

ZOOMLION

ZOOMLION ZCC 350 t (V) CRAWLER CRANE

TECHNICAL SPECIFICATIONS

ZCC3500V-2/27Y

Zoomlion Heavy Industry Science & Technology Co.,Ltd.

TECHNICAL SPECIFICATIONS

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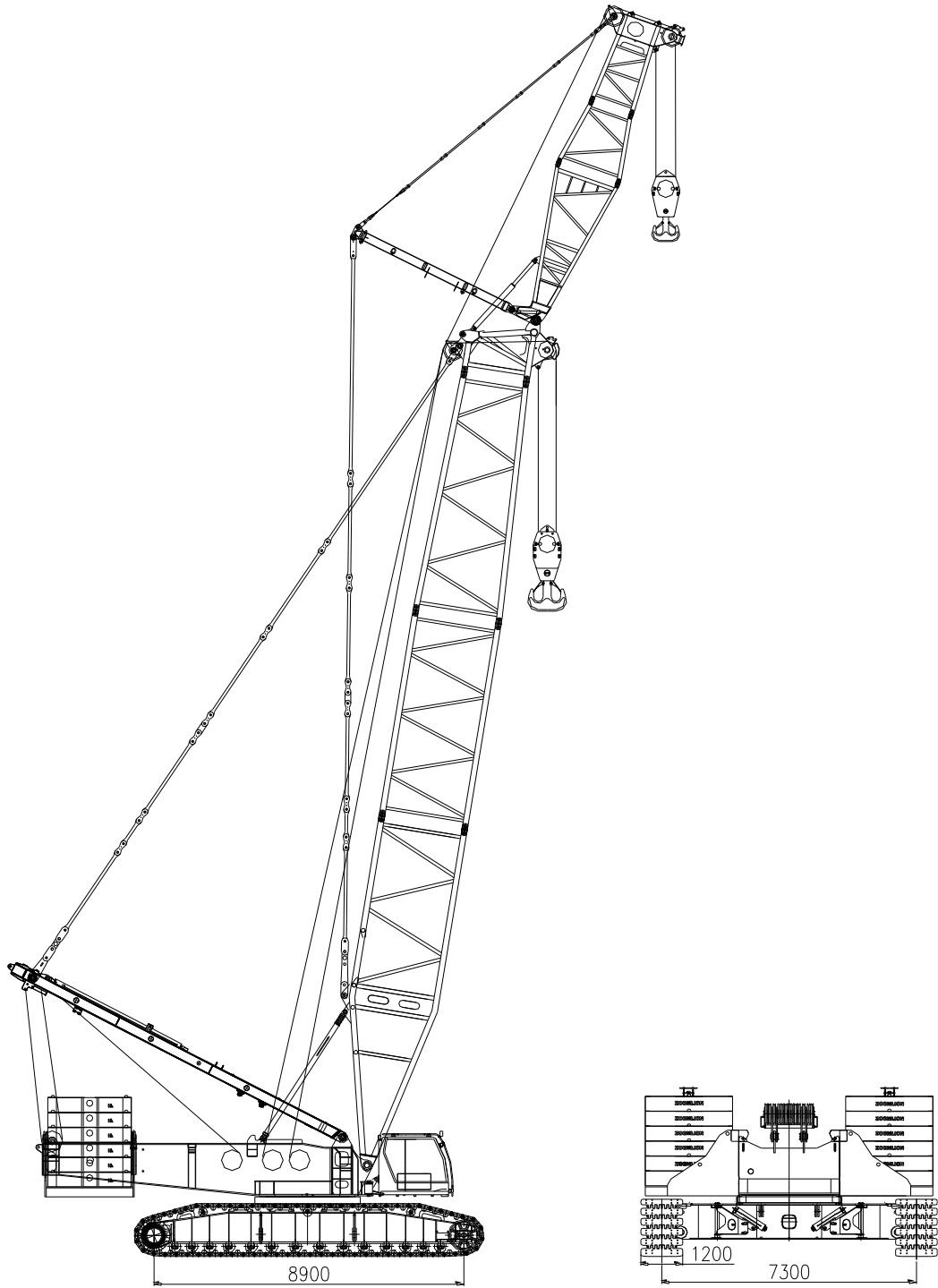
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1. Overall description

