ZOOMLION

Mobile Crane Branch Company of Changsha Zoomlion Heavy Industry Science & Technology Development Co., Ltd.

Address: No. 677, Lugu Road, Changsha City,
Hunan Province, China
Tel: 0086-731-88942695, 88942626
Fax: 0086-731-85667407, 88942629
Service Hotline: 4008-016677
Postal Code: 410205

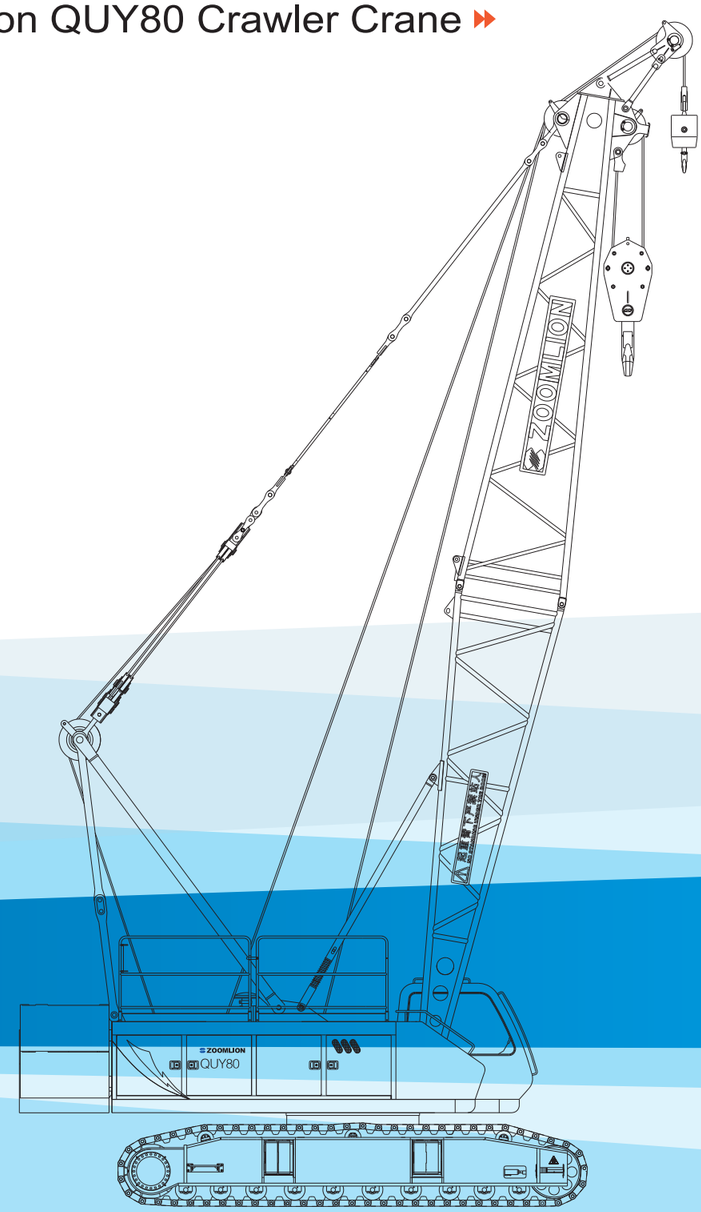
www.zoomlion.com

2010.4

ZOOMLION

QUY80

Zoomlion QUY80 Crawler Crane



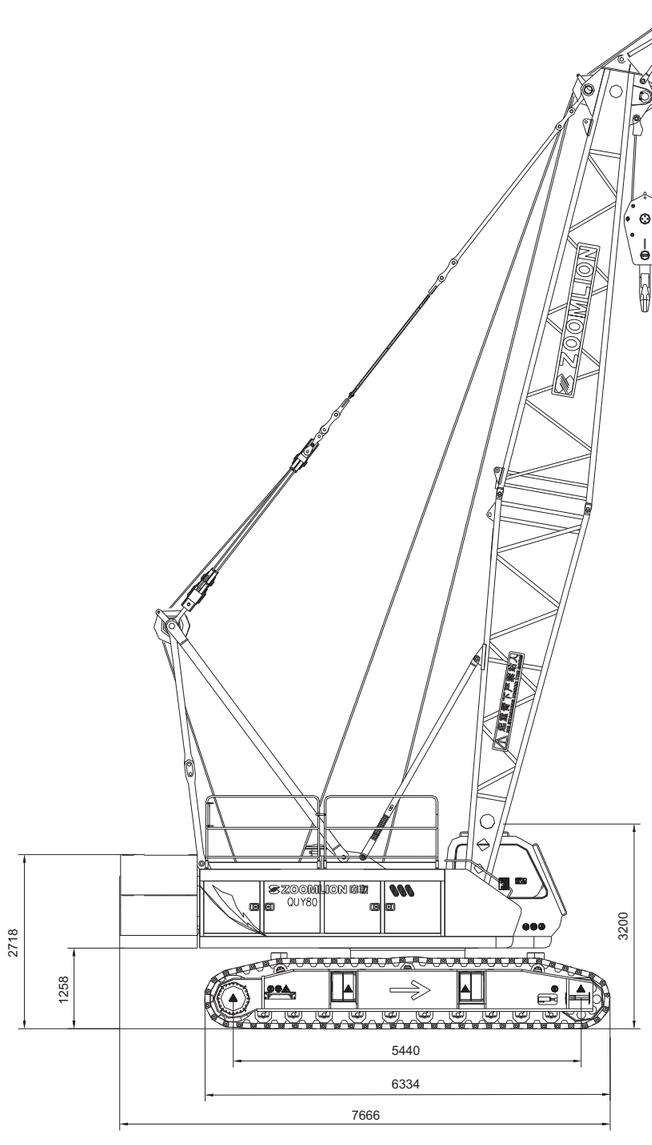
Vision Creates the Future

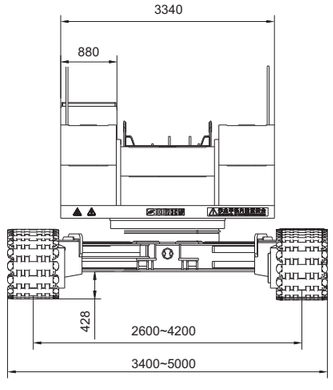
Expertise Heavy Industry Sci-Tech

Contents

I. External Dimensions and Main Parameters

1. External Dimensions of Entire Crane, including Basic Boom

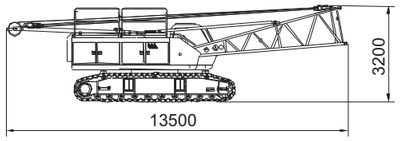




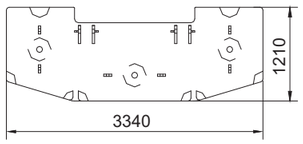
2. Main Performance Parameters

Items		Unit of measurement	Values	Remarks
Maximum lifting capacity × radius		t × m	80 × 4.3	
Deadweight of crane with basic boom		t	70.8	
Length of main boom		m	13~58	
Length of fixed jib		m	6~18	
Maximum lifting capacity with fixed jib		t	7	
Setting angle of fixed jib		°	10,30	
Maximum length of main boom + fixed jib		m	49 + 18	
Maximum single rope speed of drum	Main winch	m/min	120	Fourth layer of drum
	Auxiliary winch	m/min	120	Fourth layer of drum
