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**ZOOMLION**

ZOOMLION ZRT700V532 ROUGH TERRAIN CRANE

# **TECHNICAL SPECIFICATIONS**

**GQ0751112700000EN**

**Zoomlion Heavy Industry Science & Technology Co.,Ltd.**

## TECHNICAL SPECIFICATIONS

GQ0751112700000EN

### 1. PRODUCT CHARACTERISTICS

ZRT700V532 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° swing 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.

ZRT700V532 rough terrain crane consists of the superstructure and special purpose chassis, including the power system, drive system, suspension system, steering system, brake system, hoist mechanism, derricking mechanism, swing mechanism, boom system, slewing platform, 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 steer
- Max. rated lifting capacity: 70 ton at 2.5 m working radius
- Max. lifting height: 61.4m
- Max. driving speed: 40km/h
- Overall dimensions: 14180 mm×3300 mm×3890mm
- Deadweight: 44.3 T
- Ability to pick-and carry loads
- Rough terrain travel performance

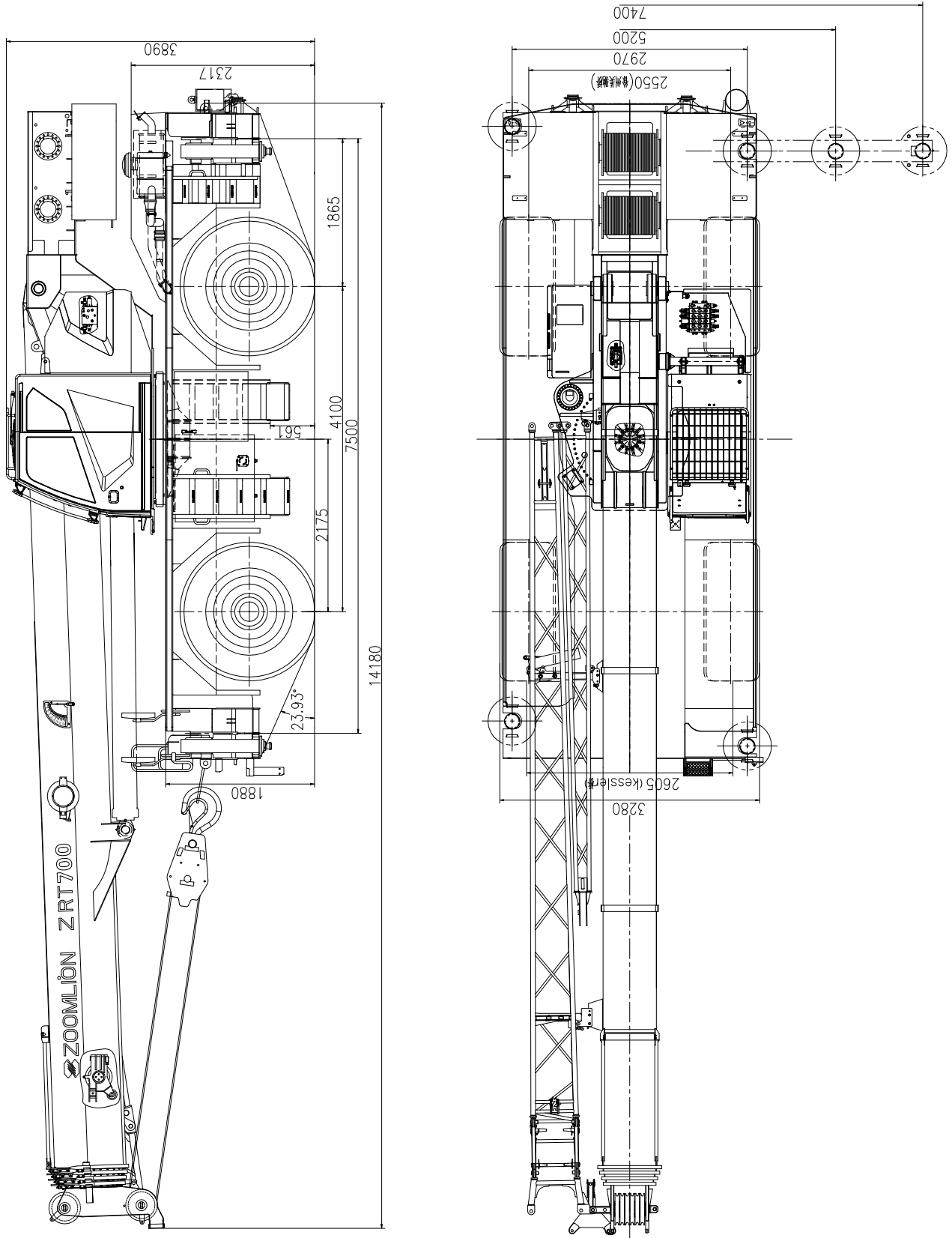


Figure 1 Overall View – ZRT700V532 Rough Terrain Crane

**2. TECHNICAL DATA****MAIN TECHNICAL DATA**

Type	Ser. No.	Item	Unit	Value
Working performance	1	Max. rated lifting capacity × working radius	kg.m	70000×2.5
	2	Max. load moment of boom	kN.m	2337
	3	Max. load moment of boom (fully extended)	kN.m	1191
	4	Max. lifting height of boom (fully extended)	m	45.3
	5	Max. lifting height of jib	m	61.4
Dimensions	6	Overall dimensions (L × W × H)	mm	14180×3300×3890
	7	Outrigger spread (Height × Width)	mm	7500×7400
	8	Boom length (fully retracted – fully extended)	mm	11600-45000
	9	Jib length (fully retracted – fully extended)	mm	9500, 16000
	10	Boom angle	°	-2-80
	11	Swing range		360° unlimited swing (Full range)
Working speeds	12	Max. hoist rope speed (Main winch)	m/min	150
	13	Min. boom telescoping out time	s	110
	14	Min. boom telescoping in time	s	100
	15	Min. boom derricking up time	s	45
	16	Min. boom derricking down time	s	75
	17	Swing speed	r/min	0-2.5
Hydraulic system	18	Maximum working pressure	MPa	28
	19	Rate working flow	L/min	280
	20	Hydraulic oil tank capacity	L	800
Gross vehicle mass	21	Gross weight	kg	44300
	22	Front weight	kg	23440
	23	Rear weight	kg	20860
Driving	24	Max. driving speed	km/h	40/40
	25	Wheelbase	mm	4100

Type	Ser. No.	Item	Unit	Value
	26	Treads (Front / Rear)	mm	2550 (Meritor axles) /2605(KESSLER axles)
	27	Max. gradeability	%	75

**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 (Cummins US)
	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	Xuzhou Meritor/Kessler (Germany)