1) Overall dimension of the basic machine

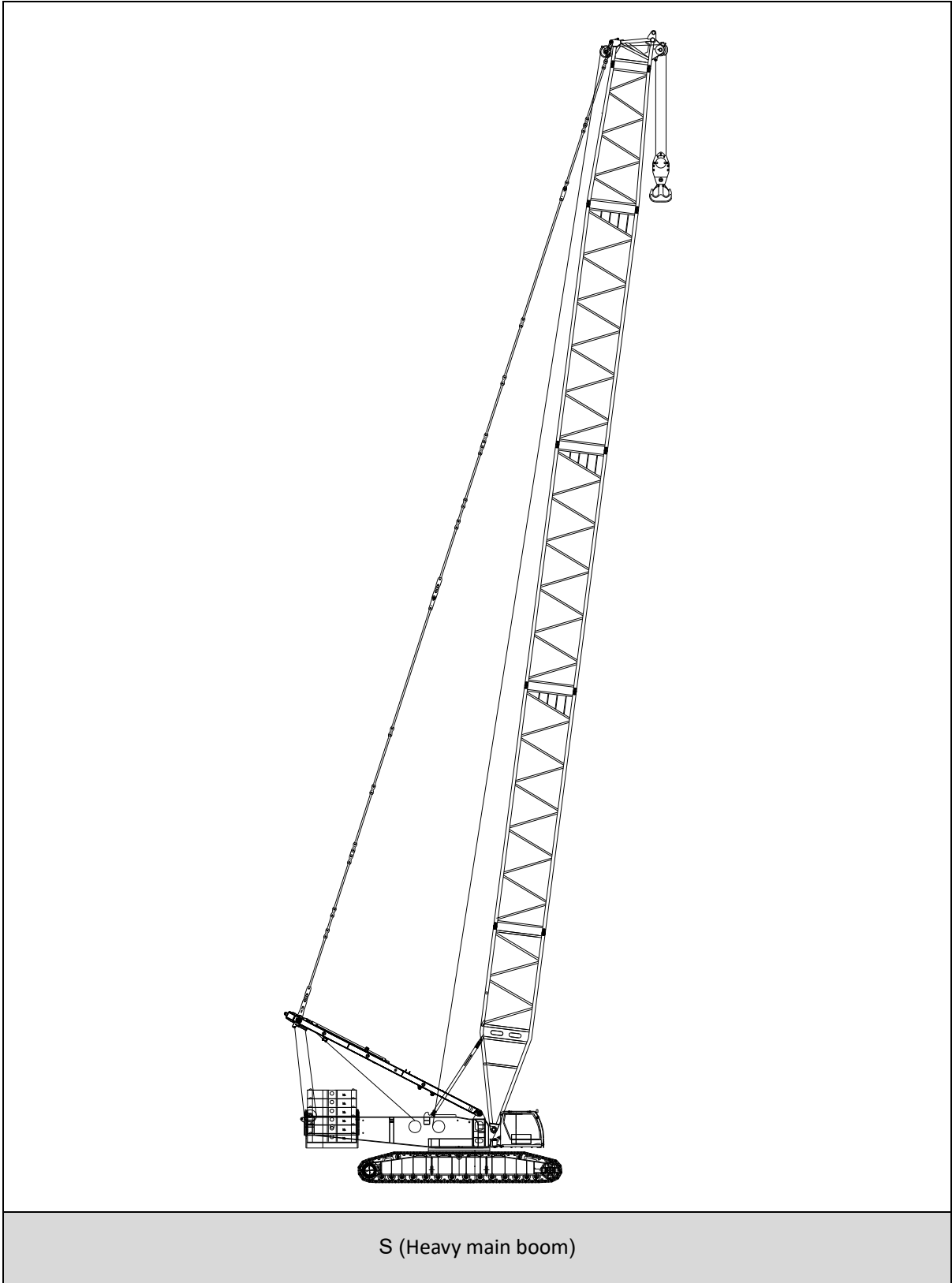


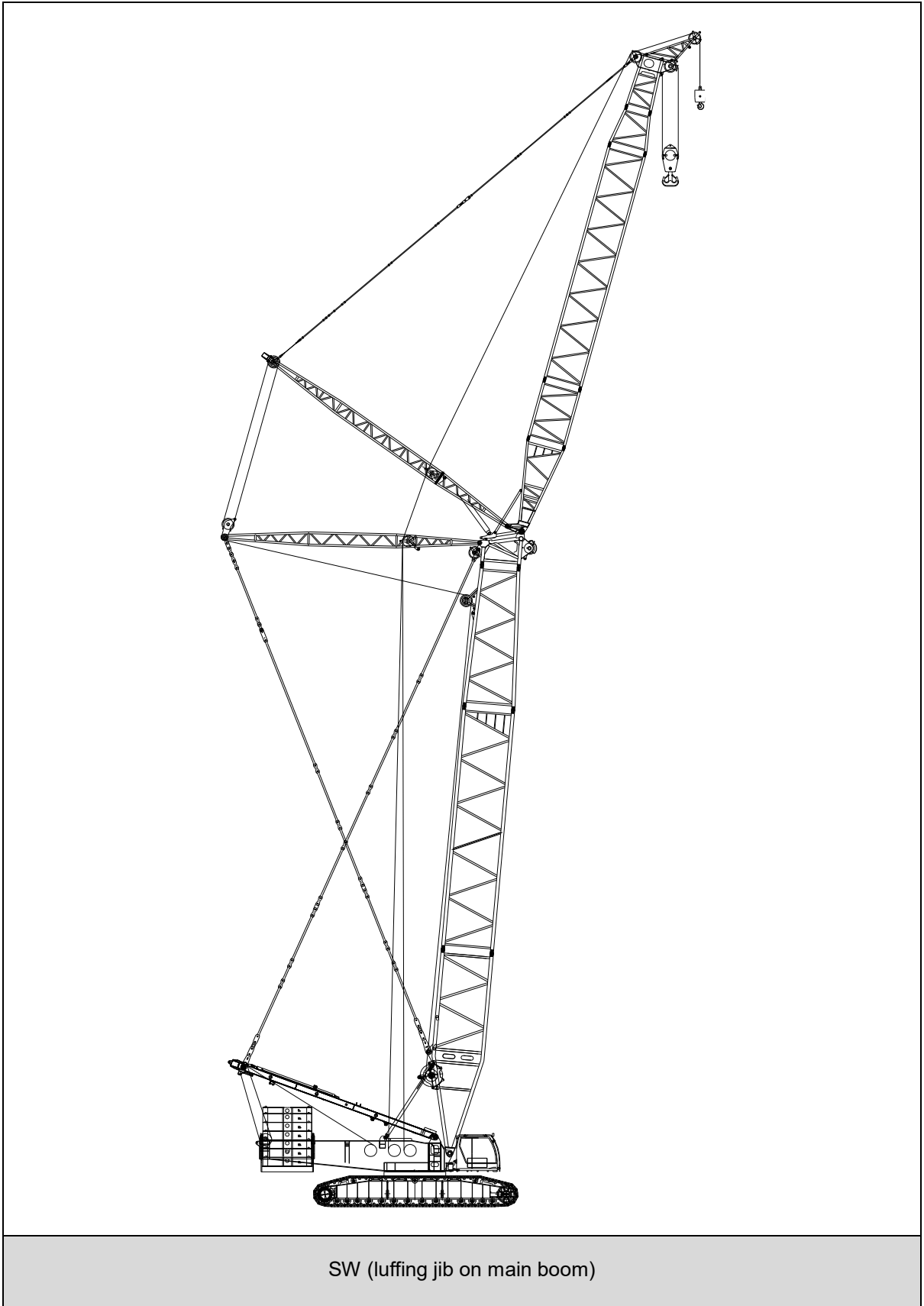
Standard TBM OM

2) Major technical parameters

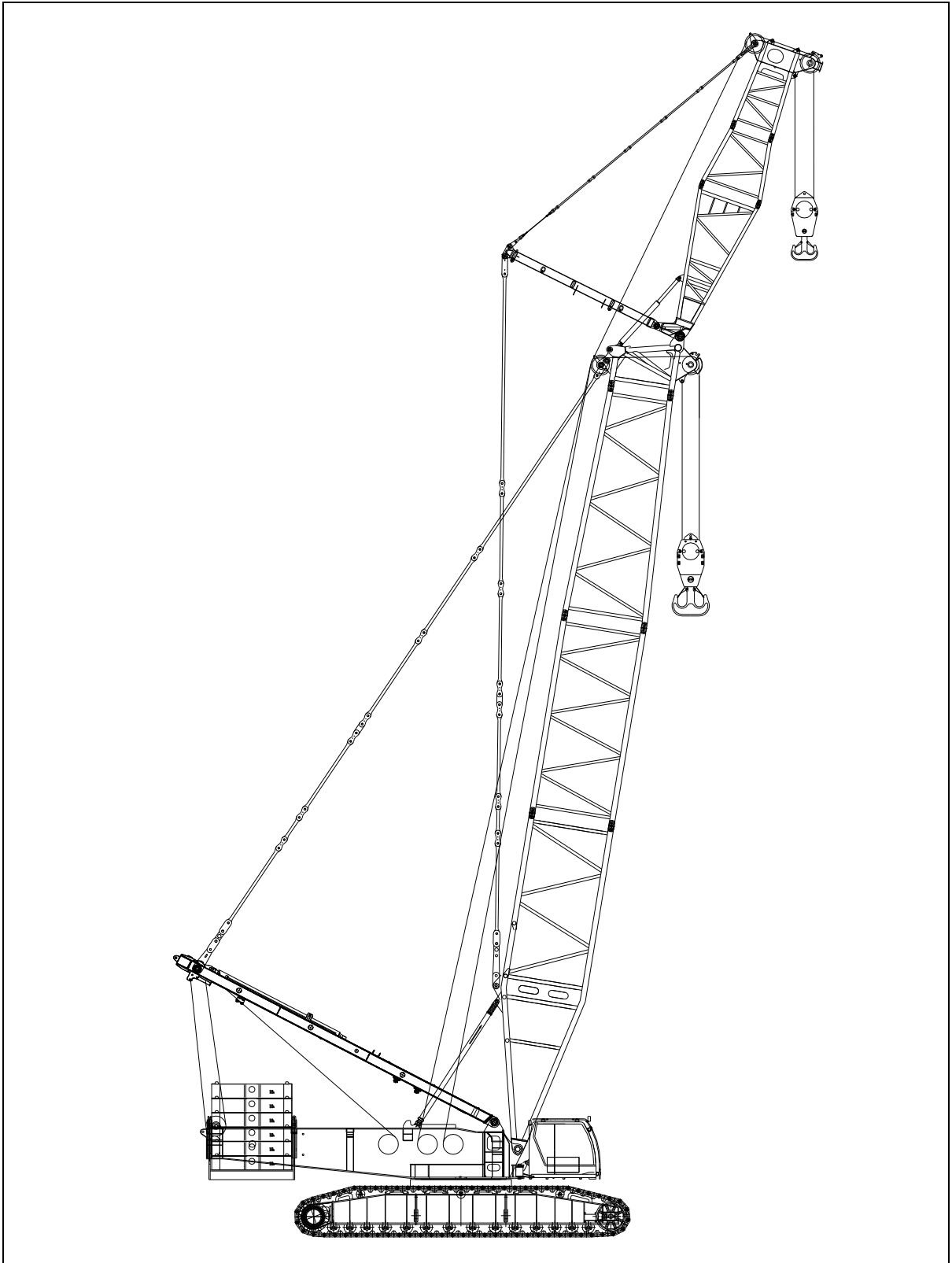
Item		Parameters
Max. lifting capacity(t) / radius(m) / boom length(m)		350/7/24
Max. load moment (t.m) (standard OM)		2450
Max. load moment (t.m) (attached counterweight OM)		2790
Main boom length (m)		24-84
Luffing jib length (m)		24-60
Max. lifting capacity of luffing jib (t)		150
Main boom angle of SW (°)		65-85
Main boom length of SW (m)		30-60
Max. length of main boom + luffing jib of SW (m)		60+60
TBM (m)		24+9/24+12
Speed of a single rope	Hoisting winch 1(m/min)	0-140
	Hoisting winch 2(m/min)	0-130
	Main boom derricking winch(m/min)	0-40×2
	Luffing jib derricking winch(m/min)	0-130
Max. slewing speed (rpm)		0-1.0
Max. crawling speed (km/h)		0-1.0
Gradeability (%)		30
Ground pressure with main boom (MPa)		0.146
Total weight with main boom (t)		305
Max transport weight of a single component (t)		49 (without A-frame and winch)
Engine	Manufacturer/model	Weichai /WP10
	Rated power / rotational speed (kW/rpm)	247/2000
	Max. output torque / rotational speed (Nm/rpm)	1600/(1200-1400)
	Exhaust emission	Off-road China III

3) Description on boom combinations

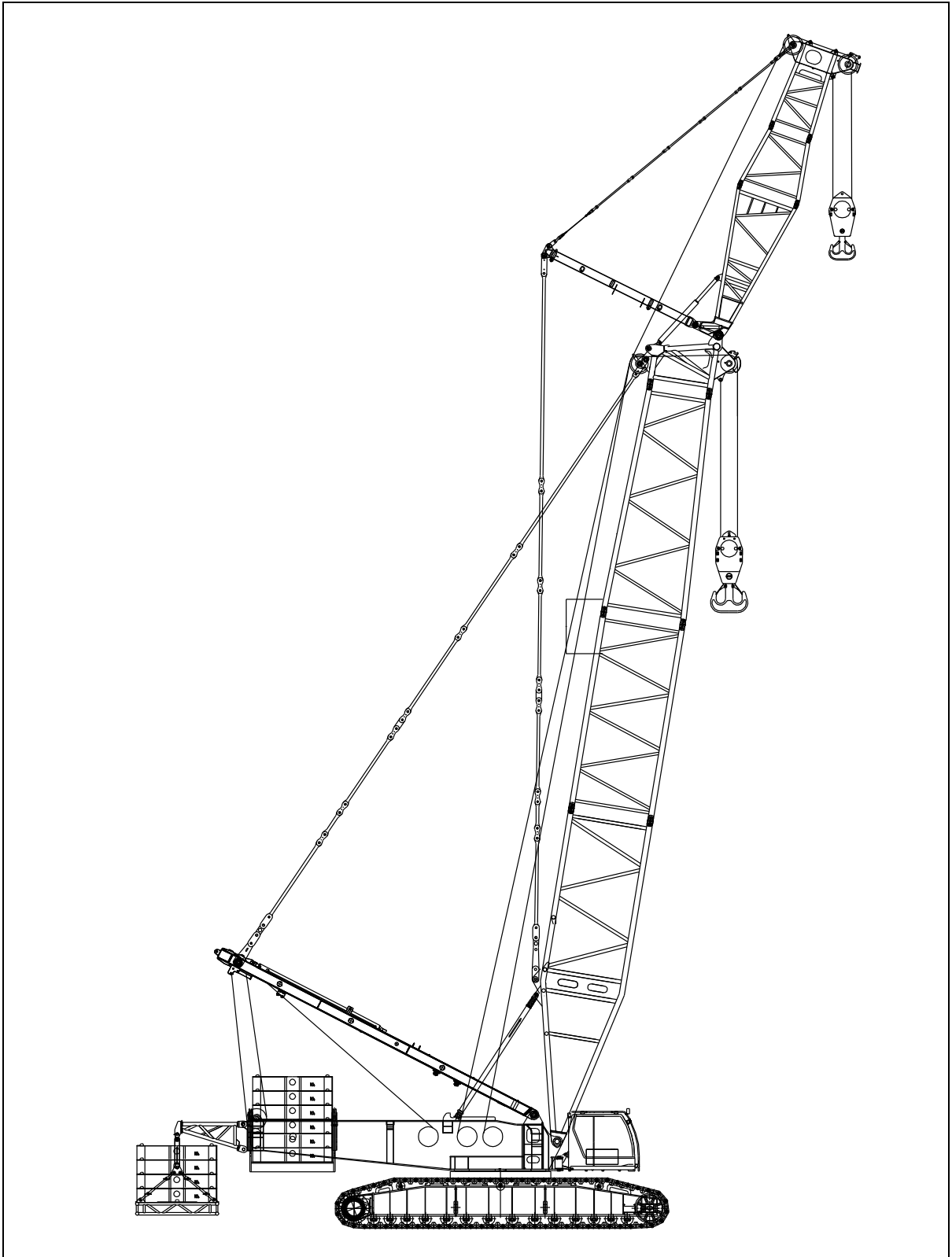




SW (luffing jib on main boom)



SF (Fixed jib on main boom, for shield tunneling machine)



SFA (Fixed jib on main boom, for shield tunneling machine with attached counterweight)

Boom combinations of ZCC3500V -2

Codes	Operating modes	Combinations
S	Heavy main boom	S=24m-84m
SW	Luffing jib on main boom	S=30m- 60m W=24m-60m
SF	Fixed jib on main boom (for shield tunneling machine)	S=24m F=9 m/12m
SFA	Fixed jib on main boom, for shield tunneling machine with attached counterweight)	S=24m F=9 m/12m

Heavy main boom:

Main boom length (m))	Number of main boom intermediate section (piece)				
	6m main boom intermediate section	12m heavy main boom intermediate section	12m main boom intermediate section	6m main boom reducing section	12m jib intermediate section (big section)
24	1	0	0	1	0
30	2	0	0	1	0
36	1	1	0	1	0
42	2	1	0	1	0
48	1	1	1	1	0
54	2	1	1	1	0
60	1	1	2	1	0
66	2	0	2	1	1
72	1	1	2	1	1
78	2	0	2	1	2
84	1	1	2	1	2

Luffing jib on main boom:

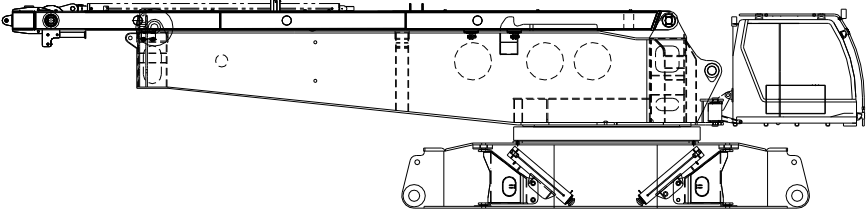
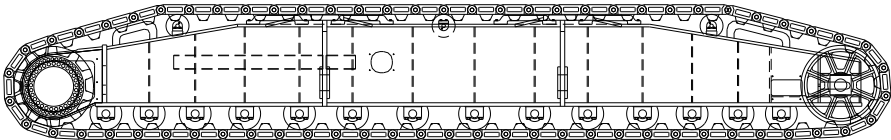
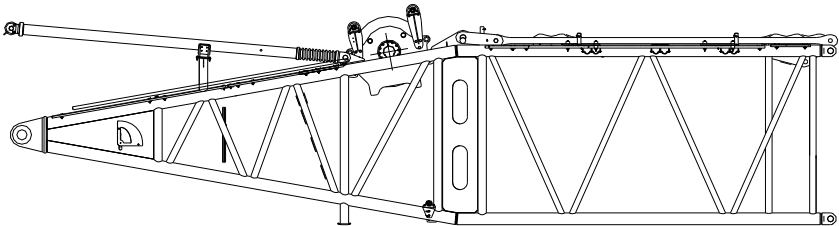
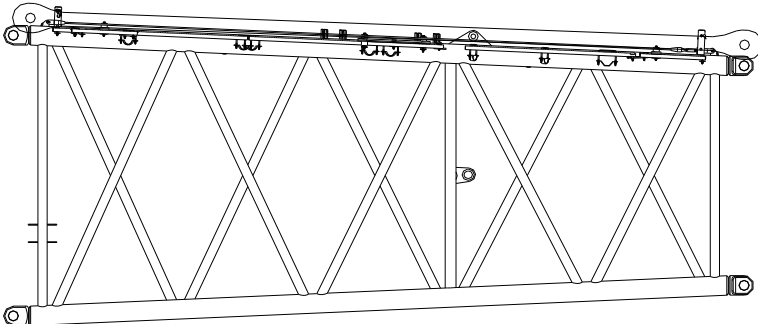
Luffing jib length (m)	Pivot section(4.5m)	3m intermediate section	6m intermediate section	12m intermediate section (big section)	Luffing jib reducing section (2m)	12m intermediate section (small section)	Head (2.5m)
24	1	1	0	1	1	0	1
30	1	1	1	1	1	0	1
36	1	1	2	1	1	0	1
42	1	1	1	1	1	1	1
48	1	1	2	0	1	2	1
54	1	1	1	1	1	2	1
60	1	1	2	1	1	2	1

