SANY®

SPECIFICATION

160t

74.8m

Standard 87.9m, optional 103.9m

SAC1600S7

SANY ALL TERRAIN CRANE

QUALITY CHANGES THE WORLD

crane.sanyglobal.com

V1.1

It is one of the core business units in SANY Group, specializing in the development and manufacturing of high-end wheel cranes, crawler cranes and tower cranes, including the complete range of wheel cranes from 8 to 1800t, crawler cranes from 25 to 4500t and tower cranes from 6 to 185t.

SANY CRANE


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SAC1600S7

SANY ALL TERRAIN CRANE
160 TON LIFTING CAPACITY

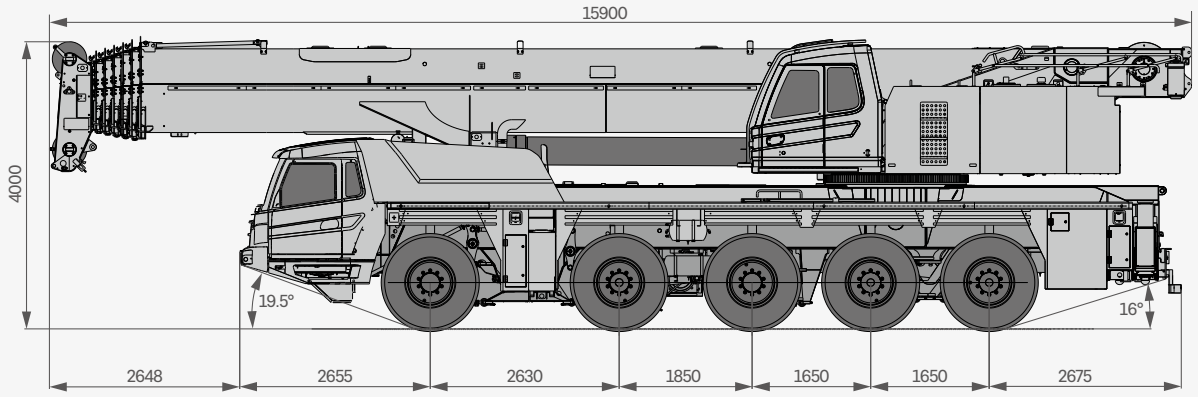
7-section U-shape boom, with full extension of 74.8 m and max. lifting moment of 550t.m, optional auxiliary jib of 4m, 54.5t CW, large lifting range.
Jib, standard 18 m (optional total 34 m with additional two 8 m sections).
Excellent power chain: Mercedes Benz engine + German ZF automatic transmission + German Kessler transfer case+ German Kessler axles, max. travel speed of 80km/h, max. gradeability of 46%.
5-axle all-terrain carrier, hydro-pneumatic suspension, all-wheel steering, 6 steering modes, min. steering radius of 8.5 m. Its maneuvering flexibility is 15% better than same class cranes in the industry.
H-type outriggers, variable extension combinations of 0%, 50%, 100% available, adaptable to more working conditions.
Low-noise and energy-saving concept is implemented with mechanical single engine, free of risk of upgrades on vehicle emissions, resulting in 35% decrease in maintenance costs.
Rexroth variable piston main oil pump+ Kawasaki variable piston motor, high performance and high reliability.
Cable wiring for superstructure, with high reliability.