	13	Steering mode	2-wheel steering (front wheel) 2-wheel steering (rear wheel) 4-wheel steering Crab steering
	14	Tire size	26.5-25
	15	Tire number	4
Hydraulic system	16	Model or brand of main valve	ZOOMLION
	17	Gear pump	Liyuan/Hi-Tech/Hengli
	18	Balance valve / hydraulic lock	NEM (Italy)/ZOOMLION
	19	Swing motor	HIGH-TECH/Liyuan (China)
Electrical system	20	Rated capacity indicator	ZOOMLION /HIRSCHMANN (Germany)
	21	Controller	ZOOMLION /HIRSCHMANN (Germany)
Emission	22		America TIII

### 3. SPECIFICATIONS, SUPERSTRUCTURE

#### 3.1 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): 11600m

Max. boom length (with telescopic sections completely extended): 45000 mm

Min. telescoping out time: about 110s

#### 3.2 Jib

It consists of two 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

#### 3.3 Derricking mechanism

Rear-mounted single derricking cylinder with derricking balance valve.

Derrick angle: -2°- 80°

Derrick speed: -2°- 80°/45s

#### 3.4 Hoist mechanism

##### 3.4.1 Main and auxiliary winches

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

##### 3.4.2 Wire rope

High strength wire rope is used; twist resistant wire ropes are optional.

Max. hoist rope strength: 5200kg

Max. hoist rope speed: 150 m/min (At the 4th layer)

Rope diameter:  $\Phi$ 17mm

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Main winch rope length:	210m
Auxiliary winch rope length:	130 m

### 3.4.3 Hook block

Rotatable main hook: 60 t, with 6 sheaves and hook latch, secured at the chassis frame in front of slewing platform.

Rotatable auxiliary hook: 5.5 ton, with hook latch, used for the rooster sheave and jib, secured at auxiliary hook holder on the chassis frame.

## 3.5 Slewing mechanism

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

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

Slewing speed: 0 - 2.5 r/min

## 3.6 Slewing platform

The slewing platform adopts a wall structure.

## 3.7 Hydraulic system

### 3.7.1 Oil pumps

A variable pump and two gear pumps are connected in series at the transmission.

The variable pump supplies oil to the telescoping mechanism, derricking mechanism, hoisting mechanism of the main and auxiliary winches, and supplies pilot oil as well.

One gear pump supplies oil to the outriggers, braking system, oil radiator of the torque converter in the undercarriage and superstructure AC; the other gear pump supplies oil to the slewing and steering system.

### 3.7.2 Control valve

It applies a quadruple valve back compensation multi-way directional valve.

### 3.7.3 Pipelines

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.

