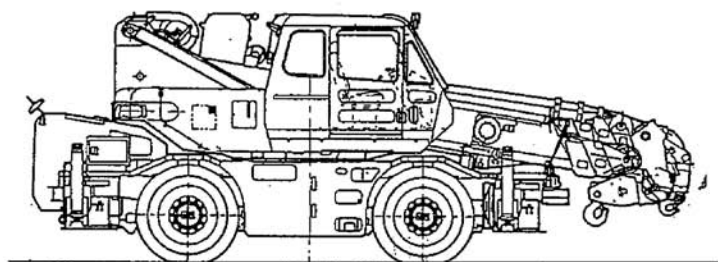


ORIGIN
CRANES
We Lift Your Business

**ROUGH
TERRAIN
CRANE**
RK160-2



SPECIFICATIONS

Max. Lifting Capacity: 16 tons x 3.0 m
Max. Boom Length: 25.0 m

KOBELCO
◆ KOBELCO STEEL, LTD.

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 hoisting and lowering with inching capability, and free fall.

Hydraulic motor drive, spur gear reduction, and counterbalance valve.

CLUTCHES

Internal-expanding, hydraulic shoe type.

BRAKES

Band type, with positive and negative brake modes.

HOIST CABLES

IWRC6xFi (22+7) c/o spin-resist cable. Diameter: 14mm.

BOOM HOIST

One-double acting hydraulic cylinder with holding valve, 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 sashless roof window with wiper. Adjustable driver's seat with seat belt. Auxiliary seat behind driver's seat.

SAFETY DEVICES (Standard)

Overhoist shut off, 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 lock pin, lock valves for vertical cylinders on outriggers, emergency steering system, about-face steering compensator valve, axle lock-out valve, and swing flasher lamps, Programmable Operating Zone System, Automatic Outrigger Extension Sensor, and Automatic Swing Arrest, free-fall interlock and safety lock lever.

HYDRAULIC SYSTEM



PUMPS

Three gear pumps and two single variable plunger pumps deliver power to the upper structure and outriggers. The first and second plunger pumps are paired and driven by power take-off. The third, fourth and fifth pumps are paired and directly driven. The first pump actuates the boom hoist, boom telescope, and winch assist; the second pump actuates the outriggers, and winch system; the third pump actuates the swing and steering the fourth pump actuates the pilot circuits for the clutches and negative brake cylinders, steering assist, the optional cab air conditioner. The fifth pump assists steering system and optional power sky tilt jib and power twist.

MOTORS

Two plunger motors power the main hoist, the auxiliary hoist, and the swing.

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

Seven solenoid valves for the outriggers and suspension system; one 2-stack set for steering.

OIL RESERVOIR

Capacity260 liters



EQUIPMENT (Standard)

Radio, windshield wiper/washer, cigarette lighter, ashtray, sun visor, floor mat, engine tachometer, tachograph, hourmeter, engine over running alarm, paper-element air cleaner, two working lights, horn, towing hooks (one front, one rear), oil cooler, cab heater/defroster, and air conditioner.

EQUIPMENT (Optional)

Extra hydraulic oil cooler for hydraulic system, remote back mirror, outrigger plates.

CARRIER

TYPE

4-wheel drive (4x4), with 2-wheel (4x2) drive select for high speed mode.

FRAME

Welded box structure.



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 6D14T turbocharged, water-cooled diesel engine with 4 cycles, -4 cylinders, and direct injection.

Max. output (DIN) 185 PS at 2,800rpm
 Max. torque (DIN) 58kg-m at 1,600 rpm
 Displacement 6,557 cc

ELECTRICAL SYSTEM

24-volt DC system with two 12-volt, 65 Ah batteries

FUEL TANK

Capacity250 liters

TORQUE CONVERTER

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

TRANSMISSION

8-speed with high-low range. The transmission shifts to automatic drive in D range.

BRAKES

Service: Vacuum-servo hydraulic disc brakes on all wheels; single caliper on front and rear wheels.

Parking: Spring-applied, hydraulically-released shoe brake on the out-put shaft of the transfer. Complementary disc brake actuator on all wheels can be also applied.



STEERING

"Orbitrol" hydraulic steering 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. The compensator is activated by a reverse steer switch on the front panel.

SUSPENSION

Front and rear axles are fitted with leaf springs with shock absorbers.

FRONT/REAR AXLES

Fully floating drive-steer type axles.

AXLE LOADING

Gross-Vehicle Weight: 19,155 kg

TIRES

Front/Rear: 13.00-R-24 (OR)

LIGHTS

Headlights, license plate light, clearance light, directional lights, parking lights, and back light.

