

ZOOMLION

ZOOMLION ZRT1100V532 ROUGH TERRAIN CRANE

TECHNICAL SPECIFICATIONS

GQ07514227000000EN

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TECHNICAL SPECIFICATIONS

GQ07514227000000EN

1. PRODUCT CHARACTERISTICS

ZRT1100V532 rough terrain crane is of wide tread, high stability, short wheelbase and small turning radius, which is adapted to tight work space.

It provides 360° slewing function, “On Tires” Lifts and pick-and-carry operations.

It can be widely used in construction building sites, oil fields, warehouses, freight yards and logistics bases etc., to carry out lifting work, short distance transportation and pick-and-carry operations in narrow working areas.

ZRT1100V532 rough terrain crane consists of the superstructure and special purpose chassis, including power system, drive system, suspension system, steering system, brake system, hoist mechanism, derricking mechanism, slewing mechanism, boom system, turntable, chassis frame, outrigger, hydraulic system, electric system and cab etc.

Distinguishing characteristics:

Four steering modes:

2-wheel steering (front wheel), 2-wheel steering (rear wheel), 4-wheel steering and Crab steering

Max. rated lifting capacity: 110 ton at 2.5 m working radius

Max. lifting height: 66.1m

Max. driving speed: 37 km/h

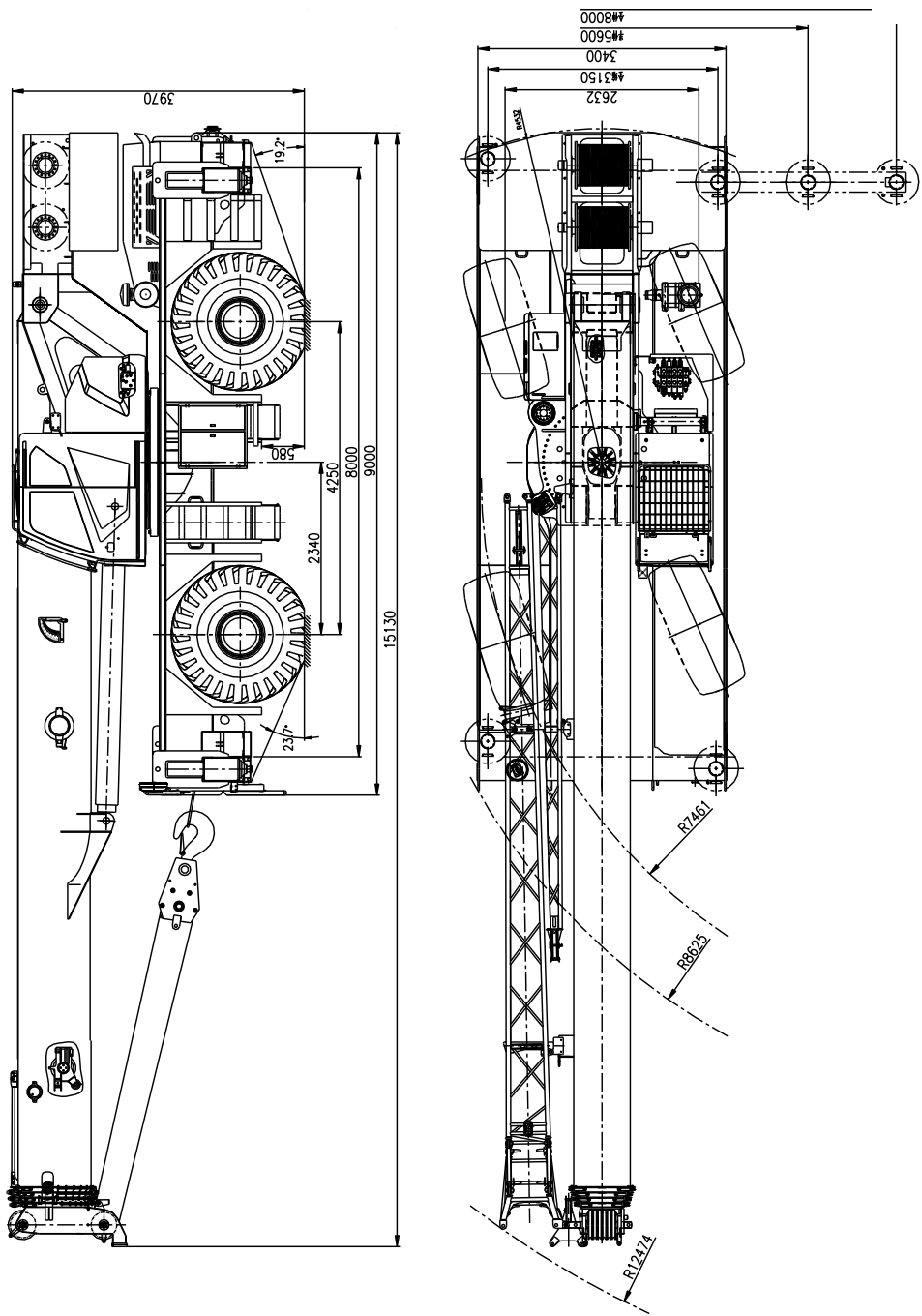
Overall dimensions: 15130 mm×3400 mm×3970 mm

Deadweight: 55.8 ton

Ability to pick-and carry loads

Ability to travel on rough terrains

Unit: Metric mm



Overall View – ZRT1100 Rough Terrain Crane

2. TECHNICAL DATA

MAIN TECHNICAL DATA

Type	Ser. No.	Item	Unit	Value
Working performance	1	Max. rated lifting capacity × working radius	kg.m	110000×2.5
	2	Max. load moment of boom	kN.m	3332
	3	Max. load moment of boom (fully extended)	kN.m	1658
	4	Max. lifting height of boom (fully extended)	m	49.8
	5	Max. lifting height of jib	m	66.1
Dimensions	6	Overall dimensions (L × W × H)	mm	15130×3400×3970
	7	Outrigger spread (Height × Width)	mm	8000×8000
	8	Boom length	mm	12500 - 49000
	9	Jib length	mm	9500, 16000
	10	Boom angle	°	-1 - 80
	11	Slewing range		360° unlimited slewing (Full range)
Working speeds	12	Max. hoist rope speed (Main winch)	m/min	145
	13	Min. boom telescoping out time	s	115
	14	Min. boom telescoping in time	s	125
	15	Min. boom derricking up time	s	55
	16	Min. boom derricking down time	s	80
	17	Slewing speed	r/min	0-1.5
Hydraulic system	18	Maximum working pressure	MPa	28
	19	Rate working flow	L/min	320
	20	Hydraulic oil tank capacity	L	1000
Gross vehicle mass	21	Gross weight	kg	55800
	22	Front weight	kg	27900
	23	Rear weight	kg	27900
Driving	24	Max. driving speed (forward/backward)	km/h	37/25
	25	Wheelbase	mm	4250
	26	Treads (Front / Rear)	mm	2632
	27	Max. gradeability	%	68

