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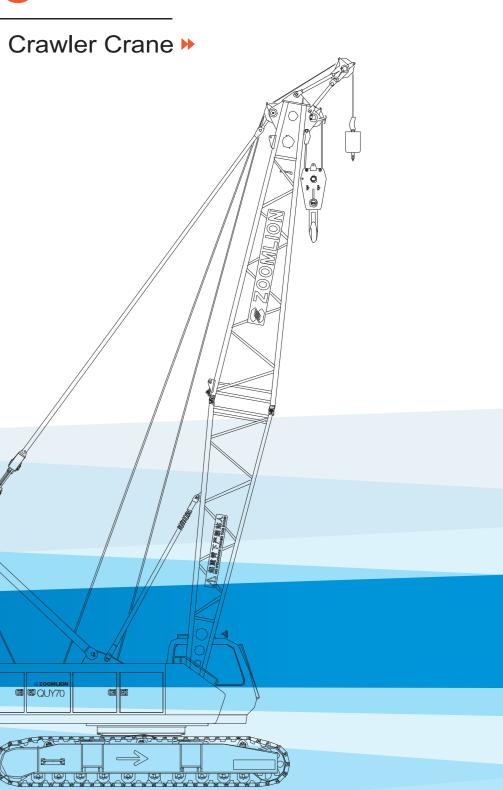
QUY70

Zoomlion QUY70 Crawler Crane >>

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2010.4



Contents

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I. External D

- 1. External Di
- 2. Main Perfor
- 3. External Di

II. Technica

- 4. Boom Syste
- 5. Mechanism
- 6. Systems
- 7. Safety Dev
- 8. Control Roo
- 9. Hook
- III. Descript

IV. Self-Mou

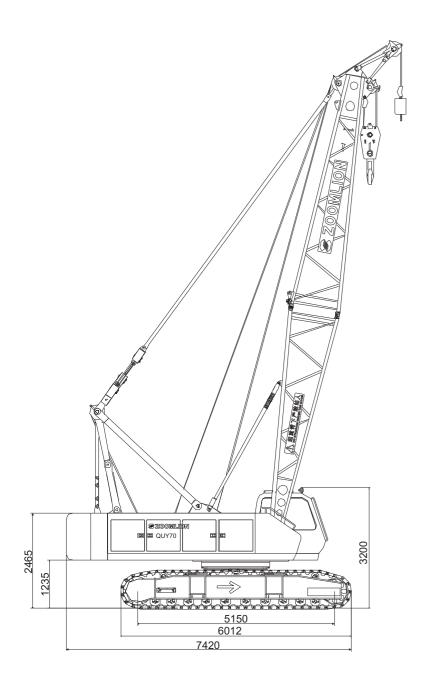
V. Lifting Pe

10. Lifting Cha 11. Lifting Cha

Dimensions and Main Parameters	
imensions of Entire Crane, including Basic Boom	01
rmance Parameters	02
imensions and Weight of Main Transport Components	03
I Descriptions	
lem	05
ns	05
	06
rices	07
om	07
	07
tion of Boom Assembly	08
unting and Dismounting Functions	09
erformance	
aracteristics of Main Boom	11
aracteristics of Main Boom + Fixed Jib	14

I. External Dimensions and Main Parameters

1. External Dimensions of Entire Crane, including Basic Boom



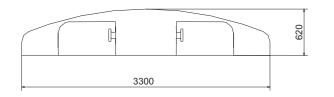
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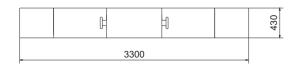
2. Main Performance Parameters

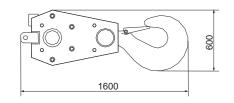
	lte	ms	Unit of measurement	Values	Remarks
Maximum lif	fting capacity	< radius	t × m	70 × 3.8	
Deadweight	of crane with	basic boom	t	61	
Length of m	ain boom		m	12~57	
Length of fiv	ked jib		m	6~18	
Maximum lif	fting capacity	with fixed jib	t	6.4	
Setting ang	le of fixed jib			10,30	
Main boom	+ fixed jib		m	42 + 18	
	Primary lif	ting	m/min	120	Fourth layer of drum
Speed of single rope	Secondary	/ lifting	m/min	120	Fourth layer of drum
on drum	Luffing		m/min	45	Fourth layer of drum
Swiveling sp	peed		rpm	0~2.4	
Traveling sp	beed		km/h	0~1.35	
Gradeability	1		%	30	Basic boom, with frontal counterweight placement
Ground pres	ssure		Мра	0.074	
Overall dime	ensions (L × V	/ × H)	mm	12400 × 3300 × 3200	Incl. A-bracket, base section of boom
		Rated power/ rotational speed	kW/rpm	175/2200	
	Weichai Euro II	Maximum output torque/ rotational speed	Nm/rpm	1000/1400~1600	
		Emissions standard		EU Stage II	
Engine		Rated power/ rotational speed	kW/rpm	153/1800	
	Cummins (USA)	Maximum output torque/ rotational speed	Nm/rpm	929/1300	
		Emissions standard		TIER3	
	tween track co	enters ×	mm	2540 × 5150 × 760	With crawler carrier retracted
crawler cont crawler sho	tact length × e width		mm	4000 × 5150 × 760	With crawler carrier extended