ATTACHMENTS

BOOM

Boom consists of a boom base and three power telescoping sections. The first sections extended separately as do the second and tip sections synchronized. All-welded, high tensile strength steel box construction.

Fully retracted length.....6.7 m

Fully extended length.....25.0 m

JIB

Jib with telescopic box section extendable to stored alongside boom. Jib swing down under the boom and twist to set out. Jib offsets 5°, 17°, and 30° with suspension rods.

Length.....5.5 m

AUXILIARY SHEAVE

The auxiliary sheave permits one-part line operation.



HOOK BLOCK

4-sheave, 16 metric ton block with safety latch, 2.7 metric ton hook with swivel and safety latch.

PERFORMANCE

Max. rated lifting capacity: 16.0 metric ton x 3.0 m

Boom length: 6.7 to 25.0 m

Boom derricking angle: -9 to 80°

Boom derricking time: 39 sec

Boom telescoping time: 60 sec (6.7 to 25.0 m)

Main hoist line speed (4 98/36 m/min layer)

Aux. hoist line speed (2 85/31 m/min layer)

Swing speed: 2.45 rpm

Max. travel speed: 49 km/h

Gradeability: tan 0.64

Lifting Capacities

NOTES FOR LIFTING CAPACITIES

GENERAL NOTES

- Lifting capacities listed apply only to the machine as originally manufactured and designed by KOBE STEEL, LTD. modifications to this machine or use of equipment other than that specified can reduce operating capacity.
- Construction equipment can be dangerous if improperly operated or maintained. Operation and maintenance of this machine must be in compliance with the information in the operation, safety and maintenance manual supplied with machine. If this manual is missing, order replacement.

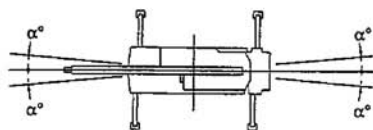
OPERATION WITH OUTRIGGERS

- For outrigger operation, outriggers shall be fully extended with tires free of supporting surface before operating crane.
- Total rated loads shown on the chart are the maximum allowable crane capacities and are based on the machine standing level on firm supporting surface under ideal job conditions. Depending on the nature of the supporting surface, it may be necessary to have structural supports under the outrigger floats to spread the load to larger bearing surface.
- Capacities do not exceed 78% of the tipping loads. Capacity factors other than machine stability such as structural competence are shown by bold lines.
- Weight of hooks, hook blocks, slings and other lifting devices are a part of the total load. Their total weight must be subtracted load to obtain the weight that can be lifted.
16.0-ton hook block weight.....140 kg
2.7-ton hook block weight.....45 kg
- The working radius given in the charts allow for loaded boom deflection. Always operate the machine on the basis of actual operating radius.
- Total rated loads are based on freely suspended load and mark no allowance for such factors as the effect of wind, sudden stopping of loads, supporting surface conditions, side loads, etc. Side pull on boom or jib is extremely dangerous.
- Maximum outrigger extension is 5.1m. Two intermediate extension positions are also provided at 4.2m and 3.2m. Minimum outrigger extension is 1.825m.

Over-the-side ratings depend on outrigger extension. Values for each outrigger position are given separately and must be followed accordingly during operation. Load rating over the front and rear assume fully extended outrigger position.

Over-the-front area

Over-the-rear area



Outriggers	4.2m extension	3.2m extension	1.825m extension
α° (FRONT)	28	20	5
α° (REAR)	28	20	5

- Ratings of the auxiliary sheave are the same as main boom ratings, but should not exceed 2,700kg. Ratings of the auxiliary sheave are calculated by deducting 16-ton hook weight (140 kg) from main boom ratings.
- To determine load ratings that fall between those shown in the charts, proceed as follows:
 - For boom lengths not listed use rating for next longer boom length or next shorter boom length, whichever is smaller.
 - For load radii not shown, use rating for next larger radius.

- To attempt to lift loads in the area other than those listed in the rated load charts, the machine may tip or collapse.
- Standard hoist reeving are shown below. Rated single-line pull must not exceed 2,700kg.
- Free fall should in principle be done with no load on a hook. When a load must unavoidably be applied, load allowance for free fall operations are restricted to one-fifth of rated loads at the given load radius. Never brake suddenly during free fall, or machine may tip.

