KATO

KR-250

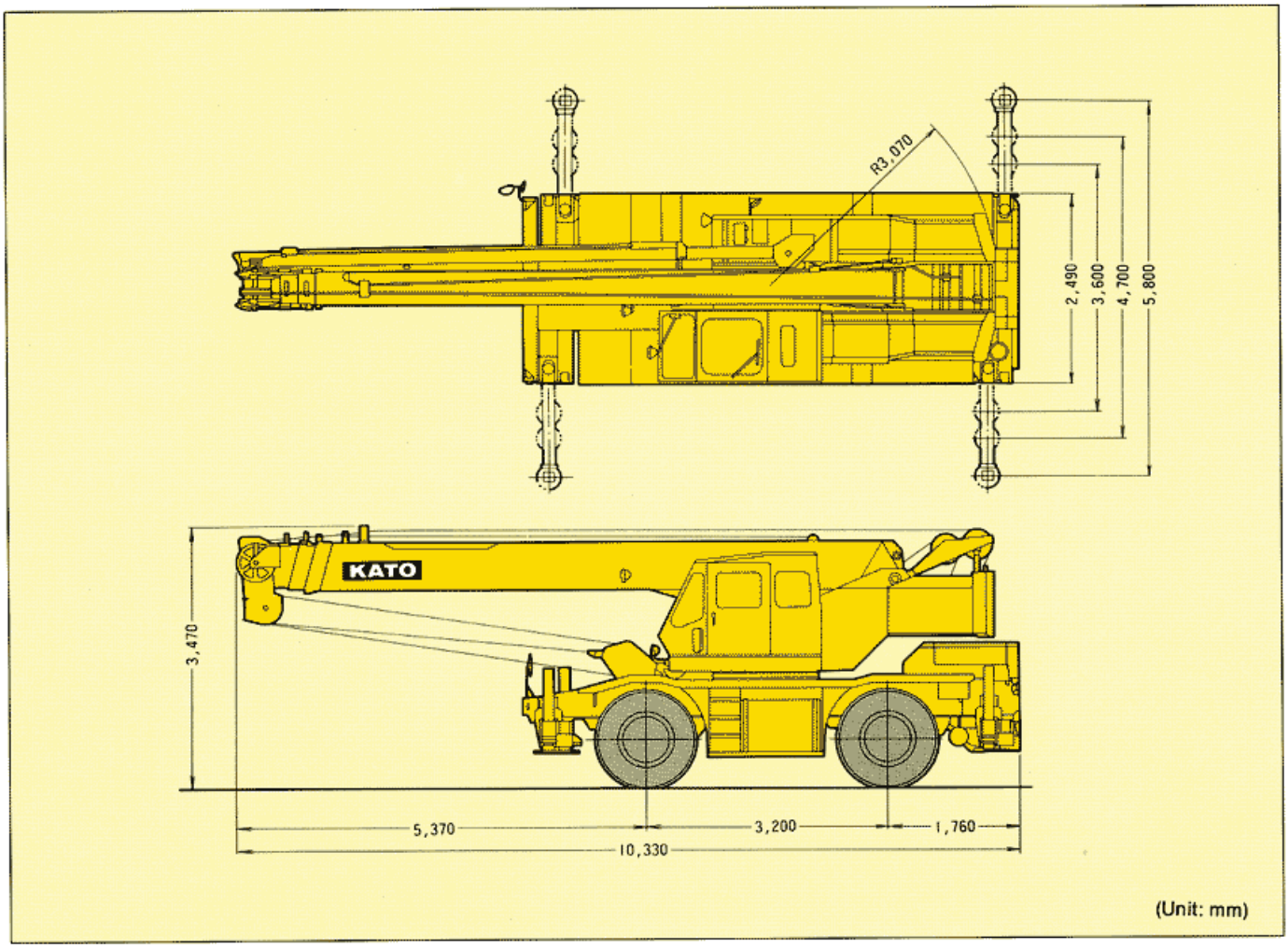
Rough Terrain Crane

ROUGHTERR

SPECIFICATION

KATO WORKS CO..LTD.

