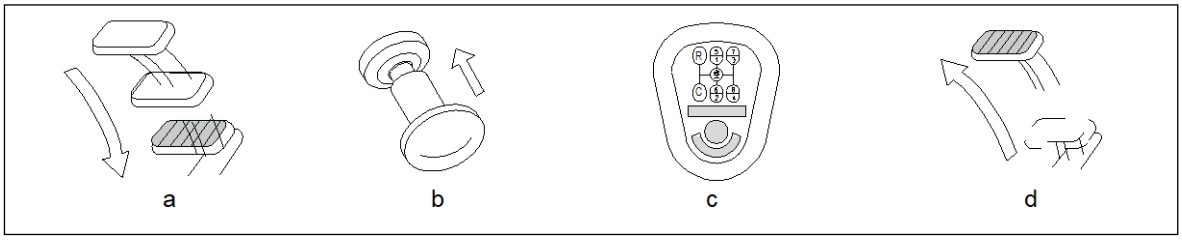


Figure 3-33 Disengaging the PTO

CAUTION

(1) Depress and release the clutch pedal slowly.

(2) If the PTO and the drive device for oil pump need to be repaired or replaced, put a warning board on the ignition starter switch. Otherwise, risk of danger may occur!

WARNING

When the PTO is engaged, keep the gear lever in the proper gear position and apply the parking brake.

3.3.9 Drive operations

This crane is capable of two drive modes, i.e. real-time drive and part-time drive.

Under the real-time drive mode, Axle 3, 4 and 5 drive together, without the need to be controlled from the Axle 5 drive switch. Under the part-time drive mode, based on road condition, the axle 5 drive switch can be used to switch over between drive by Axle 3+4 and drive by Axle 3+4+5.

Attentions should be paid for activating the part-time drive mode:

a. The crane should be at standstill and the parking brake should be applied. Use the axle 5 drive switch to activate this mode, otherwise the detaching/locking device of Axle 5 would be damaged.

b. Activation of the part-time drive mode for a long time can decrease driving fuel consumption and abrasion of the drive wheels. Activation of full-time drive mode for a long time will increase driving fuel consumption and abrasion of the driving wheels.

3.3.10 Towing

There is a towing coupling at both the front and rear ends of the crane. Obey the following towing regulations:

a) Attach a strong towing rope onto the tow coupling at the front under the bumper. Start slowly to avoid impact.

b) Start the engine of the towed vehicle to make sure that it can realize emergency brake and steering operation. Otherwise it will be very dangerous.

WARNING

If the engine of the towed crane cannot operate, do not tow the crane.

c) Move the gear lever of the towed crane in the neutral position.

d) If the transmission of the towed crane breaks down, remove the propeller shaft.

e) If the differential gear or the rear axle of the towed crane is defective, remove the left and right half shafts.

CAUTION

The engine exhaust brake system will be invalid if you remove the propeller shaft or the half shaft.

3.3.11 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.

CAUTION

If you have stopped the crane for more than 1 minute, shift the transmission to the neutral position to avoid wear on the clutch. Do not run the engine at idle speed for a long time.

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.

3.3.12 Engine error codes and fault diagnosis

3.3.12.1 Self-diagnosis

The ECU of Weichai engine is of diagnostic function. If the ECU detects errors occurred in electrical control system, it will:

– send error codes and store them in.
– make warning light illuminate.
– automatically activate different protective measures.
  - If the warning light "Engine defects" illuminates, it indicates the engine is defective. Stop the crane and remedy till the warning light goes off.
  - If the warning light "Engine defects" does not illuminate, but the error code is still displayed, it indicates stored error codes or not very serious defect which will not affect normal operation.
  - Under most circumstances, the protective measure activated will decrease the engine RPM to guarantee the engine running with fault (namely the "Limp home" mode). However, the serious fault will lead to engine shutdown.

3.3.12.2 Read the engine error codes

– Read the error codes from the fault diagnostic system.

– Read the error codes by the warning light "Engine error code displayed".

- Press and release the "Engine fault diagnosis" button. The error codes will be flashed out in the warning light "Engine error code displayed". Refer to the *Blink code list* for detailed information.
- The ECU can store 10 error codes.

  A blink code consists of 3 digital numbers. Each digital number flashes every 1 second, such as 3—2—1.

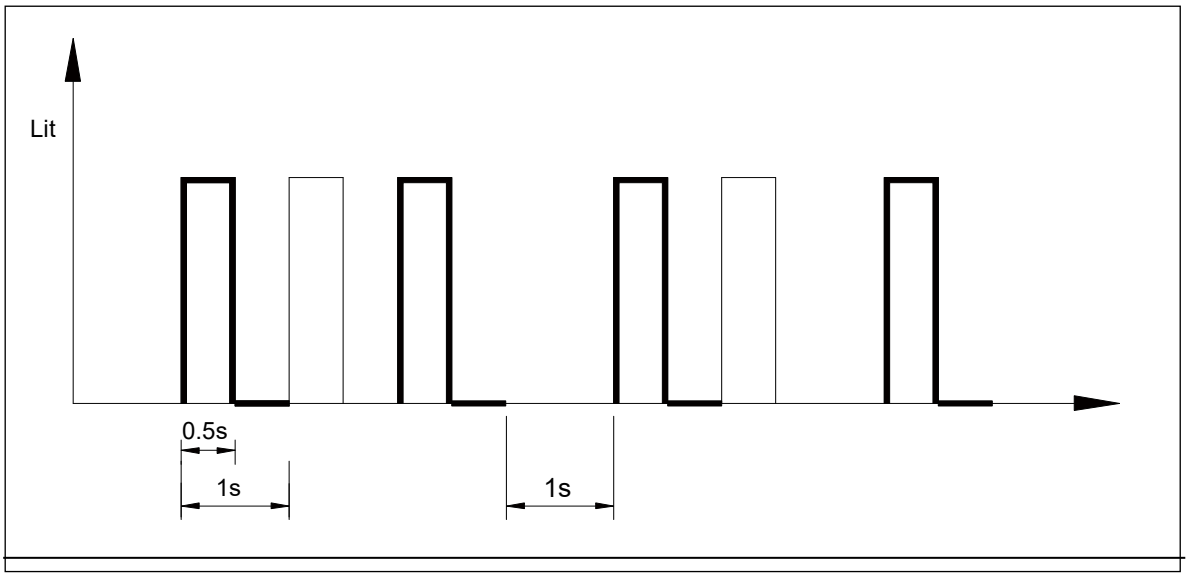


Figure 3-34 Engine error code display

CAUTION

If the "Engine fault diagnosis" button is activated, the warning light "Engine error code displayed" will illuminate.

– Clear up the stored error:

1) Press the "Engine fault diagnosis" button.
2) Turn on the ignition starter switch (T15).
3) Hold the "Engine fault diagnosis" button for 4 to 8 seconds and then release.
4) Turn off the circuit breaker close to the battery to disengage the ECU.
5) Start the engine again.

CAUTION

(1) Only the stored error can be cleared up. The current error cannot be cleared up. Before you clear up the error stored in the ECU, remedy the current error first.

(2) If the error codes cannot be cleared up, contact our service technician as soon as possible.

3.4 Points for attention

3.4.1 Road driving

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 onto the slope.
- Put the transmission in the low gear range before you go down the slope. Activate the engine exhaust 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.

(1) Engine is easily damaged by overrunning.

(2) Decelerate the crane before you downshift the transmission. When you downshift from the 4th gear position, the engine RPM should be below 1500 r/min. When you downshift from the 3rd gear position, the RPM should be below 1200 r/min. Otherwise, overrunning may occur.

g) If the engine stops because the fuel tank is empty, air can go into the fuel system. When this occurs, you remove the air from the fuel lines.

h) When the crane enters a rough terrain such as a slope, in order to avoid tire slipping due to insufficient friction between tires of Axle 3 and 4 and the ground, drive the crane slowly. When the crane reverses onto a slope, etc. the crane may stop moving due to tire slipping caused by such insufficient friction.

WARNING

Do not let the vehicle move forward after the engine is OFF.

3.4.2 Crane movements 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.

b) Shift the gear lever to the low gear range and then engage the clutch slowly. Otherwise crane service life will be shortened.

c) Make sure that the engine RPM is around maximum.

d) Tow the vehicle or put rigid materials, e.g. pieces of wood or iron plates, below the wheels.

3.4.3 Parking 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) Move the gear lever to the neutral position of low gear range.

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.

CAUTION

(1) Make sure that the hazard lights illuminate when the vehicle is parked on the road at night.

(2) If it takes 1 minute or even more to park the vehicle, shift the gear lever to neutral to decrease the clutch wear. Do not run the engine at idle speed for a long time.

3.4.4 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 (drive shaft, axle) failure 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.

If you cannot repair the vehicle, 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 Overall view

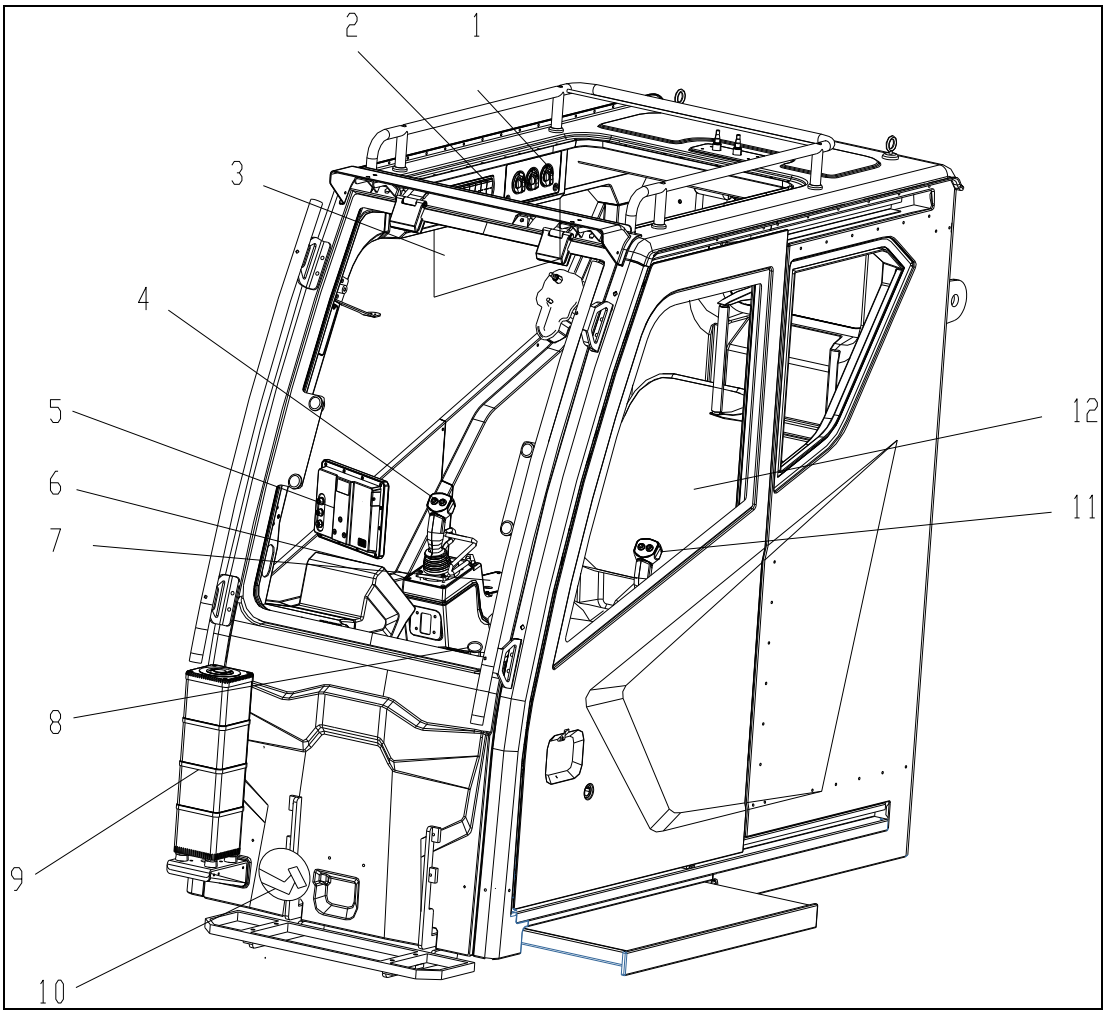


Figure 4-1 Cab interior

Pos.	Description	Pos.	Description	Pos.	Description
1	A/C control panel	2	Auxiliary switch panel	3	Rated capacity char (Not used)
4	Right joystick	5	Load moment limiter	6	Superstructure switch panel
7	Control panel, right control box	8	Emergency stop button	9	Tri-color light
10	Engine control pedal	11	Left joystick	12	Operator's seat

4.1.2 Instrument panel

For the instrument panel, refer to Figure 4-2.

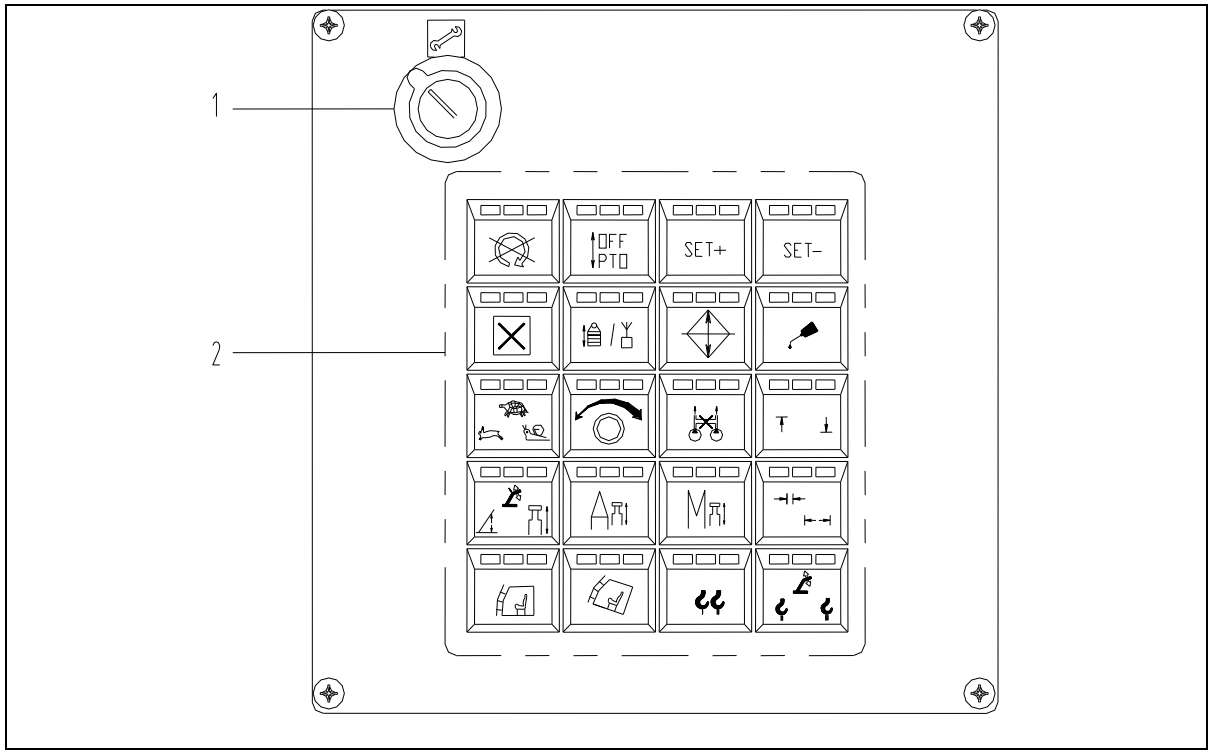
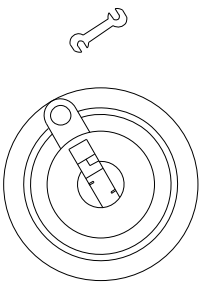


Figure 4-2 Instrument panel

Pos.	Description	Pos.	Description
1	Bypass switch	2	CAN bus control panel

4.1.2.1 Bypass switch



During one of the following cases, the bypass switch can be turned to cancel the limitation on crane movements into a dangerous direction:
- Overloading;
- Overwinding
- Overlowering;
- No safety device is installed during installation or commissioning stage.

This switch is only intended to be used during commissioning or repair.

4.1.2.1 CAN bus control panel

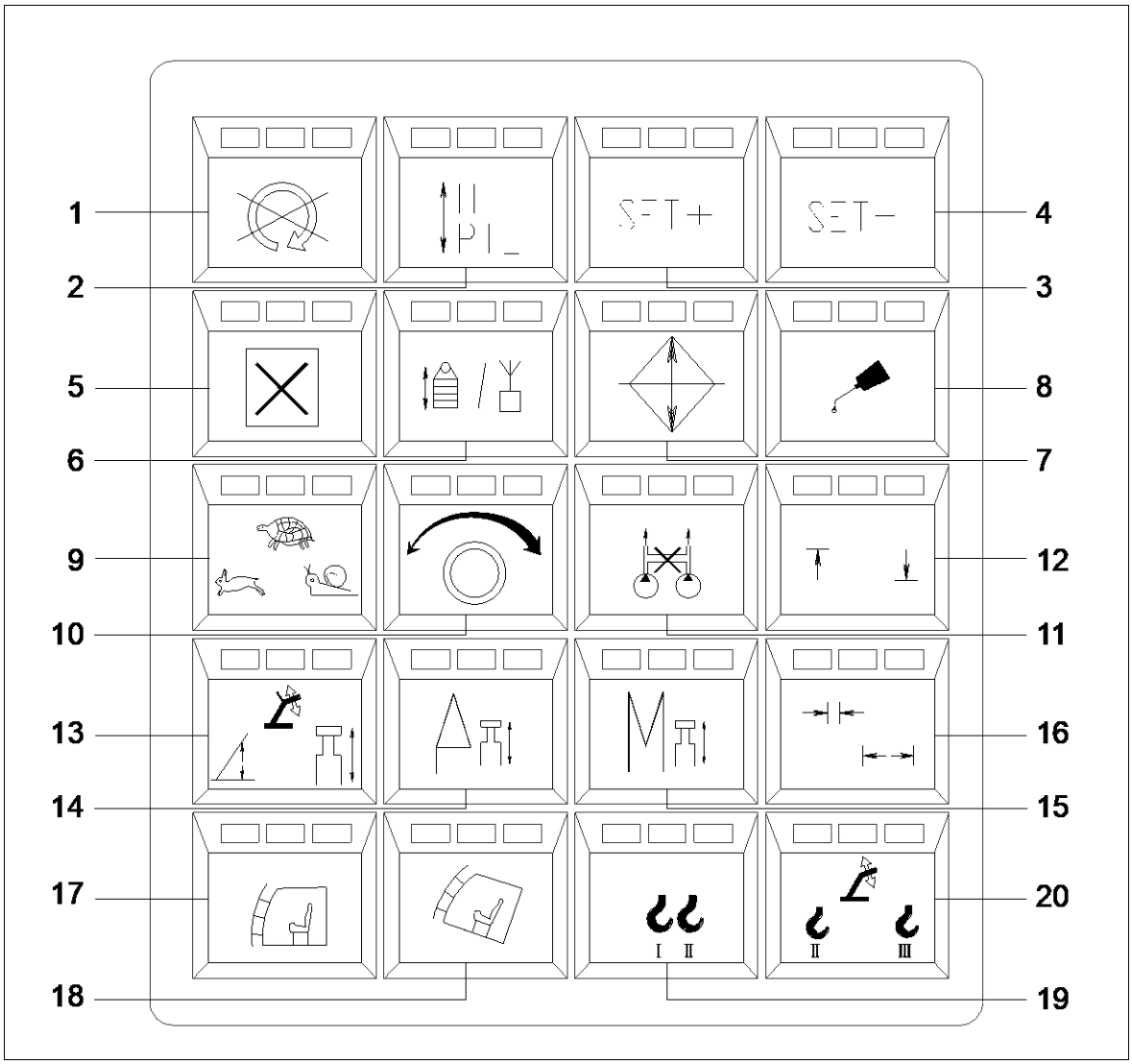


Figure 4-3 Switch panel

Pos.	Description	Pos.	Description
1	Button Engine stop	5	Button Deadman
2	Button PTO	6	Button Counterweight remote control
3	Button Increase engine RPM	7	Button Oil cooler
4	Button decrease engine RPM	8	Button (Not used) Central lubricating system

Pos.	Description	Pos.	Description
9	Button Pre-selection of normal speed / intermediate speed / low speed	15	Button Manual telescoping
10	Inching mode switch (Not used)	16	Button Cylinder pin operation
11	Confluence switch (Not used)	17	Button Operator's cab tilting downwards
12	Button Boom pin operation	18	Button Operator's cab tilting upwards
13	Button Pre-selection of derricking / telescoping	19	Button Not used
14	Button Automatic telescoping	20	Button Not used

1 Button Engine stop

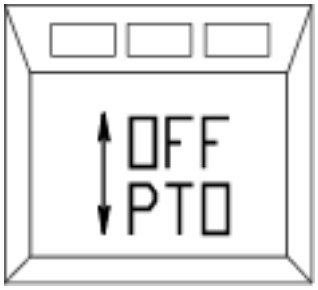
Pressed:

The middle light turns red.

When PTO is engaged and the superstructure works, engine stops.

This button can also control the multifunctional fuel filter on chassis to work again after the multifunctional fuel filter stop working.

2 **Button PTO**



Pressed once:

The middle light illuminates.

Engage the PTO.

Superstructure engine RPM is increased to 900 r/min.

Pressed twice:

The middle light turns red.

Disengage the PTO.

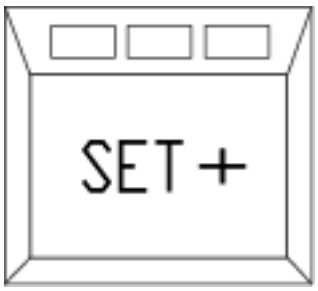
Engine RPM is decreased to idle speed.

CAUTION

Engage the PTO before you begin a lift operation.

Do not do a lift while PTO is disengaged.

3 **Button**



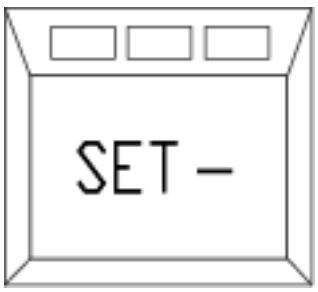
Increase engine RPM

Pressed:

The middle light turns red.

The engine RPM is increased by 150 r/min. until 1350 r/min. is reached. (Sequence: 900 r/min.→1050 r/min.→1200 r/min.→1350 r/min.) after PTO is engaged.

4 **Button**



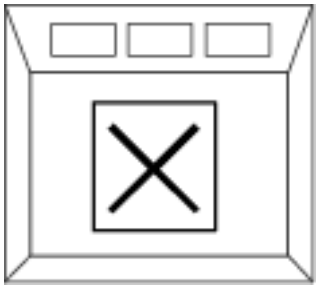
Decrease engine RPM

Pressed:

The middle light turns red.

The engine RPM is decreased by 150 r/min. until 900 r/min. is reached. (Sequence: 1350 r/min.→1200 r/min.→1050 r/min.→900 r/min.) after PTO is engaged.

5 Button Deadman



Pressed:

The middle control light illuminates.

Operate the functions of the joysticks.

It has the same function as the deadman switches on the left and right joysticks.

Press either the deadman button or deadman switch to operate the joysticks.

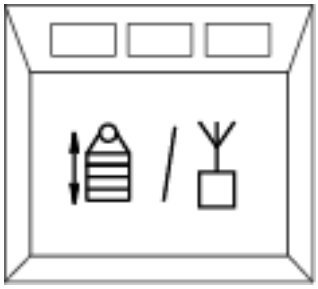
CAUTION

Deactivate the button after operation.

Otherwise, risk of inestimable losses!

6 Button

Counterweight remote control



Pressed:

The left light illuminates.

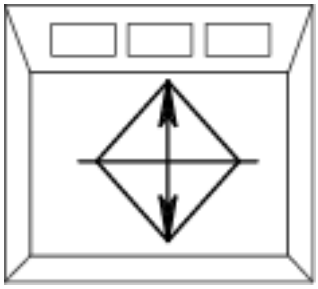
You can operate the counterweight via the remote controller.

Pressed three times:

When these three light extinguish, the remote controller stops working. The joysticks in operator's cab perform their function.

7 Button

Oil cooler



Pressed:

The oil cooler starts to run.

When one of the following conditions is fulfilled, the oil cooler runs.

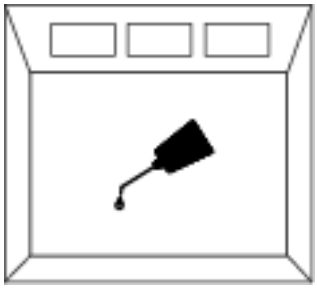
– The engine starts and the oil cooler button is pressed.
– The engine starts and the hydraulic oil temperature exceeds 50°C.

When the hydraulic oil temperature is lower than 46°C, the oil cooler automatically stops.

8 Button

Central lubricating system

(Not used)



9 Button

Pre-selection of normal speed / intermediate speed / low speed

(1) Crane movements "Slew" and "Hoist" have 3 speeds which depend on the position of switch.

(2) 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.

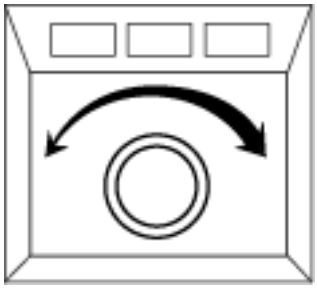
(3) Crane movements "Derrick" also have 3 speeds.

Considering the controllability, crane movements "Derrick" and "Slew" speed will automatically limit to the safety range when the boom length is equal to or more than moderate one.

10 Button

Inching mode

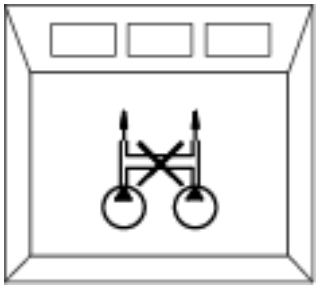
(Not used)



11 Button Confluence

(Not used)

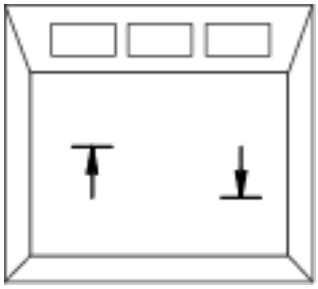
.



12 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;



13 Button

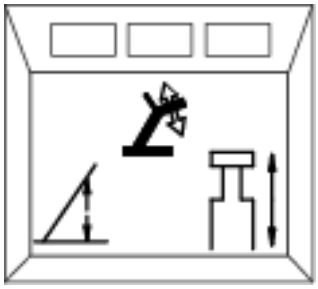
Pre-selection of derricking / telescoping

Pressed:

(1) Left light illuminates: The boom derricking movement is operational

(2) Right light illuminates: The boom telescoping movement is operational

(3) Middle light illuminates: Not used. This vehicle doesn't support this function.



14 Button Automatic telescoping

Pressed:

The middle light illuminates.

The boom can perform automatic telescoping.

15 Button Automatic telescoping

Pressed:

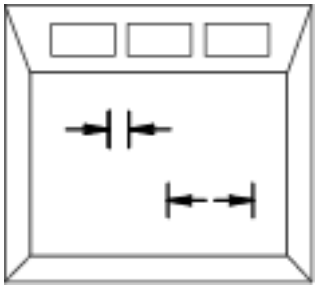
The middle light illuminates.

The boom can perform manual telescoping.

16 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.



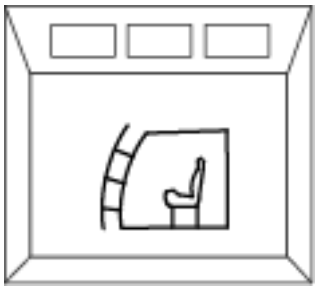
17 Button

Operator's cab tilting downwards

Pressed:

The middle light illuminates.

Tilt the cab downwards.



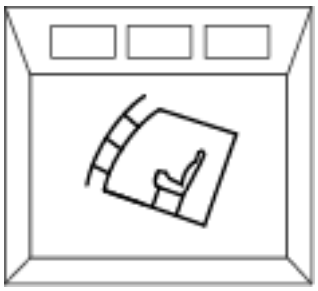
18 Button

Operator's cab tilting upwards

Pressed:

The middle light illuminates.

Tilt the cab upwards.



4.1.3 Emergency stop button

Press down this switch to shut down all superstructure movements, so as to avoid injuries and property loss.

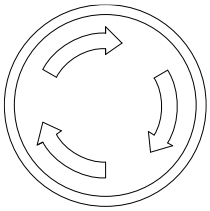


Figure 4-4 Emergency stop button

4.1.4 Rocker switches and lights

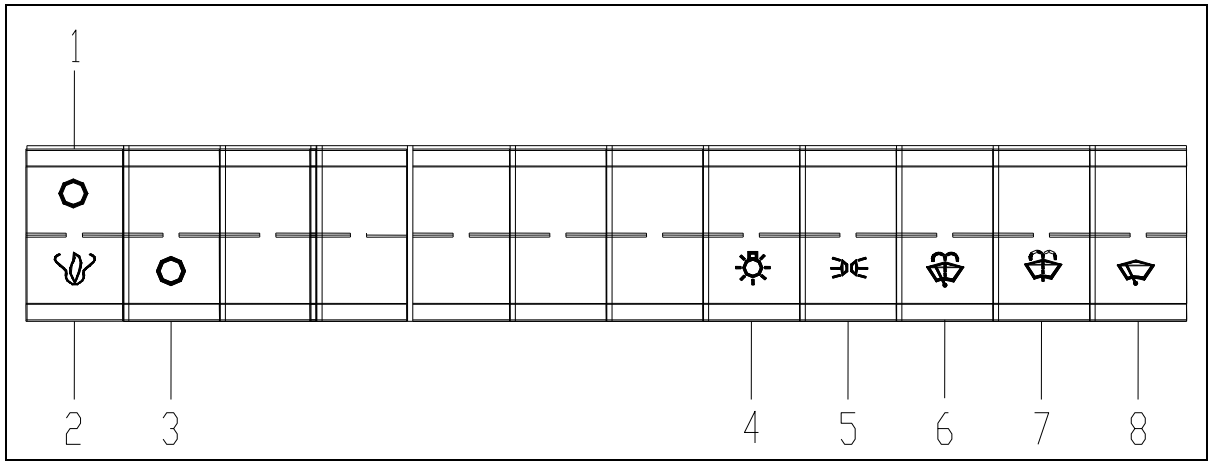
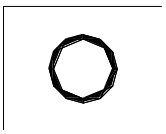


Figure 4-5 Rocker switches and lights

Pos.	Description	Pos.	Description
1	Control light Superstructure power source	5	Boom head light switch
2	Warning light Cab heater malfunction	6	Roof window wiper and washer system switch
3	Power switch	7	Front windshield washer system switch
4	Working light switch	8	Front windshield wiper switch

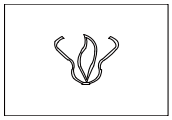
1 Power indicator light

When the superstructure power switch is turned on, this indicator light illuminates



2 Superstructure power switch

When the cab heater is working, this indicator light illuminates.

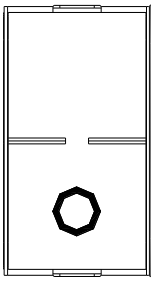


3 Control light

Superstructure power source

Illuminates:

The button "superstructure power source" is pressed.



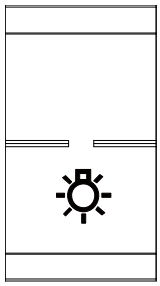
4 Working light switch

Position 1:

Switch on background lighting.

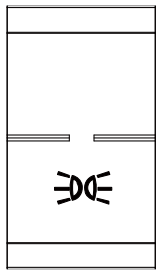
Position 2:

Switch on background lighting, work lights on operator's cab, slewing platform, winchesand boom.



5 Boom head light switch

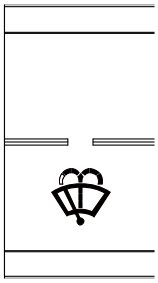
Press this switch to turn on the lights on the boom head.



6 **Roof window wiper/cleaner switch**

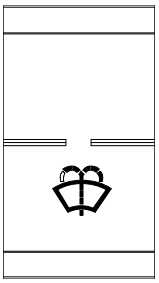
When this switch is pressed to Position I, the roof window wiper starts working; when this switch is pressed in Position II, the roof window wiper and cleaner start working simultaneously.

Position II is automatically reset.



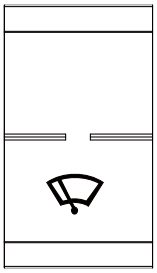
7 **Front windshield cleaner switch**

Press this switch to enable the front windshield cleaner, and the sprayer will sprayer water onto the glass and cleaning starts.



8 **Front windshield wiper switch**

Press this switch and the front windshield wiper starts working.



4.1.5 Control boxes

4.1.5.1 Left control box

As for left control box, please refer to Figure 4-6.

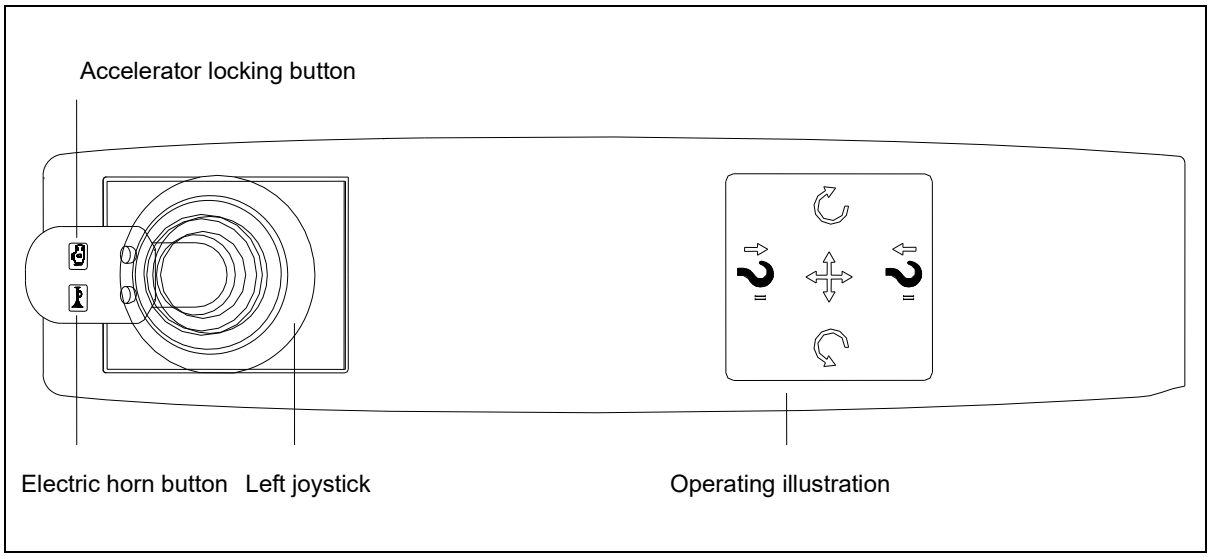


Figure 4-6 Left control box

As for left joystick and its operating illustration, please refer to Figure 4-7.

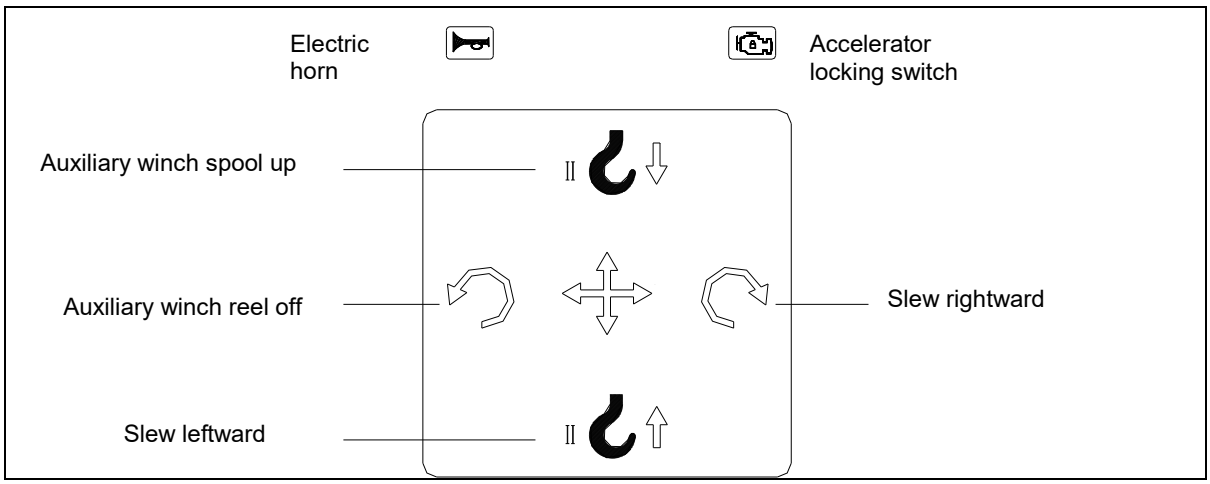


Figure 4-7 Left joystick and operating illustration

4.1.5.2 Right control box

As for right control box, please refer to Figure 4-8.

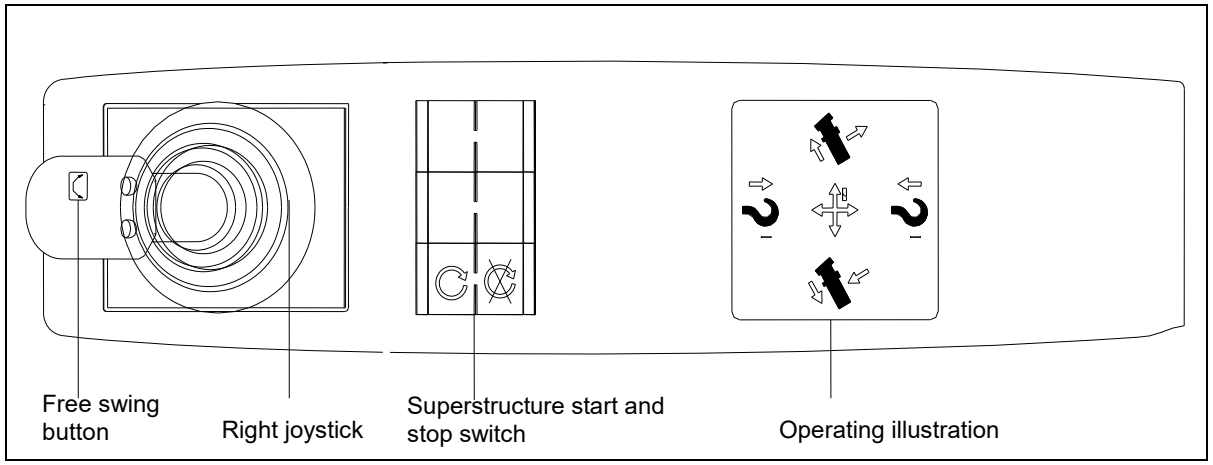


Figure 4-8 Right control box

As for right joystick and its operating illustration, please refer to Figure 4-9.