	Luffing winch	m/min	61	Fourth layer of drum
Swiveling speed		rpm	1~2	
Traveling speed		km/h	1~1.68	
Gradeability (with basic boom, and with driver's cab at the rear)		%	30	
Ground pressure		MPa	0.083	
Overall dimensions L x W x H		m	13.5 × 3.4 × 3.2	Including A-bracket and base section
Engine	Rated power/rotational speed	kW/rpm	199/2200	
	Maximum output torque/rotational speed	Nm/rpm	1100/1200~1600	
Distance between track centers × crawler contact length × crawler shoe width		mm	4200 × 5440 × 800	Extended
			2600 × 5440 × 800	Retracted
Noise	Noise radiated during operation	dB	≤ 107	
	Noise in the control room during operation	dB	≤ 85	

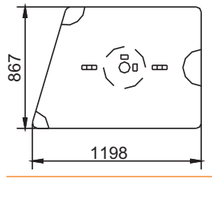
3. External Dimensions and Weight of Main Transport Components



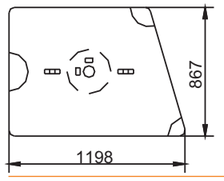
Name	Main machine
Weight (t)	41.8
Quantity	1
Remarks	Width 3400mm



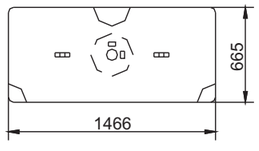
Name	Counterweight base
Weight (t)	5.5
Quantity	1
Remarks	Height 606mm



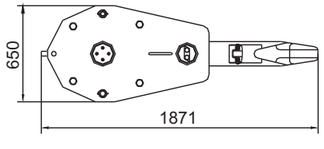
Name	Counterweight block
Weight (t)	3.86
Quantity	2
Remarks	Height 630mm



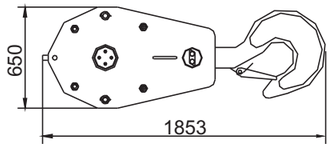
Name	Counterweight block
Weight (t)	3.86
Quantity	2
Remarks	Height 630mm