DIMENSIONS



(Unit: mm)

CRANE SPECIFICATIONS

Name	KATO ROUGHTER (ROUGH TERRAIN CRANE)
Model	KATO KR-250
• Performance	
Maximum rated lifting capacity	25 metric tons × 3.0 m
Boom length	8.4 m ~ 26.7 m (4 sections)
Fly jib length	7 m
Boom derricking angle	0° ~ 80°
Boom derricking time	34 sec. (0° ~ 80°)
Boom extending time	85 sec. (8.4 m ~ 26.7 m)
Hoisting line speed Main winch Auxiliary winch	 High 110 m/min. (at 3rd layer) Low 53 m/min. (at 3rd layer) High 102 m/min. (at 2nd layer) Low 49 m/min. (at 2nd layer)
Hoisting hook speed Main winch (parts of line: 8) Auxiliary winch (parts of line: 1)	 High 13.75 m/min. (at 3rd layer) Low 6.62 m/min. (at 3rd layer) High 102 m/min. (at 2nd layer) Low 49 m/min. (at 2nd layer)
Slewing speed	3.5 r.p.m.
Wire rope for hoisting Main winch: Type Diameter Length	 4 × F (a + 39) 16 mm 160 m
Auxiliary winch: Type Diameter Length	 4 × F (a + 39) 16 mm 105 m (75 m for the right side cab)

Hydraulic system Oil pump	 4 pumps, gear and axial plunger type
Hoisting motor	Axial plunger type
Slewing motor	Axial plunger type
Cylinder	Double acting type
Control valve	4 way double acting with integral check and relief valves
Oil reservoir capacity	400 lit.
Winch system Main winch Auxiliary winch	 Driven by axial plunger type hoisting motor through built-in gear reduction. Controlled independently by respective operating lever. Equipped with automatic brake with free fall device
• Safety devices	
	ACS (Automatic Crane Stopper) (Digital display of seven factors: Safety level, boom angle, working radius, boom length, critical load, actual load, maximum hook lift) Boom falling prevention device Overhoist prevention device Drum lock device Automatic winch brake Irregular winding prevention device Hydraulic safety valve Outrigger lock device Slewing lock device
• Optional equipment	
	Voice alarm device for ACS moment limiter Heater Cooler Defroster Oil cooler

*Note: Various speeds above mentioned are subject to no load.

• 8.4m ~ 26.7m Boom

26.7m Boom + 7m jib
(Offset 5°)

26.7m Boom + 7m jib
(Offset 17°)

26.7m Boom + 7m jib
(Offset 30°)

RATED LIFTING CAPACITY

Based on * BS 1757:1981 * DIN 15019-2 * 75% of tipping loads

Working radius (m)	With fully extended outriggers 360° full range				With intermittently extended outriggers (4.7m) over side			
	8.4 m Boom	14.5 m Boom	20.6 m Boom	26.7 m Boom	8.4 m Boom	14.5 m Boom	20.6 m Boom	26.7 m Boom
2.5	25.00	16.00			25.00	16.00		
3.0	25.00	16.00			25.00	16.00		
3.5	20.00	16.00	9.00		20.00	16.00	9.00	
4.0	18.50	15.50	9.00		18.50	15.50	9.00	
4.5	16.50	14.20	9.00	6.80	16.50	14.20	9.00	6.80
5.0	15.00	13.10	9.00	6.80	15.00	13.10	9.00	6.80
5.5	13.70	12.10	9.00	6.80	12.30	12.10	9.00	6.80
6.0	12.50	11.20	9.00	6.80	10.40	10.00	9.00	6.80
6.5	11.50	10.40	8.50	6.80	8.70	8.50	8.50	6.80
7.0		9.70	8.00	6.80		7.40	8.00	6.80
8.0		8.15	7.10	6.10		5.70	6.25	5.90
9.0		6.45	6.40	5.50		4.55	5.05	5.30
10.0		5.25	5.80	5.00		3.70	4.15	4.40
12.0		3.65	4.15	4.20		2.45	2.95	3.20
14.0			3.05	3.30			2.10	2.35
16.0			2.30	2.55			1.50	1.70
18.0			1.75	1.95			1.05	1.25
20.0				1.50				0.90
22.0				1.20				0.65
24.0				0.90				0.45
25.0				0.80				
Critical boom angle	–	–	–	–	–	–	–	–