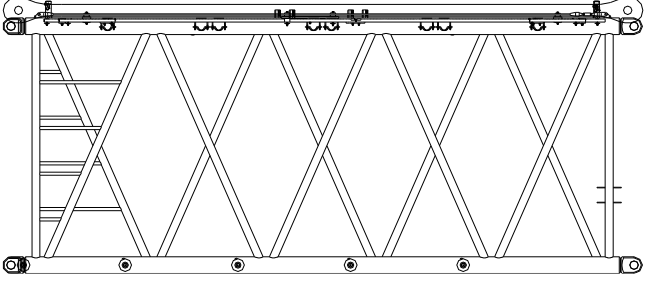
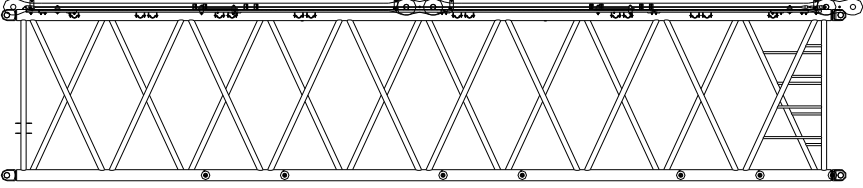
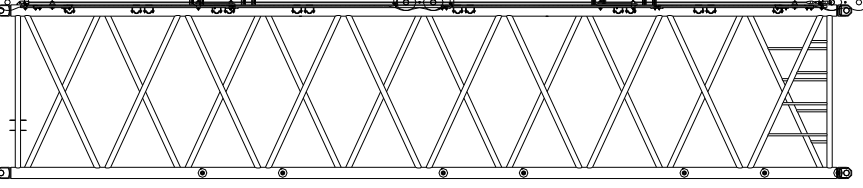
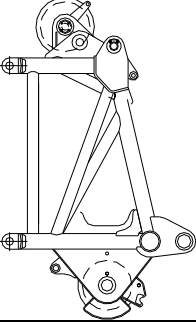
Fixed jib on main boom (for shield tunneling machine):

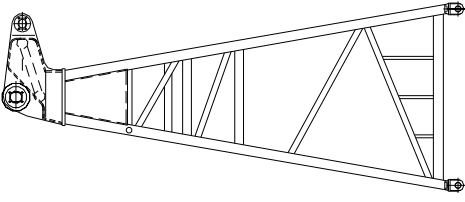
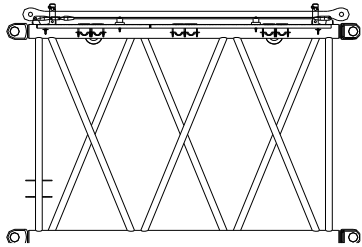
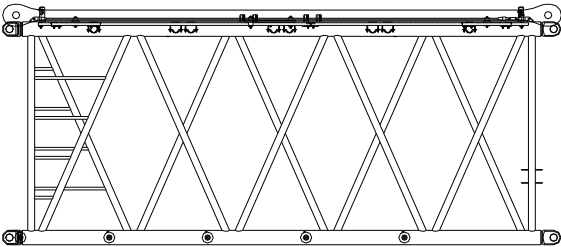
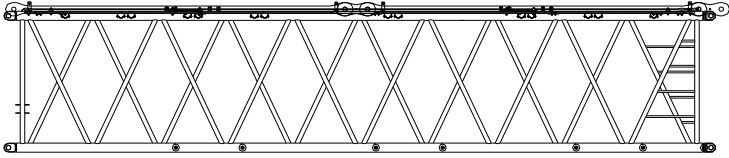
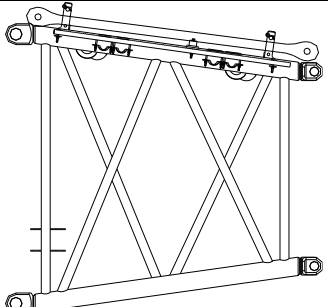
Main boom length (m)	Number of main boom intermediate section (piece)
	6m intermediate section
24	1

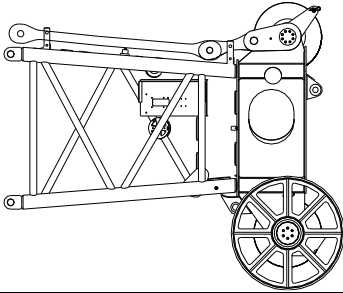
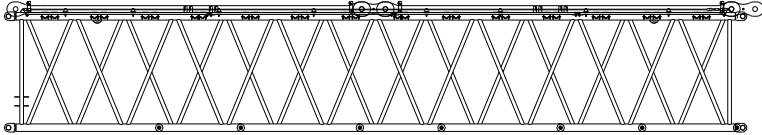
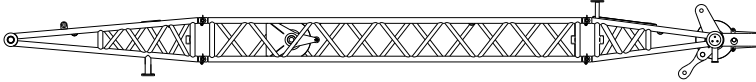
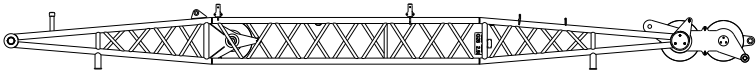
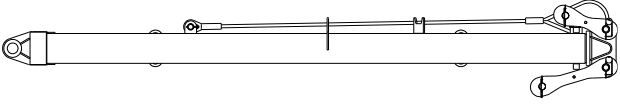
Fixed jib length (m)	Number of fixed jib intermediate section (piece)
	3m intermediate section
9	0
12	1

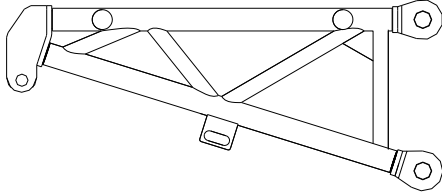
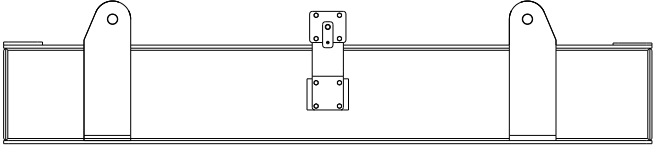
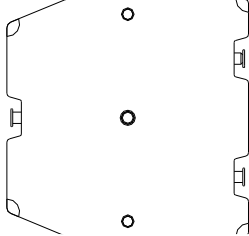
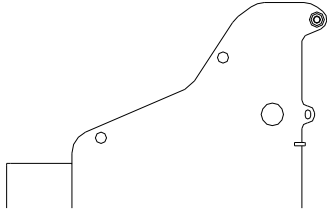
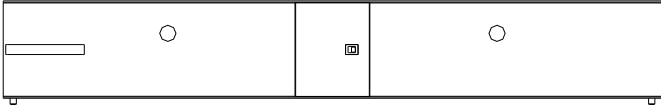
4) Transport dimensions and weights of major components

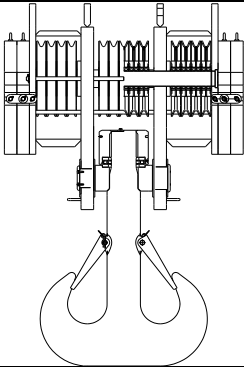
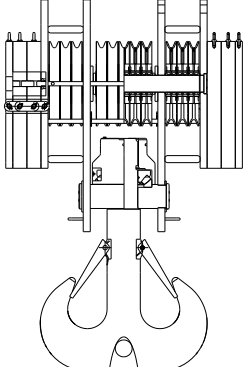
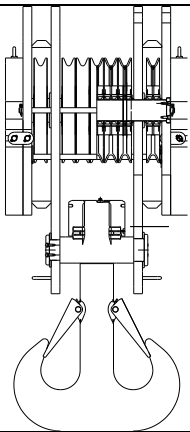
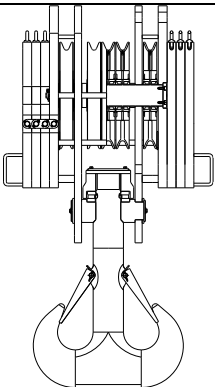
Components	Items	Values
	Basic machine	×1
	Length	13700mm
	Width	3000 mm
	Height	3200 mm
	Weight	49.6t
This weights of the hoisting mechanism, the A-frame and the derricking winch.		
	Track assy.	×2
	Length	10108 mm
	Width	1200 mm
	Height	1550 mm
	Weight	24t
	Main boom pivot section (including the winch)	×1
	Length	11230 mm
	Width	2960 mm
	Height	2660 mm
	Weight	8.50t
	Main boom intermediate section	×1
	Length	6230 mm
	Width	2960 mm
	Height	2460 mm
	Weight	1.90t

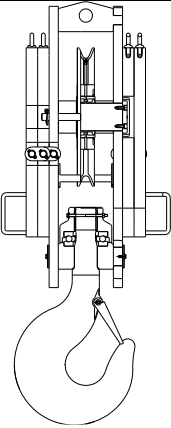
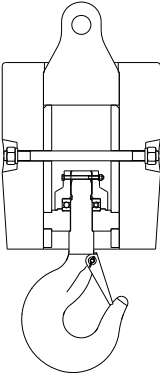
	<p>6m heavy main boom intermediate section</p>	<p>×1</p>
<p>Length</p>		<p>6230 mm</p>
<p>Width</p>		<p>2960 mm</p>
<p>Height</p>		<p>2460 mm</p>
<p>Weight</p>		<p>1.89 t</p>
	<p>12m heavy main boom intermediate section</p>	<p>×2</p>
<p>Length</p>		<p>12160 mm</p>
<p>Width</p>		<p>2960 mm</p>
<p>Height</p>		<p>2460 mm</p>
<p>Weight</p>		<p>3.6 t</p>
	<p>12m main boom intermediate section</p>	<p>×1</p>
<p>Length</p>		<p>12160 mm</p>
<p>Width</p>		<p>2960 mm</p>
<p>Height</p>		<p>2460 mm</p>
<p>Weight</p>		<p>3.0 t</p>
	<p>Head section</p>	<p>×1</p>
<p>Length</p>		<p>3225 mm</p>
<p>Width</p>		<p>1990 mm</p>
<p>Height</p>		<p>2460 mm</p>
<p>Weight</p>		<p>2.6t</p>

	TBM/Luffing jib pivot section	×1
	Length	4750 mm
	Width	2550 mm
	Height	1940 mm
	Weight	1.6 t
	TBM/3m luffing jib intermediate section	×1
	Length	3140 mm
	Width	2440 mm
	Height	1940 mm
	Weight	0.66t
	6m luffing jib intermediate section	×2
	Length	6140 mm
	Width	2440 mm
	Height	1940 mm
	Weight	1.2 t
	12m luffing jib intermediate section (big section)	×2
	Length	12140 mm
	Width	2440 mm
	Height	1940 mm
	Weight	2.1 t
	TBM/2m luffing jib reducing section	×1
	Length	2130 mm
	Width	2440 mm
	Height	1940mm
	Weight	0.5t

	TBM/Luffing jib head	×1
	Length	2866 mm
	Width	1920 mm
	Height	2192 mm
	Weight	1.2 t
	12m luffing jib intermediate section (small section)	×1
	Length	12120 mm
	Width	1920 mm
	Height	1420 mm
	Weight	1.6 t
	WA-frame I	×1
	Length	11000mm
	Width	2420mm
	Height	1170mm
	Weight	2.2t
	WA-frame II	×1
	Length	10000mm
	Width	2420mm
	Height	689mm
	Weight	1.98t
	WA-frame, TBM	×1
	Length	5000mm
	Width	2514mm
	Height	320mm
	Weight	1.0t

	Lifting bracket, attached counterweight	×1
	Length	2700mm
	Width	2000mm
	Height	760mm
	Weight	0.5t
	Seat, attached counterweight	×1
	Length	2760mm
	Width	2500mm
	Height	480mm
	Weight	10t
	Counterweight plate	×12
	Length	2500 mm
	Width	2400 mm
	Height	485 mm
	Weight	10t
	Seat, counterweight	×2
	Length	2876 mm
	Width	2587 mm
	Height	1720 mm
	Weight	15t
	Central ballast	×2
	Length	5800 mm
	Width	1666 mm
	Height	810 mm
	Weight	20 t

	350t load hook	×4
	Length	2876 mm
	Width	1900 mm
	Height	806 mm
	Weight	6.7 t
	300t load hook	×1
	Length	2633 mm
	Width	1680 mm
	Height	806 mm
	Weight	5.9t
	200t load hook	×1
	Length	2431 mm
	Width	1040 mm
	Height	806mm
	Weight	3.5 t
	160t load hook	×1
	Length	2085 mm
	Width	1176 mm
	Height	806mm
	Weight	3.1t

	50t load hook	×1
	Length	1835 mm
	Width	735 mm
	Height	806 mm
	Weight	1.6t
	16t load hook	×1
	Length	1132 mm
	Width	480 mm
	Height	480 mm
	Weight	0.7t

2. Technical instruction

1) Working mechanisms

Primary hoisting mechanism, secondary hoisting mechanism (tip boom hoisting mechanism)

A hoisting mechanism is composed of a built-in axial piston variable displacement motor, a balance valve, a reducer, a normally-closed brake and a wire rope, which can be controlled independently.

Wire rope is anti-rotation one.

Primary hoisting mechanism, secondary hoisting mechanism (derricking of luffing jib) and tip boom hoisting mechanism are able to realize infinitely variable speeds from 0 to the maximum speed, largely improving the working efficiency.