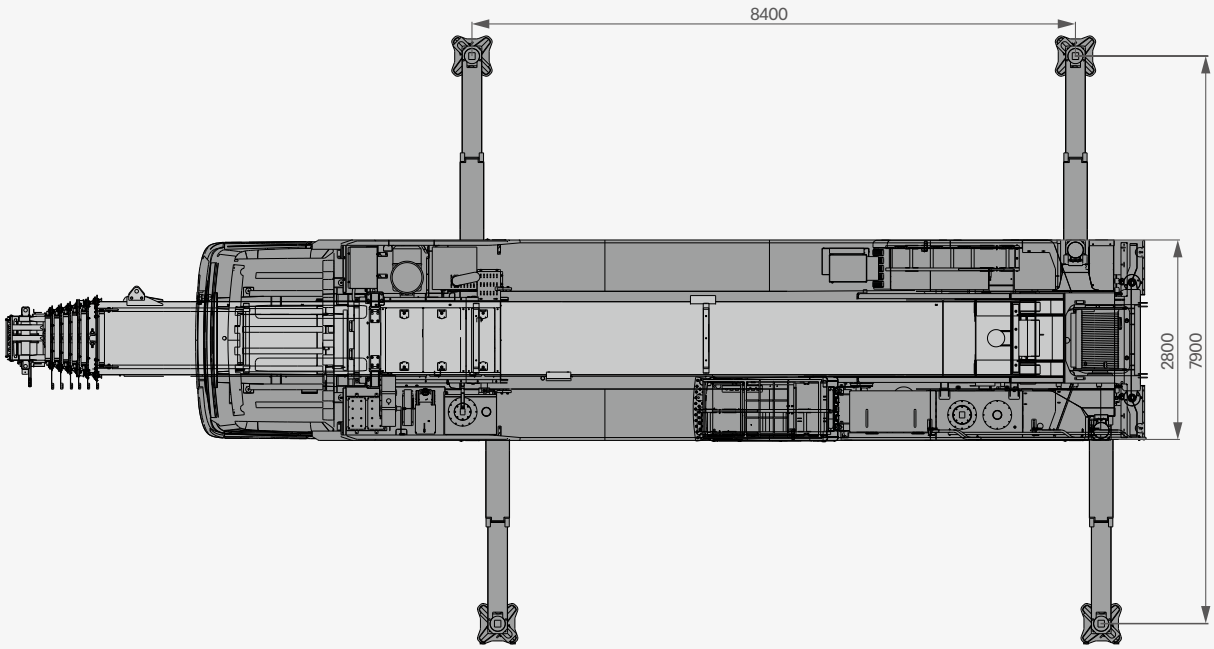
74.8m
Full-extension boom

46%
Max. gradeability

80km/h
Max. travel speed

Overall Dimensions





Technical Specification

CATEGORY	ITEM		UNIT	VALUE
CAPACITY	Max. lifting capacity		t	160
WEIGHT	Gross weight		kg	56000 (hook, jib, auxiliary winch, spare tire bracket not included)
POWER	Engine model		-	Benz OM460LA.E3A/1
	Max. engine power		kW/rpm	360/1800
	Max. engine torque		N·m/rpm	2200/1300
DIMENSIONS	Overall length		mm	15900
	Overall width		mm	2800
	Overall height		mm	4000
TRAVEL	Max. travel speed		km/h	80
	Min. steering radius		m	8.5
	Wheel formula		-	10×6×10
	Min. ground clearance		mm	285
	Approach angle		°	19.5
	Departure angle		°	14
	Max. gradeability		-	46%
	Fuel consumption per 100km		L	≤70
MAIN PERFORMANCE	Working temperature range		℃	-20-+40
	Min. rated lifting radius		m	2.5
	Tail slewing radius		m	4.86
	Boom sections (Qty.)		-	7
	Boom shape		-	U shape
	Max. lifting moment	Basic boom	kN·m	5174
		Full-extension boom	kN·m	2234
	Boom length	Basic boom	m	14
		Full-extension boom	m	74.8
		Max. combination of boom + jib	m	Standard 87.9m, optional 103.9m
	Max. lifting height	Full-extension boom	m	75.5
		Max. combination of boom + jib	m	Standard 87.2m, optional 103m
	Outrigger span (longitudinal × transverse)		m	8.4×7.9
	Jib offset		°	0, 15, 30
AIR CONDITIONER	In operator's cab		-	Heating & cooling
	In driver's cab		-	Heating & cooling

Technical Specification

Axle Load

Axle	1	2	3	4	5	Gross weight
Axle load (t)	≤12	≤12	≤12	≤12	≤12	56
Remark	56t for type approval, without hook, jib, auxiliary winch, spare tire bracket.					

