



ZOOMLION

ZOOMLION ZTC400V552R TRUCK CRANE

TECHNICAL SPECIFICATIONS

GQ06380327016000EN

Zoomlion Heavy Industry Science & Technology Co.,Ltd.

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1. Product characteristics

ZOOMLION ZTC400V552R truck crane, which integrates our many decades' experience in designing and manufacturing mobile cranes with advanced technologies, is a new-generation and high-performance product developed to meet the 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 of full range slewing function, 5 boom sections and proportionally controlled hydraulic systems. The crane is installed with a 4-axle special purpose chassis with full-width cab (8×4 drive) manufactured by Zoomlion, providing wide vision and simple decoration. The engine complies with Euro V emission standard.

The latest directional control valve and gear pump system ensure that each executive mechanism makes full use of its working capability and the reliability and safety of systems 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 oil line overload and oil pipe ruptures.

The safety devices such as load moment limiter, and the complete lighting system fitted in the crane ensure your safety during operation and are convenient for night work.

This crane has a novel style which makes it beautiful in figure, in form and in color.

2. Specifications, complete vehicle

2.1 Product model

Model in engineering industry: ZTC400V5R

Internal model: ZTC400V552R

2.2 Technical data

Table 1 Technical data

Item		Value	Remarks
Working performance	Max. rated lifting capacity kg	40000	
	Max. load moment of basic boom kN.m	1110	
	Max. load moment of Max. length main boom kN.m	720	
	Max. lifting height of basic boom m	10.3	
	Max. lifting height of main boom m	41.3	These parameters do not include deflection of boom and jib.
	Max. lifting height of jib m	49.5	
Working speeds	Max. hoist rope speed (Main winch) m/min	120	At 4 th layer
	Max. hoist rope speed (Auxiliary winch) m/min	120	At 4 th layer
	Boom derricking up/down time s	33/80	
	Boom telescoping out/in time s	75/80	
	Outrigger extension/retraction time (horizontal) s	20/28	
	Outrigger extension/retraction time (vertical) s	20/28	
	Slewing speed r/min	0-2.8	
Driving	Max. operation altitude m	2000	
	Max. driving speed km/h	90	
	Max. gradeability %	43	
	Min. turning diameter m	22	
	Approach angle °	18.5	
	Departure angle °	14.5	
	Min. ground clearance mm	250	
	Oil consumption per hundred kilometer L	29	
Mass	Deadweight in driving condition kg	32000	
	Complete vehicle kerb mass kg	31870	
	Front axle load kg	9200	
	Rear axle load kg	22800	

Dimension	Overall dimensions (L×W×H)	mm	12800×2550×3640	
	Transversal distance between outriggers (completely extended)	m	5.53	
	Longitudinal distance between outriggers	m	6.4	
	Transversal distance between outriggers (intermediately extended)	m	4.36	
	Tail slewing radius	mm	3420	
	Main boom length	m	10.5-41	
	Main boom angle	°	-2 – 80	
	Jib length	m	8.5	
	Jib angle	°	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 condition.

The values in column "I" refer to the extendable length of telescopic cylinder I.

The values in column "II" refer to 3 times extendable length of telescopic cylinder II, namely, the total extendable length of boom section 3, 4 and 5.

