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KATO

SR250

Technical Data

KATO
ROUGH TERRAIN CRANE
25 TON LIFTING CAPACITY
MAIN BOOM 30.5 M

SPECIFICATION

Performance

Max. rated lifting capacity		25ton X 3.5m
Boom length		9.5m – 30.5m
Fly jib length		7.9m – 13m
Boom derricking angle		0° - 83°
Boom derricking time		54 sec (0° - 83°)
Boom extending time		70 sec (9.5m – 30.5m)
Hoisting line speed	Main winch	128m/min (at 4th layer)
	Aux. winch	112m/min (at 2nd layer)
Hoisting Hook speed	Main winch (8 Part-line)	16.0m/min (at 4th layer)
	Aux. winch (1 Part-line)	112.0m/min (at 2nd layer)
Slewing speed		2.5 rpm
Tail slewing radius		3.15m

Hydraulic equipment

Oil pump	4 pumps, plunger and gear type
Hoisting motor	Axial plunger type
Slewing motor	Axial plunger type
Cylinder	Double acting type
Control valve	Double acting with integral check and relief valves
Oil reservoir	450 liters

Equipment and structure

Boom extension / retraction equipment		Two hydraulic cylinders and wire ropes used together	
Boom derricking / lowering equipment		Two hydraulic cylinders of direct acting type with pressure-compensated flow control valve	
Winch system Main and auxiliary winches		Driven by axial plunger type hoisting motor through planetary gear reduction. Controlled independently by respective operating lever. Equipped with automatic brake.	
Slewing equipment		Ball bearing type	
Outriggers	Type	Hydraulic H / X beam type	
	Extension width	6,300mm	(Fully extended)
		5,100mm, 3,800mm	(Intermediately extended)
		2,200mm	(Fully retracted)
Wire rope		Main winch: Ø16mm X 175m, Auxiliary winch: Ø16mm X 95m	

Safety devices

ACS (Automatic Crane Stopper), with voice alarm
Boom falling prevention device
Overhoist prevention device
Drum lock device (on aux. winch)
Automatic winch brake
Irregular winding prevention device
Hydraulic safety valve
Outrigger lock device
Angle indicator
Slewing lock device

SPECIFICATION

Carrier

Max. traveling speed	49km/h
Gradeability (tan Θ)	0.6
Min. turning radius (center of extreme outer tire)	8.4m (2 wheel steer)
	5.0m (4 wheel steer)

General dimensions

Overall length	11,000mm
Overall width	2,620mm
Overall height	3,520mm
Wheel base	3,500mm
Treads (front & rear)	2,140mm
Center to center of extended outriggers	6,300mm (fully extended)
Gross vehicle weight	25,305kg
Passenger	2

Engine

Model	Mitsubishi 6D16T (turbo-charged)
Type	4 cycle, water-cooled, direct injection diesel engine
No. of cylinder	6
Displacement	7,545cc
Max. horsepower	220ps/2,800 rpm
Max. torque	65kg-m/1,600 rpm

Equipment & structure

Drive system	4 X 2 (4 X 4)
Torque convertor	Engine mounted 3 elements. 1 stage (with lock up clutch)
Transmission	Automatic & manual
Number of speed	4 forward & 2 reverse (with Hi-Low selector)
Axles	Planetary, drive/steer type (front & rear)
Suspension	Leaf spring equipped with hydraulic shock absorber and hydraulic locking device (front & rear)
Steering	Full hydraulic power steering with reverse steering correction mechanism Five steering modes available (with automatic rear wheel steering lock system) 1. Front wheel steer 2. 4-wheel coordinated steer 3. 4-wheel crab steer 4. Rear wheel steer Independent front and rear steer
Brake system	Service brake – Air-over hydraulic disk brake on 4 wheels (2 circuits). Equipped with service brake lock. Parking brake – Spring applied, electrically air released parking brake mounted on front axle, internal expanding type Auxiliary brake – Exhaust brake
Tires	16.00-25-28PR (OR) tubeless (front & rear)
Fuel tank capacity	300 liters

Safety devices

Emergency steering device
Brake fluid leak warning device
Suspension lock device
Service lock brake
Engine overrun alarm
Over-shift prevention device
Radiator coolant leakage warning device