Hook

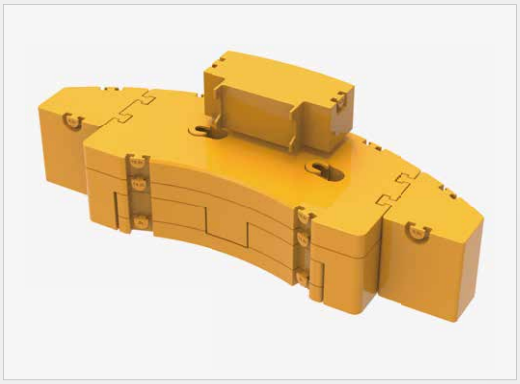
Rated load (t)	Number of sheaves	Rope rate	Hook weight (kg)
○ 160	9	15	1787
● 80 (double eye hook)	3	7	695
○ 32	1	3	484
● 12.5	-	1	270

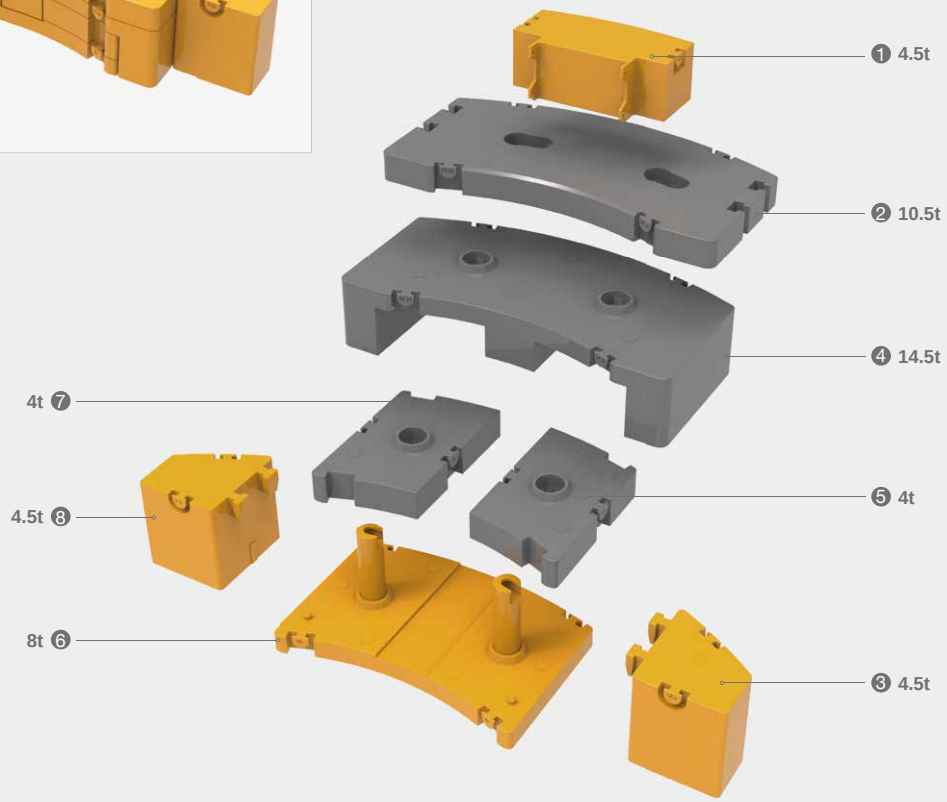
● Standard 标配　○ Optional 选配

Operations

Item		Max.single rope lifting speed (empty load)	Rope diameter / length	Max. single line pull
Main winch		130m/min	22mm/280m	10.5t
Auxiliary winch		130m/min	22mm/210m	10.5t
Slewing speed		1.5r/min		
Full luffing up/down time of boom		55s/115s		
Full extension/retraction time of boom		660s/660s		
Outrigger jack	Retraction	30s		
	Extension	35s		
Outrigger beam	Retraction	30s		
	Extension	25s		