Table 2 Rated capacity chart

Unit: Kg

Working radius (m)	Boom length (m)						
	Telescopic cylinder I fully extended, outriggers fully extended, over side or rear working area						
	10.5	14.4	18.3	24	29.7	35.4	41
2.5	40000						
3	35000	25000					
3.5	30000	25000	19500				
4	26400	24750	19500				
4.5	24200	22700	19500	17600			
5	22300	20950	19500	17600			
5.5	20600	19400	18450	17600	13500		
6	18600	18050	17150	16850	13500		
6.5	16900	16550	16000	15800	13500		
7	15450	15100	14900	14800	12800	10000	
7.5	14200	13850	13650	13950	12200	10000	
8	13100	12750	12550	13150	11600	9800	
9		10900	10700	11350	10500	9000	6800
10		8800	8600	9400	9500	8200	6800
11		7200	7000	7800	8300	7500	6500
12		6100	5800	6500	7000	6800	6100
13			4800	5600	6000	6300	5600
14			4000	4700	5200	5500	5200
15			3400	4100	4500	4800	4900
16				3500	3900	4200	4500
18				2600	3000	3300	3500
20				1900	2300	2600	2800
22					1700	2000	2200
24					1300	1600	1800
26						1200	1400
28						900	1100
30						600	800
32							600
I	0	3.9	7.8	7.8	7.8	7.8	7.8
II	0	0	0	5.7	11.4	17.0	22.7
Reeving	10	8	6	5	4	3	3
Hook	40t						

Table 3 Rated capacity chart

Unit: Kg

Working radius(m)	Boom length (m)					
	Telescopic cylinder I intermediately extended, outriggers fully extended, over side or rear working area					
	10.5	14.4	20.1	25.8	31.5	37.1
2.5	40000					
3	35000	25000				
3.5	30000	25000				
4	26400	24750	17600			
4.5	24200	22700	17600			
5	22300	20950	17600	16000		
5.5	20600	19400	17600	16000		
6	18600	18050	17600	16000		
6.5	16900	16550	16600	16000	10400	
7	15450	15100	15300	15200	10400	
7.5	14200	13850	14400	14300	10400	7500
8	13100	12750	13500	13500	10000	7500
9		10900	11900	12100	9400	7500
10		8800	9800	10350	8600	7050
11		7200	8200	8700	7900	6550
12		6100	6900	7400	7300	6050
13			5900	6400	6700	5600
14			5050	5550	5850	5200
15			4350	4850	5150	4900
16			3800	4250	4550	4600
18				3300	3600	3800
20				2600	2850	3050
22				2000	2300	2500
24					1800	2000
26					1450	1650
28						1300
30						1050
32						800
I	0	3.9	3.9	3.9	3.9	3.9
II	0	0	5.7	11.4	17.0	22.7
Reeving	10	8	5	4	3	3
Hook	40t					

Table 4 Rated capacity chart

Unit: Kg

Working radius(m)	Boom length (m)				
	Telescopic cylinder I fully retracted, outriggers fully extended, over side or rear working area				
	10.5	16.2	21.9	27.6	33.2
2.5	40000				
3	35000	17600			
3.5	30000	17600			
4	26400	17600	16000		
4.5	24200	17600	16000		
5	22300	17600	16000	11500	
5.5	20600	17600	16000	11500	
6	18600	17600	16000	11500	
6.5	16900	17600	16000	10950	7800
7	15450	16300	15700	10650	7800
7.5	14200	14900	15000	10000	7800
8	13100	13800	14300	9600	7800
9		12100	12400	8700	7350
10		10300	10800	7900	6700
11		8650	9100	7300	6150
12		7350	7800	6700	5650
13		6350	6750	6250	5250
14			5900	5800	4850
15			5200	5450	4550
16			4600	4850	4250
18			3650	3900	3750
20				3200	3300
22				2600	2750
24					2300
26					1900
28					1550
I	0	0	0	0	0
II	0	5.7	11.4	17.0	22.7
Reeving	10	6	5	4	3
Hook	40t				

