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XGC45

CRAWLER CRANE



▼XCMG

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Note: Due to the need for continuous product improvement, we reserve the right to make changes to product models, parameters, and configurations without prior notice.

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XGC45 CRAWLER CRANE

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DESCRIPTION ON COMPONENTS AND SYSTEM

CRANE SUPERSTRUCTURE

Boom combination

The boom sections use high-strength seamless pipe as chords and lacing members, supplemented by four-chord lattice structure which is welded by high strength steel plate, with equal section in the middle and variable section at two ends. With the help of accurate finite element analysis and calculation, the potential of boom sections are fully utilized and the lifting capacity is greatly improved.

In boom working condition, the maximum lifting capacity is 45t/3.3m, maximum load moment is 150t.m, boom length HB10m–HB37m. Boom composition: boom butt $1\times5m$, boom top $1\times5m$, boom insert $1\times3m$, boom insert $1\times6m$, boom insert $2\times9m$.

In boom single top working condition, the maximum lifting capacity is 6.5t (parts of line 1), boom single top length is 1.1m, boom length HB10m~HB37m.

Boom luffing components

Luffing connection between boom sections is mainly realized through guy cables, supplemented by pendant. The guy cables adopt mature technology structure, safe and reliable; the pendants use high-strength steel plate and cut once for formation, no welding, with less manufacturing defects and has high safety factor.

Turntable

Turntable is the key load bearing structure to connect superstructure and undercarriage, the main bearing structure is made of high strength steel plate and welded in flat box—type structure, the space is enlarged by welding bracket on both sides for arranging the fixed load. Turntable is connected with undercarriage by slewing ring. Boom butt, gantry, hoist winch, luffing winch and counterweight are arranged on the main bearing structure; fixed load such as cab, engine system, main pump, hydraulic valve, electric cabinet and other structures are arranged on the brackets on both sides; turntable main structure and brackets of both sides are design according to the force condition of the overall crane, with reasonable structure, good overall strength and stiffness.

A-frame

Gantry is double-limb structure, reinforced beam is installed between the two limbs, with good stability. The main structure of gantry is high-quality seamless steel pipe, with less welding, less manufacturing defects and high safety factor. There are two states for the gantry, it is erected for working and laid down for transportation. The gantry is equipped with self-erection roller, which can achieve self-erection function in coordination with boom butt.

Mechanism composition

The mechanisms of the crane and their functions are shown in the table below:

No.	Name		
1	Main hoist system	Used for the lifting operation of main boom	Turntable middle and front side
2	Auxiliary hoist system	Used for auxiliary lifting operation in boom single top	Turntable middle side
3	Main luffing system	Boom luffing	Turntable rear side
4	Slewing system	Superstructure slewing	Turntable middle side
5	Travel unit	Crane travel	Crawler drive sprocket

Hoist system

Hoist system includes main hoist system and aux. hoist system.

The ductile iron double–line drum is used for the winches, with good vibration absorption, ensures that there is no messy rope when it is reeved in multiple layers, which effectively prolong the rope's service life.

The rotation resistance wire rope used for main hoist system is left–handed and twisting in the same direction. It has the features of independent steel core, high breaking force and high extrusion resistance. Rated single line pull is 6.5t, rope diameter is ϕ 20 mm, rope length is 150m.

The wire rope used for auxiliary hoist system is also rotation resistance, with the features of independent steel core, high breaking force and high extrusion resistance. Rated single line pull is 6.5t, rope diameter is ϕ 20 mm, rope length is 90m. Optional free fall for main and axu. load hoist.

Luffing system

For the luffing winch system, planetary reducer is driven by fixed displacement hydraulic motor to achieve boom luffing through drum and luffing pulley block. Main luffing mechanism has built–in planetary reducer, with negative brake wet type multi–disc normally closed brake to achieve "spring braking/hydraulic release" function.

The ductile iron double-line double-drum is used for main luffing winch, with good vibration absorption, ensures that there is no messy rope when it is reeved in multiple layers, which effectively prolong the rope's service life. The drum has a ratchet locking device, and the pawl is driven by hydraulic cylinder to achieve multiple lock for protection.