Counterweight Combinations





Total weight (t)	①	②	③	④	⑤	⑥	⑦	⑧
	4.5t	10.5t	4.5t	14.5t	4t	8t	4t	4.5t
0t								
8t						•		
12.5t	•					•		
16t					•	•	•	
20.5t	•				•	•	•	
35t	•			•	•	•	•	
45.5t	•	•		•	•	•	•	
54.5t	•	•	•	•	•	•	•	•

Crane Introduction

Driver's cab

- It is made of SANY independently developed new steel structure with excellent shock absorption and sealing, and designed with outward opening doors, comfortable driver's seat (with head rest) and co-driver's seat equipped with pneumatic suspension, adjustable steering wheel, wide-view rear-view mirror, demister, air conditioner, stereo radio, and complete set of control instruments and meters, which is more comfortable, secure and user-friendly.

Carrier frame

- It is designed and manufactured by SANY in the torsion-proof box-shaped structure welded by fine-grained high-strength steel sheets, which has strong load-bearing capacity.

Engine

- Model: Benz OM460LA.E3A six-cylinder, water-cooled, supercharged intercooler, diesel engine.
- Rated power: 360kW/1800rpm.
- Emission standard: EU Stage IIIA.
- Fuel reservoir capacity: 600L.

Transmission

- German ZF AMT (with hydraulic retarder to run easily on long-downhill path), with 12 forward gears and 2 reverse gears.

Axle

- German Kessler axle in full-axle steering and 3-axle drive (drive axles 2, 4, 5). The axles 1, 2 adopt the hydraulic power steering system with rod system feedback, and the axles 3, 4, 5 adopt the electro-hydraulic control steering, so the assistance for speed control and selectable steering modes can be realized, with easy steering and flexible control.

Drive/Steering

- 10 × 6.

Suspension system

- All axle suspension devices are height-adjustable hydro-pneumatic suspension devices with hydraulic locking. The suspension height can be adjusted up by 190mm and down by 100 mm. With rigid locking, automatic leveling, and whole machine lifting modes, it can be applied to various harsh working conditions and roads to ensure the smoothness, lateral stability and comfortable driving of the crane.

Tires

- Techking, 10×14.00R25, radial tubeless tires.

Brake

- Parking brake: It is driven by a pressure accumulator, acting on the second to fifth axles.
- Service brake: All wheels are equipped with air servo brakes, dual-circuit braking system, and disc brakes.
- Assist brake: It includes transmission hydraulic retarder brake, engine brake and exhaust brake, which can reduce the wear of brake system and save the use costs.

Steering

- It consists of servo power steering gear, and dual-circuit system hydraulic steering device, with emergency steering pump.
- There are 6 steering modes: 1. Highway driving mode (default mode); 2. All-wheel steering mode; 3. Crab walk mode; 4. No-yaw steering mode; 5. Independent rear axle steering mode; 6. Rear axle lock steering mode.

Outrigger

- With a longitudinal and transverse pan of 8.4 m×7.9 m, and fully hydraulic horizontal and vertical support telescopic cylinders, the H-type outriggers functions automatic levelling.

Electrical system

- With modern data bus system, 24V DC power supply, 2 battery packs (180 Ah for each), the power supply of chassis can be cut off.
- The carrier adopts CAN bus system and multi-functional centralized display system in low power consumption; as well as LCD screen with adjustable contrast.

Crane Introduction

Operator's cab

- 0°~20° tiltable, the operator's cab is made of corrosion-resistant steels, and designed with full-covering softened interior, panoramic sunroof, adjustable seat, etc. to make the operation more user-friendly, comfortable and easy; and equipped with LMI screen to integrate the center console and operation display system and make operation conditions are well monitored from multiple angles.