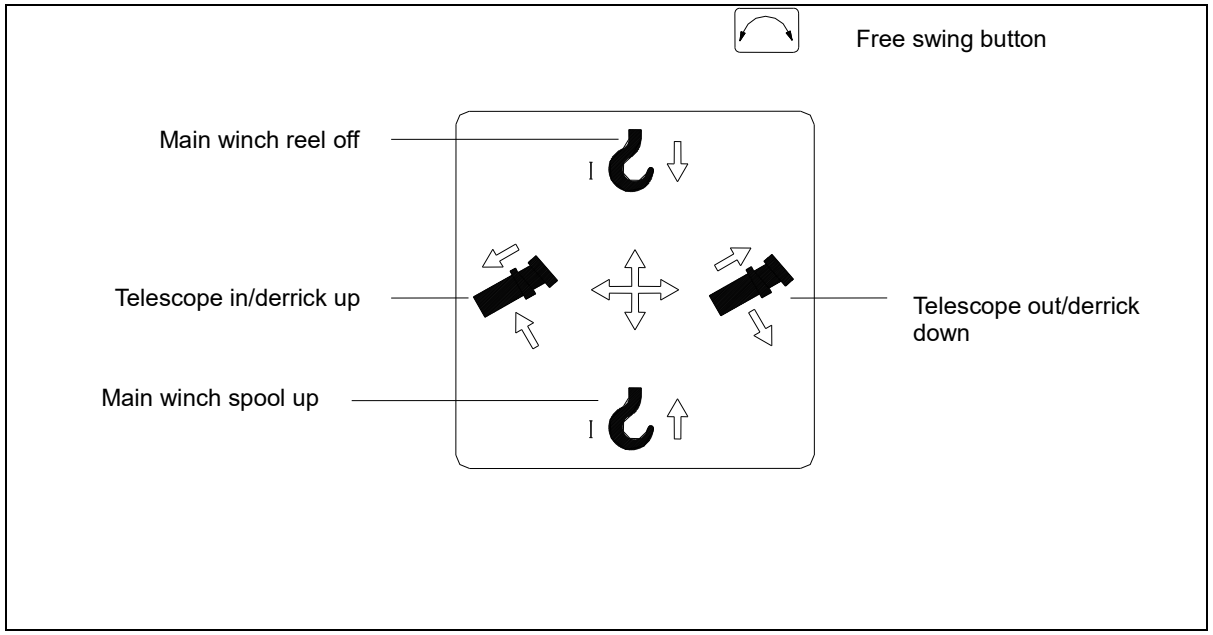


Figure 4-9 Right joystick and its operating illustration

Left joystick has an accelerator locking button. First depress the accelerator pedal to any speed, and press this button once to lock the current accelerator, and then press this button twice to unlock the accelerator.

Right joystick has a free swing button. The slewing table may slew freely when the free swing button is activated.

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 4-10.

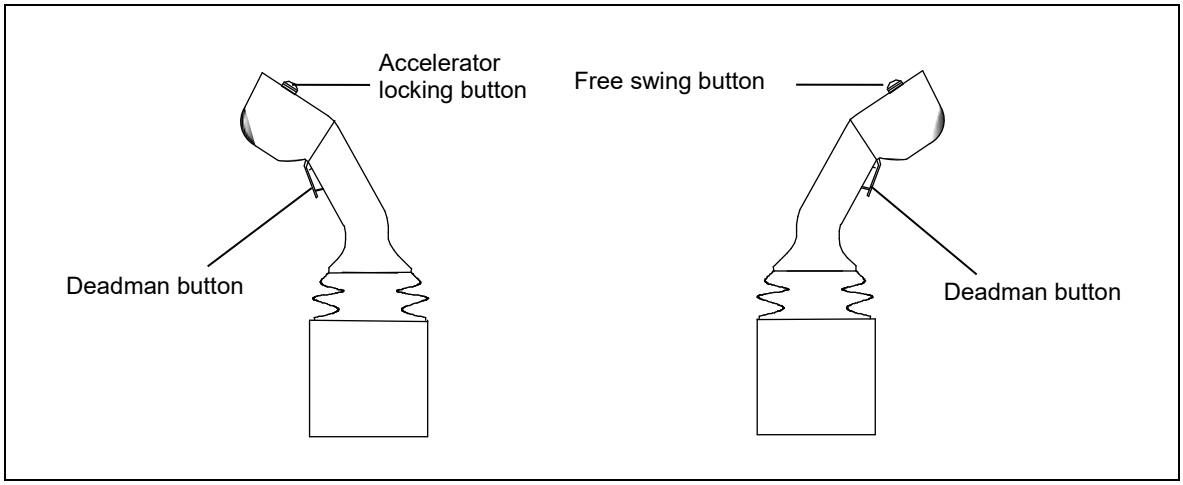


Figure 4-10 Joysticks

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 control pedal

You can depress the engine control pedal to increase the engine RPM, thus to accelerate the slewing, derricking, telescoping and hoisting movements.

4.1.7 Operator's seat

Refer to Figure 4-11.

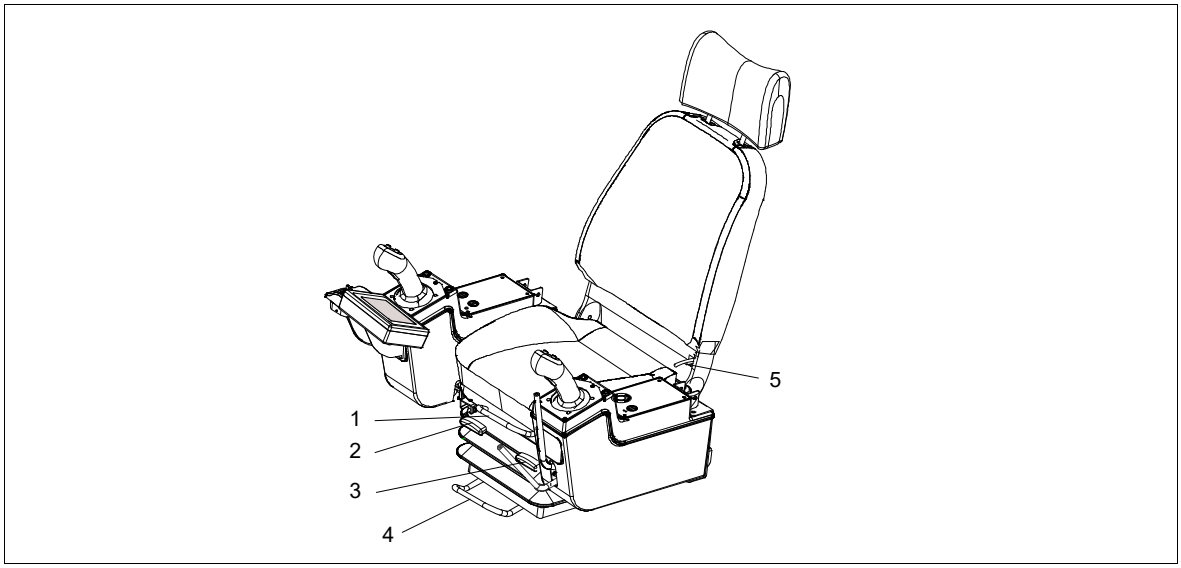


Figure 4-11 Operator's seat

Pos.	Description	Pos.	Description
1	Hand lever, upper horizontal seat adjustment	4	Hand lever, lower horizontal seat adjustment
2	Hand lever, seat cushion (rear section) angle adjustment	5	Hand lever, backrest angle adjustment
3	Hand lever, seat cushion (front section) angle adjustment		

Hand lever, upper horizontal seat adjustment:

When you adjust the seat, pull the hand lever upwards to move the sliding rail to suit the operator. After the seat adjustment is done, release the hand lever to lock the sliding rail.

Hand lever, seat cushion (rear section) angle adjustment:

When you adjust the seat cushion angle (rear section), pull the hand lever upwards to suit the operator. After the adjustment is done, release the hand lever to lock the seat.

Hand lever, seat cushion (front section) angle adjustment:

When you adjust the seat cushion angle (front section), pull the hand lever upwards to suit the operator. After the adjustment is done, release the hand lever to lock the seat.

Hand lever, lower horizontal seat adjustment:

When you adjust the seat/control box, pull the hand lever upwards to move the sliding rail to suit the operator. After the seat adjustment is done, release the hand lever to lock the sliding rail.

Hand lever, backrest angle adjustment:

When you adjust the backrest angle, pull the hand lever upwards to suit the operator. After the adjustment is done, release the hand lever to lock the seat.

4.1.8 Engine control pedal

You can depress the engine control pedal to increase the engine RPM, thus to accelerate the slewing, derricking up, telescoping and hoisting movements. When the ECO system works in economic mode, the accelerator pedal is invalid.

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 tippling 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 4-12. For the elements of main screen, refer to the following table.

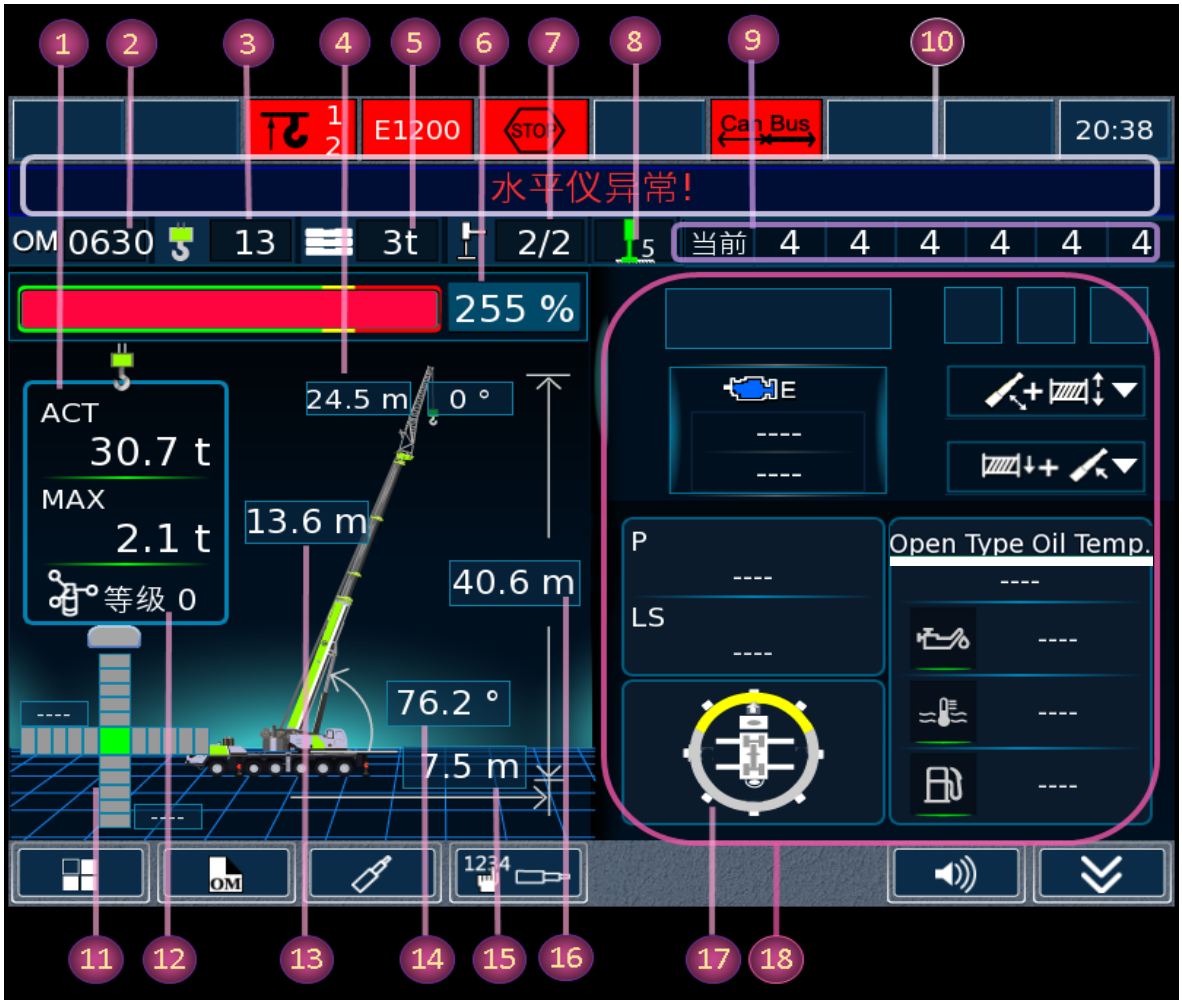


Figure 4-12 Main screen

Pos.	Description	Pos.	Description	Pos.	Description
1	Actual load (ACT) Rated load (MAX)	2	Operating mode code	3	Reeving factor
4	Jib length	5	Counterweight	6	Load ratio
7	Outrigger setting status	8	5th outrigger status	9	Current boom section telescoping combination
10	Text prompt scroll bar	11	Horizontal inclination angle	12	Wind speed level
13	Boom length	14	Boom angle	15	Working radius
16	Lifting height	17	Indication of front or rear working area	18	Control related display area

CAUTION

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 description

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 errors are 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 4-13.

Figure 4-13 Self-test passed

For the "OM selection" screen, refer to Figure 4-14.

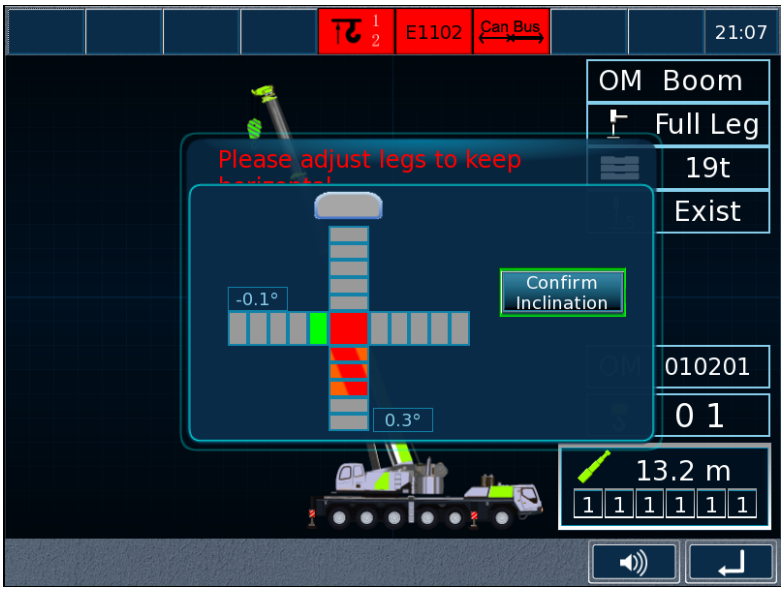


Figure 4-14 OM selection

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 4-15).

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 a text reminding "Please adjust levelness of the chassis frame" appears in the OM confirmation screen, adjust the outriggers to achieve the levelness according to Section 4.5.2: *Outriggers*.

CAUTION

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 4-15.

Figure 4-15 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 4-16). Many parameters can be monitored from this screen in real time.

Pos.	Description	Pos.	Description	Pos.	Description
1	Alarm icons	2	Scrolling alarm texts	3	Operating mode code
4	Load ratio	5	Suspending load status	6	Engine and functional switches
7	Instrument and pressure indications	8	Functional keys		

Figure 4-16 Main screen – configuration program

The functions of the individual monitor operating elements are program-dependent, and can be different in any running program. Therefore, the description of the individual programs will be described in detail.

a) Function key line

The function key line consists of the function keys F1 to F8 and the function key icons line above them. (Refer to Figure 4-17.)

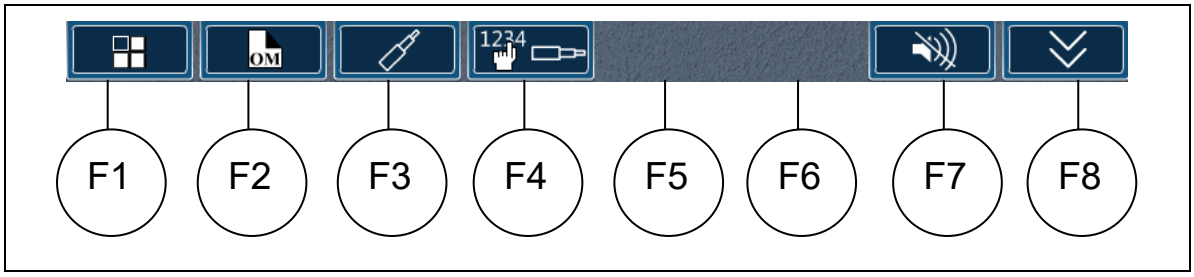


Figure 4-17 Function key line

Functional keys at the bottom of the monitoring interface:

F1: jump to functional list interface (or so called navigation interface) to enter sub-level functional pages.

F2: jump to the operating mode setting interface.

F3: jump to the automatic/manual telescoping interface.

F4: jump to the telescopic boom section selection interface.

F7: switch over the buzzer switch.

F8: page turning of instruments and pressure indication.

CAUTION

During following conditions, press F7 to mute the buzzer, but the fault cannot be eliminated:

- **Overlowering;**
- **Overwinding;**
- **Overloading;**

- **Hydraulic oil level too low**
- **Central passage pressure too high.**

The operator should rectify the fault according to system reminding or actual condition.

Fault reminding for the buzzer is located in: F5: Fault query – F5: Movement parameter query – F4: Movement indicator lights.

Press key F1 in main interface to enter into a navigation interface. Refer to Figure 4-18.

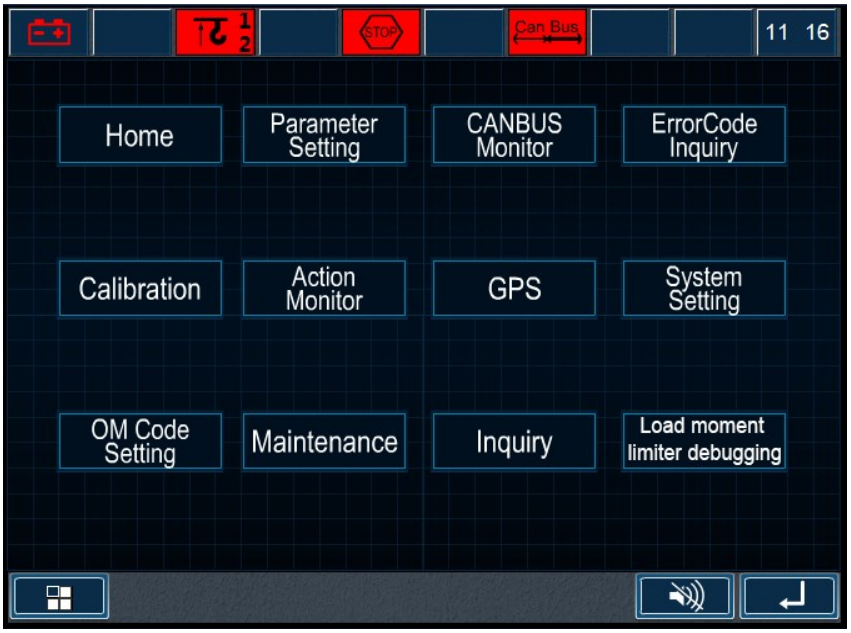


Figure 4-18 Navigation interface

Click the corresponding icons in main interface to enter into the related sub-interfaces. The menu of sub-interface is as follows:

a) 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!)

b) Communication monitoring: monitor the state of CAN network of complete vehicle.

c) Fault query: Including faults of load moment limiter, engine, controllers, valves of switches and sensors.

d) Calibration interface: including displacement sensor, CR2012, slewing coder, main winch coder, oil quantity sensor, and anemometer. (This vehicle doesn't have slewing coder, main winch coder, oil quantity sensor and calibration of counterweight cylinder length.)

e) Movement monitoring: including crane movements "slew", "derrick", "hoist" and "telescope", movements of counterweights and operator's cab, I/O of boom pin and cylinder pin movements and state monitoring query.

f) GPS interface: including GPS entering, ON, state monitoring, GPS fault query, emergency unlocking, GPS OFF, GPS activation, etc.

g) System setting: including date and time, display brightness, Chinese and English display as well as metric and English systems setting function.

h) OM setting: set OMs.

i) Maintenance: check the date and interval of maintenance.

j) Query function: including IO port, AD value and calculated values of load moment limiter.

k) Debugging tool: benchmark debugging before delivery and convention debugging, only limit to the professional personnel.

⚠ CAUTION

When the items below occur, the buzzer sends out fast acoustic warning.

- **The main or auxiliary winch is in the spool-up mode and the hook block touches the hoisting limit switch weight.**
- **The sensor senses that the main winch has 3 wraps of wire-rope on it.**
- **The sensor senses that the load weight is more than the load weight in the system**

Press key F7 (buzzer icon) to turn off the buzzer. But the current fault cannot be removed. The operator can manually remove the fault according to actual conditions.

b) Boom status

It displays boom length, angle, radius, height and chassis frame levelness, etc.

The chassis frame levelness is used to indicate real-time inclination angle of the chassis frame during lift operation.

If the jib is selected, it will also show the configuration of jib. Refer to Figure 4-19.

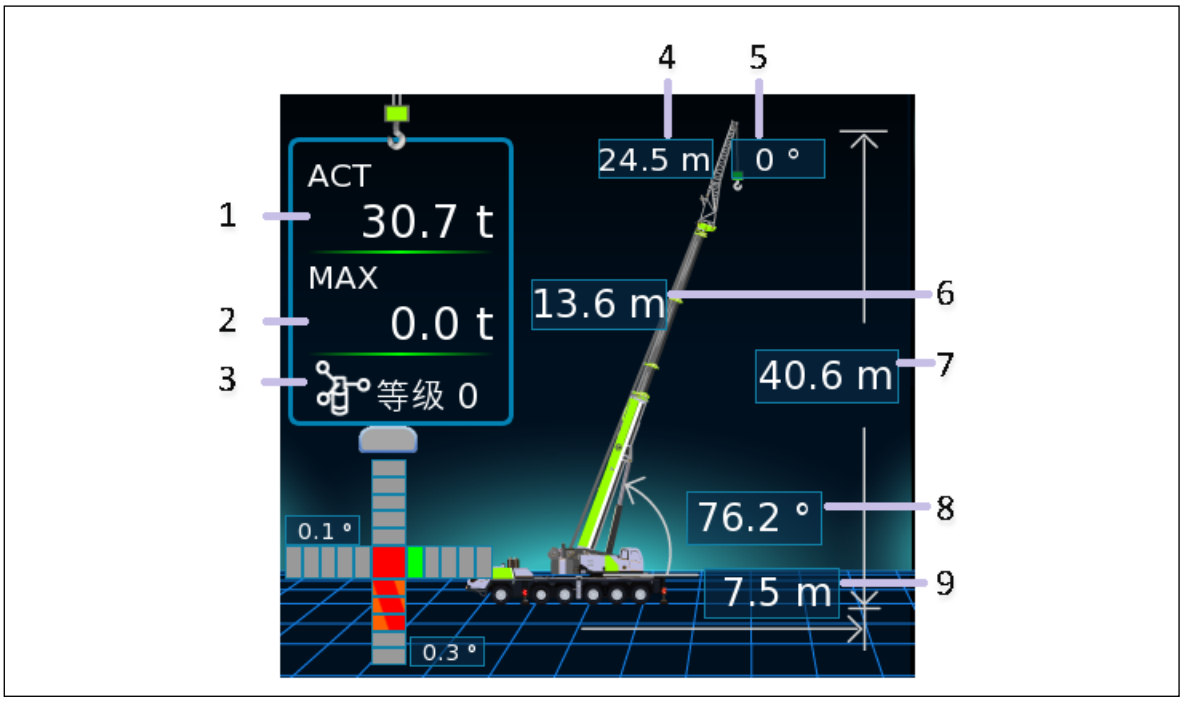


Figure 4-19 Boom status

Pos.	Description	Pos.	Description	Pos.	Description
1	Actual load weight	2	Maximum lifting capacity	3	Current wind speed
4	Jib length	5	Jib angle	6	Boom length
7	Lifting height	8	Boom angle	9	Working radius

Figure 4-19 displays boom length, boom angle, lifting height and chassis frame levelness, etc.

The chassis frame levelness can be used to observe real-time inclination angle of the chassis frame during lifting operations.

When the jib is used, a jib icon will also appear. OM code, counterweight, reeving, crane inclination angle in real time and outrigger status, etc. are displayed Refer to Figure 4-20.

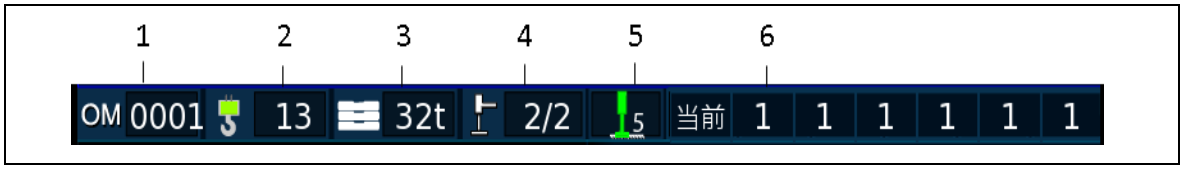


Figure 4-20 OM display

Pos.	Description	Pos.	Description	Pos.	Description
1	Operating mode code	2	Reeving factor	3	Counterweight
4	Outrigger fully/half extended	5	5th outrigger extended	6	Telescopic boom section code

As for the instruments and the pressure indications, refer to Figure 4-21. (Pressing key F8 can switch between these two interfaces.)

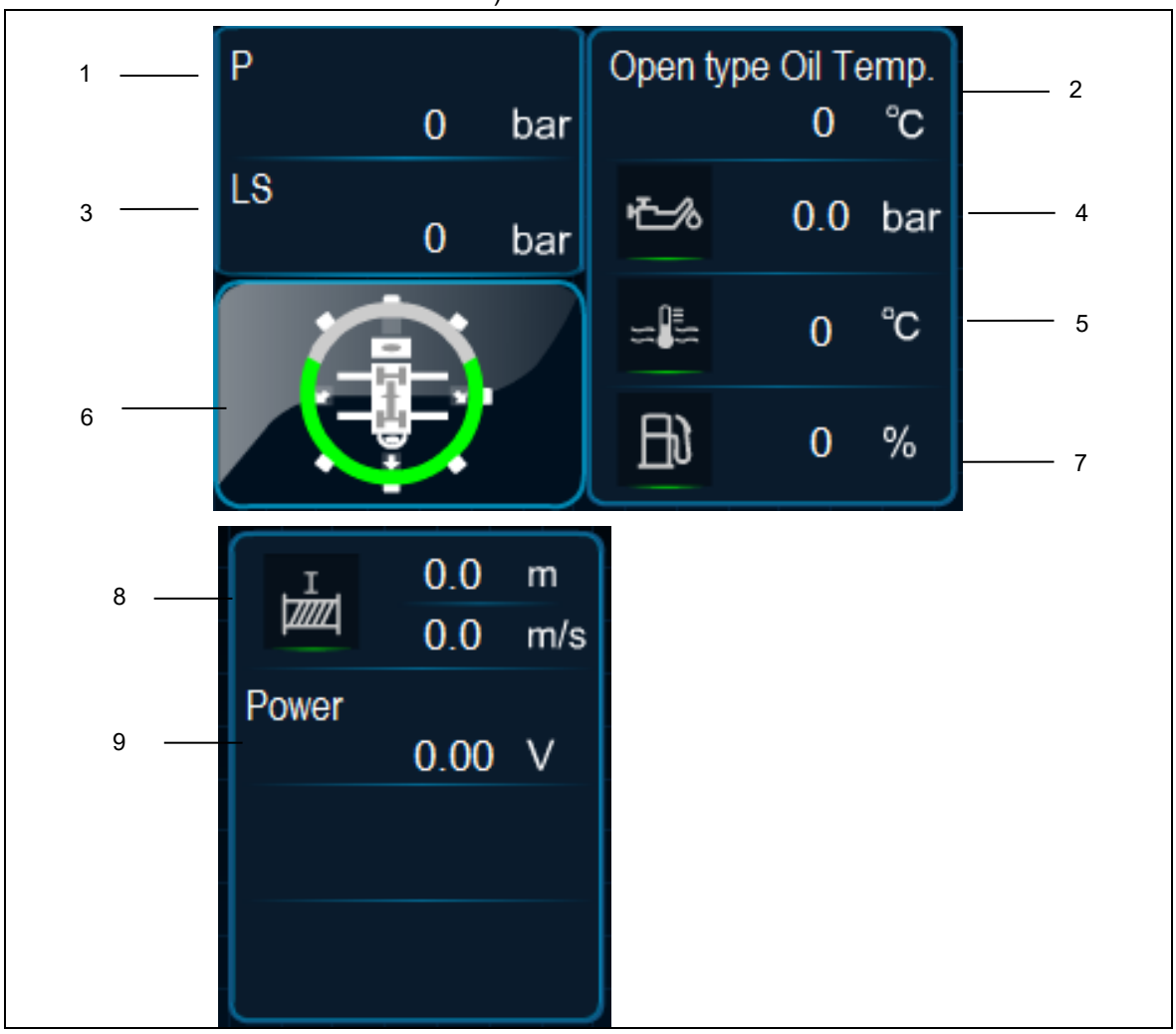


Figure 4-21 Instrument indication interface

Pos.	Description	Pos.	Description
1	Pressure at port P	6	Front and rear area display
2	Hydraulic oil temperature, open system	7	Fuel reserve
3	Pressure at port L	8	Length and speed of main hoist rope
4	Engine oil pressure	9	Supply voltage

5	Coolant temperature		

As for the load percentage, refer to Figure 4-22.

Figure 4-22 Load percentage display

The figure above displays the load weight including digit display, graph display and wind speed scale.

Figure 4-23 Speeds and function switches

Pos.	Description	Pos.	Description
1	Speed gear (high/medium/low) or stepless speed ratio	2	Accelerator pedal and crane locking status
3	Engine speed	4	Engine working hours
5	ECO mode, LMI mode, return oil filter clogged	6	Deflection compensation function switch
7	Derricking and winch simultaneously moving switch		

Position 1 in Figure 4-23 is a speed switch. When the switch "Pre-selection of low / medium / high speed" is set into these three speeds respectively, this switch will display the following icons such as rabbit, the tortoise and the snail.

When the inching mode button on the switch panel is pressed, Position 1 in Figure 4-23 will display the current speed value as Figure 4-24 shown. Activate the speed switch on left control box to regulate the speed from 20% - 100%. And thus the crane movements "derrick" and "slew" can realize stepless speed adjustment.

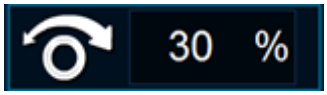


Figure 4-24 Speed display

As for the boom telescoping combination, refer to Figure 4-25. The combination indicates the current boom telescoping one.

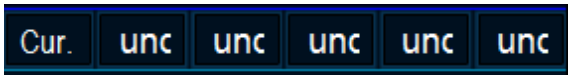


Figure 4-25 Boom telescoping combination display

As for the top indicators, refer to Figure 4-26.

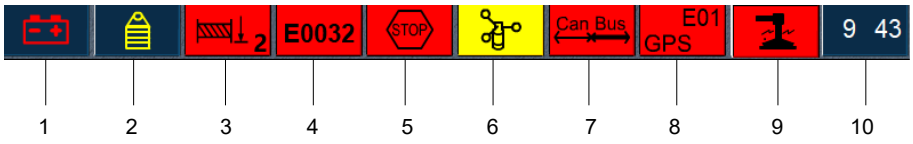


Figure 4-26 Top indicators

Pos.	Description	Pos.	Description
1	Warning light Low voltage	6	Warning light Early warning / warning of wind overspeed
2	Control light Counterweight remote control box / remote controller	7	Warning light CAN bus fault
3	Warning light Hoisting limit switch / Lowering limit switch	8	Control light Error code of GPS
4	Control light Error code of load moment limiter	9	Warning light The 5th outrigger overpressure
5	Warning light Early warning / warning of overload	10	Current time display

4.2.2.3 OM setting

Set the OMs and the boom telescoping combination before telescoping. press key F2 on left bottom of main interface or restart the load moment limiter to enter into the OM selection interface. Refer to Figure 4-27.

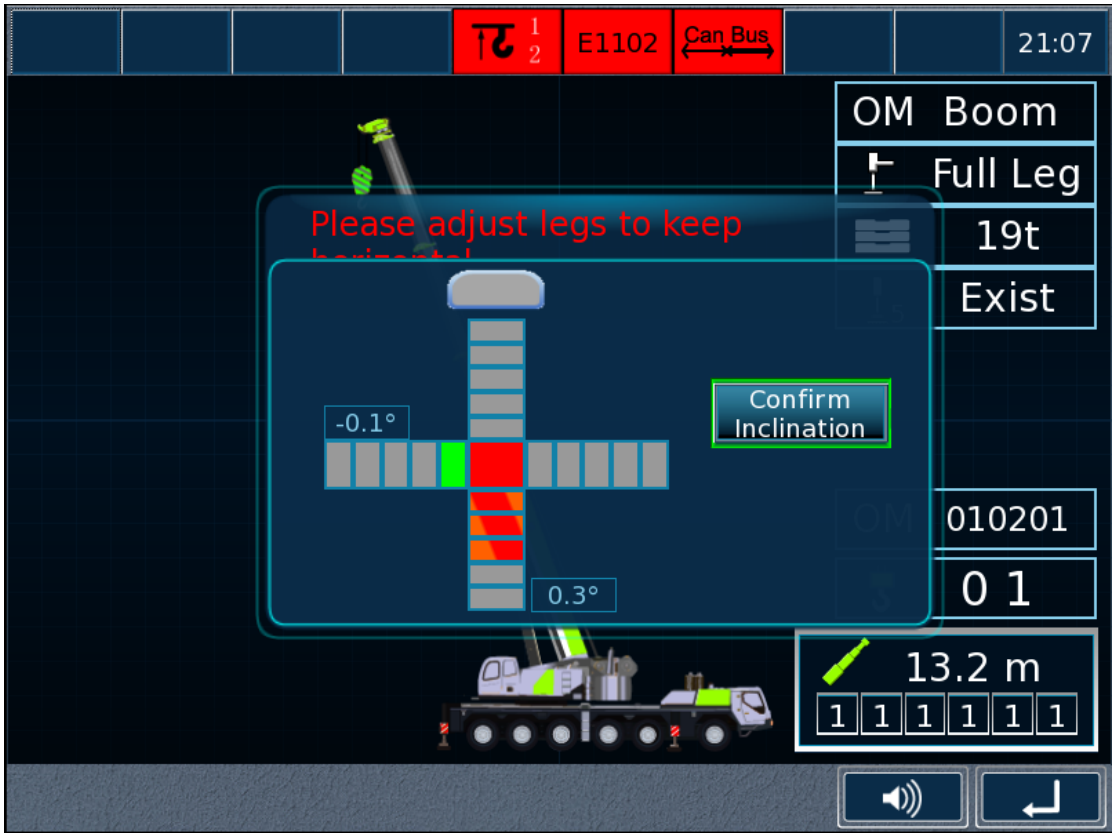


Figure 4-27 OM selection interface

Horizontal inclination angle of the chassis frame should be adjusted to be within 0.3 degree (green) before crane operations. After a lifing operation is started, the level gauge is only used for safety reminding, and the levelness should not be ajusted at will.

Press 

in the OM selection interface to enter into the main OM selection interface. Refer to Figure 4-28.

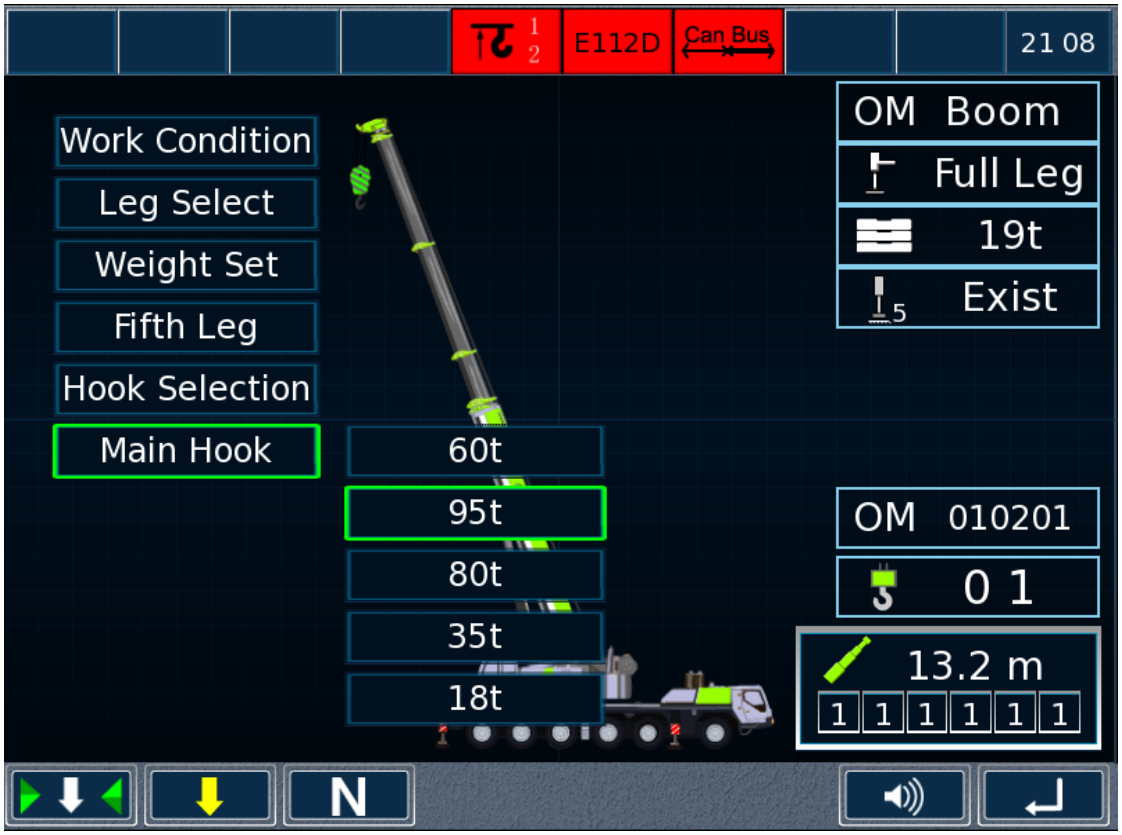


Figure 4-28 Main OM selection interface

Press  to scroll down items in the main page. Press  to enter next page of items.

When all paramters of a certain operting modes are selected, press  to save current operating mode.

Press  to give up current setting and return to the main page.

Press  in the operting mode interface to select a reeving factor, as shown in Figure 4-29.

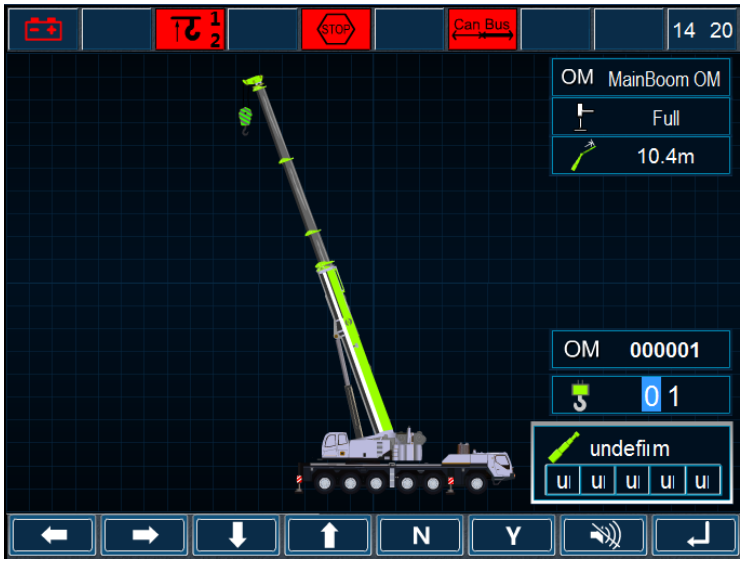


Figure 4-29 Hook reeving selection interface

Press  and  to switch over between number change at the first and second digits.