Table 5 Rated capacity chart

Unit: Kg

Working radius (m)	Boom length (m)						
	Telescopic cylinder I fully extended, outriggers intermediately extended, over side or rear working area						
	10.5	14.4	18.3	24	29.7	35.4	41
2.5	40000						
3	30000	25000					
3.5	25000	25000	19500				
4	24800	24700	19500				
4.5	21800	21300	19500	17600			
5	19700	19200	18500	17600			
5.5	16300	15850	15600	15900	13500		
6	13700	13300	13050	13750	13500		
6.5	11700	11350	11150	12000	12200		
7	10150	9800	9600	10400	10800	10000	
7.5	8900	8500	8300	8100	9600	9800	
8	7850	7500	7300	8050	8550	8850	
9		5850	5650	6400	6850	7200	6800
10		4650	4450	5150	5600	5950	6200
11		3700	3500	4200	4650	4950	5200
12		2900	2800	3450	3850	4150	4400
13			2150	2800	3200	3500	3750
14			1650	2300	2700	3000	3200
15				1900	2250	2550	2750
16				1500	1900	2150	2350
18				900	1300	1550	1700
20				450	800	1050	1250
22					400	650	850
24							550
I	0	3.9	7.8	7.8	7.8	7.8	7.8
II	0	0	0	5.7	11.4	17.0	22.7
Reeving	10	8	6	5	4	3	3
Hook	40t						

Table 6 Rated capacity chart

Unit: Kg

Working radius(m)	Boom length (m)					
	Telescopic cylinder I intermediately extended, outriggers intermediately extended, over side or rear working area					
	10.5	14.4	20.1	25.8	31.5	37.1
2.5	40000					
3	30000	25000				
3.5	25000	25000				
4	24800	24700	17600			
4.5	21800	21300	17600			
5	19700	19200	17600	16000		
5.5	16300	15850	16700	16000		
6	13700	13300	14300	14450		
6.5	11700	11350	12300	12750	10400	
7	10150	9800	10700	11200	10400	
7.5	8900	8500	9400	9900	10250	7500
8	7850	7500	8300	8800	9100	7500
9		5850	6650	7100	7450	7500
10		4650	5400	5850	6150	6400
11		3700	4450	4900	5150	5400
12		2900	3700	4100	4400	4600
13			3050	3450	3750	3950
14			2550	2950	3200	3400
15			2100	2500	2750	2950
16			1700	2100	2350	2550
18				1500	1750	1950
20				1000	1250	1450
22				650	900	1050
24					550	750
26						450
I	0	3.9	3.9	3.9	3.9	3.9
II	0	0	5.7	11.4	17.0	22.7
Reeving	10	8	5	4	3	3
Hook	40t					

