

ZOOMLION

ZOOMLION ZCT1000V5

TELESCOPIC CRAWLER CRANE

TECHNICAL SPECIFICATIONS

ZCT1000V5/27Y

Zoomlion Heavy Industry Science and Technology Co. Ltd

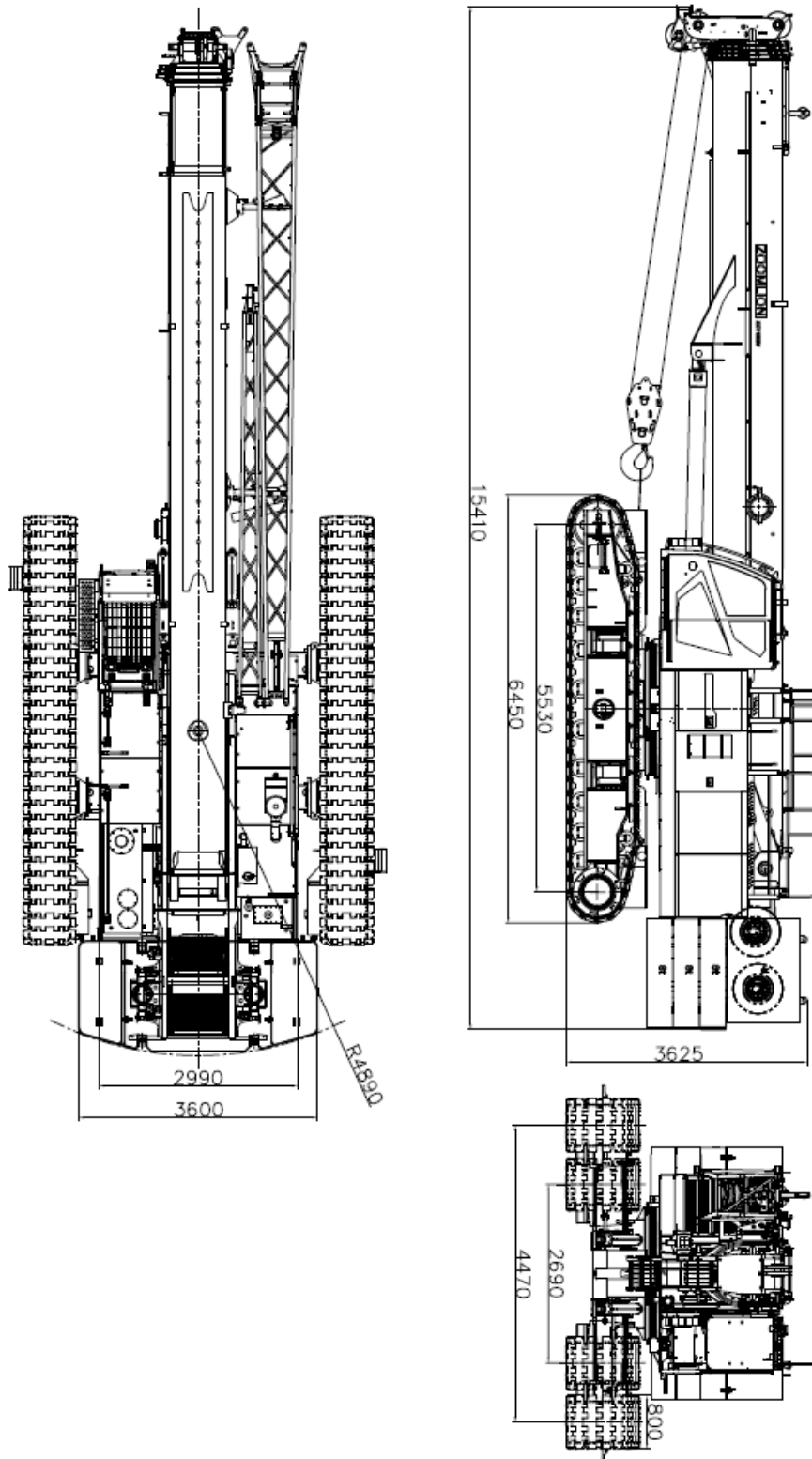
ZOOMLION ZCT1000V5
TELESCOPIC CRAWLER CRANE
TECHNICAL SPECIFICATIONS

ZCT1000V5/27Y

1. Overall dimensions and main technical parameters.....	2
1.1. Overall dimensions	2
1.2. Main technical parameters.....	3
1.3. Main technical features	5
1.4. Main boom and telescoping mechanism	6
1.5. Jib	6
1.6. Hoisting mechanism	6
1.7. Derricking mechanism	7
1.8. Slewing mechanism	7
1.9. Engine	7
1.10. Hydraulic system.....	7
1.11. Electrical system	8
1.12. Counterweight	8
1.13. Operator's cab	8
1.14. Crane undercarriage	8
1.15. Safety devices	9
2. Working range and rated capacity chart.....	12
3. Transportation plan	16