Press  or  to increase or decrease reeving factor number.

Press  to save current setting.

Note:

Remember to press  to save the current setting!
If the current setting is incorrect, press "OM setting" in the monitoring interface to reset parameters.

Press  in the OM interface or the main interface to enter the telescopic boom confirm interface, as shown in Figure 4-30.

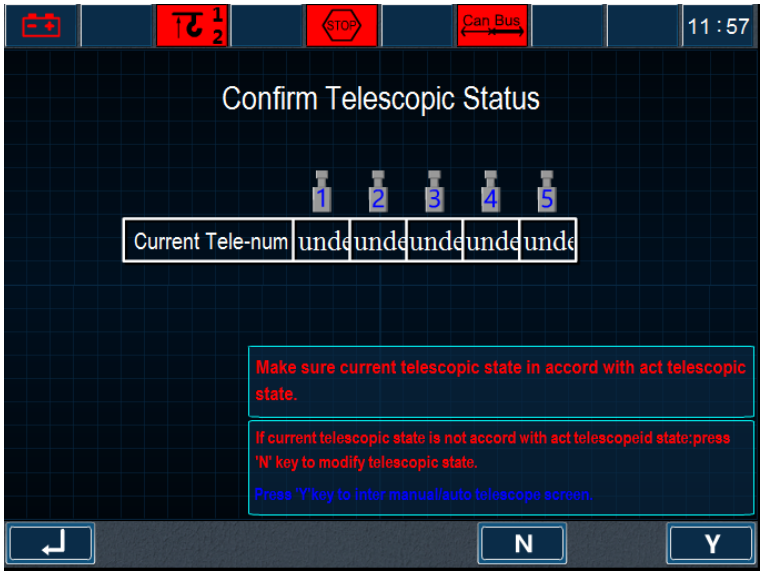


Figure 4-30 Boom telescopic status confirm interface

Current telescopic boom section status is displayed.

If the displayed status conforms to the actual status, press Y to confirm the stausand enter telescopic boom control interface.

When the two does not conform, press N to enter telescopic boom section edit itnerface, as shown in Figure 4-31.

Figure 4-31 Telescopic boom section edit interface

Press  to edit telescopic boom section combination, and press Y to save curent combiantion as shown in Figure 4-32.

Figure 4-32 Telescopic boom section edit interface

Press 

in the OM selection interface or the main interface to enter into the telescoping combination selection interface. Refer to Figure 4-30.

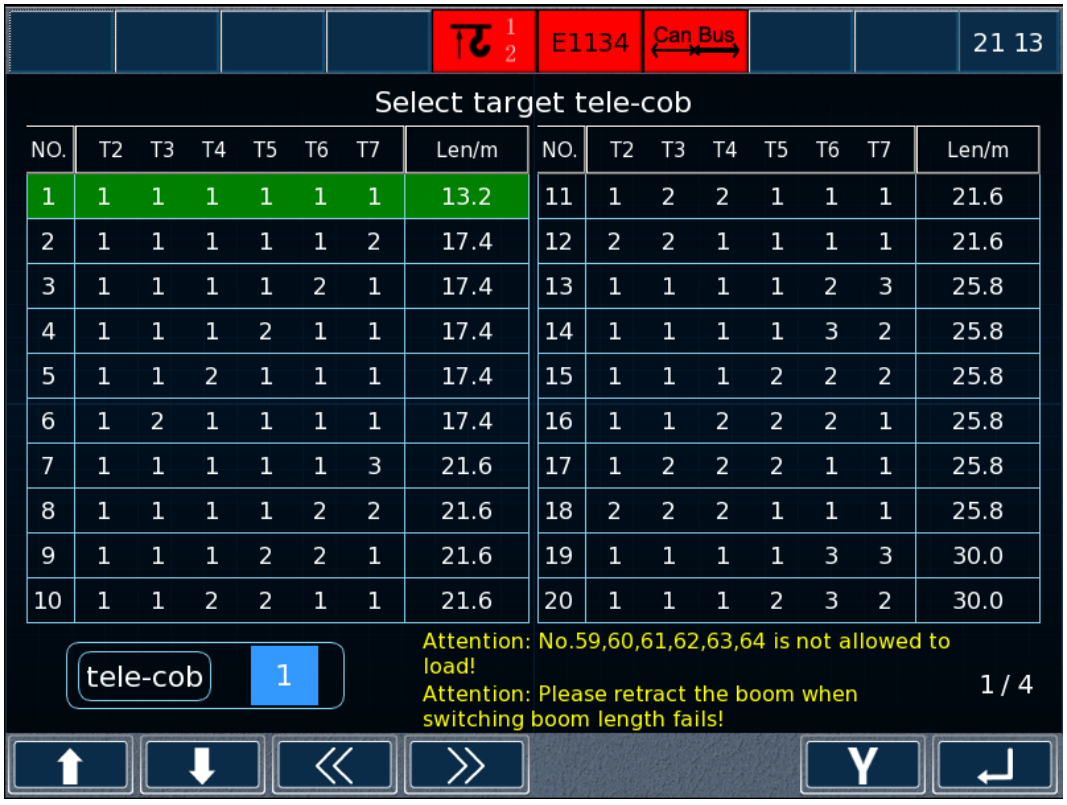


Figure 4-30 Telescoping combination selection interface

Press  to switch over between table pages;

Press  to select target boom section combination, the nubmerselected will be displayed in the lower left part of the screen.

Press  to save current combination.

After the target combination is set, press "Auto start" to enable automatic boomsection telescoping.

Press "Manual telescope" to enter manual telescoping interface.

(1) Only the selected OM is a legal one, can the system carry out the telescoping operation.

(2) The last yellow numbers stand for the OMs which are not for lifting the load, but for greasing the boom. Under these OMs, do not lift the load!

4.2.2.4 Telescoping operation

Two telescoping operations: manual / automatic

Automatic telescoping is strongly recommended.

The manual telescoping can only be activated when automatic telescoping is invalid.

Boom combination illustration (Refer to Figure 4-34):

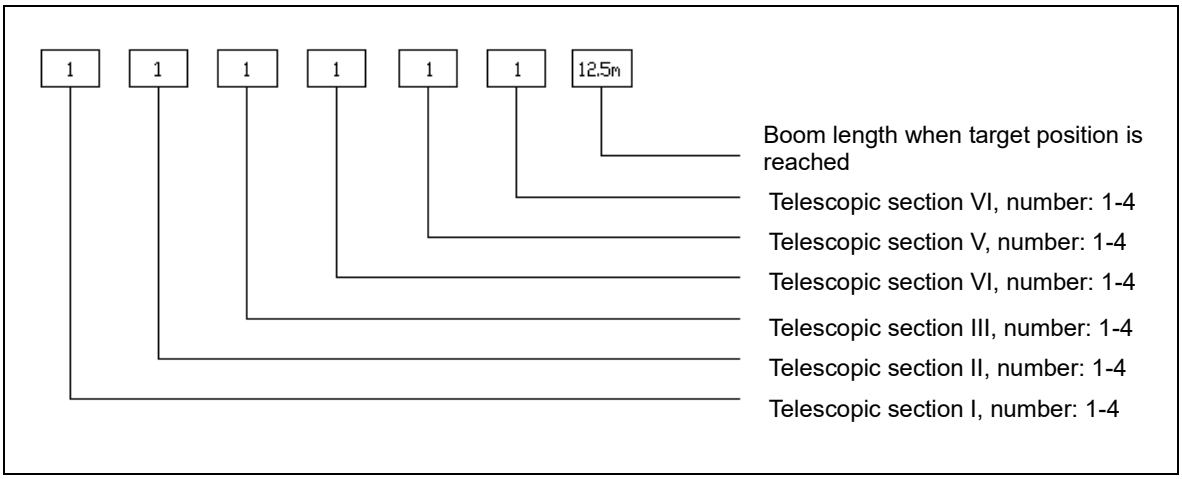


Figure 4-34 Boom combination

Numbers "I – VI": 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%

4.2.2.4.1 Automatic telescoping

The automatic telescoping has 3 steps in total.

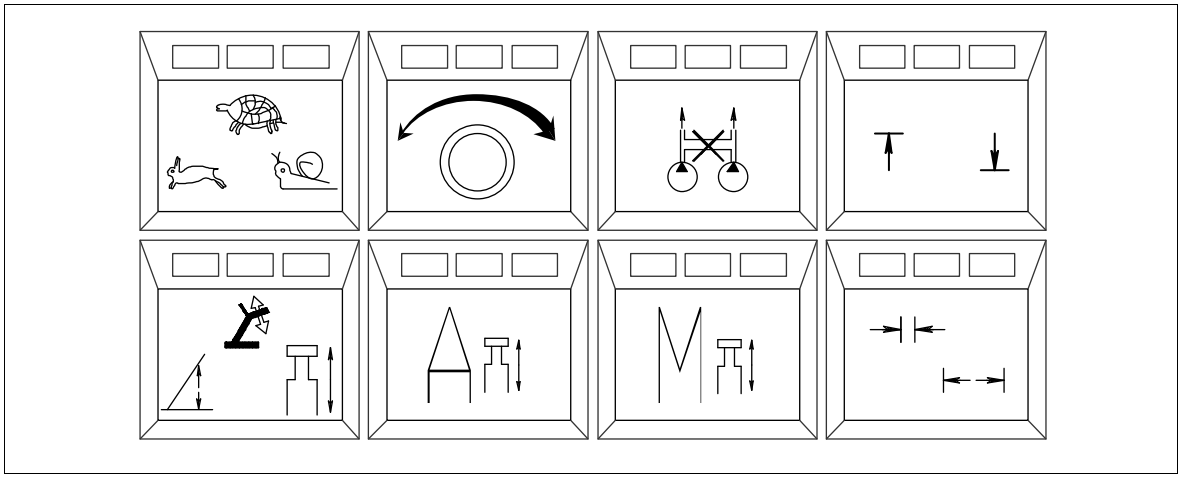


Figure 4-35 Automatic telescoping

a) Refer to Figure 4-35. Make sure that the following prerequisites are met:

1) The valid operating mode has been set.
2) The hoisting limit switch and lowering limit switch are not activated.
3) Switch "pre-selection of derrick / telescope" as shown in Figure 4-35 has been set to "Telescope".
4) Activate switches "cylinder pin operation" and "boom pin operation" as shown in Figure 4-35 to open the cylinder pin and the boom pin..
5) Deactivate switches "automatic telescoping operation" and "manual telescoping operation" as shown in Figure 4-35.
6) Activate the switch "pre-selection of normal speed / low speed / extremely low speed" as shown in Figure 4-35 in normal speed.
7) Icon  does not appear.

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 78.5° 。

Boom status

DANGER

It is very important to confirm the current boom status!

Improper setting will result in incorrect telescoping movement and cause fatal

accidents!

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

a) Information about boom pin, cylinder pin and other related information.

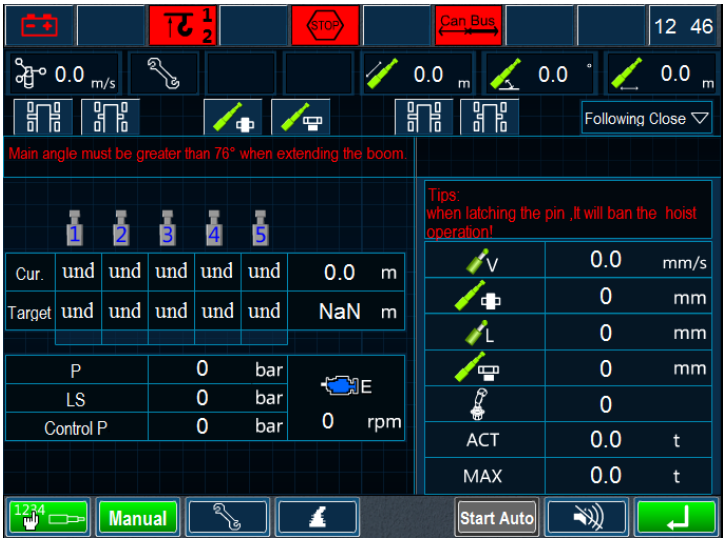


Figure 4-36 Telescoping

Control light icons: (the icons on the upper side are corresponding to the control lights on the instrument panel)

Refer to Figure 4-37.

For the description of control light icons, refer to Table 4-9.

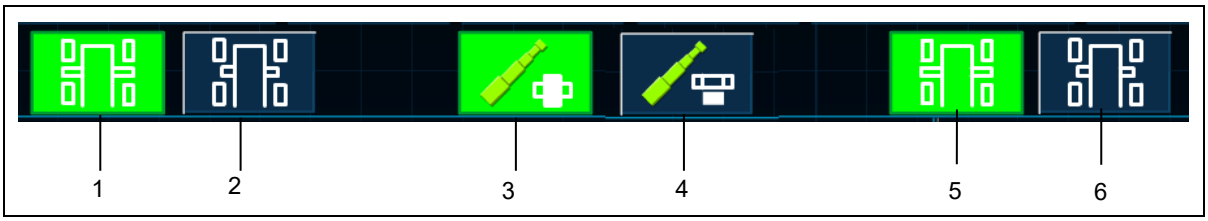


Figure 4-37 Control light icons

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

b) Start automatic telescoping

When "Auto start" and the return icon turn green, it indicates that the prerequisites for automatic telescoping have been fulfilled. Press F6 corresponding to "Auto start", AND "Manual telescope", "Auto start" and the return key icons turn into grey.

Press the automatic telescoping switch on the control panel (refer to Figure 4-35) to "Auto" position, i.e. the middle light of the switch illuminates in red, boom section telescoping will be executed automatically according to the operator's setting.

When the boom reaches target length, "Return" and "Manual telescope" return to green, indicating that the telescoping is completed.

1) 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 4-38.

The content highlighted in red are the detailed error information.

Rectify the errors manually according to the instructions.

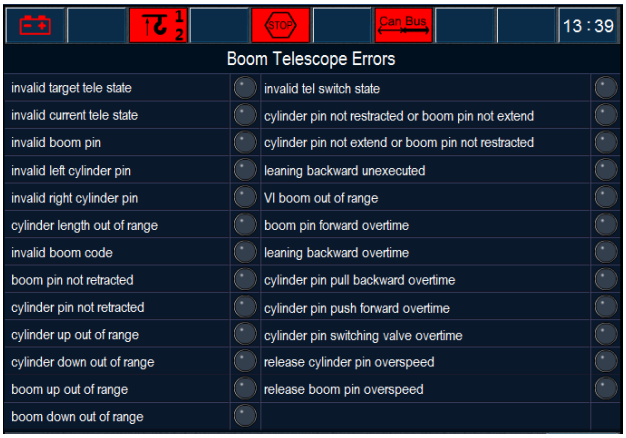


Figure 4-38 Boom telescope errors

2) Modify the current boom status:

Before switching to the boom telescoping status, confirm the current boom status (Refer to Figure 4-30) first.

If the displayed boom status differs from the actual one, press function key F6 "N" to switch to Figure 4-40 for modification.

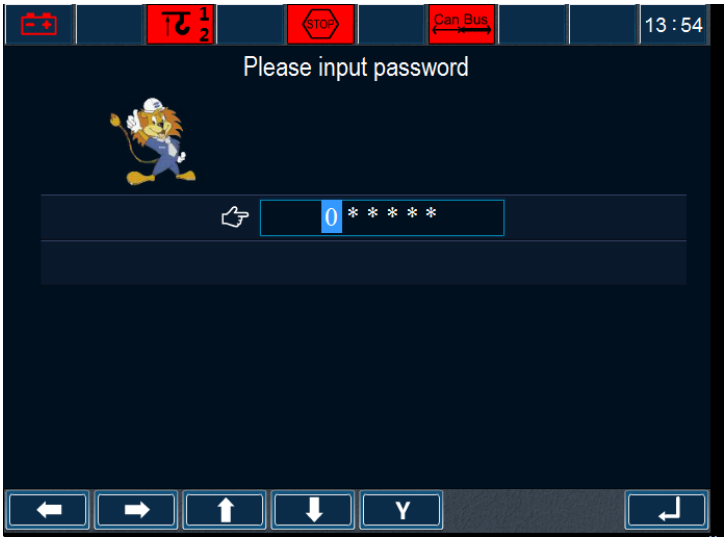


Figure 4-39 Enter password

Figure 4-40 Current boom status modification

How to modify the current boom status (Refer to Figure 4-38):

a) Press function keys F1 and F2 to select the corresponding telescopic section which needs to be modified.

b) Press function keys F3 / F4 to increase / decrease the numerical values.

c) Press function key F7 "Y" for confirmation.

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.

Manual telescoping

4.2.2.4.2 Manual telescoping

CAUTION

Because the manual telescoping is complex, it is recommended to initiate manual telescoping only when the automatic telescoping is invalid.

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 4-35).

CAUTION

Boom angle should not be lower than 78.5 degrees during manual telescoping, pinning or unpinning process, so as to ensure telescoping safety.

e) Press function key F2 in Figure 4-34 to switch to Figure 4-41.

f) Telescope boom sections manually.

In Figure 4-41, if the above prerequisites are met, "Start manual" will be highlighted in green.

In that case:

1) Press function key F6, and "Start manual" and  will be highlighted in grey.
2) Activate the switch "manual telescoping operation"
3) Move the right joystick.
4) Use bearing pins, working pins and the bypass switch to manually telescope boom sections.

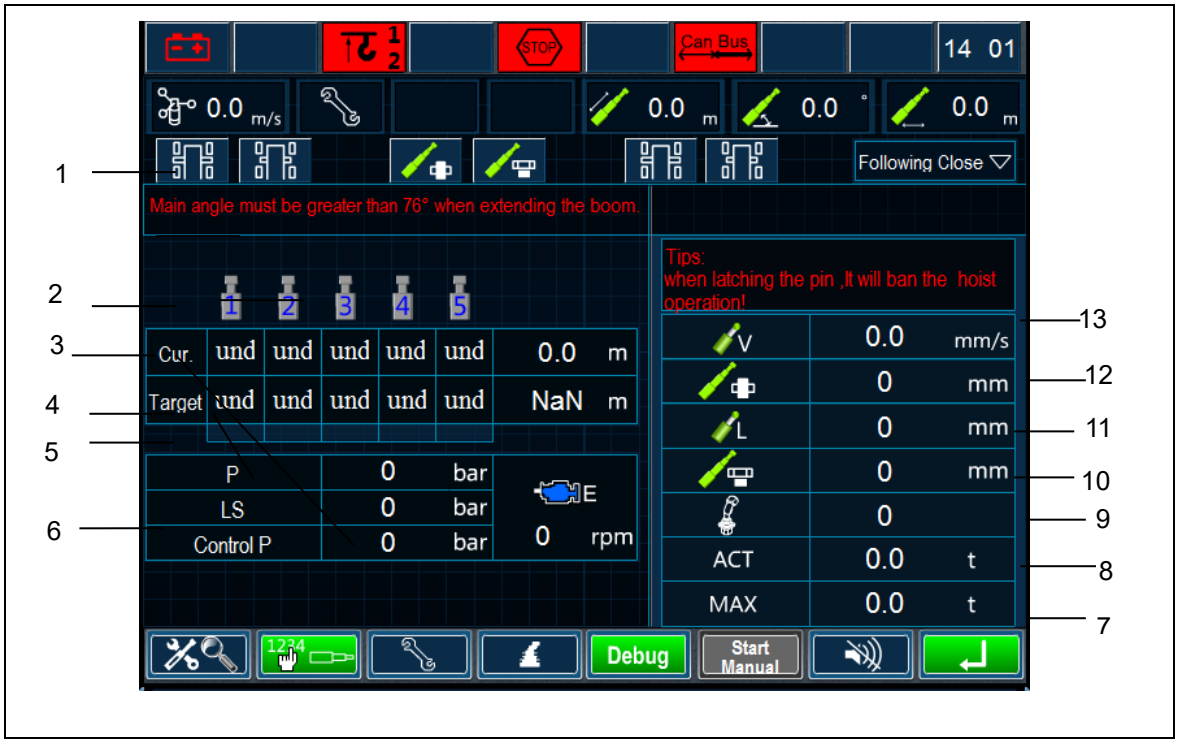


Figure 4-41 Boom status during manual telescoping

Pos.	Description	Pos.	Description
1	Control light icons	8	Actual load
2	Boom code	9	Telescoping control value
3	Current status	10	Cylinder length 1
4	Target status	11	Current cylinder length
5	Target telescopic section	12	Cylinder length 2
6	Pressure display	13	Telescope speed
7	Rated load		

Press  to enter the telescopic boom section maintenance interface.

Press  to enter the calibration interface, in which displacement sensor, boom zero position, boom telescoping speed and cylinder telescoping speed can be calibrated.

Press  to start manual boom section telescoping.

CAUTION

Observe the following instructions when carrying out manual telescoping operation.

a) Unlock the telescoping cylinder

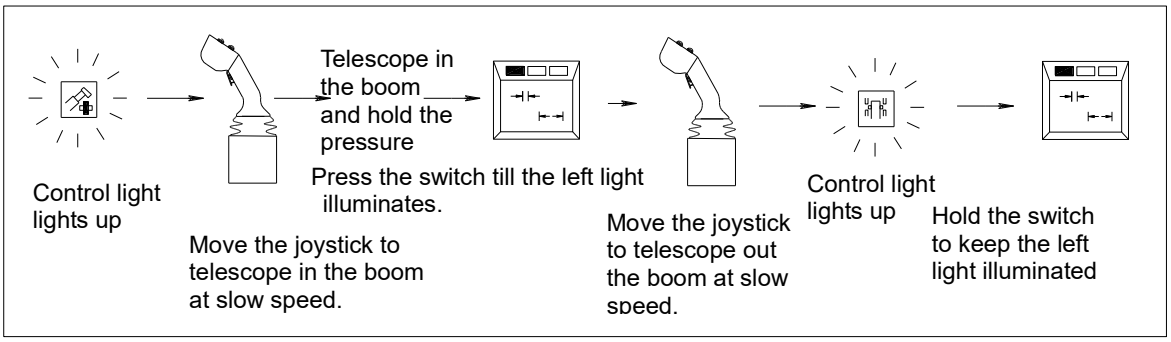


Figure 4-42 Unlock the telescoping cylinder

DANGER

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.

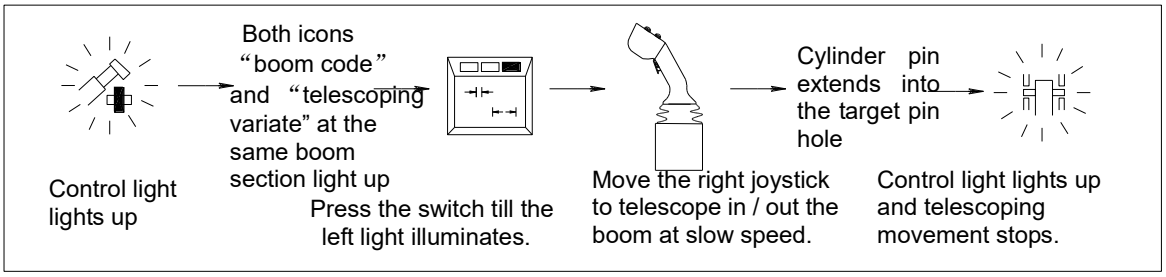


Figure 4-43 Lock the telescoping cylinder

c) Pin the telescopic section

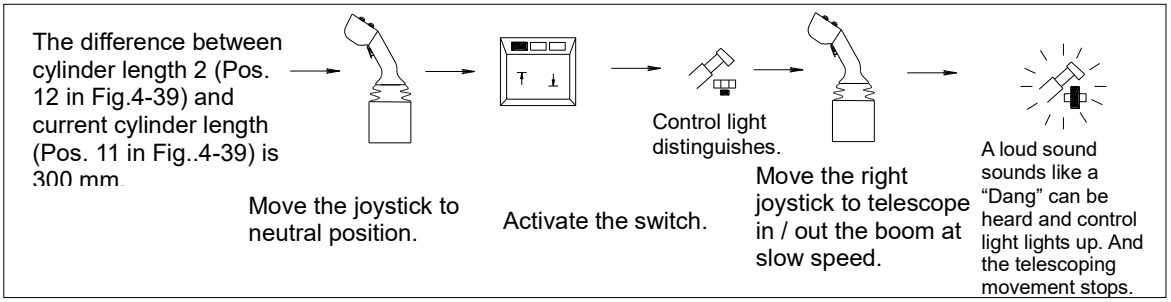


Figure 4-44 Pin the telescopic section

CAUTION

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.

a) Unpin the telescopic section

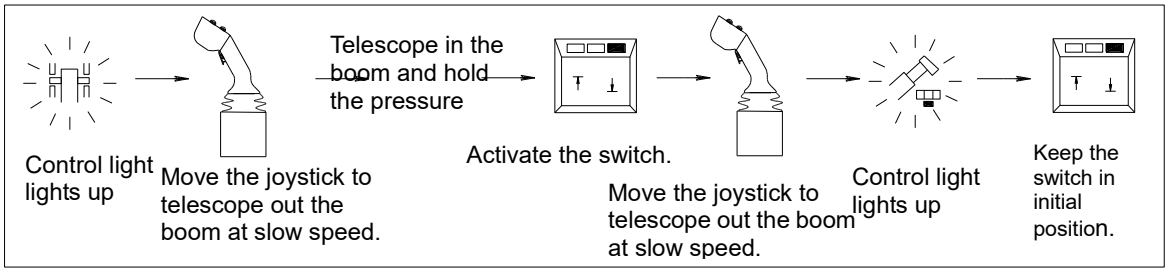
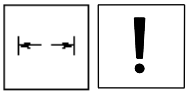


Figure 4-45 Unpin the telescopic section

CAUTION

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.

b) 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 telescoped in completely.
2) Telescoping cylinder is unlocked.
3) Telescoping cylinder is in the tail of telescopic section VI.
4) Continually extend until the control light 'Boom code" of telescopic section VI extinguishes.

c) Methods for identifying which boom section is carrying out movement

Observe the manual and automatic telescoping monitor interface. Refer to Figure 4-46.

Figure 4-46 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.

d) If the boom section is unpinned, icon 8 displays the cylinder length 1 and icon 7 displays cylinder length 2.

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 4-39.

The length of telescoping cylinder shown in icon 9 will vary with the moving of joystick.

e) Icon 4 (Target telescopic section) 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 4-39), the

highlighted section is telescopic section 1. So, the telescopic section 1 is to carry out telescoping movements.

CAUTION

(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.**

Refer to the operator's manual of the load moment limiter for operational instructions.

CAUTION

Special precautions for use of load moment limiter:

1. The load moment limiter can be used to prevent crane tip-over, boom rupture or injuries due to crane overloading in construction sites. However, it shall not be solely depended upon by the operator. When the rated lifting capacity displayed in its screen does not conform to lifting capacity tables, the latter shall prevail for determining the actual lifting capacity.

2. Correct operating mode setting is a prerequisite for use of the load moment limiter and the crane. Only a skilled operator is allowed to set operating mode. It is prohibited to set an operating mode which does not conform to actual working condition.

3. The load moment limiter shall be debugged by technical personnel.

4. When "Heavily overloaded" appears in the screen, limitation on movements into a dangerous direction cannot be bypassed. Please reel off the winch to lower the load onto the ground.

5. When "LMI" appears in the upper right corner of the screen, or press F6 to enter the LMI interface and "Locked for a period of time" appears, the limitation of movements into a dangerous direction is removed temporarily.

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.

NOTICE

If the oil level is lower than the MIN. mark, fill oil. Otherwise, the engine will be damaged seriously!

b) Examining the hydraulic oil

The oil level in hydraulic oil tank must be between MIN. and MAX. marks.

Open the shutoff gate valve to connect the hydraulic oil tank with the oil line.

How to open shutoff gate valve:

1) Pull out the handle.
2) Turn the handle.

Refer to Figure 4-47.

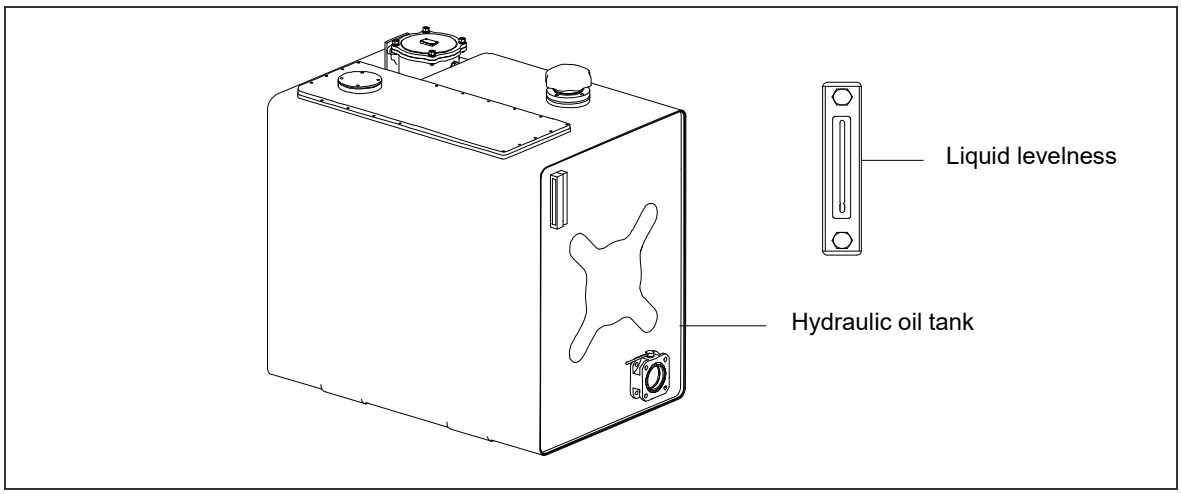


Figure 4-47 Hydraulic oil tank

c) Examining the fuel reserve

The fuel reserve is displayed on the fuel gauge. Examine the fuel reserve and add fuel if necessary.

NOTICE

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!

d) Examining the coolant level

Do a check of the coolant to make sure that the engine coolant is at the correct level. Add more if below the cold engine level.

e) Examining general conditions of crane

1) Examine lubrication status of each moving parts and make sure that all moving parts are lubricated. Add grease to 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 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) Make sure that the joysticks in the operator's cab are in neutral before you engage the PTO.
9) Make sure that all the outrigger control levers are in neutral.
10) Make sure that the parking brake is applied.

4.3.2 Starting and stopping the engine

For starting and stopping the engine in driver's cab, please refer to the operating instructions in Chapter 3 *Operation – crane chassis*.

Starting and stopping the engine in operator's cab should be carried out in accordance with the following operating instructions.

a) Stopping the engine

In normal conditions, press and hold the button "Engine stop" on the control panel for 1 to 2 seconds to switch off the engine.

b) Starting the engine

You can press the button "Engine start" to switch on the engine if the following prerequisites are met:

1) The PTO has been engaged.
2) The transmission is in the required position.

4.4 Safety devices

4.4.1 Levelness gauge

A levelness gauge is installed near the outrigger operation mechanism at each side of the chassis frame. Its screen displays vividly the overall levelness of the chassis frame, with information displayed in symmetry in the two screens at the two sides. Take the right side display screen as an example, as shown in Figure 4-48.

Direction indications in the screen are as follows:

Left: represents the head of the chassis frame;

Right: represents the end of the chassis frame;

Up: represents right side of the chassis frame;

Down: represents left side of the chassis frame.

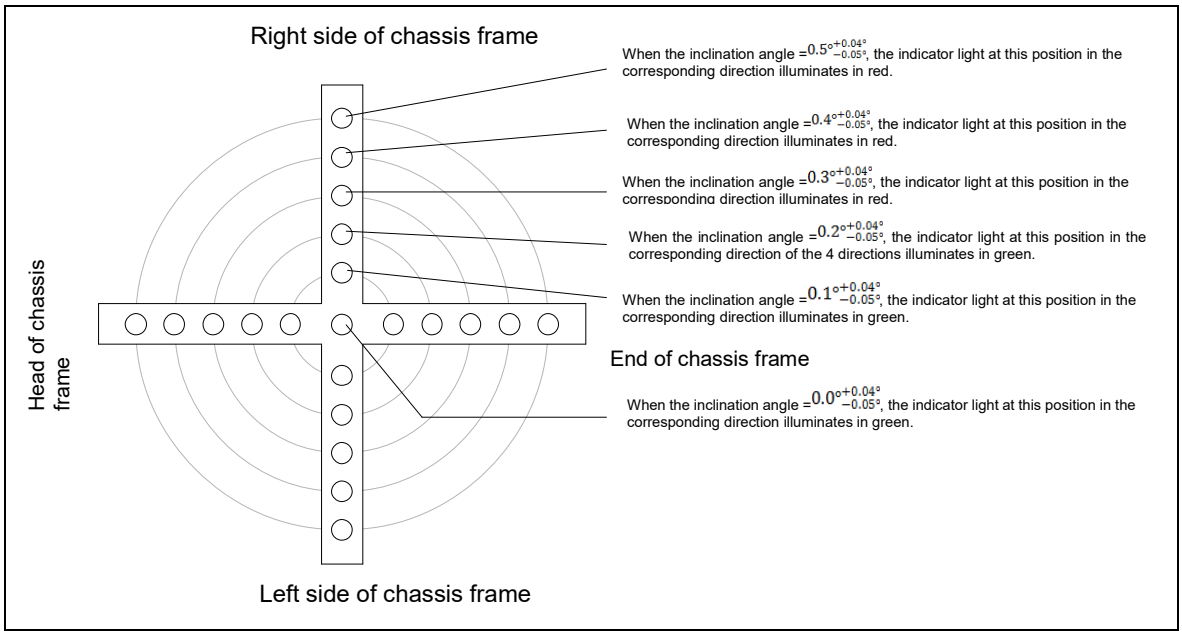


Figure 4-48 Levelness gauge

Illumination logic of indicator lights:

a) Only one row of indicator lights in one of the 4 directions will illuminate at any given moment.

b) Illumination of indicator lights in any direction indicates the loss of levelness in that direction, and adjustment of the vertical cylinder of corresponding outriggers is necessary.

c) If the outermost indication light illuminates in any direction, it indicates that the inclination angle in that direction has exceeded the limit (0.5°).

d) When all indicator lights are flashing, it indicates that there is a CAN bus connection failure.

CAUTION

Maintain the chassis frame's inclination angle to be lower than 0.3, otherwise there is an increased risk of accident!

WARNING

Adjust crane levelness after the counterweight is changed.

DANGER

It is strictly prohibited to adjust levelness of the crane during operations.

4.4.2 Hoisting limit switch

The hoisting limit switches on the boom, jib and 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 buzzer sounds. The crane movements "Spool winches up", "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 4-49.

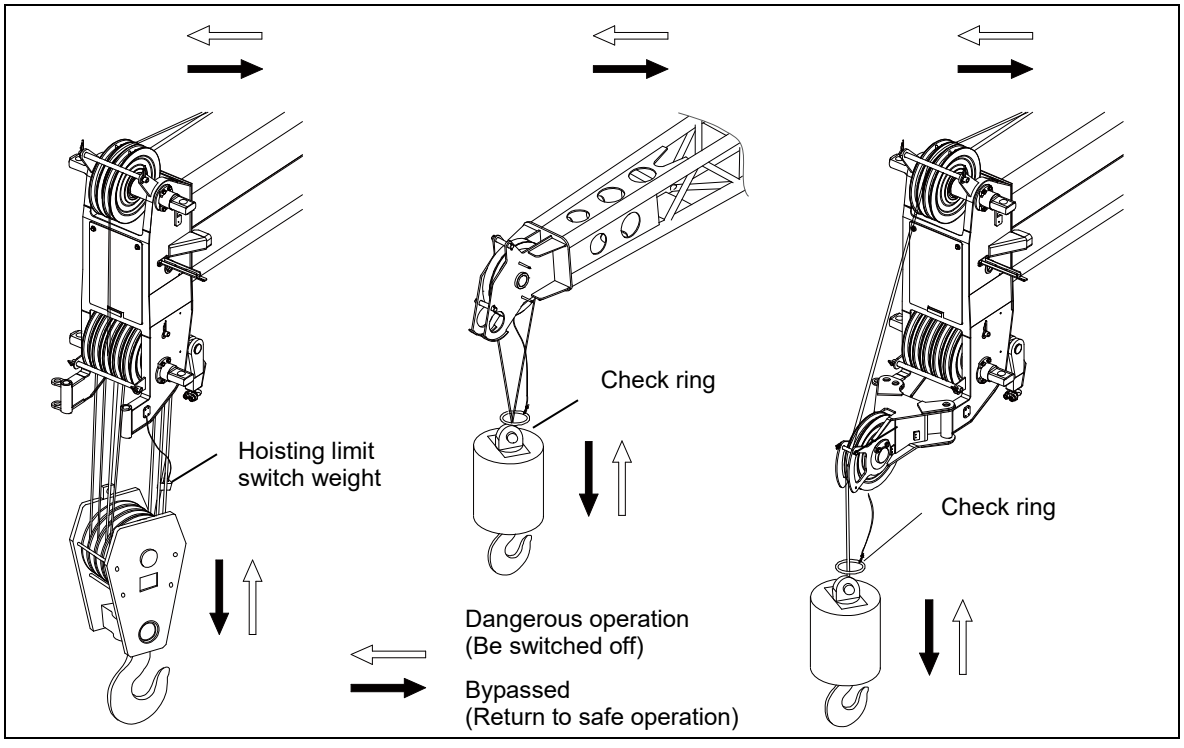


Figure 4-49 Hoisting limit switch

Activate the bypass key switch to bypass the switch-off during commissioning and maintenance.

WARNING

Do not use the bypass key switch when you do usual crane operations.

The connection and installation of hoisting limit switches on the jib, tip boom and rooster sheave are as follows:

a) When the jib is used:

1) Remove a plug at the tail of box jib section.

2) Connect the plug to the socket at the boom head.

Refer to Figure 4-50.