Table 7 Rated capacity chart

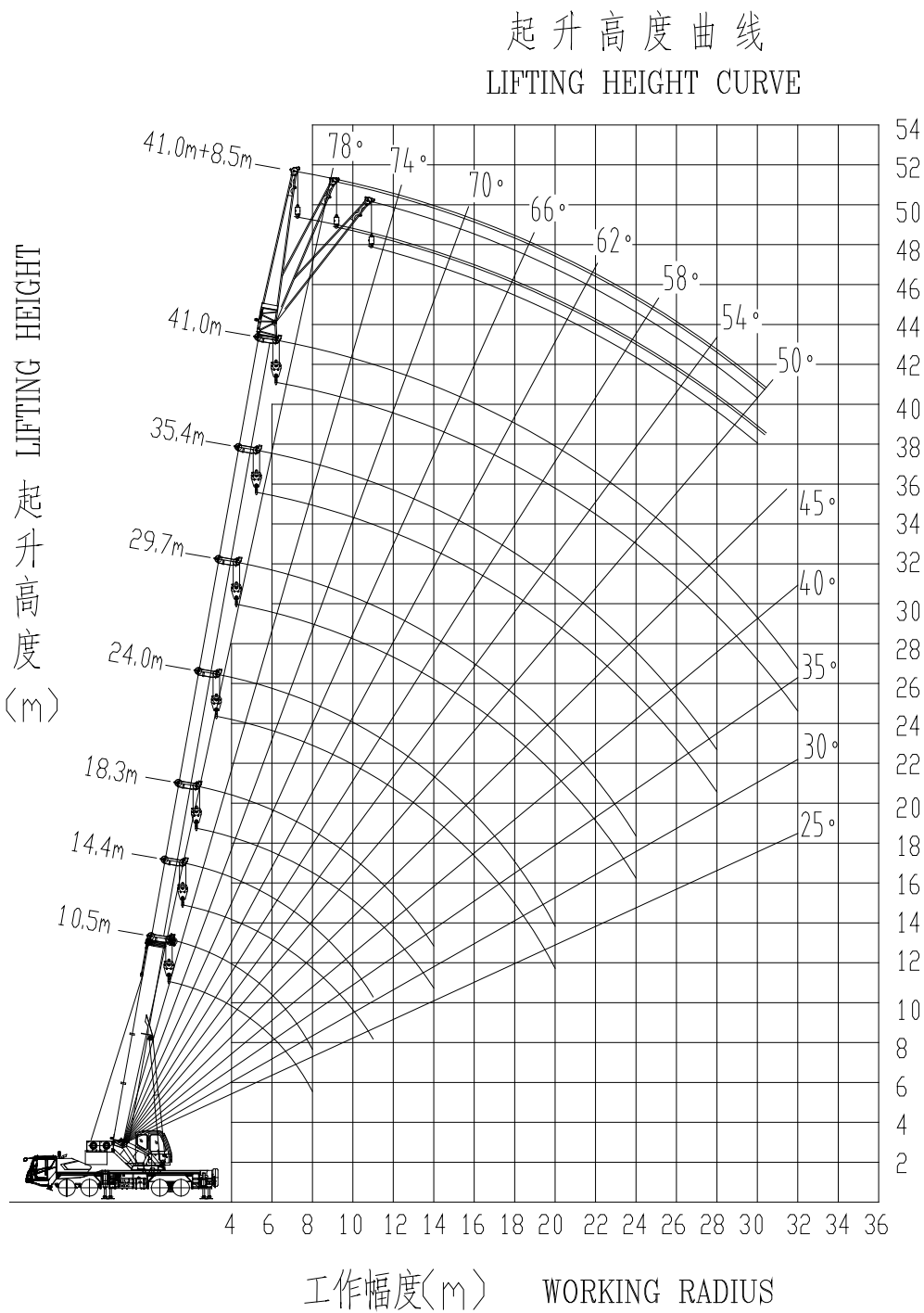
Working radius (m)	Unit: Kg				
	Boom length (m)				
	Telescopic cylinder I fully retracted, outriggers intermediately extended, over side or rear working area				
	10.5	16.2	21.9	27.6	33.2
2.5	40000				
3	30000	17600			
3.5	25000	17600			
4	24800	17600	16000		
4.5	21800	17600	16000		
5	19700	17600	16000	11500	
5.5	16300	17400	16000	11500	
6	13700	14800	15250	11000	
6.5	11700	12750	13250	10850	7800
7	10150	11150	11650	10550	7800
7.5	8900	9850	10350	10050	7800
8	7850	8750	9250	9500	7800
9		7100	7550	7800	7200
10		5800	6250	6500	6600
11		4850	5250	5500	5700
12		4050	4450	4700	4900
13		3450	3850	4050	4200
14			3300	3500	3650
15			2850	3050	3250
16			2450	2700	2850
18			1850	2050	2200
20				1550	1700
22				1150	1300
24					1000
26					700
28					500
I	0	0	0	0	0
II	0	5.7	11.4	17.0	22.7
Reeving	10	6	5	4	3
Hook	40t				

Table 8 Rated capacity chart

Unit: Kg

Boom angle (°)	Boom (m) + jib (m)		
	Outriggers fully extended,		
	41.0+8.5		
	0°	15°	30°
	Over side or rear working area	Over side or rear working area	Over side or rear working area
80	2800	2800	2150
78	2800	2800	2050
76	2800	2500	2000
74	2800	2400	1900
72	2800	2200	1800
70	2700	2100	1700
68	2500	2000	1600
66	2400	1800	1550
64	2100	1750	1500
62	1850	1600	1450
60	1550	1400	1400
58	1350	1250	1200
56	1150	1100	1050
54	1000	950	900
52	800	750	700
50	700	650	600
Reeving	1		
Hook	3t		

