

**ZOOMLION**

ZOOMLION ZCT300V532

TELESCOPIC BOOM CRAWLER CRANE

# **TECHNICAL SPECIFICATIONS**

ZCT300V532/27Y

Zoomlion Heavy Industry Science and Technology Co. Ltd

ZOOMLION ZCT300V532  
TELESCOPIC BOOM CRAWLER CRANE  
TECHNICAL SPECIFICATIONS

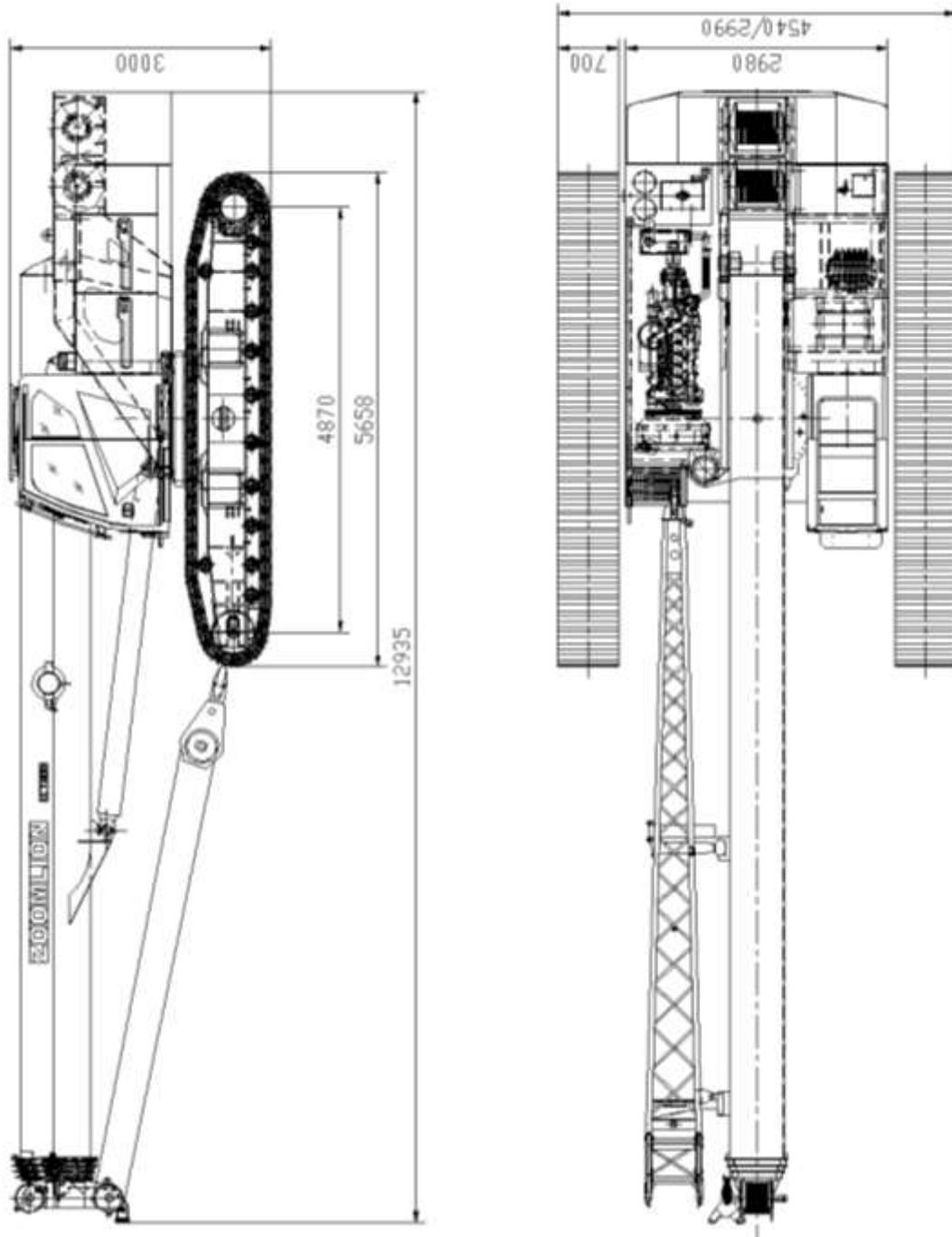
ZCT300V532/27Y

---

<b>1. Overall dimensions and main technical parameters.....</b>	<b>2</b>
<b>1.1. Overall dimensions .....</b>	<b>2</b>
<b>1.2. Main technical parameters.....</b>	<b>3</b>
<b>1.3. Main technical features .....</b>	<b>4</b>
<b>1.4. Main boom and telescoping mechanism .....</b>	<b>5</b>
<b>1.5. Jib.....</b>	<b>5</b>
<b>1.6. Hoisting mechanism .....</b>	<b>5</b>
<b>1.7. Derricking mechanism .....</b>	<b>6</b>
<b>1.8. Slewing mechanism .....</b>	<b>6</b>
<b>1.9. Engine .....</b>	<b>6</b>
<b>1.10. Hydraulic system.....</b>	<b>6</b>
<b>1.11. Electrical system .....</b>	<b>7</b>
<b>1.12. Counterweight .....</b>	<b>7</b>
<b>1.13. Operator's cab .....</b>	<b>7</b>
<b>1.14. Crane undercarriage .....</b>	<b>7</b>
<b>1.15. Safety devices .....</b>	<b>9</b>
<b>2. Work conditions and points for attention.....</b>	<b>11</b>
<b>3. Transport dimensions.....</b>	<b>13</b>

## 1. Overall dimensions and main technical parameters

### 1.1. Overall dimensions



## 1. 2. Main technical parameters

Table – Main technical parameters

Item	Unit	Value	Remarks
Max. lifting capacity	t	30	
Max. lifting moment	t×m	123	
Main boom length	m	10.7-42	
Jib length	m	8	
Max. length of main boom with fixed jib	m	42+8	
Main boom angle	°	-1.5-80	
Jib offset	°	0, 15, 30	
Max. single rope speed of the main hoisting winch	m/min	135	Unloaded, the 4th drum layer
Max. single rope speed of the auxiliary hoisting winch.	m/min	135	Unloaded, the 4th drum layer
Derricking speed (up/down)	s	35	
Boom derricking up time	s	80	
Slewing speed	rpm	0-2.7	
Traveling speed	km/h	0-3	
Max. gradeability	%	45	
Deadweight	t	41.2	
Counterweight	t	12	
Overall dimensions (L × W × H)	mm	12935×4540(2990)×3000	
Engine	Model		Weichai WP6G190E301
	Rated power / rotational speed	kW/rpm	140/2000
	Max. output torque / rotational speed	Nm/rpm	860/1500
	Exhaust emission	/	Chinese National Stage III

Note:

1. The single rope speed of the winch, slewing speed and traveling speed vary with the load.