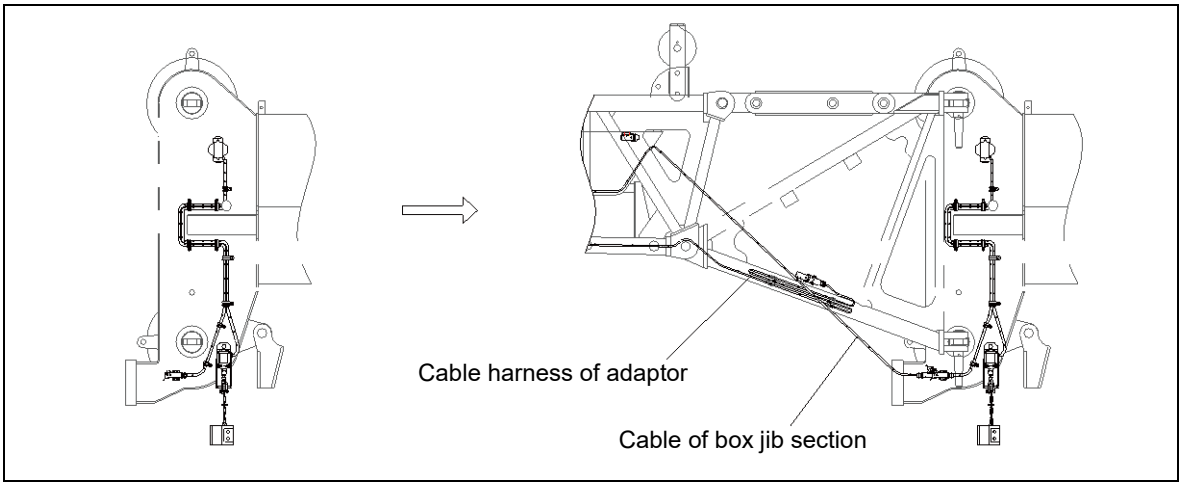


Figure 4-50 Installation of hoisting limit switch on the jib

CAUTION

Under jib working condition, connect the cable harness of hoisting limit switch of auxiliary winch to the cable harness of jib in advance. And thus the hoisting limit switch of auxiliary winch is valid.

Before dismantling of jib, disconnect the cable harness of hoisting limit switch of auxiliary winch to the cable harness of jib lest the cable harness is broken.

b) When the rooster sheave is used:

1) Remove the hoisting limit switch on the jib and install it as the figure below.

2) Connect the plug of hoisting limit switch to the socket at boom head.

Refer to Figure 4-51.

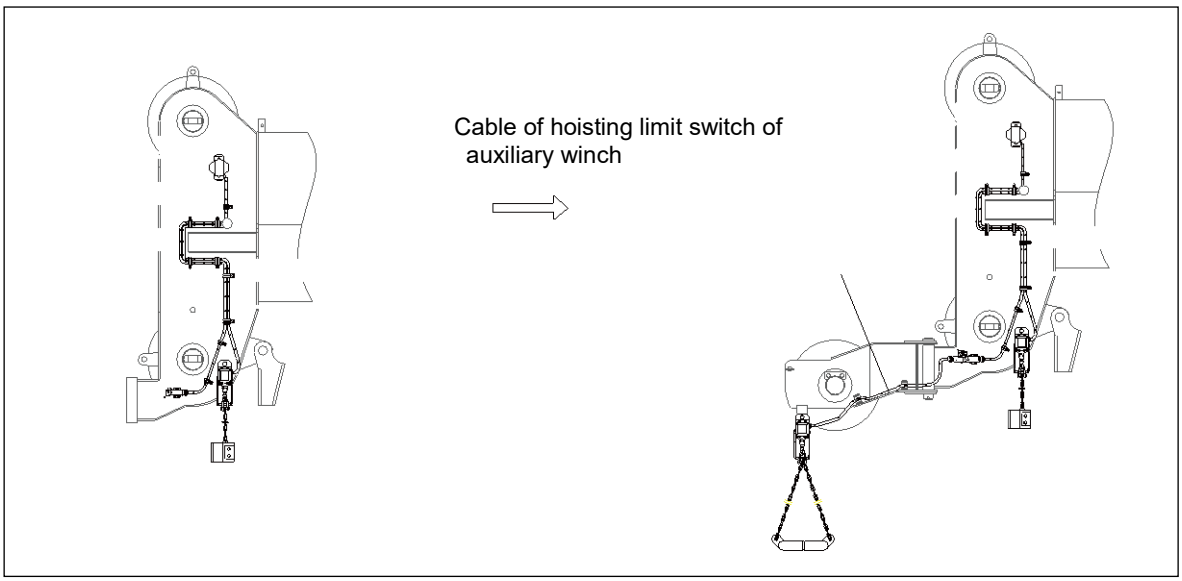


Figure 4-51 Installation of hoisting limit switch on the rooster sheave

4.4.3 Lowering limit switch

In order to prevent the wire rope from being spooled up automatically after being reeled off completely, the lowering limit switches installed on the winches will automatically switch off the movements "Reel winches off" if there are only 3 wraps of rope on the winches.

In this case, the warning light lights up, the buzzer sounds alarm and only the upward movement of the hook is permitted. During commissioning and maintenance, activate the lowering limit bypass switch to bypass the switch-off. Refer to Figure 4-52.

WARNING

Do not use the bypass key switch when you do usual crane operations.

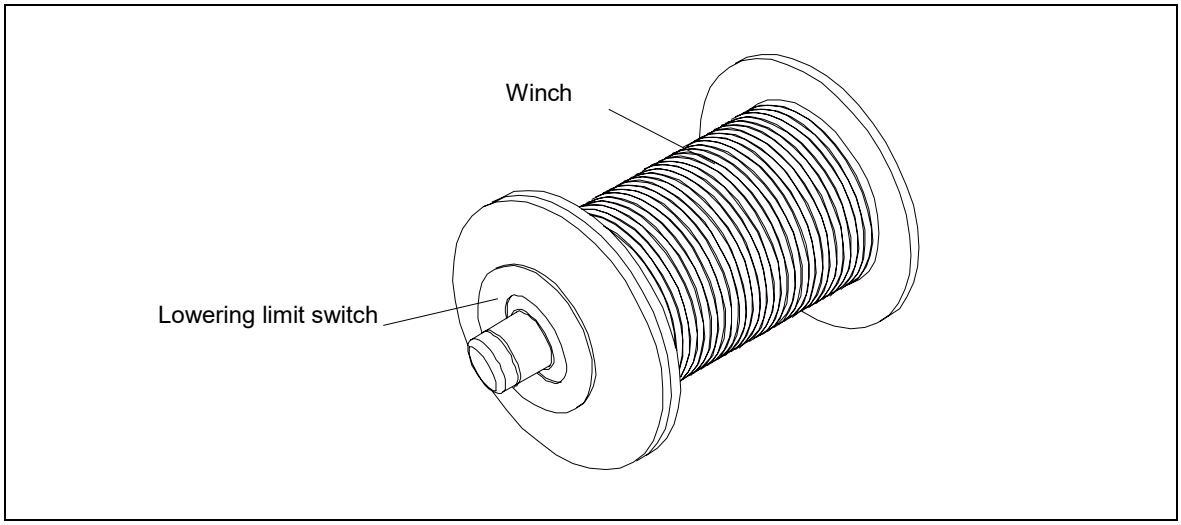


Figure 4-52 Lowering limit switch

4.4.4 Hydraulic safety devices

4.4.4.1 Relief valves in hydraulic system

The relief valves in the hydraulic system can prevent the pressure in the circuit from rising too high, thus avoid the hydraulic pump and hydraulic motor from being damaged and the hydraulic system from being overloaded.

4.4.4.2 Outrigger locking 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.

4.4.4.3 Locking 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 upward movement from being down, and thus ensure the safe operation of the crane.

4.4.4.4 Locking 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.

4.4.4.5 The 5th outrigger overpressure warning system

In order to prevent the vehicle front from bending and deformation caused by overpressure on the 5th outrigger, a pressure relay is installed on the oil cylinder for the 5th outrigger. When you carry out a lift operation over front, the pressure detecting device installed on the 5th outrigger can detect the pressure in the hydraulic system and send the pressure signal to the crane control system. Once the pressure exceeds the set safety value, the warning light "The 5th outrigger pressure high" lights up and the buzzer sounds.

Do not carry out lifting operation over front when the warning light "The 5th outrigger pressure high" lights up and the buzzer sends out acoustic warning.

4.4.4.6 System pressure monitoring

The maximum pressures are as follows:

Superstructure control valve 1:
Pilot pressure: 2.8 MPa -3.2MPa
Main relief valve: 34 MPa ± 0.5 MPa
Relief valve of reel main winch off:
7MPa-8MPa
Relief valve of reel auxiliary winch off:
7MPa-8MPa
Relief valve of derrick up:
30MPa-31MPa
Relief valve of telescoping out:
15MPa-16MPa
Relief valve of telescoping in:
15MPa-16MPa
Relief valve of feedback:
30MPa-31MPa

Superstructure control valve 2:
Relief valve of raising left and right counterweight cylinders:
20 MPa ± 0.5MPa
Relief valve of lowering left and right counterweight cylinders:
6MPa±0.5MPa
Relief valve of retracting boom pin / cylinder pin: 10 MPa – 12 MPa
Safety valve of retracting boom pin / cylinder pin: 10 MPa – 10 MPa

Main relief valve of slewing cushion valve: 15 MPa
Relief valve of chassis control valve: 24MPa
Adjusting pressure of safety valve: 10 MPa
Warning pressure of the 5th outrigger: 18 MPa.

4.4.5 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 4.1.2. For movements allowed or blocked under overloading, overwinding and overlowering conditions, refer to Table 4-1.

Table 4-1 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	×	√	×	√	√	×	√	√	√	√
Overwinding	×	√	×	√	√	×	√	√	×	√
Overlowering	√	×	√	×	√	√	√	√	√	√

Note:

"×" means that the system will switch off the movement. "√" means that the system will not switch off the movement.

DANGER

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 78°. Otherwise, you must bear full responsibility for all the consequences arising therefrom.

4.4.6 Wind speed warning system

The anemometer is fitted on the boom head to detect the wind speed in real time. Refer to Figure 4-53.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:

a) Stop the work (safely lower the load).

b) Retract the boom.

c) Correctly stow the boom.

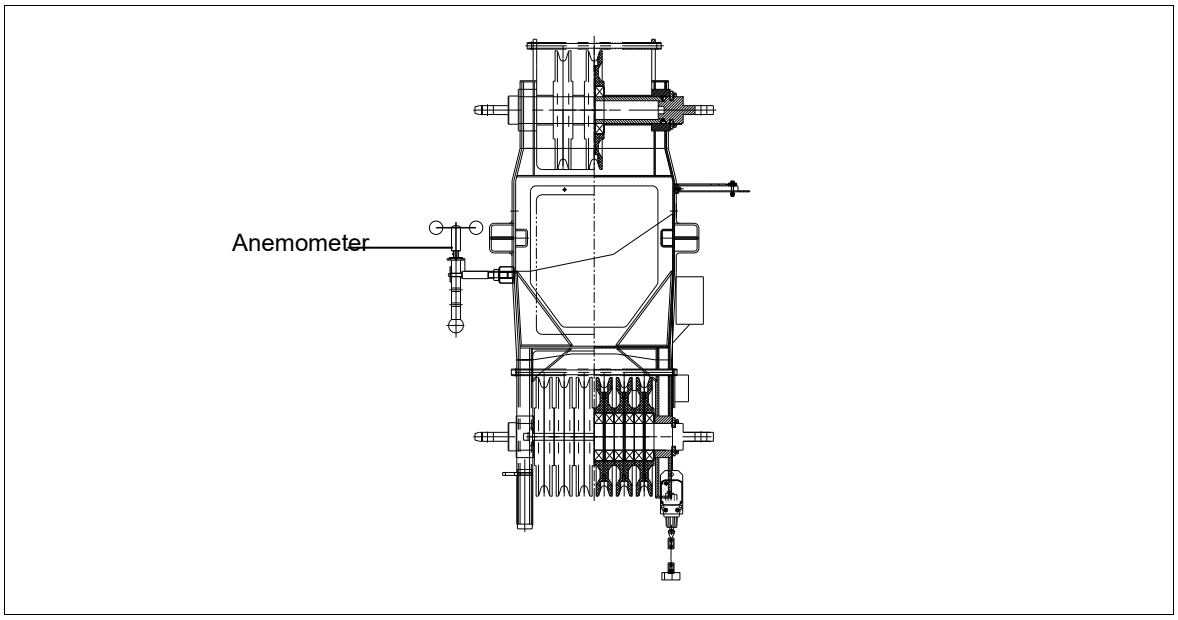


Figure 4-53 Anemometer

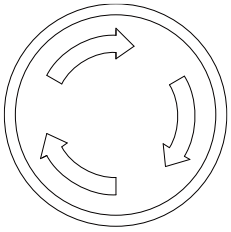
DANGER

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!

4.4.7 Emergency stop button

You can find the emergency stop button on the switch panel in the operator's cab. When you push the button, all crane operations immediately STOP. Turn the button clockwise to release it and continue usual crane operations.



WARNING

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 performed 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.

(1) Examine the fuel gauge to ensure 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 Outrigger

Both sides of the vehicle chassis frame have the items below:

– Accelerator control switch
– Outrigger control levers
– Levelness gauge.

You can operate the control levers to extend or retract the outriggers simultaneously or independently. Refer to Figure 4-54.

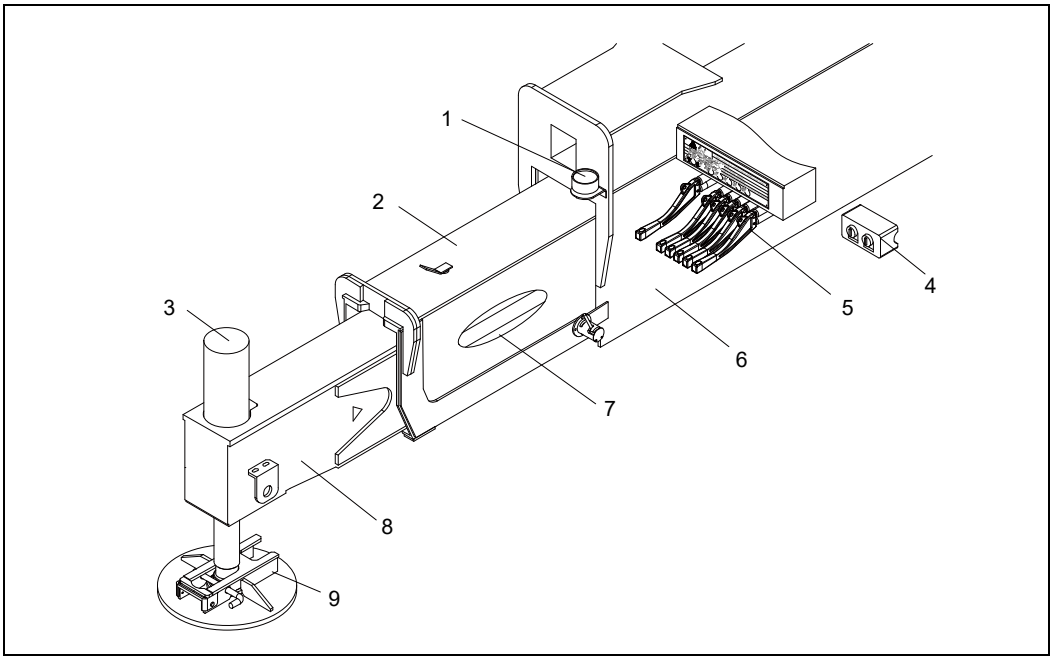


Figure 4-54 Outrigger

Pos.	Description	Pos.	Description
1	Electric levelness gauge	6	Front outrigger box
2	Outrigger beam 1	7	Horizontal cylinder
3	Vertical cylinder	8	Outrigger beam 2
4	Accelerator control switch	9	Outrigger pad
5	Outrigger control levers		

NOTICE

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.

4.5.2.1 Outrigger control levers

As for the outrigger control levels, please refer to Figure 4-55.

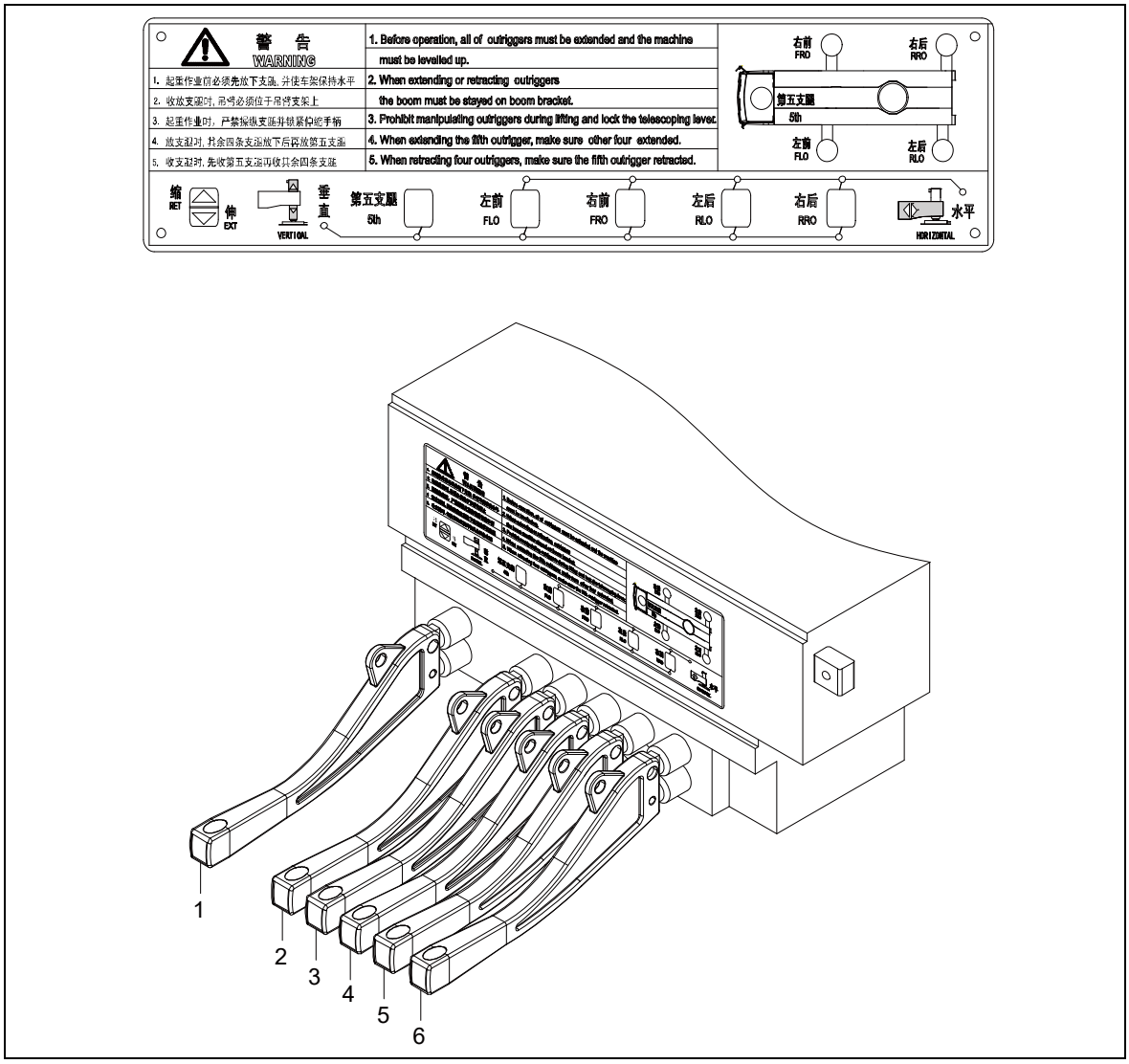


Figure 4-55 Outrigger control levers

Outrigger control levers are shown in Figure 4-55.

a) Operating illustrations and points for attention are printed in the outrigger label.

b) Control lever 1: extend or retract the horizontal or vertical cylinder

   1) Move lever 1 upwards: retract the horizontal / vertical cylinder.

   2) Neutral position: stop the cylinder's movement.

   3) Move lever 1 downwards: extend the horizontal / vertical cylinder.

c) Control lever 3: select the left front outrigger

   Control lever 4: select the right front outrigger

   Control lever 5: select the left rear outrigger

   Control lever 6: select the right rear outrigger

Move levers 3, 4, 5 and 6 together with lever 1 to initiate corresponding movements.

1) Move levers 3, 4, 5 and 6 upwards and move lever 1 upwards or downwards: extend / retract the horizontal cylinders.
2) Move levers 3, 4, 5 and 6 downwards and move lever 1 upwards or downwards: extend / retract the vertical cylinders.

d) Control lever 2: select the 5th outrigger

Move lever 2 downwards and move lever 1 upwards: retract the 5th outrigger

Move lever 2 downwards and move lever 1 downwards: extend the 5th outrigger.

CAUTION

(1) During the operation of the outriggers, turn the accelerator control switch clockwise to increase their work speeds.

(2) When you retract any of the vertical cylinders, the 5th outrigger cylinder will be retracted simultaneously.

WARNING

Do not extend or retract horizontal cylinders after the outrigger pads are in contact with the ground!

4.5.2.2 Outrigger extension

a) Remove the pin of the outrigger beam. Refer to Figure 4-56.

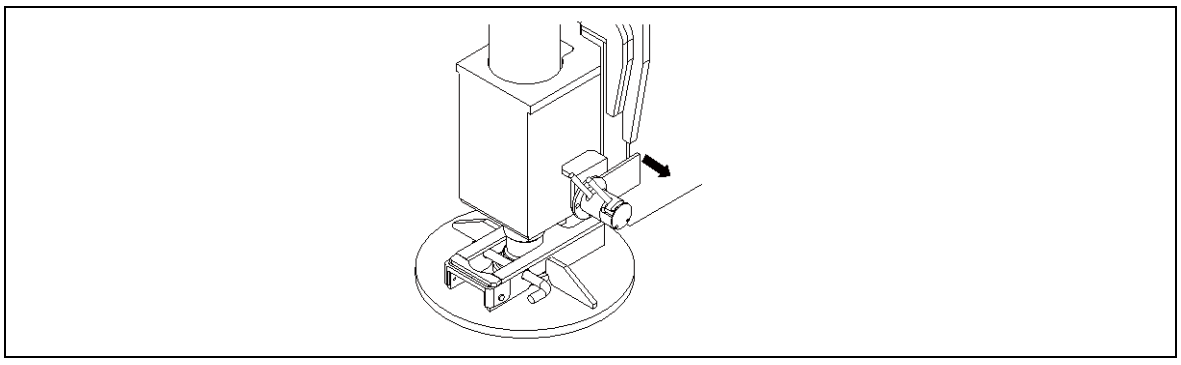


Figure 4-56 Outrigger beam removal

b) Do the following steps as follows:

1) Stand on the left (or right) side of the crane.
2) Move levers 3 and 5 (or 4 and 6) upwards.
3) Move lever 1 downwards till the mid-position marks " ◁ " are exposed, that is to say the outrigger beams are intermediately extended.
4) Continue moving lever 1 to fully extend the outrigger beams.
5) Move the levers to neutral positions after the outrigger beams are fully extended.
6) Extend the outrigger beams on the other side of the crane in the same steps.

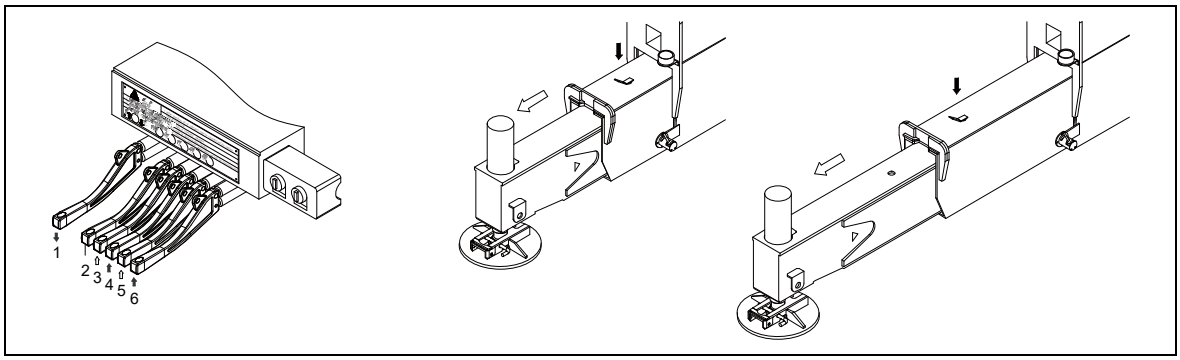


Figure 4-57 Extend horizontal cylinder

WARNING

The mid-position marks "◁" on outrigger beams must completely exposed and the pins must be secured if the crane is working with outriggers intermediately extended. Otherwise, the crane may topple.

c) Do the following steps as follows:

1) Stand on the left (or right) side of the crane.
2) Move levers 3 and 5 (or 4 and 6) downwards.
3) Move lever 1 downwards to fully extend the vertical cylinders.
4) Walk to the other side of the crane to extend vertical cylinders on the other side.

Refer to Figure 4-58

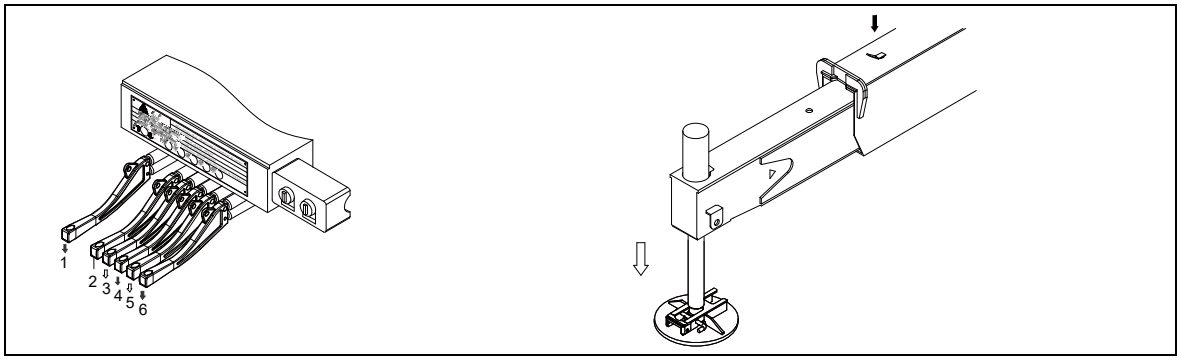


Figure 4-58 Extend vertical cylinder

After all the outrigger vertical cylinders are fully extended, observe whether there is a red indicator light which illuminates (indicating that the inclination angle of the chassis frame exceeds 0.3°) in the levelness gauge screen. If it does, adjust the outrigger vertical cylinders according to the steps listed in the table below to achieve levelness of the chassis frame. After adjustment, place the lever in its neutral position.

Figure 4-59 below shows the screen at left side of the chassis frame. The screen at the right side is in symmetry.

Levelness of chassis frame is achieved when there is only the indicator light at very center that illuminates, indicating an inclination angle of 0 degree.

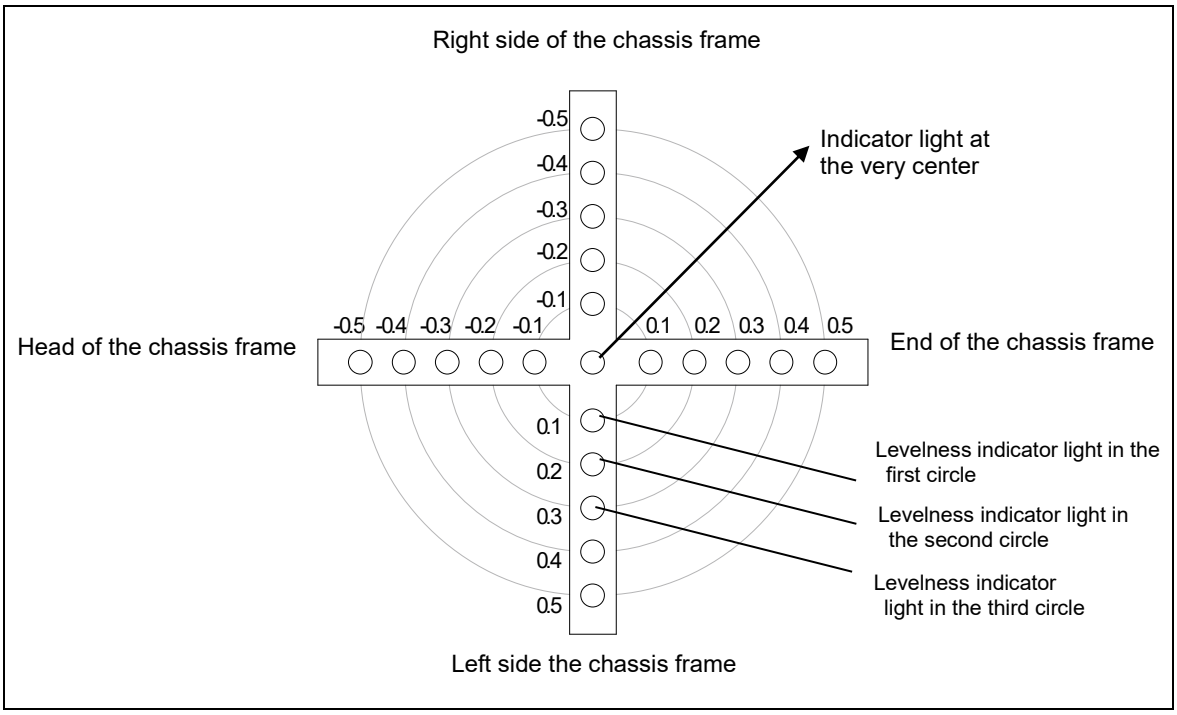


Figure 4-59 Indicator lights in the levelness gauge (left side)

Inclination angle of the overall chassis frame	Levelness indicator light status	Operations of outrigger vertical cylinders to be done
Head of the chassis frame is 0.3° / 0.4° / 0.5° or above higher	The indication light in the 3rd/4th/5th circle at left side illuminates in red or the one in the 5th circle flashes in red	Operate the control level to extend the front left and right outriggers or retract the rear left and right outriggers
End of the chassis frame is 0.3° / 0.4° / 0.5° or above higher	The indication light in the 3rd/4th/5th circle at right side illuminates in red or the one in the 5th circle flashes in red	Adjust in reverse direction as above
Right side of the chassis frame is 0.3° / 0.4° / 0.5° or above higher	The indication light in the 3rd/4th/5th circle in upper side illuminates in red or the one in the 5th circle flashes in red	Operate the control level to extend the front and rear right outriggers or retract the front and rear left outriggers
Left side of the chassis frame is 0.3° / 0.4° / 0.5° or above higher	The indication light in the 3rd/4th/5th circle in lower side illuminates in red or the one in the 5th circle flashes in red	Adjust in reverse direction as above
Inclination angle in the four directions is lower than 0.3°	Only the indicator light at the very center or ones in the first/second circle illuminates in green	No need to adjust the outriggers

d) Release the control lever and put it in neutral position when the crane is leveled.

e) When the crane is operating over the front area with the same lifting performance as that of over side and rear area, the 5th outrigger should be used.

Extend the outriggers in following steps:

- Push the selection control lever (2) of the 5th outrigger downward;
- Push the control lever (1) downward to extend the 5th outrigger.
- Keep a clearance of 5-10mm from the outrigger to the ground, as shown in Figure 4-60.

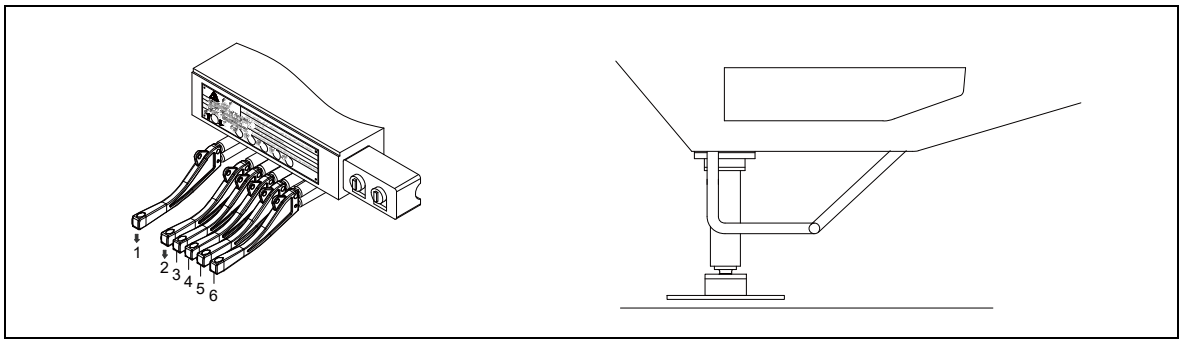


Figure 4-60 Extending the 5th outrigger

f) Insert the outrigger pins before normal lifting operations.

CAUTION

The cylinder telescoping control level (1) can return to its neutral position automatically after being released, while other control levers have to be returned to their neutral position manually.

WARNING

Risk of accident!

If the horizontal reference of the levelness gauge varies due to external forces, etc., the levelness gauge must be aligned by specialized technicians again.

If this is not observed, a risk of accident exists.

4.5.2.3 Outrigger retraction

NOTICE

After crane operation, do the tasks that follow in sequence:

(1) Stop the work (safely lower the load).

(2) Retract the boom.

(3) Correctly stow the boom.

(4) Retract the 5th outrigger.

(5) Retract all the other outriggers.

a) Remove the pin of the outrigger beam. Refer to Figure 4-61.

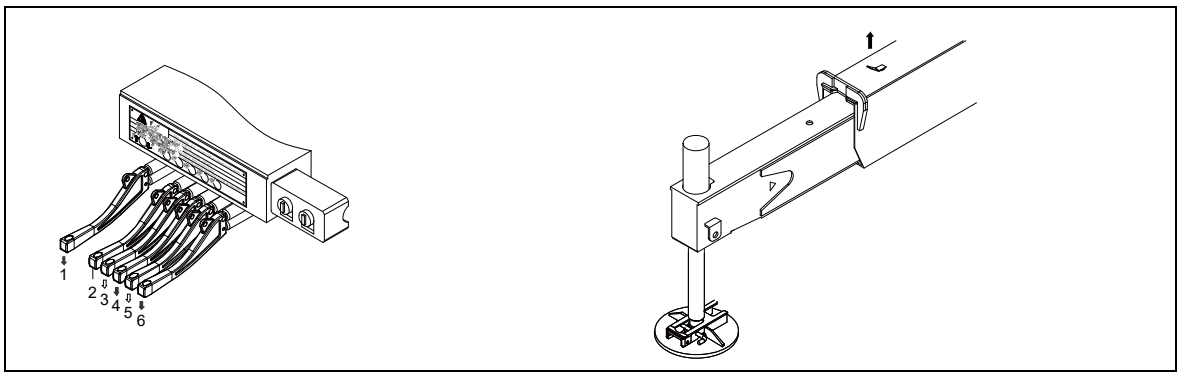


Figure 4-61 Outrigger beam removal

b) Retract the 5th outrigger (Refer to Figure 4-62):

1) Move lever 2 downwards.

2) Move lever 1 upwards until the 5th outrigger is fully retracted.

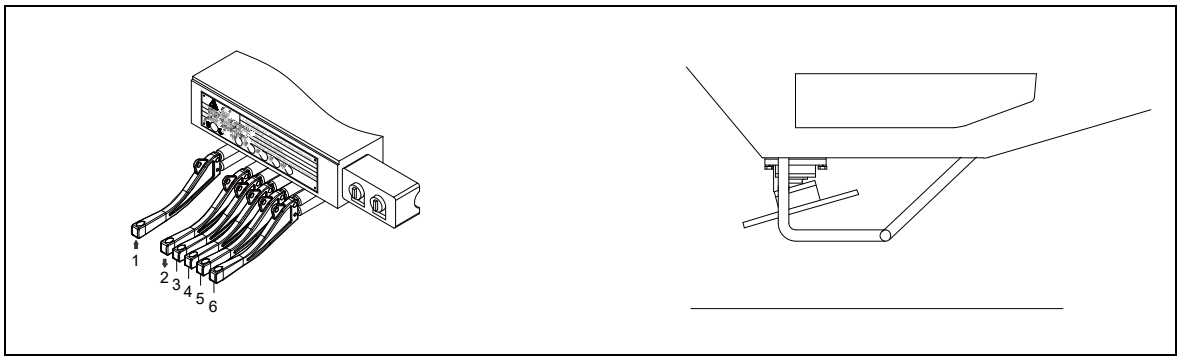


Figure 4-62 Retract the 5th outrigger

c) Retract the vertical cylinders:

1) Stand on the left (or right) side of the crane.

2) Move levers 3, 4, 5 and 6 downwards.

3) Move lever 1 upwards to retract vertical cylinders completely.

Refer to Figure 4-63.

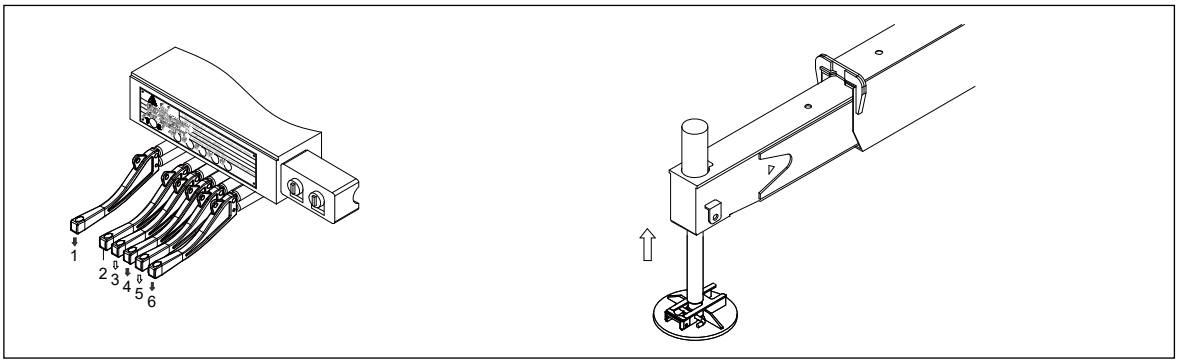


Figure 4-63 Retract vertical cylinder

d) Retract the outrigger beams:

1) Stand on the left (or right) side of the crane.

2) Move levers 3, 4, 5 and 6 upwards.

3) Move lever 1 upwards to retract outrigger beams completely.

Refer to Figure 4-64.

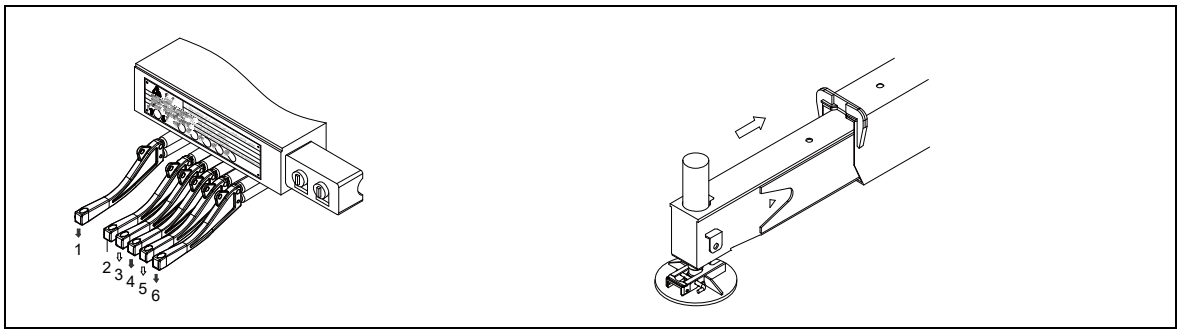


Figure 4-64 Retract horizontal cylinder

e) Install the outrigger retaining pins. Refer to Figure 4-65.