The rotation resistance wire rope used for the luffing system is left–handed and twisting in different directions. It has the features of independent steel core, high breaking force and good structure stability. Rated single line pull is 6t. rope diameter is \$20 mm. rope length is 70m.

Slewing unit

Slewing unit is internally meshed with slewing ring for drive. It is arranged in front of turntable. Planetary reducer is driven by fixed displacement motor to drive the slewing ring to achieve 360° slewing.

Slewing unit has a built-in planetary reducer, with negative brake wet type multi-disc normally closed brake to achieve "spring braking/hydraulic release" function, so as to ensure high brake safety. Slewing unit also has a mechanical locking device for locking protection of the slewing unit.

Eccentric mechanism can ensure a better meshing between the reducer and slewing bearing, so the slewing is more stable. The slewing mechanism has free swing function, so when heavy load is lifted, the side force of boom can be eliminated even if the hook is not on the vertical center line of the gravity center of the heavy load, so as to prevent boom from being damaged due to large side force.

Slewing ring

Single-row ball type slewing bearing, with the features of large bearing capacity and small rotary resistance.

Cylinder assembly

It includes track frame telescopic cylinder and boom luffing ratchet lock cylinder

The crawler beam telescopic adopts the oil cylinder as the power and shares a main valve with the left traveling. Convenient travel and track telescopic switching, soft action and small impact, and can easily change the track gauge to meet the transportation and work requirements.

The main luffing ratchet locking cylinder is used to control the action of ratchet . When the main luffing pilot handle is operated, the ratchet opens automatically. After the main luffing pilot handle returns to the middle position, the ratchet closes automatically. When the main luffing winch does not work, the ratchet locking device is always locked without additional manual operation, which is safe and convenient.

Operator's cab

The shape of the Operator's cab adopts bionic design, with smooth lines and a sense of strength. The glass area of the control room is large, the side glass division is reasonable, the sense of science and technology is strong, and the control field of vision is wide. The interior is arranged with people as the center, and the operator can touch all buttons without standing up. It is equipped with adjustable seats, cooling and heating air conditioners, power sockets, radios, etc., providing a comfortable operating environment for the operator.

CRANE UNDERCARRIAGE

The undercarriage includes car-body, crawler track travel device, etc.

Car-body

Car-body is made of high strength steel and welded in box-type radial structure good overall rigidity, high strength, and high precision. Precision machining ensures correct slewing ring installation.

Crawler travel unit

Crawler travel unit is divided into left/right crawler, consisting track frame, crawler shoe, track roller, drive sprocket, guide roller, idle roller, travel device and tension device.

Track frame: symmetrically arranged, one on each side, made of high-strength steel plate welded in box-type structure, insert type connection with car-body, drawer type clearance adjusting device to make sure there is not lateral "\n" type deformation and prevent collision between crawler shoes and lower roller.

Track shoe: high strength wear resistant alloy steel casting, width 760mm. Travel gear: constant close type planetary reducer, axial piston motor drive, and strong travel power for movement such as straight travel, turn on site, one side turn, differential turn and travel with load with excellent agility and flexibility. Multiple-disc wet type constant close brake, spring brake, hydraulic loose brake guarantees excellent brake safety.

Max. travelling speed: 1.37/km/h.

HYDRAULIC SYSTEM

Hydraulic system

Hydraulic system adopts hydraulic proportional pilot control load sense LUDV system, to achieve load-independent flow distribution, with accurate velocity, sensitive operation, stable system and good fine movement. Special LUDV centralized main valve to realize combined operation, with compact structure and easy for maintenance.

Main winch and auxiliary winch has double-pump combined flow function, to easily realize winch high/low speed control. Special slewing buffering circuit design, to realize stable slewing start and stop to meet the requirement of delicate lifting operation.

Hydraulic oil tank capacity: 400L.

ELECTRICAL SYSTEM

Electrical system mainly includes: engine control, monitoring instruments, auxiliary equipment, hydraulic system control, load moment limit and safety monitoring.

Electrical system composition: conventional electrical system and PLC monitoring system.

