

KOBELCO

ROUGH TERRAIN CRANE

RK450



Max. lifting capacity: 45 metric tons \times 3.5 meters

Max. total length (boom + jib): 47.9 meters

SPECIFICATIONS

Specifications

UPPER STRUCTURE



SWING UNIT

A hydraulic piston motor drives the swing pinion through a deck-mounted planetary gear reducer for 360° continuous rotation.

Hydraulic flow into the swing motor is controlled by a manual valve in the swing circuit. The brake valve allows the operator to select free or automatic braking when the swing control lever is set in neutral.

SWING PARKING BRAKE

Manual disc brake.

SWING GEAR

Internal spur gear.

SLEWING RING

Integral with the swing gear, with a single row of ball bearings.



WINCHES

Mounted side by side. Power raising and lowering with inching capability, and free fall. Hydraulic motor drive, spur gear reduction, and automatic fail-safe brake.

CLUTCHES

Internal-expanding, hydraulic shoe type.

BRAKES

Band type, with positive and negative brake modes.

DRUMS

360mm P.C.D., with 630mm diameter flanges. Width: 446.3mm (main) and 294.3mm (auxiliary).

HOIST CABLES

IWRC1 x Fi (22+7) c/o spin-resist cable. Diameter: 18mm. Length: 175m (main) and 120m (auxiliary). U4 x Sec (39) non-spin cable optionally available.

BOOM HOIST

Double-acting hydraulic cylinder with holding valve, inching device, and boom angle indicator mounted on the base boom section.



BOOM TELESCOPE

Full power telescoping by two hydraulic cylinders with holding valves and telescoping assistance cables for the boom tip section.

CONTROLS

Five adjustable hand control levers for swing, telescope, main winch, auxiliary winch, and boom hoist (with pedal). These can be tilted in three neutral positions and stored in their bases when not in use. Other controls include: two short levers for main and auxiliary winch clutches and negative brake ON-OFF; one short lever for swing parking brake; one lever for telescope change over; one lever for transmission gear selection; swing lock pin; winch drum lock knobs; two pedals for main and auxiliary winch drum brakes; one pedal for engine throttle control; and one travel brake pedal.



OPERATOR'S CAB

All-weather, wide-view cab with safety glass, sliding door, roll-down window, and sliding roof window with wiper. Adjustable driver's seat with seat belt. Optional auxiliary seat behind driver's seat is available.

SAFETY DEVICES (Standard)

Overhoist alarm buzzer, relief valves in hydraulic circuits, holding valves for boom hoist and telescope cylinders, counterbalance valve for winch motor, Check and Safety Monitor, overload warning device (automatic shut-off), winch drum locks, swing brake lock pin, lock valves for vertical cylinders on outriggers, emergency steering system, about-face steering compensator valve, axle lock-up valve, and swing indicator lamps.

HYDRAULIC SYSTEM



PUMPS

Four gear pumps and a single variable plunger pump deliver power to the upper structure and outriggers. The first and second pumps (gear and plunger, respectively) are paired and driven by power take-off. The third and fourth pumps are paired and directly driven. The first pump actuates the boom hoist, boom telescope, and winch assist; the second pump actuates the outriggers, swing, and axle-lock cylinder; the third pump actuates the winch, steering, and suspension systems; the fourth pump actuates the pilot circuits for the clutches and negative brake cylinders, steering assist, the optional cab air conditioner. The fifth pump regulates hydraulic flow to the third pump.

MOTORS

Three plunger motors power the main hoist, the auxiliary hoist, and the swing, respectively.

CONTROL VALVES

Upper

One 5-stack set for the winch, boom telescope, and boom hoist; one 2-stack set for the clutch and brake; one 1-stack set for the swing.

Lower

Six solenoid valves for the outriggers and axle lock; one 3-stack set for steering.

OIL RESERVOIR

Capacity..... 595 liters



EQUIPMENT (Standard)

Radio, windshield wiper/washer, cigarette lighter, ashtray, sun visor, floor mat, engine tachometer, tachograph, engine hourmeter, engine over running alarm, air supply valve, paper-element air cleaner, two working lights, horn, outrigger sight level bubble, load centering button on winch lever (braked swing mode only), towing hooks (one front, two rear).

