ZOOMLION

ZOOMLION ZLJ5300JQZ25E TRUCK CRANE

TECHNICAL SPECIFICATIONS

ZTC251V452/27Y

Zoomlion Heavy Industry Science & Technology Co.,Ltd.

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1. Product characteristics

ZLJ5300JQZ25E truck crane, which integrates Zoomlion's decades of experience in designing and manufacturing mobile cranes with advanced technologies, is a new generation of high-performance product developed to meet oversea market demands. Its performances such as lifting height, main boom length, working speed and lifting capacity, etc., have achieved advanced international level.

This product is a truck crane capable of full range slewing, installed with 4 telescopic boom sections and a pilot hydraulic proportionally controlled system. The crane adopts a 3-axle special purpose chassis (6×4 drive) independently designed by Zoomlion. The full-width cab provides wide vision and simple decoration. The engine complies with the Chinese National Stage V emission standard.

The latest directional control valve and hydraulic control device installed in the crane's hydraulic system ensure that each executive mechanism makes full use of its working capability, therefore system reliability and safety are improved. The safety devices such as relief valve, balance valve, hydraulic lock and brake valve fitted in hydraulic system prevent the accidents caused by overloaded oil lines and oil pipe ruptures.

Safety devices, including a load moment limiter installed in the crane, together with the complete lighting system, ensure driver's safety during operation and are convenient for crane operations at night.

This crane has a novel style that makes it beautiful in contour, in lines and in color.

2. Specifications, complete vehicle

2.1 Product model

Model in auto industry:	**ZLJ5300JQZ25E**
Model in engineering industry:	**ZTC251V**
Product code:	**ZTC251V452**

2.2 Technical data

Table 1 Technical data

Item			Value	Remarks
Working performance	Max. rated lifting capacity	kg	25000	
	Max. load moment of basic boom	kN.m	960	
	Max. load moment of Max. length main boom	kN.m	672	
	Max. lifting height of basic boom	m	11.4	
	Max. lifting height of main boom	m	35.4	These parameters do not include deflection of boom and jib.
	Max. lifting height of jib	m	43.0	
Working speeds	Max. hoist rope speed (Main winch)	m/min	120	At 4th layer
	Max. hoist rope speed (Auxiliary winch)	m/min	120	At 4th layer
	Boom derricking up time	s	25	
	Boom telescoping out time	s	64	
	Slewing speed	r/min	0 - 2.7	
Driving	Max. operation altitude	m	2000	
	Max. driving speed	km/h	80	
	Max. gradeability	%	40	
	Min. turning diameter	m	≤ 20	
	Min. ground clearance	mm	250	
	Oil consumption per hundred kilometer	L	28	
Mass	Deadweight in driving condition	kg	29600	
	Complete vehicle kerb mass	kg	29470	
	Front axle load	kg	6300	
	Rear axle load	kg	23300	
Dimensions	Overall dimensions (L×W×H)	mm	12640×2500×3470	
	Longitudinal distance between outriggers	m	5.37	

	Transversal distance between outriggers	m	For completely extended outrigger: 6.2 m for intermediately extended outrigger: 4.25 m	
	Tail slewing radius	mm	3265	
	Main boom length	m	10.7 - 35.0	
	Main boom angle	°	-1 - 80	
	Jib length	m	8	
	Offset	°	0, 15, 30	

2.3 Rated lifting capacity tables

This crane is provided with multiple rated lifting capacity tables. The operator should select proper rated lifting load referring to resp. lifting capacity table according to actual working conditions.