### 3.7.4 Hydraulic oil tank

Capacity: about 800L

A return oil filter is installed in the tank. It can eliminate bubbles inside the tank and is of a filtration accuracy of 12 $\mu$ m.

### 3.7.5 Filter

A high pressure filter with the filtering accuracy of 10  $\mu$  is mounted in oil-ways of the outriggers, braking system, slewing system and steering system.

A low pressure filter with the filtering accuracy of 5  $\mu$  is mounted in oil-ways of pilot oil circuits.

## 3.8 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 swing 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.

## 3.9 Cab

There is only one cab for ZRT700V532 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.

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  $\pm$  5 mm

Width: 1050  $\pm$  5 mm

Height: 1710  $\pm$  5 mm

## 3.10 Rated capacity indicator (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 rated capacity indicator also can limit the working range (including working radius, boom angle, lifting height and swing 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 swing 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.

### **3.11 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 3.11.3 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): 7500 mm

Outrigger spread (Width): 7400 mm (fully extended)

5200 mm (half extended)

2970 mm (fully retracted)

## **4. SPECIFICATIONS, SPECIAL PURPOSE CHASSIS FOR ROUGH TERRAIN CRANE**

### **4.1 Type**

Rear mounted engine

Drive mode: 4 x 2 and 4 x 4

### **4.2 Chassis frame**

Integral box-type construction welded by high-strength steel

### **4.3 Engine**

#### **4.3.1 Model**

CUMMINS QSB6.7

#### **4.3.2 Type**

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

#### 4.3.3 Performance

Max. output power: Dongfeng Cummins: 194 KW / 2200 RPM;  
Cummins US: 194 KW / 2400 RPM

Max. output torque: 990 Nm / 1500 RPM

#### 4.4 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.

#### 4.5 Axles

##### 4.5.1 Front axle

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

##### 4.5.2 Rear axle

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

#### 4.6 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

#### 4.7 Suspension system

Front axle: rigidly mounted to chassis frame

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

#### 4.8 Brake system

##### 4.8.1 Service brake

Hydraulically controlled disc brake on 4 wheels

##### 4.8.2 Parking brake

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

#### **4.9 Electrical system**

24 Volt DC

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

#### **4.10 Fuel tank**

Capacity: 300 L

#### **4.11 Tire**

Size: 26.5-25

### **5. SAFETY DEVICES**

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

**6. LOAD RATING****6.1 LIFTS WITH OUTRIGGER BEAMS FULLY EXTENDED****6.1.1 BOOM RATED LOADS**

Table 6-1 Rated capacity chart with boom only on outriggers fully extended

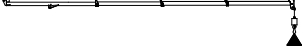
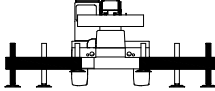
		360° slewing (Unit: Kg)					
Boom						Outriggers fully extended	
Working radius (m)	TELESCOPIC CYLINDER I FULLY EXTENDED, outriggers fully extended, 7.8t counterweight						
	11.6	15.9	20.1	26.4	32.7	39.0	45.0
2.5	70000*						
3.0	60000	46000	36000				
3.5	59000	46000	36000				
4.0	56000	46000	36000				
4.5	53000	44000	34000	27000			
5.0	47000	42000	33500	27000			
5.5	42000	40000	32500	27000			
6.0	37500	36500	32000	26000	19800		
6.5	35000	34300	30600	25000	19800		
7.0	30500	31000	29500	24000	19800		
7.5	29200	29000	27500	23000	19000		
8.0	26700	26500	26000	22000	18400	14400	
9.0	20200	20000	19500	20000	17000	13600	
10.0		16000	16000	16500	15800	12800	10000
11.0		13200	13000	13600	14000	12000	9600
12.0		11000	11000	11800	12200	11500	9200
14.0			7700	8800	9200	9600	8400
16.0			5500	6700	7100	7500	7600
18.0				5100	5600	6000	6200
20.0				3900	4400	4800	5000
22.0					3500	3800	4100
24.0					2750	3100	3400
26.0					2150	2400	2700
28.0						1900	2150
30.0						1500	1750
32.0						1100	1350
34.0							1050
36.0							750
I (m)	0	4.3	8.5	8.5	8.5	8.5	8.5
II (m)	0	0	0	6.3	12.6	18.9	24.9
Reeving	12	10	8	6	4	4	3
Hook	60t						

Table 6-2 Rated capacity chart with boom only on outriggers fully extended

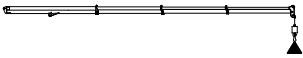
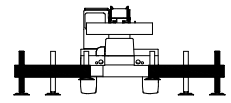

