

ZOOMLION

Zoomlion ZAT1200V753 All Terrain Crane

Technical Specifications

GQ06522027000000CN

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Technical Specifications

GQ06522027000000EN

1. Product Features

The ZAT1200V7 all terrain crane is a new generation of high-performance crane independently developed by Zoomlion based on our years of experience and advanced technologies to meet the market demand. The performance parameters of the cranes including lifting height, boom length, working speed, lifting capacity are in the leading position in the world.

The crane is a full-slewing, telescopic boom, and electro-hydraulic proportionally controlled crane, which is mounted on a four-axle chassis made by Zoomlion with a wide vision and a luxurious and comfortable trim. In addition, it is equipped with a hydro-pneumatic suspension system, an 8x6 drive and 8x8 steering system, which is easy-to-handle and flexible.

The crane is configured with an electro-hydraulic proportional reversing valve with load feedback function as well as a variable pump and gear pump system, so as to give full play to the working performance of all actuators, realize electro-hydraulic proportional control, and realize boom and jib lifting, luffing, slewing, and the combined actions of telescopic mechanisms, greatly improving the work efficiency of the crane. Known for its ease of operation, flexibility, and reliable performance. Safety devices including overflow valves, counterbalance valves, hydraulic locks and brake valves are provided in the hydraulic system to avoid overload in oil lines and prevent hazards arising from broken oil lines.

The crane is equipped with a variety of safety devices including the moment limiter and complete lighting system to ensure safe and reliable operation and to facilitate operation at night.

The crane adopts innovative design, featured by optimal shape, smooth streamline and beautiful color.

2. Specifications

2.1 Model

Engineering industry model: ZAT1200V7

Product identifier: ZAT1200V753

2.2 Main technical parameters

Items		Values	Remarks
Performance parameters	Max. rated lifting capacity kg	120000	
	Max. basic boom lifting moment kN.m	3528	
	Max. fully extended boom lifting moment kN.m	1809	
	Max. basic boom lifting height m	14.1	
	Max. boom lifting height m	66.8	
	Max. jib lifting height m	84.6	
	Max. lifting height of jib (Optional configuration: 9.5m jib extension) m	93.9	
Work Speed	Max. single rope speed (main winch) m/min	125	
	Max. single rope speed (2nd winch) m/min	110	
	Jib lifting time s	58	
	Boom extending time s	900	
	Slewing speed r/min	0~1.5	
Traveling Parameter	Max. traveling speed km/h	80	Equipped with 385/95R25 tires.
	Max. gradeability %	60	
	Min. turning diameter m	15.75	
	Min. ground clearance mm	326	
	Fuel consumption per hundred kilometers L	63	
Mass Parameter	Dead weight in traveling state (gross mass) kg	48000	
	Overall unladen mass kg	47870	
	Axle loads I, II	24000	

	kg		
	Axle loads III, IV kg	24000	
dimensions Parameter	Overall dimensions (L×W×H) mm	14380×2750×4000	
	Longitudinal distance between outriggers m	7.52	
	Horizontal distance between outriggers m	6.9	Outrigger fully extended
	Tail slewing radius mm	4060	
	Boom length m	12.5~66.0	
	Boom derricking angle °	-1~82	
	Jib length (m) m	10.4, 17.5	
	Angle °	0, 15, 30	
	Jib extension length m	9.5	Optional configuration
	Angle °	0	

2.3 Rated lifting capacity

The crane is provided with different rated capacities at different working conditions, operators shall determine the rated lifting capacity based on the lifting capacity table according to the actual working condition.

- a) When rated lifting capacity \leq 60t, the 60t hook shall be used;
- b) When $60t <$ rated lifting capacity \leq 70t, the 70t hook shall be used;
- c) When $70t <$ rated lifting capacity \leq 80t, the 80t hook shall be used;
- d) The * lifting capacity is considered the nominal lifting capacity.