Table 2 Lifting capacity table

Unit: kg

Radius (m)	Main boom (m)					
	Outriggers fully extended, over sides and rear working area					
	10.7	15.5	20.3	25.4	30.2	35
3.0	25000	23000				
3.5	25000	23000	20000			
4.0	23000	21000	20000			
4.5	21000	19000	18500	15000		
5.0	19000	18000	17500	14400		
5.5	17400	17000	16500	13500		
6.0	16000	16000	15200	12700	10600	
6.5	14500	14500	14100	12000	10200	
7.0	13200	13200	13000	11300	9700	
7.5	12000	12000	12000	10700	9300	8000
8.0	11000	11000	11000	10200	8800	7600
9.0		9600	9700	9300	8000	7000
10.0		8500	8600	8500	7300	6500
11.0		7600	7800	7800	6700	6000
12.0		6500	6700	6900	6200	5600
13.0			5800	6000	5800	5100
14.0			5100	5300	5300	4700
15.0			4500	4600	4700	4300
16.0			4000	4100	4200	4000
18.0				3300	3400	3400
20.0				2600	2700	2800
22.0					2200	2300
24.0					1800	1900
26.0						1600
28.0						1300
30.0						1000
Reeving	8	6	5	4	3	3
Hook	25t					

Table 3 Lifting capacity table

Unit: kg

Radius (m)	Main boom (m)					
	Outriggers half extended, over sides and rear working area					
	10.7	15.5	20.3	25.4	30.2	35
3.0	25000	23000				
3.5	25000	23000	20000			
4.0	22500	21000	20000			
4.5	20000	19000	18500	15000		
5.0	16900	17500	17500	14400		
5.5	14100	14700	15000	13500		
6.0	11900	12500	12800	12500	10600	
6.5	10200	10800	11100	11200	10200	
7.0	8900	9500	9800	9900	9700	
7.5	7800	8300	8600	8700	8900	8000
8.0	6900	7400	7700	7800	8000	7600
9.0		6000	6300	6400	6500	6600
10.0		4900	5200	5300	5400	5500
11.0		4000	4300	4400	4500	4600
12.0		3300	3600	3700	3800	3900
13.0			3100	3200	3300	3400
14.0			2600	2700	2800	2900
15.0			2200	2300	2400	2500
16.0			1800	1900	2000	2100
18.0				1400	1500	1600
20.0				1000	1100	1200
22.0					800	900
24.0					600	700
26.0						500
Reeving	8	6	5	4	3	3
Hook	25t					

Table 4 Lifting capacity table

Unit: kg

Boom angle (°)	(Main boom + Jib) (m)		
	Outriggers fully extended		
	35.0+8.0		
	0°	15°	30°
	Sides and rear	Sides and rear	Sides and rear
80	3000	2800	2000
78	3000	2600	2000
76	3000	2400	2000
74	3000	2300	1900
72	2800	2200	1800
70	2600	2100	1700
68	2400	2000	1650
66	2200	1900	1600
64	2100	1800	1550
62	2000	1700	1500
60	1900	1600	1450
58	1800	1550	1400
56	1650	1500	1350
54	1500	1450	1300
52	1350	1300	1250
50	1200	1150	1100
45	900	850	800
40	700	650	600
35	550	500	450
Reeving	1		
Hook	3t		