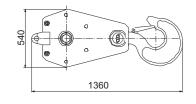
3. External Dimensions and Weight of Main Transport Components

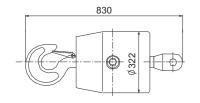












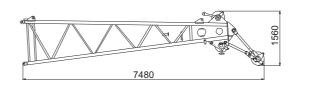
Name	Counterweight block
Weight (t)	12
Quantity	1
Remarks	Height 1230mm
	-

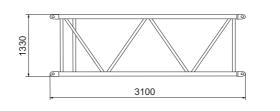
Name	Counterweight block
Weight (t)	9.87
Quantity	1
Remarks	Height 1230mm

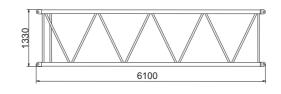
Name	Hook (70T)	
Weight (t)	0.76	
Quantity	1	
Remarks	Width 820mm	

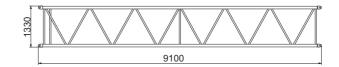
Name	Hook (30T)
Weight (t)	0.38
Quantity	1
Remarks	Width 370mm

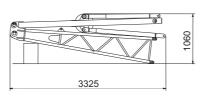
Name	Hook (6T)	
Weight (t)	0.18	
Quantity	1	
Remarks	Width 320mm	

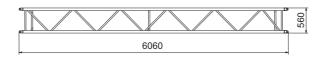


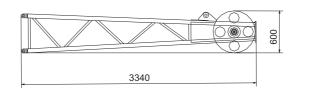












Name	Top section of main boom (with gooseneck boom)
Weight (t)	0.95
Quantity	1
Remarks	Width 1450mm

Name	Standard arm of main boom (3m)
Weight (t)	0.29
Quantity	1 piece
Remarks	Width 1450mm

Name	Standard boom of main boom (6m)
Weight (t)	0.53
Quantity	1 piece
Remarks	Width 1450mm

Name	Standard boom of main boom (9m)
Single piece (t)	0.63
Weight (t)	2.52
Quantity	4
Remarks	Width 1450mm

Name	Base section of jib (Including brace poles and bracing pole of jib)
Weight (t)	0.58
Quantity	1
Remarks	Width 560mm

Name	6m standard boom of jib
Weight (t)	0.16
Quantity	2
Remarks	Width 560mm

Name	Top section of jib
Weight (t)	0.25
Quantity	1
Remarks	Width 560mm

II. Technical Descriptions

4. Boom System

Truss-type structure and high-strength tubing. Main boom

Length of main boom: 12~57m

Length of intermediate section of main boom: 3m, 6m, and 9m

Table of Main Boom Lengths Configuration Combinations

Length of	Number of standard sections for corresponding lengths of main boom (pieces)						
main boom (m)	3m section	6m section	9m section				
15	1	0	0				
18	2	0	0				
21	1	1	0				
24	2	1	0				
27	1	2	0				
30	1	1	1				
33	2	1	1				
36	1	2	1				
39	1	1	2				
42	2	1	2				
45	1	2	2				
48	1	1	3				
51	2	1	3				
54	1	2	3				
57	1	1	4				

Note: the table above shows recommended configurations optionally sold according to boom length rather than standard configurations; the actual contract shall be the basis for reference.

Fixed jib

Length of main boom (operating mode of jib): 30m~42m

Length of fixed jib: 6~18m Length of intermediate section of fixed jib: 6m

Maximum length of main boom + fixed jib: 42 + 18m

5. Mechanisms

Primary lifting mechanism

The primary lifting mechanism is composed of an internal axial plunger hydraulic motor, balance valve, reducer, normally closed brake and wire rope. It can be controlled independently of other mechanisms.