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	100	
Max. lifting moment		t×m	352	
Main boom length		m	12.7-50	
Jib length		m	9.5-16	
Max. length of main boom with fixed jib		m	50+16	
Main boom angle		°	-1-80	
Jib offset		°	0, 15, 30	
Max. single rope speed of the main hoisting winch		m/min	142	Unloaded, the 4th drum layer
Max. single rope speed of the auxiliary hoisting winch.		m/min	142	Unloaded, the 4th drum layer
Boom derricking up time		s	65	
Slewing speed		rpm	0-1.6	
Traveling speed		km/h	0-2.0	
Max. gradeability		%	45	
Ground pressure		MPa	0.1	
Deadweight		t	90	With the main hook installed
Counterweight		t	32	
Overall dimensions (L × W × H)		mm	15410×5270(3490)×3375	
Engine	Model		WP7G270E301	Weichai Power Co., Ltd.
	Rated power / rotational speed	kW/rpm	199/2000	
	Max. output torque / rotational speed	Nm/rpm	1200/1500	
	Exhaust emission	/	Chinese National Stage III for non-road vehicles	
Distance between track center × crawler contact length × crawler width		mm	2690×5530×800	Crawler carrier retracted
		mm	4470×5530×800	Crawler carrier extended

Noise	Noise level outside the operator's cab during operation	dB	≤ 107	
	Noise level in the operator's cab during operation	dB	≤ 85	

Note:

1. The single rope speed of the winch, slewing speed and traveling speed vary with the load.
2. The ground pressure is an average value, and the actual maximum ground pressure should be determined according to actual lifting conditions.

1. 3. Main technical features

✦ High lifting performance

The U-shaped boom consists of 5 boom sections and is of superior lifting performance. An innovative plate-type boom head and compact boom end realize excellent lapping ratio between boom sections and high bearing capacity. The boom adopts telescoping system of the second generation which can realize continuous boom length change, thus proving higher anti-tipping capability of the whole crane.

✦ High working efficiency

Pilot hydraulically controlled joysticks can combine movements of the main and auxiliary hoist mechanisms, derricking, slewing and telescoping mechanisms, which greatly increases working efficiency.

The system is characterized in its convenient, flexible, stable, and reliable work and stepless speed adjustment.

The single-rope speed can reach 142m/min (At 4th layer)

✦ High tension of single rope

φ20 anti-twisting wire rope is a standard configuration for the main and auxiliary winches, whose tension of single rope reaches 8.6t.

✦ Optimization of transportation and dismantling

Convenient crane translocation: only the counterweight needs to be dismantled for transportation.

The stacked counterweight plates are convenient for assembly and disassembly by the counterweight handler, which is convenient for transportation.

The crawler carriers can be extended or retracted, and the max. transportation width is 3.49m.

Vertical cylinders are standard configuration which is convenient for dismantling of the crawler carriers.

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, super load bearing capacity, light deadweight, large lateral stiffness and low end deflection. The main boom head adopts a new plate-type structure with an imbedded sliding block, contributing to a larger connecting ratio between boom sections. A series of optimized design greatly decrease the deadweight of the boom and provide a more evenly distributed stress onto the boom to avoid partial distortion. Furthermore, the boom has good guidance quality and adjustability.

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 two jib sections of a lattice structure and reducing cross section. They are attached to the side of the boom through pins when they are not used

There are two jib lengths, i.e. 9.5 m and 16 m. The jib section I is hinged to the head of the top boom section through pins. The jib can be installed at one of the three angles onto the main boom, i.e. 0°, 15° and 30°. Change of jib angles 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 lower limit switch 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: $\varnothing 20.0$ mm

Strength grade: 2160 N/mm²

Length of main hoist rope: 280 m

Length of auxiliary hoist rope: 160 m

Tension of a single rope: 8.6t

1. 7. **Derricking mechanism**

A front-mounted derricking mechanism with a single cylinder, which can change the boom angle within -1°-80°. A balance valve is installed on the cylinder, ensuring stable derricking process.

1. 8. **Slewing mechanism**

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° unlimited slewing range.

The free swing function decreases lateral pulling force from a load to the boom.

✚ Slewing bearing

Single-row ball, four-point contact, externally geared

✚ Slewing braking

The crane is installed with a hydraulically controlled normally-closed brake, and is capable of conducting controllable free swing operation.

1. 9. **Engine**

Engine model: Weichai WP7G270E301 diesel engine

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

Rated power: 199kW/2000r/min

Max. torque: 1200N.m/1500r/min

Emission standard: Chinese National Stage III

Fuel tank capacity: 450L

1. 10. **Hydraulic system**

The crane adopts a series-connected 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.

The oil cooler for hydraulic system: a radiator driven by high-power hydraulic motor, 40 kW

Hydraulic oil tank capacity: 1400 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, hydraulic oil cooling fan, 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

Rear-mounted movable counterweight plates, whose total weight is 32t. The counterweight plates are assembled and disassembled through the counterweight handler at the tail of the slewing platform. The counterweight plates are stacked and convenient for transportation.

The central ballast consists of two counterweight plates, whose total weight is 7.0t.

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.

✿ 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.

✿ Joystick and travel gear pedal

The hydraulic joystick installed with a universal joint pin controls the movements of the hoisting winches 1 and 2, slewing mechanism and derricking winch.

Travel gear pedals with hand levers: control the movements of left and right travel gears.

The crane movement can be performed independently and simultaneously.

✿ 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 pedal 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: 4470 mm
- Crawler carrier retracted:
Distance between track centers: 2690 mm

✧ Track roller

A maintenance-free, sealed structure

✧ Track pads

High-strength alloy forged track pads; width: 800mm.