EQUIPMENT (Optional)

Cab heater/defroster, air conditioner, oil cooler for hydraulic system and ladder for jib mounting.

CARRIER

TYPE

4-wheel drive (4 × 4), with 2-wheel (4 × 2) drive select for high speed mode.

FRAME

Welded box structure of high tensile strength steel.



OUTRIGGERS

KOBELCO hydraulic H-type outriggers. Eight double-acting hydraulic cylinders provide independent horizontal and vertical movement for each outrigger. Outriggers can be set from inside the cab or at the side of the carrier.



POWER PLANT

Mitsubishi 6D22TC intercooled, turbocharged, water-cooled diesel engine with 4 cycles, 6 cylinders, and direct injection.

Max. output (JIS)..... 320 PS at 2,200 rpm

Max. torque (JIS)..... 118 kg·m at 1,400 rpm

ELECTRICAL SYSTEM

24-volt DC system with two 12-volt, 150 Ah batteries

FUEL TANK

Capacity..... 300 liters

TORQUE CONVERTER

Single-stage, torque converter with automatically controlled lock-up clutch.

TRANSMISSION

8-speed power shift with high-low range. The transmission shifts to automatic drive when the D range is engaged in the high mode.

Gear ratios (forward and reverse):

Low mode: 1st—6.00; 2nd—3.82; D—1.91; R—6.00

High mode: 1st—1.96; 2nd—1.25; D—0.62; R—1.96

BRAKES

Service: Air-over hydraulic disc brakes on all wheels; dual caliper on front wheels and single caliper on rear wheels. Parking: Spring-applied, air-released shoe brake on the output shaft of the transmission.



STEERING

“Orbitrol” hydraulic steering with emergency system. Four steering modes are provided: normal, cramp, crab, and rear. Adjustable steering wheel.

About-Face Steering Compensator

An about-face steering compensator makes it possible to travel in reverse with the same handling characteristics as forward travel in all but the crab mode. The compensator is activated by a reverse steer switch on the front panel.

SUSPENSION

Front and rear axles are fitted with leaf springs with axle lock-up cylinders that act as shock absorbers.

FRONT/REAR AXLES

Fully floating drive-steer type axles. Standard non-spin differential on rear axle.

AXLE LOADINGS

Gross Vehicle Weight: 36,670 kg; (36,780 kg with operator)

Front: 18,320 kg; (18,390 kg with operator)

Rear: 18,350 kg; (18,390 kg with operator)

FINAL REDUCTION

2-stage reduction with a ratio of 16:888

(Differential=3.545; final reduction=4.764)

TIRES

Front/Rear: 18.00-25-**(OR)

LIGHTS

Halogen headlights, license plate light, clearance light, directional lights, parking lights, and back light.

ATTACHMENTS

BOOM

Boom consists of a boom base and four power telescoping sections. The first and second sections are paired and extend simultaneously, as do the third and fourth sections. All-welded, high tensile strength steel box construction.

Fully retracted length..... 10.45 m

Fully extended length 38.9 m

JIB (OPTIONAL)

Single-section, side-stored, high tensile strength steel jib with truss construction. Jib swings down under the boom and is fitted to the boom using the auxiliary cable. Adjustable tension members for 5° and 30° offsets.

Length..... 9.0 m

AUXILIARY SHEAVE (OPTIONAL)

The pin-released auxiliary sheave permits one-part line operation. It must be mounted if a jib is ordered.



HOOK BLOCKS

Five-sheave, 45 metric ton block with swivel and safety latch.

3-sheave, 21 metric ton block with swivel and safety latch.

4 metric ton weighted hook with swivel and safety latch (optional).