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MAIN BOOM RATED LIFTING CAPACITY

Main boom : 9.5m ~ 30.5m

When outriggers are used

(Unit: ton)

Working Radius (m)	6.3m Outriggers fully extended (Over front & over rear)				5.1m Outriggers intermediately extended (Over side)				3.8m Outriggers intermediately extended (Over side)				2.2m Outriggers completely retracted (Blocked on vertical cylinders) (Over side)			
	9.5m Boom	16.5m Boom	23.5m Boom	30.5m Boom	9.5m Boom	16.5m Boom	23.5m Boom	30.5m Boom	9.5m Boom	16.5m Boom	23.5m Boom	30.5m Boom	9.5m Boom	16.5m Boom	23.5m Boom	30.5m Boom
2.5	25.00	18.00			25.00	18.00			25.00	18.00			12.00	11.60		
3.0	25.00	18.00	12.50		25.00	18.00	12.50		25.00	18.00	12.50		12.00	11.60	9.70	
3.5	25.00	18.00	12.50		25.00	18.00	12.50		20.00	18.00	12.50		9.35	8.95	9.70	
4.0	23.00	18.00	12.50	7.00	23.00	18.00	12.50	7.00	15.70	15.60	12.50	7.00	7.55	7.15	7.80	5.50
4.5	21.20	18.00	12.50	7.00	21.20	18.00	12.50	7.00	12.60	12.60	12.50	7.00	6.20	5.80	6.45	5.50
5.0	19.40	16.70	12.50	7.00	18.40	16.70	12.50	7.00	10.60	10.40	10.70	7.00	5.15	4.80	5.40	5.50
5.5	17.80	15.50	11.75	7.00	15.40	15.00	11.75	7.00	9.05	8.80	9.30	7.00	4.35	4.00	4.60	4.75
6.0	16.30	14.40	11.10	7.00	13.00	12.60	11.10	7.00	7.70	7.60	8.20	7.00	3.70	3.40	3.95	4.15
6.5	15.10	13.45	10.40	7.00	11.20	10.80	10.40	7.00	6.60	6.50	7.25	7.00	3.15	2.85	3.40	3.65
7.0		12.65	9.80	7.00		9.40	9.80	7.00		5.60	6.40	6.55		2.40	2.95	3.20
7.5		11.90	9.25	7.00		8.25	8.90	7.00		4.90	5.70	5.90		2.05	2.55	2.80
8.0		10.55	8.75	6.75		7.30	8.00	6.75		4.40	5.05	5.30		1.70	2.25	2.50
9.0		8.40	7.85	6.15		5.80	6.50	6.15		3.50	4.05	4.35		1.10	1.75	1.95
10.0		6.90	7.10	5.60		4.70	5.40	5.60		2.80	3.30	3.65		0.65	1.35	1.55
11.0		5.70	6.40	5.15		3.90	4.55	4.80		2.15	2.75	3.05			0.95	1.20
12.0		4.80	5.45	4.70		3.25	3.85	4.15		1.65	2.30	2.60				0.90
13.0		4.10	4.70	4.35		2.70	3.25	3.55		1.30	1.90	2.20				
13.5		3.80	4.40	4.20		2.50	3.05	3.30		1.10	1.75	2.00				
14.0			4.10	4.05			2.85	3.10			1.55	1.85				
15.0			3.60	3.80			2.45	2.70			1.30	1.55				
15.5			3.40	3.65			2.25	2.50			1.15	1.45				
16.0			3.15	3.45			2.10	2.35			1.00	1.30				
17.0			2.80	3.05			1.80	2.10			0.75	1.10				
18.0			2.45	2.70			1.50	1.80			0.55	0.90				
19.0			2.15	2.45			1.25	1.60			0.40	0.70				
20.0			1.90	2.20			1.05	1.40				0.55				
20.5			1.80	2.05				1.30								
21.0				1.95				1.20								
22.0				1.75				1.00								
24.0				1.40				0.70								
26.0				1.15				0.45								
27.5				0.95												
Critical angle	-	-	-	-	-	-	-	-	-	-	20°	40°	-	40°	53°	60°

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MAIN BOOM RATED LIFTING CAPACITY