✧ Traveling speed

The highest traveling speed is 2.0 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 main 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 limit switch

A hoisting 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 alarms in the cab through a buzzer and an alarm indicator.

✧ Lowering limit switch

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

✧ Anemometer (optional)

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

✧ 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.

✧ Slewing alarm

An acoustic alarm will be sent out during slewing movements.

✧ Traveling alarm

An acoustic alarm will be sent out during traveling movements.

✦ Video monitoring system

A camera and a visual monitoring system .They respectively monitor working conditions of the crane's hoisting winches and the blind spots at the right side of the crane.

✦ Function locking

When the function locking lever is not in position, all operations are invalid, so as to avoid misoperation.

2. Working range and rated capacity chart

Rated capacity chart with boom

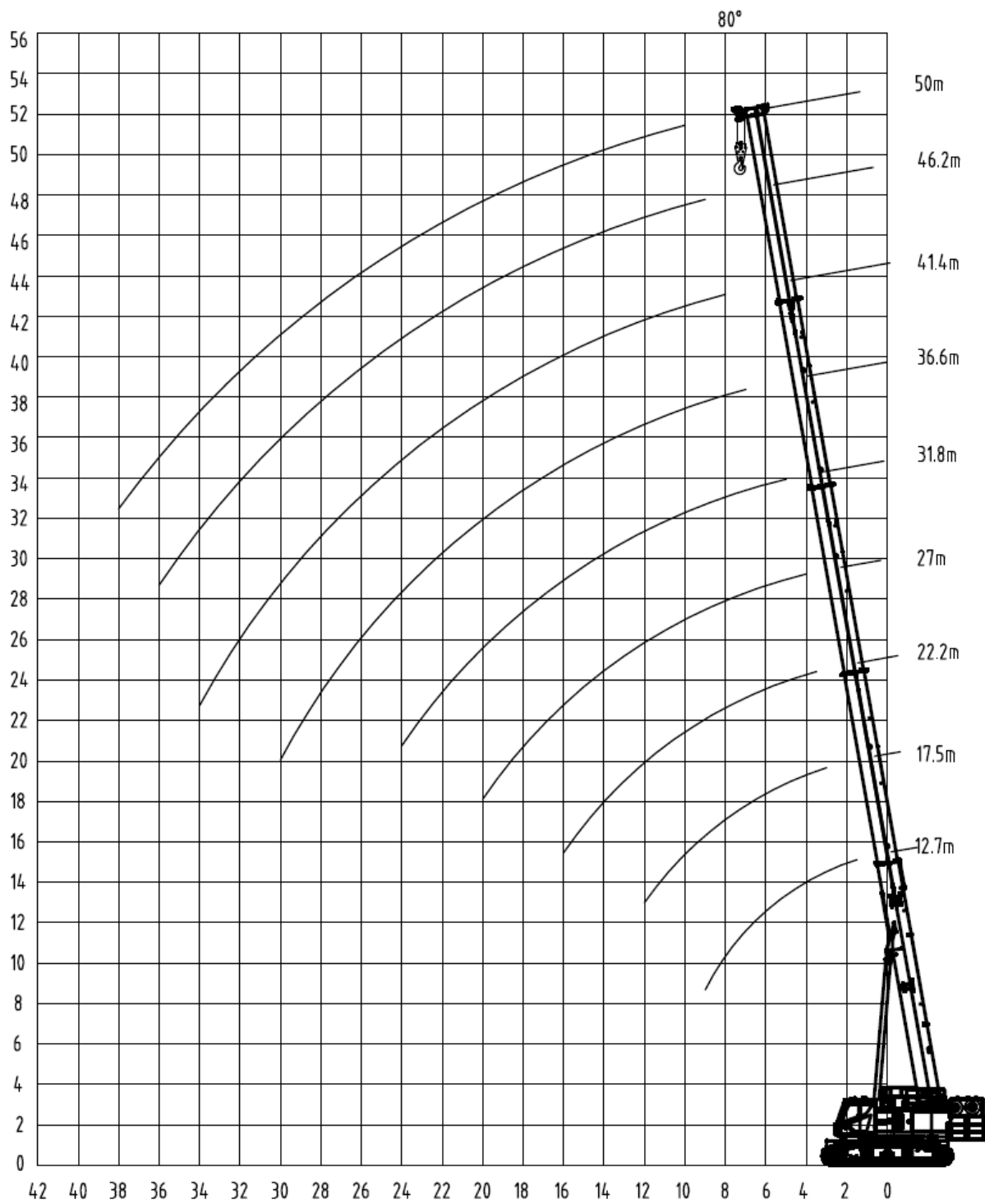
Unit: t

Working radius (m)	Zoomlion ZCT1000V5								
	Telescopic cylinder I fully extended, 360° working range, 32t counterweight + 7t central ballast								
	12.7	17.5	22.2	27	31.8	36.6	41.4	46.2	50
2.5	100								
3	90	76							
3.5	80	74	54						
4	76	72	54	39.5					
4.5	<u>73</u>	<u>70</u>	53	39.5					
5	70	65	51	38	36				
5.5	64	60	48	38	36				
6	58	55	46.5	37	36				
7	47	46	<u>42</u>	36	35	31			
8	37.5	37	36.8	34	33	30	24		
9	31	30.5	30	<u>31.2</u>	30	28	24	20.5	
10		25.7	25.2	26.3	<u>27.5</u>	26	24	19.5	15.6
11		21.8	21.5	22.6	23.4	<u>24</u>	21	17.8	15
12		18.7	18.5	19.6	20.3	20.9	<u>20</u>	15.8	14.5
14			14.1	15.2	15.8	16.4	16.8	14	12.9
16			10.9	12	12.7	13.2	13.6	<u>13.5</u>	11.8
18				9.6	10.2	10.8	11.2	11.5	<u>10.7</u>
20				7.8	8.4	8.9	9.4	9.4	9.2
22					7	7.4	7.8	7.8	8
24					5.8	6.2	6.5	6.6	6.8
26						5.2	5.5	5.7	5.8
28						4.4	4.6	4.9	5
30						3.6	3.9	4.2	4.3
32							3.3	3.6	3.7
34							2.8	3.1	3.1
36								2.6	2.6
38									2
40									
42									
I	0	4.8	9.5	9.5	9.5	9.5	9.5	9.5	9.5
II	0	0	0	4.8	9.6	14.4	19.2	24	27.8
II	0	0	0	17%	35%	52%	69%	86%	100%
Reeving	12	11	8	7	6	5	4	3	3
Hook	100t		60t			35t			