PERFORMANCE

Max. rated lifting capacity: 45.0 metric ton × 3.0 m

Boom length: 10.45 to 38.9 m

Twist jib length: 9.0 m

Boom derricking angle: 0 to 79°

Boom derricking time: 65 sec

Boom telescoping time: 114 sec (10.45 to 38.9 m)

Main hoist line speed (4th layer) High: 124 m/min

Low: 60 m/min

Aux. hoist hook speed (2nd layer) High: 107 m/min

Low: 52 m/min

Swing speed: 2.5 rpm

Max. travel speed: 50 km/h

Gradeability: tanθ0.6

Lifting Capacities

Main Boom Lifting Capacities with Outriggers

Operating radius in meters	With outriggers fully extended—360° working area					With outriggers in 5.4 m position—over the side					With outriggers in 4.0 m position—over the side					With outriggers in 2.57 m position over the side			Operating radius in meters						
	Boom length in meters					Boom length in meters					Boom length in meters					Boom length in meters									
	10.45	17.55	24.65	31.75	38.90	10.45	17.55	24.65	31.75	38.90	10.45	17.55	24.65	31.75	38.90	10.45	17.55	24.65							
3.0	45,000	23,000				45,000									39,200								3.0		
3.5	40,800	28,000				40,500									32,500								3.5		
3.75	38,800	28,000				38,500									29,900							14,700	3.75		
4.0	36,900	28,000	20,000			36,500									27,250	27,450						14,100	4.0		
4.5	33,400	28,000	20,000			33,000	28,000	20,000							21,950	21,550	19,600					11,400	10,750	10,750	4.5
5.0	30,200	28,000	20,000	13,000		30,000	24,900	20,000							17,650	17,550	16,750					9,400	8,950	8,700	5.0
5.5	27,500	25,700	20,000	13,000		24,500	22,500	20,000							14,700	14,700	14,200					7,900	7,500	7,250	5.5
6.0	25,000	23,600	20,000	13,000	7,500	20,350	20,500	18,250							12,550	12,350	12,150	12,750				6,750	6,350	6,100	6.0
6.5	22,700	21,800	18,400	13,000	7,500	17,500	17,400	16,650							10,950	10,550	10,350	11,250				5,850	5,400	5,200	6.5
7.0	20,700	20,000	17,000	13,000	7,500	15,100	14,700	15,000	13,000						9,550	9,100	9,000	10,100				5,050	4,600	4,400	7.0
7.5		18,500	15,800	13,000	7,500		13,000	12,800	13,000							7,900	7,850	8,800					4,600	3,750	7.5
8.0		17,100	14,800	12,400	7,500		11,450	11,250	11,750							7,000	6,850	7,850	7,350				3,400	3,200	8.0
8.5		16,000	14,000	11,700	7,500		10,200	10,000	10,750							6,050	6,050	6,950	6,850				2,950	2,650	8.5
9.0		15,000	13,200	11,150	7,500		9,100	8,900	9,800							5,450	5,400	6,250	6,400				2,450	2,200	9.0
9.5		13,200	12,450	10,600	7,500		8,200	7,950	8,900							4,900	4,700	5,600	6,050				2,050	1,750	9.5
10.0		12,050	11,800	10,100	7,500		7,400	7,150	8,100	7,350						4,400	4,150	5,100	5,550				1,600	1,350	10.0
11.0		10,000	9,750	9,150	6,950		6,050	5,850	6,750	6,600						3,400	3,150	4,150	4,650				950		11.0
12.0		8,350	8,100	8,300	6,450		5,050	4,800	5,650	5,900						2,650	2,400	3,350	3,900						12.0
13.0		7,150	6,900	7,600	6,000		4,150	3,900	4,800	5,300						1,950	1,750	2,750	3,250						13.0
14.0		6,100	5,850	6,900	5,600			3,150	4,100	4,650							1,200	2,150	2,750						14.0
15.0			5,050	5,850	5,200				2,550	3,500	4,000							700	1,650	2,250					15.0
16.0			4,300	5,150	4,800				2,000	2,950	3,500								1,200	1,800					16.0
18.0			3,150	4,000	4,050				1,100	2,050	2,600								850	1,100					18.0
19.0			2,700	3,500	3,750				750	1,650	2,200									800					19.0
20.0			2,200	3,100	3,550					1,300	1,850														20.0
22.0				2,350	3,000					750	1,250														22.0
24.0					1,700	2,300					800														24.0
26.0					1,200	1,750					400														26.0
27.0						1,500																			27.0
28.0						1,300																			28.0
29.0						1,100																			29.0
30.0						1,000																			30.0
31.0						800																			31.0
32.0						650																			32.0
Min. angle	—	17°	23°	25°	27°	—	27°	28°	39°	43°	—	27°	45°	50°	56°	—	40°	60°	Min. angle						