(Unit: Metric ton)

JIB RATED LIFTING CAPACITY

■ 26.7m Boom + 7m Jib

Boom angle (°)	With fully extended outriggers 360° full range					
	offset 5°		offset 17°		offset 30°	
	Working radius (m)	Load	Working radius (m)	Load	Working radius (m)	Load
80.0	6.2	3.00	7.5	2.40	8.8	2.00
75.0	9.4	3.00	10.5	2.40	11.7	2.00
73.0	10.6	3.00	11.5	2.40	12.8	2.00
70.5	12.0	3.00	13.0	2.40	14.0	2.00
65.0	14.9	2.40	15.8	2.00	16.8	1.75
60.0	17.4	2.00	18.2	1.75	19.2	1.60
55.0	19.8	1.75	20.5	1.55	21.3	1.50
53.0	20.7	1.55	21.4	1.50	22.1	1.35
50.0	21.9	1.35	22.7	1.30	23.2	1.20
45.0	23.8	1.05	24.5	1.05	25.0	0.95
40.0	25.6	0.80	26.2	0.80	26.6	0.75
35.0	27.2	0.65	27.7	0.62	27.9	0.60
30.0	28.6	0.50	29.0	0.50	29.0	0.45
25.0	29.8	0.41	30.0	0.40		
23.6	30.0	0.40				
Critical boom angle	–		–		–	

(Unit: Metric ton)

RATED LIFTING CAPACITY

Working radius (m)	With intermittently extended outriggers (3.6 m) over side				With retracted outriggers (blocked on vertical cyls.) over-side			
	8.4 m Boom	14.5 m Boom	20.6 m Boom	26.7 m Boom	8.4 m Boom	14.5 m Boom	20.6 m Boom	26.7 m Boom
2.5	25.00	16.00			10.50	9.50		
3.0	20.00	16.00			10.50	9.50	6.50	
3.5	18.80	16.00	9.00		8.20	7.60	6.50	
4.0	14.50	13.60	9.00		6.50	6.10	6.50	4.00
4.5	11.50	11.10	9.00	6.80	5.35	4.90	5.50	4.00
5.0	9.50	9.10	9.00	6.80	4.45	4.10	4.60	4.00
5.5	8.00	7.65	8.10	6.80	3.75	3.40	3.90	4.00
6.0	6.90	6.50	7.00	6.80	3.20	2.85	3.30	3.50
6.5	6.00	5.60	6.15	6.30	2.70	2.40	2.85	3.05
7.0		4.85	5.40	5.60		2.05	2.50	2.65
8.0		3.75	4.25	4.50		1.40	1.85	2.10
9.0		2.90	3.40	3.60		0.90	1.40	1.65
10.0		2.25	2.75	3.00		0.55	1.05	1.30
11,0		1.75	2.25	2.45			0.75	1.00
12.0		1.35	1.80	2.05				0.75
13.0			1.50	1.70				
14.0			1.20	1.40				
15.0			0.95	1.15				
16.0			0.75	0.95				
17.0			0.55	0.75				
18.0				0.60				
19.0				0.45				
Critical boom angle	–	–	–	35°	–	33°	50°	58°

(Unit: Metric ton)

JIB RATED LIFTING CAPACITY

■ 26.7m Boom + 7m Jib

Boom angle (°)	With intermittently extended outriggers (3.6 m) over side					
	offset 5°		offset 17°		offset 30°	
	Working radius (m)	Load	Working radius (m)	Load	Working radius (m)	Load
80.0	6.2	3.00	7.5	2.40	8.8	2.00
75.0	9.4	3.00	10.0	2.40	11.7	2.00
70.5	12.0	3.00	13.0	2.40	14.0	2.00
66.5	14.1	2.55	15.0	2.10	16.1	1.95
63.5	15.5	2.10	16.5	1.90	17.6	1.70
60.0	17.2	1.65	18.2	1.55	19.2	1.40
55.0	19.6	1.15	20.5	1.10	21.2	1.05
50.0	21.7	0.85	22.6	0.80	23.1	0.75
45.0	23.6	0.60	24.5	0.55	24.9	0.55
40.0	25.4	0.40	25.9	0.40	26.4	0.40
Critical boom angle	30°		30°		30°	