Primary hoisting mechanism	Diameter of drum	620mm
	Speed of the outmost layer	140m/min
	Rope diameter	Φ26mm
	Rope length	800m
	Rated single rope tension	16t

Secondary hoisting mechanism (Tip boom hoisting mechanism)	Diameter of drum	620mm
	Speed of the outmost layer	130m/min
	Rope diameter	Φ26mm
	Rope length	480m
	Rated single rope tension	16t

Derricking mechanism

A derricking mechanism is composed of a built-in axial piston variable displacement motor, a balance valve, a reducer, a normally-closed brake and a wire rope, which can be controlled independently.

Wire rope is anti-rotation one.

Main boom derricking mechanism	Diameter of drum	2×620mm
	Speed of the outmost layer	2×40m/min

	Rope diameter	Φ26mm
	Rope length	450m
	Rated single rope tension	15t

Luffing jib derricking mechanism	Diameter of drum	650mm
	Speed of the outmost layer	139m/min
	Rope diameter	Φ26mm
	Rope length	400m
	Rated single rope tension	16t

Slewing mechanism

It is composed of a built-in axial piston double-variable displacement motor, a dual-gear reducer, a normally closed slewing brake, a small gear, and a slewing bearing. It realizes slewing for 360° through the slewing bearing driven by the small gear, thus realizing the slewing of superstructure.

The slewing mechanism is equipped with a controllable free swing function, which reduces the impact on the crane and ensures that braking is smooth and steady.

A closed slewing system with less impact is used to make the starting and braking more stable. The controllable free swing function make the slewing gear better fitted in operation.

Infinite slewing speed regulation: from 0 to 1.0r/min.

Crawling mechanism

The crawling mechanism is fitted with two variable displacement motors and two reducers. Each track is controlled by a lever. It is able to make such movements as crawling straight ahead/backwards, turning with a crawler, differential steering, turning on spot, crawling with a load with high maneuverability and flexibility.

Crawling speed: 0~1.0km/h。

Gradeability: 30%。

The tension degree of the track can be adjusted through a jack quickly and conveniently.

A-frame erecting mechanism

The A-frame erecting mechanism consists of A-frame, erection cylinder, auxiliary hydraulic system, etc. It is mainly used for the assembly, dismantling or transferring.

It is safer and more reliable that cylinder and balancing valve are connected through gasket-mounting.

After the A-frame is erected for over 105°, it can be used to connect anchoring rods and install boom sections, track assembly and counterweight.

Slewing and pitching mechanism of operator's cab

To reduce the width of the basic machine during transportation, the operator's cab can be swiveled for 90° from one side of the slewing table to the front, which is then fixed with a positioning pin. This is convenient for transportation.

Pitching-up and pitching-down is controlled by a cylinder. The operator's cab can be pitched up for 20° if the load is hoisted highly, broadening the vision of crane operator.

Counterweight and installation of counterweight

The mechanism is composed of counterweight frame, counterweight, bearing chain and retaining pin.

Outrigger erecting and track self-assembly/dismantling mechanism

The outrigger erecting and track self-assembly/dismantling mechanism consists of undercarriage outriggers, outrigger cylinders, undercarriage control valves, power pins, etc.

The outrigger erecting mechanism is the main load-bearing mechanism for self-assembly and dismantling of track. Track bolting cylinders are used to connect the track to the undercarriage center section. The track can be assembled /dismantled by the crane itself without help of an auxiliary crane, thus improving the working efficiency, reducing the labor intensity and guaranteeing the safe operation of crane.

2) Systems

Hydraulic system

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

It is equipped with a worldwide advanced pump-controlling system and a load-sensitive system. Main hydraulic elements are of famous brands both at home and abroad, which are energy-saving and highly reliable with a long service life.

Cooler: aluminum radiator with a hydraulic-driving fan.

Electrical system

DC 24V, negative ground, two storage batteries of 195AH

The electrical system of machine includes power source, engine start, engine shutdown, indicating light, alarm device, illumination device, fan, wiper, horn, hoisting limiter, hydraulic oil

cooling fan, digital display system, PLC controller, load moment limiter, engine preheating device, safety equipment etc. which not only ensure safe operation of the crane but also provide a good working environment. CAN bus control technology applied in the crane connects engine, PLC controller, load moment limiter and digital display efficiently. It possesses the function of fault detecting and self-diagnosis.

Power system

WeiChai engine with CAN bus interface

Rated output power/ rotational speed: 247kw, 2000r/min

Maximum output torque: 1600Nm, (1200~1400)r/min

Exhaust emission standard: off-road China III

Fuel tank has a great capacity of 750 L, which ensures long working hours of engine.

Digital display system

LCD with a large touch screen is able to display all kinds of configuration signals collected by PLC in multiple languages, including rotational speed of engine, water temperature, fuel oil pressure, hydraulic pump pressure, major motor pressure, operational condition of the basic machine, etc. It also carries out real-time monitoring on working condition and sends out yellow or red alarm when the crane is in abnormal conditions.

3) Safety devices

Load moment limiter

It consists of a digital LCD screen, a host machine, a signal converter, a sensor, etc. When the lifting moment reaches 90% of the rated moment, the warning light is on and the buzzer sends out a warning. The operation will be stopped automatically when the rated moment is being approached so that accidents caused by overload can be avoided.

Data as follows can be displayed on the digital LCD screen:

Moment ratio

Elevation angle of main boom

Main boom length

Working radius

Actual load capacity of hook

Permitted lifting capacity

Permitted maximum lifting height

Overflow valves in hydraulic system

The overflow valve fitted in the hydraulic system can restrain the pressure in the oil circuit from rising irregularly, thus protecting such hydraulic elements as hydraulic oil pump and hydraulic motor against damage and preventing the hydraulic system from being overloaded.

Hoisting limiter

Devices like limit switch and limit weight installed on boom head are used to prevent over-hoisting of load hook. Limit switch sends out a signal if the load hook is hoisted to a certain height, and the electrical system will cut off the hoisting automatically. A sound-light alarm will be sent out through the buzzer and the display in operator's cab to avoid over-hoisting of the hook.

Angle indicator

It is fitted at the lower rear end of the boom pivot section (i.e. on the right side of the operator's cab). The operator can clearly see the boom angle from the cab.

Derricking limiter

The protective device, controlled by load moment limiter and limit switch, realizes automatic cut-off of limit derricking of boom and sends out sound-light alarm.

Main boom tilting-back support

It is a mechanical tilting-back support with the spring. It is mounted on the main boom pivot section to prevent main boom from tilting backwards with the support of hydraulic pressure.

Crane inclinometer

An electronic inclinometer is used to indicate the "leveled position" of the crane. The operator can observe the inclination of crane in the screen at all times.

Mousing

It closes off the hook to prevent a load from slipping off.

Protective device for over-winding and over-unwinding of rope

A device ensuring that three windings of wire rope on the drum is maintained at all times during operation. When there are only three windings of wire rope left on the drum, the lowering limit switch will be triggered, the buzzer will sound, and the crane movement "reel off winch" will be switched off.

Anemometer

An electronic device used to indicate the actual wind speed at boom head to the crane operator.

Emergency stop button

It shuts down the engine and cuts off the whole power supply in emergent conditions.

Tricolor warning light

The warning light, by showing red, yellow and green colors, can indicate loading status. The green color means the load ratio is less than 90%, the yellow color means the load ratio is between 90% and 100%, and the red color means that the load ratio has exceeded 100% and the crane is overloaded.

Monitoring system

Four video cameras: respectively monitor the working conditions of crane winches in the slewing table and on the boom frame as well as the situation behind the crane.

Display: switch between the different screens via press-key.

Remote GPS monitoring system (optional)

It has such functions as global positioning, GPRS data transmission, inquiry and statistics of equipment status, remote fault diagnosis, etc.

4) Operator's cab

It is an all-steel structured cab with tempered glass around. The top and front windows are laminated glasses. The cab is equipped with a right sun visor, an adjustable seat, a wiper, an electrical control lever, a load moment limiter, a digital display, a remote control box of various switches, an air conditioner, an electric fan, a head lamp, a cigarette lighter, a fire extinguisher, etc. The operator's cab has a broad vision and a capacious and comfortable inner space.

5) Load hook

All rotatable load hooks are equipped with a mousing.

350t load hook: 13 pulleys

300t main load hook: 11 pulleys

200t load hook: 7 pulleys

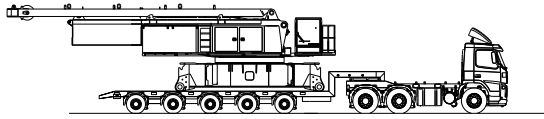
160t load hook: 5 pulleys

50t load hook: 2 pulleys

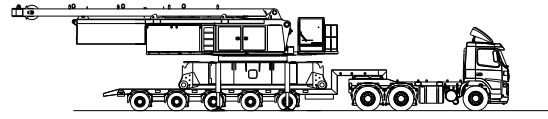
16t load hook: cylinder hook

3. Schematic diagrams of basic operating modes

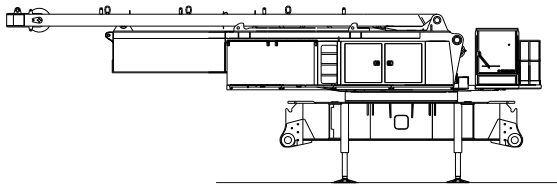
1) Unloading of the basic machine



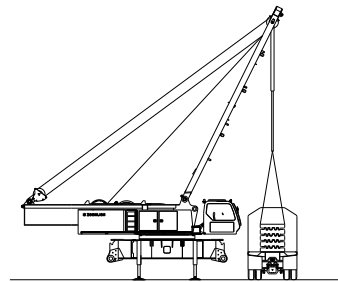
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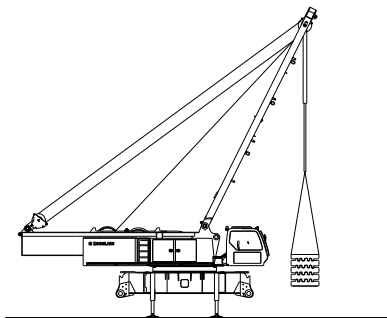
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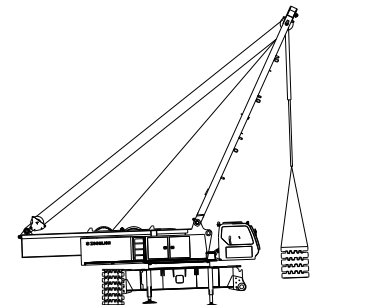
(3)



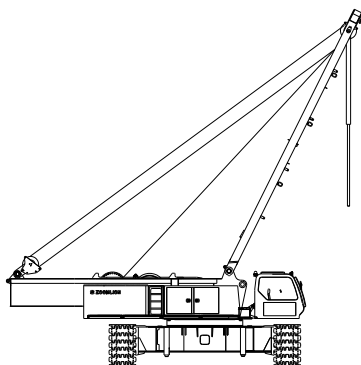
(4)



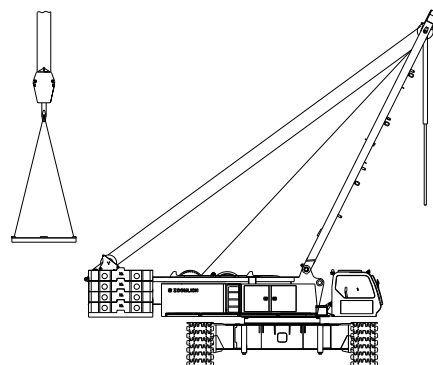
(5)



(6)

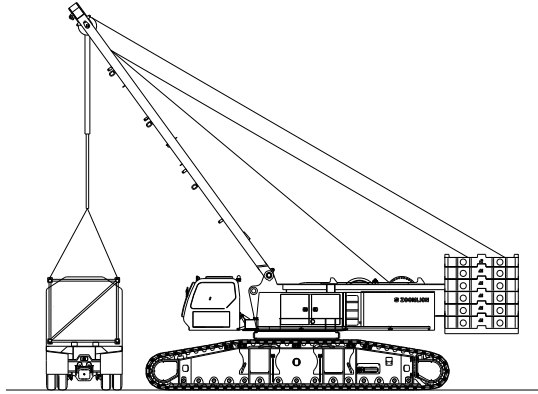


(7)

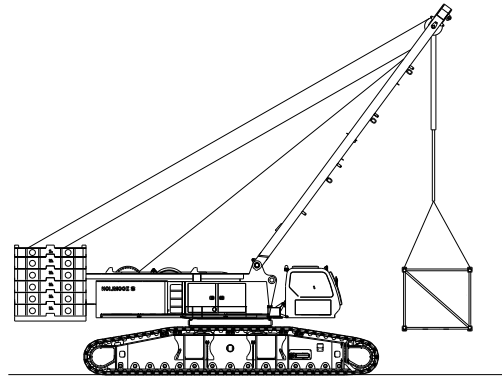


(8)