Main boom : 9.5m ~ 30.5m

When outriggers are not used

(Unit: ton)

Working Radius (m)	Stationary on rubber						Pick & carry (less than 2km/h)					
	9.5m Boom		16.5m Boom		23.5m Boom		9.5m Boom		16.5m Boom		23.5m Boom	
	Over Front	360° full range	Over Front	360° full range	Over Front	360° full range	Over Front	360° full range	Over Front	360° full range	Over Front	360° full range
3.0	14.00	9.00	9.00	7.30			10.50	7.00	7.50	5.10		
3.5	14.00	7.60	9.00	7.30	6.50	4.50	10.50	6.20	7.50	5.10	5.50	3.20
4.0	12.50	6.30	9.00	5.85	6.50	4.50	9.50	5.30	7.50	4.90	5.50	3.20
4.5	10.90	5.20	9.00	4.75	6.50	4.50	8.70	4.40	7.50	3.95	5.50	3.20
5.0	9.55	4.30	8.20	4.00	6.50	4.30	7.70	3.60	7.00	3.30	5.50	3.20
5.5	8.30	3.60	7.40	3.30	6.05	3.70	6.80	3.00	6.20	2.70	5.15	3.10
6.0	7.20	3.00	6.60	2.80	5.65	3.20	5.90	2.50	5.50	2.30	4.80	2.70
6.5	6.25	2.50	5.90	2.35	5.25	2.75	5.10	2.10	4.90	1.90	4.45	2.30
7.0			5.25	1.95	4.85	2.40			4.35	1.60	4.15	2.00
8.0			4.10	1.35	4.10	1.80			3.40	1.00	3.50	1.50
9.0			3.25	0.85	3.50	1.40			2.70	0.60	2.95	1.10
10.0			2.60	0.45	3.00	1.05			2.10		2.45	0.75
11.0			2.10		2.55	0.75			1.65		2.05	0.55
12.0			1.70		2.20				1.30		1.70	
13.0			1.35		1.85				1.00		1.40	
14.0					1.50						1.15	
15.0					1.25						0.95	
16.0					1.00						0.75	
17.0					0.80						0.60	
18.0					0.60							
Critical angle	-	-	-	40°	-	53°	-	-	-	45°	30°	54°

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FLY JIB RATED LIFTING CAPACITY

Main boom : 30.5m, Power jib : 7.9m

6.3m Outriggers fully extended (Over front & over rear)							5.1m Outriggers intermediately extended (Over side)							3.8m Outriggers intermediately extended (Over side)						
Boom angle (°)	Offset 5°		Offset 25°		Offset 45°		Boom angle (°)	Offset 5°		Offset 25°		Offset 45°		Boom angle (°)	Offset 5°		Offset 25°		Offset 45°	
	W/R (m)*	Load (ton)	W/R (m)*	Load (ton)	W/R (m)*	Load (ton)		W/R (m)*	Load (ton)	W/R (m)*	Load (ton)	W/R (m)*	Load (ton)		W/R (m)*	Load (ton)	W/R (m)*	Load (ton)	W/R (m)*	Load (ton)
83.0	4.5	3.00	7.0	2.10	9.0	1.60	83.0	4.5	3.00	7.0	2.10	9.0	1.60	83.0	4.5	3.00	7.0	2.10	9.0	1.60
72.5	11.8	3.00	13.9	2.10	15.9	1.60	72.5	11.8	3.00	13.9	2.10	15.9	1.60	74.0	10.8	3.00	12.9	2.10	14.9	1.60
71.5	12.6	3.00	14.6	2.10	16.4	1.55	71.5	12.6	3.00	14.6	2.10	16.4	1.55	72.5	11.7	2.60	13.9	2.10	15.9	1.60
70.0	13.4	2.80	15.5	2.00	17.1	1.50	70.0	13.4	2.80	15.5	2.00	17.1	1.50	71.5	12.3	2.35	14.5	1.90	16.4	1.55
65.0	16.5	2.30	18.4	1.70	19.6	1.35	67.0	15.3	2.45	17.3	1.80	18.6	1.40	70.0	13.2	2.00	15.3	1.65	17.0	1.40
60.0	19.4	1.90	21.1	1.50	22.0	1.20	64.0	17.0	1.95	19.0	1.65	20.1	1.30	65.0	15.9	1.20	18.0	0.95	19.2	0.90
57.0	21.0	1.75	22.6	1.40	23.3	1.15	61.5	18.3	1.60	20.2	1.35	21.4	1.25	60.0	18.7	0.55	20.5	0.45	21.7	0.40
54.0	22.5	1.40	24.0	1.30	24.6	1.10	60.0	19.1	1.40	20.9	1.20	22.0	1.10	Critical angle	58°		58°		58°	
51.5	23.7	1.15	25.2	1.05	25.7	1.05	55.0	21.7	0.85	23.3	0.75	24.1	0.70							
50.0	24.4	1.05	25.9	0.95	26.3	0.95	50.0	24.1	0.45	25.5	0.40	26.0	0.40							
45.0	26.6	0.70	27.8	0.65	28.1	0.65	Critical angle	48°		48°		48°								
40.0	28.6	0.40	29.6	0.40																
Critical angle	37°		37°		42°															