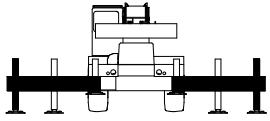

		360° slewing (Unit: Kg)				
Boom		Outriggers fully extended				
Working radius (m)	TELESCOPIC CYLINDER I INTERMEDIATELY EXTENDED, outriggers fully extended, 7.8t counterweight					
	11.6	15.9	22.2	28.5	34.8	40.8
2.5	70000*					
3.0	60000	46000				
3.5	59000	46000	27000			
4.0	56000	46000	27000			
4.5	53000	44000	27000			
5.0	47000	42000	27000	24000		
5.5	42000	40000	27000	24000		
6.0	37500	36500	27000	24000		
6.5	35000	34300	27000	24000	16500	
7.0	30500	31000	27000	23000	16500	
7.5	29200	29000	26000	22000	16000	
8.0	26700	26500	25000	21000	15500	10800
9.0	20200	20000	20500	19000	14500	10400
10.0		16000	17000	17200	13500	10000
11.0		13200	14200	15000	12500	9600
12.0		11000	12300	13000	11600	9200
14.0			9000	9700	9800	8400
16.0			6900	7500	7800	7600
18.0			5300	5900	6200	6700
20.0				4700	5000	5500
22.0				3800	4100	4500
24.0					3300	3700
26.0					2700	3100
28.0					2200	2500
30.0						2100
32.0						1700
34.0						1400
I (m)	0	4.3	4.3	4.3	4.3	4.3
II (m)	0	0	6.3	12.6	18.9	24.9
Reeving	12	10	6	5	4	3
Hook	60t					

Table 6-3 Rated capacity chart with boom only on outriggers fully extended

 Boom		360° slewing (Unit: Kg)			 Outriggers fully extended	
Working radius (m)	TELESCOPIC CYLINDER I FULLY RETRACTED, outriggers fully extended, 7.8t counterweight					
	11.6	17.9	24.2	30.5	36.5	
2.5	70000*					
3.0	60000	27000				
3.5	59000	27000				
4.0	56000	27000	24000			
4.5	53000	27000	24000			
5.0	47000	27000	24000			
5.5	42000	27000	23200	18600		
6.0	37500	27000	22500	17900		
6.5	35000	27000	21700	17200		
7.0	30500	27000	21000	16500	11500	
7.5	28500	25500	20200	15700	11500	
8.0	26000	24000	19500	15000	11500	
9.0	20200	22000	18000	13800	11000	
10.0		18000	16500	12800	10500	
11.0		15000	15500	11800	9800	
12.0		12800	13600	11000	9200	
14.0		9600	10300	9500	8200	
16.0			8100	8300	7200	
18.0			6500	6700	6400	
20.0				5500	5600	
22.0				4600	4800	
24.0				3800	4000	
26.0					3400	
28.0					2900	
30.0					2400	
32.0						
34.0						
I (m)	0	0	0	0	0	
II (m)	0	6.3	12.6	18.9	24.9	
Reeving	12	6	5	4	3	
Hook	60t					

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**Notes:**

- a) For OMs marked with \*, they are for 360-degree working range; a 70 t hook should be used, and the reeving factor should be 14. An additional device should 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.
- 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) Do not operate at longer radii than those listed on the applicable lift chart (cross hatched areas  shown on range diagrams) as tipping can occur without a load on the hook.
- h) 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.
- i) 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.
- j) Consult appropriate section of the *Operator's Manual* for more exact description of hoist line reeving.
- 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) When an anti-twist wire rope is used, unless otherwise specified, the permissible load of the wire rope should be a fifth of the tensile strength.
- n) 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.
- o) Load ratings are dependent upon the crane being maintained according to the *Operator's Manual* and *Maintenance Manual*.

6.1.2 RATED LOADS ON BOOM AND JIB

Table 6-4 Rated capacity chart with boom + 9.5 m jib on outriggers fully extended


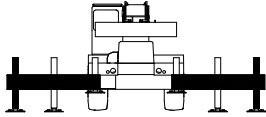
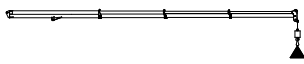
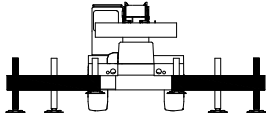

 Boom + 9.5m jib		360° slewing (Unit: Kg)		 Outriggers fully extended	
Boom angle (°)	Outriggers fully extended, 7.8t counterweight				
	0°	15°	30°	45°	60°
80	5000	3300	2500	1800	1200
78	5000	3300	2500	1800	1200
76	4800	3200	2500	1800	1200
74	4500	3100	2500	1800	1200
72	4200	3000	2400	1800	1200
70	3900	2800	2300	1800	1200
68	3600	2700	2200	1800	1200
66	3300	2600	2100	1800	1200
64	2800	2500	2000	1800	1200
62	2400	2200	1900	1800	1200
60	2100	2000	1800	1800	1200
58	1800	1600	1600	1800	1200
56	1500	1400	1300	1800	1200
54	1200	1200	1200	1800	1200
52	1000	1000	900	1800	1200
50	800	700	700	1800	1200
Reeving	1				
Hook	5.5t				