(Unit: Metric ton)

JIB RATED LIFTING CAPACITY

■ 26.7m Boom + 7m Jib

Boom angle (°)	With intermittently extended outriggers (3.6 m) over side					
	offset 5°		offset 17°		offset 30°	
	Working radius (m)	Load	Working radius (m)	Load	Working radius (m)	Load
80.0	6.2	3.00	7.5	2.40	8.8	2.00
75.0	9.4	3.00	10.5	2.40	11.7	2.00
73.5	10.4	3.00	11.3	2.40	12.5	2.00
72.0	11.1	2.65	12.2	2.40	13.3	2.00
71.0	11.6	2.45	12.7	2.20	13.8	2.00
68.0	13.0	1.95	14.2	1.75	15.3	1.55
65.0	14.6	1.50	15.6	1.40	16.7	1.25
60.0	16.8	1.00	18.0	0.90	18.9	0.85
55.0	19.3	0.60	20.2	0.55	21.1	0.50
53.0	20.0	0.50	21.0	0.45	21.9	0.40
Critical boom angle	48°		48°		48°	

(Unit: Metric ton)

■ STATIONARY ON RUBBER
RATED LIFTING CAPACITY

Working radius (m)	8.4m Boom		14.5m Boom		20.6m Boom		26.7m Boom	
	Over front	360° full range	Over front	360° full range	Over front	360° full range	Over front	360° full range
3.0	12.20	8.20	8.70	7.20				
3.5	10.70	7.20	8.70	7.00				
4.0	10.00	5.90	8.70	5.60	6.20	4.50		
4.5	8.80	4.80	8.00	4.50	6.20	4.50		
5.0	7.75	3.90	7.20	3.70	6.20	4.10	4.00	2.70
5.5	6.90	3.30	6.40	3.10	5.70	3.50	4.00	2.70
6.0	6.10	2.80	5.65	2.60	5.30	3.00	4.00	2.70
6.5	5.20	2.40	4.90	2.15	4.85	2.60	4.00	2.70
7.0			4.30	1.80	4.50	2.25	3.80	2.40
8.0			3.30	1.25	3.75	1.70	3.35	1.80
9.0			2.55	0.80	3.00	1.25	2.95	1.35
10.0			2.05	0.45	2.45	0.90	2.50	1.05
11.0			1.60		2.00	0.60	2.15	0.75
12.0			1.25		1.60		1.85	
13.0					1.30		1.55	
14.0					1.10		1.30	
15.0					0.85		1.10	
16.0					0.65		0.90	
17.0					0.50		0.75	
18.0							0.55	
Critical boom angle	–	–	–	33°	–	50°	35°	60°

(Unit: Metric ton)

■ PICK & CARRY (Traveling speed max. 2km/h)
RATED LIFTING CAPACITY

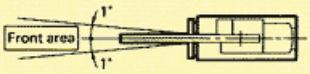
Working radius (m)	8.4m Boom		14.5m Boom		20.6m Boom		26.7m Boom	
	Over front	360° full range	Over front	360° full range	Over front	360° full range	Over front	360° full range
3.0	8.50	6.00	6.60	5.00				
3.5	8.25	5.00	6.60	4.80		3.20		
4.0	8.00	4.30	6.60	4.10	5.00	3.20		
4.5	6.80	3.60	6.00	3.40	5.00	3.20		
5.0	5.80	3.00	5.30	2.80	5.00	3.20	2.80	1.85
5.5	5.00	2.50	4.75	2.30	4.70	2.70	2.80	1.85
6.0	4.50	2.05	4.30	1.90	4.30	2.30	2.80	1.85
6.5	4.00	1.70	3.80	1.60	3.90	2.00	2.80	1.85
7.0			3.40	1.30	3.60	1.70	2.70	1.70
8.0			2.65	0.85	3.00	1.25	2.35	1.35
9.0			2.10		2.45	0.90	2.15	1.05
10.0			1.65		2.00	0.65	2.00	0.75
11.0			1.30		1.65		1.70	
12.0			1.00		1.35		1.45	
13.0					1.10		1.20	
14.0					0.90		1.05	
15.0					0.70		0.90	
16.0					0.55		0.75	
Critical boom angle	–	–	–	45°	25°	53°	45°	62°

(Unit: Metric ton)

– ON RUBBER –

1.) The rated lifting capacities are the load guaranteed when the ground surface is good, specified tire pressure is maintained and spring lock cylinders are fully retracted.
Specified tire pressure: 8.0 kg/cm^2 (14.00–24–24 PR)

2.) Rated lifting capacities in front area (2° arc) are different from those for full working area (360°arc).
Great care should be taken when transferring from over front to over side since there is a danger of overloading.