Main Boom Lifting Capacities without Outriggers

Operating radius in meters	Stationary						Pick & Carry (under 2 km/h)						Operating radius in meters		
	360° working area			Over the front			360° working area			Over the front					
	Boom length in meters			Boom length in meters			Boom length in meters			Boom length in meters					
	10.45	17.55	24.65	10.45	17.55	24.65	10.45	17.55	24.65	10.45	17.55	24.65			
3.0														3.0	
3.5														3.5	
4.0	11,300	10,000				20,000				8,000			14,500	4.0	
4.5	9,000	8,500				17,400				6,500	6,500		12,500	4.5	
5.0	7,400	7,000				15,100	15,000			5,500	5,200	4,500	11,000	5.0	
5.5	6,100	5,700	5,500			13,600	13,700			4,550	4,200	3,850	9,900	10,500	5.5
6.0	5,100	4,800	4,500	12,200	12,400	10,500	3,850	3,400	3,250	8,950	9,500			6.0	
6.5	4,250	4,050	3,750	11,200	11,300	9,500	3,250	2,800	2,750	8,250	8,600	8,000		6.5	
7.0	3,600	3,400	3,100	10,300	10,200	8,700	2,700	2,350	2,250	7,600	7,800	7,250		7.0	
7.5		2,850	2,550		9,100	7,900		1,950	1,900		7,000	6,650		7.5	
8.0		2,350	2,100		8,100	7,200		1,550	1,500		6,350	6,050		8.0	
8.5		1,950	1,650		7,200	6,550		1,200	1,150		5,800	5,500		8.5	
9.0		1,600	1,300		6,400	5,900		900	900		5,250	5,000		9.0	
9.5		1,300	950		5,750	5,400					4,750	4,600		9.5	
10.0		1,000	700		5,200	4,800					4,300	4,100		10.0	
11.0					4,300	3,900					3,600	3,300		11.0	
12.0					3,600	3,200					3,000	2,750		12.0	
13.0					3,000	2,650					2,400	2,250		13.0	
14.0						2,150						1,900		14.0	
15.0						1,700						1,600		15.0	
16.0						1,300						1,300		16.0	
17.0						900						1,000		17.0	
18.0												800		18.0	
Min. angle	—	45°	60°	—	27°	37°	—	49°	63°	—	27°	33°	Min. angle		

Jib Lifting Capacities with Outriggers

With outriggers fully extended —360° working area		
9.0 m jib		
Main boom angle	Offset angle	
	5°	30°
79	4,000	2,000
77	4,000	2,000
76	3,650	2,000
75	3,450	2,000
74	3,230	2,000
72	2,960	1,900
70	2,720	1,800
68	2,520	1,710
66	2,340	1,620
64	2,160	1,540
62	2,020	1,480
60	1,900	1,410
58	1,780	1,360
57	1,730	1,340
55	1,450	1,300
54	1,320	1,180
52	1,120	950
50	920	750
48	750	580
46	630	430
44	500	310
42	410	
40	350	
38	290	
Min. angle	38°	44°

With outriggers in 5.4 m position —over the side		
9.0 m jib		
Main boom angle	Offset angle	
	5°	30°
79	4,000	2,000
77	4,000	2,000
76	3,620	2,000
75	3,400	2,000
74	3,240	2,000
72	2,950	1,890
70	2,720	1,750
68	2,500	1,700
67	2,120	1,660
66	1,770	1,360
65	1,450	1,060
64	1,150	830
63	850	610
62	640	420
Min. angle	62°	62°