The primary lifting mechanism is dual-speed, offering two different lifting speeds to improve operational efficiency.

	Wire rope diameter	20mm
	Wire rope length	240m
Main winch	Single rope speed (4th layer)	0~120m/min
	Single rope tension	69kN

Secondary lifting mechanism

This mechanism is composed of an internal axial plunger hydraulic motor, balance valve, reducer, normally closed brake and wire rope. It can be controlled independently of other mechanisms.

The secondary lifting mechanism is dual-speed, offering two different lifting speeds to improve operational efficiency.

Auxiliary	Wire rope diameter	20mm
Auxiliary	Wire rope length	160m
winch	Single rope speed (4th layer)	0~120m/min
	Single rope tension	69kN

Luffing mechanism

This mechanism is composed of an internal axial plunger hydraulic motor, balance valve, speed reducer, normally closed brake, pulley block and wire rope. It can be controlled independently of other mechanisms.

The luffing mechanism has a ratchet auto-locking protection mechanism, which prevents the luffing winch from slipping after being parked for long periods of time.

Luffing winch	Wire rope diameter	20mm
Luffing	Wire rope length	120m
winch	Single rope speed (4th layer)	0~45m/min
	Single rope tension	71kN

Slewing mechanism

The slewing mechanism is composed of an internal axial plunger hydraulic motor, gear reducer, slewing brake valve, brake, pinions and slewing bearing. The pinion-driven slewing bearing allows for full 360° slewing movement, thereby providing slewing functionality to the upper machinery.

The slewing mechanism employs internal geared slewing bearings and a slewing speed reducer to provide strong carrying capacity and high precision, thereby ensuring slewing stability and accuracy.

The slewing mechanism offers stepless speed regulation within the range of $0 \sim 2.4 r/min$.

The slewing mechanism is lockable through the mechanical locking device located at the front of the rotating platform.

Traveling mechanism

The traveling mechanism is a dual-motor and dual-reducer type. With two control handles for respective control of the two crawlers' movement, this traveling mechanism can perform straight line traveling, unilateral steering, differential steering, pivotal steering, driving with load, etc., thus offering a high level of maneuverability and flexibility.

Traveling speed: 0~1.35km/h (on solid horizontal surface, main boom carrying no load).

Gradeability: 30%

The crawlers are tensioned through jacks, making adjustment is fast, easy and reliable.

A-bracket mechanism

This mechanism is composed of the A-bracket, A-bracket anchoring rods, self-mounting and dismounting anchoring rods, etc. While the vehicle is self-assembling/disassembling (or relocating), the A-bracket is rotated backwards to allow for easy connecting of the anchoring rods as well as for mounting and dismounting of the counterweight.

During transport, the A-bracket lies flat on the back of the rotating platform.

Counterweight and counterweight loading/unloading mechanism

The counterweight is composed of 2 counterweight blocks, counterweight mounted pins, counterweight anchoring screws, etc.

The counterweight loading/unloading mechanism is composed of a counterweight anchoring rod, A-bracket rear anchoring rod, A-bracket front bracing pole, luffing pulley block, the base section of main boom, a sway rod of main boom and more. Its function is to properly assemble the counterweight on the vehicle in order to maintain balance, or to remove it from the vehicle to allow for the self-mounting and dismounting of the counterweight.

Crawler retraction mechanism

The crawler retraction and control mechanism is composed of outriggers, horizontal cylinders, crawler carrier assembly, anchoring rod, latch, etc. Switch between traveling mode and retraction mode is achieved through the control handle on the lower part of frame face. Traveling and retraction are controlled by the electronic handle located in the control room.

6. Systems

Hydraulic system

The hydraulic system is composed of a main pump, control valve, motor, hydraulic oil tank, cooler, etc.

The hydraulic system adopts one of the world's most advanced pump control system, to save energy, ensure high efficiency, high reliability, and long service life.

Main hydraulic pump: domestically produced (Chinese) plunger pump, powered by the engine. The rotary pump used is imported.

Oil source for auxiliary mechanisms: gear pump.

Main control valve: pilot electro-hydraulic control valve.

Main circuit control method: variable displacement valve + main directional control valve of the variable displacement main pump, which is centrally controlled by two control handles.

Capacity of hydraulic oil tank: 700L.

Cooler: aluminum radiator, with electrically powered fan.