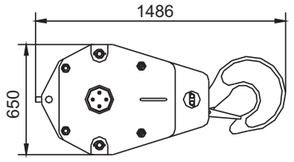
Name	Counterweight block
Weight (t)	3.045
Quantity	2
Remarks	Height 490mm



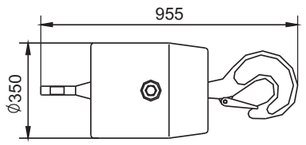
Name	Hook (80T)
Weight (t)	1.25
Quantity	1
Remarks	Width 650mm



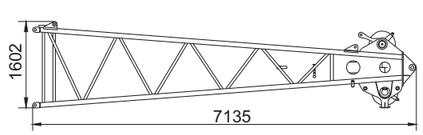
Name	Hook (50T)
Weight (t)	0.92
Quantity	1
Remarks	Width 484mm



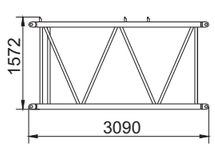
Name	Hook (30T)
Weight (t)	0.605
Quantity	1
Remarks	Width 405mm



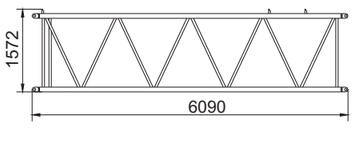
Name	Hook (8T)
Weight (t)	0.264
Quantity	1
Remarks	Width 350mm



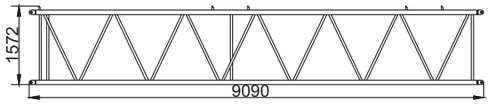
Name	Top section of main boom (with gooseneck boom)
Weight (t)	1.3
Quantity	1
Remarks	Width 1700mm



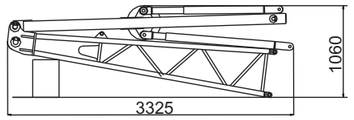
Name	3m standard arm of main boom
Weight (t)	0.30
Quantity	1
Remarks	Width 1700mm



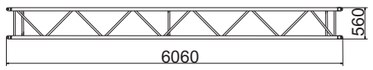
Name	6m standard arm of main boom
Weight (t)	0.58
Quantity	1
Remarks	Width 1700mm



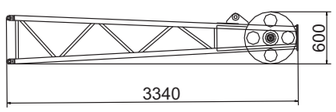
Name	9m standard arm of main boom
Weight (t)	0.68
Quantity	4
Remarks	Width 1700mm



Name	Base section of jib (Including brace pole and jib bracing pole)
Weight (t)	0.70
Quantity	1
Remarks	Width 740mm



Name	6m standard arm of jib
Weight (t)	0.17
Quantity	1
Remarks	Width 560mm



Name	Top section of jib
Weight (t)	0.31
Quantity	1
Remarks	Width 560mm

II. Technical Descriptions

4. Boom System

Truss-type structure and Chinese-made high strength tubings.

Main boom

Length of main boom: 13~58m

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

Table of Main Boom Lengths Configuration Combinations

Length of main boom (m)	Number of standard sections for corresponding lengths of main boom (pieces)		
	3m section	6m section	9m section
13	0	0	0
16	1	0	0
19	2	0	0
22	1	1	0
25	2	1	0
28	2	0	1
31	1	1	1
34	2	1	1
37	2	0	2
40	1	1	2
43	2	1	2
46	2	0	3
49	1	1	3
52	2	1	3
55	2	0	4
58	1	1	4

Fixed jib

Length of fixed jib: 6~18m

Length of additional adjustable section of fixed jib: 6m

Maximum length of main boom + fixed jib: 49 + 18m

Length of main boom (operating mode using jib): 37m~49m

5. Mechanisms

Primary lifting mechanism

This mechanism is comprised of an internal axial plunger hydraulic motor, balance valve, speed reducer, normally closed brake, and wire ropes; it can be controlled independently of other mechanisms.

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

Main winch	Wire rope diameter	Φ24mm
	Wire rope length	240m
	Single rope speed (4th layer)	120m/min
	Single rope tension	80kN

Secondary lifting mechanism

This is comprised of an internal axial plunger hydraulic motor, balance valve, speed reducer, normally closed brake, and wire ropes; 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 winch	Wire rope diameter	Φ24mm
	Wire rope length	160m
	Single rope speed (4th layer)	120m/min
	Single rope tension	80kN

Luffing mechanism

This mechanism is comprised of an internal axial plunger hydraulic motor, balance valve, speed reducer, normally closed brake, pulley block, and wire ropes; 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	Φ20mm
	Wire rope length	150m
	Single rope speed (4th layer)	61m/min
	Single rope tension	71kN

Slewing mechanism

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

The slewing mechanism uses internal geared slewing bearings and a slewing reducer with high bearing capacity and high accuracy, thus ensuring slewing stability and accuracy.

The slewing mechanism offers stepless speed regulation within the range of 0~2r/min.