With outriggers in 4.0 m position —over the side		
9.0 m jib		
Main boom angle	Offset angle	
	5°	30°
79	4,000	2,000
77	4,000	2,000
76	3,640	2,000
75	3,400	2,000
74	3,240	2,000
73	2,930	1,940
72	2,620	1,890
71	2,330	1,840
70	2,060	1,620
69	1,790	1,400
68	1,540	1,200
67	1,290	990
66	1,080	810
65	850	630
64	680	460
63	490	300
62	310	
Min. angle	62°	63°

Lifting Capacities

NOTES:

(With outriggers)

1. Load ratings are the approved lifting capacities on a firm, level surface, and include the weight of the hook block and all other handling accessories.

The ratings do not exceed 75% of the tipping load.

Values in the shaded areas are based on the machine's hydraulic or structural limitations; all others are based on stability.

45-ton hook block weight 450 kg

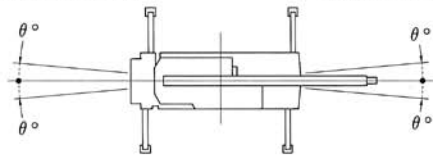
21-ton hook block weight 250 kg

4-ton hook block weight 100 kg

2. The working radii given in the charts allow for loaded boom deflection. Always operate the machine on the basis of actual operating radius.
3. Jib operation must be based on the main boom angle only.
4. Maximum outrigger extension is 7.2 m. Two intermediate extension positions are also provided at 5.4 m and 4.0 m. Minimum outrigger extension is 2.57 m.
5. Over-the-side ratings depend on outrigger extension. Values for each outrigger position are given separately and must be followed accordingly during operation. Load ratings over the front and rear assume fully extended outriggers.

Over-the-front area

Over-the-rear area



Outriggers	5.4 m extension	4.0 m extension	2.57 m extension
θ (FRONT)	25°	15°	5°
θ (REAR)	25°	15°	5°

6. Ratings with the auxiliary sheave are the same as main boom ratings, but should not exceed 4,000 kg. For boom lengths between 10.45 m and 17.55 m, deduct the weight of the 45-ton hook block (450 kg) from the ratings. For boom lengths exceeding 17.55 m up to the maximum of 38.9 m, deduct the weight of the 21-ton hook block (250 kg).
7. To determine load ratings that fall between those shown in the charts, proceed as follows:
 - a) For boom lengths not shown, use rating for next longer boom length shown.
 - b) For load radii not shown, use rating for next larger radius shown.
8. When operating the boom with the jib extended, deduct the weight of the hook block and other handling accessories plus 1,000 kg from the main boom ratings. Do not use the auxiliary sheave when the jib is extended.
9. The machine must not be operated under load conditions corresponding to the empty boxes in the charts. Tipping will occur if the boom is lowered below the danger angles indicated. Note that it is possible for the machine to tip when unloaded.
10. Standard hoist reevings are shown below. Single-line load must not exceed 4,500 kg.

Boom length	10.45 m	17.55 m	24.65 m	31.75 m	38.9 m	Aux. sheave
Hook	45-ton	45-ton	21-ton	21-ton	21-ton	4-ton
Parts of line	10	6	5	3	2	1

11. Free fall should in principle be restricted to hook only. When a load must unavoidably be applied, load ratings for free fall operations are one-fifth of rated loads. Never brake suddenly during free fall.

(Without outriggers)

- 1 Load ratings are the approved maximum lifting capacities for a firm and level surface, with tires filled to prescribed pressure (8.00 kg/cm²), and with axle lock-up cylinder engaged. Ratings include hook block and all other load handling accessories.

Values in the shaded areas are based on the machine's hydraulic or structural limitations; all others are based on stability.

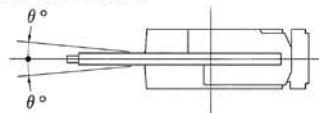
45-ton hook block weight 450 kg

21-ton hook block weight 250 kg

4-ton hook block weight 100 kg

2. The working radii given in the charts allow for loaded boom deflection. Always operate the machine on the basis of actual operating radius.
3. Load ratings differ for over-the-front and 360° operation. Care must be taken to avoid overload when swinging a load from an over-the-front position to an over-the-side position.