### 1. 3. Main technical features

#### ✦ Strong lifting capacity

The main boom consists of 5 U-shaped boom sections which can extend to a maximum length of 42m, contributing to the crane's superior comprehensive lifting capacity and securing Zoomlion's leadership in the industry. The independently designed plate-type boom head and compact boom end realize optimal overlapping ratio as well as stronger lifting capacity of the main boom. The second generation of free boom telescoping technology, which is novel in the industry, increases stability during telescoping and brings the overall vehicle with higher anti-tipping capacity.

#### ✦ High work efficiency

A hydraulic pilot control joystick is installed in the crane, which is capable of compounding movements of the main and auxiliary winches, the derricking mechanism, the slewing mechanism and the telescoping mechanism, therefore greatly increasing the crane's lifting efficiency.

The crane is characterized in its convenient, flexible, stable and reliable operations which can be adjusted in a stepless way.

Single rope speed of the hoisting winch 1 and 2 can reach 135 m/min (at 4<sup>th</sup> layer on the drum).

#### ✦ Stronger single wire rope pulling force

The main and auxiliary winches use a standard  $\phi 17$  anti-twisting wire rope.

#### ✦ Optimization of transportation, assembly and dismantling

Easy for transfer between working sites; the whole vehicle can be transported in one truck.

The crawler carriers can be extended and retracted, and the maximum transport width of the crane is 3 m.

## 1. 4. Main boom and telescoping mechanism

The box-shaped main boom consists of 5 U-type boom sections made of low-alloy high-strength steel plate, providing the boom with excellent bending-resistance capacity, superior load bearing capacity, light deadweight, large lateral stiffness and low end deflection.

The main boom head adopts an independently designed imbedded sliding block structure and a series of optimized designs, having the deadweight of the boom greatly decreased and the stress on the boom evenly distributed to avoid partial distortion. Furthermore, the boom has good guidance quality and adjustability.