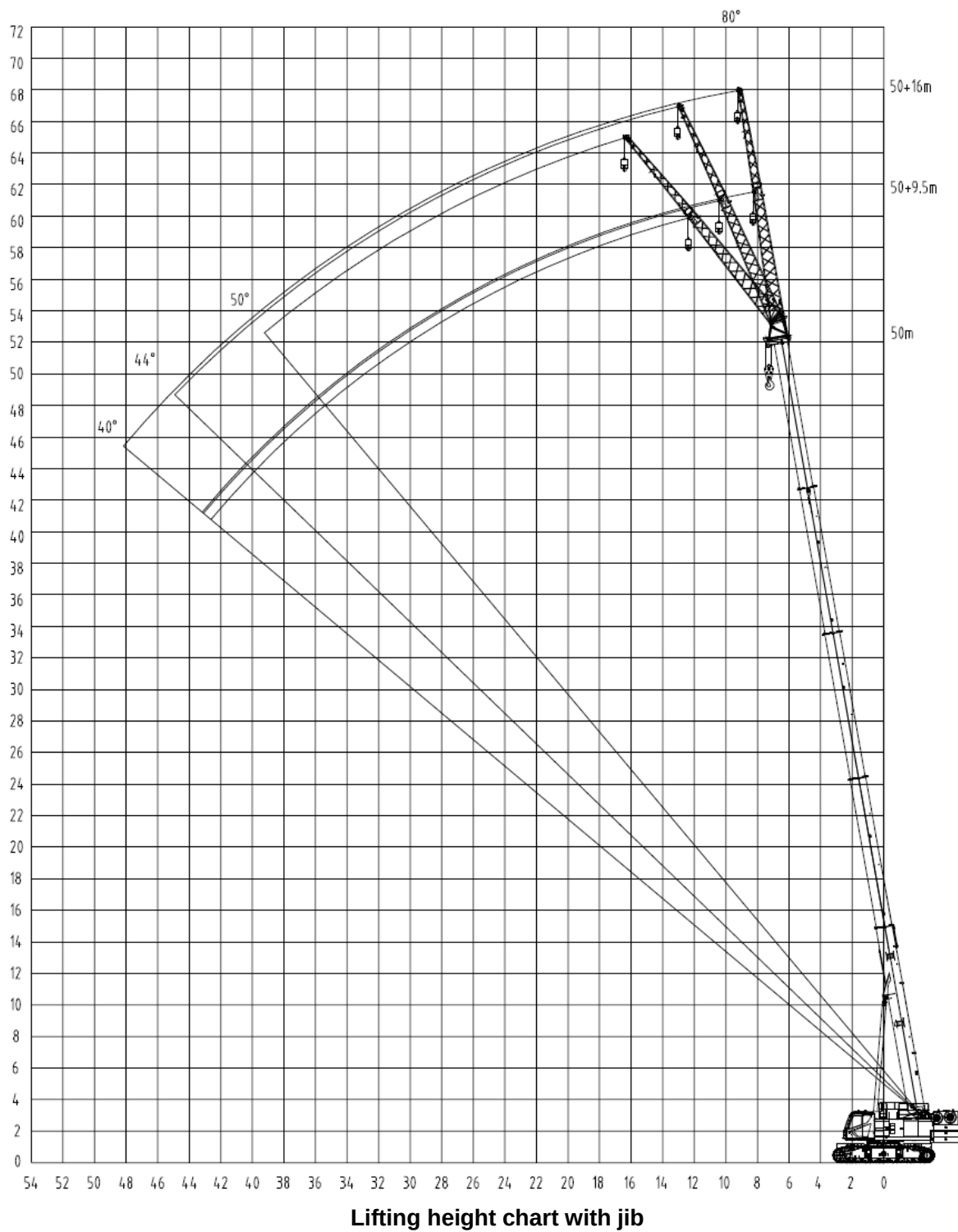
Rated capacity chart with jib

Unit: t

Boom angle (°)	Boom (m)+ jib (m)					
	360° working range, 32t fixed counterweight					
	50+9.5			50+16		
	0°	15°	30°	0°	15°	30°
80	5.50	3.30	2.50	3.00	2.00	1.50
78	5.00	3.30	2.50	3.00	2.00	1.45
76	4.80	3.20	2.50	2.90	1.90	1.40
74	4.50	3.10	2.50	2.70	1.80	1.35
72	4.20	3.00	2.50	2.50	1.70	1.30
70	3.90	2.90	2.40	2.30	1.65	1.25
68	3.60	2.80	2.30	2.10	1.60	1.25
66	3.40	2.70	2.20	2.00	1.55	1.20
64	3.20	2.60	2.10	1.90	1.50	1.20