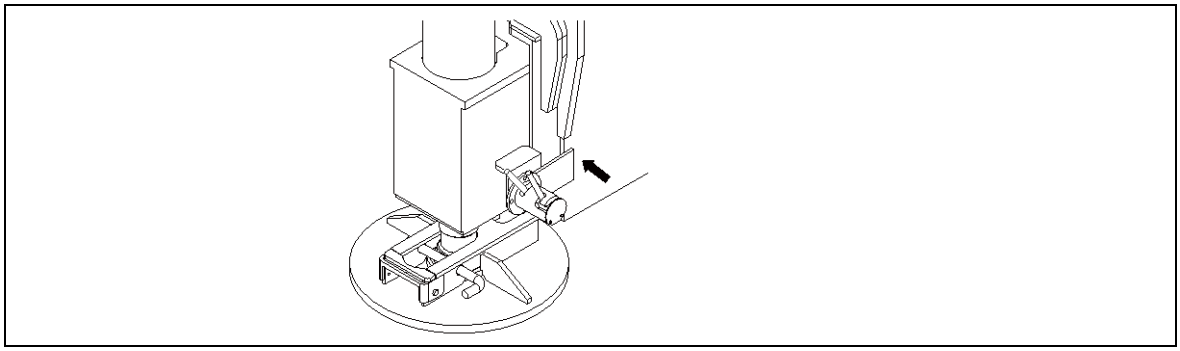


Figure 4-65 Install the outrigger retaining pins

4.5.2.4 Install and remove the outrigger pads

The outrigger pad is shown in Figure 4-66.

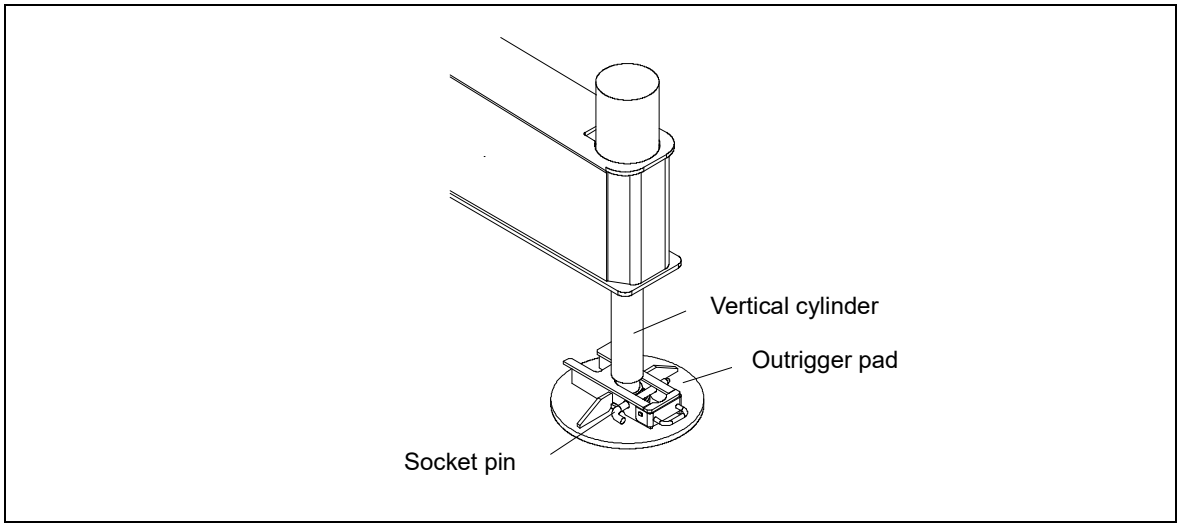


Figure 4-66 Outrigger pad

a) Installation

Before you extend the outriggers, remove the socket pin from the outrigger pads and pull out the outrigger floats. When the hole aligns with the vertical cylinder, install the socket pin.

Weight of outrigger pad: about 35 kg.

b) Removal

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.

CAUTION

(1) Before you move the outriggers, make sure that there is clearance to prevent injury to personnel or damage to the crane and other objects.

(2) Make sure that you install the outrigger pads before you move the outriggers.

(3) Make sure that all the outrigger pads (except the 5th outrigger pad) contact with the ground.

(4) You can only extend the 5th outrigger to the position where its outrigger pad is about 5 – 10 mm off the ground. It is not permitted that the two front outriggers are away from the ground due to excessive extending of the 5th outrigger.

(5) Make sure that all the tires are off the ground (crane weight held up by the outriggers) before you start to lift a load.

(6) When the crane is on a level area, examine the levelness gauge. The bubble shows in the middle of the gauge. If not, adjust the nuts below the levelness gauge.

WARNING

Do not operate the outrigger control levers in a lift operation.

4.5.3 Derricking

a) Turn the switch "Pre-selection of telescope / derricking" to the right position. Refer to Figure 4-67.

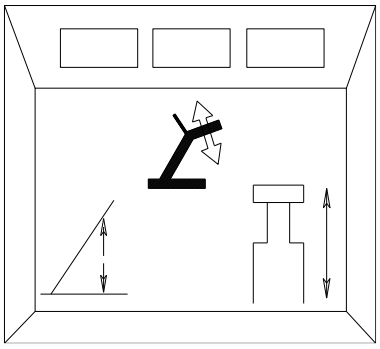


Figure 4-67 Switch "Pre-selection of telescope / derricking"

b) The right joystick controls the derricking gear.

– Neutral position: stop the derricking movements

– Move the joystick leftwards (direction ③).

Result:

The telescopic boom is derricked up.

– Move the joystick rightwards (direction ④).

Result:

The telescopic boom is derricked down.

Refer to Figure 4-68.

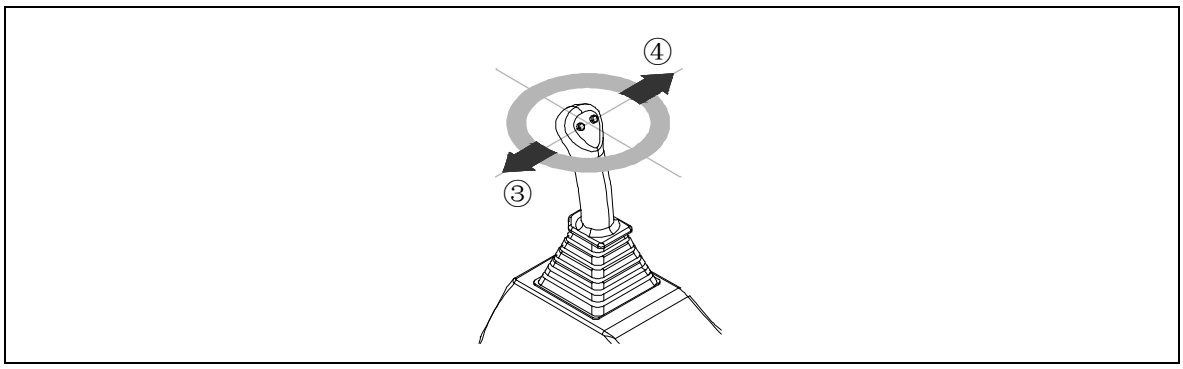


Figure 4-68 Right joystick

The speed of derricking up movement is changed by:

– Right joystick – how far you move the joystick leftwards

– Engine control pedal – Increase or decrease the engine RPMs.

Note:

Do not apply the engine control pedal when the travel distance of control lever is short.

Do not change the derricking speed rapidly.

CAUTION

The speed of derricking down movement is not dependent upon the travel distance of engine control pedal.

The angle detector attach to the side of the boom. Refer to Figure 4-69. The angle detector is an electronic device that sends the boom angle data to the load moment limiter. The boom angle shows on the display screen.

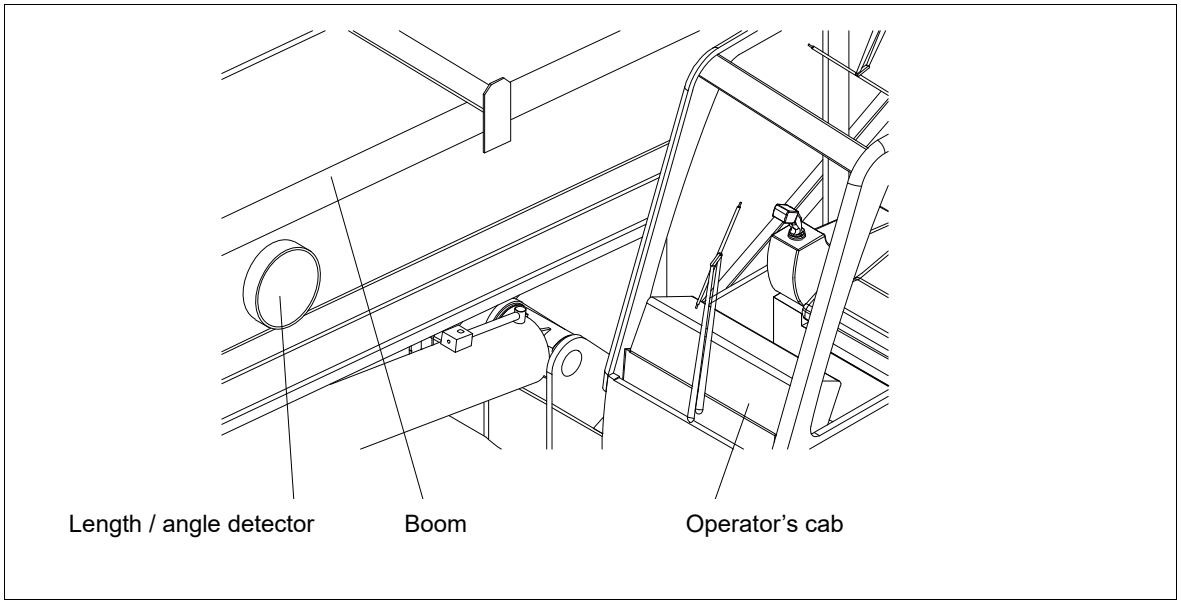


Figure 4-69 Safety devices on the boom

WARNING

(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) The derricking angle and working radius should be restricted according to the lifting capacity tables.

4.5.4 Lifting / lowering

4.5.4.1 Preparations

Read *Lifting capacity tables and Lifting height chart* in Chapter 1 before lifting / lowering operation.

Lifting capacity table (Refer to Figure 4-70)

How to look up lifting capacity in the *Lifting capacity table*:

Look up the boom length according to the lifting height and working radius in lifting height chart.

Look up the lifting capacity according to the checked boom length in the lifting capacity tables.

If the jib is fitted, look up the lifting capacity according to the boom angle in the table.

For example:

If outriggers are fully extended and the boom is over sides and rear, look up the lifting capacity:

The rated lifting capacity with working radius of R_2:

If the boom length is L_2, the lifting capacity is W_2 kg.

The rated lifting capacity with working radius of R_3:

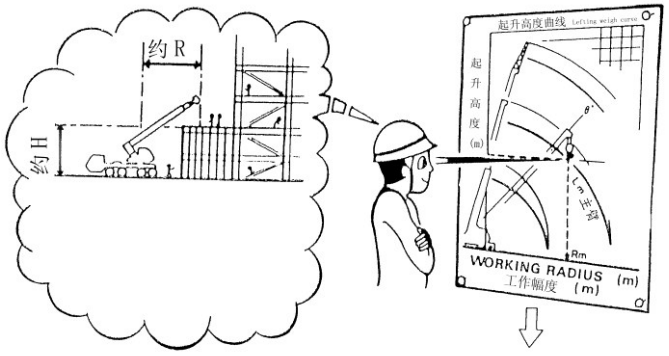
If the boom length is L_3, the lifting capacity is W_3 kg.

Refer to Figure 4-72.

CAUTION

(1) Look up the corresponding lifting capacity according to actual working conditions.

(2) Observe the notes shown below the lifting capacity table.



Supposed height above ground: about H (m)
Supposed radius: about R (m)

Boom length: L (m)
Boom angle: About θ (°)

Figure 4-70 Look up lifting capacity

CAUTION

All the working radius and lifting height in lifting height charts do not include the deflection of boom and jib.

Lifting capacities are changed with working radius.

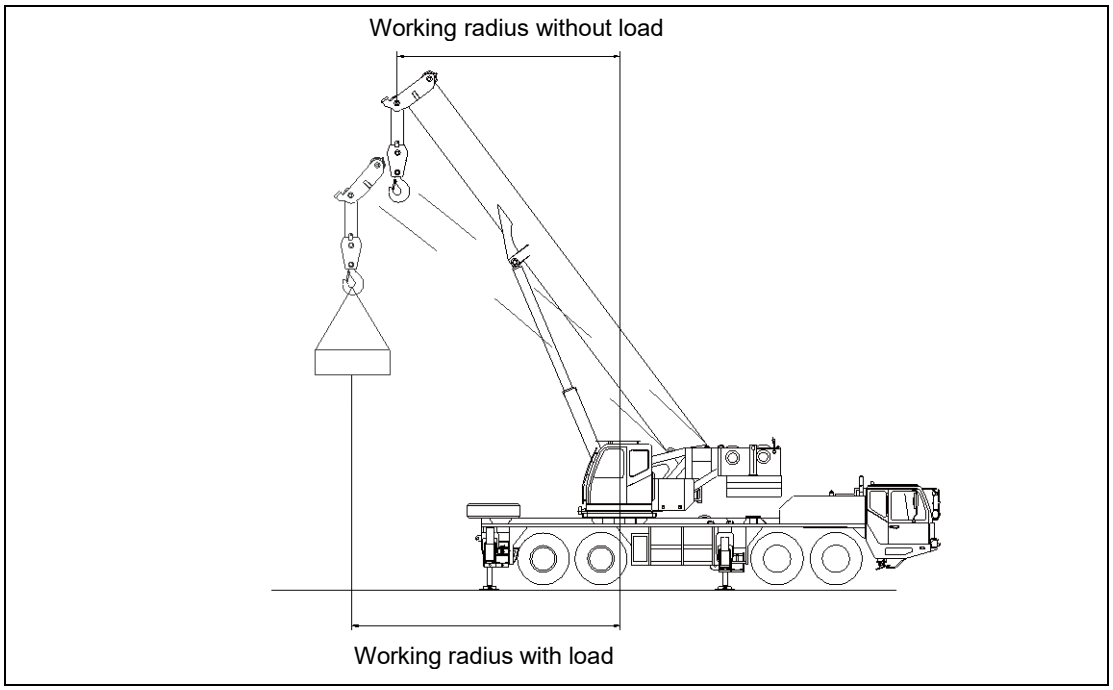


Figure 4-71 Working radius change

额 定 起 重 量 表 RATED LIFTING CAPACITY TABLE

工作幅度(m)	主 臂 (n) BOOM						
	I缸伸至100%，支腿全伸，侧方、后方作业						
WORKING RADIUS(m)	Cylinder I fully extended, with outriggers fully extended, side & rear working area						
	L_1	L_2	L_3	L_4	L_5	·····	L_n
R_1							
R_2							
R_3			W_3				
·····							
R_n							

Note: L_3 refers to the boom length. W_3 refers to the rated lifting capacity.

Figure 4-72 Rated lifting capacity table

4.5.4.2 Spooling up / reeling off main winch

a) The right joystick controls the main winch.

– Neutral position: stop spooling up / reeling off main winch.

– Move the joystick forwards (direction ①).

Result:

Main winch is reeled off.

– Move the joystick backwards (direction ②).

Result:

Main winch is spooled up.

Refer to Figure 4-73.

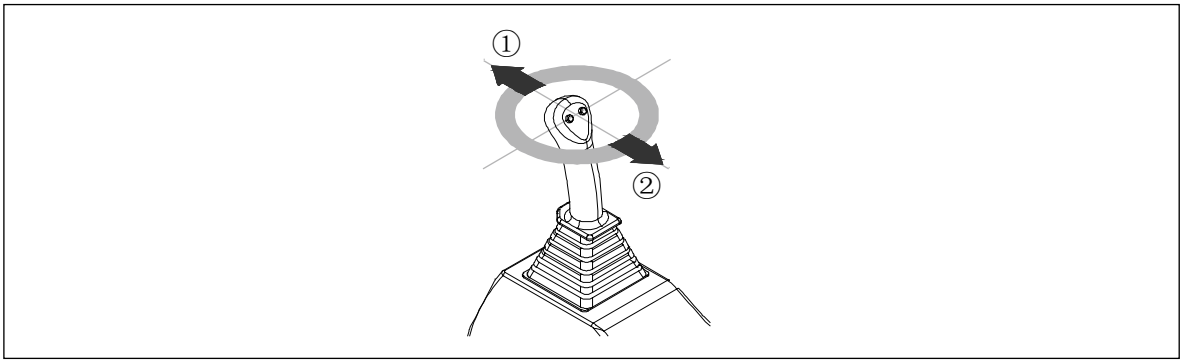


Figure 4-73 Right joystick

b) The main hoist gear is working. Refer to Figure 4-74.

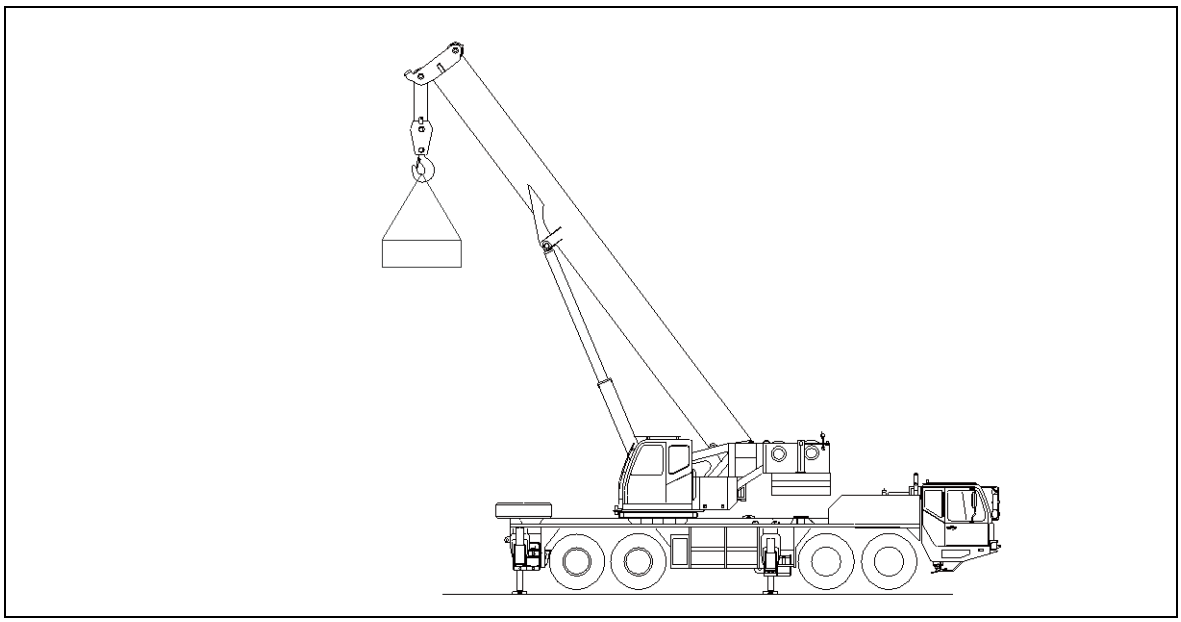


Figure 4-74 Main hoist gear operation

4.5.4.3 Spooling up / reeling off auxiliary winch

a) The left joystick controls the auxiliary winch.

– Neutral position: stop spooling up / reeling off auxiliary winch.

– Move the joystick forwards (direction ①).

Result:

Auxiliary winch is reeled off.

– Move the joystick backwards (direction ②).

Result:

Auxiliary winch is spooled up.

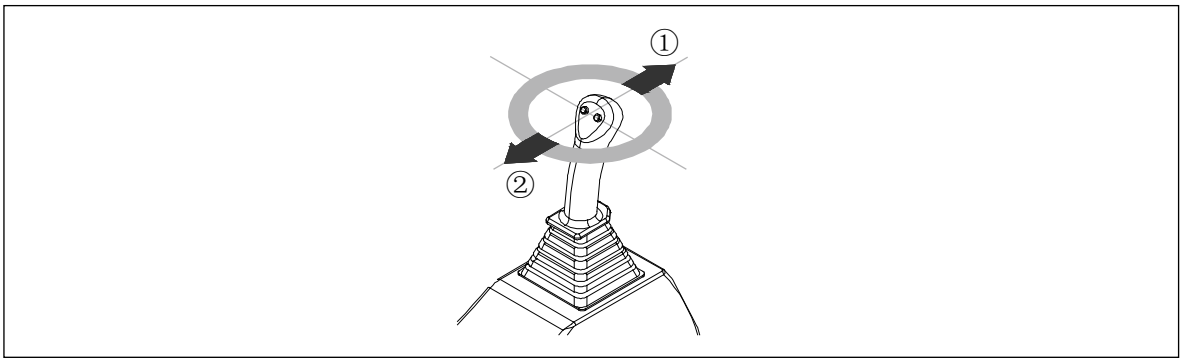


Figure 4-75 Left joystick

b) The auxiliary hoist gear is working.

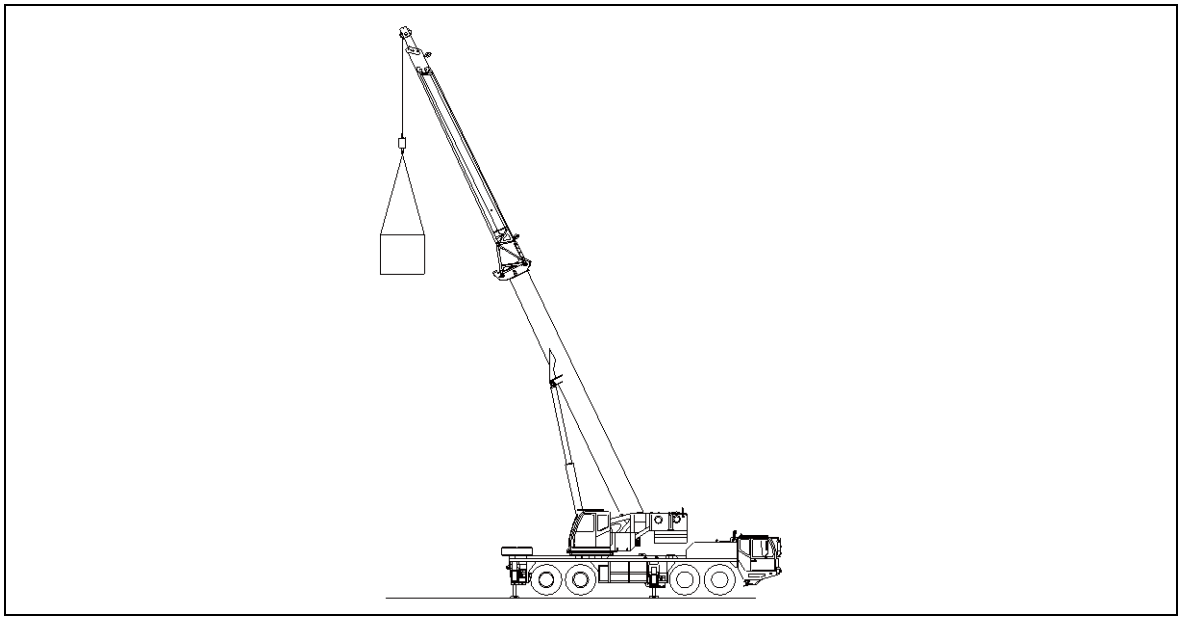


Figure 4-76 Auxiliary hoist gear operation

After you complete the movement, move the joystick to the neutral position slowly to stop the movements.

The speed of the main winch / auxiliary winch movement is changed by:

– Joystick – how far you move the joystick forwards or backwards
– Engine control pedal – increase or decrease the engine RPMs.

Note:

Spool up / reel off the winches smoothly. You can cause damage to the crane if you change speed rapidly.

Do not apply the engine control pedal when the joystick travel distance is short.

A warning noise sounds and a warning light illuminates if the items below occur:

– The main or auxiliary winch is in the spool-up mode and the hook block touches the hoisting limit switch weight.
– The sensor senses that the winch has 3 wraps of wire rope on it.
– The sensor senses that the load weight is more than the load weight in the system.

When the warning occurs, the winch operation is cut off. The crane can only work towards safe directions till the dangerous operation is deactivated.

(1) Choose the correct reeving for the boom length and load weights in accordance with the lifting capacity tables. Before you change the reeving numbers, fit the hoisting limit switch weight.

(2) Keep a minimum of 3 wraps of rope on the winch while you operate the crane.

(3) Lift the load vertically. Do not drag the load that is still on the ground. Do not pull a load at an angle.

(4) Monitor the area as you lift a load. Do not move a load unless the conditions are safe. 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 connects 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. The lifting capacity includes the mass of the hook and slings.

(7) Do not use the crane to lift personnel.

(8) If the hook turns because of the rope, put the load on the ground. Do not lift the load until the rope is straight.

Do not do a lifting operation with the main winch and auxiliary winch at the same time.

4.5.5 Slewing

4.5.5.1 Operation

The left joystick controls the slewing gear.

– Neutral position: stop the slewing movements.

– Move the joystick leftwards (direction ④).

Result:

Slew to the left.

– Move the joystick rightwards (direction ③).

Result:

Slew to the right.

Refer to Figure 4-77.

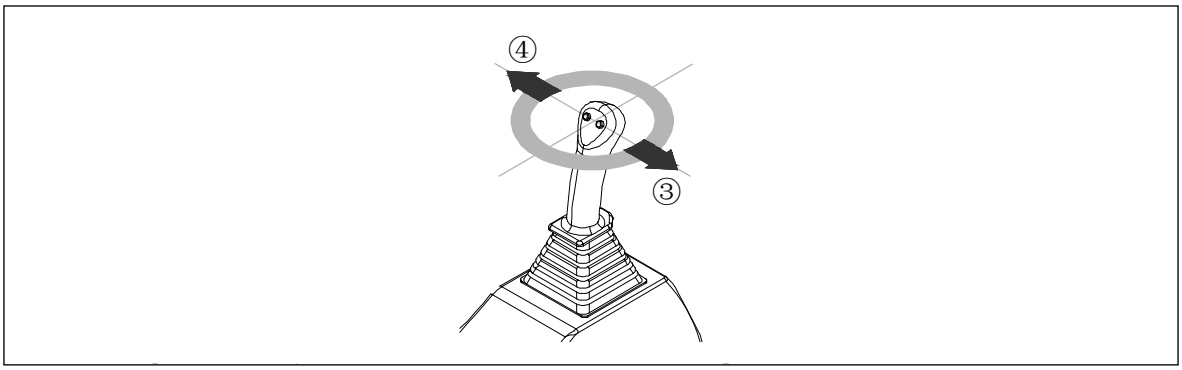


Figure 7-77 Slewing operation

Note:

Do not apply the engine control pedal when the joystick travel distance is short.

Do the slewing movement smoothly. You can cause damage to the crane if you change speed rapidly.

CAUTION

(1) During slewing superstructure, operator's field of vision will be limited to some extent. Do operate the crane carefully.

(2) Make sure that work-site personnel and equipment are clear from crane slewing area (within slewing radius R). Give a short warning signal (horn) before starting a crane movement.

(3) After the confluence switch is activated, there is no slewing movement when extending the telescoping cylinder.

4.5.5.2 Slewing lockout device

The slewing lockout device attaches on the front of the slewing table. Make sure that the superstructure is unpinned before initiating the slewing movement. Insert and secure the pin after finishing this operation. Refer to Figure 4-78.

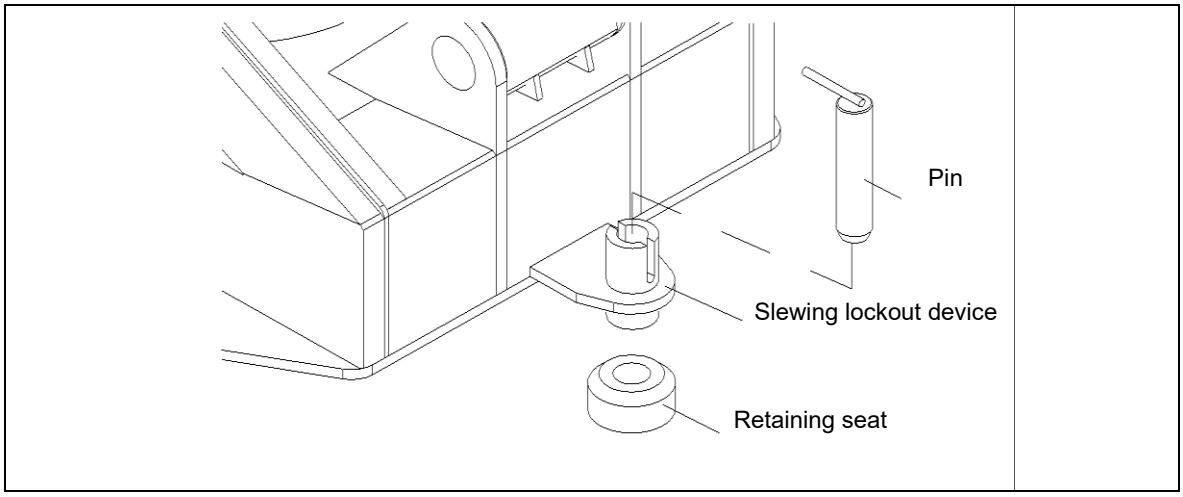


Figure 4-78 Slewing lockout device

CAUTION

(1) Make sure that you do not make fast movements or suddenly stop the turn.

(2) When you operate a new crane, make sure that you examine the slewing bearing bolts at these intervals: 100, 500, 1000 hours of operation.

– The torque on the bolts must be 1350 N·m.

(3) The crane can slew with load. Do not try to lift the load diagonally. Do not pull a load across the ground.

(4) Make sure that the outriggers are in the correct position before you slew the superstructure with a load on the boom.

(5) Monitor the area as you move a load. Do not move a load unless the conditions are safe.

(6) Lubricate the slewing bearing at regular intervals.

4.5.6 Simultaneous crane movements

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 4-79.

1) The more the joysticks are deflected upward or downward, the faster the relevant movements will be.
2) 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.

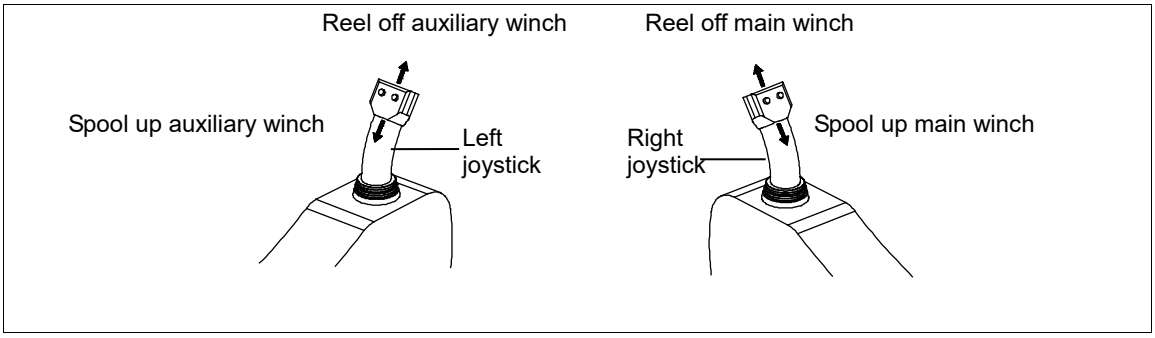


Figure 4-79 Auxiliary winch + Main winch

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 4-80.

1) Set the switch "Pre-selection of derrick / telescope" (on the right control panel) to the left 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.

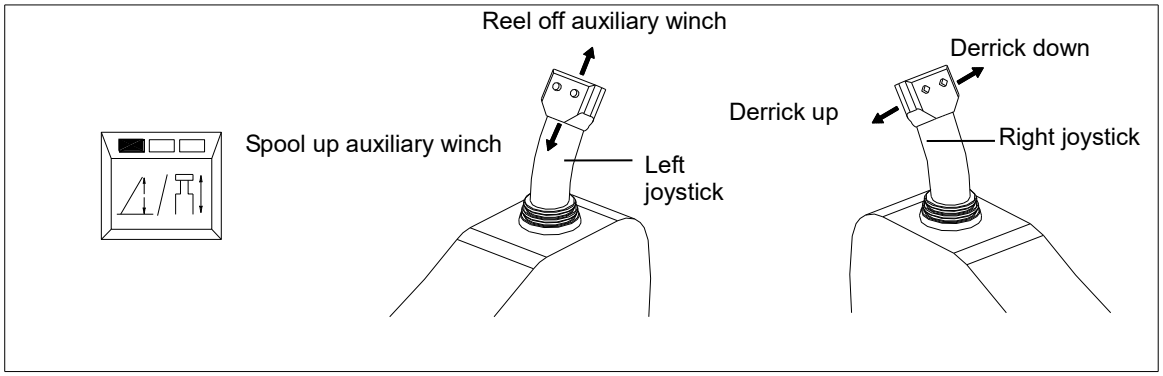


Figure 4-80 Auxiliary winch + Derrick

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 4-81.

1) Set the switch "Pre-selection of derrick / telescope" (on the right switch panel) to the right 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.

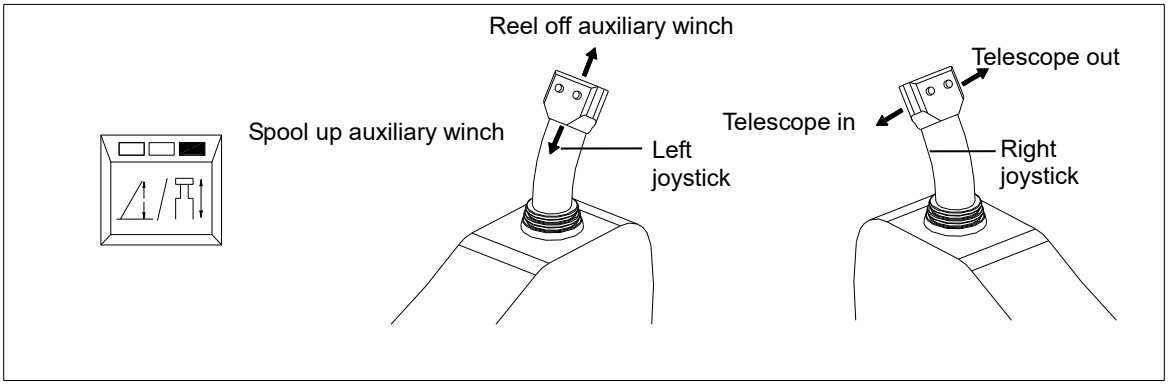


Figure 4-81 Auxiliary winch + Telescope

CAUTION

It is strongly 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 4-82.

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) 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.

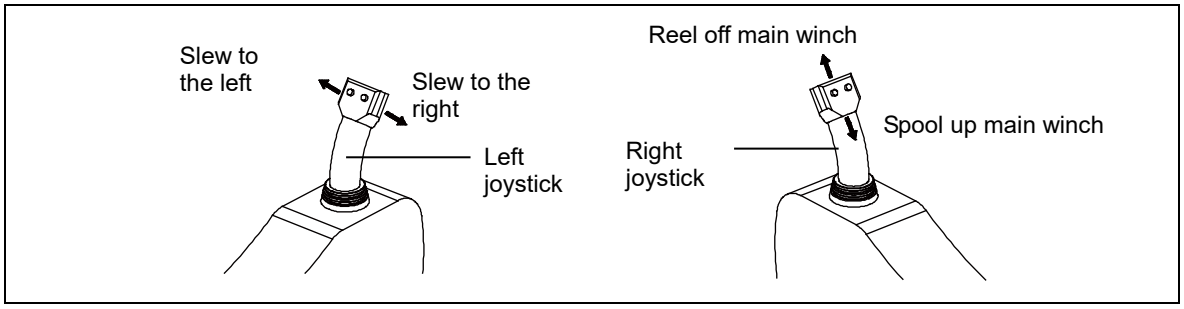


Figure 4-82 Slew + Main winch

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 4-83.

1) Set the switch "Pre-selection of derrick / telescope" (on the right switch panel) to the right 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.

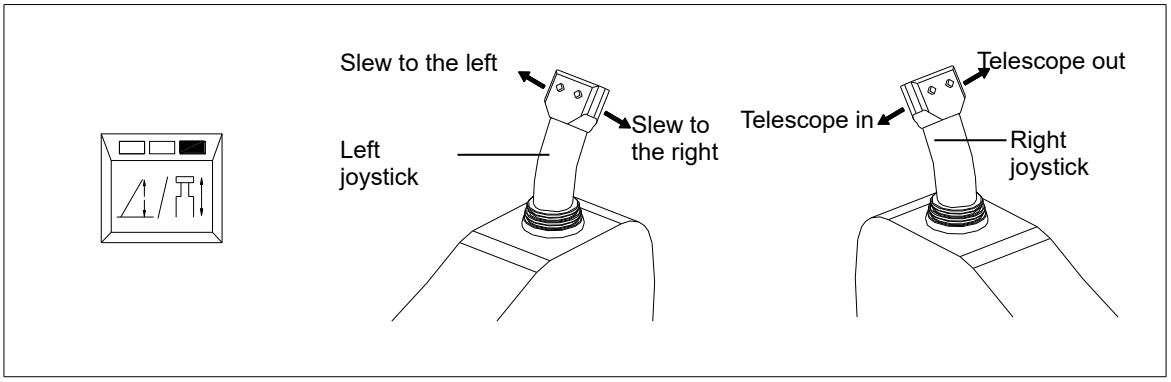


Figure 4-83 Slew + Telescope

CAUTION

It is strongly recommended to select the automatic telescoping mode and deactivate the confluence switch 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 4-84.

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.

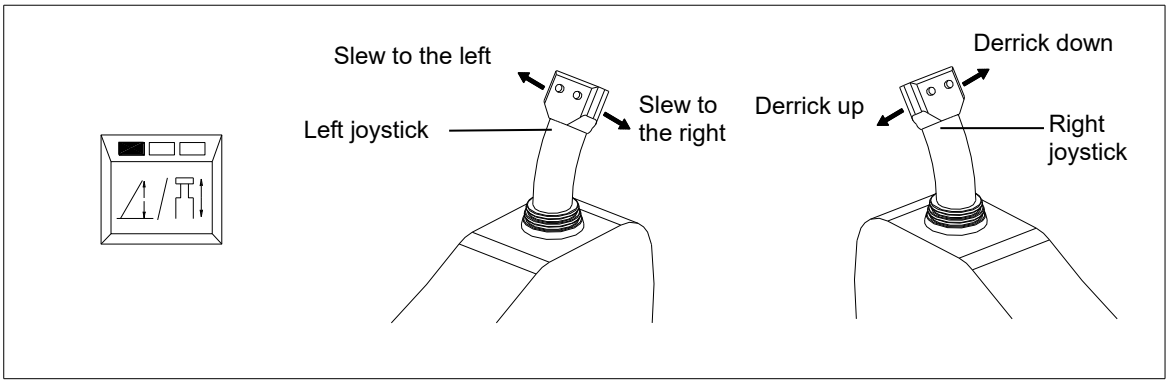


Figure 4-84 Slew + Derrick

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 4-85.

The other movements on the left joystick are as follows: (Refer to Figure 4-85.)

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.