3. MAIN PARTS TABLE

MAIN PARTS TABLE

Type	Ser. No.	Item		Main configuration
Power system	1	Engine make & model		Cummins QSB6.7
	2	Fuel type		Diesel
	3	Intake system		turbo-charged, air to air, inter-cooling
	4	Cooling system		Water-cooling
	5	Engine rated power	KW/r/min	194KW/2200rpm (Dongfeng Cummins) 194KW/2400rpm (US Cummins)
	6	Engine rated torque	N.m/r/min	990N.m/1500rpm
	7	Fuel tank capacity		300 L
Drive system	8	Transmission drive mode		4×2, 4×4
	9	Model or brand of transmission		ZF (Germany)
	10	Transmission gear stage		6 forward and 3 reverse speeds
Travel system	11	Suspension		Rigid (front) / Flexible (rear)
	12	Model or brand of axles		Hande Axle Xuzhou Meritor Axle Kessler (Germany)
	13	Steering mode		2-wheel steering (front wheel) 2-wheel steering (rear wheel) 4-wheel steering Crab steering
	14	Tire size		29.5-25-34PR
	15	Tire number		4
	16	Model or brand of main valve		ZOOMLION
Hydraulic system	17	Gear pump		Avic Liyuan/High-Tech/Hengli
	18	Balance valve / hydraulic lock		NEM/ZOOMLION
	19	Slewing motor		HIGH-TECH (China)
	20	Load moment limiter		ZOOMLION HIRSCHMANN
Electrical system	21	Controller		ZOOMLION HIRSCHMANN
Emission	22			America TIII

4. SPECIFICATIONS, SUPERSTRUCTURE

4.1 Boom and telescoping mechanism

The box-shaped boom consists of 5 U-type boom sections made of high-strength steel.

The boom head is equipped with 6 sheaves, which is convenient for changing line parts without removing the wedges. The rooster sheave is optional.

The telescopic boom sections are telescoped in / out via two telescopic cylinder and two sets of boom extension / retraction ropes. The telescopic cylinder is equipped with a plunge-jointed balance valve.

Min. boom length (with telescopic sections completely retracted): 12500 mm

Max. boom length (with telescopic sections completely extended): 49000 mm

Min. telescoping out time: about 115s

4.2 Jib

It consists of two lattice jib sections. The jib section II is secured into the jib section I, and the whole jib is side stowed with the boom via moveable pins during driving.

A sheave is assembled at the jib head.

Jib angle: 0°, 15° and 30°

Jib length: 9.5m, 16 m

4.3 Derricking mechanism

Rear-mounted single derricking cylinder with derricking balance valve.

Derrick angle: -1° - 80°

Derrick speed: -1° - 80°/55s

4.4 Hoist mechanism

4.4.1 Main and auxiliary winches

The main and auxiliary winches are equipped with the same spare parts, including variable-

displacement hydraulic motor with axial plunger and planetary reducer. The hydraulic motor drives the winch with a planetary reducer. When the winch turns (rotates), the wire rope reels off or spools on to the winch

4.4.2 Wire rope

High strength wire rope; twist resistant wire rope is optional.

Max. hoist rope strength:	6500 kg
Max. hoist rope speed:	145 m/min (At the 4 th layer)
Rope diameter:	Φ20 mm
Main winch rope length:	260 m
Auxiliary winch rope length:	140 m

4.4.3 Hook block

Rotatable main hook: 70 t, with 6 sheaves and hook latch, secured at the chassis frame in front of turntable.

Rotatable auxiliary hook: 6.5 t, with hook latch, used for the rooster sheave and jib, secured at auxiliary hook holder on the chassis frame.

4.5 Slewing mechanism

It consists of a hydraulic motor, planetary gear reducer, pinion gear and slewing bearing etc. Via the planetary gear reducer, the hydraulic motor drives the pinion gear to rotate and makes the slewing bearing outer ring rotate around its inner toothed ring fixed on chassis frame, providing superstructure with 360° unlimited slewing.

Hydraulically controlled usually-closed brake, with a slewing function that you can control and a pneumatic slewing lockout device.

Slewing speed:	0 - 1.5 r/min
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4.6 Slewing platform

The slewing platform adopts a wall structure.

4.7 Hydraulic system

4.7.1 Oil pump

The dual variable pumps mounted on the transmission supply oil for telescoping, derricking and hoist mechanisms and 360 ° slewing lock. Moreover, it also supplies pilot oil.

One of the two gear pumps serially connected with variable pumps supply oil for outriggers, braking, oil radiator of torque converter and A/C. The other gear pump supplies oil for slewing and steering mechanisms.

4.7.2 Control valve

It applies a quadruple-unit multi-way directional valve with downstream compensation technology.

4.7.3 Pipeline

An air-cooled hydraulic oil cooler driven by an electric motor is located in return line.

The system pressure can display on the instrument console since there is a pressure test port on the hydraulic circuit.

4.7.4 Hydraulic oil tank

Capacity: about 1000 L

There is a return oil filter with automatic bubble elimination function and filtering performance of 12μm.

4.7.5 Filter

High pressure filter with the filtering accuracy of 10 μ is installed in oil-ways of outriggers, braking, slewing, and steering.

Low pressure filter with the filtering accuracy of 5 μ is installed in pilot control oil ways.

4.8 Crane controls

The superstructure movements are controlled by two hydraulically controlled joysticks on

both sides of operator's seat (comply with ISO standard requirements).

The left joystick controls the slewing and auxiliary winch movements

The right joystick controls the derricking and main winch movements.

The hoist mechanism can carry out the derricking or telescoping movement simultaneously.