Boom system

- Boom: 7-section boom made of fine-grained high-strength steel, with full extension of 74.8 m, and U shape cross-section. Jib: Standard 18 m, and 2×8m m for optional, mechanically adjusted at 0°, 15°, 30°.
- Telescopic mechanism: Each section independently telescoping via single cylinder pinning mechanism, full-extension and full-retraction time of 660s, it is efficient, safe and reliable.

Hoist

- The main winch adopts Kawasaki electric proportional variable piston motor, which has good inching performance and stability. Main winch wire rope diameter of 22mm, length of 180mm.

Luffing system

- It is designed with passive luffing down, which is more energy-saving. It adopts a single cylinder in front hinged support arrangement to perform the luffing with less effort and improve the force of the boom; and an electric proportional control balance valve is used.

Slewing

- It consists of a variable main piston pump for 360° slewing at speed of 0~1.5 r/min; and an electric proportional closed hydraulic circuit and electric proportional pedal to realize emergency braking.

Counterweight

- It adopts movable counterweight, which can be moved backward, total counterweight of 54.5t. 14.5t counterweight can be loaded with the crane when traveling. The counterweight can be raised and lowered by wireless remote control.

Hydraulics

- The superstructure hydraulics adopts open and closed type combined system, featuring load sensing, heavy load in low speed and smaller load in high speed, ensuring high efficiency. Luffing and telescoping systems are of open type formed by electro proportional pump and self-made main valve, functioning one-key pressure calibration and smart modification. Staged pressure and electro proportional pump displacement realized energy efficiency and operation safety. Hoist adopts close type to ensure responsive hook movement and wide speed range. Slewing closed system ensures non-time-delay start and stop. Counterweight lifting and lowering, operator's cab titling and turntable lockout available.
- The pump, piston motor and balance valve come from international name brands of high quality and reliability. Open and closed type electro proportional pump can adjust displacement for maximized energy usage rate. Double pump confluence and shunt mode realizes pressure and flow stepless adjustment and non-interfering dual circuit control. Single motion by confluent flow and combined motions by divided flow.