Table 1. Boom Rated Lifting Capacity

Unit: ton

Outriggers fully extended 6.9m, 31.3t counterweights (3.7+27.6 shifted to the rear), side and rear operations.														
Radius (m)	Boom length (m)												Radius (m)	
	12.5★	16.5	16.5	16.5	16.5	16.5★	20.5	20.5	20.5	20.5	20.5	20.5★		
2.5	120.0*												2.5	
3.0	80.0	38.0	60.0	65.0	67.5	70.0	27.5	41.5	64.5	65.0	66.5	68.0	3.0	
3.5	71.0	36.0	55.0	65.0	65.0	68.0	26.0	39.5	59.5	65.0	65.0	65.5	3.5	
4.0	65.0	34.0	51.0	62.5	62.5	62.5	24.5	37.0	55.0	61.0	61.0	61.0	4.0	
4.5	60.0	32.0	47.0	58.5	58.5	58.5	23.0	34.5	51.5	56.5	56.5	56.5	4.5	
5.0	55.0	31.0	44.0	54.5	54.5	54.5	21.5	32.5	48.5	52.5	52.5	52.5	5.0	
6.0	47.0	28.0	39.0	48.0	48.0	48.0	19.5	29.0	43.0	46.5	46.5	46.5	6.0	
7.0	41.0	26.0	35.0	42.0	42.0	42.0	17.8	26.0	38.5	40.5	40.5	40.5	7.0	
8.0	36.0	24.0	31.5	35.6	35.6	35.6	16.3	23.6	35.0	36.0	36.0	36.0	8.0	
9.0	32.0	22.5	29.0	33.0	33.0	33.0	15.0	21.8	32.0	32.1	32.1	32.1	9.0	
10.0		21.0	26.5	29.5	29.5	29.5	14.0	20.0	28.9	28.9	28.9	28.9	10.0	
11.0		20.0	24.6	26.5	26.5	26.5	13.0	18.5	26.0	26.0	26.0	26.0	11.0	
12.0		19.0	22.9	23.8	23.8	23.8	12.3	17.2	23.2	23.2	23.2	23.2	12.0	
14.0							10.9	15.1	18.7	18.7	18.7	18.7	14.0	
16.0							9.8	13.5	15.0	15.0	15.0	15.0	16.0	
18.0													18.0	
Parts of	10	9					8						Parts	
Hook	60T anchor hook												Hook	
E xt en si on	I	1	1	1	1	1	1	1	1	1	1	1	2	I
	II	1	1	1	1	1	2	1	1	1	1	2	2	II
	III	1	1	1	1	2	1	1	1	1	2	2	1	III
	IV	1	1	1	2	1	1	1	1	2	2	1	1	IV
	V	1	1	2	1	1	1	1	2	2	1	1	1	V
	VI	1	2	1	1	1	1	3	2	1	1	1	1	VI

Table 2. Boom Rated Lifting Capacity

Unit: ton

Outriggers fully extended 6.9m, 31.3t counterweights (3.7+27.6 shifted to the rear), side and rear operations.															
Radius (m)	Boom length (m)												Radius (m)		
	24.5	24.5	24.5	24.5	24.5	24.5★	28.5	28.5	28.5	28.5	28.5	28.5★			
3.0	25.0	25.0	44.0	65.0	65.0	65.0	20.5	27.0	31.0	46.0	50.0	50.0	3.0		
3.5	23.5	23.5	42.0	61.0	64.0	64.0	19.0	25.5	29.0	44.0	50.0	50.0	3.5		
4.0	22.0	22.0	40.5	56.5	59.5	59.5	18.0	24.0	27.0	42.5	50.0	50.0	4.0		
4.5	20.5	20.5	38.5	53.0	55.0	55.0	17.0	22.5	25.5	41.0	50.0	50.0	4.5		
5.0	19.5	19.5	36.5	50.0	51.5	51.5	16.0	21.5	24.0	39.5	49.5	49.5	5.0		
6.0	17.5	17.3	32.7	44.0	45.0	45.0	15.0	19.0	22.5	36.0	44.5	44.5	6.0		
7.0	15.8	15.6	29.7	39.5	40.5	40.5	13.5	17.5	20.5	32.8	40.0	40.0	7.0		
8.0	14.4	14.2	27.1	36.0	36.0	36.0	12.5	16.0	18.5	30.1	36.2	36.2	8.0		
9.0	13.2	13.0	24.9	32.0	32.0	32.0	11.5	14.5	17.0	27.8	32.8	32.8	9.0		
10.0	12.2	12.0	23.0	29.8	29.8	29.8	10.5	13.5	15.5	25.8	30.2	30.2	10.0		
11.0	11.3	11.2	21.4	27.0	27.0	27.0	9.8	12.5	14.5	24.1	27.2	27.2	11.0		
12.0	10.5	10.4	20.1	24.0	24.0	24.0	9.1	12.0	13.5	22.6	24.5	24.5	12.0		
14.0	9.3	9.1	17.7	19.5	19.5	19.5	8.0	10.6	11.8	19.8	19.8	19.8	14.0		
16.0	8.3	8.1	15.6	15.6	15.6	15.6	7.0	9.5	10.4	16.0	16.0	16.0	16.0		
18.0	7.5	7.3	13.0	13.0	13.0	13.0	6.3	8.6	9.3	13.5	13.5	13.5	18.0		
20.0	6.8	6.6	11.0	11.0	11.0	10.9	5.7	7.8	8.4	11.5	11.5	11.5	20.0		
22.0							5.2	7.1	7.6	10.0	10.0	9.6	22.0		
24.0							4.6	6.4	7.0	8.5	8.5	8.0	24.0		
26.0													26.0		
Parts of	8						6						Parts		
Hook	60T anchor hook												Hook		
Extension position	I	1	1	1	1	1	2	1	1	1	1	1	2	I	Extension position
	II	1	1	1	1	2	2	1	1	1	1	2	2	II	
	III	1	1	1	2	2	2	1	1	1	2	2	2	III	
	IV	1	1	2	2	2	1	1	2	3	2	2	2	IV	
	V	2	3	2	2	1	1	3	3	2	2	2	1	V	
	VI	3	2	2	1	1	1	3	2	2	2	2	1	1	