2.4 Lifting height chart



2.5 Overall view (unit: Metric mm)

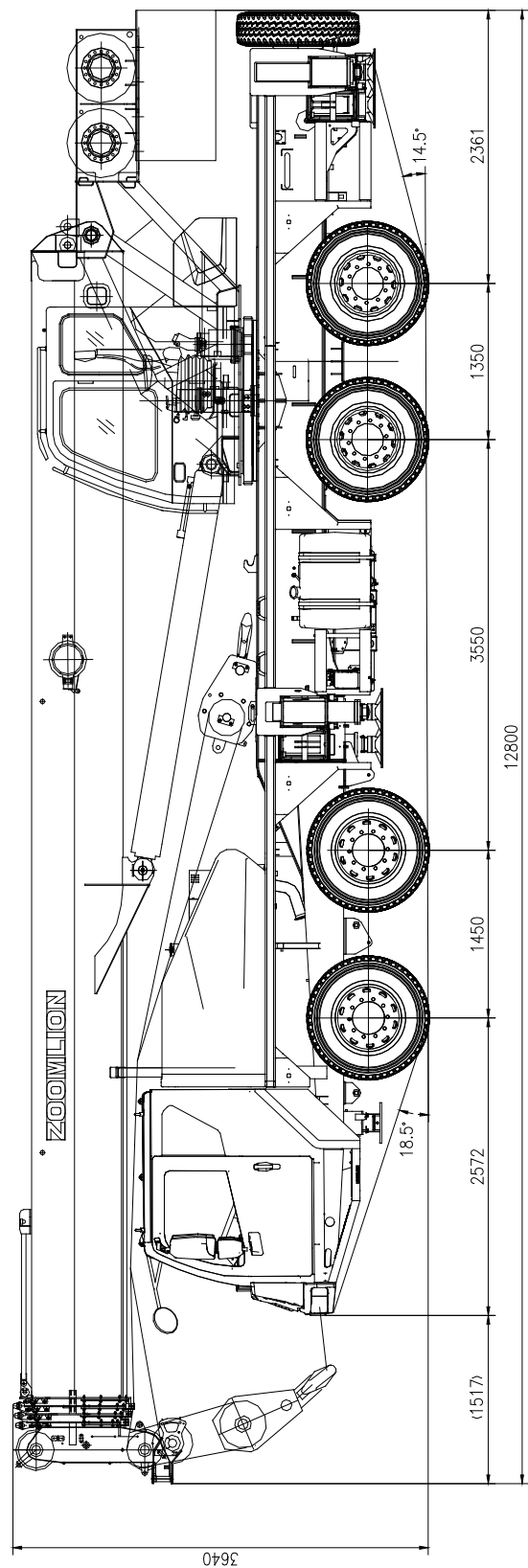


Figure 2 Overall view

3. Components, superstructure

3.1 Main boom and telescoping mechanism

Weight-optimized and distortion-resistant design of low-alloy and high-strength steel with box-shaped boom profile, 1 articulated piece and 4 telescopic sections, providing the boom with super load bearing capacity, large lateral stiffness and small end deflection. Self-created support structure of inserted sliding block and a series of optimized design have the deadweight of the boom greatly decreased and the stress on the boom evenly distributed. Thus, boom deformation caused by uneven stress distribution will never occur. Furthermore, the boom has good guidance quality.

The telescopic boom sections are telescoped in/out via 2 telescopic cylinders and 2 sets of boom extension / retraction wire rope. The 1st telescopic cylinder drives telescopic boom section 1 to telescope in/out; the 2nd telescopic cylinder drives telescopic boom sections 2, 3 and 4 to telescope in / out simultaneously via boom extension / retraction wire rope. This compact design makes the crane work reliably. Each cylinder is fitted with a balance valve.

3.2 Jib

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

The jib section is articulated on the head of top boom section with pins and can be assembled below an angle of 0° , 15° or 30° to the telescopic boom according to your needs. The offset can be conveniently changed via the pins and pull bracket.