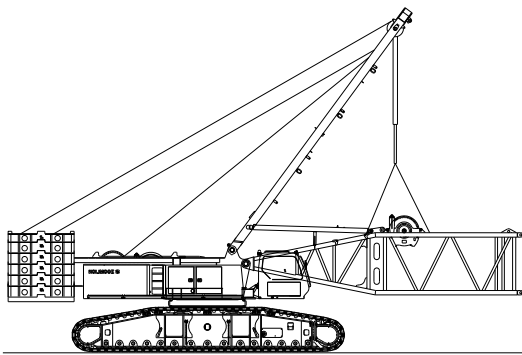
2) Installation of main boom



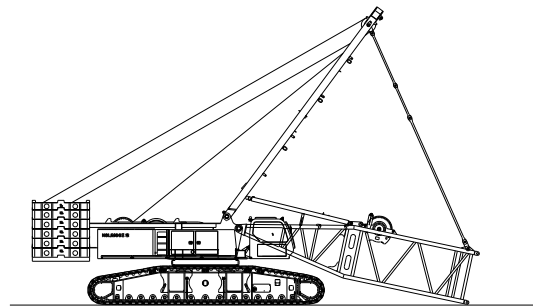
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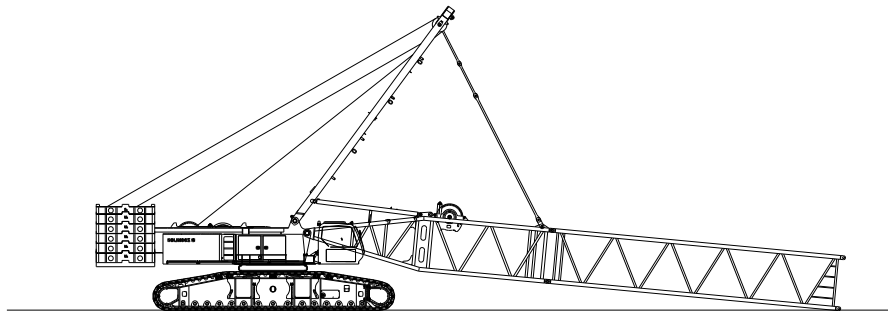
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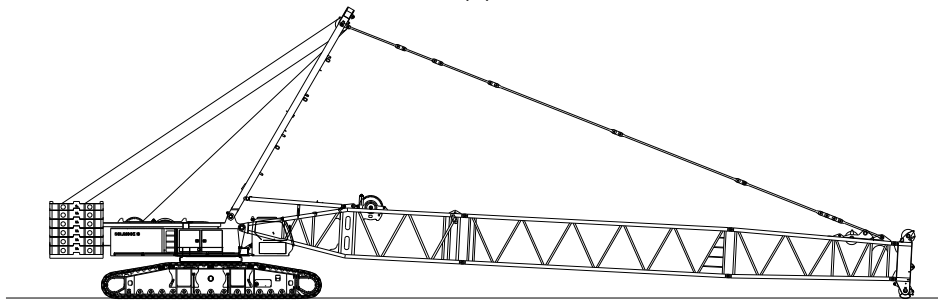
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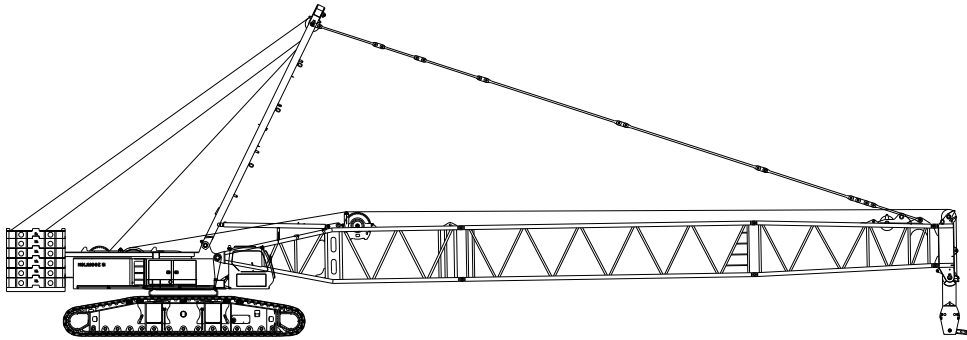
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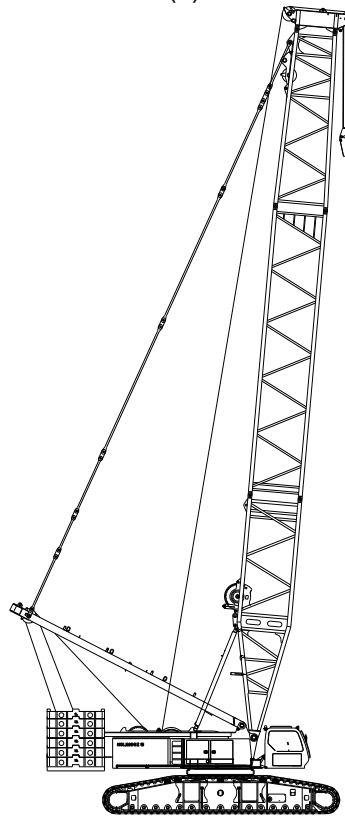
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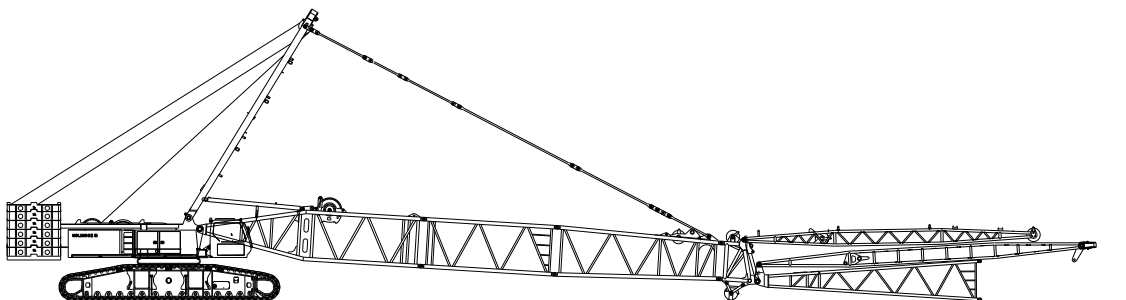


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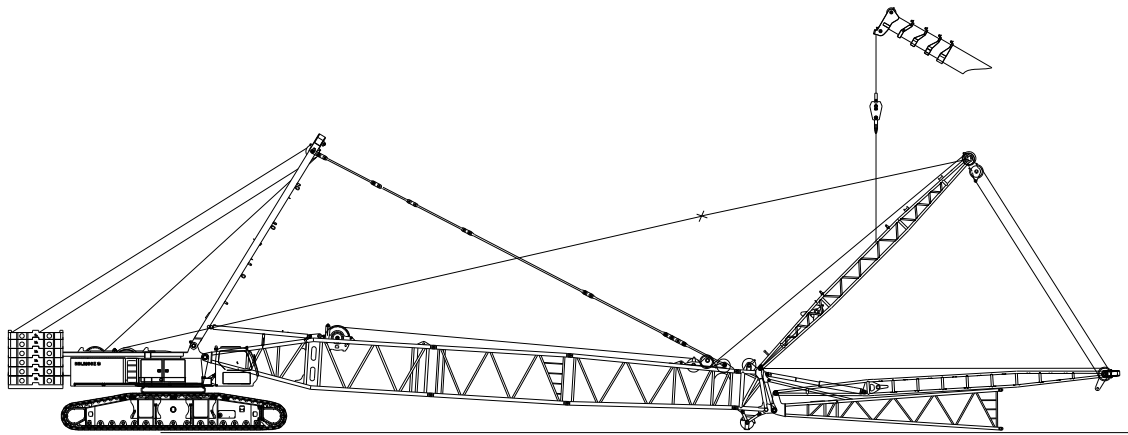


(8)

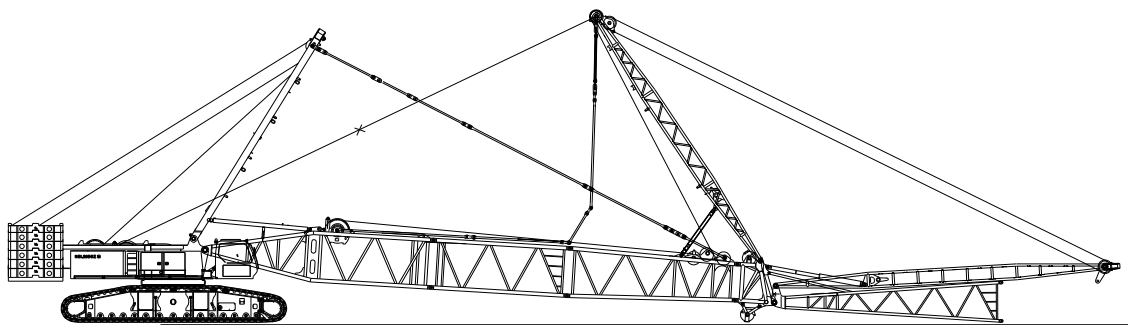
3) Installation of derricking jib (luffing jib)



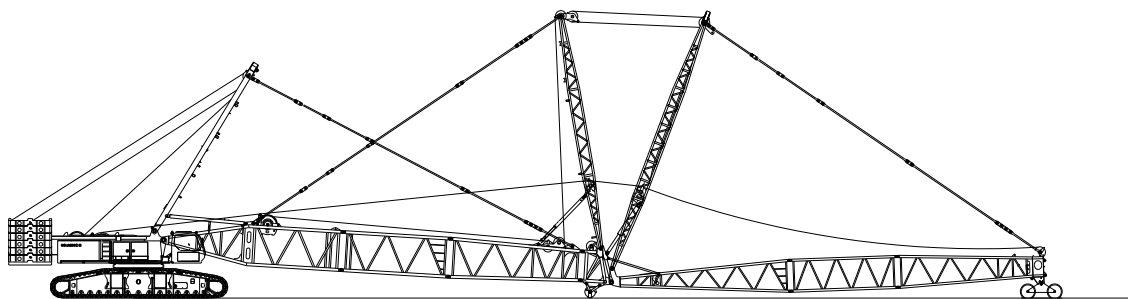
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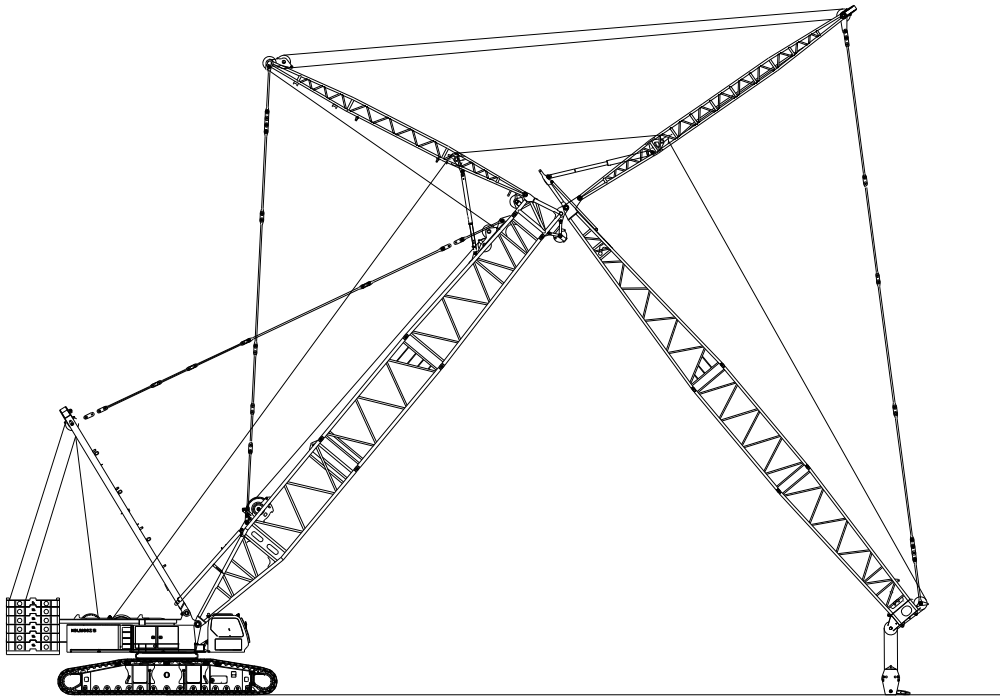
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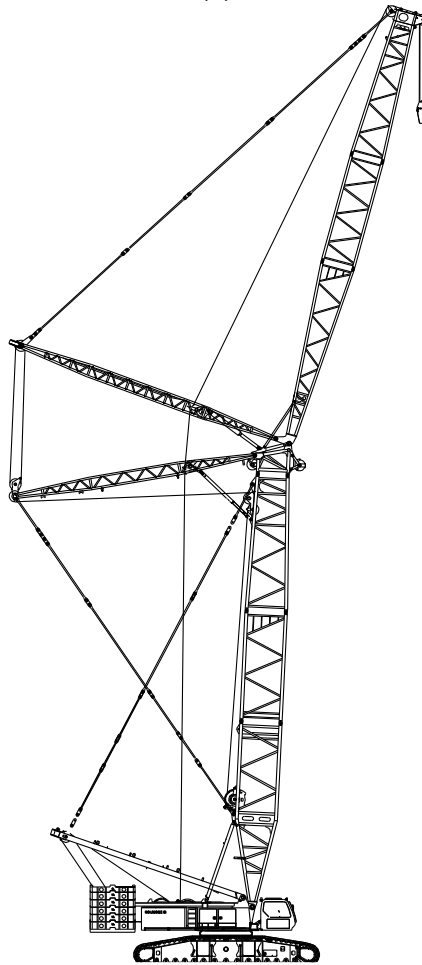
(3)