4.9 Cab

There is only one cab for ZRT1100 rough terrain crane. It can be used as operator's cab as well as driver's cab. The cab is side-mounted and adopts left hand drive.

There are two control boxes on the both sides of operator's seat. The left / right control box can be pulled up. The controls of superstructure are arranged according to the requirements of ASME B30.5-2007 standard and comply with ISO (International Organization for Standardization) standard.

Cab dimensions:

Length: 1810 ± 5 mm

Width: 1050 ± 5 mm

Height: 1710 ± 5 mm

4.10 Load moment limiter (RCI)

If the actual load approaches the rated one, the buzzer sends out visual and audible warning.

If the actual load reaches the rated one, all dangerous movements are switched off automatically.

The load moment limiter also can limit the working range (including working radius, boom angle, lifting height and slewing range etc.).

The following information can be displayed on the screen:

- Boom angle or moment ratio;
- Boom length or default hook weight;

- Actual working radius or slewing angle;
- Actual lifting capacity;
- Max. permissible lifting capacity;
- Offset or line parts;
- Boom status indication;
- Outrigger status (completely extended, intermediately extended or completely retracted or “On Tires” indication).

The following information is displayed by bar graph:

- Percentage of actual lifting capacity to the rated one or working pressure of the hydraulic system.

4.11 Outriggers

H-type outriggers, hydraulically controlled, can be operated in the cab simultaneously or independently.

Each vertical jack cylinder is equipped with a two-way hydraulic lock to ensure that outriggers are secured reliably during working or driving.

Outrigger boxes are directly welded onto the chassis frame.

The outriggers can be completely extended, intermediately extended or completely retracted for crane operation.

Outrigger spread (Height): 8000 mm

Outrigger spread (Width): 8000 mm (fully extended)

5600 mm (half extended)

3150 mm (fully retracted)

5. SPECIFICATIONS, SPECIAL PURPOSE CHASSIS FOR ROUGH TERRAIN CRANE

5.1 Type

Rear mounted engine, left-hand drive

Drive mode: 4 x 2 and 4 x 4

5.2 Chassis frame

Integral box-type construction welded by high-strength steel

5.3 Engine

5.3.1 Model

CUMMINS QSB6.7

5.3.2 Type

Four stroke cycles, 6-cylinder diesel, direct injection, water-cooled, turbocharged, diesel engine.

5.3.3 Performance

Max. output power: 194 kW / 2200 r/min. (Dongfeng Cummins)
Optional: 194kW/2400rpm (US Cummins)

Max. output torque: 990 Nm / 1500 RPM

5.4 Drive system

Electrically controlled automatic hydraulic transmission, with transfer case.

6 forwards and 3 reverse speeds, electro-hydraulic power shift, and automatic locking mechanism.

Working hydraulic oil pump and steering oil pump directly take off power from the transmission.

5.5 Axle

5.5.1 Front axle

Steering and driving axle, rigidly mounted to chassis frame, with planetary reducer and brake.

5.5.2 Rear axle

Full-floating steering and driving axle, with planetary reducer and brake.

5.6 Steering system

Full hydraulic power steering gear

The cylinder for steering and driving axle is controlled by steering wheel to realize crane steering.

4 steering modes:

2-wheel steering – front wheel steering

2-wheel steering – rear wheel steering

4-wheel steering – all-wheel steering

4-wheel steering – crab steering

5.7 Suspension system

Front axle: rigidly mounted to chassis frame

Rear axle: oscillation axle, connecting to chassis frame via hydraulic suspension cylinder

5.8 Brake system

5.8.1 Service brake

Hydraulically controlled disc brake on 4 wheels

5.8.2 Parking brake

Hydraulically released parking brake, under the action of the spring mounted on the input shaft of front axle.

5.9 Electrical system

24 Volt DC

2 batteries with 12 V rated voltage and 120 Ah rated current

5.10 Fuel tank

Capacity: 300 L

5.11 Tire

Size: 29.5-25-34PR

6、SAFETY DEVICES

- Load moment limiter (RCI)
- Rotating beacon and horn
- Anti-Two Block devices
- 3rd wrap
- Balance valve
- Hydraulic lock
- Hydraulic safety valve
- Slewing brake
- Slewing lockout device
- Boom angle indicator
- Outrigger beam retaining pin
- Emergency stop button

7. LOAD RATING

7.1 LIFTS WITH OUTRIGGER BEAMS FULLY EXTENDED

7.1.1 RATED LOADS WITH BOOM

Table 7-1 Rated load on outriggers fully extended with boom only

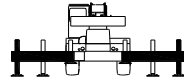
			360° slewing (UNIT: KG)				 OUTRIGGERS FULLY EXTENDED		
Load radius (m)	Outriggers and telescoping cylinder I fully extended, 12 t counterweight								
	12.5	17.1	21.7	26.2	30.7	35.2	39.7	44.2	49.0
2.5	110000*								
3.0	100000*	66000							
3.5	85000*	66000							
4.0	78000*	66000	50000						
4.5	72000*	63000	48000	32000					
5.0	68000	59000	46000	32000					
5.5	60000	54000	43000	32000	30000				
6.0	54300	51000	40500	32000	30000	26000			
7.0	45500	44000	36500	32000	29000	26000			
8.0	39000	38000	33000	29000	27000	25000	21000		
9.0	30000	29500	29000	26500	25000	22500	19700	16500	
10.0		23500	23600	24600	23000	20600	18200	16000	12400
11.0		19500	19300	20500	21000	18600	17000	15000	12200
12.0		16300	16200	17200	18000	17600	15800	14200	12000
14.0			11700	12600	13300	14000	13500	12500	11500
16.0			8800	9600	10300	10800	11300	11000	10400
18.0			6600	7500	8100	8600	9000	9400	9400
20.0				5900	6500	7000	7300	7700	8200
22.0				4600	5200	5800	6100	6300	6700
24.0					4200	4700	5000	5200	5500
26.0					3300	3800	4100	4400	4700
28.0						3100	3400	3700	3900
30.0						2500	2800	3100	3300
32.0						1900	2300	2600	2800
34.0							1800	2100	2300
36.0								1700	1900
38.0								1300	1600
40.0									1200
I	0	4.6	9.2	9.2	9.2	9.2	9.2	9.2	9.2
II	0	0	0	4.5	9.0	13.5	18.0	22.5	27.3
Reeving	12	12	8	6	5	4	4	3	3
Hook	70t								