OPERATION WITHOUT OUTRIGGERS (ON TIRES)

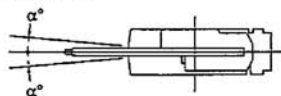
- Suspension lock-up cylinder is available for X-type outrigger carrier as option. Do not attempt to lift loads other than over the front area with H-type outrigger carrier with which suspension lock-up is not available.
- Load ratings are allowable maximum lifting capacities for a firm and level surface, with tires filled to prescribed pressure; 9.0 kg/cm². Damaged tires are hazardous to safe operation of crane. Ratings include hook block and all other load handling accessories.

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

16.0-ton hook block weight.....140 kg
2.7-ton hook block weight.....45 kg

- The working radius given in the charts allow for loaded boom deflection. Always operate the machine on the basis of actual operating radius.
- 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 a over-the-side position.

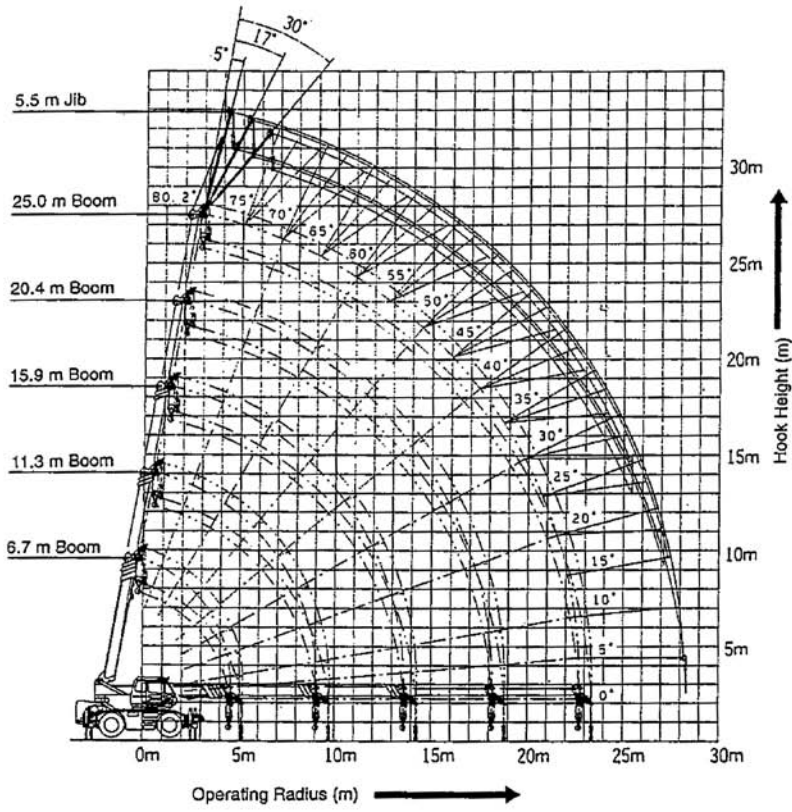
Over-the-front area



On tires	Stationary	Pick & carry
α° (FRONT)	1°	1°

- Ratings of the auxiliary sheave are the same as main boom ratings, but should not exceed 2,700 kg. Ratings of the auxiliary sheave are calculated by deducting 16-ton hook weight (140 kg) from main boom ratings.
- Do not use free fall.
- Parking brake and auxiliary operation brake must be applied during stationary load lifting.
- Pick and carry operations must be done in the low travel mode.
- During pick and carry operations, keep the load close to the ground to avoid swaying, and travel no faster than 2.0km/h. Avoid cornering, sudden starts (acceleration), and sudden braking. Boom must be centered over the front area.
- Do not operate the crane functions while carrying the load.
- Single-line load must not exceed 2,700kg.

Working Ranges



Main Boom Lifting Capacities with Outriggers

(METRICTON)