(4)



(5)

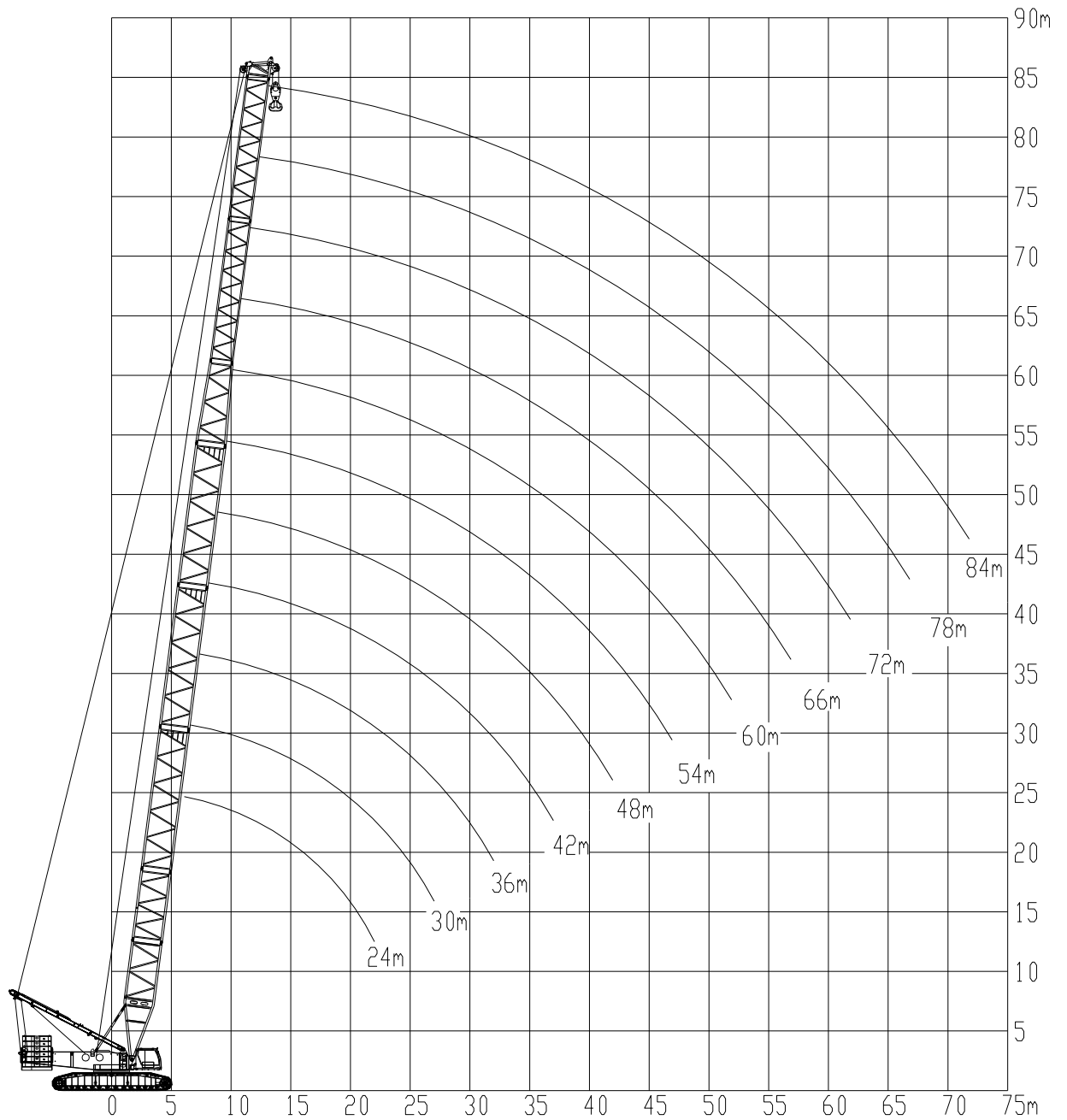


(6)

4. Lifting performance

1) S

1.1 Lifting height curves



1.2 Lifting capacity charts

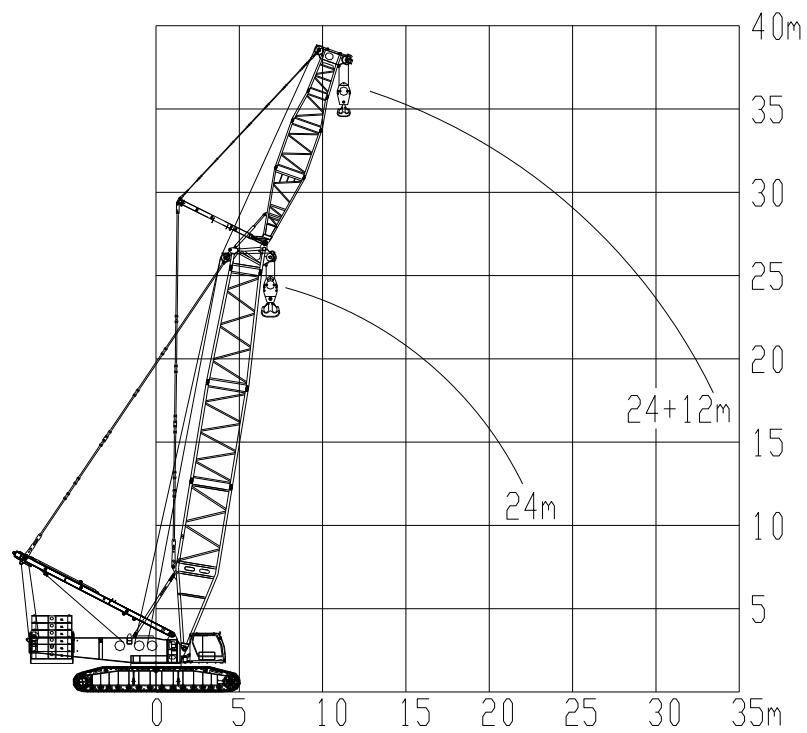
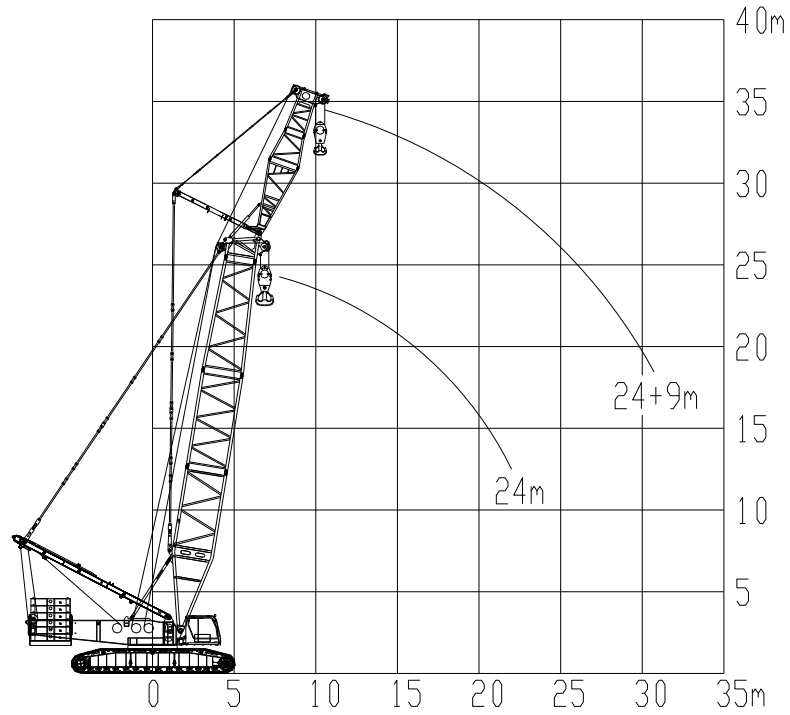
Rear counterweight, 150t; Central ballast, 40t												
Radius (m)	Main boom length (m)											Radius (m)
	24	30	36	42	48	54	60	66	72	78	84	
7												7
8												8
9				257	249							9
10			236	229	223	210						10
11			212	207	201	196	191					11
12			193	189	183	179	174	167	147			12
14		158	158	158	154	151	148	145	141	118	98.9	14
16		131	130	130	130	128	125	123	120	114	95.1	16
18		111	111	111	110	110	108	106	104	102	91.4	18
20	96.5	96.6	96.1	96	95.3	95.1	94.4	93.5	91.7	90	88	20
22	84.9	85	84.5	84.3	83.7	83.5	82.7	82.3	81.5	80	78.4	22
24		75.7	75.1	75	74.3	74.1	73.3	72.9	72.4	71.8	70.3	24
26		68	67.5	67.4	66.7	66.5	65.6	65.2	64.7	64.2	63.5	26
28		61.6	61.1	61	60.3	60	59.2	58.8	58.3	57.8	57.2	28
30			55.7	55.6	54.8	54.6	53.8	53.3	52.8	52.3	51.7	30
32			51	50.9	50.2	49.9	49.1	48.6	48.1	47.6	47	32
34				46.8	46.1	45.9	45.1	44.6	44	43.5	43	34
36				43.3	42.6	42.3	41.5	41	40.5	40	39.4	36
38				40.1	39.4	39.2	38.4	37.9	37.3	36.8	36.2	38
40					36.6	36.4	35.6	35.1	34.5	34	33.4	40
44						31.6	30.8	30.3	29.7	29.2	28.6	44
48						27.7	26.9	26.4	25.8	25.3	24.7	48
52							23.6	23.1	22.5	22	21.4	52
56								20.3	19.8	19.2	18.6	56
60									17.4	16.8	16.2	60
64									15.3	14.8	14.2	64
68										12.9	12.3	68
72											10.7	72