Table 3. Boom Rated Lifting Capacity

Unit: ton

Outriggers fully extended 6.9m, 31.3t counterweights (3.7+27.6 shifted to the rear), side and rear operations.															
Radius (m)	Boom length (m)												Radius (m)		
	32.5	32.5	32.5	32.5	32.5	32.5★	36.5	36.5	36.5	36.5	36.5	36.5★			
3.0														3.0	
3.5														3.5	
4.0	20.5	25.0	30.0	30.0	45.0	52.0								4.0	
4.5	19.5	24.0	28.0	28.0	43.5	52.0								4.5	
5.0	18.5	22.5	26.5	27.0	42.0	49.5	19.0	24.0	24.0	29.0	36.5	42.5		5.0	
6.0	16.7	20.7	24.0	24.0	39.5	44.0	17.5	22.0	22.0	26.0	33.0	42.0		6.0	
7.0	15.1	18.6	21.7	21.6	36.5	39.5	16.0	20.0	20.0	24.0	30.0	39.0		7.0	
8.0	13.8	16.8	19.7	19.7	33.7	35.8	14.6	18.0	18.0	22.0	27.0	36.5		8.0	
9.0	12.7	15.4	18.0	18.0	31.3	32.2	13.6	16.5	16.5	20.2	25.0	33.5		9.0	
10.0	11.7	14.2	16.6	16.6	29.2	29.2	12.6	15.4	15.0	18.7	23.0	30.0		10.0	
11.0	10.9	13.1	15.4	15.3	26.7	26.7	11.7	14.3	14.0	17.3	21.5	27.5		11.0	
12.0	10.2	12.1	14.3	14.2	24.5	24.5	10.8	13.3	13.0	16.2	20.1	25.0		12.0	
14.0	9.0	10.5	12.5	12.4	20.2	20.2	9.4	11.6	11.3	14.2	17.6	21.0		14.0	
16.0	8.0	9.3	11.0	10.9	16.7	16.7	8.3	10.2	9.9	12.6	15.5	17.5		16.0	
18.0	7.2	8.3	9.8	9.7	14.1	14.1	7.4	9.1	8.8	11.3	13.8	14.8		18.0	
20.0	6.5	7.4	8.8	8.7	12.0	12.0	6.6	8.1	7.9	10.2	12.4	12.7		20.0	
22.0	5.9	6.7	8.0	7.9	10.2	10.2	5.9	7.4	7.1	9.2	11.1	10.9		22.0	
24.0	5.4	6.1	7.3	7.2	8.8	8.6	5.4	6.7	6.4	8.4	9.7	9.3		24.0	
26.0	5.0	5.6	6.7	6.6	7.7	7.3	4.9	6.1	5.8	7.7	8.3	8.0		26.0	
28.0							4.5	5.6	5.3	7.1	7.2	6.9		28.0	
30.0							4.2	5.1	4.8	6.4	6.3	5.9		30.0	
32.0														32.0	
34.0														34.0	
Parts of	7						5						Parts		
Hook	60T anchor hook												Hook		
Extension position	I	1	1	1	1	1	2	1	1	1	1	1	2	I	Extension position
	II	1	1	1	1	2	2	1	1	1	2	3	2	II	
	III	1	1	2	3	2	2	1	2	3	3	2	2	III	
	IV	2	3	3	2	2	2	3	3	3	2	2	2	IV	
	V	3	3	2	2	2	2	3	3	2	2	2	2	V	
	VI	3	2	2	2	2	1	3	2	2	2	2	2	VI	