*W/R – Working radius

Main boom : 30.5m, Power jib : 13.0m

6.3m Outriggers fully extended (Over front & over rear)							5.1m Outriggers intermediately extended (Over side)							3.8m Outriggers intermediately extended (Over side)						
Boom angle (°)	Offset 5°		Offset 25°		Offset 45°		Boom angle (°)	Offset 5°		Offset 25°		Offset 45°		Boom angle (°)	Offset 5°		Offset 25°		Offset 45°	
	W/R (m)*	Load (ton)	W/R (m)*	Load (ton)	W/R (m)*	Load (ton)		W/R (m)*	Load (ton)	W/R (m)*	Load (ton)	W/R (m)*	Load (ton)		W/R (m)*	Load (ton)	W/R (m)*	Load (ton)	W/R (m)*	Load (ton)
83.0	5.8	2.00	10.3	1.25	13.3	0.80	83.0	5.8	2.00	10.3	1.25	13.3	0.80	83.0	5.8	2.00	10.3	1.25	13.3	0.80
77.5	10.4	2.00	14.4	1.25	17.1	0.80	77.5	10.4	2.00	14.4	1.25	17.1	0.80	77.5	10.4	2.00	14.4	1.25	17.1	0.80
76.0	11.6	2.00	15.5	1.20	18.0	0.80	76.0	11.6	2.00	15.5	1.20	18.0	0.80	76.0	11.6	2.00	15.5	1.20	18.0	0.80
69.0	16.8	1.55	20.2	1.00	22.3	0.80	69.0	16.8	1.55	20.2	1.00	22.3	0.80	71.0	15.4	1.65	18.9	1.05	21.0	0.80
65.0	19.5	1.35	22.7	0.95	24.5	0.77	65.0	19.5	1.35	22.7	0.95	24.5	0.77	69.0	16.6	1.40	20.2	1.00	22.3	0.80
60.0	22.8	1.05	25.7	0.90	27.0	0.73	61.5	21.8	1.15	24.9	0.90	26.3	0.75	67.5	17.6	1.15	21.0	0.85	23.1	0.78
55.0	25.8	0.95	28.5	0.85	29.4	0.67	58.5	23.5	0.90	26.4	0.75	27.7	0.70	65.0	19.2	0.80	22.5	0.60	24.4	0.55
52.0	27.6	0.85	30.0	0.80	30.7	0.64	55.0	25.4	0.60	28.2	0.50	29.2	0.50	62.0	21.0	0.50	24.1	0.40		
50.0	28.6	0.75	31.0	0.65	31.5	0.62	53.0	26.5	0.45	29.1	0.40	30.1	0.40	Critical angle	60°		60°		63°	
47.5	29.8	0.60	32.0	0.55	32.4	0.60	Critical angle	51°		51°		51°								
45.0	31.0	0.50	33.0	0.45	33.2	0.45														
Critical angle	42°		42°		42°															