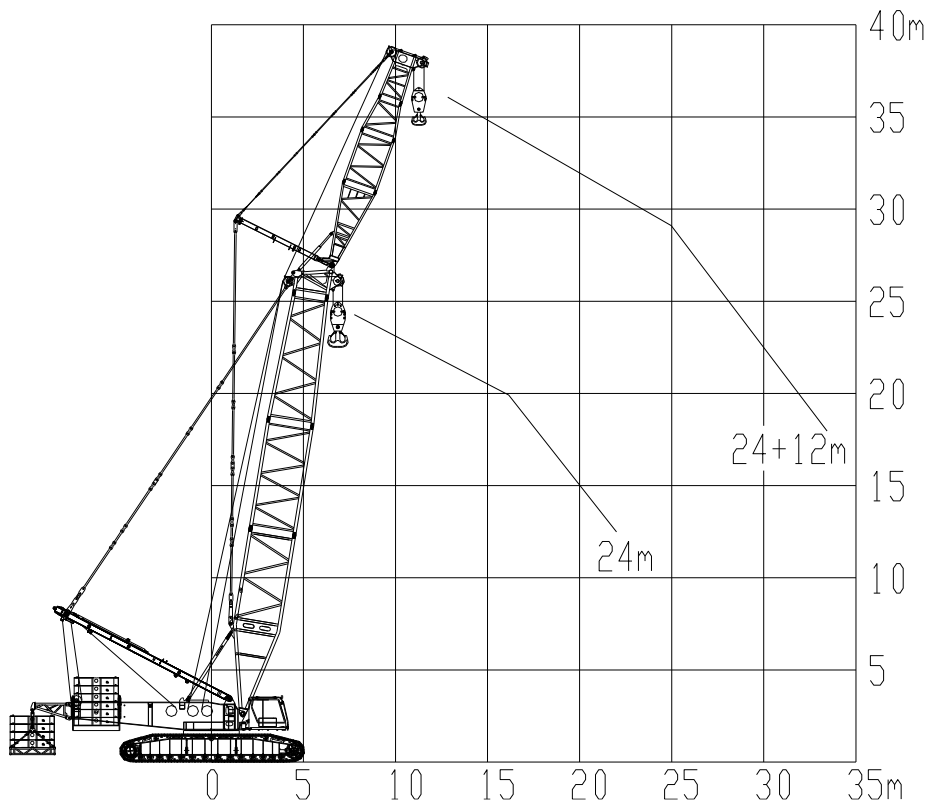
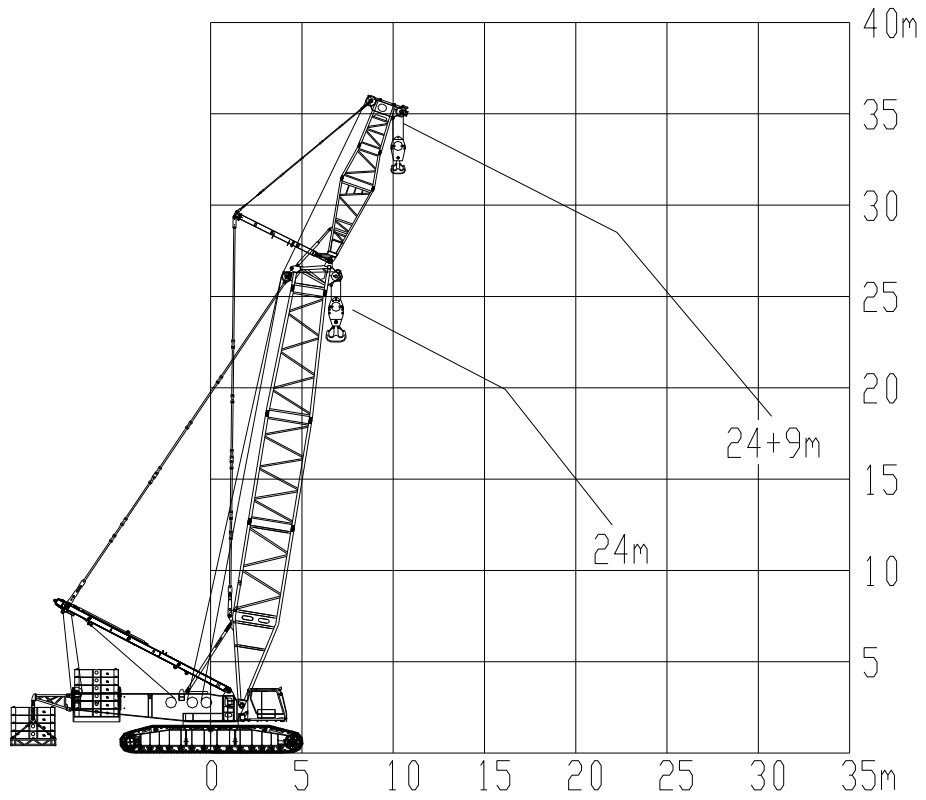
Rear counterweight, 130t; Central ballast, 40t												
Radius (m)	Main boom length (m)											Radius (m)
	24	30	36	42	48	54	60	66	72	78	84	
7	350											7
8	306	303	300									8
9	267	267	261	253	245							9
10	237	232	225	219	213	207						10
11	203	203	197	192	187	183	178					11
12	177	178	175	171	167	163	159	156	143			12
14	141	141	141	140	137	134	131	128	126	114	94	14
16	116	117	116	116	115	114	111	109	107	104	90.5	16
18	99.1	99.1	98.6	98.5	97.9	97.8	96.1	94.3	92.4	90.6	86.5	18
20	85.8	85.8	85.3	85.2	84.5	84.4	83.6	82.7	81.1	79.5	77.9	20
22	75.3	75.4	74.9	74.8	74.1	73.9	73.1	72.8	72	70.6	69.1	22
24		67	66.5	66.4	65.7	65.5	64.7	64.3	63.9	63.2	61.9	24
26		60.1	59.6	59.5	58.8	58.6	57.8	57.4	57	56.6	55.8	26
28		54.4	53.9	53.8	53.1	52.9	52	51.6	51.2	50.8	50.3	28
30			49	48.9	48.2	48	47.1	46.8	46.3	45.9	45.4	30
32			44.8	44.7	44	43.8	42.9	42.5	42.1	41.7	41.1	32
34				41.1	40.4	40.1	39.3	38.9	38.4	38	37.5	34
36				37.9	37.2	37	36.1	35.7	35.2	34.8	34.3	36
38				35	34.3	34.1	33.3	32.9	32.4	31.9	31.4	38
40					31.8	31.6	30.8	30.3	29.9	29.4	28.9	40
44						27.3	26.5	26.1	25.6	25.1	24.6	44
48						23.8	22.9	22.5	22	21.6	21.1	48
52							20	19.6	19.1	18.6	18.1	52
56								17.1	16.6	16.1	15.6	56
60									14.4	14	13.5	60
64									12.6	12.1	11.6	64
68										10.5	9.8	68
72											7.6	72

Rear counterweight, 110t; Central ballast, 40t												
Radius (m)	Main boom length (m)											Radius (m)
	24	30	36	42	48	54	60	66	72	78	84	
7	338											7
8	291	287	278									8
9	249	241	233	226	219							9
10	212	207	201	195	189	184						10
11	181	181	176	171	167	163	158					11
12	158	158	156	153	149	145	142	138	135			12
14	125	125	125	125	122	119	116	114	111	109	94	14
16	103	103	103	103	102	101	98.5	96.5	94.4	92.4	90.4	16
18	87.9	87.9	87.4	87.3	86.7	86.6	84.9	83.2	81.5	79.8	78	18
20	75.9	76	75.5	75.4	74.7	74.5	73.8	72.9	71.3	69.9	68.3	20
22	66.6	66.6	66.1	66	65.3	65.1	64.4	64	63.1	61.8	60.4	22
24		59.1	58.6	58.5	57.8	57.6	56.8	56.5	56	55.2	54	24
26		53	52.5	52.4	51.7	51.4	50.6	50.3	49.8	49.4	48.5	26
28		47.8	47.3	47.2	46.5	46.3	45.5	45.1	44.6	44.2	43.7	28
30			42.9	42.8	42.1	41.9	41.1	40.7	40.2	39.8	39.3	30
32			39.1	39.1	38.4	38.1	37.3	36.9	36.4	36	35.5	32
34				35.8	35.1	34.9	34	33.6	33.1	32.7	32.2	34
36				32.9	32.2	32	31.2	30.8	30.3	29.8	29.3	36
38				30.4	29.7	29.5	28.6	28.2	27.7	27.3	26.8	38
40					27.4	27.2	26.4	26	25.5	25	24.5	40
44							23.4	22.5	22.1	21.6	21.2	44
48							20.2	19.3	18.9	18.4	18	48
52								16.7	16.3	15.8	15.3	52
56									14	13.5	13.1	56
60										11.6	11.2	60
64										9.9	9.5	64
68											8	68
72												72

2) SF

2.1 Lifting height curves





2.2 Lifting capacity charts

Main boom, 24m; Jib, 9m; Rear counterweight, 150t; Central ballast, 40t						
Angle(°)	Radius(m)			Lifting capacity(t)		
Main boom angle	Primary hook	Auxiliary hook	Turning over	Primary hook	Auxiliary hook	Turning over
80.4	7	10.6	8.8	330.0	193.2	261.6
79.6	7.3	11	9.2	320.1	190.0	255.1
77.9	8	12	10.0	297.0	183.0	240.0
74.2	9.5	14	11.8	245.5	155.0	200.3
72.9	10	14.7	12.4	231.0	145.6	188.3
70.3	11	16	13.5	207.0	128.0	167.5
67.7	12	17.5	14.8	187.0	113.0	150.0
66.7	12.4	18	15.2	179.0	108.0	143.5
62.3	14	20	17.0	147.0	93.3	120.2
58.6	15.3	22	18.7	129.5	81.6	105.5
56.6	16	22.9	19.5	120.0	77.4	98.7
54.2	16.8	24	20.4	112.0	72.3	92.2
50.4	18	25.6	21.8	100.0	66.1	83.1
43.5	20	28.3	24.2	85.8	57.3	71.5
35.5	22	30.9	26.5	74.3	50.5	62.4

Note: The auxiliary hook weighs 3.1t when the primary hook is used (load hook for 160t). The primary hook weighs 3.7t when the auxiliary hook is used (load hook for 260t).

Main boom, 24m; Jib, 12m; Rear counterweight, 150t; Central ballast, 40t						
Angle(°)	Radius(m)			Lifting capacity(t)		
Main boom angle	Primary hook	Auxiliary hook	Turning over	Primary hook	Auxiliary hook	Turning over
80.4	7	12	9.5	325.0	165.0	245.0
77.9	8	13.5	10.8	292.0	152.3	222.1
76.4	8.3	14	11.2	281.2	148.0	214.6
75.4	9	15	12.0	256.0	138.0	197.0
72.9	10	16	13.0	227.0	128.0	177.5
70.3	11	18	14.5	204.0	109.0	156.5
67.7	12	19.4	15.7	184.0	98.4	141.2
66	12.4	20	16.2	176.2	93.8	135.0
62.3	14	22	18.0	145.0	82.2	113.6
58.5	15.1	24	19.6	130.2	72.8	101.5
56.6	16	25.3	20.7	118.0	67.8	92.9
54.5	16.5	26	21.3	113.2	65.1	89.1
50.4	18	28	23.0	98.7	58.6	78.7
45.5	19.3	30	24.7	89.2	53.1	71.2
43.5	20	31	25.5	72.6	50.8	61.7
35.5	22	33.8	27.9	72.6	44.3	58.5

Note: The auxiliary hook weighs 3.1t when the primary hook is used (load hook for 160t). The primary hook weighs 3.7t when the auxiliary hook is used (load hook for 260t).

Main boom, 24m; Jib, 9m; Rear counterweight, 130t; Central ballast, 40t						
Angle(°)	Radius(m)			Lifting capacity(t)		
Main boom angle	Primary hook	Auxiliary hook	Turning over	Primary hook	Auxiliary hook	Turning over
80.4	7	10.6	8.8	330.0	193.2	261.6
79.6	7.3	11	9.2	320.1	190.0	255.1
77.9	8	12	10.0	297.0	177.0	237.0
74.2	9.5	14	11.8	243.5	140.0	191.8
72.9	10	14.7	12.4	227.0	131.3	179.1
70.3	11	16	13.5	193.0	115.0	154.0
67.7	12	17.5	14.8	167.0	101.5	134.3
66.7	12.4	18	15.2	159.8	97.0	128.4
62.3	14	20	17.0	131.0	83.5	107.3
58.6	15.3	22	18.7	115.4	72.9	94.2
56.6	16	22.9	19.5	107.0	69.1	88.0
54.2	16.8	24	20.4	99.9	64.4	82.2
50.4	18	25.6	21.8	89.3	58.8	74.1
43.5	20	28.3	24.2	76.0	50.8	63.4
35.5	22	30.9	26.5	65.6	44.4	55.0

Note: The auxiliary hook weighs 3.1t when the primary hook is used (load hook for 160t). The primary hook weighs 3.7t when the auxiliary hook is used (load hook for 260t).

Main boom, 24m; Jib, 12m; Rear counterweight, 130t; Central ballast, 40t						
Angle(°)	Radius(m)			Lifting capacity(t)		
Main boom angle	Primary hook	Auxiliary hook	Turning over	Primary hook	Auxiliary hook	Turning over
80.4	7	12	9.5	325.0	165.0	245.0
77.9	8	13.5	10.8	292.0	146.3	219.1
76.4	8.3	14	11.2	281.2	140.0	210.6
75.4	9	15	12.0	256.0	127.5	191.8
72.9	10	16	13.0	225.0	115.0	170.0
70.3	11	18	14.5	191.0	97.6	144.3
67.7	12	19.4	15.7	165.0	88.1	126.5
66	12.4	20	16.2	157.8	84.0	120.9
62.3	14	22	18.0	129.0	73.4	101.2
58.5	15.1	24	19.6	117.0	64.9	91.0
56.6	16	25.3	20.7	105.0	60.4	82.7
54.5	16.5	26	21.3	100.6	57.9	79.3
50.4	18	28	23.0	87.5	52.0	69.8
45.5	19.3	30	24.7	78.9	47.1	63.0
43.5	20	31	25.5	74.3	45.0	59.6
35.5	22	33.8	27.9	63.9	39.4	51.6

Note: The auxiliary hook weighs 3.1t when the primary hook is used (load hook for 160t). The primary hook weighs 3.7t when the auxiliary hook is used (load hook for 260t).