Table 4. Boom Rated Lifting Capacity

Unit: ton

Outriggers fully extended 6.9m, 31.3t counterweights (3.7+27.6 shifted to the rear), side and rear operations.															
Radius (m)	Boom length (m)												Radius (m)		
	40.5	40.5	40.5	40.5	40.5	40.5	★	44.5	44.5	44.5	44.5	44.5		★	
3.0														3.0	
3.5														3.5	
4.0														4.0	
4.5														4.5	
5.0														5.0	
6.0	18.0	20.5	24.0	28.0	34.5	36.0								6.0	
7.0	16.5	18.6	21.8	26.0	31.5	35.0		17.0	19.5	22.5	26.5	28.0		7.0	
8.0	15.5	16.9	20.0	24.0	29.5	32.0		15.5	18.0	21.0	24.5	28.0		8.0	
9.0	14.5	15.5	18.4	22.0	27.3	30.0		14.5	16.7	19.5	23.0	27.0		9.0	
10.0	13.6	14.3	17.0	20.0	25.3	28.0		13.5	15.5	18.0	22.0	25.0		10.0	
11.0	12.6	13.2	15.7	19.0	23.7	25.7		12.5	14.5	17.0	20.7	23.5		11.0	
12.0	11.8	12.3	14.6	18.0	22.1	24.0		11.6	13.5	16.0	19.4	22.0		12.0	
14.0	10.2	10.7	12.8	15.8	19.2	20.4		10.1	11.8	14.0	17.3	19.3		14.0	
16.0	9.0	9.4	11.3	14.1	17.0	17.0		8.9	10.5	12.5	15.5	17.0		16.0	
18.0	8.1	8.3	10.1	12.7	14.5	14.5		7.9	9.4	11.4	13.7	14.4		18.0	
20.0	7.2	7.4	9.1	11.4	12.4	12.3		7.0	8.4	10.3	12.2	12.3		20.0	
22.0	6.5	6.6	8.3	10.3	10.6	10.3		6.3	7.6	9.4	10.6	10.4		22.0	
24.0	6.0	6.0	7.5	9.2	9.2	8.8		5.8	6.9	8.5	9.2	8.8		24.0	
26.0	5.4	5.5	6.9	8.1	7.9	7.5		5.3	6.3	7.7	8.0	7.5		26.0	
28.0	5.0	5.0	6.3	7.0	6.9	6.4		4.8	5.8	7.0	6.9	6.4		28.0	
30.0	4.6	4.6	5.8	6.2	5.8	5.5		4.4	5.3	6.1	5.9	5.4		30.0	
32.0	4.2	4.2	5.3	5.4	5.0	4.7		4.0	4.9	5.3	5.1	4.6		32.0	
34.0	4.0	3.8	4.7	4.7	4.3	4.0		3.7	4.5	4.6	4.4	3.9		34.0	
36.0								3.4	4.1	4.1	3.8	3.3		36.0	
38.0								3.2	3.5	3.5	3.2	2.8		38.0	
40.0														40.0	
42.0														42.0	
Parts of	5							4						Parts	
Hook	60T anchor hook												Hook		
Extension	I	1	1	1	1	2	3		1	1	1	2	3	I	Extension
	II	1	1	2	3	3	2		1	2	3	3	3	II	
	III	2	3	3	3	2	2		3	3	3	3	2	III	
	IV	3	3	3	2	2	2		3	3	3	2	2	IV	
	V	3	3	2	2	2	2		3	3	2	2	2	V	
	VI	3	2	2	2	2	2		3	2	2	2	2	VI	