62	3.00	2.50	2.05	1.80	1.45	1.15
60	2.90	2.40	2.00	1.70	1.40	1.15
58	2.80	2.30	1.95	1.60	1.35	1.10
56	2.70	2.20	1.90	1.55	1.30	1.10
54	2.60	2.10	1.85	1.50	1.25	1.05
52	2.40	2.00	1.80	1.45	1.20	1.05
50	2.20	1.90	1.70	1.35	1.15	1.0
48	2.10	1.80	1.60	1.30	1.10	
46	1.90	1.70	1.50	1.25	1.05	
44	1.70	1.60	1.40	1.20	1.00	
42	1.60	1.50	1.30	1.15		
40	1.50	1.40	1.20	1.10		
Reeving	1					
Hook	9t					



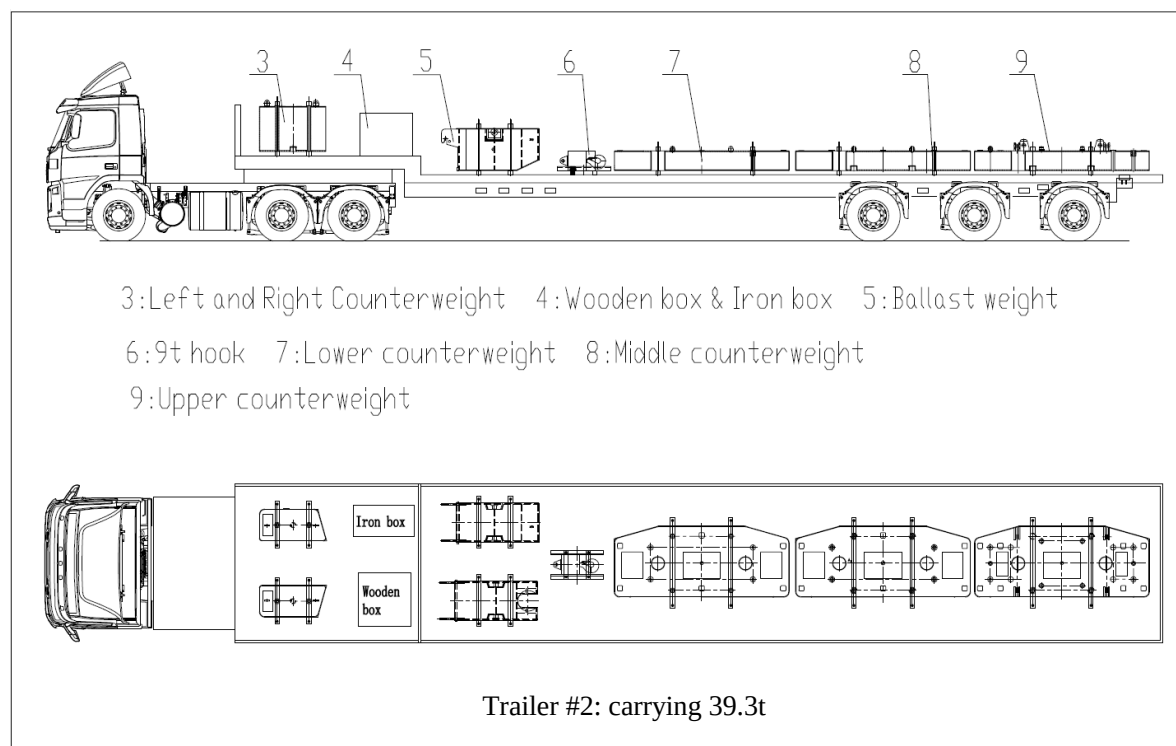
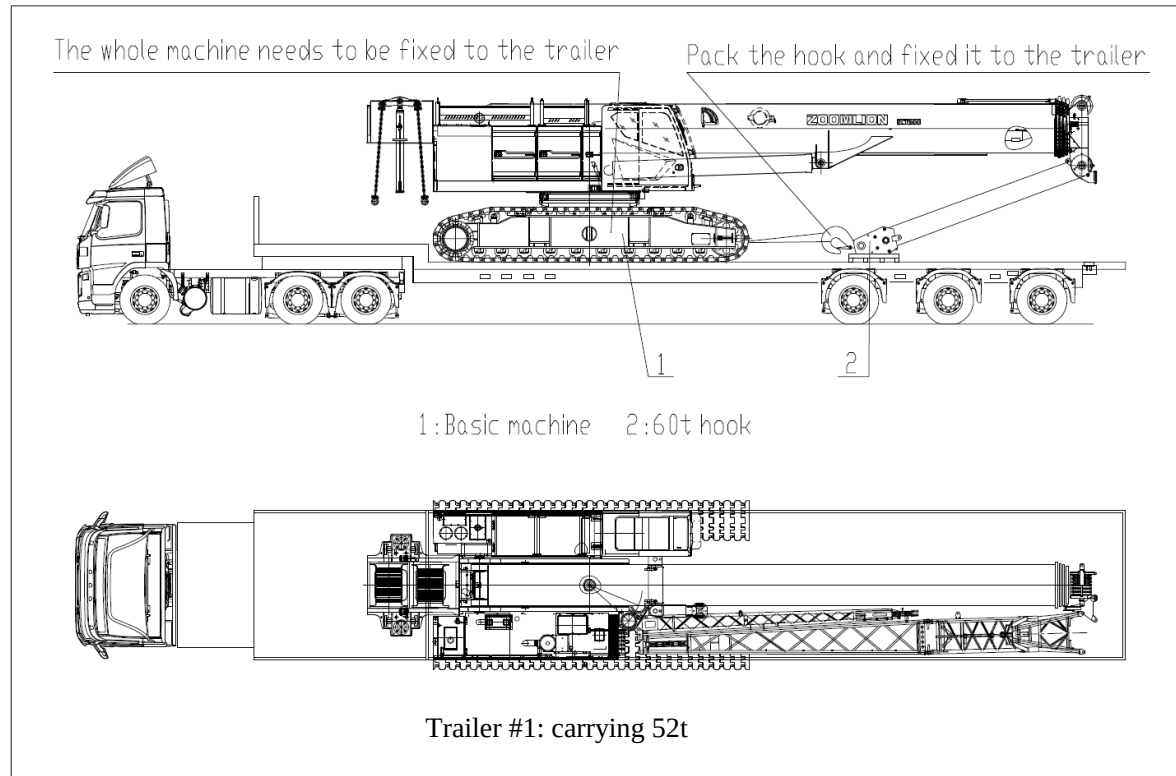
Lifting height chart with boom