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

Traveling mechanism

The traveling mechanism is a dual-motor and dual-reducer type. The two crawlers are controlled by two different control handles, allowing for a variety of traveling actions such as straight line traveling, unilateral steering, differential steering, pivotal steering, driving with load, etc., thus offering a high level of mobility, maneuverability and flexibility.

Traveling speed: 0~1.68km/h (on level firm road surface, with no load on main boom).

Gradeability: 30%

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

Mast mechanism

This is comprised of a frontal mast bracing rod, rear counterweight anchoring rods, etc.; during transportation, the mast lies flat against the back of the rotating platform.

Counterweight

The counterweight system weighs a total of 27.13 tons, and is comprised of a 5.5 ton counterweight base plate, 4 × 3.86 ton side counterweight blocks, and 2 × 3.045 ton central counterweight blocks.

Crawler retraction mechanism

The crawler retraction and control mechanism is comprised of outriggers, horizontal oil cylinders, crawlers, anchoring rods, and latches, etc. It is connected to the chassis frame through the extending outriggers of the undercarriage; telescoping actions are controlled by an electronic control handle in the control room.

6. Systems

Hydraulic system

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

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

Main control valve: pilot electrohydraulic control valve.

Main circuit control method: variable displacement main pump + main directional control valve, 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

DC 24V, negative ground, 2 × 165AH batteries.

The electrical components of the vehicle primarily include: power supply, engine starter, engine misfiring, indicator lights, alarms, lighting devices, fans, windshield wipers, horn, lifting height limiters, hydraulic oil cooling fans, digitalized display system, PLC controller, engine preheater, 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 Weicai engine is an in-line 6-cylinder turbocharged water-cooled engine
Rated power/rotational speed: 199kW/2200 rpm
Fuel oil tank: 300L, which ensures a sufficiently long working time for the engine.
Emissions standard: in compliance with the requirements in EU Stage III

Digitalized display system

The 10.4-inch LCD display system, with both Chinese and English display capabilities, can centrally display the various operating mode signals collected by the PLC controller, including engine's rotational speed, water temperature, fuel oil pressure, hydraulic pump pressure, main motor pressure, main machine operational level, working hours of engine, and working conditions of I/O monitor, etc. It can monitor working conditions in realtime; when the crane is working abnormally, the system will emit a yellow or red light 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 (domestically produced~Chinese)

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

7. Safety Devices

Load moment limiter

This is comprised of a digital LCD monitor, host computer, signal converter, and sensors, etc. When the lifting load moment reaches 90% of the rated load moment, an alarm lamp will light on and a buzzer alarm will sound; operation of the crane will stop automatically when the lifting load moment approaches the maximum rated load moment in order to prevent any accident that might occur as a result of crane overloading during construction, thus helping 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, and are used to prevent excessive lifting of the hook. When the hook is lifted 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 along the lower rear part of the boom's bottom section (right side of control room), allowing the driver convenient, clear visibility of the elevation angle 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.

Whole machine level sensor

This electronic level meter displays in realtime the inclination angle of the whole machine and sends an alarm on the digital display screen in order to ensure safe operation of the vehicle.

Hook safety latch

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

Luffing winch ratchet locking mechanism

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

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.

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 spring-loaded compression force to provide support and to prevent the main boom from overturning.

Emergency stop button

In case of emergency, press this button to switch off the engine and stop all operations.

Tri-color warning light

With three different colors, red, yellow and green, the warning light can synchronously indicate overload status. Green indicates that the load factor is below 90%, yellow informs operators that the load factor is between 90% and 102 , while the red color warns that the load factor has exceeded 102% 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 sunroof and windshield. The interior is equipped with a sun shield on the right side, adjustable seat, windshield wipers, electronic control handle, load moment indicators, digitalized displays, various switches, air conditioners, electric fans, illuminating lamps, CD players (car DVD player optional), and fire extinguishers, etc. The control room offers an exceptionally broad field of vision, and the interior is both spacious and comfortable.