Operating radius (m)	With outriggers in 5.1 m position					With outriggers in 4.2 m position					With outriggers in 3.2 m position					With outriggers in min. position					
	360° swing area					Over the side					Over the side					Over the side					
	Boom length in meters					Boom length in meters					Boom length in meters					Boom length in meters					
	6.7	11.3	15.9	20.4	25.0	6.7	11.3	15.9	20.4	25.0	6.7	11.3	15.9	20.4	25.0	6.7	11.3	15.9	20.4	25.0	
2.5	16.00	12.00	9.00	7.00		16.00	12.00	9.00	7.00		16.00	12.00	9.00	7.00		7.75	7.80	7.80	7.00		
3.0	16.00	12.00	9.00	7.00		16.00	12.00	9.00	7.00		13.00	12.00	9.00	7.00		5.55	5.60	5.60	6.10		
3.5	14.00	12.00	9.00	7.00	5.00	14.00	12.00	9.00	7.00	5.00	10.00	10.00	9.00	7.00	5.00	5.00	4.20	4.30	4.25	4.70	4.70
4.0	12.50	12.00	9.00	7.00	5.00	12.50	12.00	9.00	7.00	5.00	7.70	7.80	7.20	7.00	5.00	3.30	3.40	3.35	3.70	3.80	
4.5	11.50	11.10	8.50	7.00	5.00	11.20	10.55	8.30	7.00	5.00	5.40	6.20	6.10	6.45	5.00	2.65	2.70	2.70	3.00	3.10	
5.0		10.25	8.95	7.00	5.00		9.15	7.65	7.00	5.00		5.10	5.00	5.30	5.00		2.20	2.25	2.55	2.65	
5.5		9.40	7.60	6.60	4.75		7.75	6.95	6.55	4.75		4.30	4.20	4.50	4.70		1.80	1.85	2.10	2.25	
6.0		8.55	7.15	6.20	4.55		6.55	6.30	6.10	4.55		3.60	3.60	3.85	4.05		1.50	1.55	1.80	1.90	
6.5		7.70	6.70	5.80	4.35		5.65	5.60	5.70	4.35		3.10	3.10	3.35	3.55		1.25	1.30	1.55	1.65	
7.0		6.85	6.20	5.50	4.15		4.90	4.95	5.25	4.15		2.70	2.70	2.95	3.10		1.05	1.05	1.30	1.45	
7.5		6.00	5.70	5.15	3.90		4.30	4.40	4.70	3.95		2.40	2.35	2.60	2.80		0.85	0.85	1.15	1.30	
8.0		5.30	5.20	4.85	3.70		3.80	3.85	4.20	3.70		2.10	2.05	2.30	2.50		0.70	0.70	0.95	1.10	
9.0		4.25	4.25	4.30	3.30		3.05	3.10	3.40	3.30		1.85	1.60	1.85	2.00		0.45	0.70	0.85		
10.0			3.50	3.75	3.00			2.50	2.80	2.90			1.25	1.50	1.65			0.30	0.50	0.65	
11.0			2.90	3.20	2.70			2.05	2.35	2.50			1.00	1.20	1.35			(3.5m)	0.29	0.50	
12.0			2.45	2.75	2.50			1.70	1.95	2.15			0.80	1.00	1.15					0.30	
13.0			2.05	2.35	2.30			1.40	1.65	1.85			0.63	0.80	0.95						
14.0			1.85	2.05	2.10			1.25	1.45	1.60			0.50	0.65	0.80						
15.0			(19.8m)	1.75	1.90			(13.6m)	1.20	1.40			(3.6m)	0.55	0.65						
16.0				1.50	1.70				1.00	1.20				0.40	0.55						
17.0				1.32	1.50				0.80	1.00					0.45						
18.0				1.15	1.30				0.65	0.85					0.35						
19.0				1.15	1.15				0.60	0.70											
20.0				(18.3m)	1.00			(18.3m)	0.60												
21.0					0.90				0.50												
22.0					0.80				0.40												
24.0					0.74				0.35												
26.0					(22.7m)				(22.7m)												
Min. boom angle	0°	0°	0°	0°	0°	0°	0°	0°	0°	0°	0°	0°	0°	29°	37°	0°	0°	45°	52°	57°	

Main Boom Lifting Capacities without Outriggers

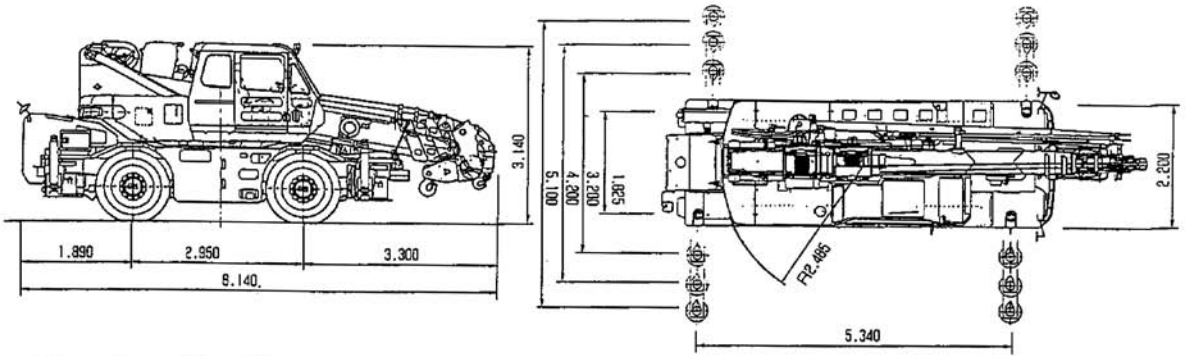
(METRICTON)