Table 6-5 Rated capacity chart with boom + 16 m jib on outriggers fully extended

 Boom + 16m jib		360° slewing (Unit: Kg)		 Outriggers fully extended
Boom angle (°)	Outriggers fully extended, 7.8t counterweight			
	0°	15°	30°	
80	3000	2000	1400	
78	3000	2000	1400	
76	2900	1800	1300	
74	2700	1700	1300	
72	2500	1600	1200	
70	2300	1500	1200	
68	2100	1400	1100	
66	2000	1300	1100	
64	1900	1300	1100	
62	1800	1200	1000	
60	1700	1200	1000	
58	1400	1100	1000	
56	1200	1100	900	
54	1000	900	800	
52	800	700	650	
50	650	600	550	
Reeving	1			
Hook	5.5t			

- a) Crane load ratings are based on the crane being leveled and standing on a firm and uniform supporting surface.
- 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.
- f) Do not operate at longer radii than those listed on the applicable lift chart (cross hatched areas  shown on range diagrams) as tipping can occur without a load on the hook.
- 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) 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*.

**6.2 LIFTS WITH OUTRIGGER BEAMS AT MID-POSITION**

**6.2.1 BOOM RATED LOADS**

Table 6-6 Rate capacity chart with boom on outriggers at middle position


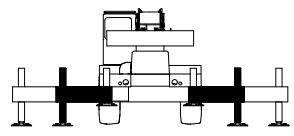
 <p>Boom</p>		<p>360° slewing (Unit: Kg)</p>				 <p>Outriggers at middle position</p>	
Working radius (m)	TELESCOPIC CYLINDER I FULLY EXTENDED, outriggers at middle position, 7.8t counterweight						
	11.6	15.9	20.1	26.4	32.7	39.0	45.0
2.5	70000*						
3.0	60000	46000	36000				
3.5	54000	44000	36000				
4.0	47000	42000	36000				
4.5	41000	38000	34000	27000			
5.0	33000	32500	30500	27000			
5.5	28000	26500	26000	26500			
6.0	23500	22500	22000	23000	19800		
6.5	20000	19500	19000	20000	19800		
7.0	18500	18300	18000	19000	19000		
7.5	16000	15800	15500	16500	17000		
8.0	14200	13800	13500	14500	15000	14400	
9.0	11200	10800	10600	11500	12000	12000	
10.0		8800	8600	9500	10000	10000	10000
11.0		7100	6900	8000	8600	9000	9000
12.0		5900	5600	6700	7400	7800	8000
14.0			3700	4700	5300	5800	6000
16.0			2300	3300	3900	4400	4600
18.0				2300	2800	3300	3600
20.0				1500	2000	2500	2800
22.0					1400	1800	2100
24.0					900	1300	1500
26.0						800	1100
I (m)	0	4.3	8.5	8.5	8.5	8.5	8.5
II (m)	0	0	0	6.3	12.6	18.9	24.9
Reeving	12	10	8	6	4	4	3
Hook	60t						

Table 6-7 Rate capacity chart with boom on outriggers at middle position


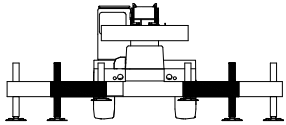

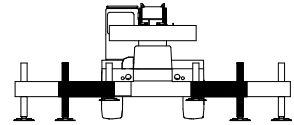

 Boom		360° slewing (Unit: Kg)				 Outriggers at middle position	
Working radius (m)	TELESCOPIC CYLINDER I INTERMEDIATELY EXTENDED, outriggers at middle position, 7.8t counterweight						
	11.6	15.9	22.2	28.5	34.8	40.8	
2.5	70000*						
3.0	60000	46000					
3.5	54000	44000	27000				
4.0	47000	42000	27000				
4.5	41000	38000	27000				
5.0	33000	32500	27000	24000			
5.5	28000	26500	26000	24000			
6.0	23500	22500	24000	24000			
6.5	20000	19500	21500	21500	16500		
7.0	18500	18300	19000	19000	16500		
7.5	16000	15800	17000	17000	16000		
8.0	14200	13800	15000	15000	15000	10800	
9.0	11200	10800	12000	12500	12500	10400	
10.0		8800	10000	10200	10500	10000	
11.0		7100	8400	9000	9500	9500	
12.0		5900	7000	7600	8100	8500	
14.0			5000	5600	6100	6400	
16.0			3600	4200	4500	4900	
18.0			2600	3200	3500	3800	
20.0				2400	2700	3000	
22.0				1700	2000	2300	
24.0					1500	1800	
26.0					1100	1300	
28.0					750	1000	
30.0						700	
I (m)	0	4.3	4.3	4.3	4.3	4.3	
II (m)	0	0	6.3	12.6	18.9	24.9	
Reeving	12	10	6	5	4	3	
Hook	60t						