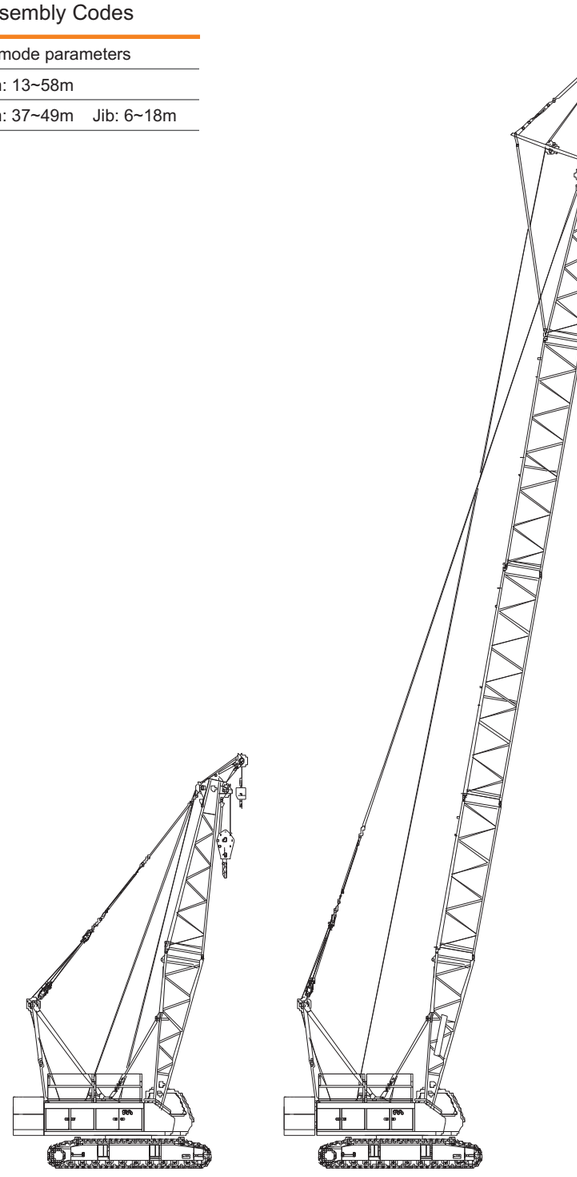
9. Hook

The following hook models are optionally available:
80t main hook: equipped with 6 pulleys
50t hook: equipped with 3 pulleys
30t hook: equipped with 2 pulleys
8t hook: without pulley
These hook specifications are not standard configurations, and are subject to the actual contract signed by customer.

III. Description of Boom Assembly

Descriptions of Boom Assembly Codes

Code	Type	Operation mode parameters
S	Main boom	Main boom: 13~58m
SF	Fixed jib	Main boom: 37~49m Jib: 6~18m

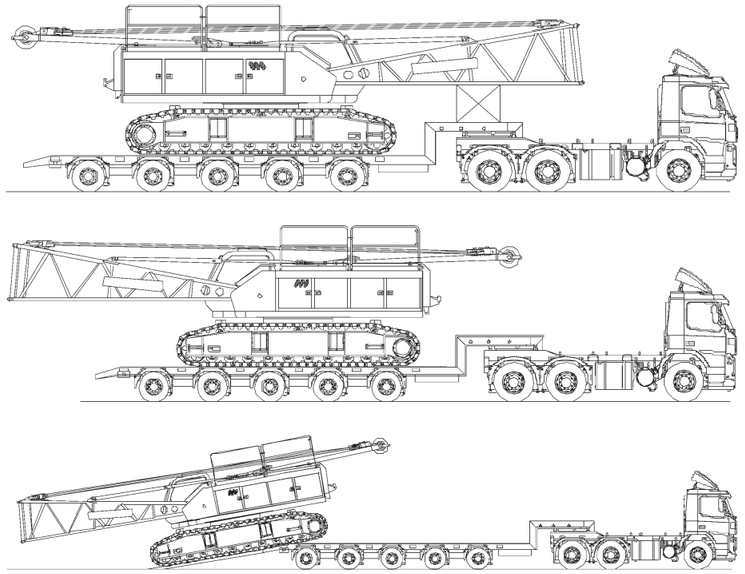


S SF

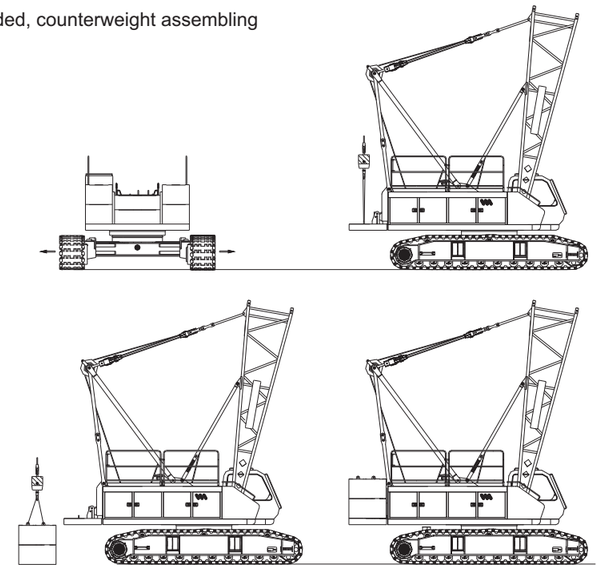
IV. Self-Mounting and Dismounting Functions