Table 5. Boom Rated Lifting Capacity

Unit: ton

Outriggers fully extended 6.9m, 31.3t counterweights (3.7+27.6 shifted to the rear), side and rear operations.														
Radius(m)	Boom length (m)												Radius (m)	
	48.5	48.5	48.5	48.5★	52.5	52.5	52.5★		56.5	56.5★	60.5★	66.0★		
5.0													5.0	
6.0													6.0	
7.0													7.0	
8.0	17.0	19.0	22.0	24.0									8.0	
9.0	15.5	18.0	20.7	23.0	15.0	17.0	18.0						9.0	
10.0	14.5	16.7	19.5	22.5	15.0	17.0	18.0		14.0	15.0			10.0	
11.0	13.6	15.6	18.2	21.0	14.5	16.5	18.0		13.5	14.5	12.0		11.0	
12.0	12.8	14.6	17.2	20.0	13.5	15.5	17.5		13.0	14.0	12.0	9.2	12.0	
14.0	11.2	13.0	15.2	17.5	12.1	14.0	16.0		12.0	13.5	11.5	9.1	14.0	
16.0	10.0	11.5	13.7	15.5	10.8	12.5	14.0		11.0	13.0	11.0	9.0	16.0	
18.0	8.9	10.3	12.4	14.0	9.7	11.3	12.8		10.3	11.8	10.5	8.8	18.0	
20.0	8.0	9.3	11.2	12.4	8.8	10.3	11.5		9.3	10.7	9.6	8.5	20.0	
22.0	7.3	8.7	10.0	10.5	8.1	9.4	10.3		8.6	9.7	8.9	8.0	22.0	
24.0	6.6	7.9	9.1	8.9	7.4	8.5	9.1		7.9	8.9	8.2	7.5	24.0	
26.0	6.0	7.2	8.1	7.6	6.8	7.7	7.8		7.3	8.0	7.6	7.0	26.0	
28.0	5.5	6.6	7.0	6.5	6.2	7.0	6.7		6.8	7.1	7.0	6.5	28.0	
30.0	5.1	6.0	6.1	5.6	5.7	6.4	5.8		6.3	6.1	6.4	6.1	30.0	
32.0	4.7	5.4	5.3	4.8	5.3	5.6	5.0		5.8	5.3	5.7	5.6	32.0	
34.0	4.3	4.8	4.6	4.1	4.9	4.9	4.3		5.2	4.6	4.9	5.0	34.0	
36.0	4.0	4.2	4.0	3.4	4.4	4.3	3.7		4.6	4.0	4.3	4.4	36.0	
38.0	3.6	3.6	3.4	2.9	3.9	3.7	3.1		4.1	3.4	3.7	3.8	38.0	
40.0	3.1	3.1	3.0	2.4	3.4	3.2	2.6		3.6	2.9	3.2	3.3	40.0	
42.0	2.7	2.7	2.5	2.0	3.0	2.8	2.2		3.2	2.5	2.8	2.9	42.0	
44.0					2.6	2.4	1.8		2.8	2.1	2.4	2.5	44.0	
46.0					2.2	2.0	1.5		2.4	1.7	2.0	2.1	46.0	
48.0									2.1	1.4	1.7	1.8	48.0	
50.0									1.8	1.1	1.4	1.5	50.0	
52.0											1.1	1.2	52.0	
54.0													54.0	
56.0													56.0	
58.0													58.0	
60.0													60.0	
62.0													62.0	
Parts of	3						3						Parts	
Hook	60T anchor hook												Hook	
Extension	I	1	1	2	3	1	2	3		2	3	3	4	I
	II	2	3	3	3	3	3	3		3	3	3	4	II
	III	3	3	3	3	3	3	3		3	3	3	4	III
	IV	3	3	3	2	3	3	3		3	3	3	4	IV
	V	3	3	2	2	3	3	2		3	3	3	4	V
	VI	3	2	2	2	3	2	2		3	2	3	4	VI

Table 6 Rated Lifting Capacity

Unit: ton

Boom derricking angle (°)	Main boom (m) + jib (m) Outriggers Fully Extended, 31.3t					
	66.0+10.4			66.0+17.5		
	0°	15°	30°	0°	15°	30°
82	3.8	3.3	3.2	2.9	2.3	2.0
80	3.6	3.2	3.1	2.7	2.2	1.9
78	3.4	3.1	3.0	2.5	2.1	1.8
76	3.2	3.0	2.9	2.3	2.0	1.7
74	3.0	2.9	2.7	2.1	1.9	1.65
72	2.8	2.7	2.5	2.0	1.8	1.6
70	2.6	2.5	2.3	1.9	1.7	1.55
68	2.4	2.3	2.15	1.8	1.6	1.5
66	2.2	2.1	2.0	1.7	1.55	1.45
64	2.0	1.9	1.8	1.6	1.45	1.4
62	1.7	1.6	1.55	1.45	1.3	1.25
60	1.45	1.35	1.3	1.2	1.15	1.0
58	1.2	1.1	1.1	1.0	0.9	
56	0.9	0.85	0.8			
54						
52						
50						
48						
46						
44						
42						
40						
Parts of line	1					
Hook	8t					