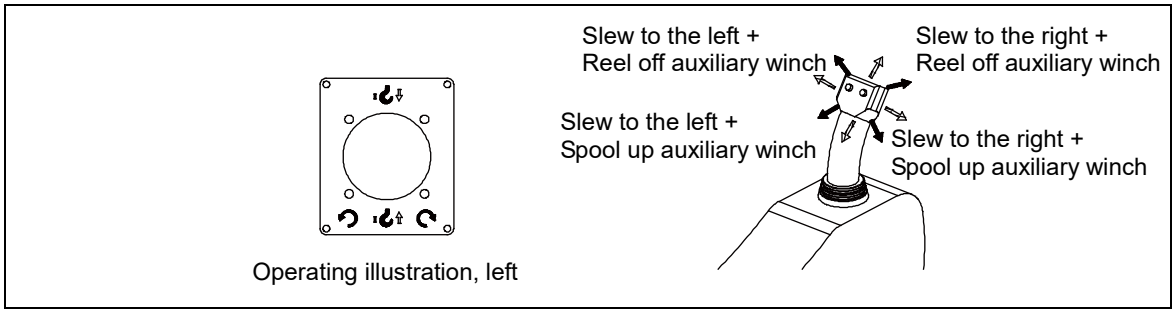


Figure 4-85 Slew + Auxiliary winch

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 4-86. 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) The more the joystick is deflected leftward or rightward, the faster the derricking movements become and the slower the winch movements.

3) The more the joystick is deflected upward or downward, the faster the winch movements become and the slower the derricking movements.

4) 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.

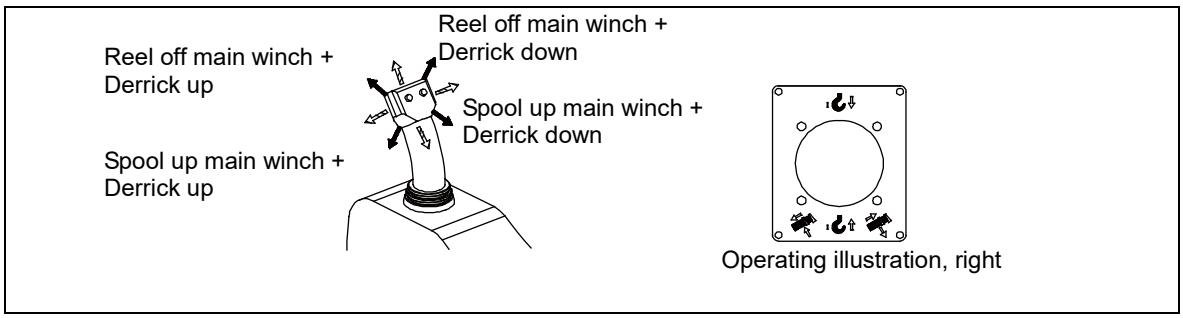


Figure 4-86 Main winch + Derrick

i) Main winch + Telescope

You can telescope the 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 4-87. 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) The more the joystick is deflected leftward or rightward, the faster the telescoping movements become and the slower the winch movements.
3) The more the joystick is deflected upward or downward, the faster the winch movements become and the slower the telescoping movements.
4) 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.

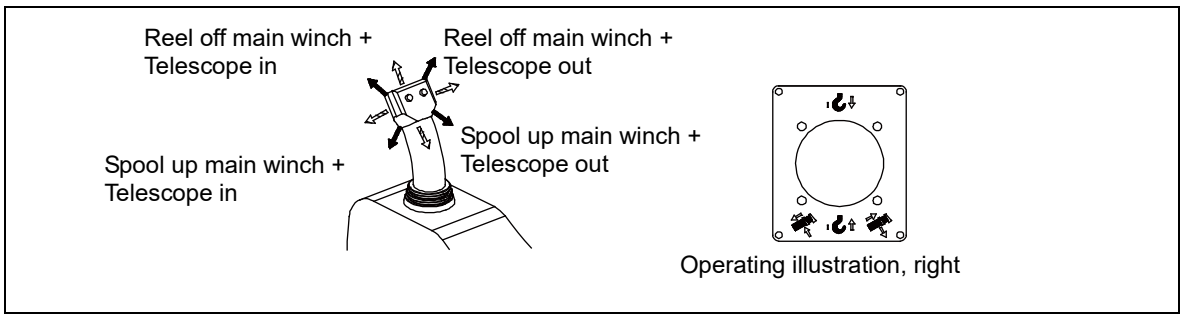


Figure 4-87 Main winch + Telescope

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.

Refer to Figure 4-88.

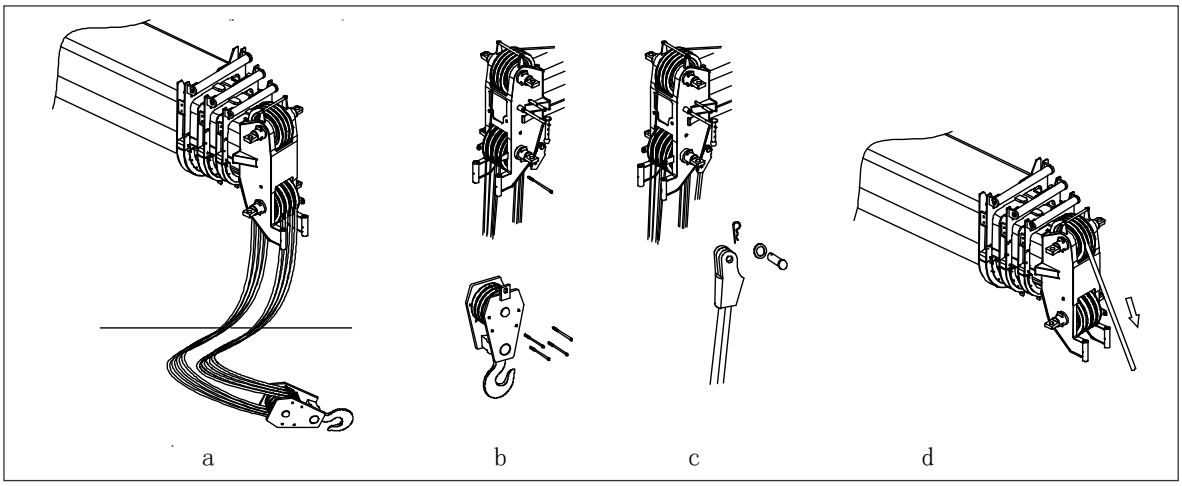


Figure 4-88 Rope reeving

Change the wire rope reevings as follows:

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 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).

CAUTION

(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 4-89.

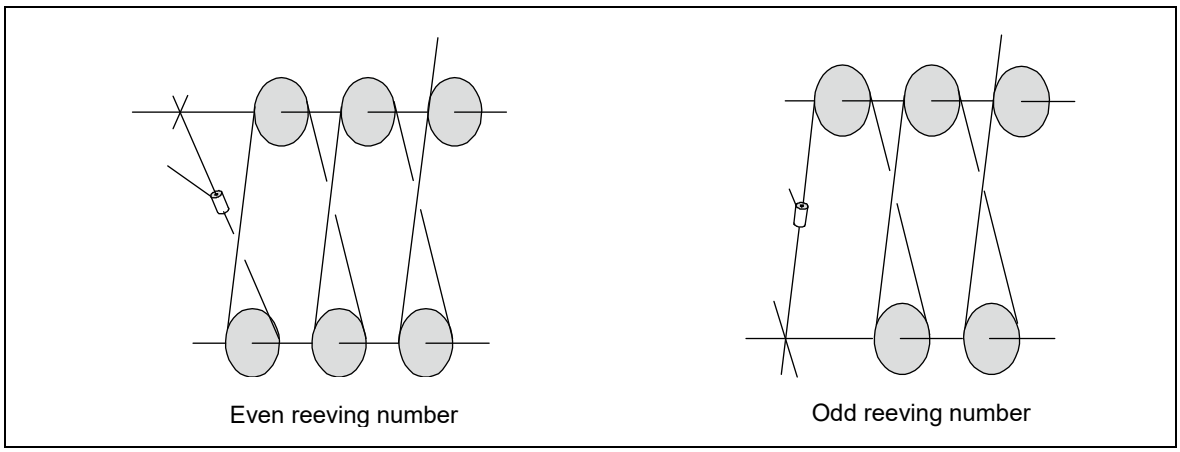


Figure 4-89 Location of hoisting limit switch weight

(2) Put the wire rope on the winch spool smoothly and in sequence.

(3) For methods of installing socket and rope clamp, please refer to Figure 4-90.

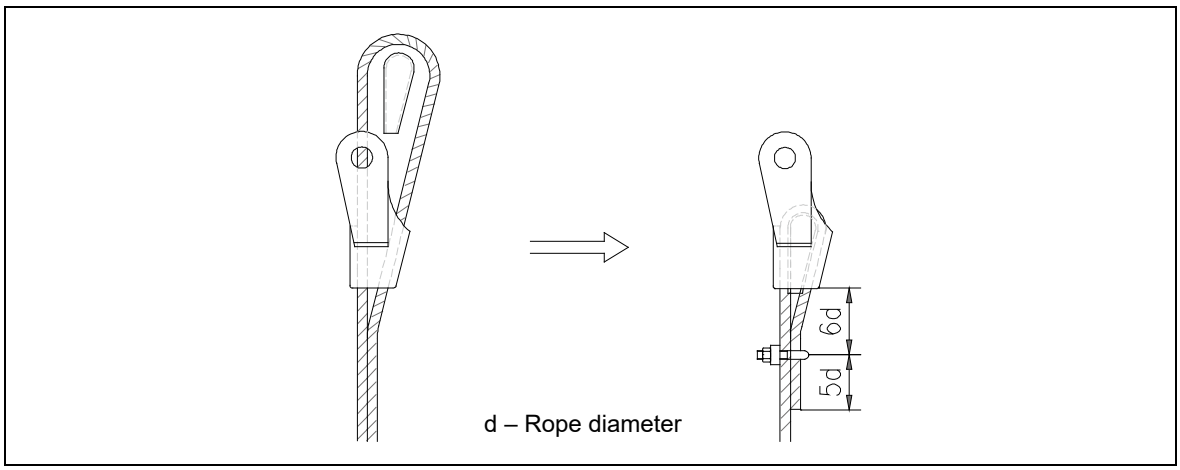


Figure 4-90 Rope clamp installation

ZOOMLION

Truck Crane Operator'S Manual

Chapter 5 Equipment

Chapter 5 Equipment

5.1 Safety technical guidelines for installation

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 disassembly, 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) Perform the safety measure checks before supporting the crane.

e) 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 telescoped in.
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 placed in 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 truck crane. With the jib assembled, the load can be lifted to a higher height and the working radius can be enlarged via angle changed.

The crane has a 2-section jib. One jib section is of a quadrangle lattice structure, while the other is of a triangular lattice structure. During driving, jib section 2 is secured onto jib section 1 via pins and the whole jib is installed on the right side of the boom via pins. Meanwhile, jib section 2 can also be secured on right side of the boom individually.

You cannot use the jib when you lift a load if the outriggers are not in the correct position.

5.2.2 Erection

You can install the jib at an angle of 0°, 15° or 30° to the telescopic boom according to work requirements.

How to install the jib (Take 0° angle for example). Refer to Figure 5-1 to Figure 5-13.

a) Extend the outriggers and make the crane level with the level gauge.

b) Retract the boom fully.

c) Move the boom to the side or rear of the crane and position it to -2°.

d) Make sure there is 30 m slewing radius.

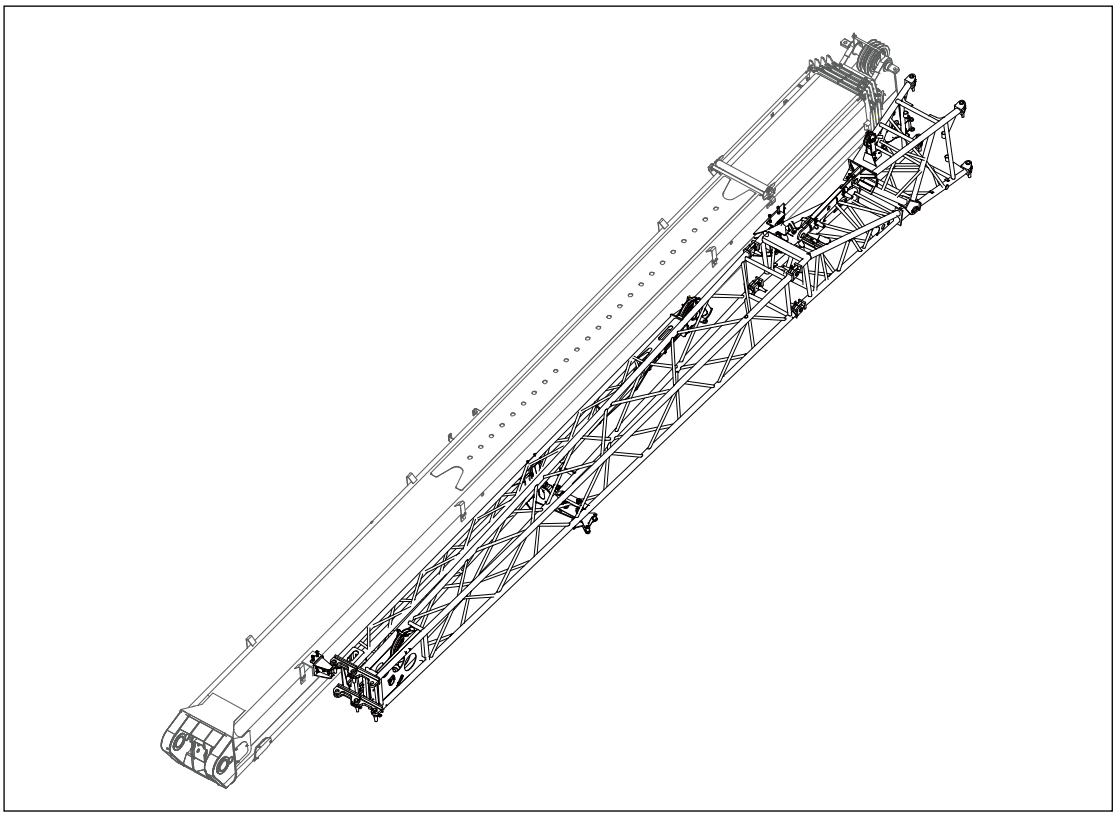


Figure 5-1 Jib assembly

a) Adjust the tongue plate at left side of the boom head, and make it maintain a clearance of 1-2mm with the bearing block. Refer to Figure 5-2.

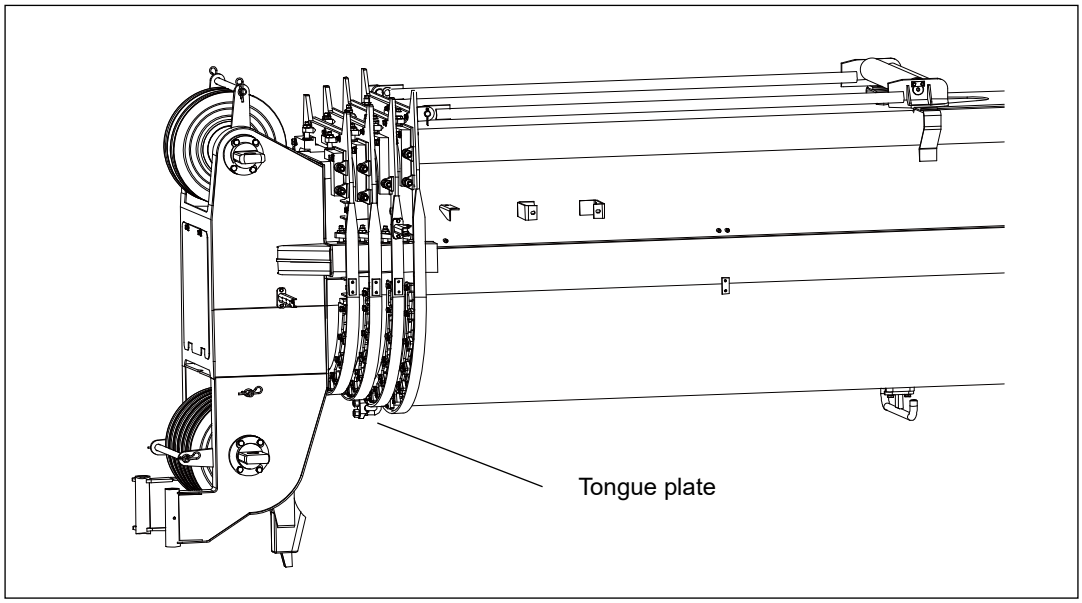


Figure 5-2 Tongue plate position

b) Remove the pin I. Extend the intermediate bracket and install the removed pin I. See Figure 5-3.

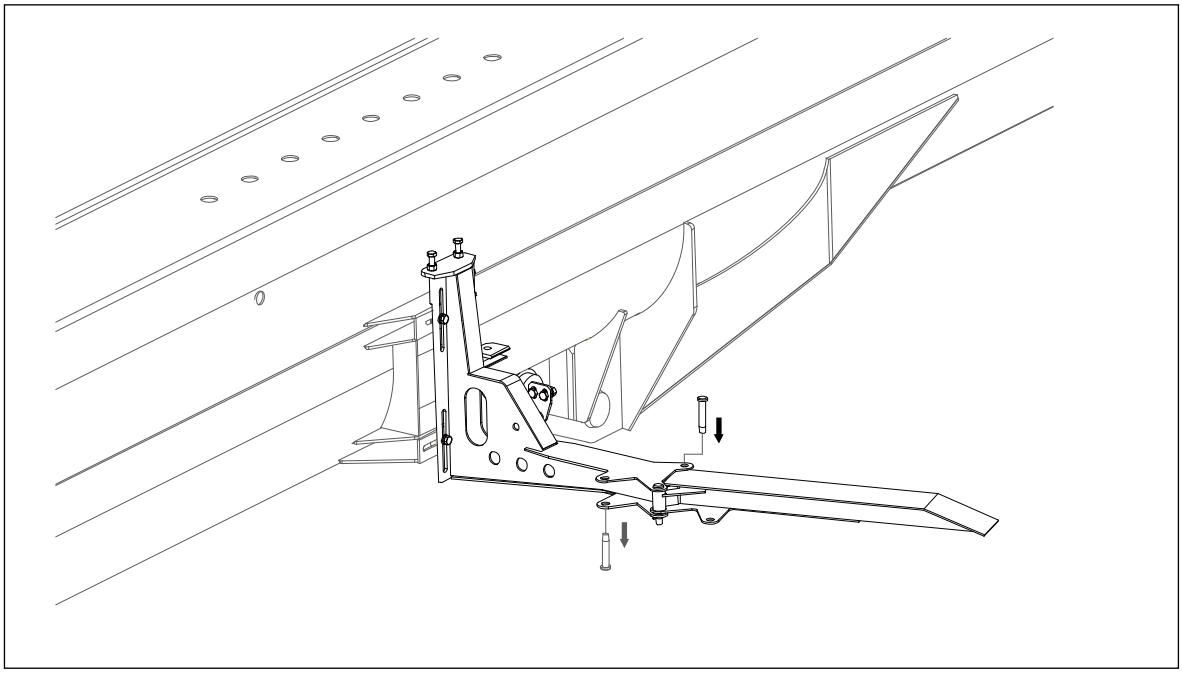


Figure 5-3 Extend the intermediate bracket

c) Remove the pins I and II. See Figure 5-4.

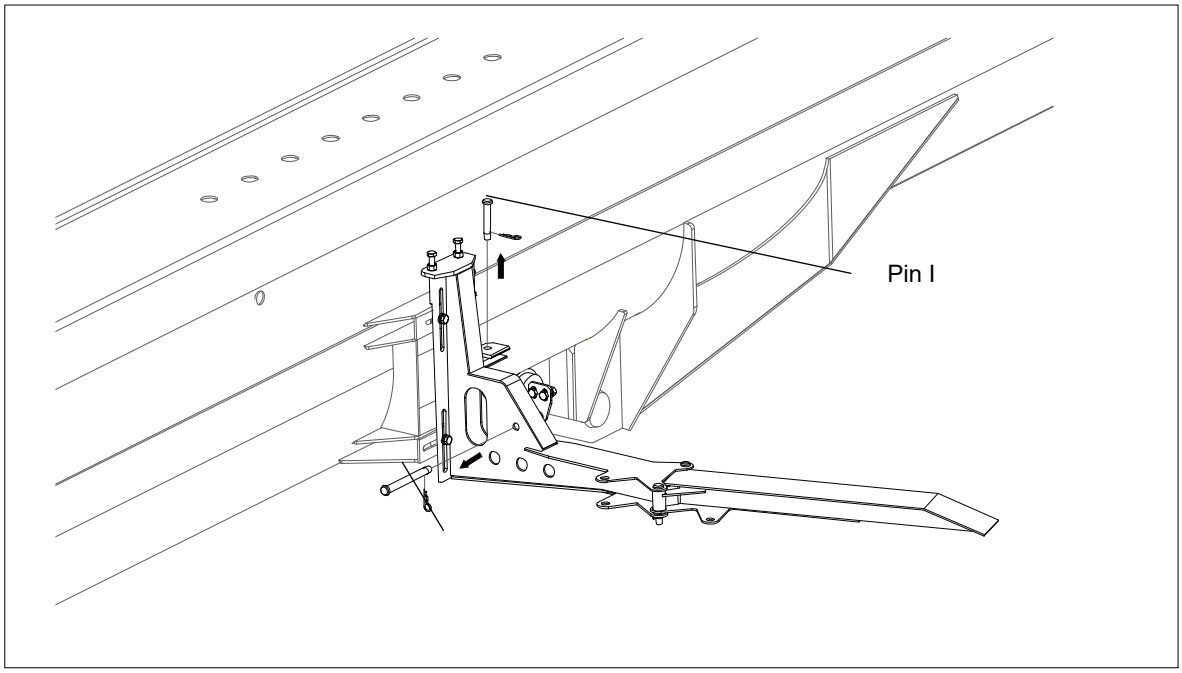


Figure 5-4 Pins I and II removal

d) Remove the pin III. See Figure 5-5.

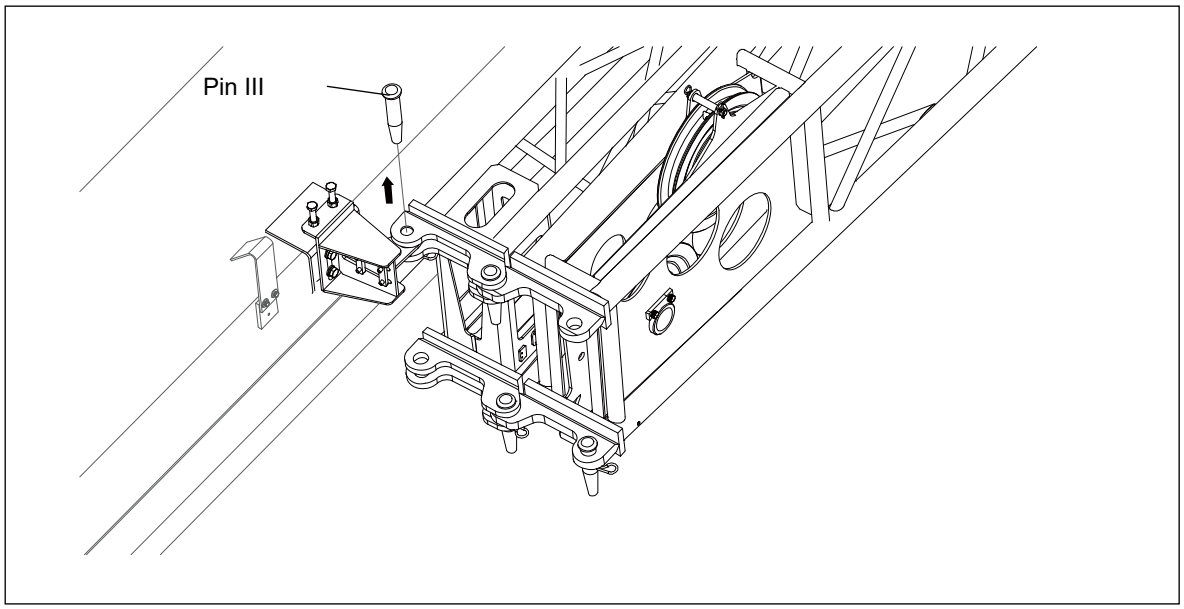


Figure 5-5 Pin III removal

e) Move the front of the jib away from the boom (jib pivots at pin IV). See Figure 5-6.

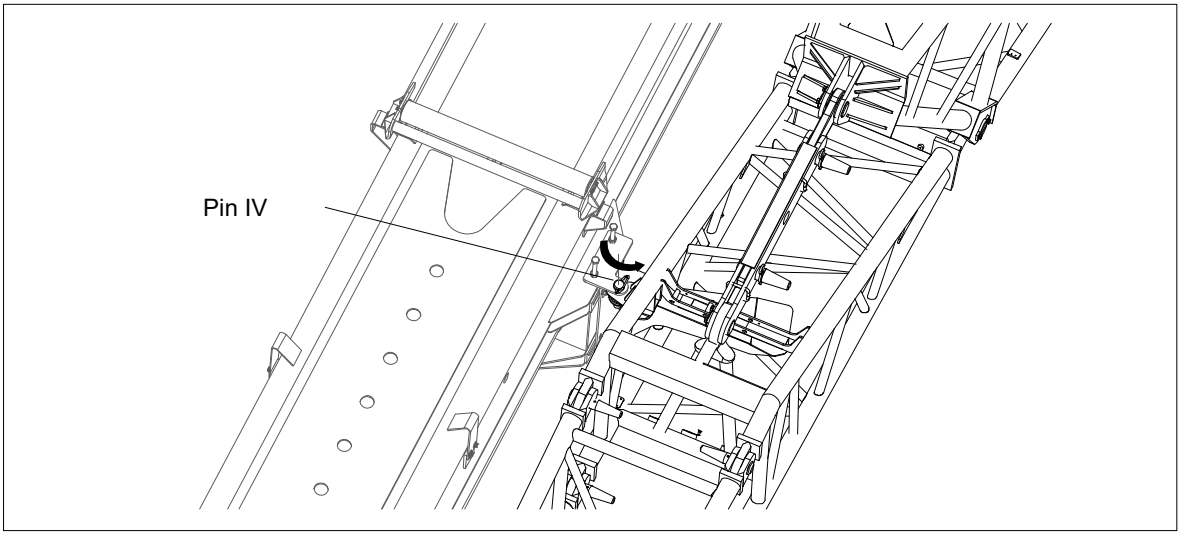


Figure 5-6 Move the front of the jib away from the boom

f) Align the end of the jib with the pin holes on the right side of the boom head. Install the pin V and the retaining clip. See Figure 5-7.

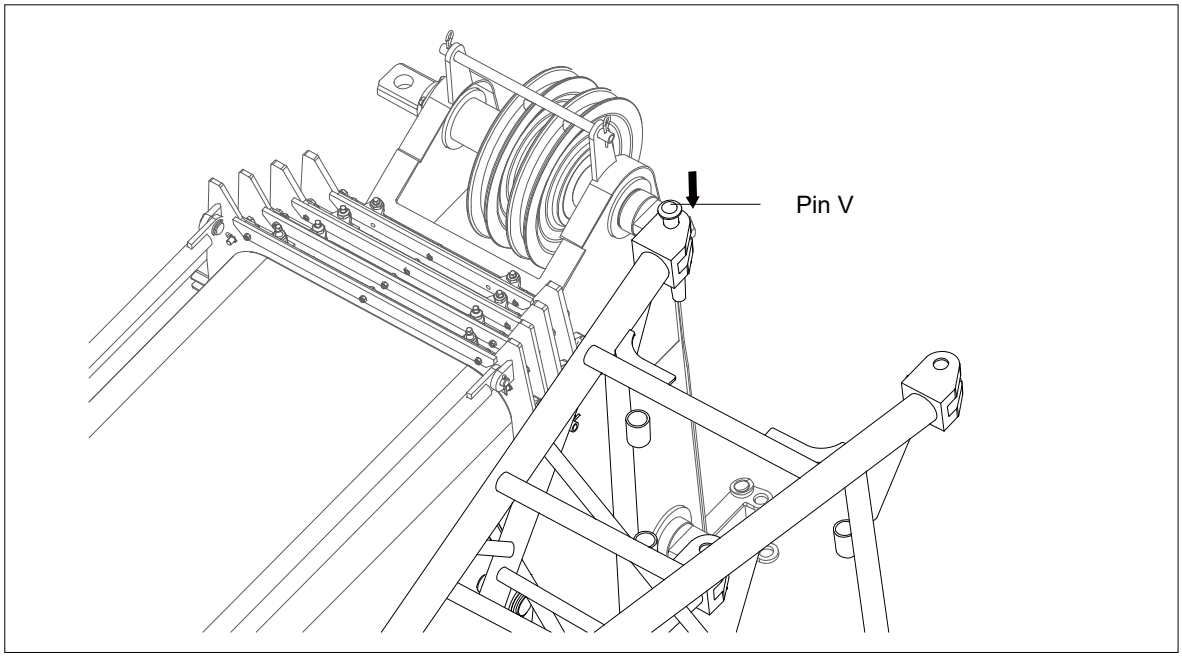


Figure 5-7 Pin V installation

g) Remove the pin IV. See Figure 5-8.

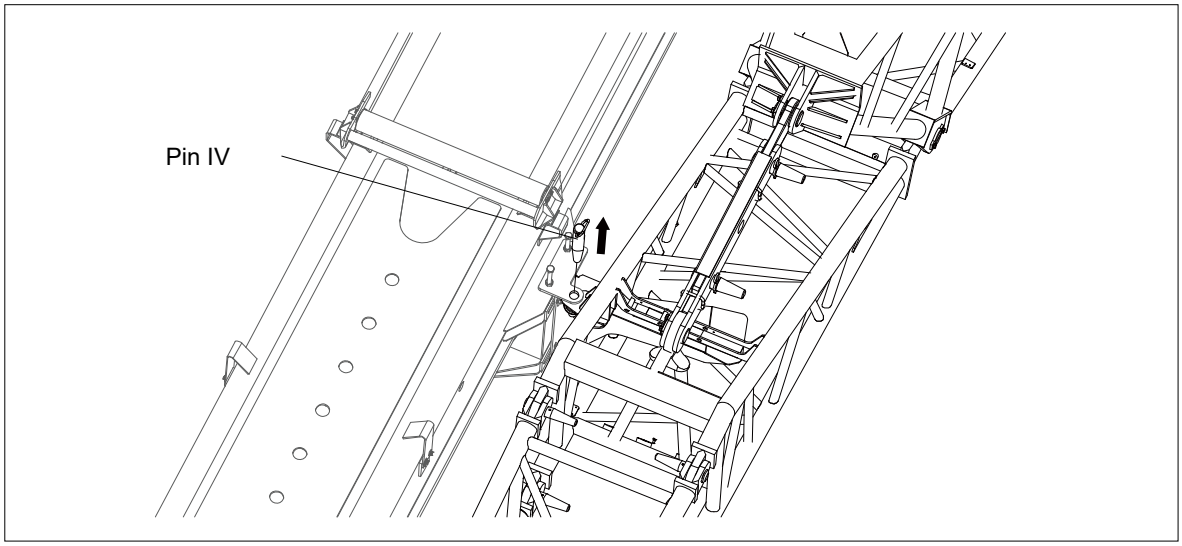


Figure 5-8 Pin IV removal

h) Move the jib (pivots at pin IV) to the front of the boom. See Figure 5-9.

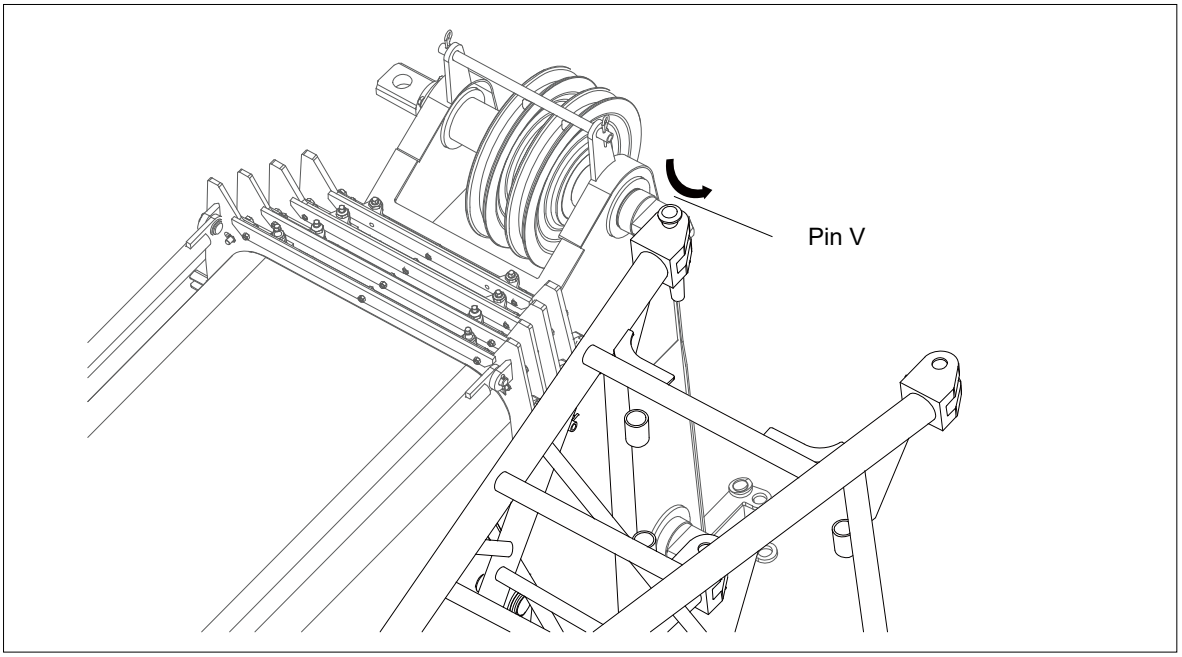


Figure 5-9 Jib rotation

i) Align the end of the jib with pin holes on the left side of boom head. Install the pin VI and the retaining clip. See Figure 5-10.

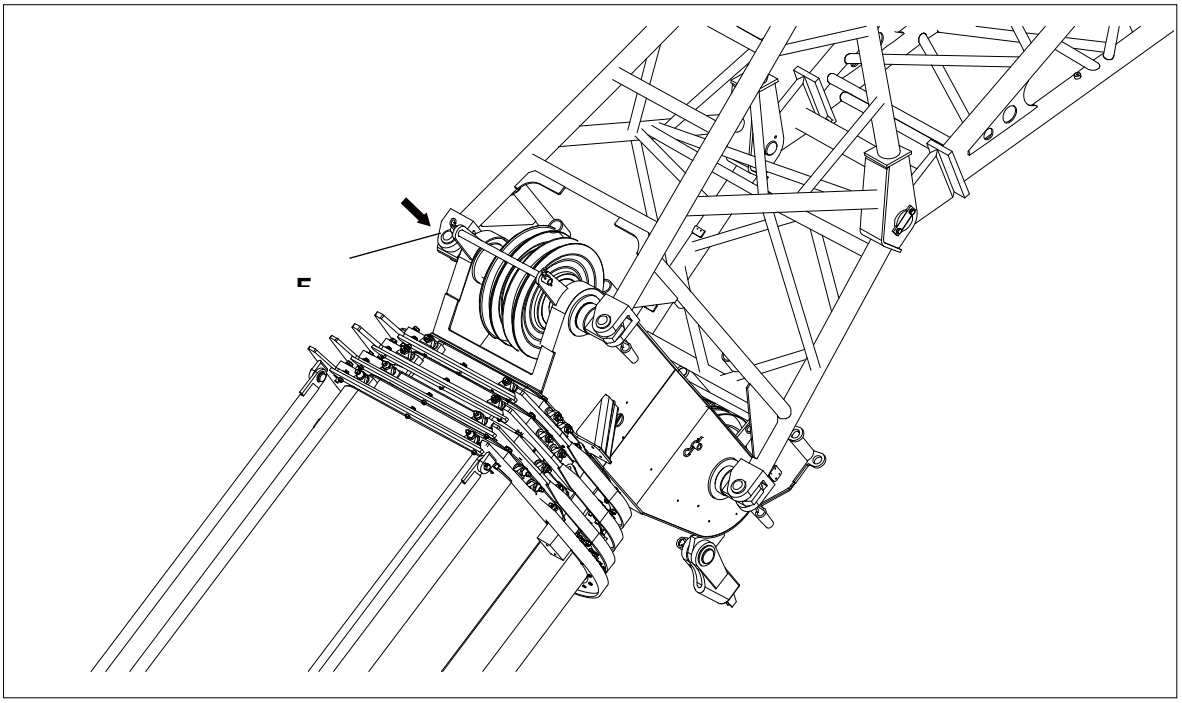


Figure 5-10 Pin VI installation

j) If the jib section II is to be used, remove the pin VII and the retaining clip β connecting jib section I to section II. See Figure 5-11.

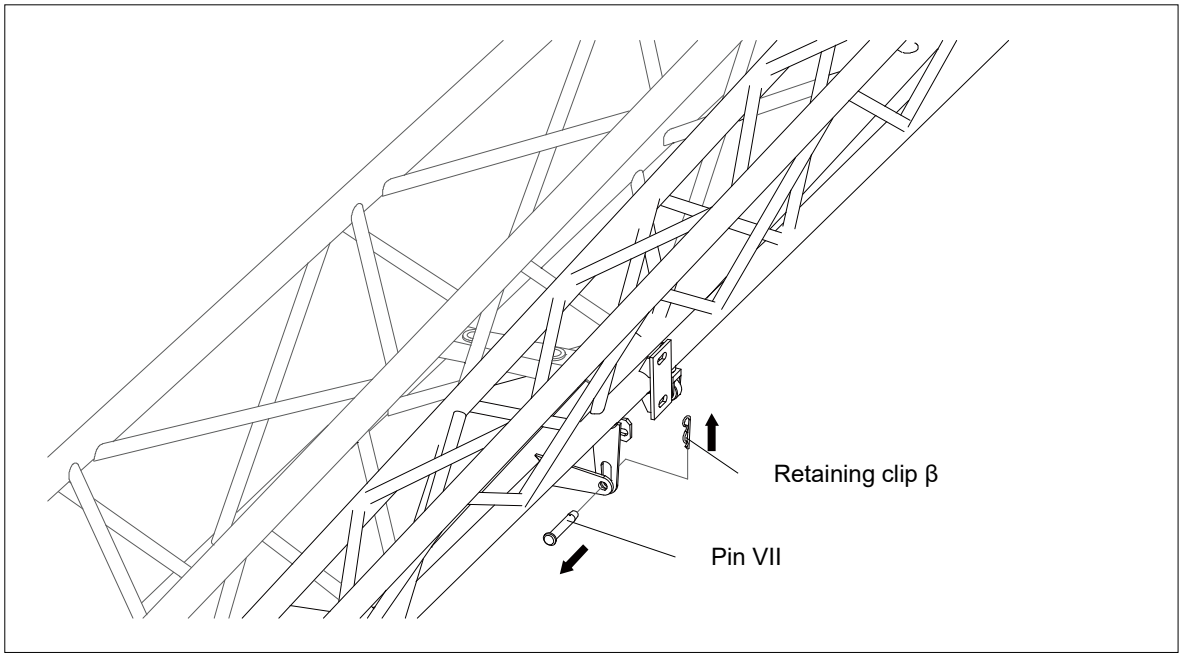


Figure 5-11 Pin VII removal

k) Rotate jib section 2 around pin VIII to the jib section 1 right ahead. Refer to Figure 5-12.