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

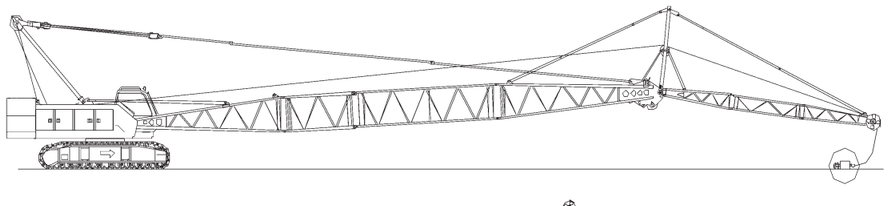
Unloading of main machine



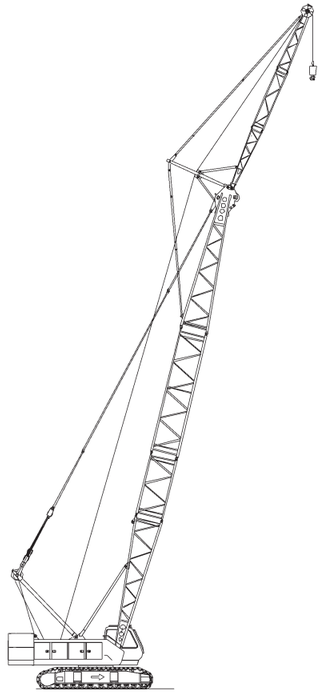
Crawler carrier extended, counterweight assembling



Assembling the boom and anchoring rods



Operating mode



V. Lifting Performance

10. Lifting Characteristics of Main Boom

Main Boom Lifting Height Characteristics Curve

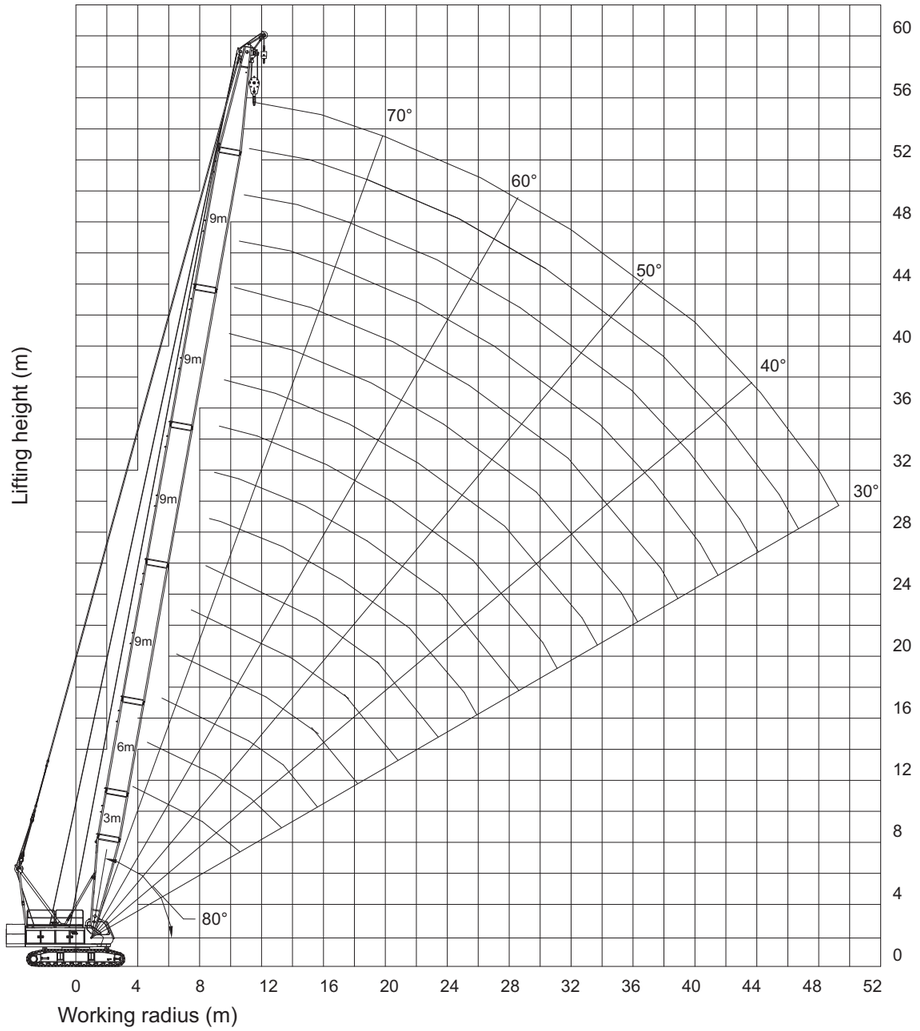


Table of Main Boom Lifting Performance (I)