Table 6-8 Rate capacity chart with boom on outriggers at middle position

 Boom		360° slewing (Unit: Kg)			 Outriggers at middle position	
Working radius (m)	TELESCOPIC CYLINDER I FULLY RETRACTED, outriggers at middle position, 7.8t counterweight					
	11.6	17.9	24.2	30.5	36.5	
2.5	70000*					
3.0	60000	27000				
3.5	54000	27000				
4.0	47000	27000	24000			
4.5	41000	27000	24000			
5.0	33000	27000	24000			
5.5	28000	27000	23200	18600		
6.0	23500	26000	22500	17900		
6.5	20000	23000	21500	17200		
7.0	18500	20000	20500	16500	11500	
7.5	16000	17500	17500	15700	11500	
8.0	14200	15500	15500	15000	11500	
9.0	11200	12500	12500	12500	11000	
10.0		10500	10700	11000	10500	
11.0		8800	9400	9800	9600	
12.0		7500	8000	8500	8700	
14.0		5500	6000	6500	6700	
16.0			4600	5000	5100	
18.0			3600	3800	4000	
20.0				3100	3300	
22.0				2400	2600	
24.0				1900	2100	
26.0					1700	
28.0					1300	
30.0					1000	
I (m)	0	0	0	0	0	
II (m)	0	6.3	12.6	18.9	24.9	
Reeving	12	6	5	4	3	
Hook	60t					

**Notes:**

- a) For OMs marked with \*, they are for 360-degree working range; a 70 t hook should be used, and the reeving factor should be 14. An additional device should 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.
- 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) Do not operate at longer radii than those listed on the applicable lift chart (cross hatched areas  shown on range diagrams) as tipping can occur without a load on the hook.
- h) 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.
- i) 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.
- j) Consult appropriate section of the *Operator's Manual* for more exact description of hoist line reeving.
- k) 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.
- l) Properly maintained wire rope is essential for safe crane operation. Consult the *Operator's Manual* and *Maintenance Manual* for proper maintenance and inspection requirements.
- m) 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.
- n) 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.
- o) Load ratings are dependent upon the crane being maintained according to the *Operator's Manual* and *Maintenance Manual*.

**6.3 LIFTS WITH OUTRIGGER BEAMS FULLY RETRACTED**

**6.3.1 BOOM RATED LOADS**

Table 6-9 Rate capacity chart with boom on outriggers fully retracted


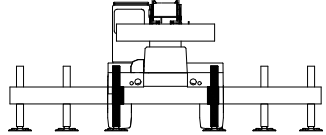
 Boom		360° slewing (Unit: Kg)				 Outriggers fully retracted		
Working radius (m)	TELESCOPIC CYLINDER I FULLY EXTENDED, outriggers fully retracted, 7.8t counterweight							
	11.6	15.9	20.1	26.4	32.7	39.0	45.0	
3.0	35000	32000	28000					
3.5	27000	26000	25000					
4.0	22000	21500	21000	20000				
4.5	18000	17500	17000	17000				
5.0	14500	14000	13800	14000				
5.5	12000	11800	11500	12000	12500			
6.0	10400	10000	9800	10500	11000			
6.5	9000	8700	8500	9200	9800			
7.0	7800	7500	7300	8100	8900	9000		
7.5	6800	6400	6300	7200	7800	8000		
8.0	6000	5500	5400	6300	6900	7200	7000	
9.0		4200	4000	4900	5400	5800	6000	
10.0		3100	2900	3800	4300	4600	5000	
11.0		2200	2000	2900	3400	3800	4000	
12.0		1600	1400	2200	2700	3000	3300	
14.0				1200	1600	1900	2100	
16.0					1100	1200	1300	
18.0						700	800	
I (m)	0	4.3	8.5	8.5	8.5	8.5	8.5	
II (m)	0	0	0	6.3	12.6	18.9	24.9	
Reeving	12	10	8	6	4	4	3	
Hook	60t							