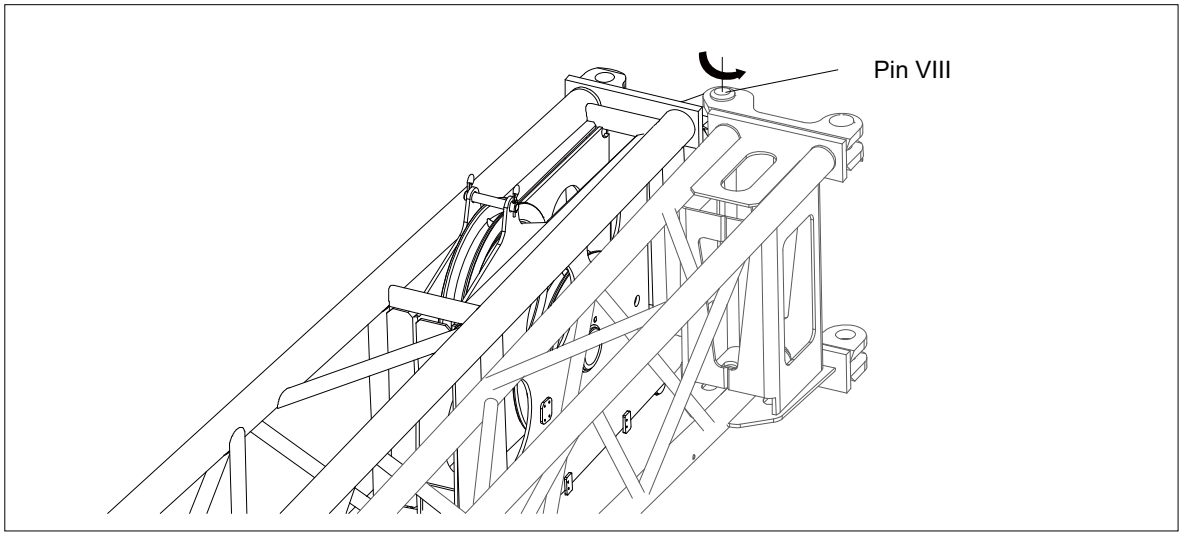


Figure 5-12 Jib section 2 rotation

l) Align the end of the jib section 2 with the pin holes on the left side of the jib section 1 head. Install the pin IX and the retaining clip. See Figure 5-13.

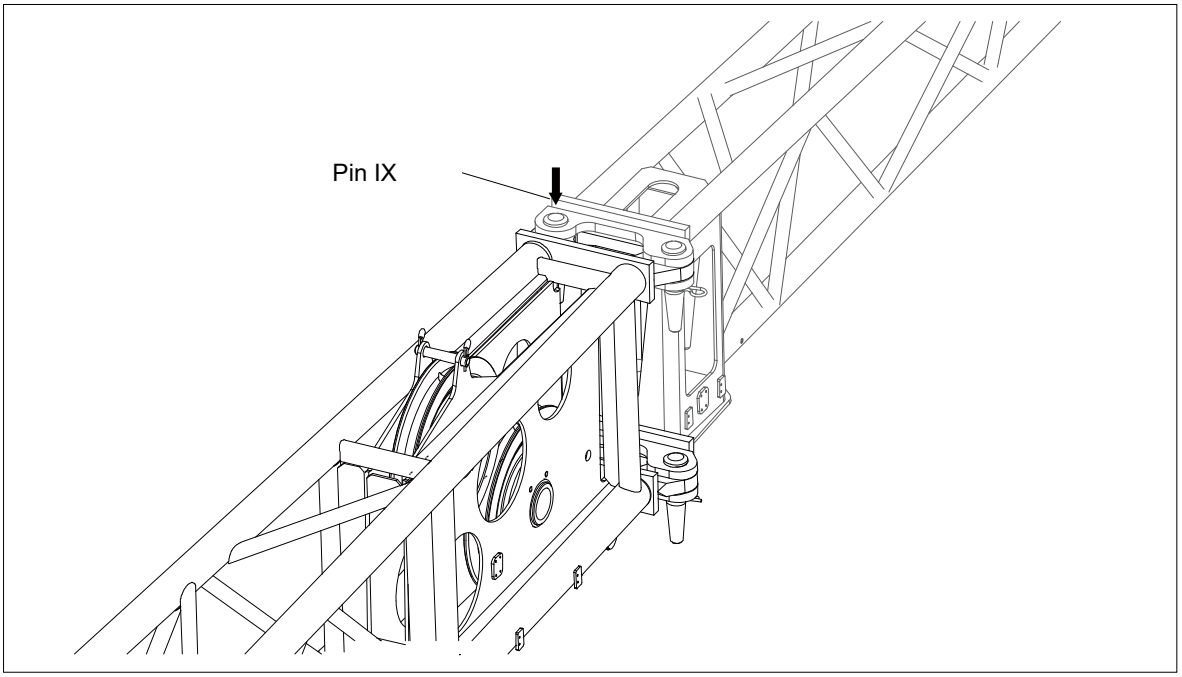


Figure 5-13 Pin IX installation

m) Reeve the wire rope from the auxiliary winch through the end of the jib. Install the auxiliary hook and the hoisting limit switch.

DANGER

Do not stand under the jib during the slewing operation!

The jib and other components – due to an assembly error – can fall down and cause fatal injuries.

5.2.3 Angle settings

Change the jib angle from 0° to 30°. Refer to Figure 5-14.

a) Take out the auxiliary hook from the hook holder.

b) Pay out the auxiliary hoist rope for 2 m to 3 m at low speed.

c) Remove the pins and retaining clips from the pull bracket of adapter at jib end.

d) Derrick the boom up slowly until the long groove of the pull bracket aligns with the pin bores for 30°.

e) Put the pins and retaining clips at the point for the 30° position.

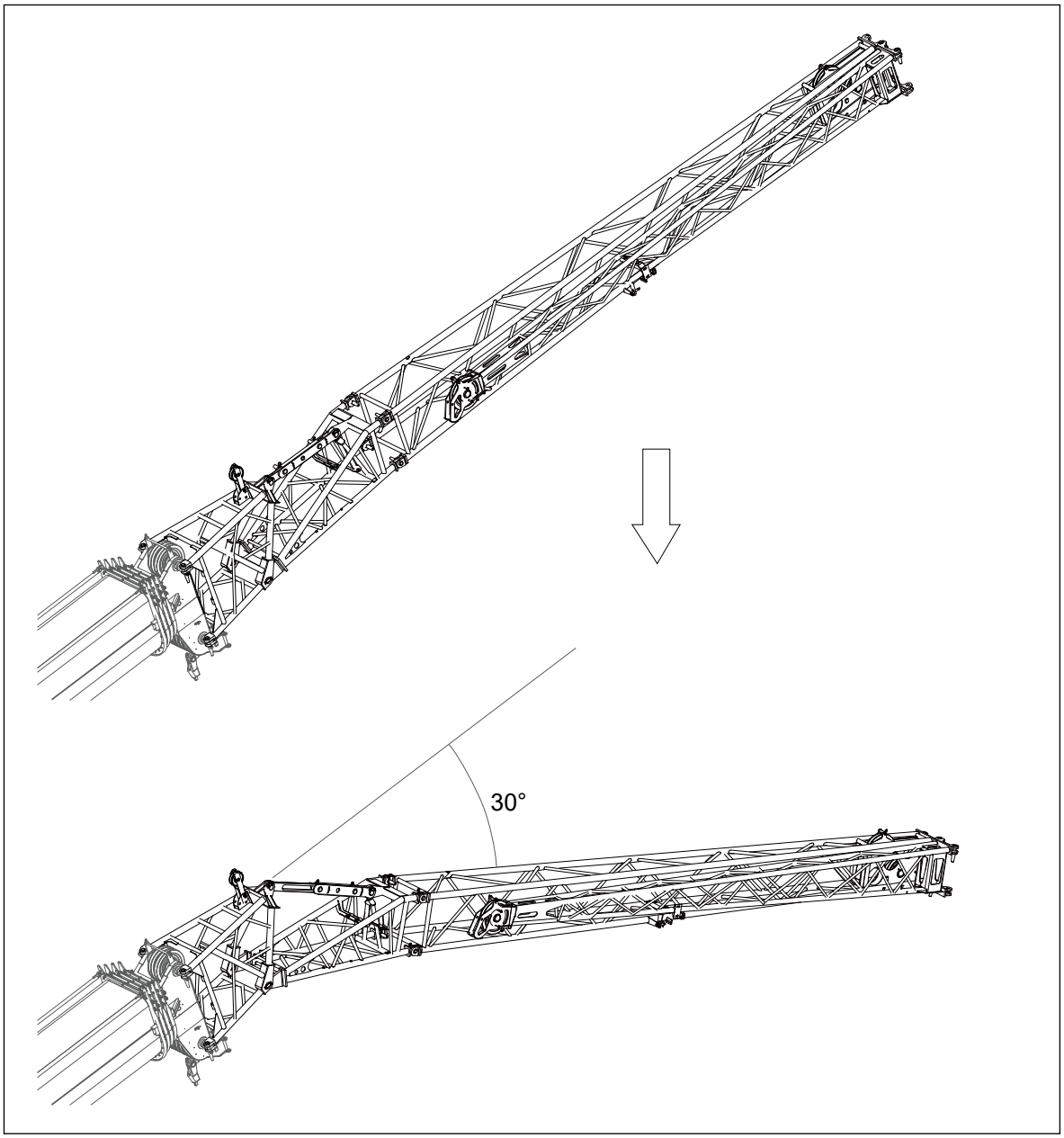


Figure 5-14 Angle positions

5.2.4 Removal

After you complete the jib operation, dismantle the jib in reverse order of the assemble steps.

CAUTION

Do not excessively spool up the auxiliary winch when you disassemble the jib.

After the assembly and disassembly of jib, adjust the limit bolt on the left side of boom head (viewed from travelling direction) till the clearance between the end surface of limit bolt and the bearing block at the boom head is equal or more than 5 mm in order to prevent from damaging the limit bolt during boom telescoping.

5.2.5 Reeving in the auxiliary hoist rope

a) Reeve the wire rope from the auxiliary winch through the rope guide on the basic boom.
b) 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.
c) Remove the rope securing tube II and its retaining clip.
d) Install the wedge and socket assembly.
e) Install the auxiliary hook.
f) Install the rope securing tube II and retaining clip.

See Figure 5-15.

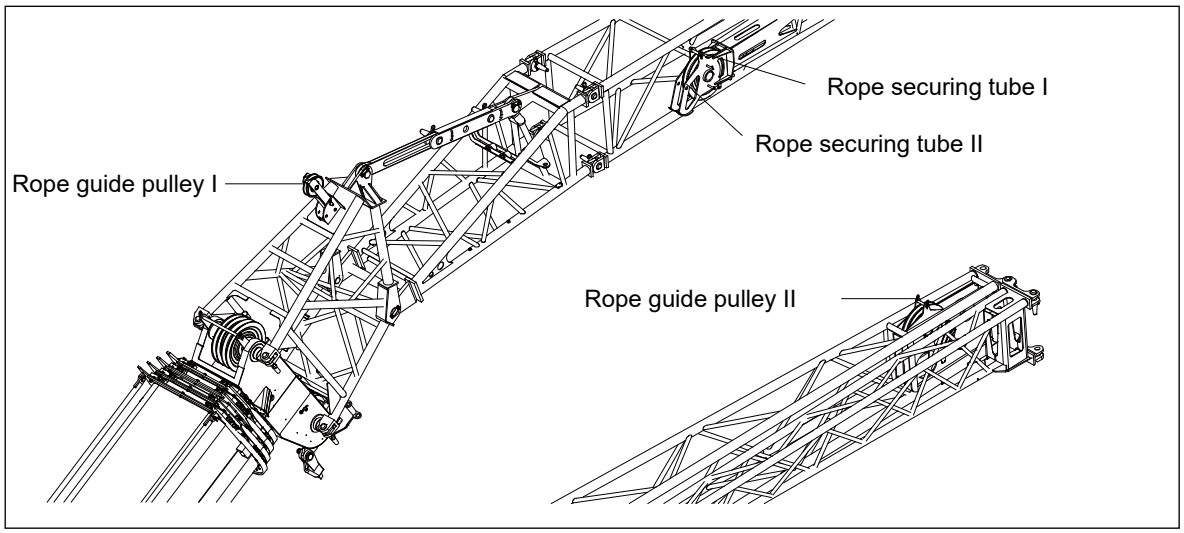


Figure 5-15 Rope securing tubes

5.2.6 Connection of hoisting limit switch

For the connection of hoisting limit switch, please refer to Figure 5-16.

For an operating mode with the jib section 1 installed (Refer to Figure 5-16):

a) Remove the cable plug at the tail of jib adaptor.
b) Plug it into the socket on boom head.
c) Remove the cable plug at the tail of jib section 1.
d) Plug it into the socket on jib adaptor head.

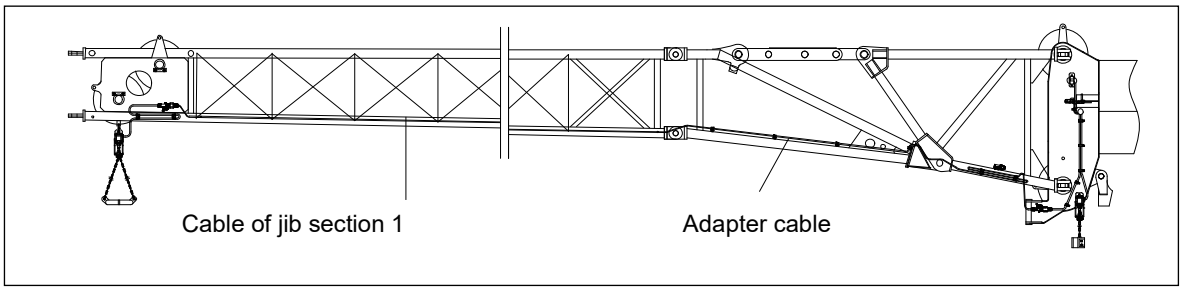


Figure 5-16 Cable harness connection of jib section 1

For an operating mode with the jib section 2 installed (Refer to Figure 5-17):

a) Properly connect the cable harness of jib section I according to the above-mentioned methods.

b) Remove the cable plug at the tail of jib section 2.

c) Connect it to the socket at the head of the jib section 1.

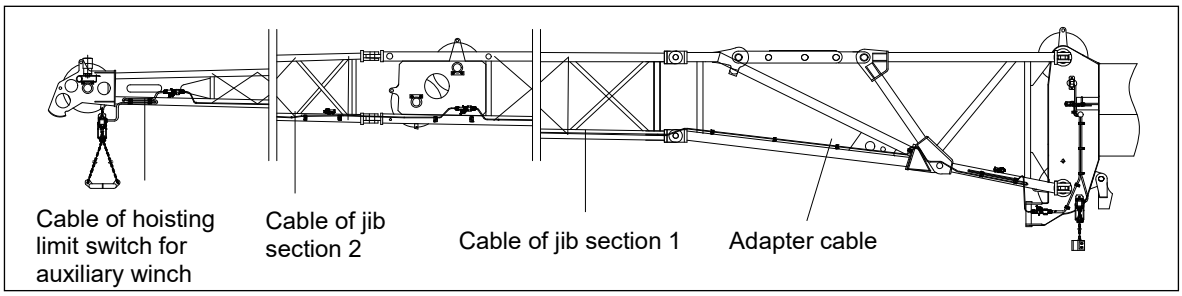


Figure 5-17 Cable connection with jib section 1 and jib section 2

NOTICE

Before you erect or dismantle the jib, disconnect the all the cables. Otherwise, the cable may be broken!

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. The one-section tip boom (optional) connects to the boom by pins. The assembly of tip boom is the same as that of the jib. Refer to Figure 5-18.

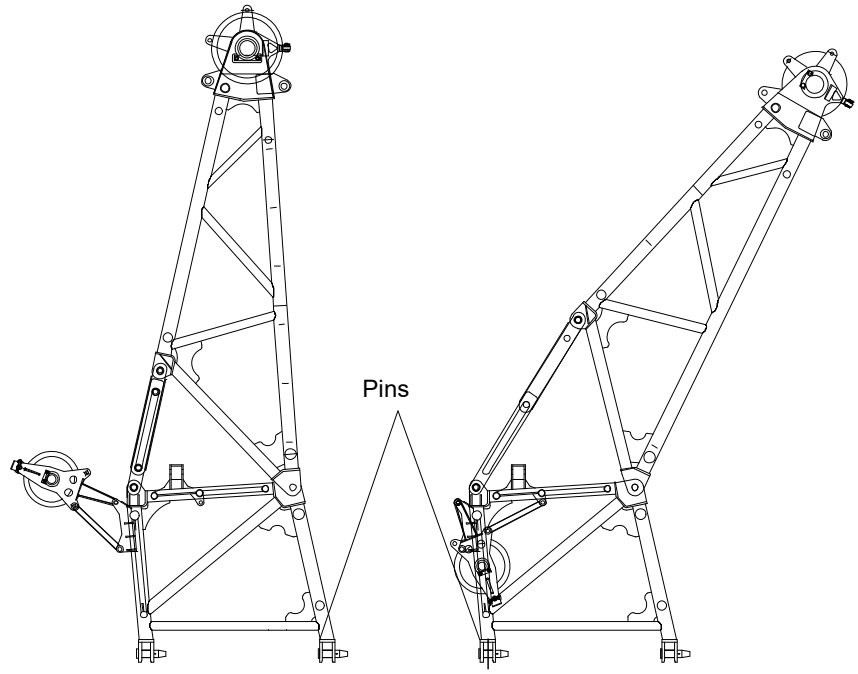


Figure 5-18 Tip boom

WARNING

(1) You cannot use the tip boom when you lift a load if the crane is not supported on outriggers.

(2) Set the angle of tip boom to 30° before you begin a lift operation. Set the angle to 0° when the operation does not use the tip boom.

5.3.2 Installation

The tip boom can be installed at one of two angles of 0° and 30°. Before you begin a lift operation, assemble the tip boom at an angle of 30°.

Install the tip boom (Take 0° angle 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) Align the end of the adapter with the pin holes on the end of triangle frame. Install the pins and the retaining clips. Refer to Figure 5-19.

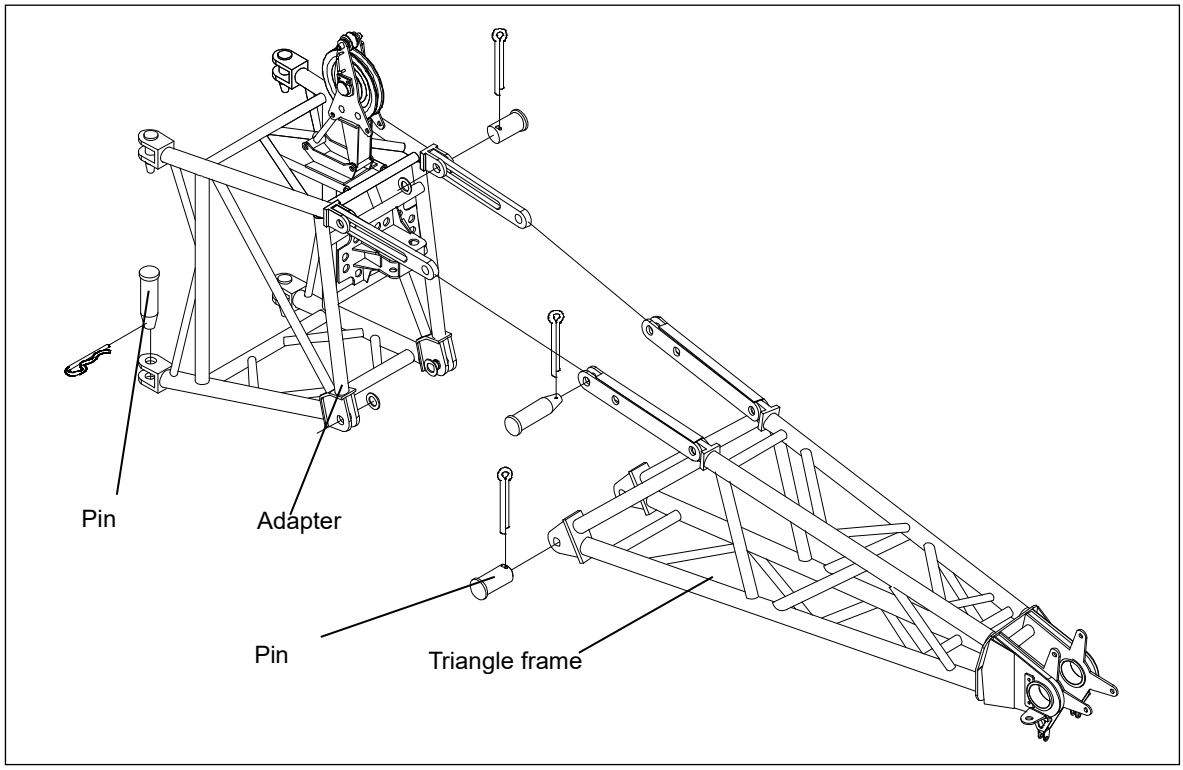


Figure 5-19 Assembly of tip boom

f) Lift the assembled tip boom with an auxiliary crane until the pin holes on the adapter are aligned with those pin holes on the head of the boom. Install the pins and the retaining clips.

g) Install the counterweight plates and hoisting limit switch. Examine them for proper assembly.

DANGER

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 installed at one of the two angles of 0° and 30°. The relevant angle is set using pins. Refer to Figure 5-20.

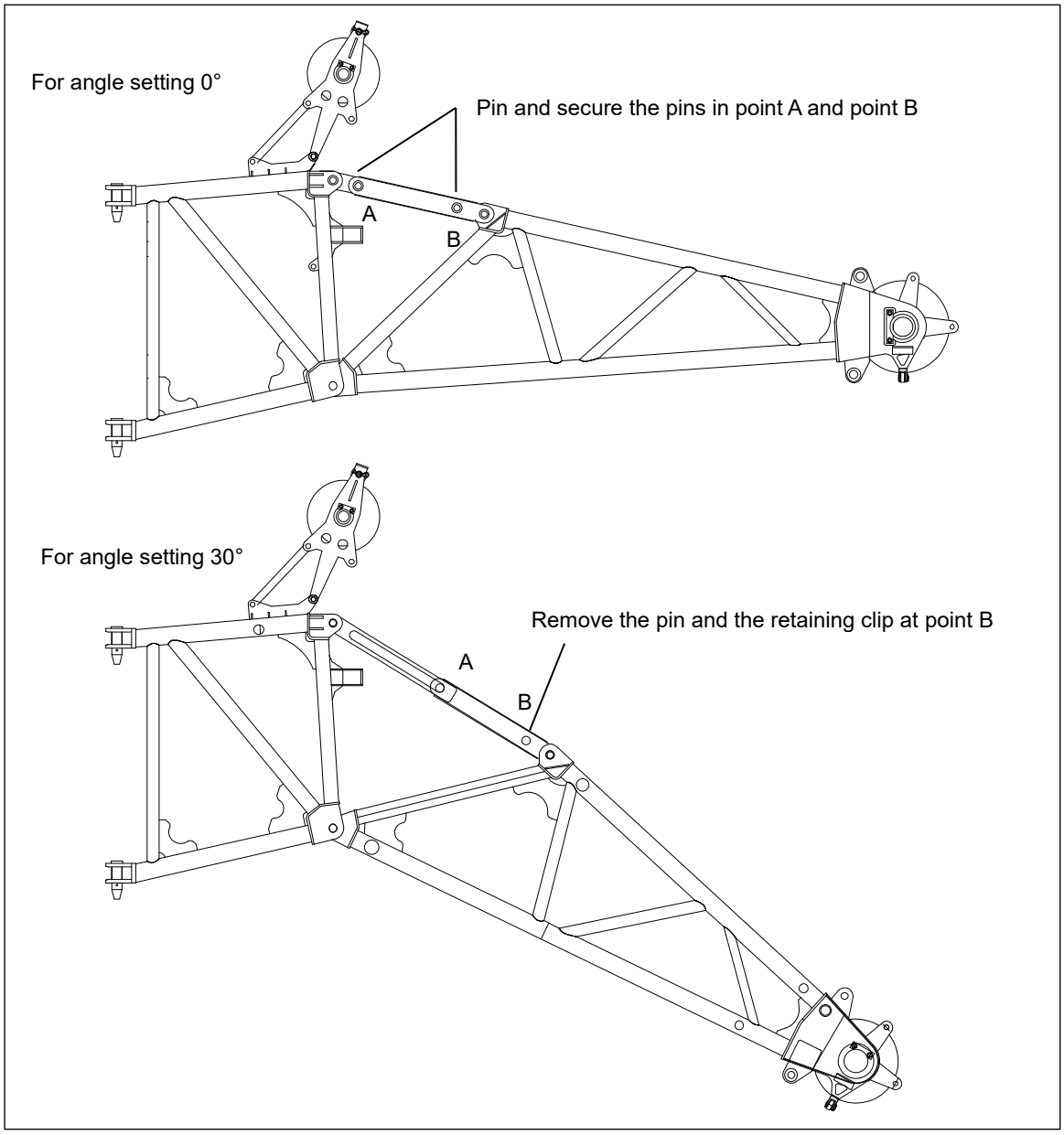


Figure 5-20 Angle positions

Change the angle of tip boom from 0° to 30° (Refer to Figure 5-14.):

a) Reel off the auxiliary hoist rope for 2 m to 3 m by moving the joystick.
b) Derrick boom down to the minimum angle until the tip boom comes into contact with the ground or is properly supported.
c) Remove the pin and the retaining clip at point B.
d) Derrick boom up slowly until the pull bracket touches the appropriate pin and the angle is changed to 30°.

5.3.4 Removal

After you complete the tip boom operation, dismantle the tip boom in reverse order of the assemble steps.

CAUTION

Do not attach the tip boom to the side of boom during vehicle driving. Otherwise, axles will be seriously damaged due to overload.

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 5-21.

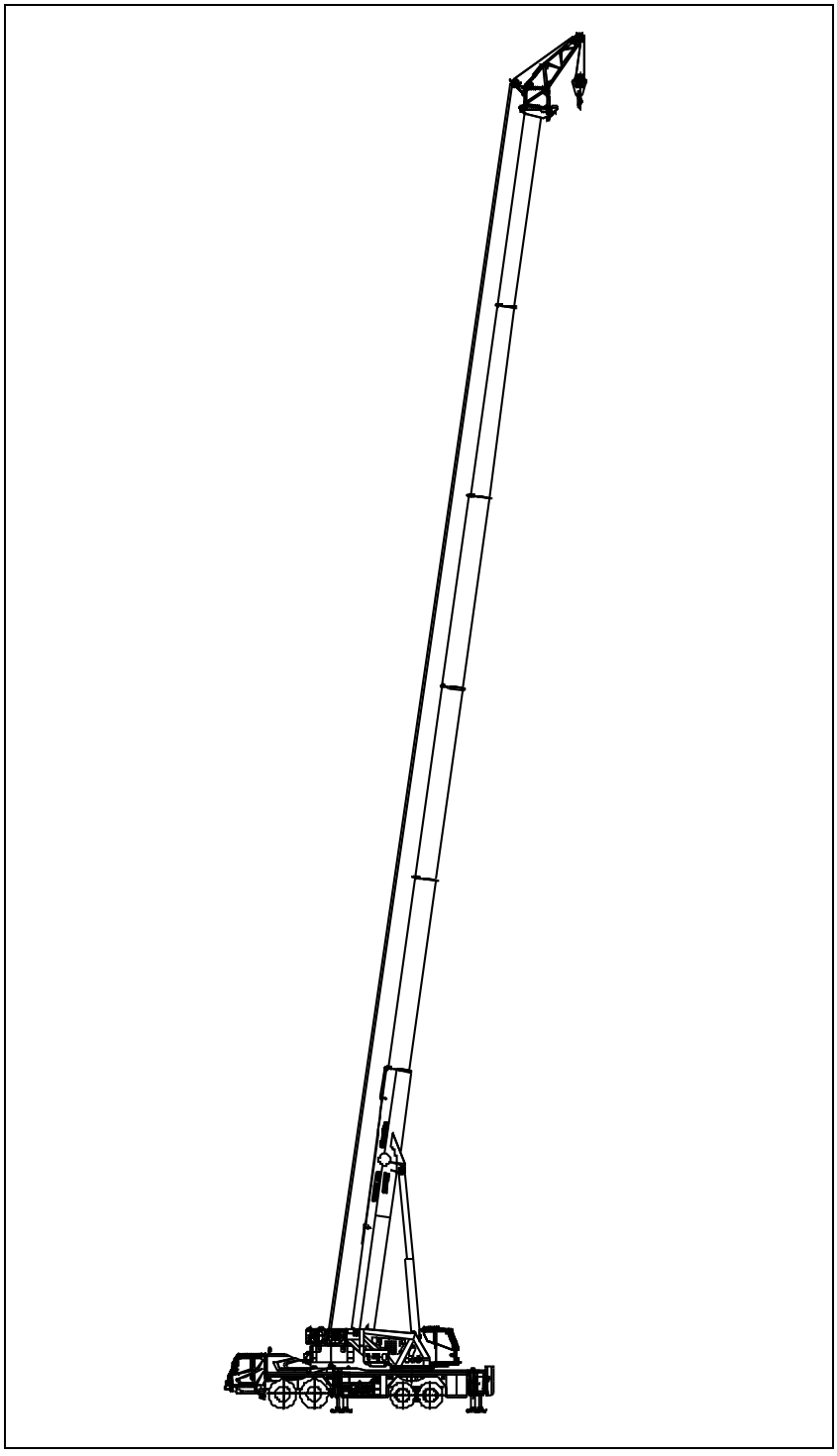


Figure 5-21 Reeving in the hoist rope for tip boom

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 5-22.

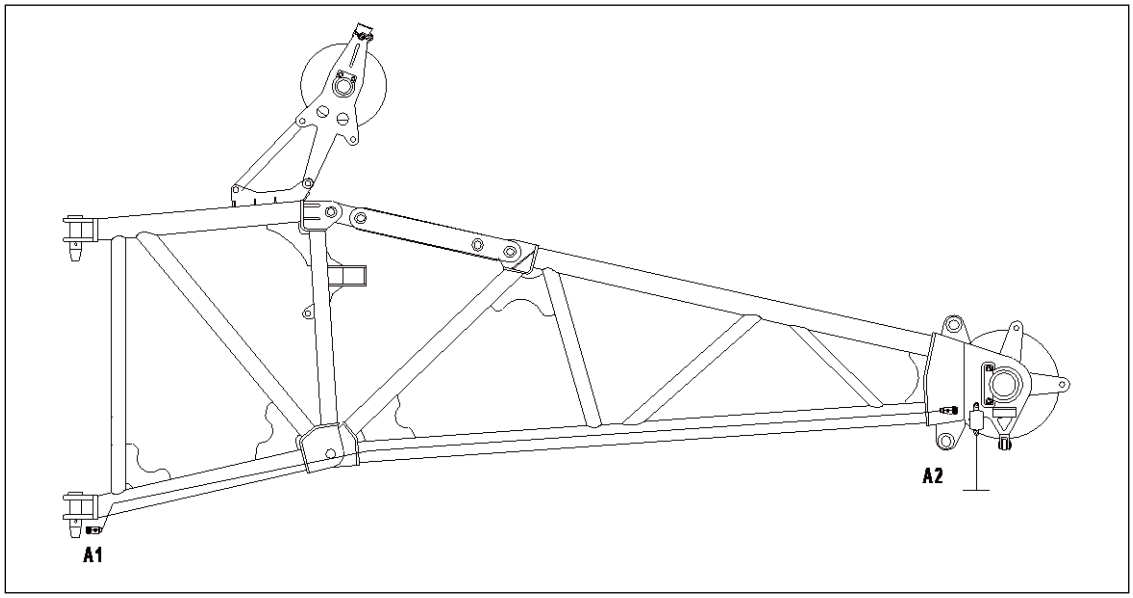


Figure 5-22 Electrical connection of tip boom

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.

How to connect:

a) Connect the terminal A1 of the cable harness on the adapter I to the cable harness plugging element on the hoisting limit switch (for main / auxiliary winch) on the boom head.

b) Connect the terminal A2 of the cable harness on the adapter to the plugging element on the hoisting limit switch.

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 top boom section.

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 Installation

a) Fully retract the boom.

b) Move the boom over sides and over rear and set the boom to the -2° position.

c) Remove the securing pin and move the bracket to the front of the boom. Align the pin holes. Install the connecting pin. See Figure 5-23.

d) Reeve auxiliary hoist rope through the upper rope pulley and the rooster sheave. Install the auxiliary hook and the hoisting limit switch. Make sure that all connections are tight.

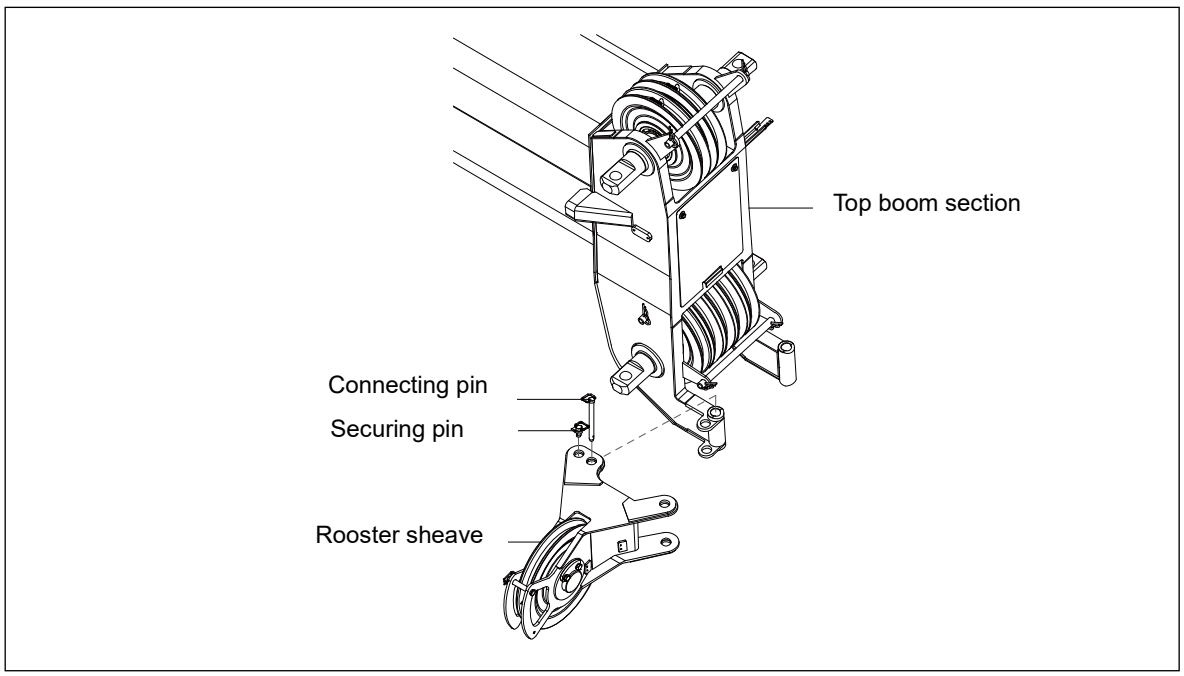


Figure 5-23 Rooster sheave assembly

5.4.2 Removal

When it is not necessary to use the rooster sheave, make sure that it is attached to the side of the boom. Disassemble it in the reverse order of the assemble procedure.

5.4.3 Connection of hoisting limit switch

Under the rooster sheave working condition:

a) Remove the hoisting limit switch on the jib.

b) Install it in the place shown in the following figure.

c) Connect its cable plug to the socket at the head of the boom.

Refer to Figure 5-24.

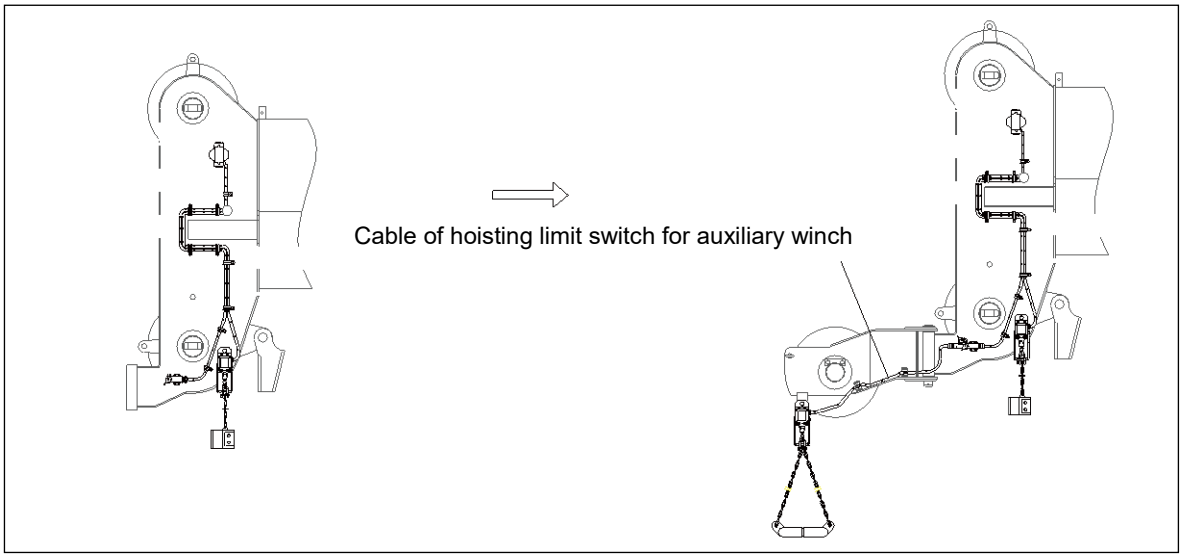


Figure 5-24 Cable connection with rooster sheave

NOTICE

Before you assemble or dismantle the rooster sheave, disconnect all cables. Otherwise, the cable may be broken!

5.5 Extension

5.5.1 Overview

An extension is an important mechanical structure of the crane and it can be used to lift a load to a higher position and in a wider working radius compared to that of when only the boom is used. It can be used independently or installed together with the jib.

An extension is optional for this crane. It is hinged and secured through pins with the boom and jib, as shown in Figure 5-25.

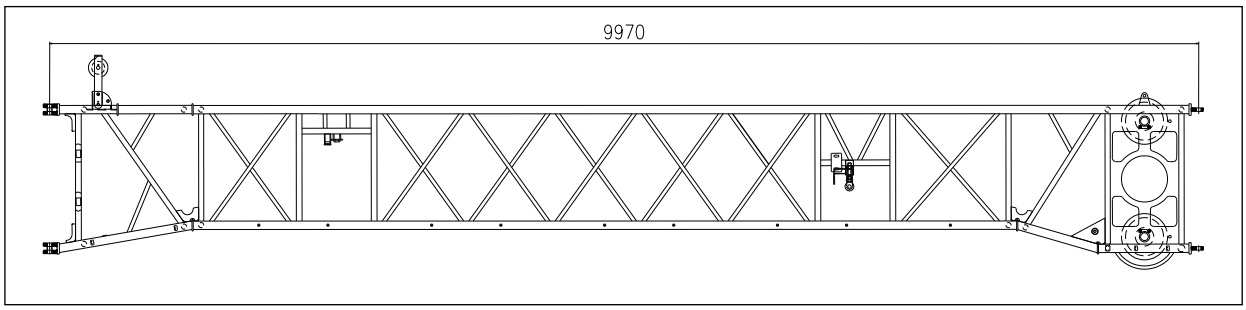


Figure 5-25 Extension

WARNING

1. Pay attention to boom length and boom section combination in the lifting capacity tables when the extension is used.

2. When the extension is used independently, remove the jib installed at right side of the boom.

3. An optional 18 t hook should be used when the extension is used independently.

4. Be sure to extend the outriggers in position before lifting a load with the extension.

5.5.2 Installation

The extension can only be installed at an angle of 0° onto the boom for both load lifting operations and during transportation.