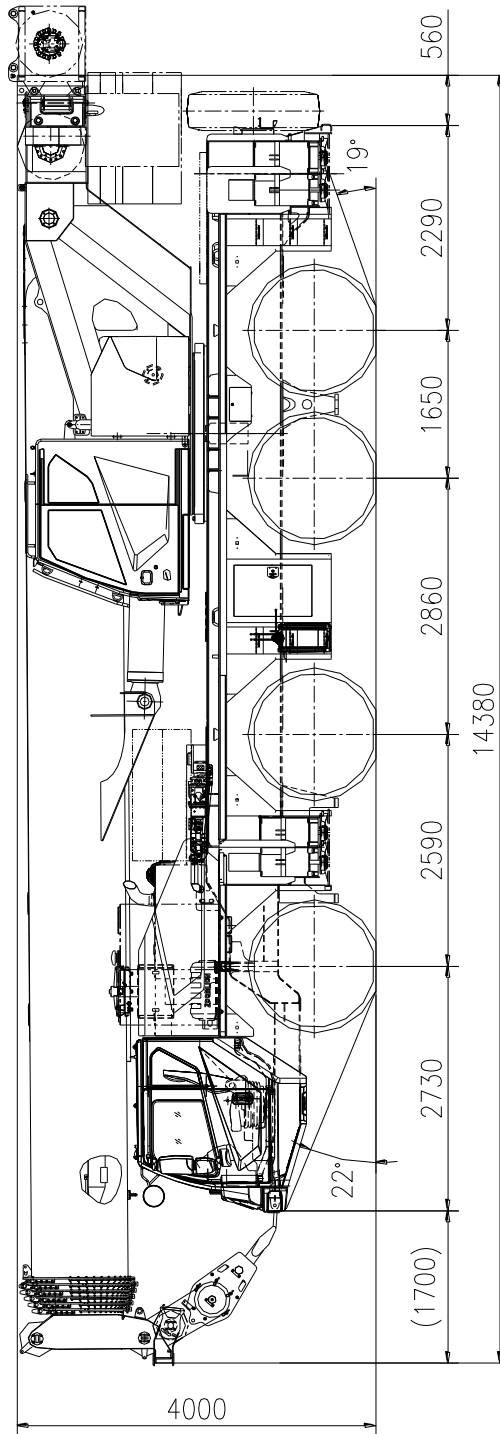
Table 7 Rated Lifting Capacity

Unit: ton

Boom derricking angle (°)	Main boom (m) + jib (m) Outriggers Fully Extended 31.3t (3.7+27.6 shifted to the rear)					
	66.0+10.4			66.0+17.5		
	0°	15°	30°	0°	15°	30°
82	3.8	3.3	3.2	2.9	2.3	2.0
80	3.6	3.2	3.1	2.7	2.2	1.9
78	3.4	3.1	3.0	2.5	2.1	1.8
76	3.2	3.0	2.9	2.3	2.0	1.7
74	3.0	2.9	2.7	2.1	1.9	1.65
72	2.8	2.7	2.5	2.0	1.8	1.6
70	2.6	2.5	2.3	1.9	1.7	1.55
68	2.4	2.3	2.15	1.8	1.6	1.5
66	2.2	2.1	2.0	1.7	1.55	1.45
64	2.0	1.9	1.8	1.6	1.45	1.4
62	1.8	1.7	1.6	1.45	1.3	1.25
60	1.6	1.5	1.4	1.3	1.15	1.0
58	1.4	1.3	1.2	1.1	1.0	
56	1.1	1.05	1.0			
54						
52						
50						
48						
46						
44						
42						
40						
Parts of line	1					
Hook	8t					

2.4 Lift height curve chart(to be supplemented)

2.5 Traveling state overall dimension diagram (unit: mm)



3. Specification of main parts of upper structure

3.1 Boom and telescoping mechanism

Seven-section oval telescopic boom is adopted, providing excellent bending resistance. The boom and the telescoping mechanism are welded from high-strength structural steels with $\delta_s=960\text{MPa}$, which are featured by excellent bearing capacity, light weight, high lateral stiffness and low end deflection. The head of the boom adopts the new type of plate structure which provides a larger lap ratio between jibs and matches with the embedded sliding block structure. Through design optimizations, the dead weight of the boom is significantly reduced and the local stress distribution is greatly evened, providing better orientation and adjustability.