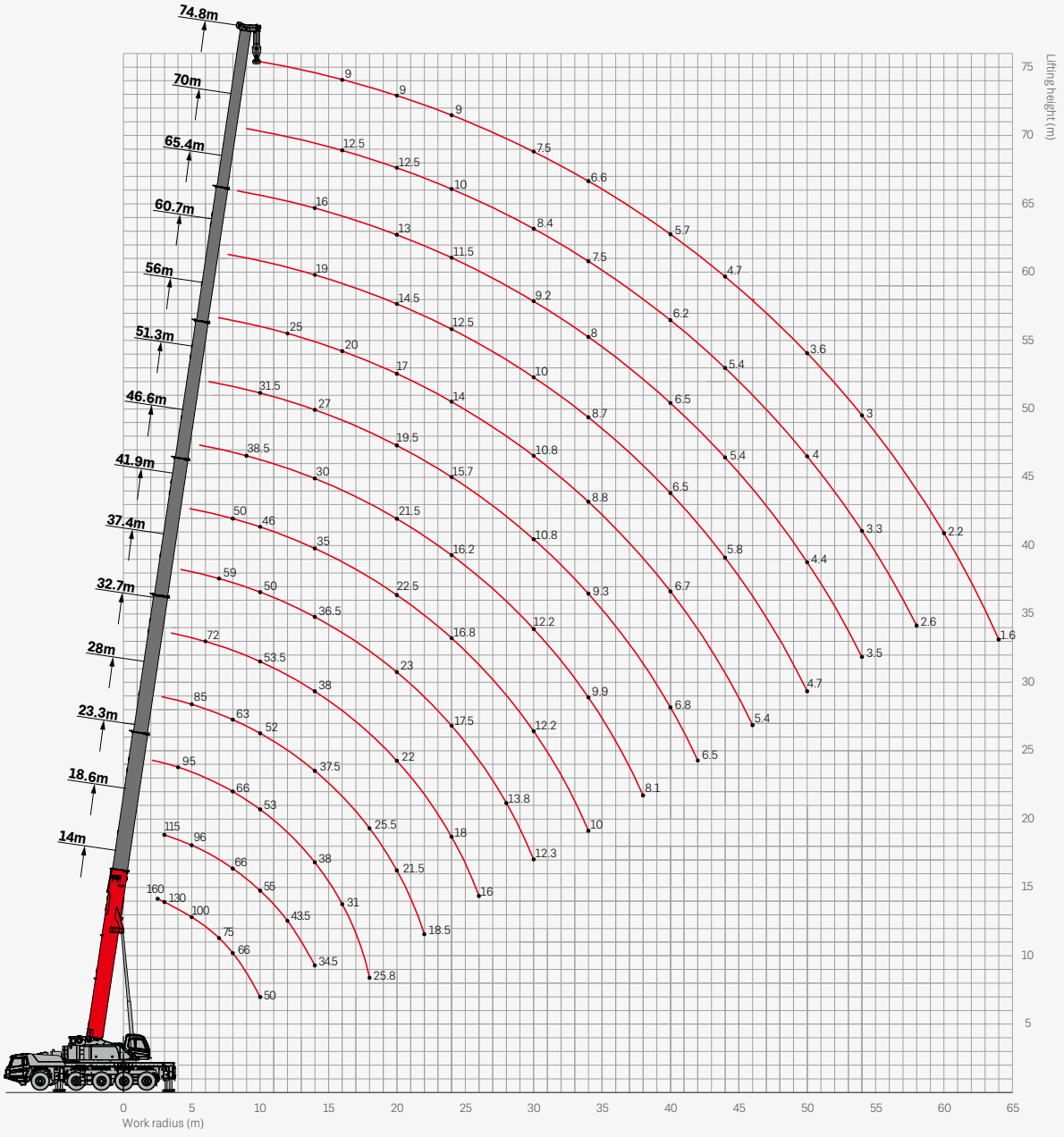
Control system

- The crane is electronically controlled by load moment indicator system; the two multi-directional joysticks can be automatically reset; and the movement of the crane is realized through controlling the hydraulic pump.

Safety equipment

- LMI: Under analytical mechanics, a load moment calculation system based on the lifting mechanics model is established. Through online empty-load calibration, the rated lifting accuracy can reach ± 5% for fully protecting the lifting operation. When overloading, the system will automatically give an alarm to provide safety guarantee for operation. The hydraulic system is equipped with hydraulic balance valve, overflow valve, two-way hydraulic lock and other components to ensure its stability and reliability. The winch is equipped with a protector to prevent the wire rope from over-hoisting down.
- The hydraulic system is equipped with hydraulic balance valve, overflow valve, two-way hydraulic lock, etc. to realize the stability and reliability of the hydraulic system.
- The main and auxiliary hoists are equipped with three-circle protectors to prevent over-hoist-down of the wire rope.
- Boom head and jib head are equipped with A2B switch to prevent the wire rope from over winding.
- An anemometer is installed at boom head to detect whether the wind speed at heights exceeds the allowable range.