Head of booms (except for the boom section IV) adopts optimized plate structure, which efficiently increases the overlapping length between two adjacent boom sections and realizes the minimum length of the basic boom.

The telescopic boom sections are telescoped in / out via two telescoping cylinders and two sets of boom extension / retraction rope. The telescoping cylinder I drives the telescopic boom section 2 to telescope in / out, while the telescoping cylinder II drives the telescopic boom section 3. The boom section 4 and 5 are telescoped in / out simultaneously together with the boom extension / retraction rope. This compact design makes the crane work reliably. Each cylinder is fitted with a balance valve.

## 1. 5. Jib

The jib is consisted of one jib section (8 m) of a lattice structure and variable cross-section, realizing superior force bearing performance. It is secured onto the first one through pins.

The jib section is hinged to the head of the top boom section through pins. The jib can be installed at one of the three offsets onto the main boom, i.e. 0°, 15° and 30°. Change of the offsets is realized conveniently through a rotary shaft and sliding groove.

## 1. 6. Hoisting mechanism

It consists of a main hoist mechanism and an auxiliary hoist mechanism.

The two hoist mechanisms are driven by an axial plunger hydraulic motor with a built-in planetary gear reducer to lift or lower the hook.

A brake is fitted between the motor and reducer.

The two winch mechanisms can be controlled independently and also can carry out simultaneous movements.

The auxiliary hoist winch is of same model of the main winch, and both of them adopt a variable motor. The main winch is installed with an overlowering protection device which gives alarm when there are only 3 wraps of wire rope left on the drum.

The sealed-in planetary reducer is of a compact structure, light deadweight and high reliability.

Specifications for high-tensile torsion resistant hoist rope:

Diameter:  $\varphi$ 17.0 mm

Strength grade: 1870 N/mm<sup>2</sup>

Length of main hoist rope: 180 m

Length of auxiliary hoist rope: 110 m

### 1. 7. Derricking mechanism

Front-mounted derricking mechanism, single oil cylinder, enables the boom to derrick within  $-1.5^{\circ}$ - $80^{\circ}$ . A balance valve is installed in the cylinder to ensure stable derricking operations.

### 1. 8. Slewing mechanism

The slewing mechanism installs a single reducer. Via the planetary gear reducer, the axial plunger hydraulic motor of constant displacement drives the pinion gear on the output shaft to rotate the toothed ring of the slewing bearing fixed on chassis frame, providing a  $360^{\circ}$  unlimited slewing range.

The crane is capable of conducting controllable free swing during lifting operation where the crane is automatically aligned to the slewing center relative to the load.

A slewing cushion valve and a normally-closed brake are installed to ensure stable and reliable slewing.

The slewing bearing is a single-row ball, four-point contact type, which provides strong bearing capacity and long service life.

### 1. 9. Engine

Engine model: Weichai WP6G190E301

Type: six-cylinder in-line, intercooling turbine diesel engine

Rated power: 140kW/2000r/min

Max. torque: 860N.m/1500r/min

Emission standard: Chinese National Stage III

Fuel tank capacity: 400L

### 1. 10. Hydraulic system

The crane adopts a hydraulic system with hydraulic pilot proportional control. The high-speed hydraulic motor drives the planet reducer to realize movements of the mechanisms.

The system has such advantages as high efficiency, energy-saving, smooth and safe simultaneous movements.

Hydraulic oil tank capacity: 600 L

## 1. 11. Electrical system

24 Volt DC, negative ground, two batteries of 200AH each.

The electrical system of the crane includes the power supply, engine start, engine shutdown, indicator lights, warning devices, illumination devices, fan, wiper, horn, hoisting limiter, concentrated display panel, load moment limiter, safety devices etc. which not only ensure safe operation of the crane but also provide a good working environment.

## 1. 12. Counterweight

Total weight of the fixed counterweight system is 12 t.

## 1. 13. Operator's cab

The spacious and full-closed cab is equipped with a safety windshield glass, an adjustable seat with armrest and headrest, an intermittent wiper and a window water injector, and covered with soft interior materials. It can be tilted upward or downward.

### ☛ Control boxes

The control boxes on both side of the cab are installed with various electrical switches and an emergency stop button, etc. They can be adjusted with the operator's seat.