Table 7-2 Rated load on outriggers fully extended with boom only

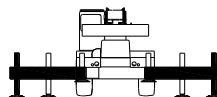
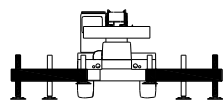
		360° slewing (UNIT: KG)						
BOOM						OUTRIGGERS FULLY EXTENDED		
Load radius (m)	Outriggers fully extended and telescoping cylinder I intermediately extended, 12 t counterweight							
	12.5	17.1	21.6	26.1	30.6	35.1	39.6	44.4
2.5	110000*							
3.0	100000*	66000						
3.5	85000*	66000	32000					
4.0	78000*	66000	32000	30000				
4.5	72000*	63000	32000	30000				
5.0	68000	59000	32000	30000	27000			
5.5	60000	54000	32000	30000	27000			
6.0	54300	51000	32000	30000	27000			
7.0	45500	44000	32000	30000	27000	22000		
8.0	39000	38000	30000	30000	27000	21000	17000	
9.0	30000	29500	29000	27000	27000	20000	16500	13500
10.0		23500	24500	24500	25000	19000	16000	13000
11.0		19500	20500	21000	21500	17500	15000	12500
12.0		16300	17500	18000	18500	16500	14000	12000
14.0			13000	13600	14000	14000	12300	11000
16.0			10000	10600	11000	11800	10800	9700
18.0				8500	9000	9500	9500	8600
20.0				6800	7300	7800	8000	7600
22.0				5500	6000	6400	6500	6700
24.0					4900	5300	5500	5800
26.0					4000	4400	4700	4900
28.0						3700	4000	4200
30.0						3100	3400	3600
32.0							2900	3100
34.0							2400	2600
36.0								2200
38.0								1800
I	0	4.6	4.6	4.6	4.6	4.6	4.6	4.6
II	0	0	4.5	9.0	13.5	18.0	22.5	27.3
Reeving	12	12	6	6	5	4	3	3
Hook	70t							

Table 7-3 Rated load on outriggers fully extended with boom only

		360° slewing (UNIT: KG)					
BOOM					OUTRIGGERS FULLY EXTENDED		
Load radius (m)	Outriggers fully extended and telescoping cylinder I fully retracted, 12 t counterweight						
	12.5	17.0	21.5	26.0	30.5	35.0	39.8
2.5	110000*						
3.0	100000*	32000					
3.5	85000*	32000	30000				
4.0	78000*	32000	30000				
4.5	72000*	32000	30000	27000			
5.0	68000	32000	30000	27000	22000		
5.5	60000	32000	30000	27000	22000		
6.0	54300	32000	30000	27000	21000		
7.0	45500	32000	30000	27000	20000	17000	
8.0	39000	31000	30000	26000	19000	16500	14000
9.0	30000	29000	28000	24000	18000	16000	13500
10.0		24500	25000	22000	16500	15000	13000
11.0		20500	21000	20500	15200	14000	12500
12.0		17500	18000	19000	14200	13000	11500
14.0			14000	14500	12000	11000	10000
16.0			11000	11600	10500	9600	9000
18.0			8800	9500	9500	8600	8000
20.0				7900	8200	7800	7100
22.0				6500	6900	6900	6400
24.0					5800	6000	5800
26.0					4900	5200	5200
28.0						4400	4600
30.0						3800	4000
32.0							3500
34.0							3000
36.0							
38.0							
I	0	0	0	0	0	0	0
II	0	4.5	9.0	13.5	18.0	22.5	27.3
Reeving	12	6	6	5	4	3	3
Hook	70t						

7.1.2 JIB RATED LOADS

Table 7-4 Rated Load on Outriggers Fully Extended

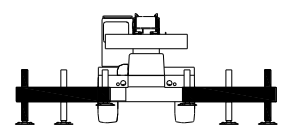
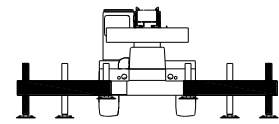
 BOOM + 9.5 M JIB		360° (UNIT: KG)		 OUTRIGGERS FULLY EXTENDED
Boom angle (°)	Outriggers fully extended, 12 t counterweight			
	0°	15°	30°	
80	5000	3500	2500	
78	5000	3500	2500	
76	5000	3300	2500	
74	4800	3300	2500	
72	4300	3100	2500	
70	4000	3000	2400	
68	3800	3000	2300	
66	3600	2900	2200	
64	3300	2700	2100	
62	3000	2500	2050	
60	2700	2400	2000	
58	2500	2300	1950	
56	2200	2000	1800	
54	1900	1800	1700	
52	1600	1550	1500	
50	1400	1300	1300	
48	1200	1100		
46				
Reeving	1			
Hook	6.5t			

Table 7-5 Rated Load on Outriggers Fully Extended

 BOOM + 16 M JIB		360° (UNIT: KG)		 OUTRIGGERS FULLY EXTENDED
Boom angle (°)	Outriggers fully extended, 12 t counterweight			
	0°	15°	30°	
80	3000	2000	1500	
78	3000	2000	1500	
76	2800	1900	1450	
74	2600	1850	1400	
72	2400	1800	1350	
70	2300	1700	1300	
68	2100	1600	1250	
66	2000	1600	1200	
64	1900	1500	1200	
62	1800	1500	1150	
60	1700	1400	1150	
58	1600	1400	1100	
56	1500	1300	1100	
54	1450	1250	1050	
52	1350	1200	1050	
50	1200	1100	1000	
48				
Reeving	1			
Hook	6.5t			

Notes:

- a) For the working conditions marked with asterisk, when the crane is working in a full-range working area, an 110 t hook should be used; when the load exceeds 70 t, a special device shall be installed.
- b) Crane load ratings are based on the crane being leveled and standing on a firm and uniform supporting surface.
- c) Crane load ratings on outriggers are based on all outrigger beams being positioned according to the applicable lift chart and the tires raised free of the supporting surface.
- d) CRANE LOAD RATINGS MUST NOT BE EXCEEDED. DO NOT ATTEMPT TO TIP THE CRANE TO DETERMINE ALLOWABLE LOADS.
- e) Lift the load vertically. Do not pull the load at an angle.
- a) Do not operate at longer radii than those listed on the applicable lift chart as tipping can occur without a load on the hook.
- f) When either radius or boom length, or both, are between listed values, the smaller of the two listed load ratings shall be used.
- g) The boom angles shown on the lift charts give an approximation of the operating radius for a specified boom length. The boom angle, before loading, should be greater to account for boom deflection.
- h) Rated loads include the weight of hook block, slings, and auxiliary lifting devices. Their weights shall be subtracted from the listed rated load to obtain the net load that can be lifted.
- i) Consult appropriate section of the *Operator's Manual* for more exact description of hoist line reeving.
- j) The use of more parts of line than required by the load may result in having insufficient rope to allow the hook block to reach the ground. Choose the correct line parts to get a rope in the proper length. Refer to *Load Ratings* Table 1.1.
- k) Properly maintained wire rope is essential for safe crane operation. Consult the *Operator's Manual* and *Maintenance Manual* for proper maintenance and inspection requirements.
- l) When the rotation-resistant wire rope is used, the allowable rope loading shall be the breaking strength divided by five (5), unless otherwise specified by the wire rope manufacturer.
- m) The user shall operate at reduced ratings to allow for adverse job conditions, such as: soft or uneven ground, out of level conditions, high winds, side loads, pendulum action, jerking or sudden stopping off loads, hazardous conditions, experience of personnel, two-machine lifts, traveling with loads, electric wires, etc, (side pull on boom or jib is hazardous). If the wind speed is higher than the maximum permissible value (45 ft/s (13.8 m/s), grade 6) or it is fulminous during crane operation, stop the work, fully retract the boom and correctly stow the boom.
- n) Load ratings are dependent upon the crane being maintained according to the *Operator's Manual* and *Maintenance Manual*.

7.2 LIFTS WITH OUTRIGGER BEAMS AT MID-POSITION

7.2.1 RATED LOADS WITH BOOM

Table 7-6 Rated Load on Outriggers Pinned at Mid-Position

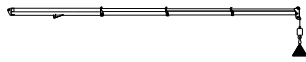
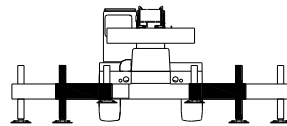
		360° slewing (UNIT: KG)					 OUTRIGGERS PINNED AT MID- POSITION		
Load radius (m)	Outriggers intermediately extended and telescoping cylinder I fully extended, 12 t counterweight								
	12.5	17.1	21.7	26.2	30.7	35.2	39.7	44.2	49.0
2.5	95000*								
3.0	85000*	66000							
3.5	78000*	66000	49000						
4.0	72000*	66000	48000						
4.5	66000	63000	46000	32000					
5.0	56000	54500	44000	32000					
5.5	45000	45000	41500	32000	30000				
6.0	37000	37500	37000	32000	30000				
7.0	27000	27000	27000	26000	27000	25500			
8.0	20800	21000	20500	21000	22000	22500	20500		
9.0	16600	16500	16300	17000	17500	18500	19000	16500	
10.0		13500	13000	14000	14600	15200	16000	15500	12400
11.0		11000	10800	11600	12000	12800	13500	13800	12200
12.0		9300	9000	10000	10500	11000	11500	11800	12000
14.0			6300	7200	7700	8200	8600	8900	9200
16.0			4400	5300	5800	6300	6600	6900	7200
18.0				3900	4400	4800	5100	5400	5700
20.0				2800	3300	3700	4000	4200	4500
22.0				1900	2500	2800	3200	3300	3600
24.0					1800	2100	2500	2600	2800
26.0						1500	1800	2000	2300
28.0							1400	1600	1800
30.0								1200	1400
I	0	4.6	9.2	9.2	9.2	9.2	9.2	9.2	9.2
II	0	0	0	4.5	9.0	13.5	18.0	22.5	27.3
Reeving	12	12	8	6	5	4	4	3	3
Hook	70t								

Table 7-7 Rated Load on Outriggers Pinned at Mid-Position

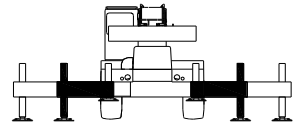
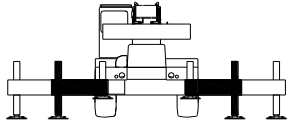
		360° slewing (UNIT: KG)				 OUTRIGGERS PINNED AT MID-POSITION		
Load radius (m)	Outriggers and telescoping cylinder I intermediately extended, 12 t counterweight							
	12.5	17.1	21.6	26.1	30.6	35.1	39.6	44.4
2.5	95000*							
3.0	85000*	66000						
3.5	78000*	66000	32000					
4.0	72000*	66000	32000	30000				
4.5	66000	63000	32000	30000				
5.0	56000	54500	32000	30000	27000			
5.5	45000	45000	32000	30000	27000			
6.0	37000	37500	32000	30000	27000			
7.0	27000	27000	27000	27000	27000	22000		
8.0	20800	21000	21500	22000	22500	20500	17000	
9.0	16600	16500	17500	18000	18000	19000	17000	13500
10.0		13500	14500	15000	15000	16000	16000	13000
11.0		11000	12000	12500	12800	13000	14000	12500
12.0		9300	10200	11000	11000	11200	12000	11500
14.0			7500	8000	8500	8500	9000	9600
16.0			5600	6200	6500	6800	7000	7600
18.0			4200	4800	5200	5500	5600	6000
20.0				3600	4000	4500	4600	4800
22.0				2800	3100	3500	3700	4000
24.0					2500	2800	3000	3200
26.0					1900	2200	2400	2600
28.0						1800	1900	2100
30.0						1300	1500	1700
32.0								1300
34.0								
36.0								
38.0								
I	0	4.6	4.6	4.6	4.6	4.6	4.6	4.6
II	0	0	4.5	9.0	13.5	18.0	22.5	27.3
Reeving	12	12	6	6	5	4	3	3
Hook	70t							