An automatic program-controlled single-cylinder telescoping mechanism with safety pin is used, realizing mechanical interlocking and sequential extension and retraction.

3.2 Jib

Two jib sections are provided, which are arranged by the boom side when not in use, and are assembled with the pin. The four-sided variable-section truss type is adopted. The second section is connected with the first section in parallel with a pin, and is bendable at the pin position. The crane is designed to provide two jib lengths (10.4m and 17.5m) according to the operation requirement. The first jib section is hinged to the head of the end boom section; three installation angles (0° , 15° and 30°) against the boom are available, which can be easily adjusted through rotating shaft and sliding chute.

3.3 Rooster sheave

The single-sheaved block is arranged by the side of the boom end. Rotate the block about the shaft to the appropriate position and secure the same with the pin. When lifting light loads, the boom-end single-sheaved block can be used to accelerate lifting operation and improve working efficiency.

3.4 Turntable

The turntable adopts the reinforced single plate structure and is made from a high-strength steel plate. The design is optimized, so that the main boom and the luffing hinge points are arranged rationally, ensuring rational stress distribution, unique structure and

artistic shape. User-friendly machine shed design. A pin mechanism is provided on the front end of the turntable to prevent the upper structure from rotating when traveling.

3.5 Telescopic mechanism

The single-cylinder front-mounting derricking mechanism is adopted, realizing a jib derricking angle range from $-1^{\circ}\sim 82^{\circ}$. A counterbalance valve is installed on the cylinder to ensure smooth lifting and lowering.

3.6 Slewing mechanism

The slewing mechanism adopts the two-way slewing mode. The hydraulic motor, via the reduction gears, drives the pinion on the output shaft to move around the outer gear ring of the slewing bearing fixed on the truck frame, which further drives 360° continuous slewing of the upper structure. The controlled free sliding function is provided, which realizes auto sliding in place during the lifting process. A slewing cushion valve and a normally-closed brake are provided to ensure smooth and reliable slewing operation. The slewing bearing is of four-point ball type, with sound carrying capacity and long service life.

3.7 Hoisting mechanism

A primary and a secondary winches (optional secondary winch) are provided. The grooved drum is driven by the hydraulic motor via the reduction gears, realizing hook lifting and lowering. A brake is installed between the motor and the reduction gears. The primary and the secondary winches can be controlled separately, and combined action can also be realized. The reduction gears for the primary winch and for the secondary winch are in the same model, and both the primary and the secondary winch are driven by the variable motor. The primary winch is provided with a wire rope three-turn overfeeding protective device. The concealed planetary gear is featured by compact structure, light weight and high reliability. Anti-twist high-strength lifting wire ropes are used, and the specifications are as follows:

Diameter: $\phi 20.0\text{mm}$

Strength grade: 1960N/mm^2

Length: main lifting wire rope: 310m, secondary lifting wire rope: 220m

3.8 Main and auxiliary hooks

The main hook is a single hook with the lifting capacity of 60t as standard. Five pulleys are installed, and a hook locking device are provided. The secondary hook has a lifting capacity of 6.5t with a single lifting ratio, along with anti-weight rotation and anti-decoupling mechanisms.

Options include: 35g single hook with 3 pulleys; 60t anchor hook, 70t or 80t single hook with 6 pulleys; 90t anchor hook with 7 pulleys.

3.9 Operator's cabin

The main body of the operating cab adopts the steel structure, providing broad view. The seat is provided with a headrest, and can be tilted and longitudinally adjusted within a large range. Standard pitch mechanism, adjustable pitch angle within the 0 to 20° range. The dashboard is arranged on the right hand area and the right top area of the operating cab with scientific layout, which facilitates operation and provides a wider operating space in the cab. The two control levers are arranged on the armrest side of the operator's seat, which facilitate operation. The cab is designed based on ergonomic principle with large operating space as well as rational and artistic layout, which provides operators with safe and comfortable operating experience. A wiper and a scrubber are provided, and an air conditioner and a heater are provided in standard configuration.

3.10 Outriggers.

"H" type is adopted, both the fixed outriggers and the movable outriggers are of box structure and made from low-alloy high-strength steel plates. The level 1 horizontally movable outrigger adopts a horizontal cylinder to make it telescopic, and it has a wide span and good structural stability. The outrigger plate is installed on the head of the vertical cylinder and can move horizontally. The outrigger plate can be retracted during traveling, so as to prevent the overall length of the crane from exceeding the limit, and it can be easily extended during operation, which reduces operator's workload to a large extent. A locking pin is provided for locking the outrigger plate in fully extended position and fully retracted position. A manual control lever is provided for controlling the

outriggers simultaneously or separately from both sides of the chassis. Every vertical cylinder is installed with a two-way hydraulic lock, ensuring operation stability and reliability. Besides, the intermediately extended state is provided for the movable outriggers, which facilitate the operation of the crane in a small area.