Various overflow valves in the hydraulic system can suppress abnormally high pressure in the circuit, preventing damage to the hydraulic oil pump and motor and preventing system overload.

Electrical system

24V DC, negative ground, two 165AH batteries.

The electrical components of the vehicle primarily include: power supply, engine control, indicator lights, lighting devices, fans, windshield wipers, horn, lifting height limiter, hydraulic oil cooling fan, digital display, PLC controller, safety devices, etc. These appliances ensure that the crane will operate safely and provide a comfortable working environment for the driver and other workers. The whole vehicle uses CAN bus technology, which connects the engine, PLC controller and digital display together, with fault detection and self-diagnosis functions.

Power system

The Weichai (Cummins) engine is an in-line six-cylinder turbocharged water-cooled engine

Fuel tank: 300L, which ensures a sufficiently long working time for the engine.

Emission standard: EU Stage II (TIER 3)

Centralized display system

The system features an 11-inch large-screen LCD display with multiplelanguage display functions. It can centrally display all types of working condition signals collected by PLC controller, including engine rotational speed, water temperature, oil pressure, hydraulic pump pressure, main motor pressure, main machine operation levels, wind speed, working hours of engine, etc. and monitor the working conditions in realtime. When the crane is working abnormally, the system will send out a yellow or red alarm.

Monitoring system

The monitoring system includes a camera which can monitor the condition of the winch mechanism. Monitor: with the press of a button you can toggle between different monitoring feeds.

Remote GPS monitoring system

This system allows for GPS satellite positioning, GPRS data transmission, equipment use status inquiry, statistical information, remote fault diagnosis and other functions.

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7. Safety Devices

Load moment limiter

This limiter is composed of a load moment indicator and digital LCD monitor. The alarm light will light on and a buzzer alarm will sound when the lifting load moment reaches 90% of the rated load moment; an alarm signal will be sent out and operation of the crane will stop automatically when the lifting load moment reaches or exceeds the maximum rated load moment in order to prevent any accident that might occur as a result of overloading, and to ensure normal and safe operation of the crane.

The digital LCD monitor can display the following data:

Moment ratio Main boom elevation angle Length of main boom Working radius Actual hook load Allowed lifting load Maximum allowed lifting height

Height limiter devices

The limit switch, movement weight and other components are mounted on the top section boom, and are used to prevent excessive lifting of the hook. When the hook has been raised to a certain height, the limit switch signals the electrical system to automatically stop the lifting of the hook, also setting off an acoustooptic warning through the buzzer and display screen in the control room to prevent overwinding of the hook.

Angle indicator

The boom angle indicator is located at the lower rear side of the boom's bottom section (right side of control room), allowing the driver convenient, clear visibility of the elevation angle of the boom from the control room.

Working boom limiting position alarm and protection system

This protection system has a load moment limiter and limit switch for dual-level control, enabling automatic termination of luffing movements of the boom's limited elevation angle position, while also simultaneously triggering an acoustooptic warning.

Wire rope over-release protection device

When the wire rope in the drum has been released until only three single wound coils remain, this protection device signals the electrical system to automatically cut off the releasing of rope and the descending hook, also setting off an acoustooptic warning through the buzzer and display screen in the control room.

Wind speed indicator

The electronic wind speed sensor can indicate wind speed levels on digital display screen in realtime, conveniently alerting workers of potentially dangerous working conditions.

Hook safety latch

This device prevents the load from unhooking when lifting heavy loads.

Boom overturn protection device

The brace poles, which are of a nested steel tube and spring structure, are mounted at the base section of the main boom. They employ springloaded compression force to provide support and to prevent the main boom from overturning.

Luffing winch ratchet locking mechanism

The luffing winch ratchet locking mechanism prevents luffing decline when the vehicle is parked for long periods of time.

Emergency stop button

In case of emergency, pressing this button will switch off all electric control systems and engines and stop all operations.

Tri-color warning light

With three different colors, red, yellow and green, the warning light can synchronously indicate current overload status. Green indicates that the load factor is below 90%, yellow informs operators that the load factor is between 90% and 100%, while the red color warns that the load factor has exceeded 100% and that the crane is in danger of overloading.

8. Control Room

The structure of the control room is made entirely of steel, is surrounded by reinforced glass on all four sides, and has laminated glass for its surroof and windshield. The interior is equipped with a sun shield on the right side, adjustable seat, windshield wipers, electric control handle, load moment indicator, digital displays, various switches, auxiliary remote control box operation assembly, air conditioners, electric fans, illuminating lamps, radio (CD player and car DVD are optional), fire extinguishers, and more. The control room offers a broad field of vision, and is spacious and comfortable.