Conventional electrical system uses 24V parallel circuit, the electrical equipment wiring is negative ground single system, including power, starter control, cab heating/cooling air conditioner, sound device, lighting (lamps) and wipers. PLC monitoring system includes the operation control of main/auxiliary winches, slewing unit, boom and tower jib luffing and engine status monitoring. All the crane movements use hydraulic proportional control technology, through PLC logic control based on CAN-bus technology, effectively ensure the realization of the machine functions, and fully reflect the concept of people-oriented design.

ENGINE SYSTEM

Model: Weichai diesel WP4.1NG175E300 Rated power: 129kW/2300rpm

Max. torque/Max. torque speed: 680N ⋅ m/1400-1600rpm Environmental protection: China GB III standard.

Fuel tank capacity: 400L.

COUNTERWEIGHT

Car-body counterweight is total 9.55t, installed in the rear of turntable, and use pin shaft to connect with turntable the composition is the follows:

Counterweight tray 1 × 3t, counterweight slab 2 × 3.25t.

HOOK BLOCK

Hook name	35t	8t
Weight (t)	0.35	0.14
Number of pulley	3	-
Max. parts of line	6	1

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SAFETY PROTECTION DEVICES

This crane widely uses mechanical, electronic, hydraulic and other safety and alarm devices, in order to ensure safety operation. The safety devices consists LMI, slewing locking, boom backstop, hoist limit, boom angle limit, anemometer, slewing alarm, hydraulic system overflow valve, balance valve, hydraulic lock, and etc.

Assembly/Work mode switch

In assembly mode, anti-over-wound device, boom limit device and LMI does not work, in order to facilitate crane assembly; in work mode, all safety devices are working.

Emergency stop switch

In emergency cases, press this button to stop all crane movement.

Over-wound protection device

A main/auxiliary hoist over—wound protection device is installed on boom head to prevent wire rope from over—wound, when main/auxiliary winch hoists up to a certain height, the over—wound lamp on display lights on, at the same time, LMI stops hoisting up movement.

Winch over-release protection device

A rope—end limiter is installed in main and auxiliary hoist winch to protect wire rope from over—release from the winch drum. When there is only 3 layers of rope left on main/auxiliary winch, the over—release lamp on display lights on, at the same time, LMI stops lowering down movement.

Winch ratchet locking device

This function is used to lock the main luffing winch to protect the boom for stop work during non-working time.

Mechanical safety device

Slewing locking device is used for crane superstructure mechanical limit when the crane stops; the backstop device for boom and jib to prevent boom, jib and strut from backward tipping.

Angle limitation for boom lifting

When the main boom reaches the specified angle, the lifting is stopped and controlled by load moment limiter and travel switch; When the elevation angle of the main boom is less than the specified angle, the falling is stopped, controlled by the load moment limiter and gives an audible alarm.

Hook block retainer clamp

All hook blocks are equipped with retainer clamps to prevent the sling falling off from hook head.

Hydraulic system

Hydraulic system is equipped with hydraulic balance valve, and hydraulic overflow valve etc. to ensure system stability and safety.

Load moment limiter

The custom-made Hirschmannfeatures little power consumption, strong function, high sensitivity and easy operation.

Detection function: automatically detect boom angle and lifting load.

Display function: large color touch screen LCD display, with Chinese (or English) and graphically display of moment percentage, actual lifting load, rated lifting load, working radius, boom length, boom angle, max. lifting height, working condition code, parts of line, limit angle and information code.

Alarm function: complete pre-warning and overload stop functions. The LMI will automatically send out alarm and stop crane operation when actual lifting load exceeds total rated lifting load and boom is out of limit angle.

The system also has self-diagnosis function.

Tricolor warning lamp

The lamp comprises 3 colors, when crane loading is below 90% of total rated lifting load, "Green Lamp" lights on to indicate crane is working in safety area; when crane loading is in 90% $\sim 100\%$ of total rated lifting load, "Yellow Lamp" lights on to indicate crane is close to total rated lifting load; when crane loading is above $100\% \sim 102\%$ of total rated lifting load, "Red Lamp" lights on to indicate crane is overload; In dangerous area, control system can automatically cut off crane movement to the dangerous direction.