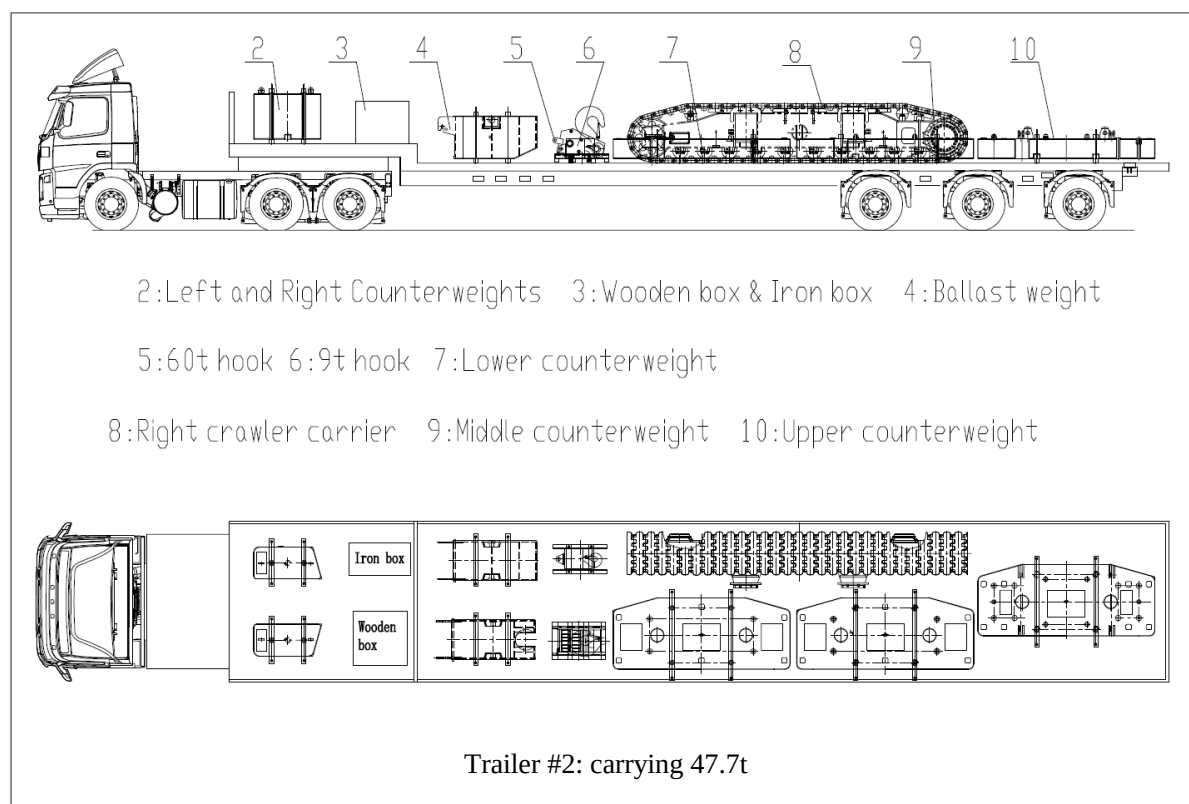
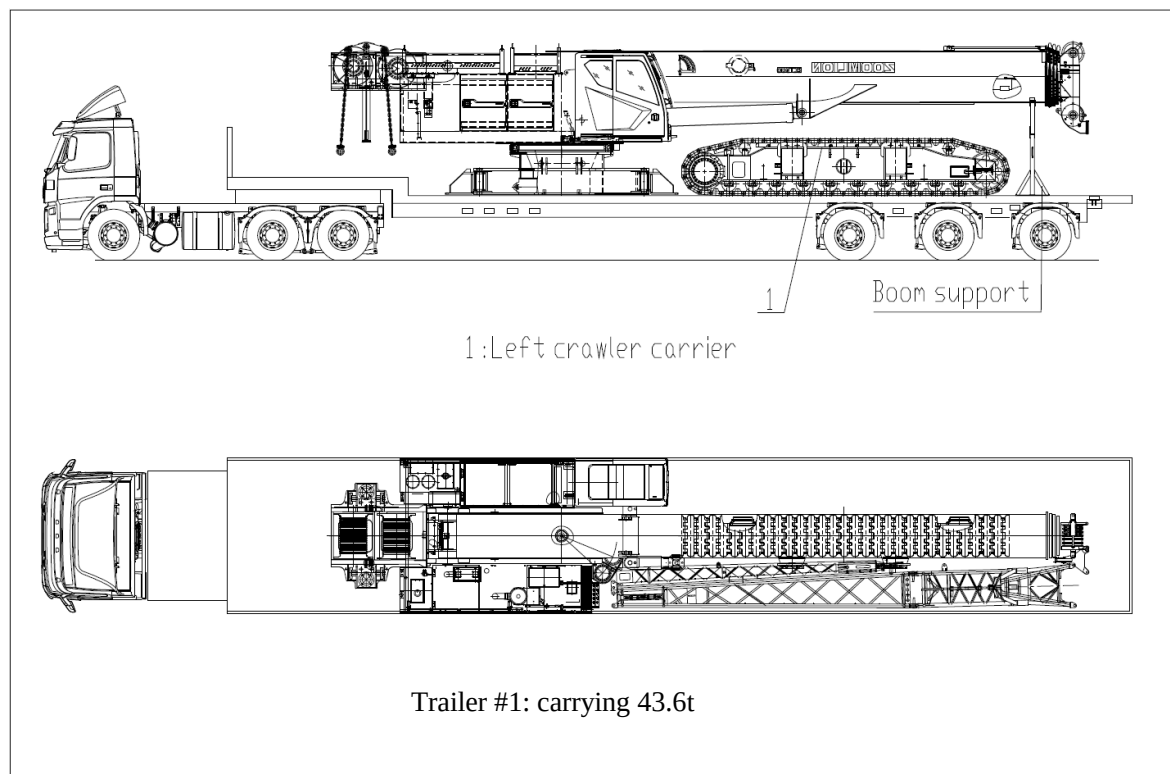
3. Transportation plan