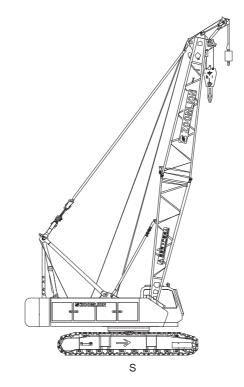
9. Hook

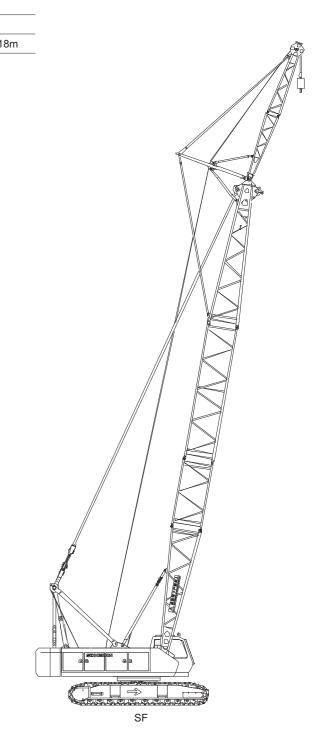
70t main hook: equipped with 6 pulleys 30t main hook: equipped with 2 pulleys 6t hook: without pulleys

III. Description of Boom Assembly

Descriptions of Boom Assembly Codes

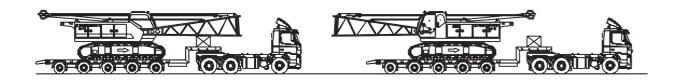
Code	Туре	Operation mode parar	meters
S	Main boom	Main boom: 12~57m	
SF	Fixed jib	Main boom: 30~42m	Jib: 6~18

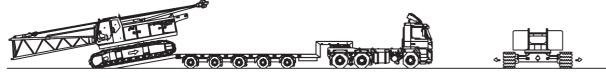




IV. Self-Mounting and Dismounting Functions

(Taking the self-mounting process of the crane operation with fixed jib as an example)