2.4 Lifting height chart

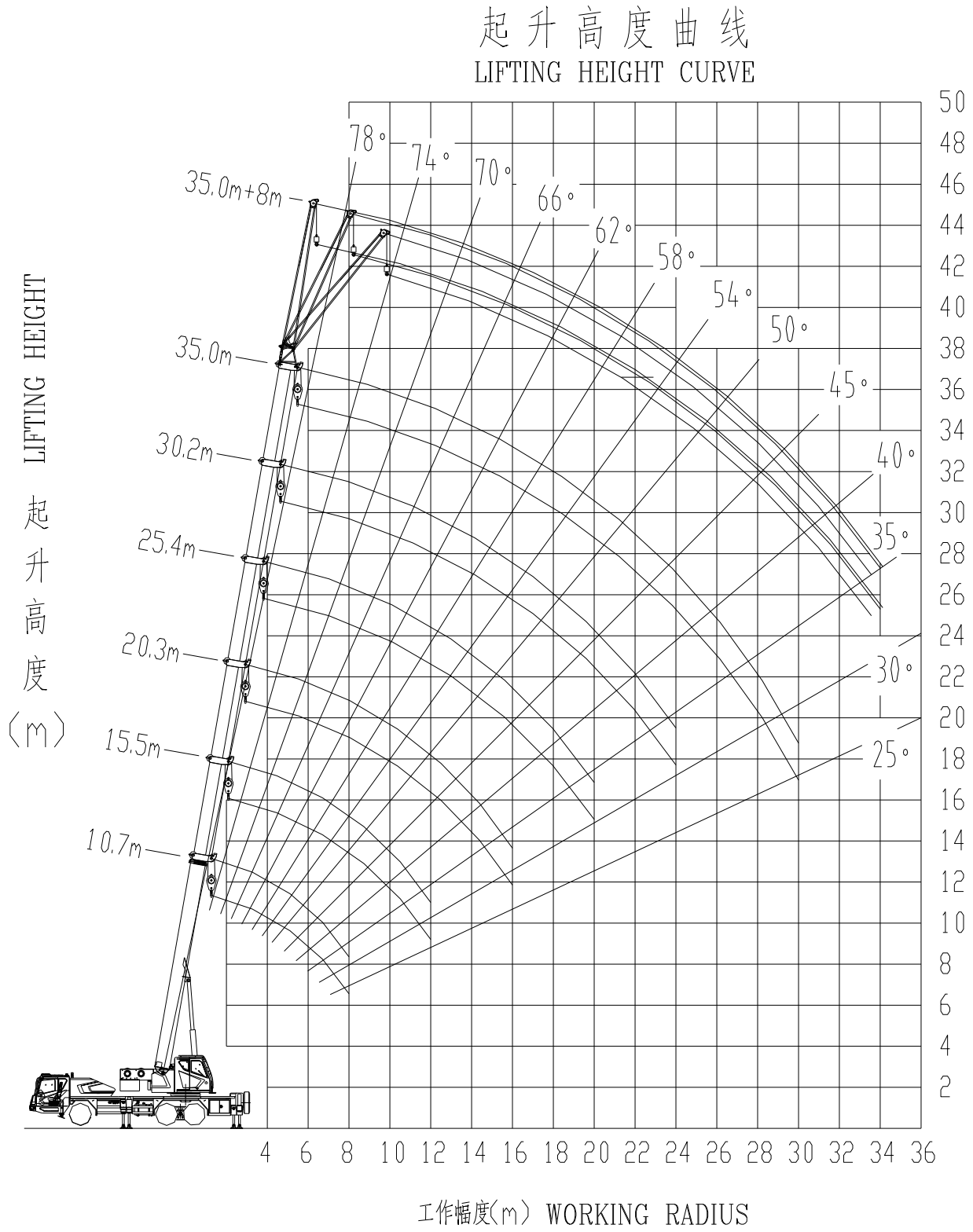

Figure 1 Lifting height chart

2.5 Overall view (unit: Metric mm)

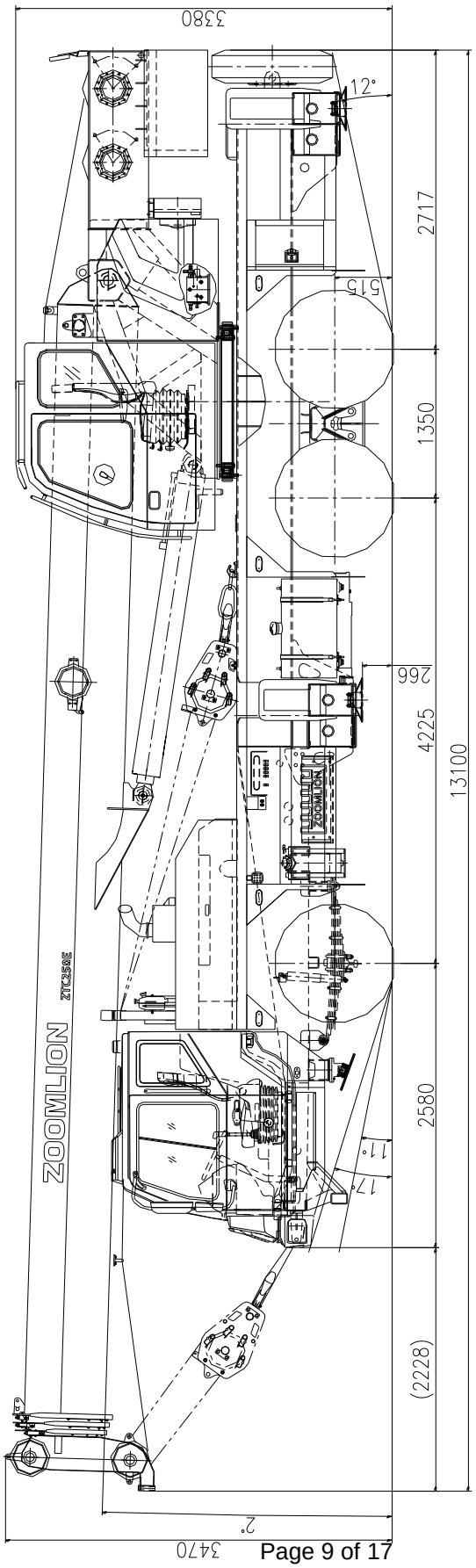

Figure 2 Overall dimensions during deriving status

3 Components, superstructure

3.1 Main boom and telescoping mechanism

The main boom has four box-type telescoping sections of U-shape profile and superior bending resistance. The boom body is fabricated from low-alloy and high-strength steel, achieving high force bearing ability, low weight, large lateral rigidity and small end deflection. Sliding blocks independently designed by Zoomlion are embedded into the boom. All these characteristics optimize weight and local stress distribution of the boom, eliminate deformation of a boom section due to local force bearing, and contribute to an excellent guidance quality.

Boom sections are telescoped in/out via one telescopic cylinder and one set of synchronous telescoping mechanism. The cylinder drives the second boom section directly, while the telescoping mechanism drives the third and fourth boom sections. The whole system is of a compact structure and high reliability. Moreover, a balance valve is installed on the telescopic cylinder.

3.2 Jib

The one-section lattice jib is folded on one side of the main boom when it is not used and can be installed and removed by inserted pins.

The jib can be installed onto the main boom at an offset of 0°, 15° or 30°, which can be conveniently changed via the pins and pull bracket.

3.3 Slewing table

The profile-structured slewing table which has been optimized through designs has reasonable arrangement of articulated points for connecting the main boom and derricking mechanism, and is also characterized in its distinctive structure and beautiful appearance.

3.4 Rooster sheave

It is secured at one side of the main boom head when not being used.

It can be rotated around the shaft and pinned onto the boom head when it is used.