Operating Range - Telescopic Boom

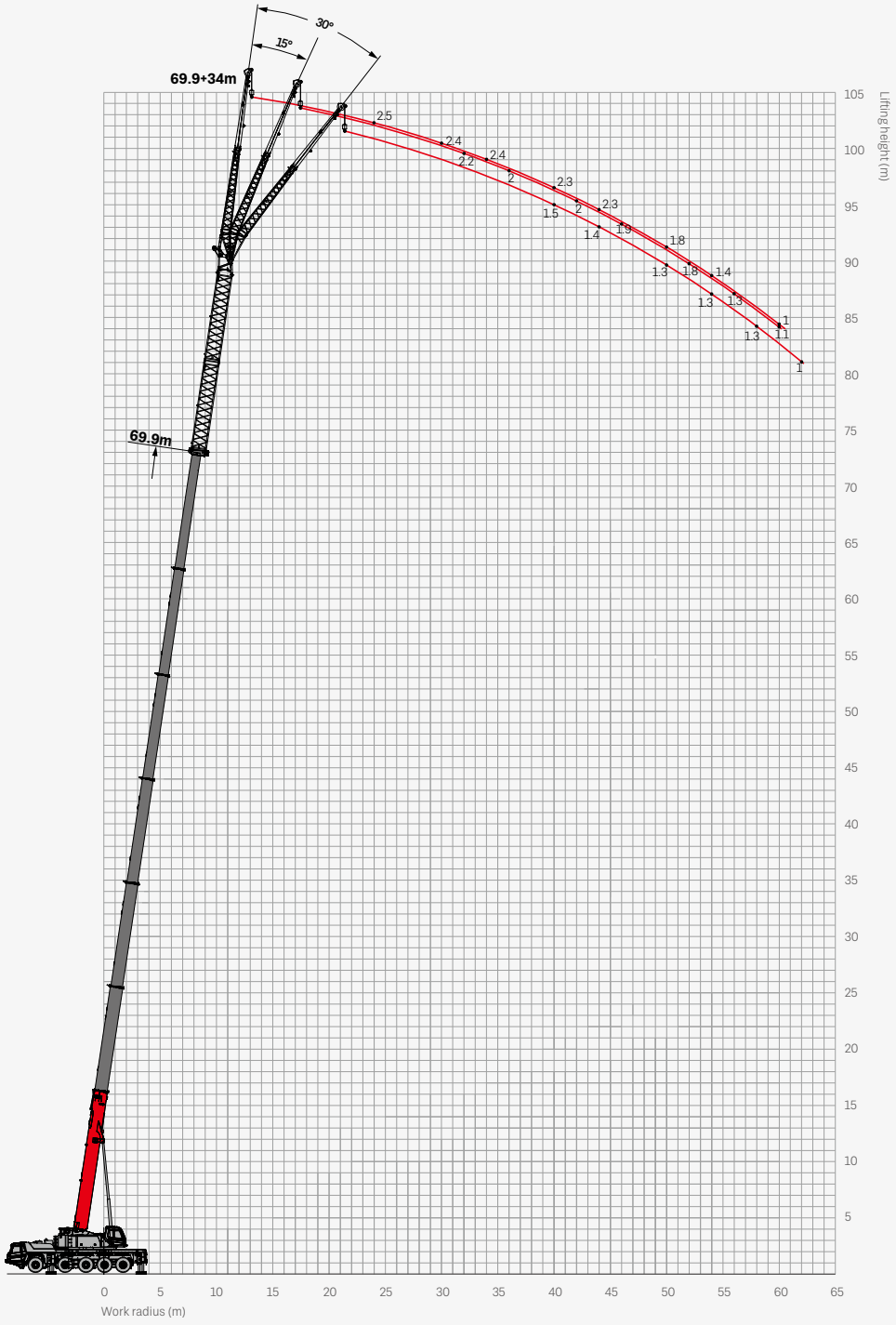


Load Chart-Telescopic Boom

Unit: t

Radius (m)	14.0	18.6	23.3	28.0	32.7	37.4	41.9	46.6	51.3	56.0	60.7	65.4	70.0	74.8	Radius (m)
2.5	160														2.5
3	130	115													3
3.5	126	110	95												3.5
4	117	106	95												4
4.5	109	101	94												4.5
5	100	96	87	85											5
6	87	85	77	78	72										6
7	75	75	70	70	72	59									7
8	66	66	66	63	64.5	56	50								8
9	58	60	60	57	58.5	53.5	49	38							9
10	50	55	52	52	53.5	50	46	38	31.5						10
12		43	44	44.5	45.5	43	41.5	35	29.5	25					12
14		34	35.6	36	37	36.5	35	30	27	22	19	16			14
16			28.8	29	30	30.5	30.5	27	24	20	18	15	12.5	9	16
18			23.8	24	24.8	25.5	26	24	21.5	18.5	16.5	14	12.5	9	18
20				20.5	21	21.6	22.2	21.5	19.5	17	14.5	13	12.5	9	20
22				17.5	18	18.6	19.2	18.6	17.5	15.5	13.5	12.5	11.5	9	22
24					15.6	16.2	16.8	16.2	15.7	14	12.5	11.5	10	9	24
26					13.6	14.2	14.8	14.2	13.7	13	11.5	10.5	9.5	8.5	26
28						12.5	13.1	12.6	12.2	12	10.8	10	9	8	28
30						11	11.6	11.1	10.8	10.8	10	9.2	8.4	7.5	30
32							10.5	9.8	9.5	9.6	9.3	8.5	8	7	32
34							9.5	8.8	8.5	8.5	8.7	8	7.5	6.6	34
36								7.8	7.5	7.6	7.8	7.5	7	6.3	36
38								7	6.6	6.8	7	7	6.5	6	38
40									5.8	6	6.2	6.5	6.2	5.7	40
42									5.2	5.3	5.5	5.8	5.8	5.2	42
44										4.6	4.9	5.2	5.4	4.7	44
46										4.1	4.3	4.6	5	4.5	46
48											3.8	4.1	4.5	4	48
50											3.5	3.6	4	3.6	50
52												3.2	3.5	3.2	52
54												2.8	3.3	3	54
56													3	2.7	56