Unloading of main machine

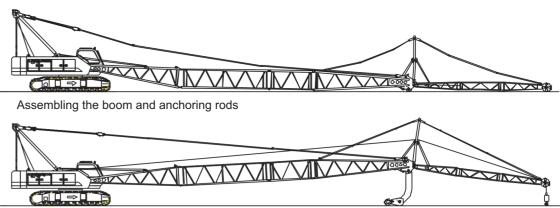
With crawler carrier extended

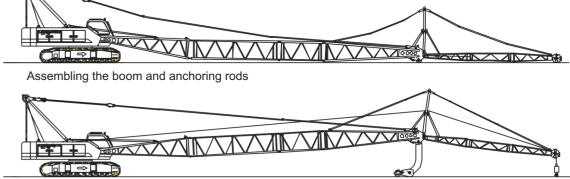




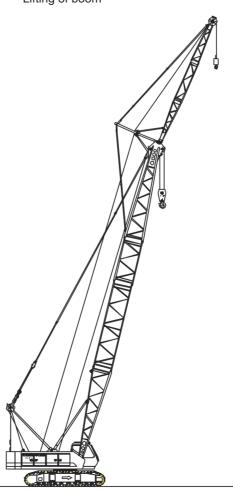


Unloading and assembling of counterweight





Lifting of boom



Operating mode

V. Lifting Performance

10. Lifting Characteristics of Main Boom

Main Boom Lifting Height Characteristics Curve

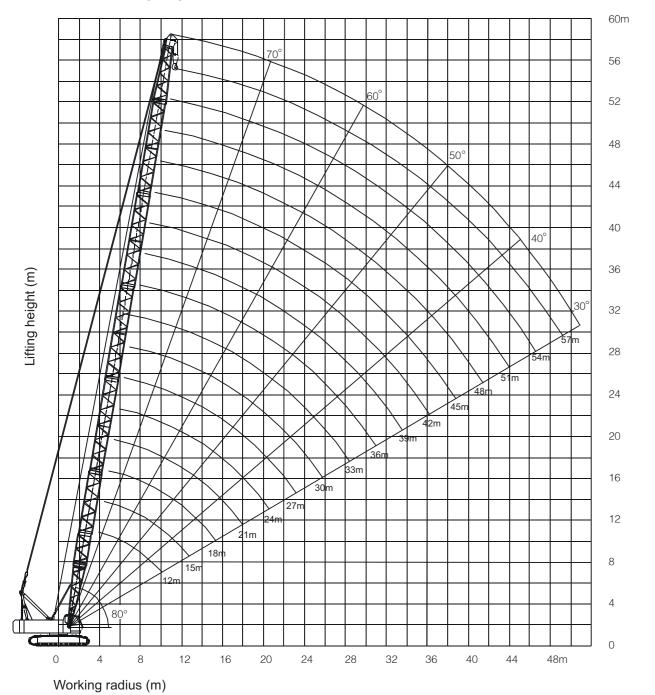


Table of Main Boom Lifting Performance (I)

Length of main boom (m)	12	15	18	21
Parts of line	12	12	10	8
Radius (m)				
3.8	70			
4	65	65	58.2/4.1	51.2/4.6
5	53.6	52.3	51	49.8
6	40.5	40.1	39.3	38.5
7	32.1	32	31.8	31.2
8	26.6	26.5	26.4	26.2
9	22.6	22.5	22.4	22.3
10	19.7	19.5	19.4	19.3
12		15.4	15.3	15.1
14		12.6	12.5	12.4
16			10.5	10.4
19				8.3
20				
22				
24				
26				
28				
29				

Notes:

1. Values in lifting performance table include the weight of the hook and of the wire ropes from the head of the

boom to the hook. 2. When a gooseneck boom is used to lift a load, the lifting capacity is equal to the single rope tension of the main boom's lifting capacity at the same boom length and radius.

24	27	30	33
8	6	6	6
44.2/5.2	37/5.7		
37.7	36.9	34/6.2	30.4/6.7
30.6	30.1	29.5	28.9
25.8	25.3	24.8	24.3
22.2	21.8	21.4	21
19.2	19.1	18.7	18.4
15	14.9	14.8	14.6
12.2	12.1	12	11.9
10.2	10.1	10	9.9
8.1	8	7.9	7.8
7.6	7.5	7.3	7.2
6.7	6.5	6.4	6.3
	5.8	5.7	5.5
		5	4.9
			4.4
			4.1

Unit of measurement: t

11. Lifting Performance of Main Boom + Fixed Jib

Main Boom + Fixed Jib Lifting Height Characteristics Curve (I)

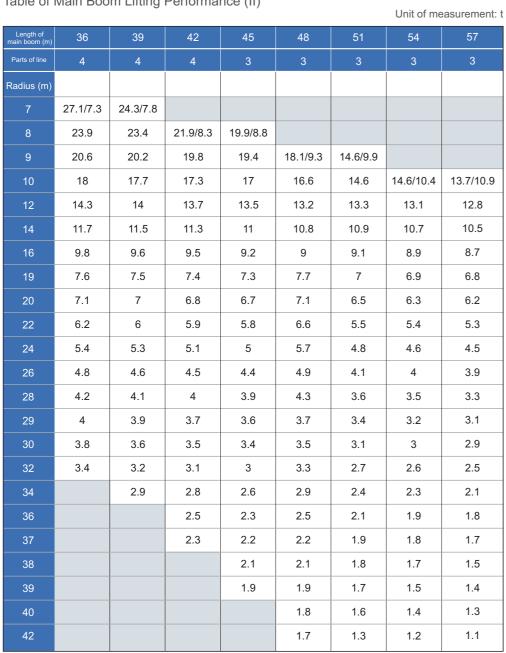
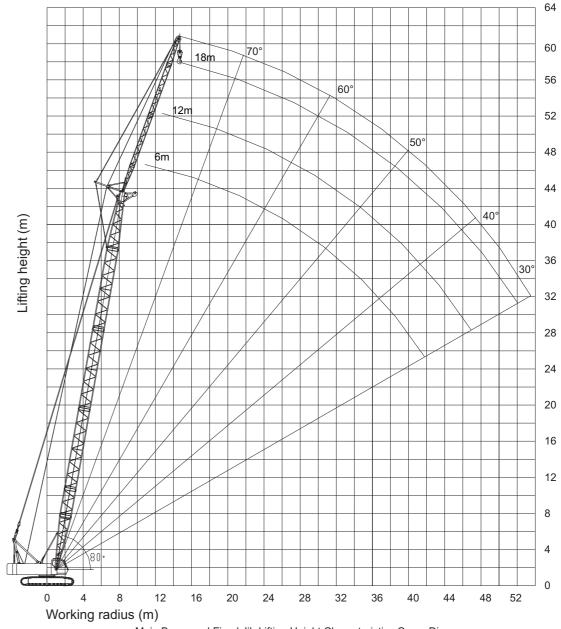


Table of Main Boom Lifting Performance (II)

Notes:

1. Values in lifting performance table include the weight of the hook and of the wire ropes from the head of the boom to the hook.