Way of installing the extension depends on its transportation mode. When it is transported with the crane, it can be installed in the same procedure as that of the jib; when it is transported by a truck, it should be installed by using an auxiliary hoist device.

For the former case, installation of the extension includes an extra step of unfolding its rear installation support as below, while rest of the installation steps is the same as that of the jib:

a）Remove the two connecting pins and take the removable support from the extension's web member, as shown in Figure 5-26.

NOTICE

Prevent the removable support from falling down when removing the pins.

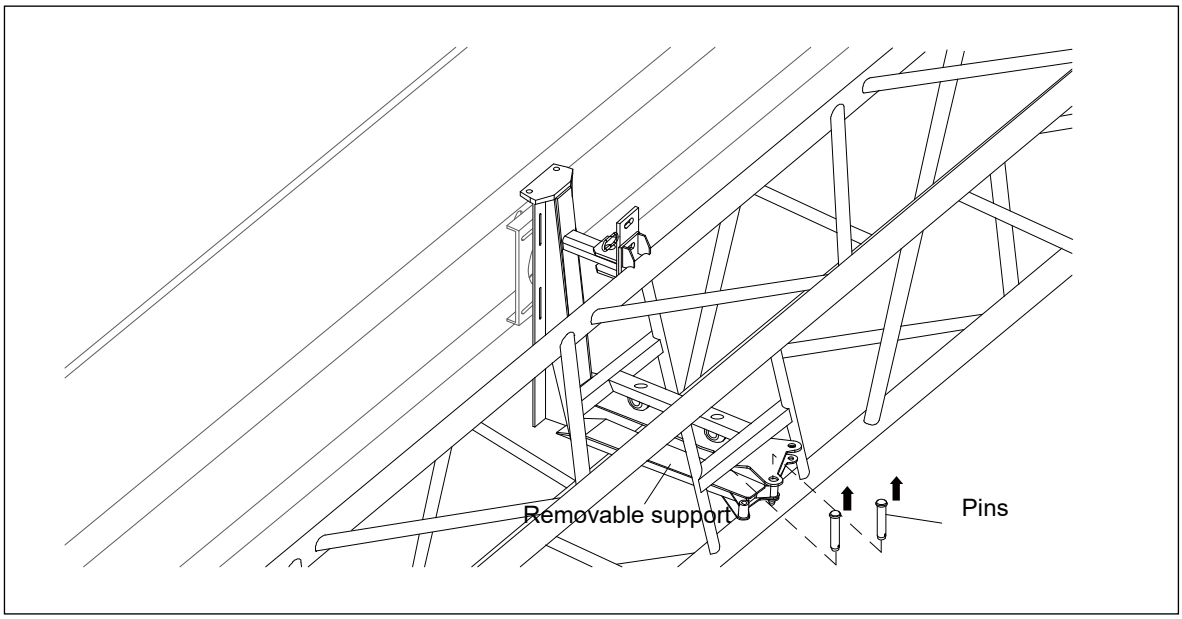


Figure 5-26 Removing the movable support

b）Install the removable support onto the fixing bracket, as shown in Figure 5-27.

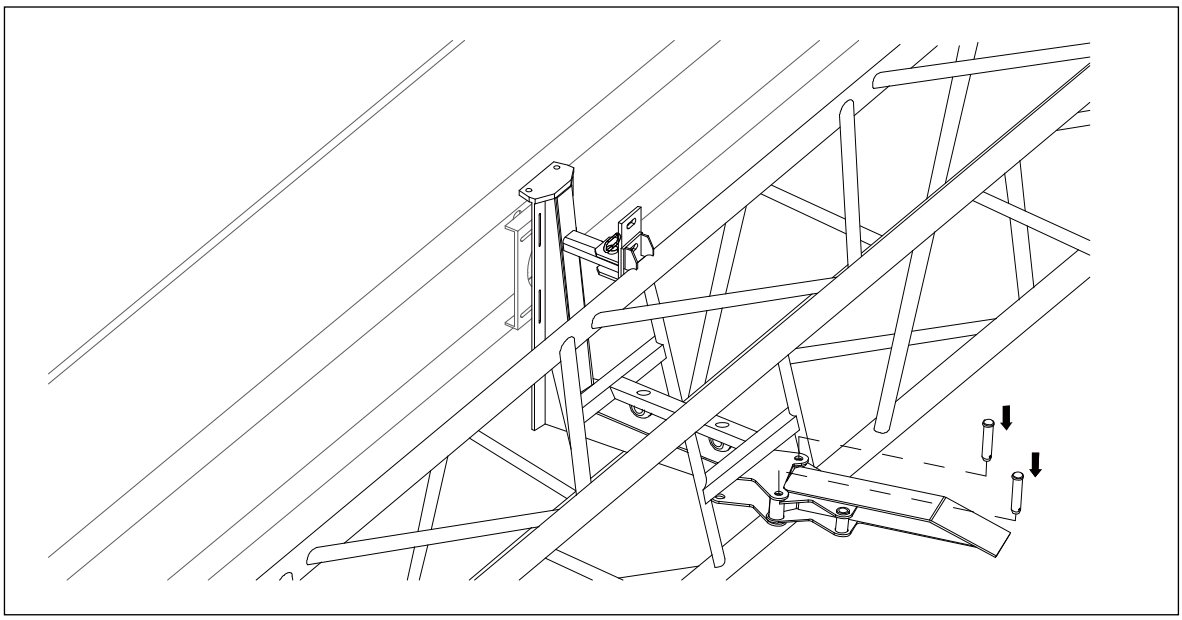


Figure 5-27 Installation of the removable support

5.5.3 Removal

5.5.3.1 Removal for transportation on a truck

After a lifting operation is completed using the extension, remove the extension using a hoisting device and place it onto a truck for transportation.

5.5.3.2 Removal for installation onto the boom

After a lifting operation is completed using the extension, remove the extension using a hoisting device and installed it onto the right side of the boom. Such installation can be done in an order reverse to that of the jib's installation. Retraction of the rear end movable support can be done in an order reverse to that of its unfolding.

CAUTION

Either the extension or the jib can be selected to be transported with the crane.

5.5.4 Reeving in the extension

Wire rope reeving in the extension which is used independently is as shown in Figure 5-28. The wire rope is drawn from the longitudinal direction along the boom directly from the main winch or auxiliary winch, and is winded through the wire rope holder, pulley at head of the boom and pulley I and II at the head of the extension respectively. It is connected to the auxiliary hook at last.

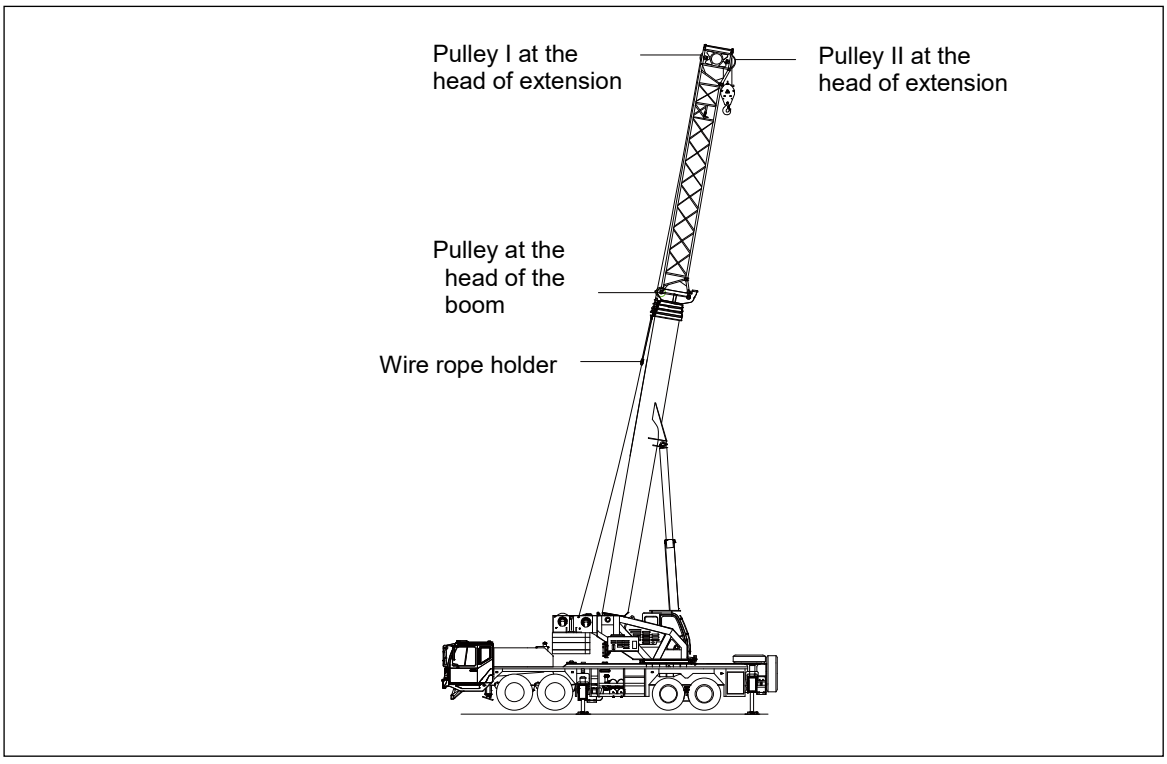


Figure 5-28 Reeving of the auxiliary wire rope

5.5.5 Reeving in the extension and jib

Reeving in the extension and jib is as shown in Figure 5-29.

The wire rope is drawn from the longitudinal direction along the boom directly from the main winch or auxiliary winch, and is winded through the wire rope holder, pulley at end of the jib and pulley at the head of the jib respectively (note: for a two-section jib, the wire rope should be winded through another pulley at head of the box-type section jib). It is connected to the auxiliary hook at last.

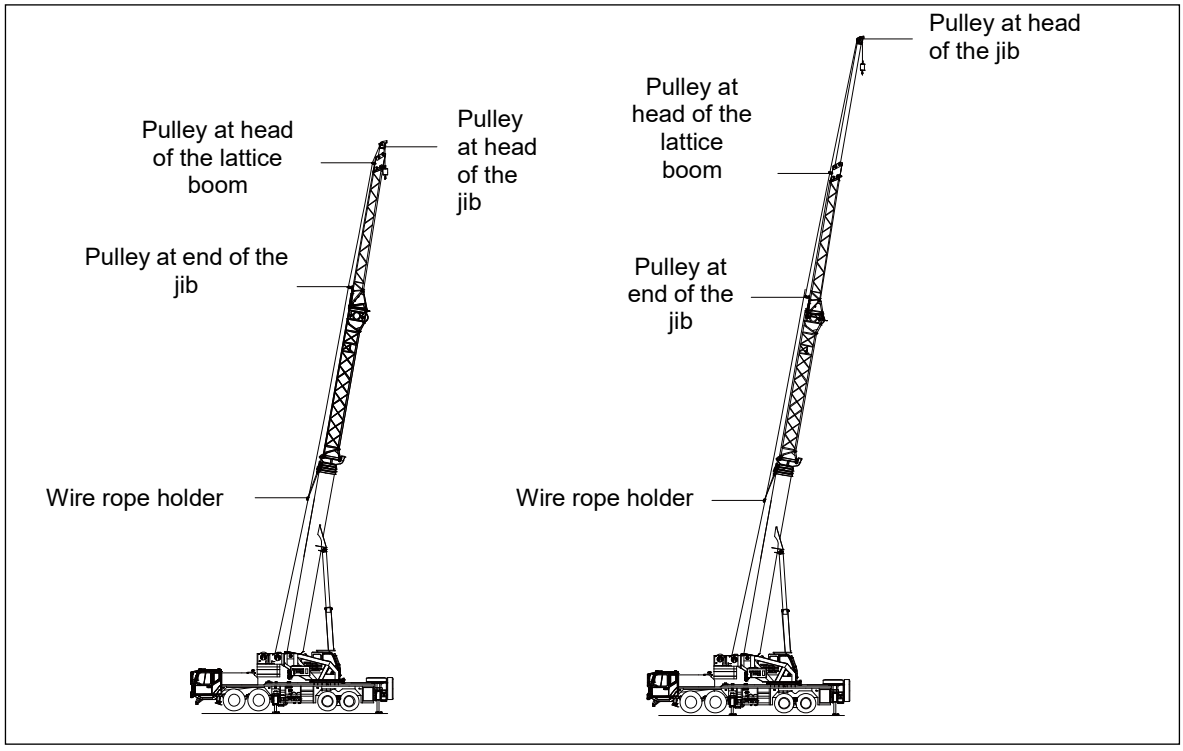


Figure 5-29 Reeving of the auxiliary wire rope

CAUTION

When the extension is used, it is recommended to use the auxiliary winch to ensure that the length of the wire rope is sufficient. Evaluate whether the wire rope is long enough before using the main winch.

5.5.6 Connection of hoisting limit switch

When the extension is used independently, connect the hoisting limit switch in following steps:

- Remove the hoisting limit switch installed in the jib and install it onto the position as shown in Figure 5-30;
- Connect the cable plug of the hoisting limit switch to the socket at front end of the extension;
- Remove the cable plug from the end of the extension and connect it to the socket at head

of the boom.

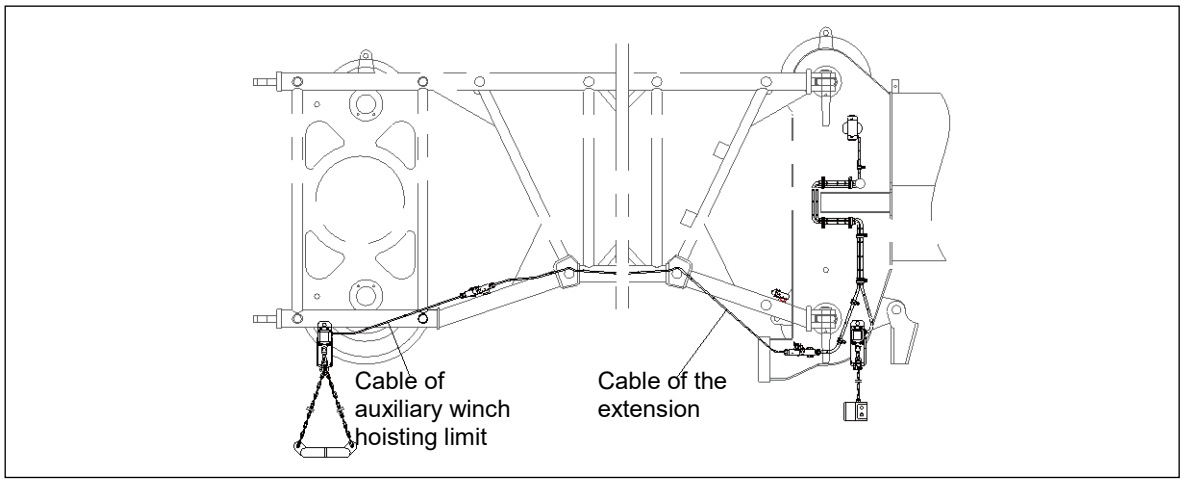


Figure 5-30 Cable connection in the extension

When the extension is used together with the jib, connect the hoisting limit switch in following steps:

- Remove the cable plug at end of the lattice section of the jib and connect it to the socket at front end of the extension;
- Remove the cable plug at end of the extension and connect it to the socket at head of the boom;
- Connect the cable of the jib according to its use conditions.
  Refer to Figure 5-31.

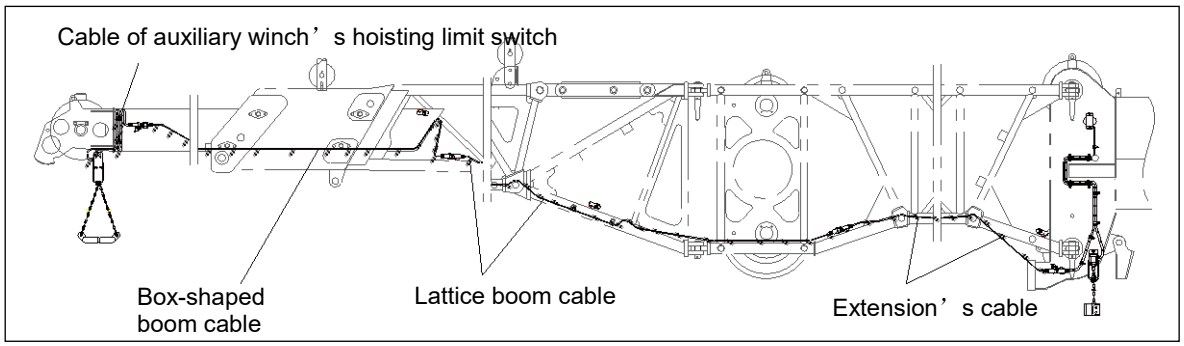


Figure 5-31 Connection of extension's cable

5.6 Counterweight

5.6.1 Counterweight and counterweight handler

Composition of the counterweight assembly is as shown in Figure 5-32:

- One fixed counterweight plate (2 t)
- One auxiliary counterweight plate (11 t)
- One upper movable counterweight plate (4 t)
- One middle movable counterweight plate (5 t)
- One lower movable counterweight plate (5 t)
- Two side counterweight plates (6.5 t *2)

Total weight: 40 tons

There are 6 counterweight variants available.

- **Variant 1**: 2 t in total, consisted of the fixed counterweight plate (2 tons).
- **Variant 2**: 13 t in total, consisted of the fixed counterweight plate (2 tons) + auxiliary counterweight plate (11 tons).
- **Variant 3**: 18 t in total, consisted of the fixed counterweight plate (2 tons) + auxiliary counterweight plate (11 tons) + lower movable counterweight plate (5 tons)
- **Variant 4**: 23 t in total, consisted of the fixed counterweight plate (2 tons) + auxiliary counterweight plate (11 tons) + lower movable counterweight plate 5 (5 t) + middle movable plate (5 tons).
- **Variant 5**: 27 t in total, consisted of the fixed counterweight plate (2 tons) + auxiliary counterweight plate (11 tons) + lower movable counterweight plate (5 tons) + middle movable plates (5 tons) + upper movable counterweight (4 t)
- V**ariant 6**: 40 t in total, consisted of the fixed counterweight plate (2 tons) + auxiliary counterweight plate (11 tons) + lower movable counterweight plate (5 tons) + middle movable plates (5 tons) + upper movable counterweight (4 t) + two side counterweight plates (6.5*2 tons)

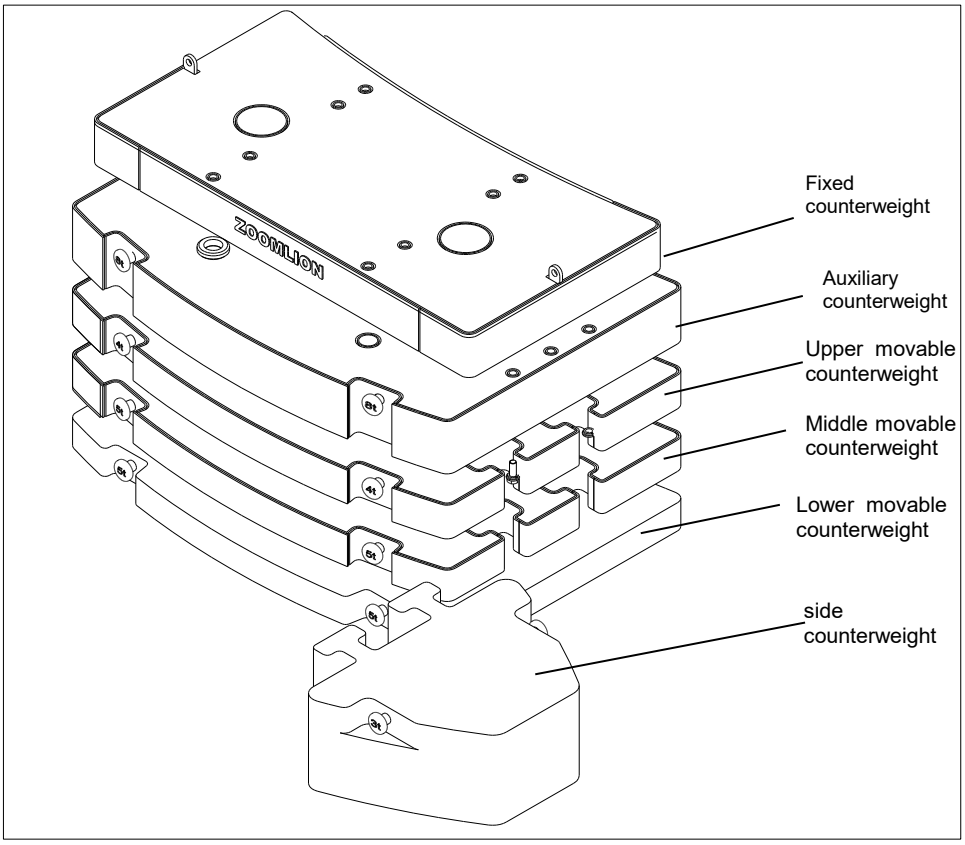


Figure 5-32 Counterweight assembly

Components of the counterweight handler are as follows:

– Counterweight lifting cylinders (left and right)

– Two hydraulic locks and other auxiliary elements.

Refer to Figure 5-33.

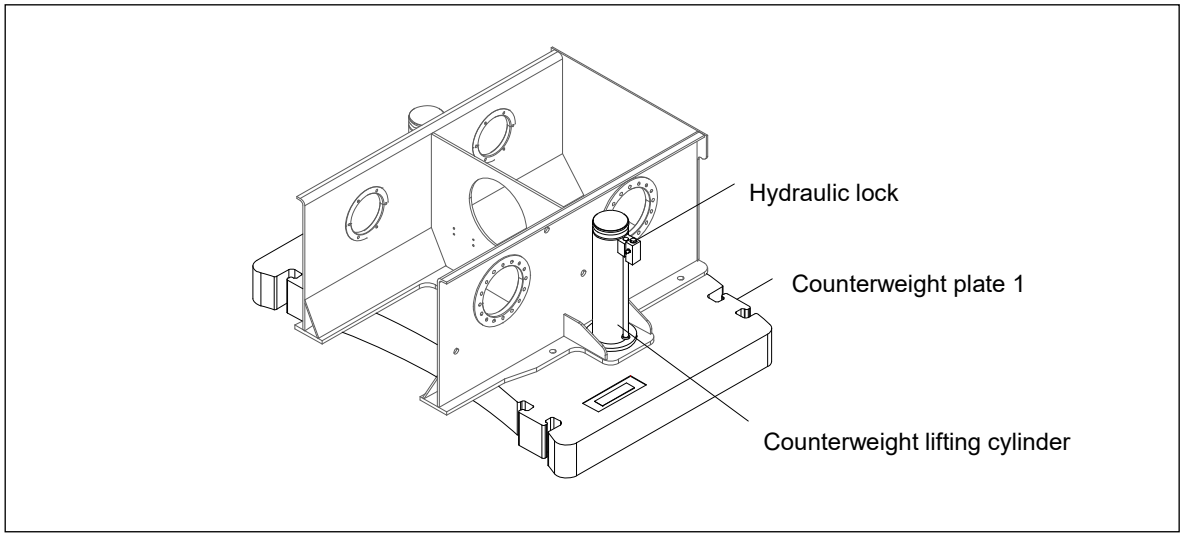


Figure 5-33 Counterweight handler

CAUTION

Risk of accident from toppling of the crane!

Attach counterweight in accordance with the information in the lifting capacity tables.

If a different counterweight than the one list in the lifting capacity table is used, the crane topple over.

5.6.2 Counterweight remote control box

Activate the counterweight remote control in following steps:

- Press the counterweight lifting pre-selection switch.
- Plug in the remote control box's plug into the socket in the middle section of the slewing platform.

The remote transmitter's panel is as shown in Figure 5-34.

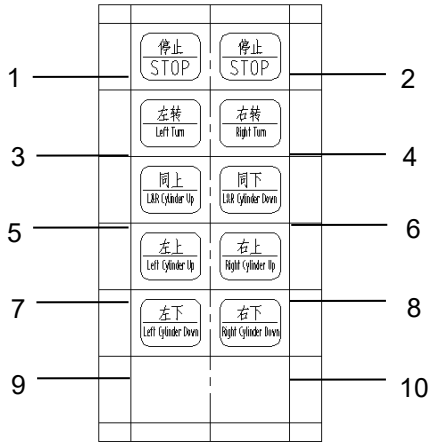


Figure 5-34 Panel of the remote controller of the remote control box

Table 5-1 Description of buttons in the remote transmitter

Pos.	Description	Pos.	Description
1	Button Stop	6	Button Simultaneous lowering
2	Button Stop	7	Button Left counterweight cylinder lifting
3	Button Slewing leftward	8	Button Right counterweight cylinder lifting
4	Button Slewing rightward	9	Button Left counterweight cylinder lowering
5	Button Simultaneous lifting	10	Button right counterweight cylinder lowering

Table 5-2 Function of buttons in the remote transmitter

Pos.	Description	Function description	Remark
1	Button Stop	All movements stop when the button is pressed	
2	Button Stop	All movements stop when the button is pressed	
3	Button Slewing leftward	The slewing platform rotates leftward	The leftward and rightward slewing are interlocked, therefore simultaneous press of the two buttons is invalid
4	Button Slewing rightward	The slewing platform rotates rightward	
5	Button Simultaneous lifting	The left and right counterweight cylinders are lifted simultaneously after this button is pressed.	Following operations are interlocked with each other. When two buttons for controlling two interlocked operations are pressed simultaneously, the control output is invalid: - Lifting and lowering of the left counterweight - Lifting and lowering of the right counterweight - Simultaneous lifting and left/right counterweight lowering - Simultaneous lowering and left/right counterweight lifting
6	Button Simultaneous lowering	The left and right counterweigh cylinders are lowered simultaneously after this button is pressed.	
7	Button Left counterweight cylinder lifting	The left counterweigh cylinder is lifted after this button is pressed.	
8	Button Right counterweight cylinder lifting	The right counterweigh cylinder is lifted after this button is pressed.	
9	Button Left counterweight cylinder lowering	The left counterweigh cylinder is lowered after this button is pressed.	
10	Button right counterweight cylinder lowering	The right counterweigh cylinder is lowered after this button is pressed.	

Before operating the remote controller, place the key strip into the key groove. The indicator light flashes once. After the remote controller sends control signals, the indicator light flashes continuously.

5.6.3 Assembly

Assemble the counterweight system in following steps:

a) Extend all outriggers to support the crane and adjust its levelness.

b) Retract fully the counterweight lifting cylinder.

c) Ensure that there are no personnel standing in the crane's slewing range as well as no device which can be damaged during the process.

d) Prepare slings of sufficient strength.

e) Lift the lower movable counterweight plate to the fixing block by operating the crane; lift other counterweight plates as necessary.

f) After settling the counterweight plates, press the pre-selection switch of counterweight lifting and air conditioner.

g) Plug in the counterweight remote control box's plug into the socket in the middle section of the slewing platform. Hereby the remote control box becomes operational.

h) Connect the remote control box and then slew the slewing platform clockwise, until the counterweight lifting cylinder sits into the side position of the mounting groove of the lifting drum.

i) Extend the counterweight lifting cylinder fully.

j) Continue to slew the slewing platform clockwise, until the cylinder sit into the installation slot of the lower movable counterweight plate's lifting cylinder.

k) Retract the counterweight lifting cylinder fully, until an overflow sound from the overflow valve can be heard. Hereby the counterweight is lifted to its position.

⚠ CAUTION

a) When driving with different counterweight combinations, the crane's highest driving speed is different as follows:

- **Driving status 1: when the crane is installed with 2 t counterweight, i.e. the fixed 3 t counterweight plate, the crane's highest driving speed is limited to 85 km/h.**
- **Driving status 2: when the crane is installed with 13 t counterweight, i.e. the fixed 2 t counterweight plate + 11 t auxiliary counterweight plate, the crane's highest driving speed is limited to 80 km/h.**
- **Driving status 3: when the crane is installed with 18 t counterweight, i.e. the fixed 2 t counterweight plate + 11 t auxiliary counterweight plate + 5 t lower movable counterweight plate (at the counterweight mounting seat), the crane's highest driving speed is limited to 75 km/h**
- **Driving status 4: when the crane is installed with 23 t counterweight, i.e. the fixed 2 t counterweight plate + 11 t auxiliary counterweight plate (at end of the slewing platform) + 5 t lower movable counterweight plate + 4 t middle movable counterweight plate (in front of the operator's cab), the crane's highest driving speed is limited to 50 km/h.**
- **Driving status 5: when the crane is installed with 27 t counterweight, i.e. the fixed 2 t counterweight plate + 11 t auxiliary counterweight plate (at end of the slewing platform) + 5 t lower movable counterweight plate + 5 t movable middle counterweight plate + 4 t upper movable counterweight plate (in front of the operator's cab), the crane's highest driving speed is limited to 50 km/h.**

b) Driving the crane on highway under the driving status 2, 3, 4 and 5 can shorten the service lift of driving axles, tires and suspensions.

Refer to Table 5-3 for the highest traveling speed and maximum gradeability corresponding to

different counterweight combinations and driving status:

Table 5-3 highest traveling speed and maximum gradeability corresponding to different counterweight combinations

Driving status	Counterweight combinations	Speed limit		Gradeability limit	
		Gear position	Highest speed (km/h)	Gear position	Max. gradeability (%)
Status 1	2t	10th gear	85	1st gear	42
Status 2	2t+11t		80		33
Status 3	2t+11t+5t		75		30
Status 4	2t+11t+5t+5t	9th or 10th gear	50		28
Status 5	2t+11t+5t+5t+4t		50		26

DANGER

It is strictly prohibited to driving the crane on high way or for long distance under the driving status 4 and 5; otherwise accident or serious injury would be resulted!

ZOOMLION

Truck Crane Operator'S Manual

Chapter 6 Additional Equipment

Chapter 6 Additional Equipment

6.1 Air conditioning in driver's cab

6.1.1 Operating methods

The control panel is on the center console in the driver's cab.

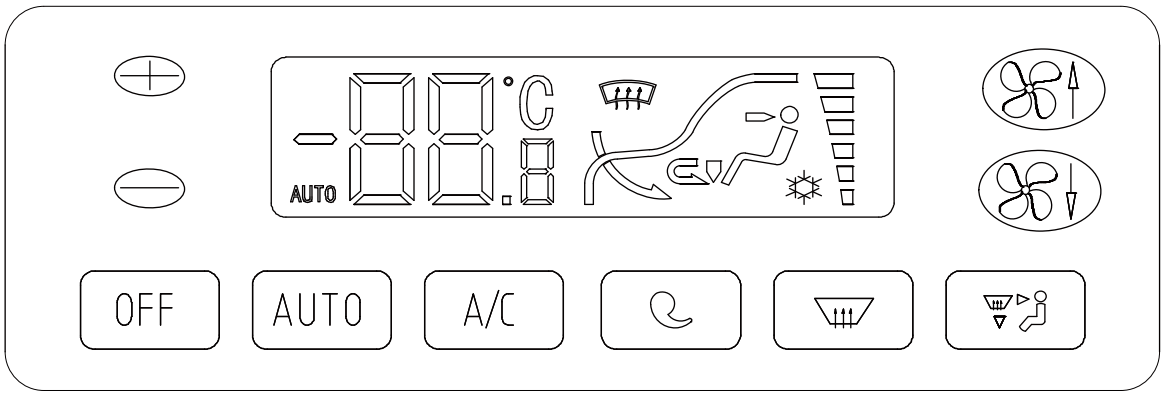


Figure 6-1 Control panel, A/C and cab heater

6.1.1.1 Symbol identification

Table 6-1 Symbol identification

Symbol	Description	Symbol	Description
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

6.1.1.2 Buttons

a) **Temperature adjustment button**

Pressed:

Increase / decrease the temperature.

b) **Fan speed button**

Pressed:

Increase / decrease the fan speed.

c) **OFF button**

Pressed:

Turn off the air conditioning system.

d) **AUTO button**

Pressed:

Activate the auto operating mode.

Pressed again, or the A/C or front window air supply button is pressed:

Exit auto operating mode.

e) **A/C button**

Pressed:

A/C begins to refrigerate.

f) **Circulation button**

Pressed:

Changeover interior / outer air circulation.

g) **Front window air supply button**

Pressed:

Enter the front window air supply mode.

h) **Mode button**

Pressed:

Changeover different air supply modes.

WARNING

Do not use the cab heater during driving if engine coolant temperature is below 70ºC.

CAUTION

(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 ensure 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 after when you do not use it for a long time.

(9) In summer, close the shutoff gate valve on the hot-water pipe of cab heater at the bottom of driver's cab. Otherwise refrigeration effect may be affected. In winter, open the shutoff gate valve to make hot water enter into the cab heater.

6.2 Air conditioning in operator's cab

In order to provide a comfortable environment, the operator's cab is equipped with air conditioning and cab heater. Adjust the room temperature via the control panel.

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 6-4.

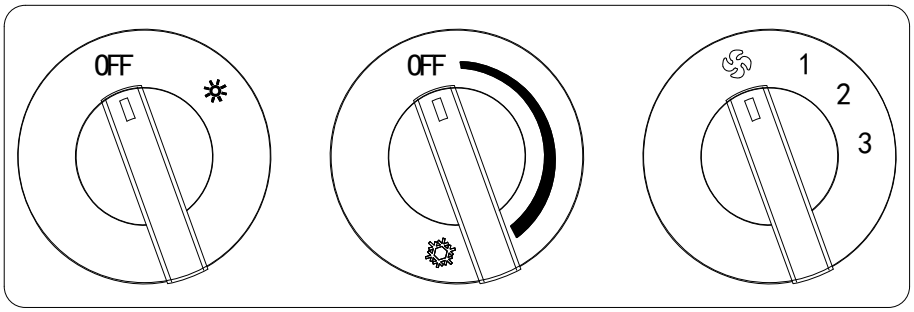


Figure 6-4 A/C control panel

6.2.1 Air conditioning

Do the items that follow.

a) Turn the A/C FAN SPEED SWITCH to position "1", "2" or "3".

b) 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

a) 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 6-4 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 6-4.

6.2.2.1 Operating conditions

a) Ambient temperature ≥ -40ºC, height above sea level ≤ 3000 m.

b) It cannot be immerged 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 6-5.

Table 6-5 Fuel selection

Ambient temperature	Above 5ºC	Above -5ºC	Above -15ºC	Above -30ºC	Above -40ºC
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 6-6.

Table 6-6 Antifreeze selection

Ambient temperature	Above -25ºC	Above -40ºC
Antifreeze	-25ºC antifreeze	-40ºC 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 80ºC.

The cab heater stops work automatically and the control light "Cab heater state" extinguishes.

d) When the water temperature is lower than 65ºC.

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.

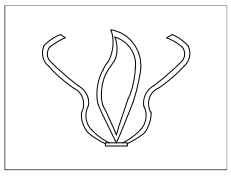


Figure 6-5 Control light “Cab heater state”

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 6-7 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.
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.

Problems	Causes	Remedy
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.
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.

ZOOMLION

Truck Crane Operator'S Manual

Chapter 7 Transportation and Storage

Chapter 7 Transportation and Storage

7.1 Transportation

This crane can drive on road, and it can also be transported by other carriers for a long distance. During transportation, chock the wheels and secure 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.

Carry out the following items before lifting. It is recommended to use special lifting device.

a) Extend four outrigger beams to about 4800 mm.

b) Wind the outriggers with wire rope.

c) Place the hook above the center of gravity of complete vehicle.

Refer to Figure 7-1.

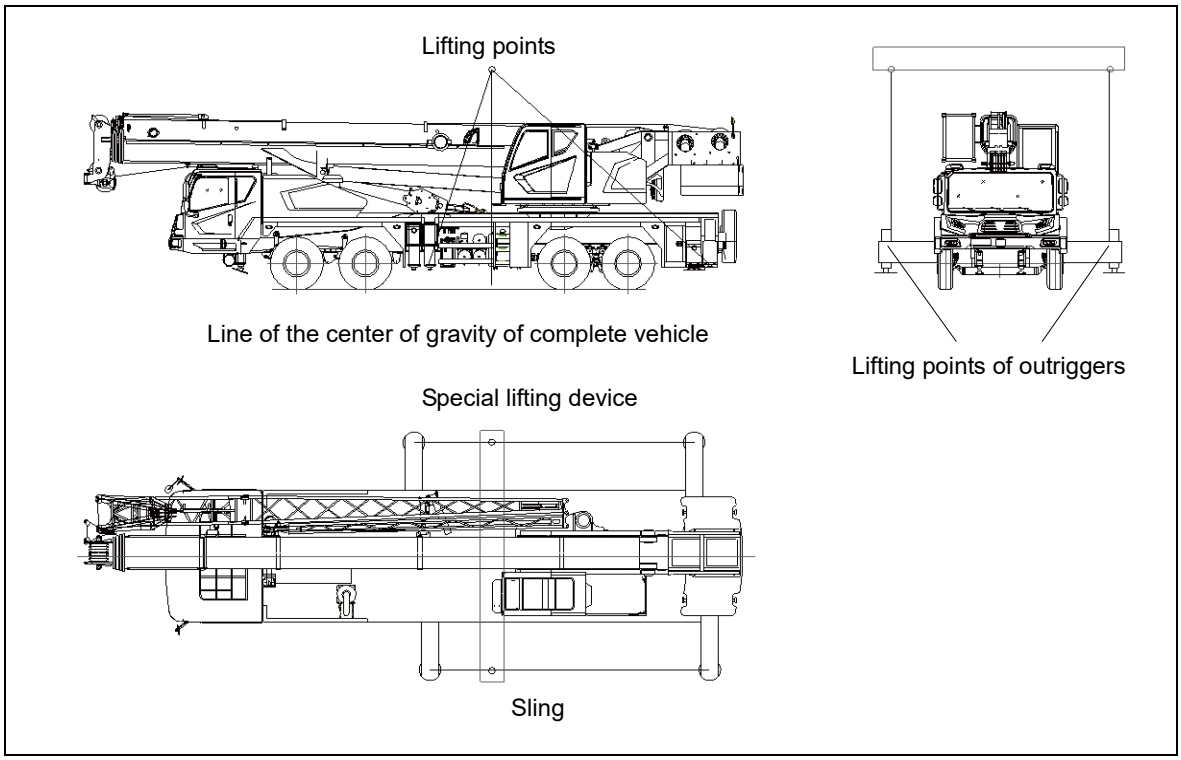


Figure 7-1 Lifting points

WARNING

Before lifting the crane, make sure that the slings have sufficient strength.

7.2 Storage

To store the crane for a long time:

a) Lock the doors and the windows, and switch off control instruments.

b) Clean contaminants off from 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 wooden blocks below the tires.

f) Turn off the engine and switch off the battery master switch.

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) 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) Store the crane in a garage. If not possible, protect it from the rain, thunder and freeze.

k) If you do not operate the crane for more than three months:
Operate the engine at idle speed for one hour in the three-month interval.

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) Conduct a general inspection of the engine to see if you must replace the coolant, diesel oil, and air filters.

m) Make sure that a specialized person is assigned to make sure that the crane is prepared for operation.