The crane needs to be dismantled into several parts for transportation. The crane body includes the boom, slewing platform, and crawlers, whose total weight is 52t. The other parts include the counterweight, central ballast, and hook, etc., whose total weight is 39.3t.

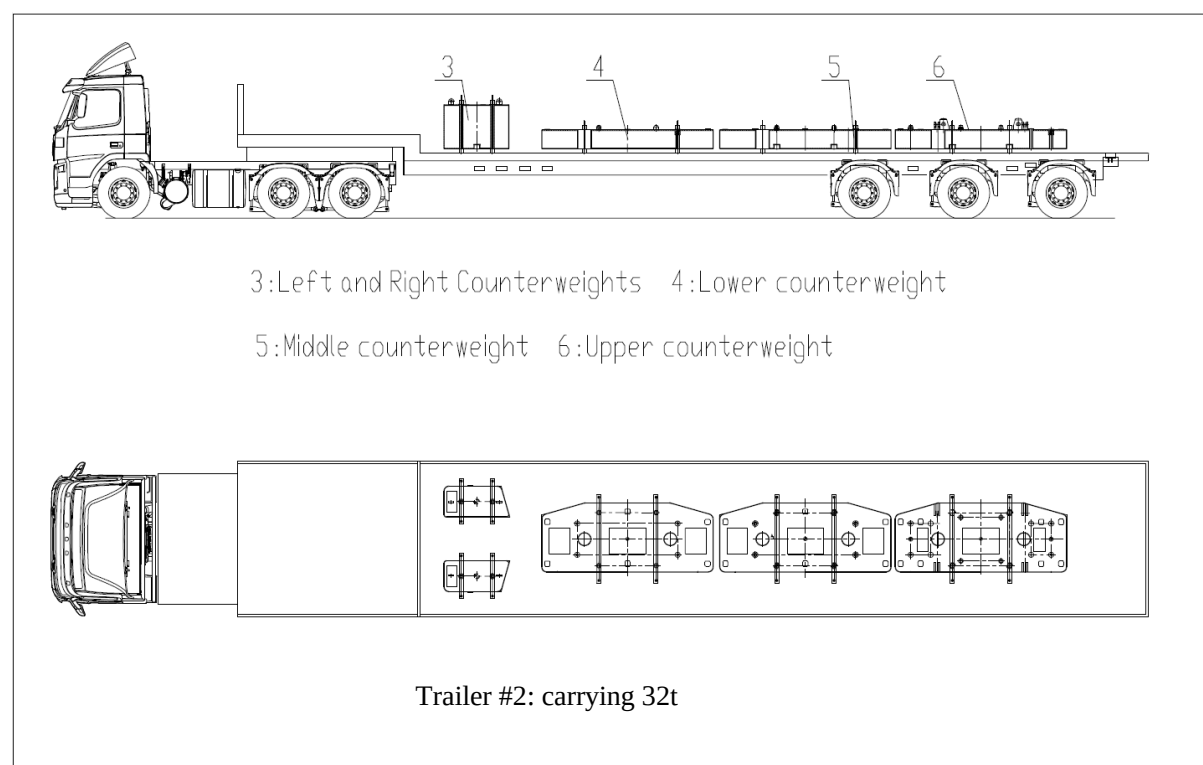
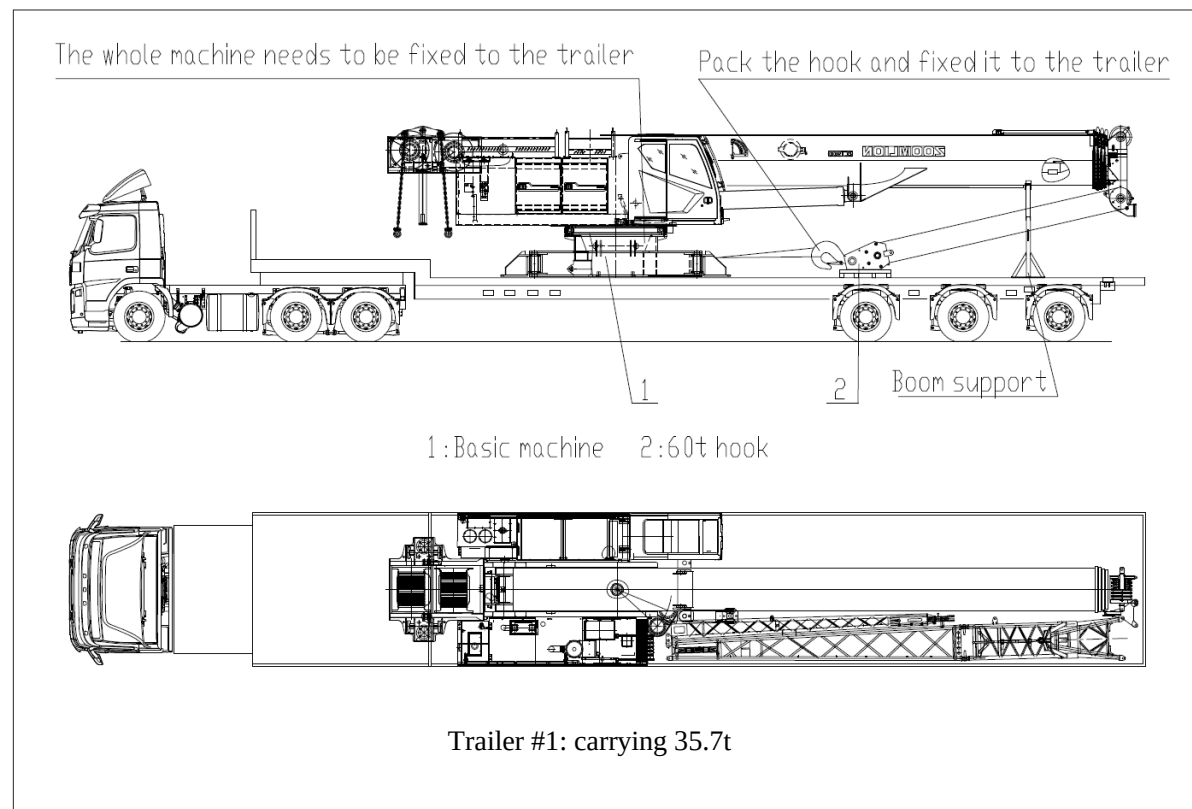