3.) For on rubber lifting, jib operation and free fall operation are not permitted.

4.) Apply the parking brake while crane is operating stationary on rubber.

5.) Push the Hi-Lo switch before Pick & Carry operation to insure low range speed.

6.) In Pick & Carry operation, move less than 2 km/h and keep the lifting load close to the ground.
Especially avoid abrupt steering, accelerating and braking so as to swing the lifting load.

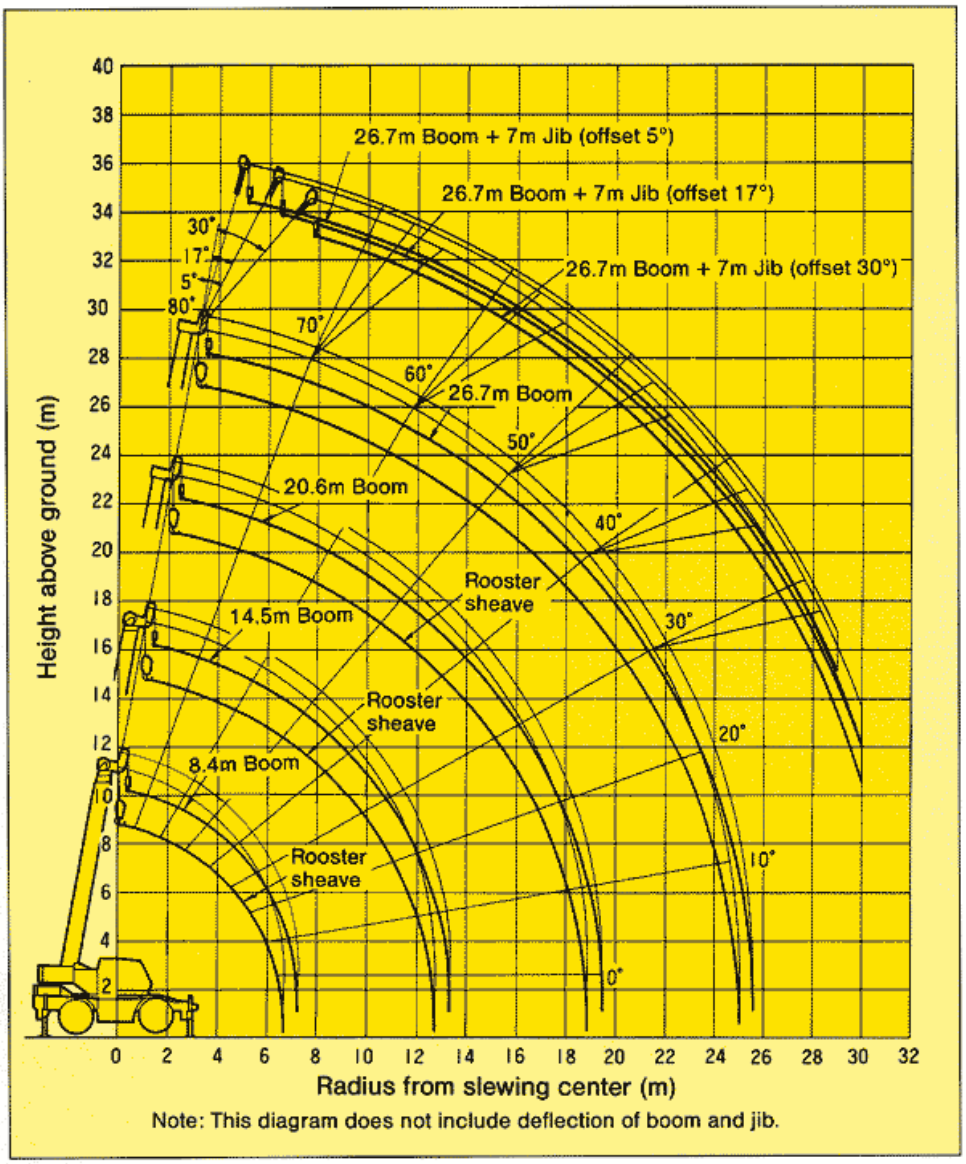
7.) Do not operate crane functions while carrying the load.