Jib length: 8 m

3.3 Slewing table

Shape structured and optimized slewing table makes the arrangement of articulated points of main boom and derricking mechanism more reasonable. It also has a distinctive structure and beautiful appearance.

3.4 Rooster sheave

It is secured at the outside of the top boom section head when it is not used.

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

This option is set up for rapid hoists over the boom head to improve the working efficiency when the loads are light.

3.5 Derricking mechanism

1 front-mounted hydraulic cylinder with balance valve provides the boom with smooth derricking movements from -2° to 80° .

3.6 Slewing mechanism

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

The slewing mechanism is of controllable aligning functions, which can make the load be aligned automatically during operation. Slewing cushion valve and normally-closed brake can ensure stable and reliable slewing operation of the crane. 4-point ball-type slewing ring ensures the slewing table with super-strong load bearing capability and long service life.

3.7 Hoist mechanism

It consists of main and auxiliary hoist mechanisms.

The axial plunger hydraulic motor drives the grooved drum to lift and lower the hook via 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 main and auxiliary winch reducers and motors are the same. Moreover, the main winch and auxiliary winch are driven by plunger motors.

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: $\varnothing$ 17 mm

Strength grade: 1870N/mm^2

Main hoist rope length: 175 m

Auxiliary hoist rope length: 105 m

3.8 Main and auxiliary hooks

Rotatable main hook: 40 t, with 4 pulleys, press nipple and hook safety device

Rotatable auxiliary hook (1 reeving): 3 t, with hook safety device

3.9 Operator's cab

It is of steel-structure welded with front and sides mounted instrument panels and adjustable seat with headrest. It is equipped with control levers, windshield wiper, washing system, standard air conditioner for both cooling and heating. The arrangement provides spacious operating space, reasonable arrangement, human-based design, convenient and safe operation. A cab tilting mechanism is installed.

3.10 Outriggers

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

One-section horizontal sliding beam can be extended and retracted with a horizontal cylinder and a set of outrigger extension / retraction rope. Large outrigger span ensures stability of the crane.

Outrigger control levers are fitted on both sides of the vehicle for controlling the outriggers to extend or retract 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. The crane can realize full range slewing operation with the 5th outrigger set up.

3.11 Hydraulic system

It is an open hydraulic system. The advanced hydraulic proportional pilot control joysticks and hydraulic proportional control system are used for controlling the slewing, telescoping, derricking and hoist mechanisms respectively. The adopted anti-pollution bite-type fitting ensures the high reliability and cleanliness of hydraulic system.

The main power element is a plunger variable pump of a large displacement and a gear pump. The plunger pump supplies hydraulic oil to the main and auxiliary hoist mechanisms, derricking mechanism and telescoping mechanism; the gear pump supplies hydraulic oil to the chassis hydraulic system, slewing mechanism and air conditioning. Stable pilot control oil is supplied by the plunger variable pump.

The outrigger control valves are manual multiple directional control valves to control the horizontal and vertical cylinders' movements. Each of them is fitted with a pressure limiting valve, thus, can prevent the piston rods of horizontal cylinders from bending. They can be operated independently or simultaneously on both sides of the vehicle

3.12 Electrical system

Double wire system, 24 Volt DC.

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

The superstructure electrical system includes the devices such as 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, air conditioning and oil cooler fan etc. These devices ensure safe operation and provide good working environment.

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 light up and 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 will cut off all dangerous crane movements via 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) Hoisting limit switch
- b) Hook safety device
- c) Lowering limit switch
- d) The 5th outrigger overpressure protection device
- e) Two-way hydraulic lock
- f) Balance valve
- g) Relief valve

3.14 Air conditioner

An air conditioner special for vehicle is a standard configuration for operator's cab.