2. When a boom tip pulley is used to lift the heavy load, the lifting capacity is equal to that of the main boom at the same boom length and radius, but not more than 6.0t.



Main Boom and Fixed Jib Lifting Height Characteristics Curve Diagram (A 10° angle is formed between the the center line of main boom and the center line of jib)

Main Boom + Fixed Jib Lifting Height Characteristics Curve (II)

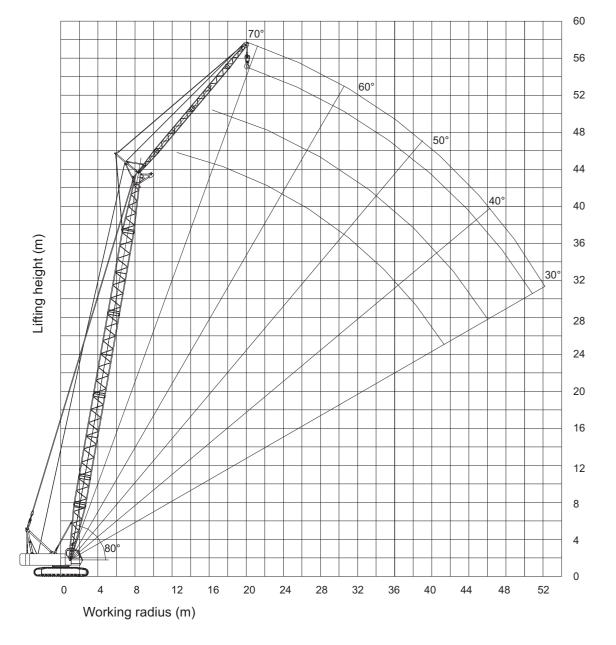


Table of Jib Lifting Performance (I)

Length of main boom (m)				30						33		
Length of jib (m)	m ^{th of} 6 12 18 6							12 18				
				1		Ang	gle (°)					1
Radius (m)	10°	30°	10°	30°	10°	30°	10°	30°	10°	30°	10°	30°
8	6.4/8.3						6.4/8.8					
10	6.4	6.4/10.1	6.4/10.3				6.4	6.4/10.6	6.4/10.8			
12	6.4	6.4	6.4	6.4/13.9	5.0/12.4		6.4	6.4	6.4		4.9/12.9	•
14	6.4	6.4	6.4	6.4	4.8		6.4	6.4	6.4	6.4/14.4	4.9	
16	6.4	6.4	6.4	6.4	4.8	4.5/17.8	6.4	6.4	6.4	6.4	4.8	
18	6.4	6.4	6.4	6.4	4.7	4.5	6.4	6.4	6.4	6.4	4.8	4.4/18.3
20	6.4	6.4	6.4	6.4	4.6	4.3	6.4	6.4	6.4	6.4	4.6	4.3
22	6.4	6.4	6.4	6.4	4.5	4.3	6.3	6.3	6.4	6.4	4.5	4.3
24	5.6	5.6	5.9	5.9	4.5	4.3	5.5	5.5	5.6	5.8	4.5	4.3
26	4.9	4.9	5.2	5.2	4.4	4.2	4.8	4.8	5.0	5.1	4.5	4.2
28	4.4	4.4	4.6	4.6	4.4	4.2	4.3	4.3	4.4	4.5	4.4	4.2
30	3.9	3.9	4.1	4.1	4.2	4.2	3.8	3.8	3.9	4.0	4.0	4.2
32	3.5	3.5	3.7	3.7	3.6	3.9	3.4	3.4	3.5	3.6	3.6	3.8
34			3.3	3.3	3.4	3.5	3.0	3.0	3.2	3.2	3.3	3.4
36			3.0	3.0	3.1	3.1	2.6	2.6	2.9	2.9	2.9	3.0
38			2.6	2.6	2.8	2.8			2.5	2.5	2.6	2.7
40					2.5	2.5			2.3	2.3	2.4	2.4
42					2.3	2.3			2.0	2.0	2.2	2.2
44					2.0	2.0					1.9	1.9