58													2.6	2.4	58
60														2.2	60
62														1.9	62
64														1.6	64
Rope rate	12	11	9	8	7	6	5	4	3	3	3	2	2	2	Rope rate
II	0	0	46	46	46	46	46	92	92	92	92	92	92	100	II
III	0	46	46	46	46	46	46	46	92	92	92	92	92	100	III
IV	0	0	0	46	46	46	46	46	46	92	92	92	92	100	IV
V	0	0	0	0	46	46	46	46	46	46	92	92	92	100	V
VI	0	0	0	0	0	46	46	46	46	46	46	92	92	100	VI
VII	0	0	0	0	0	0	46	46	46	46	46	46	92	100	VII

Operating Range - Fixed Jib



Load Chart - Fixed Jib

Unit: t

Radius (m)	60.7m+34m			65.4m+34m			69.9m+34m			Radius (m)
	0°	15°	30°	0°	15°	30°	0°	15°	30°	
20										20
22	3.2									22
24	3			2.8			2			24
26	3			2.8			2			26
28	3			2.8			2			28
30	3	2.5		2.8			2			30
32	3	2.4		2.8	2.5		2	2		32
34	3	2.2		2.8	2.5		2	2		34
36	3	2.1	1.5	2.7	2.3		2	2		36
38	2.9	2	1.4	2.7	2.1	1.5	2	2		38
40	2.9	1.9	1.4	2.7	2	1.5	2	2	1.5	40
42	2.8	1.9	1.4	2.7	1.9	1.4	2	2	1.5	42
44	2.8	1.8	1.3	2.6	1.9	1.4	2	2	1.4	44
46	2.7	1.7	1.3	2.5	1.8	1.4	2	1.9	1.4	46
48	2.6	1.7	1.3	2.3	1.8	1.4	2	1.9	1.4	48
50	2.5	1.7	1.3	2.1	1.7	1.3	1.8	1.8	1.3	50
52	2.3	1.6	1.2	1.8	1.7	1.3	1.6	1.8	1.3	52
54	2.1	1.6	1.2	1.7	1.6	1.2	1.4	1.6	1.3	54
56	1.9	1.5	1.1	1.5	1.6	1.2	1.2	1.3	1.3	56
58	1.7	1.5	1.1	1.3	1.4	1.2	1.1	1.2	1.3	58
60	1.5	1.4	1	1.2	1.3	1.1	1	1.1	1.2	60
62	1.3	1.4	1	1	1.2	1			1	62
64		1.3	1		1	1				64
66		1								66
Telescoping status	222211			222221			222222			Telescoping status
Rope rate	1	1	1	1	1	1	1	1	1	Rope rate

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