The rooster sheave is used to improve working efficiency when the crane is handling a light load through increase of lifting speed.

3.5 Derricking mechanism

Single front-mounted hydraulic cylinder installed with a balance valve provides the boom with smooth derricking movements within the range of -1° to 80°.

3.6 Slewing mechanism

Via the planetary gear reducer, the plunger hydraulic motor drives the pinion gear on the output shaft to rotate the toothed ring of the slewing bearing fixed on the chassis frame, providing a 360° unlimited slewing range.

The free slewing mechanism has a controllable aligning function, which can automatically align the load to the slewing center through slewing during operation. A slewing cushion valve and a normally-closed brake are installed to ensure stable and reliable slewing operation of the crane. 4-point contact ball-type slewing bearing ensures the slewing table with super-strong load bearing capability and long service life.

3.7 Hoist mechanism

It consists of a main hoisting winch and an auxiliary hoisting winch.

The plunger hydraulic motor drives the grooved drum to lift and lower the hook via a planetary gear reducer. A brake is fitted between the motor and reducer. The main winch and auxiliary winch can work independently or simultaneously.

Models of reducers and motors are the same for the main and auxiliary winch. Moreover, a variable motor is adopted for both the main winch and the auxiliary winch.

The main winch is also equipped with a lowering limit switch. The built-in two-stage planetary gear reducer has such advantages as compact structure, light deadweight and high reliability.

Specifications of high-tensile torsion resistant hoist rope:

Diameter: φ 17.0 mm

Strength grade: 1870 N/mm^2

Main hoist rope length: 160 m

Auxiliary hoist rope length: 95 m

3.8 Main and auxiliary hooks

Main hook: rotatable, 25 t, with 4 pulleys, a mounting lug at rope end and a hook safety device.

Auxiliary hook (1 reeving): rotatable, 4 t, with a hook safety device.