3.11 Hydraulic system

The upper structure adopts electro-hydraulic proportional control together with computer integrated control, which provides comfortable operating experience and excellent fine movement control performance, and realizes combined actions. The hydraulic system is of an open-type variable system, which is featured by small hydraulic loss, high efficiency, high movement accuracy and excellent operating stability and reliability, and realizes stepless speed regulation. In addition, it can realize counterweight self-loading and unloading and cab pitch angle adjustment, providing better braking stability and higher system reliability.

3.12 Electrical system

The double wire system is adopted, and DC 24V power supply is used. The overall electrical system is composed of chassis electrical sub-system and upper structure electrical sub-system. The upper structure electrical sub-system adopts the data bus technology, which reduces the number of cables and connections, improves system reliability, and facilitates maintenance. The system comes with a maximum speed limit feature. The computer effectively monitors and displays the operating status and parameters in a real-time manner to facilitate data analysis and processing. The chassis electrical sub-system consists of the combined extension and retraction device, the air conditioner and the heater, which ensure excellent driving performance and conformable driving experience.

3.13 Safety features.

The crane is equipped with an automatic moment limiter, and the display and alarm devices are installed in the operating cab. When the lifting torque reaches 90% of the rated torque, a warning light activates, accompanied by a buzzer alarm. When reaching the rated torque, all movements towards the dangerous direction of the crane can stop

automatically. The digital LCD panel can display parameters including moment ratio, boom derricking angle, boom length, working range, actual lifting load, allowable lifting load and the maximum allowable lifting height as required.

The crane is equipped with the following safety devices to ensure operation safety.

- 1) Suspension height limiter
- 2) Hook locking device
- 3) Wire rope overfeeding protective device
- 4) Two-way hydraulic lock
- 5) Counterbalance valve
- 6) Overflow valve
- 7) Wireless counterweight control device

3.14 Air conditioning system and heating device.

For standard configuration, both the driving cab and the operating cab are equipped with an air conditioner and a heater.

3.15 Counterweight

Underslung movable combined counterweight boasts a fully combined weight of up to 31.3 tons (2x4.5 tons side weight is optional). The counterweight can vary depending on various working conditions.

The counterweight setup includes 1 piece of 1-ton fixed counterweight, 1 piece of 2.7-ton auxiliary counterweight, 1 piece of 3-ton upper movable counterweight, 1 piece of 2.5t middle movable counterweight I, 1 piece of 6.7-ton middle movable counterweight II, 1 piece of 6.4-ton bottom counterweight, and two 4.5x2 shared side counterweights, totaling 31.3 tons.

3.16 Traveling modes:

Mode 1: Total vehicle weight of 48 tons, featuring the main hook and 1-ton fixed counterweight, excluding the auxiliary arm and auxiliary hook; a single axle load of 12t; traveling at a speed of 80km/h.

Mode 2: Total vehicle weight of 58 tons, including the main hook, 1-ton fixed counterweight, auxiliary arm, 2.7-ton auxiliary counterweight, and 6.4-ton bottom movable counterweight; a single axle load of 14.5 tons; traveling at a speed of 80km/h.

Mode 3: Total vehicle weight of 66 tons, equipped with the main hook, 1-ton fixed counterweight, 2.7-ton auxiliary counterweight, 6.4t bottom movable counterweight, 2.5t middle movable counterweight I, and 6.7-ton middle movable counterweight II

4.Specifications of special chassis for crane

Chassis	Engine Engine Engine	Model	WP12.460E50
		Rated power kW/r/min	338/1900
		Max.torque output N.m/r/min	2110/1000~1400
		Manufacturer	Weichai Power Co., Ltd.
	Model	ZLJ5480JQZV7	
	Category	Category II	
	Identifier:	ZLJ5480JQZV7	
	Emissions of exhaust pollutants and smoke limits conform to	EU-V	
	Manufacturer	Zoomlion Heavy Industry Science & Technology Co., Ltd.	

For detailed specifications of special chassis for crane, please refer to the Technical Specifications for Chassis.