8.) Critical boom angles for each boom length are shown on bottom-most line of lifting capacity table.
If the boom angle is lowered to less than the critical boom angle, the machine will tip over without load. Therefore, never lower the boom below these angles.

9.) The rated lifting capacities for rooster sheave are equivalent to the rated lifting capacities for the main boom to a maximum of 3000 kg.
At all times the weight of all lifting equipment in use (including main hook block suspended from boom head) forms part of load and must be subtracted from the rated lifting capacity.

10.) Besides these cautions as shown above, conform to items 1, 2, 4 and 6 of cautions for "ON OUTRIGGERS".

WORKING RANGE



Note: This diagram does not include deflection of boom and jib.

NOTE:

– ON OUTRIGGERS –

1.) The rated lifting capacities are the maximum load guaranteed on a firm level ground and include the weight of hook block and other lifting equipment. The capacities enclosed with bold lines are based on the structural strength of machine and the others are based on the stability of machine.

Hook	for 25 ton	for 3 ton
Weight (kg)	250	60

2.) The working radii as given in the table are the actual values including the deflection of the boom. Therefore, operate the machine based on the working radius. However, the working radii shown for jib operations are based on the values obtained when the boom is fully extended (26.7 m).
Jib operations should be performed on the basis of boom angle only, regardless of boom length when the boom is not fully extended.

3.) Critical boom angles for each boom length are shown on bottom-most line of lifting capacity table.
If the boom angle is lowered to less than the critical boom angle, the machine will tip over without load. Therefore, never lower the boom below these angles.

4.) If the boom length exceeds the specified value, the rated lifting capacities for the boom length above and below the present boom length should be referred to, and the crane should be operated within the smaller lifting capacity.

5.) When using the main boom with the jib installed, 500 kg plus the weight of hook block and other lifting equipment, etc., should be subtracted from the rated lifting capacities. When performing the above operation, do not use the rooster sheave.

6.) The standard number of parts of line is shown in the table below. When the standard number of parts of line is not used, the minimum number of parts of line is determined so that weight per part will not exceed 3,125 kg.

Boom length	8.4m~14.5m	14.5m~26.7m	Jib, Rooster sheave
Parts of line	8	4	1

7.) The rated lifting capacities for the rooster sheave are equivalent to the rated lifting capacities for the main boom to a maximum of 3000 kg.
At all times the weight of all lifting equipment in use (including main hook block suspended from boom head) forms part of load and must be subtracted from the rated lifting capacity.

8.) Outrigger extended width center to center is 5.8m at maximum stroke and 4.7m and 3.6m at intermittent stroke.

9. Lifting capacities over side vary with outrigger width extended. Operation must be carried out according to the lifting capacity table based on the corresponding outrigger width.
Lifting capacities over front/rear are equal to those with outriggers fully extended.

10.) Free fall is adopted in principle to lower the hook only. If it is necessary to lower a load by free fall, its weight should be less than 20% of the rated lifting capacity and abrupt braking should not be allowed.

CHUNJO

KR-250 Rough Terrain Crane

ROUGHTERR

CARRIER SPECIFICATIONS

Drive system		4 × 4
Maximum traveling speed		57 km/h
Gradeability (tan θ)		60 % (computed @G.V.W. = 25,200 kg)
Minimum turning radius (center of extreme outer tire)		4.9 m (4-wheel steer) 8.5 m (2-wheel steer)
• General dimensions		
Overall length		approx. 10,330 mm
Overall width		approx. 2,490 mm
Overall height		approx. 3,470 mm
Wheel base		3,200 mm
Treads;	Front	2,060 mm
	Rear	2,060 mm
Center to center of extended outriggers		5,800 mm (Fully extended)
Gross vehicle weight		approx. 22,960 kg
Front		approx. 11,440 kg
Rear		approx. 11,520 kg
• Engine		
Maker		Mitsubishi
Model		6D14T (Turbo-charger)
Type		4 cycle, water cooled, diesel
No. of cylinder		6
Piston displacement		6,557 cc
Max. output horsepower		185 PS/2,800 r.p.m. 136 KW/2,800 r.p.m.
Max. output torque		57 kg·m/1,600 r.p.m. 558.6 N·m/1,600 r.p.m.