3.9 Operator’s cab

The operator’s cab is a welded steel-structure with spacious vision. Inside the cab, the operator’s seat is equipped with headrest and can be tilted forward/backward. The cab is also installed with a windshield wiper, washing system, cooling-only air conditioner and heater (standard configuration).

All instrument panels are arranged in side positions of the operator's seat. Such arrangement provides spacious operating space, reasonable arrangement, human-based design, convenient and safe operation.

3.10 Outriggers

H-type outriggers in box structure are welded by low-alloy and high-strength steel. With NX simulation design and actual-used calculation, the outriggers are of good sectional performance and strong load bearing capacity.

The horizontal outriggers are extended/retracted under control of a horizontal cylinder. Large outrigger span ensures stability of the crane.

The outrigger pad is mounted at the bottom of vertical cylinder. The outrigger control levers, which are manually controlled, are installed on both sides of chassis frame and can be operated simultaneously or independently. Each vertical cylinder is equipped with a two-way hydraulic lock to ensure stable and reliable operation of the crane.

The 5th outrigger is installed beneath the driver's cab. When the 5th outrigger is set up, the crane can operate at 360 degree range.

3.11 Hydraulic system

The open-type hydraulic system adopts a pilot proportional control system to control slewing, telescoping, derricking and hoist mechanisms respectively through hydraulic control levers. Anti-pollution compression fittings are used for hydraulic pipelines, which ensure high reliability and cleanliness of the hydraulic system.

The main power element is a quadruple gear pump assembly, among which, two pumps supply hydraulic oil to the hoist mechanisms, derricking mechanism and telescoping system, another gear pump supplies hydraulic oil to the chassis' hydraulic system, slewing mechanism and air conditioning, and the last one supplies stable oil source to control oil circuit.

The outrigger control valves are manually-operated multiple-way directional control valves. Via the outrigger control levers on both sides of the chassis, the outriggers can be operated independently or simultaneously

3.12 Electrical system

Double-wired system, 24 Volt DC.

The electrical system consists of the superstructure electrical system and chassis electrical system.

The superstructure electrical system consists of electrical components such as a battery master switch, ignition starter switch, engine off button, control light "Power source", warning light "Main / auxiliary winch approaching upper limit", warning light "Main / auxiliary winch approaching lower limit", warning light "The 5th outrigger pressure too high", hoisting limit switch, lowering limit switch, overload protection device, illumination, fan, windshield wiper, horn, load moment limiter

and oil cooler fan, etc. These devices ensure safe crane operations and provide good working environment.

In an emergency, the red emergency-off switch can be pressed to cut off the power supply, so as to ensure operation safety.

3.13 Safety devices

This crane is equipped with an automatic load moment limiter whose display and warning devices are fitted in the operator's cab.

When the actual load approaches 90% of the rated one, the warning light will illuminate and the buzzer will send out acoustic warning.

When the actual load reaches 100% of the rated one, the load moment limiter will send out a stop signal automatically and cut off all dangerous crane movements via the superstructure control circuit and control mechanism.

The basic parameters, such as moment ratio, main boom angle, boom length, working radius, actual lifting capacity and rated lifting capacity will be displayed on the digital LCD.

This crane is also equipped with the following safety devices to ensure safety of the crane.

a) Boom angle indicator

b) Hoisting limit switch

c) Hook safety device

d) lowering limit switch

e) The 5th outrigger overpressure alarm device

f) Bidirectional hydraulic lock

g) Balance valve

h) Overflow valve

3.14 Air conditioning and heater

An air conditioner for both heating and cooling specially designed for a truck crane is a standard configuration in operator's cab.

4. Specifications, chassis

Table 9 Main date of special purpose chassis

Chassis	Engine	Model	WP7.270E51
		Rated power kW/r/min	199/2100
		Max. output torque .m/r/min	1160/1200-1700
		Manufacturer	Weichai Power Co., Ltd.
	Model		ZLJ5310JQZV5
	Type		Class II
	Code		ZLJ5310JQZV5.3
	Limits for exhaust pollutants and smoke		Conforming to GB3847-2018 and GB17691-2005 (Chinese National Stage V)
	Manufacturer		Zoomlion Heavy Industry Science And Technology Co., Ltd.