Main boom, 24m; Jib, 9m; Rear counterweight, 110t; Central ballast, 40t						
Angle(°)	Radius(m)			Lifting capacity(t)		
Main boom angle	Primary hook	Auxiliary hook	Turning over	Primary hook	Auxiliary hook	Turning over
80.4	7	10.6	8.8	330.0	186.0	258.0
79.6	7.3	11	9.2	316.2	178.0	247.1
77.9	8	12	10.0	284.0	157.0	220.5
74.2	9.5	14	11.8	220.0	124.0	172.0
72.9	10	14.7	12.4	201.0	116.3	158.7
70.3	11	16	13.5	171.0	102.0	136.5
67.7	12	17.5	14.8	148.0	89.9	118.9
66.7	12.4	18	15.2	141.4	85.8	113.6
62.3	14	20	17.0	115.0	73.6	94.3
58.6	15.3	22	18.7	101.2	64.2	82.7
56.6	16	22.9	19.5	93.8	60.7	77.3
54.2	16.8	24	20.4	85.3	56.5	70.9
50.4	18	25.6	21.8	78.1	51.5	64.8
43.5	20	28.3	24.2	66.2	44.3	55.3
35.5	22	30.9	26.5	56.8	38.6	47.7

Note: The auxiliary hook weighs 3.1t when the primary hook is used (load hook for 160t). The primary hook weighs 3.7t when the auxiliary hook is used (load hook for 260t).

Main boom, 24m; Jib, 12m; Rear counterweight, 110t; Central ballast, 40t						
Angle(°)	Radius(m)			Lifting capacity(t)		
Main boom angle	Primary hook	Auxiliary hook	Turning over	Primary hook	Auxiliary hook	Turning over
80.4	7	12	9.5	325.0	156.0	240.5
77.9	8	13.5	10.8	284.0	132.8	208.4
76.4	8.3	14	11.2	269.9	125.0	197.5
75.4	9	15	12.0	237.0	113.5	175.3
72.9	10	16	13.0	199.0	102.0	150.5
70.3	11	18	14.5	169.0	86.4	127.7
67.7	12	19.4	15.7	146.0	77.9	111.9
66	12.4	20	16.2	139.6	74.2	106.9
62.3	14	22	18.0	114.0	64.7	89.4
58.5	15.1	24	19.6	103.1	57.0	80.0
56.6	16	25.3	20.7	92.1	52.9	72.5
54.5	16.5	26	21.3	88.2	50.7	69.4
50.4	18	28	23.0	76.3	45.5	60.9
45.5	19.3	30	24.7	68.6	41.0	54.8
43.5	20	31	25.5	64.5	39.1	51.8
35.5	22	33.8	27.9	55.2	34.0	44.6

Note: The auxiliary hook weighs 3.1t when the primary hook is used (load hook for 160t). The primary hook weighs 3.7t when the auxiliary hook is used (load hook for 260t).

Lifting capacity charts: TBM OM with attached counterweight

Main boom, 24m; Jib, 9m; Rear counterweight, 150t; Central ballast, 40t, Attached counterweight, 40t						
Angle(°)	Radius(m)			Lifting capacity(t)		
Main boom angle	Primary hook	Auxiliary hook	Turning over	Primary hook	Auxiliary hook	Turning over
80.4	7	10.6	8.8	350.0	193.2	271.6
79.6	7.3	11	9.2	350.0	190.0	270.0
77.9	8	12	10.0	318	183.0	256.5
74.2	9.5	14	11.8	292.5	171.0	231.8
72.9	10	14.7	12.4	275.0	166.5	220.8
70.3	11	16	13.5	247.0	154.0	200.5
67.7	12	17.5	14.8	220.0	143.0	181.5
66.7	12.4	18	15.2	215.2	138.0	176.6
62.3	14	20	17.0	184.0	120.0	152.0
58.6	15.3	22	18.7	164.5	105.0	134.8
56.6	16	22.9	19.5	154.0	99.0	126.5
54.2	16.8	24	20.4	144.4	93.6	119.0
50.4	18	25.6	21.8	130.0	86.0	108.0
43.5	20	28.3	24.2	105.0	74.0	89.5
35.5	22	30.9	26.5	84.3	59.0	71.7

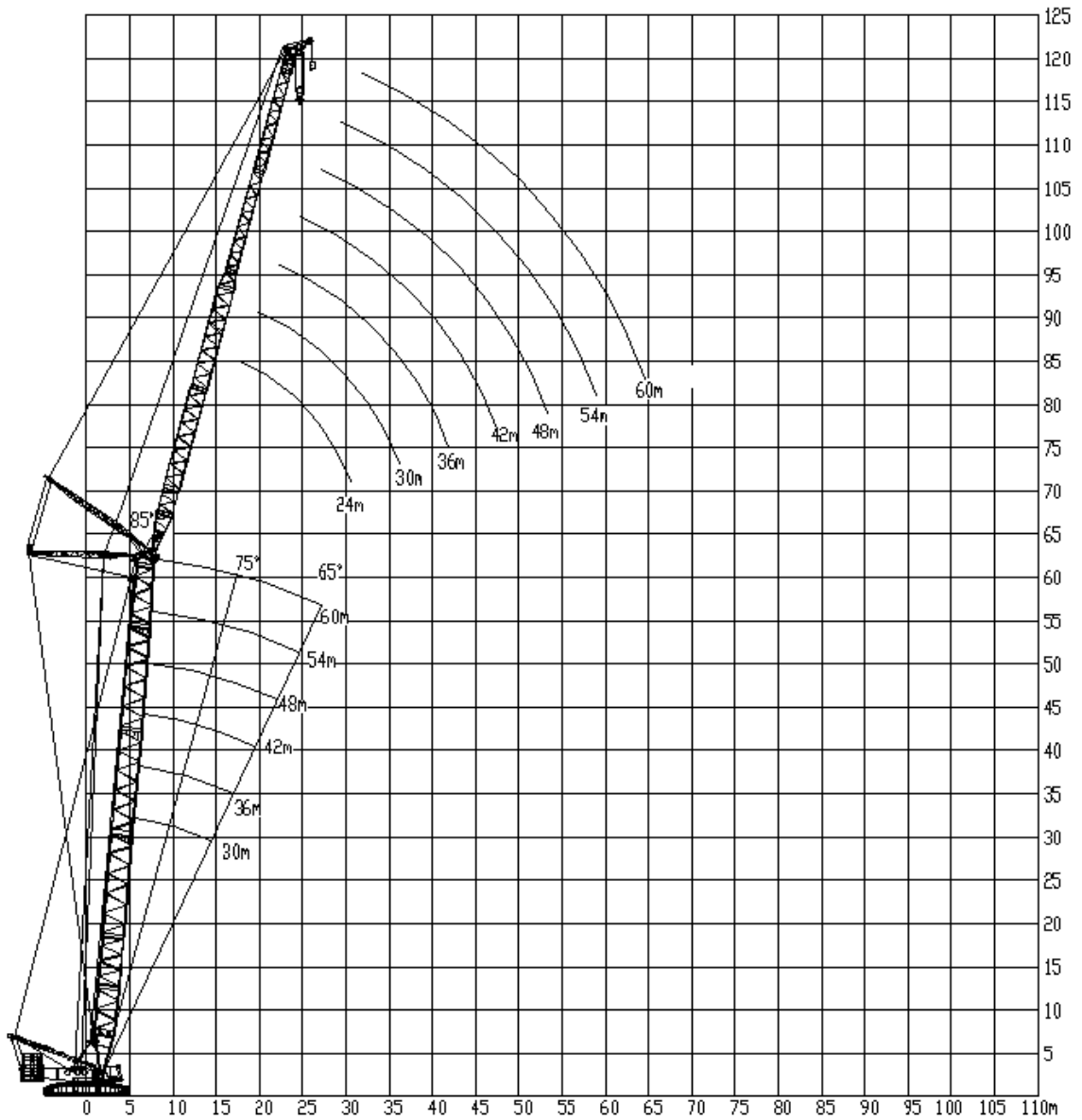
Note: The auxiliary hook weighs 3.1t when the primary hook is used (load hook for 160t). The primary hook weighs 3.7t when the auxiliary hook is used (load hook for 260t).

Main boom, 24m; Jib, 12m; Rear counterweight, 150t; Central ballast, 40t, Attached counterweight, 40t						
Angle(°)	Radius(m)			Lifting capacity(t)		
Main boom angle	Primary hook	Auxiliary hook	Turning over	Primary hook	Auxiliary hook	Turning over
80.4	7	12	9.5	350.0	165.0	257.5
77.9	8	13.5	10.8	318	152.0	241.0
76.4	8.3	14	11.2	315	148.0	233.0
75.4	9	15	12.0	310.0	141.5	225.8
72.9	10	16	13.0	275.0	135.0	205.0
70.3	11	18	14.5	247.0	124.0	185.5
67.7	12	19.4	15.7	220.0	117.0	168.5
66	12.4	20	16.2	217.0	115.0	166.0
62.3	14	22	18.0	184.0	106.0	145.0
58.5	15.1	24	19.6	172.0	94.1	133.1
56.6	16	25.3	20.7	154.0	87.8	120.9
54.5	16.5	26	21.3	152.0	84.5	118.3
50.4	18	28	23.0	130.0	76.4	103.2
45.5	19.3	30	24.7	126.0	69.6	97.8

Note: The auxiliary hook weighs 3.1t when the primary hook is used (load hook for 160t). The primary hook weighs 3.7t when the auxiliary hook is used (load hook for 260t).

3) SW

3.1 Lifting height curves



3.2 Lifting capacity charts

Main boom length 30m								
Main boom angle, 85°; Jib length, 24 – 60 m; Rear counterweight, 150t; Central ballast 40t								
Radius/ m	24	30	36	42	48	54	60	Radius/ m
12	150							12
14	142	136	120					14
16	124	120	116	106				16
18	109	106	103	100	76.8			18
20	95.4	95	93.1	90.5	76.2	64.7	54.7	20
22	84.4	84	83.7	82.4	75.2	63.8	54.6	22
24	75.6	75.2	75	74.7	73.8	61.2	53.9	24
26	68.3	68	67.8	67.5	67.4	54.5	53	26
28	60.1	62	61.7	61.5	61.4	49.2	51.2	28
30	56.9	56.9	56.6	56.4	56.3	44.6	47.1	30
32		52.4	52.2	52	51.9	40.7	43.5	32
34		47.7	48.4	48.2	48.1	37.2	39.9	34
36			45.1	44.8	44.7	34.3	36.8	36
38			42.1	41.9	41.8	31.6	33.8	38
40			39.1	39.2	39.2	29.3	31.4	40
44				34.7	34.2	22	24.7	44
48				32.6	31	19.4	21.6	48
52					27.8	17.3	19.1	52
56						15.5	16.9	56
60						14	15	60
64							14	64

Main boom length 42m								
Main boom angle, 85°; Jib length, 24 – 60 m; Rear counterweight, 150t; Central ballast 40t								
Radius/ m	24	30	36	42	48	54	60	Radius/ m
12	137							12
14	131	119						14
16	115	111	105					16
18	103	99.5	96.6	92				18
20	92.9	89.9	87.3	84.8	68.5	58.1		20
22	83.9	81.9	79.6	77.4	68	57.9	49.8	22
24	75.1	74.7	73.1	71.1	67.4	57.2	49.4	24
26	67.9	67.6	67.3	65.8	64.2	56	48.7	26
28	61.9	61.6	61.3	61	59.7	50.4	48	28
30	51.9	56.5	56.2	55.9	55.6	45.6	44.4	30
32		52.1	51.9	51.6	51.4	41.8	40.9	32
34		48.3	48.1	47.8	47.7	38.3	37.5	34
36		44.9	44.7	44.5	44.3	35.3	34.8	36
38			41.8	41.6	41.4	32.5	32.3	38
40			39.1	38.9	38.8	30.2	27.8	40
44			34	34.5	34.4	22.2	25.2	44
48				30	30.7	19.4	22	48
52					27.9	17.3	19.4	52
56						15.7	17.2	56
60						15.3	15.3	60
64							14	64

Main boom length 60m								
Main boom angle, 85°; Jib length, 24 – 60 m; Rear counterweight, 150t; Central ballast 40t								
Radius/ m	24	30	36	42	48	54	60	Radius/ m
14	108							14
16	101	96.2						16
18	92	89	83.6					18
20	83.4	80.8	78.1	70.2	56.1			20
22	76.3	73.9	71.5	69.6	55.9	48.6		22
24	70.3	68	65.9	64.2	55.4	48.3	41.9	24
26	65.2	63.1	61	59.5	54.9	41.6	41.5	26
28	54.5	58.8	56.8	55.4	53.9	39	41.1	28
30	38	54.9	53.1	51.8	50.3	36	40.6	30
32	32.9	51.3	49.8	48.6	47.3	33.8	39.4	32
34		41.5	46.9	45.7	44.4	32.1	36.6	34
36		30.2	43.8	43.1	41.9	30	33.3	36
38		28	40.9	40.7	39.7	27.8	31.2	38
40			32.8	38.2	37.6	26.1	29.3	40
44			22	33.1	33.5	23.1	25.7	44
48				22.1	30	20.4	22.7	48
52					22.2	18.2	20	52
56					16.5	16.3	17.6	56
60						15	15.7	60
64							14.1	64
68							12	68