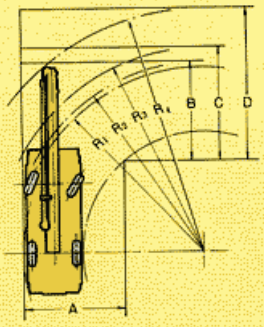
NOTE: The output is in accordance with JIS D1004, 1956. Rated power output is guaranteed within 5% at standard ambient condition.

Torque converter		Engine mounted 3 elements 1 stage (with lock up clutch)
Transmission		Remote mounted full powershift with rear axle disconnect 6 forward & 6 reverse speed
Axle:	Front	Planetary drive/steer type
	Rear	Planetary drive/steer type, with no-spin differential
Suspension: Front & Rear		Semi-elliptic leaf spring equipped with hydraulic shock absorbers and hydraulic locking device
Steering		Full hydraulic power steering. Three steering modes available 1. Front wheel steer 2. 4-wheel coordinated steer 3. 4-wheel crab steer
• Brakes		
Service brake		Air-over hydraulic disk brake on 4 wheels (2 circuits)
Parking brake		Spring applied, electrically air released cab-controlled parking brake mounted on front axle, internal expanding type
Electric system		24 V
Battery		12V – 120AH × 2
Fuel tank capacity		250 lit.
Driver's cab		All steel welded construction, 1 person (2 seats: optional)
Tire size:	Front	14.00–24–24 PR (OR)
	Rear	14.00–24–24 PR (OR)

NOTE: Spare tire is not mounted on the machine.

■ Minimum Road Width for Right-Angle Turn

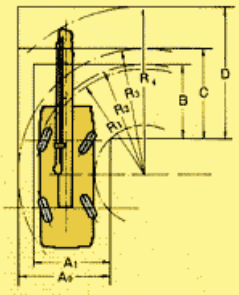
• Right turn in 2-wheel steering mode



$R_1 = 8.5$ m (Minimum turning radius)
$R_2 = 8.7$ m (Turning radius of extremely outer tire)
$R_3 = 9.25$ m (Chassis turning radius)
$R_4 = 11.25$ m (Boom end turning radius)

A = 4.55 m (Width of entrance)
B = 4.55 m (Width of wheel exit)
C = 5.1 m (Width of chassis exit)
D = 7.1 m (Width of exit at end of boom)

• Right turn in 4-wheel steering mode



$R_1 = 4.9$ m (Minimum turning radius)
$R_2 = 5.1$ m (Turning radius of extremely outer tire)
$R_3 = 5.85$ m (Chassis turning radius)
$R_4 = 8.1$ m (Boom end turning radius)

$A_0 = 4.2$ m (Width of entrance)
$A_1 = 3.45$ m (Width of wheel entrance)
B = 3.45 m (Width of wheel exit)
C = 4.2 m (Width of chassis exit)
D = 6.4 m (Width of exit at end of boom)

Note: The above values are based on calculations.

NOTE: Illustrations may include optional eqiupment. KATO products and specifications are subject to improvements and changes without notice.

KATO
QUALITY & EXPERIENCE SINCE 1895

KATO WORKS CO.,LTD.

9-37, Higashi-ohi 1-chome, Shinagawa-ku, Tokyo, 140 Japan
Phone : Head Office Tokyo (03) 458-1111
Export Dept. Tokyo (03) 458-1115
Telex : 222-4519 (CRKATO J)
Facsimile : Tokyo (03) 458-1152
Cable : CRANEKATO TOKYO

LCKR-250-1-KEX
881203(Ho) Printed in Japan