Main Boom and Fixed Jib Lifting Height Characteristics Curve Diagram (A 30° angle is formed between the the center line of main boom and the center line of jib)

Unit of measurement: t

Table of Jib Lifting Performance (II)

Length of main boom (m)			:	36						39		
Length of jib (m)	0 12 10				6		12		18			
					1	Ang	le (°)					
Radius (m)	10°	30°	10°	30°	10°	30°	10°	30°	10°	30°	10°	30°
8	6.4/9.3						6.4/9.8		6.4/11.9			
10	6.4	6.4/11.1	6.4/11.4				6.4	6.4/11.6	6.4			
12	6.4	6.4	6.4		4.9/13.4		6.4	6.4	6.4		4.9/13.9	
14	6.4	6.4	6.4	6.4/15	4.9		6.4	6.4	6.4	6.4/15.5	4.9	
16	6.4	6.4	6.4	6.4	4.8		6.4	6.4	6.4	6.4	4.8	
18	6.4	6.4	6.4	6.4	4.8	4.5/18.8	6.4	6.4	6.4	6.4	4.8	4.5/19.3
20	6.4	6.4	6.4	6.4	4.7	4.4	6.4	6.4	6.4	6.4	4.7	4.5
22	6.1	6.2	6.3	6.4	4.5	4.3	6.0	6.1	6.2	6.4	4.6	4.3
24	5.3	5.4	5.5	5.7	4.5	4.3	5.2	5.3	5.4	5.6	4.6	4.3
26	4.7	4.7	4.9	5.0	4.5	4.3	4.6	4.6	4.7	4.9	4.5	4.3
28	4.1	4.1	4.3	4.4	4.3	4.2	4.0	4.0	4.2	4.3	4.2	4.2
30	3.7	3.7	3.8	3.9	3.9	4.1	3.5	3.5	3.7	3.8	3.8	4.0
32	3.2	3.2	3.4	3.5	3.5	3.7	3.1	3.1	3.3	3.4	3.4	3.6
34	2.9	2.9	3	3.1	3.1	3.3	2.8	2.8	2.9	3.0	3.0	3.2
36	2.5	2.5	2.7	2.8	2.8	2.9	2.4	2.4	2.6	2.6	2.7	2.8
38	2.2	2.2	2.4	2.4	2.5	2.6	2.1	2.1	2.3	2.3	2.4	2.5
40			2.2	2.2	2.3	2.3	1.9	1.9	2.1	2.1	2.1	2.2
42			2.0	2.0	2.0	2.1	1.6	1.6	1.8	1.8	1.9	2.0
44			1.7	1.7	1.8	1.8			1.6	1.6	1.7	1.8
46					1.6	1.6			1.4	1.4	1.5	1.5
48					1.4	1.4					1.3	1.3
50					1.2	1.2					1.2	1.2
52											1.0	1.0

Unit of measurement: t

Table of Jib Lifting Performance (III)

Length of main boom (m)	42					
Length of jib (m)	6		12		18	
	Angle (°)					
Radius (m)	10°	30°	10°	30°	10°	30°
10	6.4/10.3					
12	6.4	6.4/12.2	6.4/12.4			
14	6.4	6.4	6.4		4.9/14.4	
16	6.4	6.4	6.4	6.4	4.9	
18	6.4	6.4	6.4	6.4	4.8	4.5/19.9
20	6.4	6.4	6.4	6.4	4.7	4.5
22	5.9	6.1	6.1	6.3	4.7	4.3
24	5.1	5.2	5.3	5.5	4.6	4.3
26	4.4	4.5	4.6	4.8	4.6	4.3
28	3.9	4.0	4.1	4.2	4.2	4.3
30	3.4	3.4	3.6	3.7	3.7	3.9
32	3	3.0	3.2	3.3	3.3	3.3
34	2.6	2.6	2.8	2.9	2.9	3.1
36	2.3	2.3	2.5	2.5	2.6	2.7
38	2.1	2.0	2.2	2.2	2.3	2.4
40	1.8	1.8	1.9	2.0	2.0	2.1
42	1.5	1.5	1.7	1.7	1.8	1.9
44	1.3	1.3	1.5	1.5	1.6	1.7
46			1.3	1.3	1.4	1.4
48			1.1	1.1	1.2	1.2
50					1.1	1.1
52					0.9	0.9
54					0.8	0.8

Unit of measurement: t