Table 7-8 Rated Load on Outriggers Pinned at Mid-Position

		360° slewing (UNIT: KG)			 OUTRIGGERS PINNED AT MID-POSITION		
Load radius (m)	Outriggers intermediately extended and telescoping cylinder I fully retracted, 12 t counterweight						
	12.5	17.0	21.5	26.0	30.5	35.0	39.8
2.5	95000*						
3.0	85000*	32000					
3.5	78000*	32000	30000				
4.0	72000*	32000	30000	27000			
4.5	66000	32000	30000	27000			
5.0	56000	32000	30000	27000	22000		
5.5	45000	32000	30000	27000	22000		
6.0	37000	32000	30000	27000	21000	17000	
7.0	27000	28500	29500	26000	20000	17000	
8.0	20800	23000	23500	24000	18600	17000	14000
9.0	16600	18500	18500	19500	17500	16000	13500
10.0		15000	15600	16300	16000	14600	12800
11.0		12500	13200	13800	14000	13500	12000
12.0		10500	11300	12000	12000	12500	11200
14.0			8600	9200	9200	9800	9800
16.0			6600	7200	7500	7800	8000
18.0				5800	6000	6000	6500
20.0				4600	4800	5000	5200
22.0					4000	4200	4300
24.0					3200	3500	3600
26.0					2500	2900	3000
28.0						2400	2500
30.0						1800	2100
32.0							1700
34.0							1300
36.0							
38.0							
I	0	0	0	0	0	0	0
II	0	4.5	9.0	13.5	18.0	22.5	27.3
Reeving	12	6	6	5	4	3	3
Hook	70t						

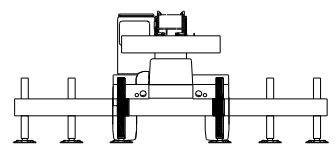
Notes:

- a) For the working conditions marked with asterisk, when the crane is working in a full-range working area, an 110 t hook should be used; when the load exceeds 70 t, a special device shall be installed.
- b) Crane load ratings on outriggers are based on all outrigger beams being positioned according to the applicable lift chart and the tires raised free of the supporting surface.
- c) CRANE LOAD RATINGS MUST NOT BE EXCEEDED. DO NOT ATTEMPT TO TIP THE CRANE TO DETERMINE ALLOWABLE LOADS.
- d) Lift the load vertically. Do not pull the load at an angle.
- e) When either radius or boom length, or both, are between listed values, the smaller of the two listed load ratings shall be used.
- b) Do not operate at longer radii than those listed on the applicable lift chart as tipping can occur without a load on the hook.
- f) The boom angles shown on the lift charts give an approximation of the operating radius for a specified boom length. The boom angle, before loading, should be greater to account for boom deflection.
- g) Rated loads include the weight of hook block, slings, and auxiliary lifting devices. Their weights shall be subtracted from the listed rated load to obtain the net load that can be lifted.
- h) Consult appropriate section of the *Operator's Manual* for more exact description of hoist line reeving.
- i) The use of more parts of line than required by the load may result in having insufficient rope to allow the hook block to reach the ground. Choose the correct line parts to get a rope in the proper length. Refer to Table 1.1.
- j) Properly maintained wire rope is essential for safe crane operation. Consult the *Operator's Manual* and *Maintenance Manual* for proper maintenance and inspection requirements.
- k) When the rotation-resistant wire rope is used, the allowable rope loading shall be the breaking strength divided by five (5), unless otherwise specified by the wire rope manufacturer.
- l) The user shall operate at reduced ratings to allow for adverse job conditions, such as: soft or uneven ground, out of level conditions, high winds, side loads, pendulum action, jerking or sudden stopping off loads, hazardous conditions, experience of personnel, two-machine lifts, traveling with loads, electric wires, etc, (side pull on boom or jib is hazardous). If the wind speed is higher than the maximum permissible value (45 ft/s (13.8 m/s), grade 6) or it is fulminous during crane operation, stop the work, fully retract the boom and correctly stow the boom.
- m) Load ratings are dependent upon the crane being maintained according to the *Operator's Manual* and *Maintenance Manual*.

7.3 LIFTS WITH OUTRIGGER BEAMS FULLY RETRACTED

7.3.1 RATED LOADS WITH BOOM

Table 7-9 Rated Load on Outriggers Fully Retracted

		360° slewing (UNIT: KG)							
BOOM						OUTRIGGERS FULLY RETRACTED			

Load radius (m)	Outriggers fully retracted and telescoping cylinder I fully extended, 12 t counterweight								
	12.5	17.1	21.7	26.2	30.7	35.2	39.7	44.2	49.0
3.0	57000	54000							
3.5	44000	41000	38000						
4.0	34500	33000	31000	31000					
4.5	28000	27000	26000	26000					
5.0	23000	22000	22000	22000	22000	22000			
5.5	19500	18500	18500	18600	19000	19000			
6.0	16600	16000	16000	16200	16600	17000			
7.0	12600	12000	11800	12000	12500	12200	13500		
8.0	9800	9000	9000	9000	10000	9500	11000		
9.0	7800	7000	7000	7000	8000	8000	9000	9600	
10.0		5600	5500	5500	6500	6500	7500	7600	8000
11.0		4400	4200	4500	5200	5200	6000	6500	6500
12.0		3300	3200	3500	4000	4400	5000	5500	5500
14.0			1800	2200	2800	3000	3500	4000	4000
16.0					1800	2000	2500	2800	3000
18.0						1300	1600	2000	2100
20.0								1400	1500
22.0									
24.0									
26.0									
I	0	4.6	9.2	9.2	9.2	9.2	9.2	9.2	9.2
II	0	0	0	4.5	9.0	13.5	18.0	22.5	27.3
Reeving	10	10	6	6	4	4	3	2	2
Hook	70t								