Audio/video alarm

When the crane is moving and slewing, there is light and sound for alarm.

Illumination lamp

There are illumination lamps in front of turntable, above cab and inside cab for night operation.

Rearview mirror

Rearview mirror is located outside the cab for operator to observe condition of the back of the machine.

Height mark lamp

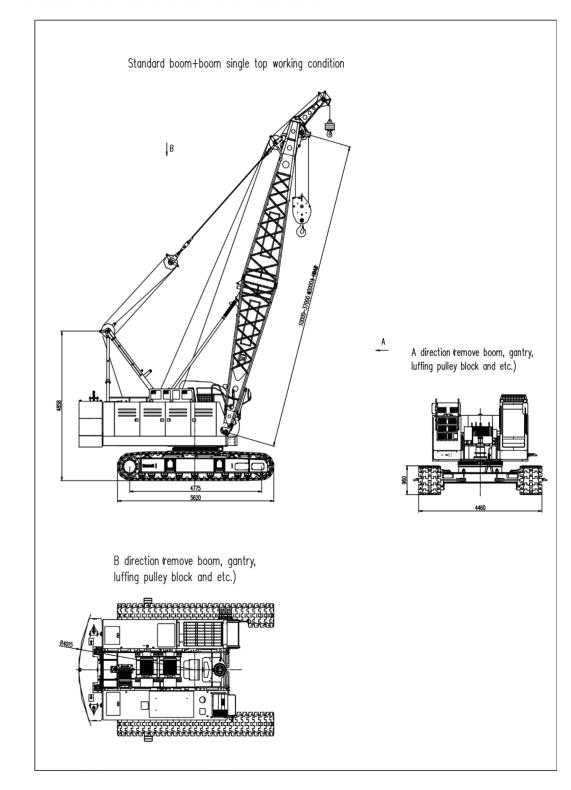
Height mark lamp is installed on boom tip for alarm.

Anemometer

Anemometer at boom tip can detect current wind speed and send wind signal to the monitor in cab to alert operator for wind load safety.

MAIN TECHNICAL PARAMETER

XGC45 CRAWLER CRANE OUTLINE DIMENSION



MAIN TECHNICAL PARAMETER

XGC45 CRAWLER CRANE MAIN TECHNICAL PARAMETER

	Items	t	Data
Max. rated lifting capacity	Boom working condition	t	45
Max. rated litting capacity	Boom single pulley working condition	t.m	6.5
Max. load moment	Boom working condition	t.m	150
Max. load momorit	Boom single pulley working condition	m	89.6
	Boom length	۰	10~37
Dimension	Boom luffing angle	m	0~80
	Boom end single pulley	m/min	1.1
	Hoist winch max. single line speed	m/min	116
Speed	Boom luffing winch max. single line speed	rpm	87
Оросси	Max. slewing speed	km/h	1.8
	Max. travelling speed	_	1.3
	Engine model	kW/rpm	Weichai diesel WP4.1
Engine	Engine rated power and revolution speed	_	129/2300
	Discharge standard	t	Nation standard III stage
Total vehic	cle mass (10m basic boom, 35tlifting hook)	MPa	36.8
	Mean ground pressure	-	0.05
	Grade-ability	t	30%
Max	. mass of single unit in transport state	m	26.2
Max. dimens	sion of single unit in transport state (L × W × H)		10.42×3.45×3.4

Notes:

- 1. Steel wire rope refers to the outermost working layer (layer 5) of the drum, the calculated value for engine revolution with empty load, it is changed according to the differences of load and operating conditions.
- 2. The maximum slewing speed refers to the slewing speed when with basic boom length, empty load, 70 ° of boom angle, ground slope ≤ 0.5%, wind speed ≤ 8.3m/s, the engine throttle reaches its maximum limit, the engine only conduct slewing movement in high speed gear, slewing operating lever reaches its maximum stroke.
- 3. The maximum travel speed refers to the travel speed when with basic boom length, empty load, 45° of boom angle, solid and no subsidence ground, ground slope $\leq 0.5\%$, wind speed ≤ 8.3 m/s, the engine throttle reaches its maximum limit, engine only conduct travel movement in high speed gear, slewing operating lever reaches its maximum stroke.
- 4. Gradeability, refers to the max. gradeability driving ability when basic boom under standard working conditions, no load, the ground is solid, plane and no−subsidence, wind speed ≤ 8.3m / s, the maximum engine torque speed, only travel movement, low speed gear, max. stroke of walking control lever, positive climbing, lateral gradient ≤ 1%. The actual climbing should be based on the ground conditions, the combination of working conditions, etc. to choose the correct way climbing (see Section 1.3.7), or contact with us.
- 5. The average ground pressure, refers to that of the basic boom of standard working condition, with no load, the ground is solid, smooth and no−subsidence, the average ground pressure when ground gradient ≤ 0.5%. it is related with the actual ground pressure and the ground conditions, the situation combined with the situation.
- 6. The company reverses the right of update and modification of technical specification without notification.





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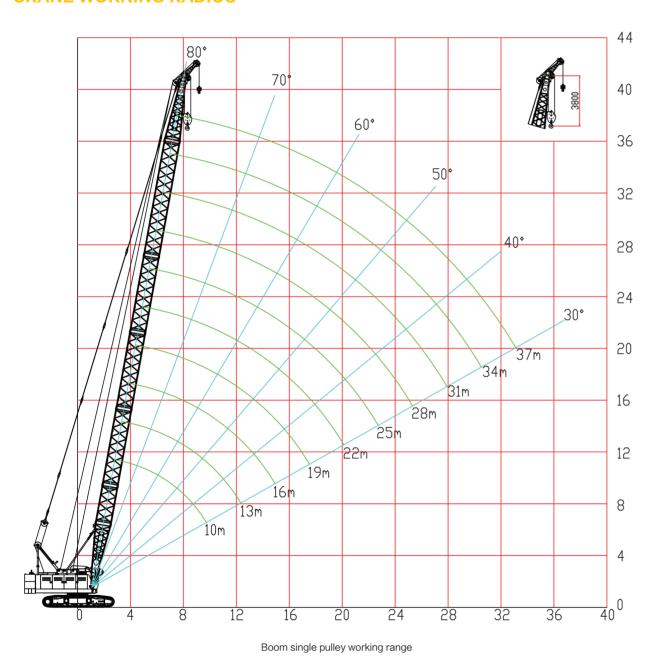
P09-P09 CRANE WORKING RADIUS

P10-P13 LIFTING CAPACITY CHARTS



LIFTING CAPACITY LISTS OF TYPICAL WORKING CONDITIONS

CRANE WORKING RADIUS



LIFTING CAPACITY CHARTS

Refer to table 1 for main boom lifting capacity chart (without boom single pulley and hook block). Refer to table 2 for main boom lifting capacity chart (with boom single pulley and hook block). Refer to table 3 for boom single pulley lifting capacity chart (boom without hook block). Refer to table 4 for boom single pulley lifting capacity chart (boom with hook block).

Table 1: Main boom lifting capacity chart (without boom single pulley and hook block) (Unit: t)

										_
Main boom length (m) Working radius (m)	10	13	16	19	22	25	28	31	34	37
3.3	45									
4	37.6	37.6								
5	27.7	27.7	27.7	27.7						
6	20.7	20.7	20.7	20.7	20.7	20.6				
7	16.5	16.5	16.5	16.4	16.4	16.4	16.3	16.3		
8	13.6	13.6	13.6	13.6	13.5	13.5	13.4	13.4	12.9	12.9
9	11.6	11.6	11.5	11.5	11.5	11.4	11.4	11.3	11.3	11.2
10		10	10	10	9.9	9.9	9.8	9.8	9.7	9.7
12		7.8	7.8	7.8	7.7	7.7	7.6	7.6	7.6	7.5
14			6.4	6.3	6.3	6.2	6.2	6.1	6.1	6
16				5.3	5.2	5.2	5.1	5.1	5	5
18					4.5	4.4	4.4	4.3	4.3	4.2
20					3.8	3.8	3.7	3.7	3.6	3.6
22						3.3	3.2	3.2	3.1	3.1
24							2.8	2.8	2.7	2.7
26								2.4	2.4	2.3
28								2.2	2.1	2.1
30									1.9	1.8
32										1.6
倍率	8	7	5	5	4	4	3	3	2	2