### ☛ Joysticks and travel gear pedals

The hydraulic control system consists of two joysticks located in left and right side of the operator's seat and two travel gear pedals. These joysticks and pedals control movements of main valves through pilot hydraulic oils.

The left joystick controls the slewing mechanism and the auxiliary winch;

The right joystick controls the derricking mechanism and the main winch;

**Derricking and telescoping movements are selected by electrical switches on the right control box. Telescoping movements are realized through cylinder I or II, and these movements are switched over through a switch.**

The pedals control telescoping and left/right crane travelling.

Multiple movements can be compounded.

### ☛ Air conditioning

Adopts a standard heating and cooling air conditioning system, and optimizes air duct and air outlet.

## 1. 14. Crane undercarriage

### ☛ Traveling power

Both left and right crawler carriers are fitted with an independent hydraulic driving system. Each hydraulic driving system has a hydraulic motor, which can drive the drive sprocket

via a planet reducer.

The operator can use the joystick or travel gear pedals to control traveling movements, such as traveling straight ahead / backwards, turning with a crawler, differential steering and turning on spot.

✦ Traveling brake

The travel gear can be braked via the spring on the traveling motor, which is controlled by a balance valve.

✦ Crawler carrier extending & retracting mechanism

Crawler carriers are extended and retracted via two hydraulic cylinders.

- Crawler carrier extended:

Distance between track centers: 3840 mm

- Crawler carrier retracted:

Distance between track centers: 2290 mm

✦ Track roller

A maintenance-free, sealed structure

✦ Track pad

A high-strength alloy cast steel track pad, its width: 700 mm.

✦ Traveling speed

The highest traveling speed is 3 km/h.

## 1. 15. Safety devices

Many safety devices, including mechanical, electronic or hydraulic ones, are fitted on the crane to ensure safe operations.

### ⊗ Load moment limiter

The load moment limiter can automatically detect a boom angle and lifting load, and provide feedback of these data to the operator according to actual lifting situation.

When the normal operating range of the crane is exceeded, the load moment limiter will send out an alarm and limit current movement.

The LCD screen can show the following data: moment ratio, main boom angle, main boom length, working radius, actual load, and permissible lifting load, etc.

### ⊗ Hoisting limiter

A hoisting height limit switch with a limit switch weight is installed on the top of the main boom section. It is used to prevent the hook from being lifted to the upper limit position. When the hook reaches the upper limit position, the limit switch is triggered and sends a signal to the crane's electrical system, which will cut off further lifting of the hook and trigger visual and acoustic alarm in the cab through a buzzer and an alarm indicator.

### ⊗ Lowering limiter

When there are only three wraps of wire rope left on the drum, the lowering limit switch will be triggered, the buzzer will ring, the warning light on the screen will flash and the crane movement "reel off winch" will be cut off.

### ⊗ Slewing locking device

It adopts both electrical and mechanical locking, generally used to fix the relative position between the superstructure and undercarriage during transportation, so as to avoid accidental misoperation.

### ⊗ Safety catch

A device to protect the lifted load from falling off from the hook

### ⊗ Rear-view mirror

Located in the left front of the cab, and near the handrail in the right hood

✦ Overflow valves in hydraulic system

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

✦ Emergency stop button

It allows the engine to be shut down and all movements to be stopped in an emergency situation.

✦ Tricolor warning light

The warning light, by illuminating in red, yellow or green color, can indicate different loading status.

- Green color – the load ratio is less than 90%
- Yellow color – the load ratio is between 90% and 100%
- Red color – the load ratio has exceeded 100% and the crane is overloaded.

✦ Anemometer (optional)

An electronic wind speed sensor to indicate actual wind speed at the boom/jib head to the crane operator

✦ Slewing alarm (optional)

An acoustic alarm will be sent out during slewing movements.

✦ Traveling alarm (optional)

An acoustic alarm will be sent out during traveling movements.

✦ Video monitoring system (optional)

A camera and a visual monitoring system are optional. They respectively monitor working conditions of the crane's hoisting winches and the blind spots behind the crane.