Unit of measurement: t

Radius (m)	Boom length (m)								
	13	16	19	22	25	28	31	34	37
4.3	80								
5	68	66.8							
6	52.3	52	51.8	51.7					
7	42.3	42	41.9	41.7	41.4	40.72			
8	35.5	35.2	35	34.8	34.6	33.97	33.8	33.5	
9	30.5	30.2	30	29.8	29.5	29	28.8	28.6	28.4
10	26.7	26.4	26.2	26	25.7	25.3	25	24.8	24.6
12	21.2	20.9	20.7	20.6	20.3	19.9	19.7	19.4	19.2
14		17.2	17	16.9	16.6	16.2	16	15.8	15.5
16			14.37	14.2	13.9	13.6	13.4	13.1	12.9
18				12.2	11.9	11.6	11.4	11.1	11
20					10.3	10	9.8	9.6	9.4
22					9	8.8	8.6	8.3	8.1
24						7.7	7.5	7.3	7
26							6.7	6.4	6.2
28								5.6	5.4
30								4.9	4.7
32									4.2

Notes:

1. Values in lifting performance table include the weight of the hook and of 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.

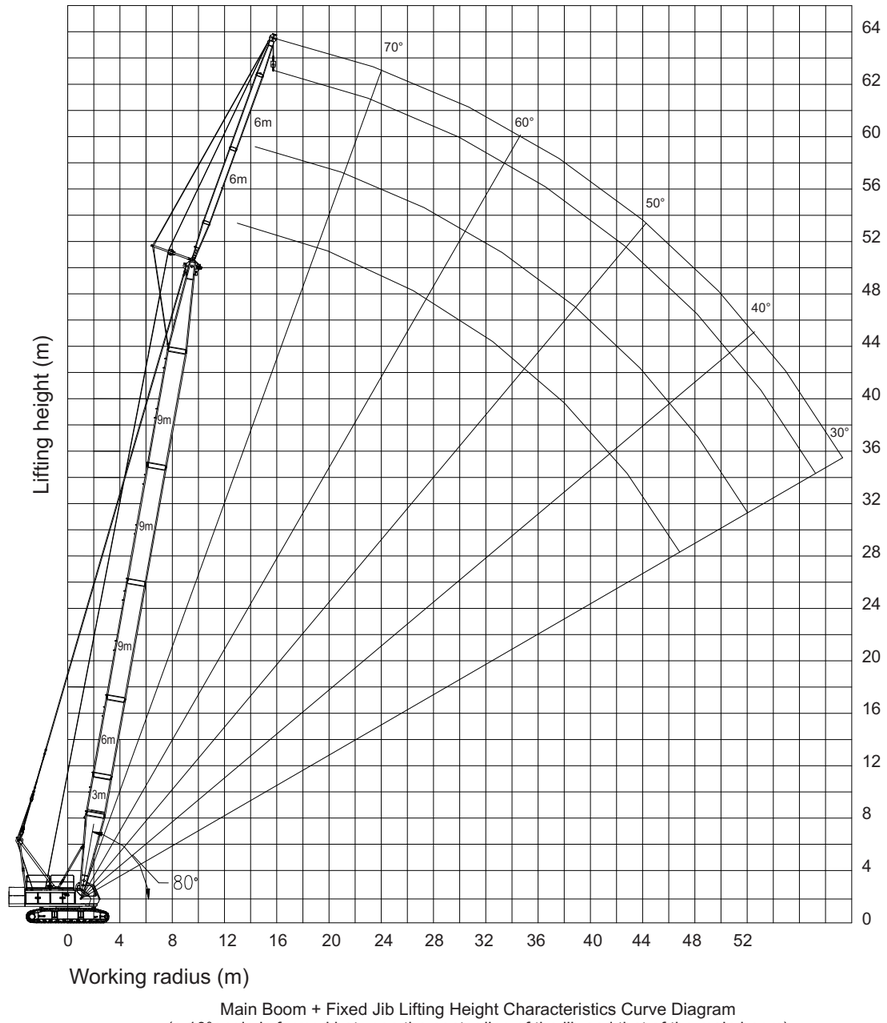
Table of Main Boom Lifting Performance (II)

Unit of measurement: t

Radius (m)	Boom length (m)						
	40	43	46	49	52	55	58
9							
10	23.8	23.2	22.6				
12	19	18.6	18.2	17.8	17.8		
14	15.5	15.2	15	14.75	14.5	14.3	14
16	12.8	12.7	12.5	12.3	12.1	12	11.5
18	10.9	10.7	10.5	10.3	10.2	10	9.9
20	9.4	9.3	9.2	9	9	8.8	8.6
22	8.5	8.3	8.1	8	8	7.7	7.5
24	7.4	7.2	7.1	7	7	6.8	6.6
26	6.6	6.5	6.5	6.2	6	6	5.7
28	5.8	5.7	5.6	5.6	5.5	5.4	5.1
30	5.3	5	5.1	5.1	4.8	4.6	4.5
32	4.8	4.7	4.6	4.5	4.3	4.1	3.8
34	4.1	4.1	4	4	3.8	3.7	3.4
36	4	3.8	3.7	3.5	3.4	3.2	2.9
38		3.2	3.2	3.2	2.9	2.9	2.6
40		3	3	2.7	2.6	2.5	2.3
42				2.5	2.3	2.3	2
44					2	2	1.6
46						1	1.3
48						1.5	1
50						1.2	0.8