TYPICAL WORKING CONDITIONS

Table 2: Main boom lifting capacity chart (with boom single pulley and hook block) (Unit: t)

										•
Main boom length (m) Working radius (m)	10	13	16	19	22	25	28	31	34	37
Tromming radius (m)										
3.3	44.5									
4	37.1	37.1								
5	27.2	27.2	27.2	27.2						
6	20.2	20.2	20.2	20.2	20.2	20.1				
7	16	16	16	15.9	15.9	15.9	15.8	15.8		
8	13.1	13.1	13.1	13.1	13	13	12.9	12.9	12.4	12.4
9	11.1	11.1	11	11	11	10.9	10.9	10.8	10.8	10.7
10		9.5	9.5	9.5	9.4	9.4	9.3	9.3	9.2	9.2
12		7.3	7.3	7.3	7.2	7.2	7.1	7.1	7.1	7
14			5.9	5.8	5.8	5.7	5.7	5.6	5.6	5.5
16				4.8	4.7	4.7	4.6	4.6	4.5	4.5
18					4	3.9	3.9	3.8	3.8	3.7
20					3.3	3.3	3.2	3.2	3.1	3.1
22						2.8	2.7	2.7	2.6	2.6
24							2.3	2.3	2.2	2.2
26								1.9	1.9	1.8
28								1.7	1.6	1.6
30									1.4	1.3
32										1.1
倍率	8	7	5	5	4	3	3	3	2	2

Table 3: boom single pulley lifting capacity chart (boom without hook block) (Unit: t)

										· · · · ·
Main boom length (m)										
Working radius (m)	10	13	16	19	22	25	28	31	34	37
	0.5									
4	6.5									
5	6.5	6.5								
6	6.5	6.5	6.5	6.5						
7	6.5	6.5	6.5	6.5	6.5	6.5				
8	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5		
9	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
10	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
12		6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
14			6.4	6.4	6.3	6.3	6.2	6.2	6.1	6.1
16			5.3	5.3	5.3	5.2	5.2	5.1	5.1	5
18				4.5	4.5	4.4	4.4	4.3	4.3	4.2
20					3.8	3.8	3.7	3.7	3.6	3.6
22						3.3	3.2	3.2	3.1	3.1
24						2.9	2.8	2.8	2.7	2.7
26							2.5	2.4	2.4	2.3
28								2.1	2.1	2
30									1.9	1.8
32									1.6	1.6
Parts of line	1	1	1	1	1	1	1	1	1	1

TYPICAL WORKING CONDITIONS

Table 4: boom single pulley lifting capacity chart (boom with hook block) (Unit: t)

Main boom length (m)		40	40	40						
Working radius (m)	10	13	16	19	22	25	28	31	34	37
4	6									
5	6	6								
6	6	6	6	6						
7	6	6	6	6	6	6				
8	6	6	6	6	6	6	6	6		
9	6	6	6	6	6	6	6	6	6	6
10	6	6	6	6	6	6	6	6	6	6
12		6	6	6	6	6	6	6	6	6
14			5.9	5.9	5.8	5.8	5.7	5.7	5.6	5.6
16			4.8	4.8	4.8	4.7	4.7	4.6	4.6	4.5
18				4	4	3.9	3.9	3.8	3.8	3.7
20					3.3	3.3	3.2	3.2	3.1	3.1
22						2.8	2.7	2.7	2.6	2.6
24						2.4	2.3	2.3	2.2	2.2
26							2	1.9	1.9	1.8
28								1.6	1.6	1.5
30									1.4	1.3
32									1.1	1.1
Parts of line	1	1	1	1	1	1	1	1	1	1