Table 6-10 Rate capacity chart with boom on outriggers fully retracted

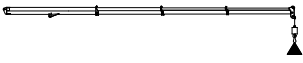
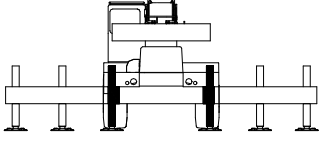
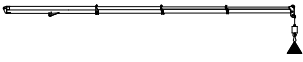
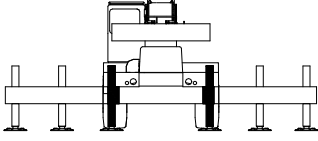
 Boom		360° slewing (Unit: Kg)			 Outriggers fully retracted	
Working radius (m)	TELESCOPIC CYLINDER I INTERMEDIATELY EXTENDED, outriggers fully retracted, 7.8t counterweight					
	11.6	15.9	22.2	28.5	34.8	40.8
3.0	35000	32000	27000			
3.5	27000	26000	24000			
4.0	22000	21500	20500			
4.5	18000	17500	17000	17500		
5.0	14500	14000	14500	15000		
5.5	12000	11800	12500	13000	13000	
6.0	10400	10000	10500	11000	11500	
6.5	9000	8700	9500	10000	10500	
7.0	7800	7500	8500	9000	9400	9000
7.5	6800	6400	7500	8000	8400	8700
8.0	6000	5500	6500	7200	7600	7900
9.0		4200	5100	5700	6100	6400
10.0		3100	4000	4600	5000	5300
11.0		2200	3200	3700	4100	4400
12.0		1600	2400	3000	3400	3700
14.0			1200	1800	2200	2500
16.0				1100	1400	1700
18.0					800	1100
I (m)	0	4.3	4.3	4.3	4.3	4.3
II (m)	0	0	6.3	12.6	18.9	24.9
Reeving	12	10	6	5	4	3
Hook	60t					




Table 6-11 Rate capacity chart with boom on outriggers fully retracted

 Boom		360° slewing (Unit: Kg)			 Outriggers fully retracted	
Working radius (m)	TELESCOPIC CYLINDER I FULLY RETRACTED, outriggers fully retracted, 7.8t counterweight					
	11.6	17.9	24.2	30.5	36.5	
3.0	35000	27000				
3.5	27000	26000	24000			
4.0	22000	21000	22000			
4.5	18000	18000	18500			
5.0	14500	15000	16000	16000		
5.5	12000	13000	14000	14000		
6.0	10400	11500	12200	12500		
6.5	9000	10000	10800	11000	11000	
7.0	7800	8800	9500	9800	10000	
7.5	6800	7900	8500	8800	9000	
8.0	6000	7000	7600	7900	8200	
9.0		5600	6200	6500	6700	
10.0		4500	5000	5400	5600	
11.0		3600	4200	4500	4700	
12.0		2900	3500	3800	4000	
14.0		1800	2400	2700	2900	
16.0			1500	1800	2100	
18.0			900	1200	1400	
20.0				800	900	
I (m)	0	0	0	0	0	
II (m)	0	6.3	12.6	18.9	24.9	
Reeving	12	6	5	4	3	
Hook	60t					

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**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 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.
- f) Do not operate at longer radii than those listed on the applicable lift chart (cross hatched areas  shown on range diagrams) as tipping can occur without a load on the hook.
- 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 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*.

**6.4 LIFTS ON TIRES****6.4.1 BOOM RATED LOADS**

Table 6-12 Rated capacity chart for lift on tires

Boom length (m)	11.6		15.9		20.1		26.4	
	360°	Travel with load over front	360°	Travel with load over front	360°	Travel with load over front	360°	Travel with load over front
3.0	21000	21000	20000	18000	20000			
3.5	20000	20000	19500	18000	19000	16000		
4.0	17500	18000	17000	17000	16500	15500	17000	
4.5	14500	16500	14000	16500	13500	15000	14300	11000
5.0	12500	14500	12000	14500	11500	14500	12300	11000
5.5	10800	13500	10000	13500	9500	13200	10500	11000
6	9400	12000	9000	11800	8800	11500	9200	11000
6.5	8000	10500	7600	10200	7400	10000	8100	10500
7	7000	9200	6600	9000	6300	8800	7100	9500
7.5	6000	8100	5600	8000	5300	7700	6200	8500
8	5300	7100	4800	7000	4500	6700	5400	7500
9			3500	5300	3200	5100	4100	5900
10			2500	4100	2200	3900	3200	4600
11			1600	3200	1400	3000	2400	3700
12			1000	2400	800	2200	1700	2900
14						1000		1800
16								1000
I (m)	0		4.3		8.5		8.5	
II (m)	0		0		0		6.3	
Reeving	12		10		8		6	
Hook	60t							