Transportation plan 1 (by two trailers):

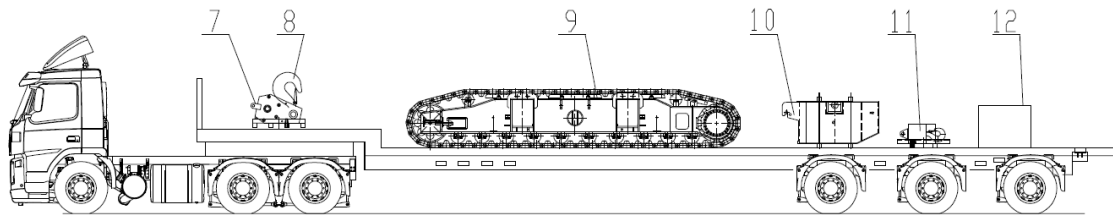


Transportation plan 2 (by two trailers)

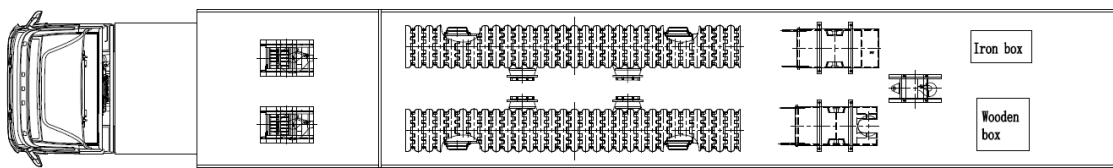


Transportation plan 3 (by 3 trailers):





7:100t hook 8:35t hook 9:Left and Right crawler carriers
 10:Ballast weight 11:9t hook 12:Wooden box & Iron box



Trailer #3: carrying 25.7t