Over-the-front area

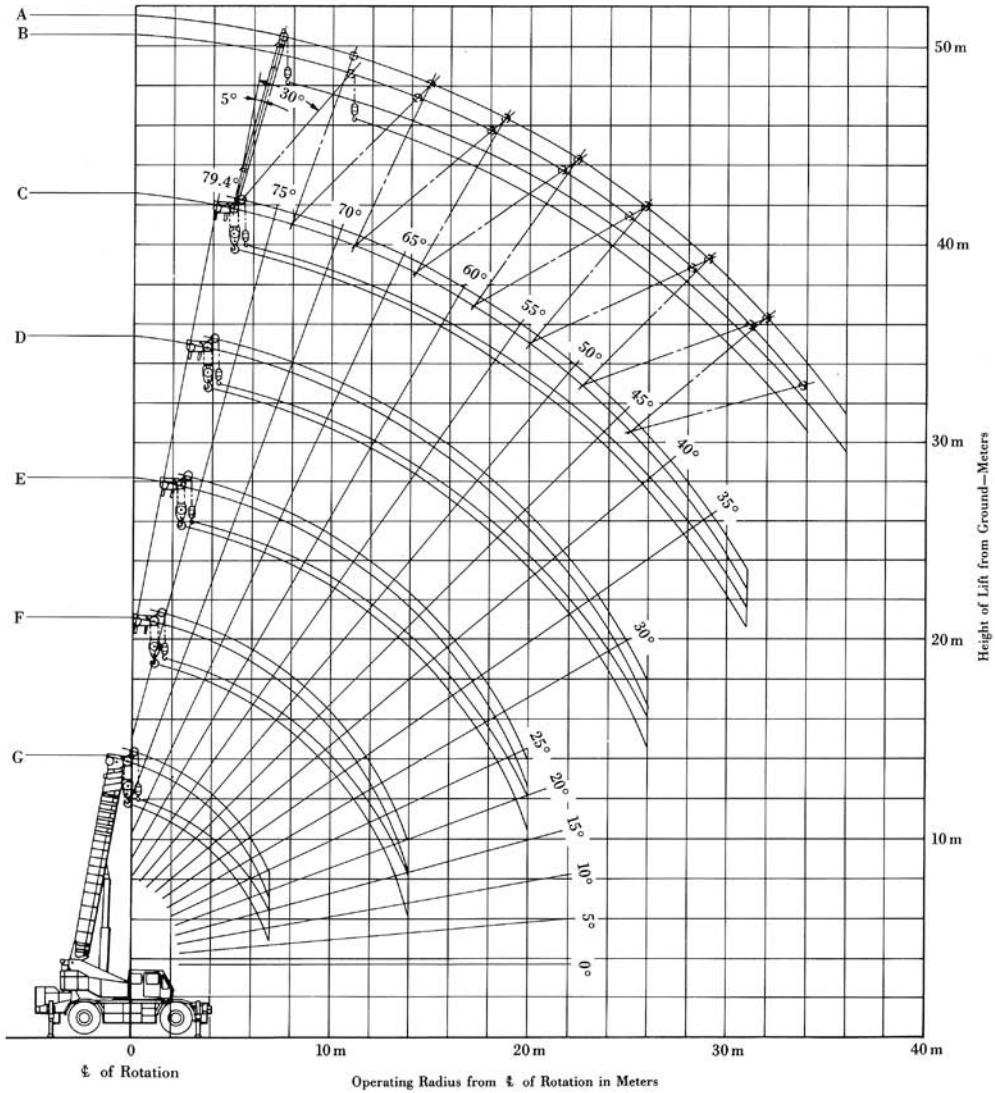


On tires	Stationary load	Pick & carry load
θ (FRONT)	5°	1°

4. Ratings with the auxiliary sheave are the same as main boom ratings, but should not exceed 4,000 kg. For boom lengths between 10.45 m and 17.55 m, deduct the weight of the 45-ton hook block (450 kg) from the ratings. For boom lengths exceeding 17.55 m up to the maximum of 24.65 m, deduct the weight of the 21-ton hook block (250 kg).
5. Do not operate the jib or use free fall.
6. Parking brake and auxiliary operation brake must be applied during stationary load lifting.
7. Pick and carry operations must be done in the low travel mode, with the High/Low switch in the ON position.
8. During pick and carry operations, keep the load close to the ground to avoid swaying, and travel no faster than 2.0 km/h. Avoid cornering, sudden starts, and sudden braking.
9. Do not operate the crane functions while transporting a load.
10. Standard hoist reevings are shown below. Single-line load must not exceed 4,500 kg.

Boom length	10.45 m	17.55 m	24.65 m	Aux. sheave
Hook	45-ton	45-ton	21-ton	4-ton
Parts of line	10	6	5	1

Working Ranges RK450

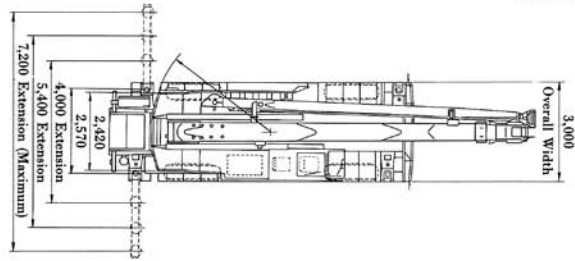
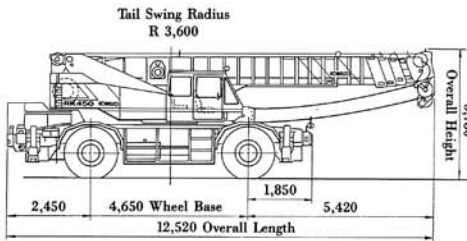


- A 38.9 m Boom+9.0 m Jib (5° offset)
- B 38.9 m Boom+9.0 m Jib (30° offset)