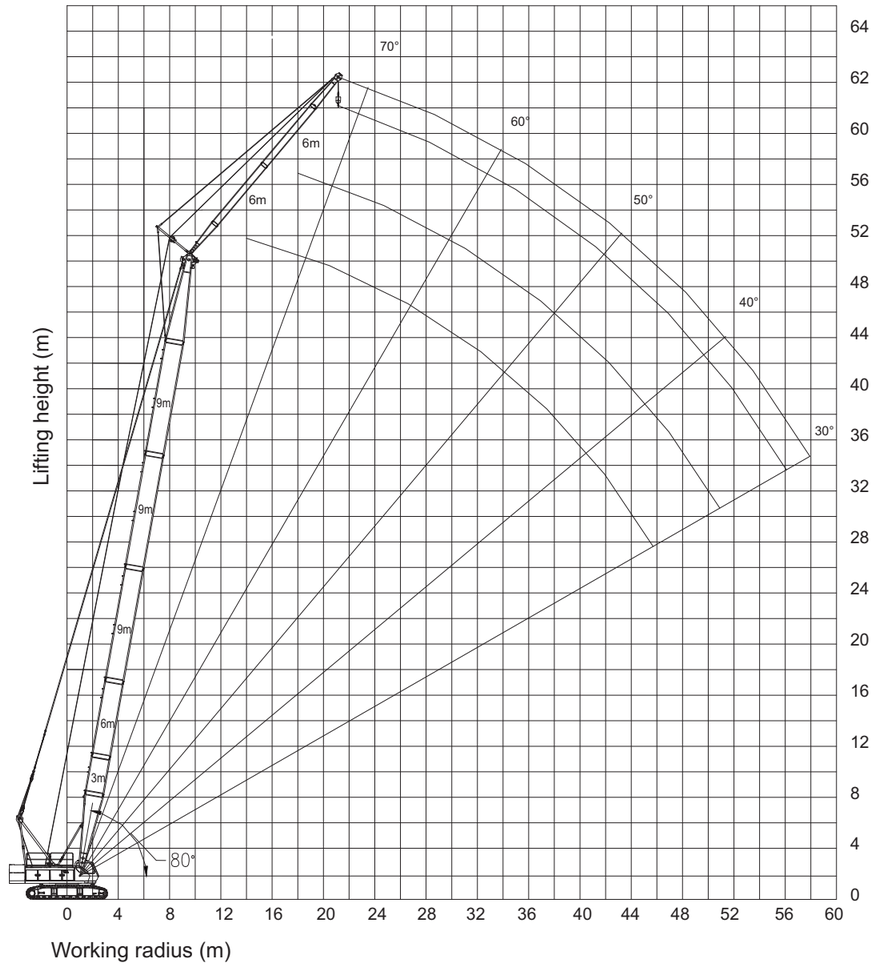
11. Lifting Performance of Main Boom + Fixed Jib

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



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

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



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

Table of Jib Lifting Performance (I)

Unit of measurement: t

Length of main boom (m)	30						33					
Length of jib (m)	6		12		18		6		12		18	
Radius	Jib set angle (°)											
	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	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	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	3	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

Table of Jib Lifting Performance (II)

Unit of measurement: t

Length of main boom (m)	36						39					
Length of jib (m)	6		12		18		6		12		18	
Radius	Jib set angle (°)											
	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	6.4/11.9		
10	6.4	6.4/11.1	6.4/11.4				6.4	6.4/11.6	6.4	6.4		
12	6.4	6.4	6.4		4.9/13.4		6.4	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	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	6.1	6.2	6.2	4.6	4.3
24	5.3	5.4	5.5	5.7	4.5	4.3	5.2	5.3	5.4	5.4	4.6	4.3
26	4.7	4.7	4.9	5.0	4.5	4.3	4.6	4.6	4.7	4.7	4.5	4.3
28	4.1	4.1	4.3	4.4	4.3	4.2	4	4.0	4.2	4.2	4.2	4.2
30	3.7	3.7	3.8	3.9	3.9	4.1	3.5	3.5	3.7	3.7	3.8	4.0
32	3.2	3.2	3.4	3.5	3.5	3.7	3.1	3.1	3.3	3.3	3.4	3.6
34	2.9	2.9	3	3.1	3.1	3.3	2.8	2.8	2.9	2.9	3	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	2	2	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	1.0

Table of Jib Lifting Performance (III)

Unit of measurement: t

Length of main boom (m)	42					
Length of jib (m)	6		12		18	
Radius	Jib set angle (°)					
	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	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	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