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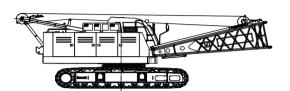
P15-P17 TRANSPORT LIST

P18-P18 TRANSPORT PLAN



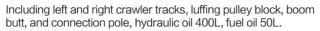
TRANSPORT LIST AND TRANSPORT PLAN

TRANSPORT LIST



Basic crane	×1
L	10.42 m
W	3.45 m
Н	3.4 m
W	26.2 t

Main boom 5m top ×1 5.22 m 1.24 m 1.24 m 0.62 t





Left and right crawler tracks	×2
L	5.62 m
W	1.1 m
Н	0.96 m
W	5.88 t

Used when not transported with basic crane.

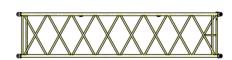


Main boom 9m insert	×2
L	9.10 m
W	1.24 m
Н	1.26 m
\\/	0.4 +

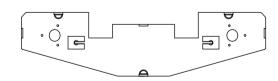




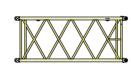
Counterweight tray	×1
L	3.30 m
W	0.8 m
Н	0.84 m
W	3.0 t



Main boom 6m insert	×1
L	6.10 m
W	1.24 m
Н	1.26 m
W	0.28 t



Counterweight block	×2
L	3.3 m
W	0.8 m
Н	0.59 m
W	3.25 t

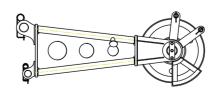


Main boom 3m insert	×1
L	3.10 m
W	1.24 m
Н	1.26 m
W	0.17 t



Main boom 5m butt	×1
L	5.15 m
W	1.24 m
Н	1.24 m
W	0.80 t

Including boom butt, boom backstop, connection pole, catwalk, used when not transported with basic crane.

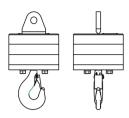


Boom single pulley assy	×1
L	1.40 m
W	0.45 m
Н	0.45 m
W	0.09 t

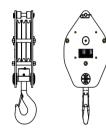


TRANSPORT LIST AND TRANSPORT PLAN

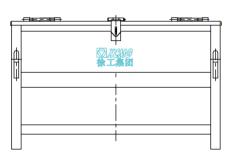
TRANSPORT LIST



8t hook	×2
L	0.32 m
W	0.32 m
Н	0.57 m
W	0.14 t



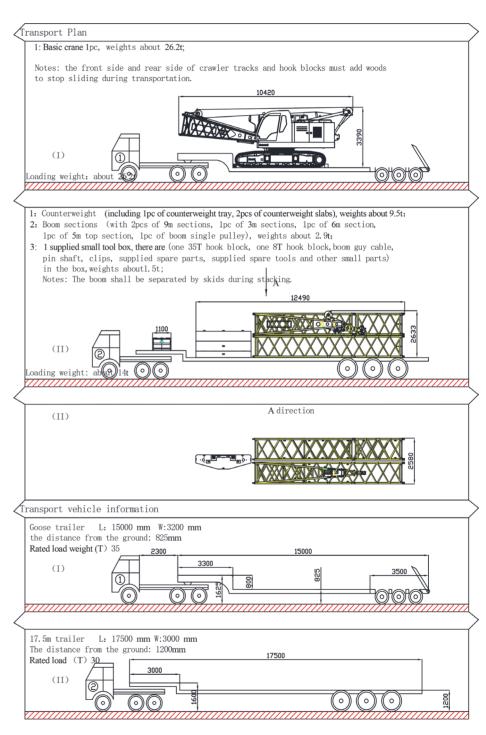
35t hook	×1
L	0.34 m
W	0.63 m
Н	1.35 m
W	0.35 t



Box	×1
L	1.10 m
W	1.1 m
Н	0.7 m
W	0.7 t

Including guy cable, connecting pin shaft, clip, connecting plate, wedge sleeve, counterweight slabs and small parts, all kinds of filters, tool box ,emergency bag, lever bag, etc.

TRANSPORT PLAN



Notes: this plan is only suitable for full working conditions. The values shown in the figure are theoretical dimensions. Please take the actual as the standard. The plan is for reference only!