Table 7-10 Rated Load on Outriggers Fully Retracted

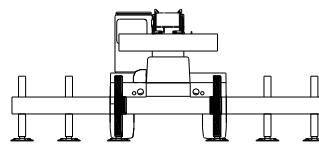
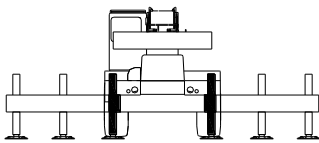
		360° slewing (UNIT: KG)						
BOOM						OUTRIGGERS FULLY RETRACTED		
Load radius (m)	Outriggers fully retracted and telescoping cylinder I intermediately extended, 12 t counterweight							
	12.5	17.1	21.6	26.1	30.6	35.1	39.6	44.4
3.0	57000	54000						
3.5	44000	41000	32000					
4.0	34500	33000	30000	31000				
4.5	28000	27000	26000	26000				
5.0	23000	22000	23000	23000	22000			
5.5	19500	18500	19200	19500	20000			
6.0	16600	16000	16500	17500	17500	17000		
7.0	12600	12000	12500	13500	14000	14000		
8.0	9800	9000	9500	10500	11000	11500	12000	
9.0	7800	7000	7500	8500	8800	9200	9500	10000
10.0		5600	6000	7000	7300	7800	8000	8400
11.0		4400	4800	5800	6200	6500	6800	7000
12.0		3300	3800	4600	5200	5300	5800	6000
14.0			2500	3200	3600	3800	4100	4500
16.0				2200	2600	2800	3100	3200
18.0					1800	2000	2300	2400
20.0					1200	1500	1700	1800
22.0							1200	1300
24.0								
26.0								
28.0								
30.0								
32.0								
34.0								
I	0	4.6	4.6	4.6	4.6	4.6	4.6	4.6
II	0	0	4.5	9.0	13.5	18.0	22.5	27.3
Reeving	10	10	6	6	4	3	2	2
Hook	70t							

Table 7-11 Rated Load on Outriggers Fully Retracted

		360° slewing (UNIT: KG)			 OUTRIGGERS FULLY RETRACTED		
BOOM							

Load radius (m)	Outriggers and telescoping cylinder I fully retracted, 12 t counterweight						
	12.5	17.0	21.5	26.0	30.5	35.0	39.8
3.0	57000	32000					
3.5	44000	32000	31000				
4.0	34500	30000	31000				
4.5	28000	26000	27000	27000			
5.0	23000	21500	23000	23000			
5.5	19500	19000	20000	20000	21000		
6.0	16600	16000	17200	17500	18000	18000	
7.0	12600	12500	13300	13500	14500	14500	
8.0	9800	10000	10600	11000	11800	12000	12000
9.0	7800	8400	8800	9200	9800	10000	10000
10.0		7000	7500	7800	8200	8400	8600
11.0		5800	6200	6500	7000	7200	7400
12.0		4500	5200	5600	6000	6200	6400
14.0			3600	4000	4300	4500	4800
16.0			2700	3000	3300	3500	3600
18.0				2300	2500	2700	2800
20.0					1900	2100	2200
22.0					1400	1600	1600
24.0							1200
26.0							
28.0							
30.0							
32.0							
34.0							
I	0	0	0	0	0	0	0
II	0	4.5	9.0	13.5	18.0	22.5	27.3
Reeving	10	6	6	5	4	3	2
Hook	70t						

Notes:

- c) Crane load ratings are based on the crane being leveled and standing on a firm and uniform supporting surface.
- d) Crane load ratings on outriggers are based on all outrigger beams being positioned according to the applicable lift chart and the tires raised free of the supporting surface.
- e) CRANE LOAD RATINGS MUST NOT BE EXCEEDED. DO NOT ATTEMPT TO TIP THE CRANE TO DETERMINE ALLOWABLE LOADS.
- f) Lift the load vertically. Do not pull the load at an angle.
- g) When either radius or boom length, or both, are between listed values, the smaller of the two listed load ratings shall be used.
- h) Do not operate at longer radii than those listed on the applicable lift chart as tipping can occur without a load on the hook.
- i) The boom angles shown on the lift charts give an approximation of the operating radius for a specified boom length. The boom angle, before loading, should be greater to account for boom deflection.
- j) Rated loads include the weight of hook block, slings, and auxiliary lifting devices. Their weights shall be subtracted from the listed rated load to obtain the net load that can be lifted.
- k) Consult appropriate section of the *Operator's Manual* for more exact description of hoist line reeving.
- l) The use of more parts of line than required by the load may result in having insufficient rope to allow the hook block to reach the ground. Choose the correct line parts to get a rope in the proper length. Refer to Table 1.1.
- m) Properly maintained wire rope is essential for safe crane operation. Consult the *Operator's Manual* and *Maintenance Manual* for proper maintenance and inspection requirements.
- n) When the rotation-resistant wire rope is used, the allowable rope loading shall be the breaking strength divided by five (5), unless otherwise specified by the wire rope manufacturer.
- o) The user shall operate at reduced ratings to allow for adverse job conditions, such as: soft or uneven ground, out of level conditions, high winds, side loads, pendulum action, jerking or sudden stopping off loads, hazardous conditions, experience of personnel, two-machine lifts, traveling with loads, electric wires, etc, (side pull on boom or jib is hazardous). If the wind speed is higher than the maximum permissible value (45 ft/s (13.8 m/s), grade 6) or it is fulminous during crane operation, stop the work, fully retract the boom and correctly stow the boom.
- p) Load ratings are dependent upon the crane being maintained according to the *Operator's Manual* and *Maintenance Manual*.

7.4 LIFTS ON TIRES

7.4.1 RATED LOADS WITH BOOM

Table 7-12 Rated Load on Tires

Boom length (m)	12.5		17.0		21.5		26.0	
Load radius (m)	360°	With boom over front	360°	With boom over front	360°	With boom over front	360°	With boom over front
4.0	15000	14500	15000	14000				
4.5	13000	13000	13000	12400	12500	12800	12500	12800
5.0	10600	11500	11500	11100	11500	11200	11500	11200
5.5	8900	10300	9600	10000	10100	10000	10300	10000
6	7500	9400	8200	9100	8700	8800	8900	8800
7	5400	7700	6200	7300	6600	7700	6800	7700
8	4000	6200	4700	5700	5100	5900	5300	5900
9	2900	4300	3600	4500	4000	4600	4200	4600
10			2800	3900	3200	4100	3400	4100
11			2100	3100	2500	3400	2700	3400
12			1600	2500	1900	2600	2100	2600
14				1400	1100	1700	1100	1700
16						1000		1000
18								
I	0		0		0		0	
II	0		4.5		9		13.5	
Reeving	12		10		8		8	
Hook	70t							

Note:

The crane is stationary when it is in the 360° full range operation.