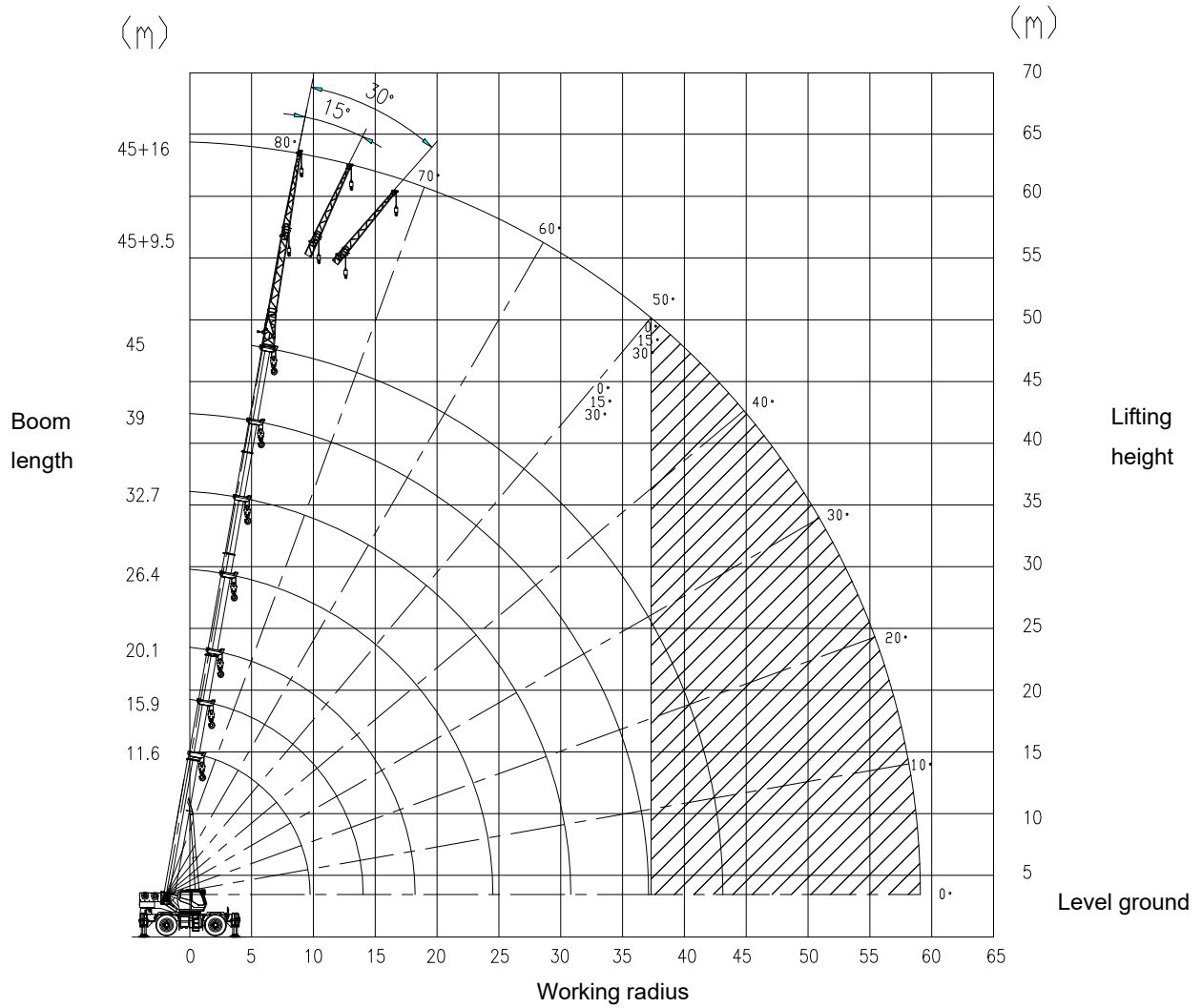
Note: 360° in the above chart is for the crane to stand still.

**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) 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.
- f) 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.
- g) 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.
- h) Use of jib is not permitted for pick-and-carry operations.
- i) For pick-and-carry operations, the boom must be centered over the front of the crane with the swing brake lock engaged. Use minimum boom point height and keep the load close to the ground surface. Travel must be on smooth level surface.
- j) The load should be restrained from swinging.
- k) 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).
- l) Consult appropriate section of the *Operator's Manual* for more exact description of hoist line reeving.
- m) 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.
- n) Properly maintained wire rope is essential for safe crane operation. Consult the *Operator's Manual* and *Maintenance Manual* for proper maintenance and inspection requirements.
- o) 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.
- p) 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.

q) Load ratings are dependent upon the crane being maintained according to the *Operator's Manual and Maintenance Manual*.

**6.5 Lift height chart**



**Figure 2 Lift Height with 16 m jib on Outriggers Fully Extended**