For detailed information, please refer to the *Technical Specifications, Special Purpose Chassis for Truck Crane.*

5 Working conditions

5.1 Temperature

Do not operate the crane if the temperature at the job-site is not in the proper range from -20°C to 40°C.

5.2 Wind speed

During operation, wind speed refers to the instantaneous wind speed at a working height. It should not exceed 14.1 m/s.

The wind speed during crane operation (3 s instantaneous wind speed) = average wind speed during 10 minutes at 10 m above the ground × conversion coefficient 1.5.

If the instantaneous wind speed exceeds the permissible 14.1 m/s (beaufort 5):

- Stop the work (safely lower the load).
- Retract the boom.
- Correctly stow the boom.

5.3 Altitude

Altitude of the location where the crane works should not exceed 2000 m above sea level, otherwise certain parameters may deteriorate to be lower than the calibrated ones.

Appendix

Main purchased parts and manufacturers

No.	Description	Manufacturer	Remarks
1	Main valve	Changde Zoomlion Heavy Industry Science & Technology Hydraulic Co., Ltd.	
2	Main pump	Xuzhou Keyuan Hydraulic Co., Ltd.	
		Jinan Hydraulic Pump Limited Liability Company	
3	Winch motor	Avic Liyuan Hydraulic Co., Ltd.	
		High-tech Fluid Power Co., Ltd.	
		Beijing Huade Hydraulic Industrial Group Co., Ltd.	
4	Winch reducer	Xuzhou Keyuan Hydraulic Co., Ltd.	
		Zhuzhou Gear Limited Liability Company	
		Qidong Wanhui Machinery Manufactring Co., Ltd.	
5	Slewing motor	Avic Liyuan Hydraulic Co., Ltd.	
		Beijing Huade Hydraulic Industrial Group Co., Ltd.	
6	Slewing reducer	Qidong Wanhui Machinery Manufactring Co., Ltd.	
		Xuzhou Keyuan Hydraulic Co., Ltd.	
7	Slewing ring	Xuzhou Rothe Erde Slewing Ring Co., Ltd.	
		Yantai Haoyang Mechanical Co., Ltd.	
8	Telescopic cylinder	Hunan Teli Hydraulic Co., Ltd. Hubei Huaheng Techonology Co., Ltd	
9	Derricking cylinder	Hunan Teli Hydraulic Co., Ltd. Hubei Huaheng Techonology Co., Ltd	
10	Horizontal cylinder	Hunan Teli Hydraulic Co., Ltd. Hubei Huaheng Techonology Co., Ltd	
11	Vertical cylinder	Hunan Teli Hydraulic Co., Ltd. Hubei Huaheng Techonology Co., Ltd	
12	Balance valve – telescoping system	Changde Zoomlion Heavy Industry Science & Technology Hydraulic Co., Ltd.	
13	Balance valve – derricking mechanism	Changde Zoomlion Heavy Industry Science & Technology Hydraulic Co., Ltd.	
14	Balance valve – hoist mechanism	Changde Zoomlion Heavy Industry Science & Technology Hydraulic Co., Ltd.	

15	Wire rope	Changsha Yongxin Metal Product Limited Liability Company	
		Juli Sling Co., Ltd.	
		Jiangsu Safety Steel Rope Co., Ltd.	

Main purchased parts and manufacturers *(continued)*

No.	Description	Manufacturer	Remarks
16	Hook	Shangdong Hong Ruida Mechanical Co., Ltd.	
		Zhuzhou Tianqiao Lifting Accessory Manufactring Co., Ltd.	
		Changsha Lanying Industry Co., Ltd.	
17	Load moment limiter	Hunan Zoomlion Intelligent Technology Co., Ltd.	
		Changsha Huade Science and Technology Development Co., Ltd.	
18	Operator’s cab assy.	Shenzhou Automobile Internal Ornament Co., Ltd.	

Note:

The above equipment fitted in the crane is subject to changes due to design improvements or other reasons. Therefore, the above table is for reference only.

Without prior request of choice at customer side, a component may be provided by one of its multiple suppliers and is delivered with the crane at a random choice. Therefore, please clarify your preference among the suppliers before crane delivery if it matters.