*W/R – Working radius

NOTES FOR THE LIFTING CAPACITY CHART

When the outriggers are used

1. The lifting capacity charts are based on the jib stowed on the boom side.
2. The lifting capacity charts indicates the maximum load which can be lifted by this crane provided it is level and standing on firm level ground. The values in the charts includes the mass of the main hook and slings for boom operation, and the auxiliary hook and slings for jib operation. [25 ton hook (mass: 230kg), 3 ton hook (mass: 60kg)]
   Within the chart the figures in the area bordered with a thick line are based on structural limitations while other figures are determined by stability limitations.
3. The working radii are the actual values allowing for boom and jib deflection. Therefore you must always operate the crane on the basis of the working radius.
4. The jib working radius is based on jib mounted on the end of the 30.5m boom. When operating at other boom lengths, use the boom angle alone as the criterion.
5. Do not operate the jib when the outriggers are completely retracted.
6. The lifting capacities for the over sides vary with the outrigger extension width. Therefore for each outrigger extension condition you should work according to the lifting capacity chart.
7. The lifting capacity of the rooster sheave is the lifting capacity of the boom minus the mass of all attached hook, slings etc. to the boom, with an upper limit of 3,000kg.
   [The hook use with rooster sheave is 25 ton hook (mass: 230kg) with one part-line.]
8. If the boom length, boom angle jib length, jib angle and/or working radius exceeds the rated value, use the lifting capacity for the rated value for the next one, whichever gives the smaller lifting capacity.
9. If you are working with the boom while the jib is rigged, subtract 1,400kg from the lifting capacity of the boom.
   Do not use the rooster sheave in this situation and do not operate the boom while the jib is rigged, when the outriggers are retracted.
10. In whatever working conditions, the corresponding boom critical angle is shown in the chart. The crane can tip over if the boom is lowered below the critical angle even if there is no load.
11. A standard part-line is indicated for each boom length and if you are working with a non-standard number of parts of line, do not exceed 3,125kg per wire rope respectively.

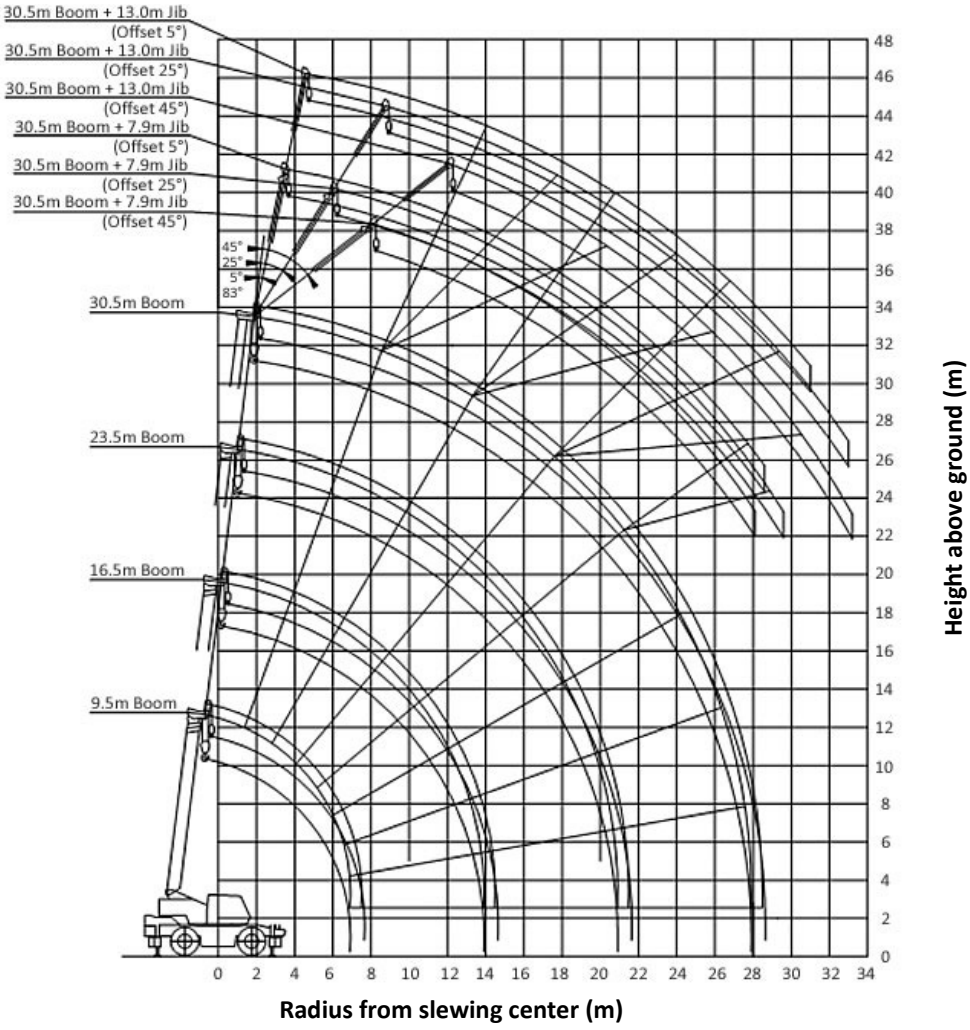
Boom length	9.5m	9.5m~16.5m	16.5m~30.5m	Jib / Rooster sheave
Part-line	8	6	4	1