4 Specifications, chassis

Table 9 Specifications, chassis

Chassis	Engine	Model	YCK08310-50
		Rated power kW/r/min	228/2200 224
		Max. output torque .m/r/min	1300/(1300-1500)
		Manufacturer	Yuchai Diesel Co., Ltd.
	Model		ZLJ5331JQZV5
	Type		II
	Code		ZLJ5331JQZV5.3
	Limits for exhaust pollutants and smoke		Euro V
	Manufacturer		Zoomlion Heavy Industry Science & 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, the instantaneous wind speed should be taken as the actual one. Wind speed during crane operation should not exceed 14.1 m/s.

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

If the instantaneous wind speed is greater than the permissible value of 14.1 m/s (beaufort 5), while the crane is in operation, do the tasks that follow:

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

5.3 Height above sea level

During crane operation, height above sea level should not be higher than 2000 m.

Appendix

Table Main purchased parts and manufacturers

No.	Description	Manufacturer	Remarks
1	Main valve	Changde Zoomlion Heavy Industry Science & Technology Hydraulic Co., Ltd.	
2	Main pump	High-tech Fluid Power Co., Ltd.	
		Avic Liyuan Hydraulic Co., Ltd.	
		Sichuan Chuanye Hydraulic and Lubrication Equipment Co., Ltd.	
		Xuzhou Keyuan Hydraulic Co., Ltd.	
		Jinan Hydraulic Pump Co., Ltd.	
		Fuxin Beixing Hydraulic Co., Ltd.	
3	Winch motor	Avic Liyuan Hydraulic Co., Ltd.	
		High-tech Fluid Power Co., Ltd.	
		Beijing Huade Hydraulic Industrial Co., Ltd.	
4	Winch reducer	Xuzhou Keyuan Hydraulic Co., Ltd.	
		Zhuzhou Gear Co., Ltd.	
		Qidong Wanhui Machinery Manufacturing Co., Ltd.	
5	Slewing motor	Avic Liyuan Hydraulic Co., Ltd.	
		High-tech Fluid Power Co., Ltd.	
		Shanghai Electrical, Hydraulic and Pneumatic Co., Ltd.	
		Wuxi Weifu Fine Machinery Co., Ltd.	
		Beijing Huade Hydraulic Industrial Co., Ltd.	
6	Slewing reducer	Qidong Wanhui Machinery Manufacturing Co., Ltd.	
		Zhuhou Gear Co., Ltd.	
		Taishan Fushen Gearbox Co., Ltd.	
		Xuzhou Keyuan Hydraulic Co., Ltd.	
7	Slewing ring	Xuzhou Rothe Erde Slewing Ring Co., Ltd.	
		Yantai Haoyang Mechanical Co., Ltd.	
		Zhaoyuan Xingsheng Slewing Bearing Co., Ltd.	
8	Telescopic cylinder	Hunan Teli Hydraulic Co., Ltd.	

		Hubei Jiaheng Technology Co., Ltd.	
9	Derricking cylinder	Hunan Teli Hydraulic Co., Ltd.	
		Hubei Jiaheng Technology Co., Ltd.	
10	Horizontal cylinder	Hunan Teli Hydraulic Co., Ltd.	
		Hubei Jiaheng Technology Co., Ltd.	
11	Vertical cylinder	Hunan Teli Hydraulic Co., Ltd.	
		Hubei Jiaheng Technology Co., Ltd.	
12	Balance valve – telescoping mechanism	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 Co., Ltd.	
		Juli Sling Co., Ltd.	
		Jiangsu Safety Steel Rope Co., Ltd.	

Table Main purchased parts and manufacturers (*continued*)

No.	Description	Manufacturer	Remarks
15	Wire rope	Jiangsu Safety Steel Rope Co., Ltd.	
16	Hook	Shandong Hongruida Machinery Co., Ltd.,	
		Zhuzhou Ruijue Railway Accessories Co., Ltd.	
		Changsha Lanying Industry Co., Ltd.	
17	Load moment limiter	Hunan Zoomlion Intelligent Technology Co., Ltd.	
18	Operator's cab assy.	Shenzhou Automobile Internal Ornament Co., Ltd.	

Note:

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