## 2. Work conditions and points for attention

Table 2-1 Rated lifting capacity

Unit: Kg

Radius (m)	Main boom (m)						
	Cylinder I fully extended, 360° working range, 12 t counterweight						
	10.7	14.7	18.7	24.4	30.4	36.1	42
3	30000	25000					
3.5	27000	25000					
4	26000	24000	20500				
4.5	25000	23000	20000	18600			
5	24500	22000	19500	18600			
5.5	22000	20000	19000	18600	13500		
6	19000	18500	18000	17400	13500		
7	14000	13800	15000	14800	13500	9600	
8		11500	12000	12000	12000	9600	
9		9200	9500	9800	10600	9100	6800
10		7800	7800	8500	9000	8600	6650
11		6600	6500	7200	7800	8000	6500
12			5500	6100	6600	7000	6300
14			3800	4500	5000	5300	5500
16				3400	4000	4100	4300
18				2600	3000	3200	3400
20					2300	2600	2700
22					1800	1800	2200
24					1400	1500	1800
26						1100	1400
28						900	1100
30						650	750
I	0	4	8	8	8	8	8
II	0	0	0	5.7	11.7	17.4	23.3
倍率	<b>8</b>	<b>8</b>	<b>6</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>3</b>
吊钩	30t 吊钩						

Table 2-2 Rated lifting capacity table

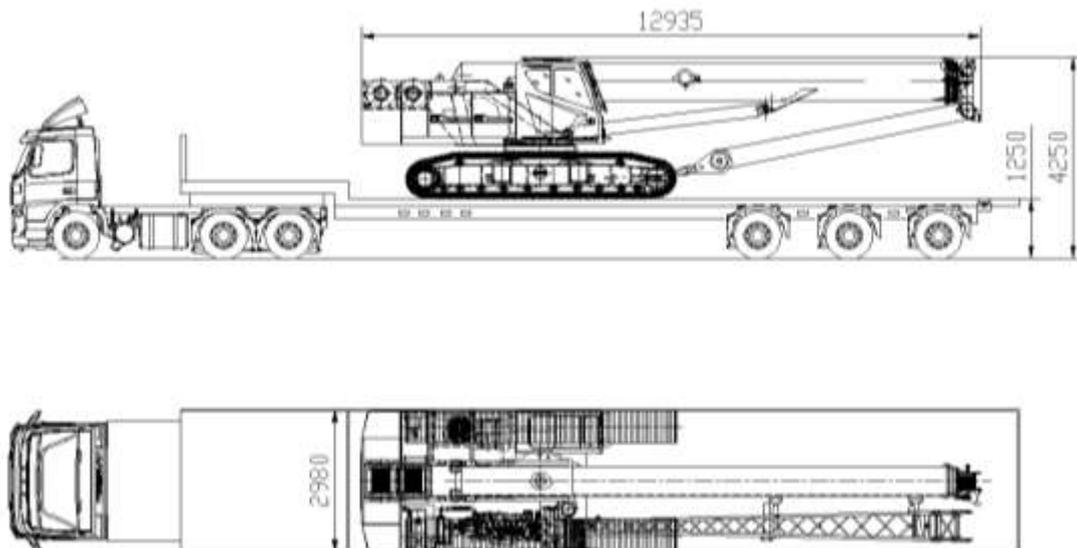
Unit: Kg

Boom angle ( ° )	Main (m) + Jib (m)		
	Over side or rear working area, with 12t fixed counterweight		
	42+8		
	0°	15°	30°
80	3000	2800	2200
78	3000	2800	2100
76	3000	2700	2000
74	3000	2500	1900
72	2800	2400	1800
70	2600	2300	1700
68	2400	2100	1550
66	2100	1900	1450
64	1800	1700	1300
62	1600	1500	1200
60	1400	1300	1100
58	1200	1100	950
56	1000	900	800
54	900	750	700
52	800		
Reeving	1		
Hook	3t		

### 3. Transport dimensions

Based on a common dismantling principle, this crane can be dismantled into two large parts for transportation. The first part includes the crane body, i.e. the boom, slewing table and crawler chassis, etc. of approx. 50 t in weight, while the other part includes the counterweight, fixed balancing counterweight and hook, etc. of approx. 35.6 t in weight.

#### Transportation plan and dimensions:



#### Note:

1. The components above are only schematic, and they are not drawn according to a fixed scale. The length dimensions are overall dimensions.
2. The weight listed in above table does not include the weight of package. The actual weight of a component may differ from the weight listed in above table due to manufacturing error.
3. The components above may be improved, which will result in changes in dimensions and weight. Therefore, the actual weight and dimension should be subject to factory products.