12. Crane operation is permissible up to a wind speed of 10m/s.
    Even in relatively light wind conditions, extra care should be taken when handling loads presenting large wind catching areas.
13. Kato bears no liability whatsoever for damage, crane tipping or other accidents caused by crane operations which differ from the directions contained in the instruction manual and the warning labels.

When the outriggers are not used

1. The lifting capacity charts are based on the jib stowed on the boom side.
2. The lifting capacity chart indicates the maximum load the crane can lift when its body is level on firm level ground and with all tires inflated to the rated pressure and the suspension cylinder completely retracted. The values in the chart include the mass of the main hook and slings.
   Within the chart the figures in the area bordered with a thick line are based on structural limitations while other figures are determined by stability limitations.
   [Tire pressure: 7.75kg/cm^2]
3. The working radii are the actual values allowing for boom deflection. Therefore you must always operate the crane on the basis of the working radius.
4. The lifting capacity differs between the front area capacity and the full range capacity. When slewing from the front to the side, make sure that the crane is not overloaded.
5. The lifting capacity of the rooster sheave is the lifting capacity of the boom minus the mass of the 25 ton hook (230kg), with an upper limit of 3,000kg.
6. Do not work with the jib or with a boom length of more than 23.5m.
7. For stationary crane-on-rubber operation, the parking brake and service brake lock device must be engaged.
8. For pick and carry operation, the super-slow speed switch must be switched to “ON” and the shift lever set to speed 1.
9. For pick and carry operation, lower the load to just above the ground and keep your speed strictly below 2km/h to avoid the load from swinging.
10. Never operate the crane during pick and carry operation. The slewing brake must be applied.
11. If the boom length or working radius exceeds the rated value, use the lifting capacity for the rated value or for the next one, whichever gives the smaller lifting capacity.
12. In whatever working conditions, the corresponding boom critical angle is shown in the chart. The crane can tip over if the boom is lowered below the critical angle even if there is no load.
13. A standard part-line is indicated for each boom length and if you are working with a non-standard number of parts of line, do not exceed 3,800kg per wire rope respectively.
14. Crane operation is permissible up to a wind speed of 10m/s.
    Even in relatively light wind conditions, extra care should be taken when handling loads presenting large wind catching areas.
15. Kato bears no liability whatsoever for damage, crane tipping or other accidents caused by crane operations which differ from the directions contained in the instruction manual and the warning labels.

WORKING RANGE

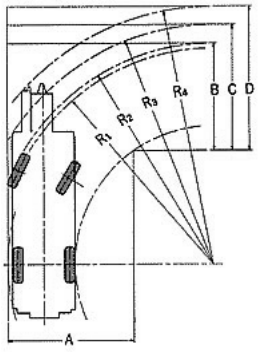


NOTE

1. This diagram does not include deflection of boom and fly jib.
2. The outriggers are extended (over front)

MINIMUN PATH WIDTH

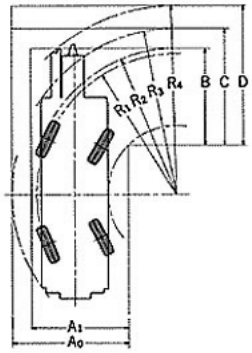
Right turn in two-wheel steering mode



R_1=8.40m (Minimum turning radius)
R_2=8.60m (Turning radius of extremely outer tyre)
R_3=9.40m (Chassis turning radius)
R_4=11.30m (Boom end turning radius)