- C 38.9 m Boom
- D 31.75 m Boom
- E 24.65 m Boom
- F 17.55 m Boom
- G 10.45 m Boom

Dimensions

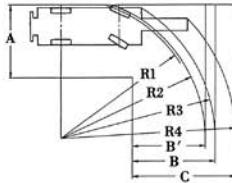
RK450

Unit: mm



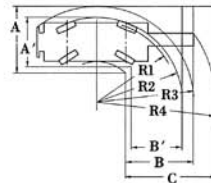
Turning Radius

2-Drive Steering (Front)



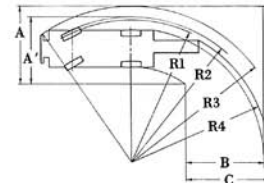
R1	Minimum turning radius	11.25 m
R2	Tire clearance with curb	11.51 m
R3	Carrier clearance	12.31 m
R4	Boom clearance	13.98 m
A	Entrance width (carrier)	5.81 m
B	Exit width (carrier)	5.81 m
B'	Exit width (tires)	6.61 m
C	Extension clearance	8.28 m

4-Drive Steering



R1	Minimum turning radius	6.33 m
R2	Tire clearance with curb	6.62 m
R3	Carrier clearance	7.52 m
R4	Boom clearance	9.41 m
A	Entrance width (carrier)	5.28 m
A'	Entrance width (tires)	3.88 m
B	Exit width (carrier)	3.88 m
B'	Exit width (tires)	5.28 m
C	Extension clearance	7.16 m

2-Drive Steering (Rear)



R1	Minimum turning radius	11.25 m
R2	Tire clearance with curb	11.61 m
R3	Carrier clearance	12.41 m
R4	Boom clearance	11.11 m
A	Entrance width (carrier)	6.28 m
A'	Entrance width (tires)	5.39 m
B	Exit width (carrier)	6.28 m
C	Extension clearance	6.74 m

Note: Due to our policy of continual product improvement, all designs and specifications are subject to change without advance notice.



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