Notes:

- a) Crane load ratings are based on the crane being leveled and standing on a firm and uniform supporting surface.
- b) CRANE LOAD RATINGS MUST NOT BE EXCEEDED. DO NOT ATTEMPT TO TIP THE CRANE TO DETERMINE ALLOWABLE LOADS.
- c) Lift the load vertically. Do not pull the load at an angle.
- d) When either radius or boom length, or both, are between listed values, the smaller of the two listed load ratings shall be used.
- e) Do not operate at longer radii than those listed on the applicable lift chart as tipping can occur without a load on the hook.
- f) The boom angles shown on the lift charts give an approximation of the operating radius for a specified boom length. The boom angle, before loading, should be greater to account for boom deflection.
- g) Rated loads include the weight of hook block, slings, and auxiliary lifting devices. Their weights shall be subtracted from the listed rated load to obtain the net load that can be lifted.
- h) Crane load ratings on tires depend on appropriate inflation pressure and tire condition. Caution must be exercised when increasing air pressures in tires. Consult the *Operator's Manual* for precautions.
- i) Use of jib is not permitted for pick-and-carry operations.
- j) For pick-and-carry operations, the boom must be centered over the front of the crane with the slewing brake lock engaged. Use minimum boom point height and keep the load close to the ground surface. Travel must be on smooth level surface.
- k) The load should be restrained from swinging.
- l) Creep speed is crane movement of less than 200 ft (61 m) in 30-minutes period and not exceeding 1 mph (1.6 km/h).
- m) Consult appropriate section of the *Operator's Manual* for more exact description of hoist line reeving.
- n) The use of more parts of line than required by the load may result in having insufficient rope to allow the hook block to reach the ground. Choose the correct line parts to get a rope in the proper length. Refer to Table 1.1.
- o) Properly maintained wire rope is essential for safe crane operation. Consult the *Operator's Manual* and *Maintenance Manual* for proper maintenance and inspection requirements.
- p) When the rotation-resistant wire rope is used, the allowable rope loading shall be the breaking strength divided by five (5), unless otherwise specified by the wire rope manufacturer.

- q) The user shall operate at reduced ratings to allow for adverse job conditions, such as: soft or uneven ground, out of level conditions, high winds, side loads, pendulum action, jerking or sudden stopping off loads, hazardous conditions, experience of personnel, two-machine lifts, traveling with loads, electric wires, etc, (side pull on boom or jib is hazardous). If the wind speed is higher than the maximum permissible value (45 ft/s (13.8 m/s), grade 6) or it is fulminous during crane operation, stop the work, fully retract the boom and correctly stow the boom.
- r) Load ratings are dependent upon the crane being maintained according to the *Operator's Manual* and *Maintenance Manual*.

7.5 Lift Height on Outriggers

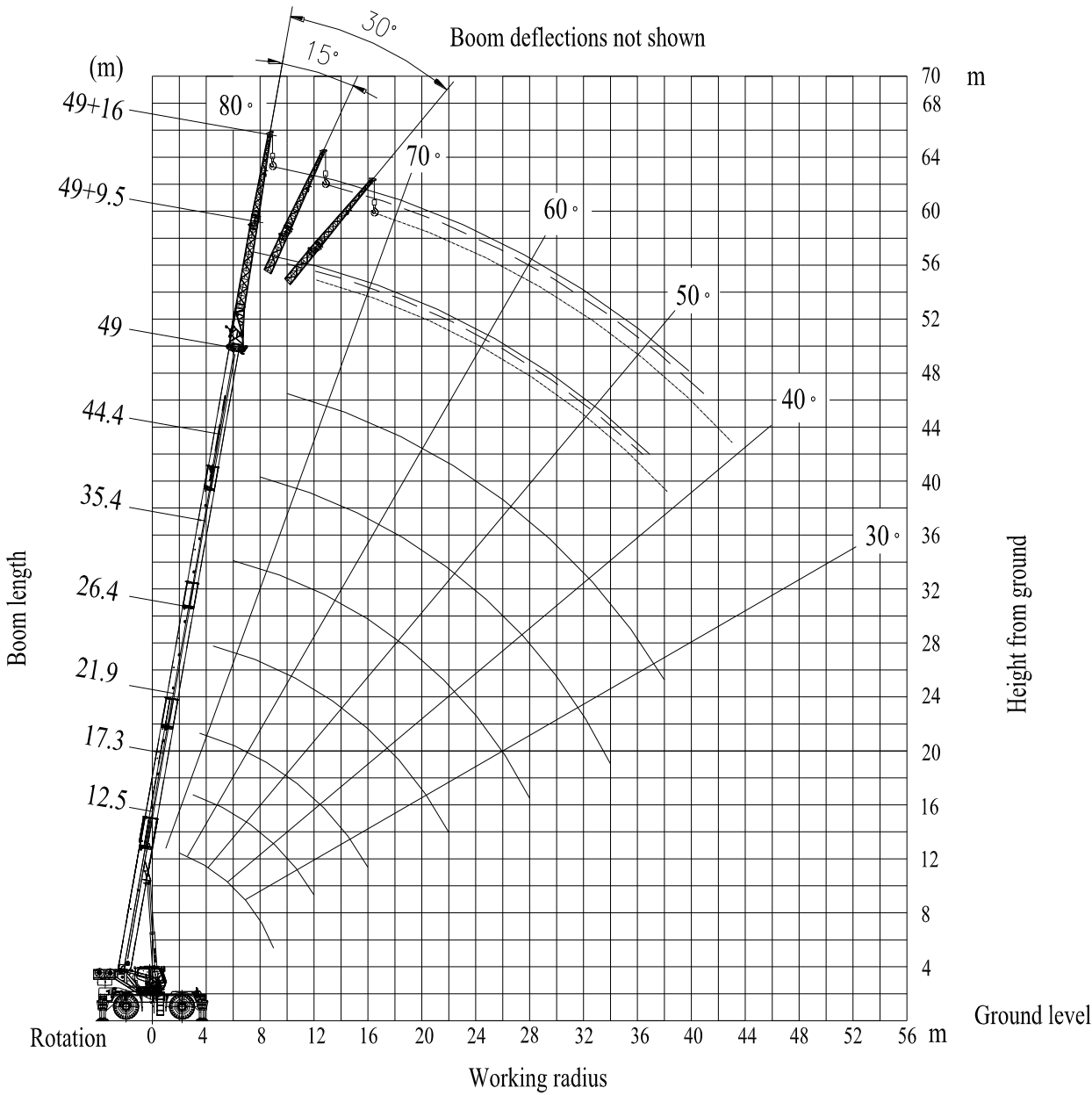


Figure 2-2 Lift Height on Outriggers Fully Extended (Unit: Metric Meter)