A=4.65m (Width of entrance)
B=4.65m (Width of wheel exit)
C=5.40m (Width of chassis exit)
D=7.35m (Width of exit at end of boom)

Right turn in four-wheel steering mode

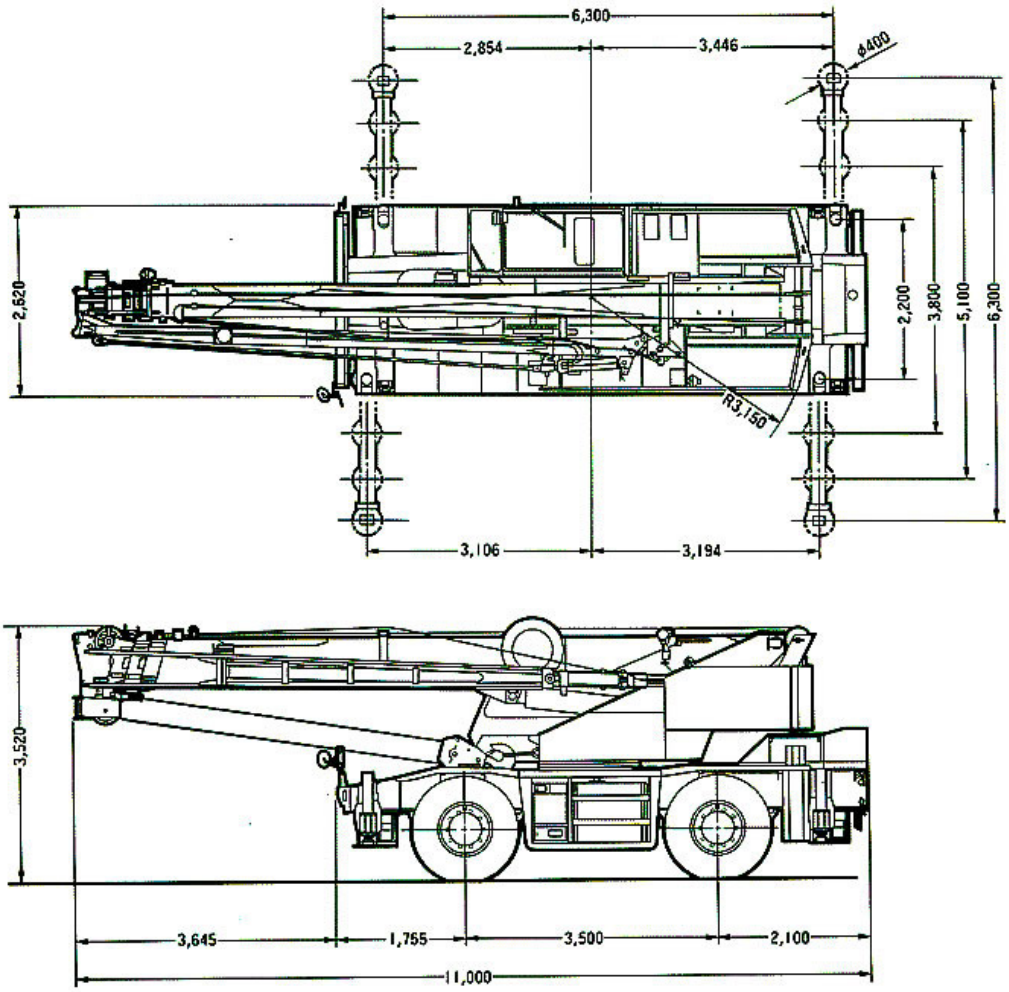


R_1=5.00m (Minimum turning radius)
R_2=5.20m (Turning radius of extremely outer tyre)
R_3=6.10m (Chassis turning radius)
R_4=8.20m (Boom end turning radius)

A_0=4.40m (Width of chassis entrance)
A_1=3.70m (Width of wheel entrance)
B=3.70m (Width of wheel exit)
C=4.40m (Width of chassis exit)
D=6.70m (Width of exit at end of boom)

Note: The above values are based on calculations.

DIMENSIONS



Ratio: 1 / 100 (Unit: mm)