Operating radius (m)	Stationary								Pick & Carry (under 2 km/h)							
	360° swing area				Over the front				360° swing area				Over the front			
	Boom length in meters				Boom length in meters				Boom length in meters				Boom length in meters			
	6.7	11.3	15.9	20.4	6.7	11.3	15.9	20.4	6.7	11.3	15.9	20.4	6.7	11.3	15.9	20.4
3.0	4.40	4.50	4.65	5.00	9.50	9.50	8.50	6.50	4.35	4.40	4.45	3.00	7.00	7.20	6.50	6.00
3.5	3.50	3.65	3.70	4.00	8.30	8.30	8.30	6.50	3.30	3.35	3.60	3.00	6.15	6.30	5.75	6.00
4.0	2.80	2.90	3.00	3.30	7.30	7.30	7.30	6.50	2.60	2.65	2.85	3.00	5.40	5.60	5.00	5.60
4.5	2.20	2.40	2.45	2.75	6.60	6.40	6.60	6.50	2.10	2.10	2.30	2.50	4.75	4.70	4.15	4.80
5.0		2.00	2.00	2.30		5.45	5.65	5.35		1.75	1.90	2.10		3.90	3.60	4.10
5.5		1.60	1.65	2.00		4.60	4.70	4.45		1.45	1.55	1.80		3.30	3.00	3.50
6.0		1.30	1.35	1.70		3.95	4.00	3.90		1.20	1.30	1.50		2.80	2.65	3.00
6.5		1.05	1.10	1.40		3.40	3.50	3.60		1.00	1.10	1.30		2.10	2.30	2.60
7.0		0.85	0.90	1.20		3.00	3.00	3.25		0.80	0.90	1.10		2.10	2.00	2.30
7.5		0.65	0.70	1.00		2.60	2.70	2.95		0.65	0.70	0.90		1.85	1.80	2.05
8.0		0.50	0.50	0.80		2.30	2.30	2.65		0.50	0.50	0.77		1.60	1.65	1.80
9.0				0.55		1.80	1.85	2.15				0.50		1.30	1.30	1.50
10.0				0.35			1.50	1.75				1.30			1.00	1.20
11.0							1.20	1.45							0.70	1.00
12.0							0.95	1.20							0.55	0.80
13.0							0.75	1.00							0.40	0.65
14.0								0.80								0.55
15.0								0.65								0.45
16.0								0.50								0.35
17.0								0.35								0.30
Min. boom angle	0°	29°	48°	55°	0°	11°	19°	22°	0°	29°	48°	55°	0°	11°	19°	22°

5.5 m Jib Lifting Capacities without Outriggers

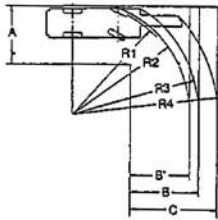
Boom angle	Outrigger extension: 5.1 m (Max. position)			Outrigger extension: 4.2 m (Mid. position)			Outrigger extension: 3.2 m (Mid. position)		
	360° swing area			Over the side			Over the side		
	Jib angle			Jib angle			Jib angle		
	5°	17°	30°	5°	17°	30°	5°	17°	30°
80°	2.00	1.50	1.20	2.00	1.50	1.20	2.00	1.50	1.20
75°	2.00	1.50	1.20	2.00	1.50	1.20	2.00	1.50	1.20
70°	2.00	1.50	1.20	2.00	1.50	1.20	2.00	1.50	1.20
65°	1.62	1.25	1.12	1.60	1.25	1.06	1.50	1.15	1.00
60°	1.35	1.09	1.02	1.32	1.09	0.94	0.98	0.84	0.78
55°	1.15	0.98	0.91	1.07	0.93	0.82	0.65	0.58	0.56
50°	1.00	0.87	0.82	0.85	0.78	0.69	0.43	0.40	0.37
45°	0.87	0.78	0.75	0.65	0.63	0.57	0.22		
40°	0.75	0.70	0.68	0.50	0.49	0.45			
35°	0.65	0.62	0.60	0.35	0.35	0.32			
30°	0.56	0.54	0.52	0.25					
25°	0.48	0.46							
20°	0.41	0.38							
15°	0.35								
10°	0.30								
5°	0.25								
Min. boom angle	5°	20°	30°	30°	35°	35°	45°	50°	50°

Dimensions **RK160-2**



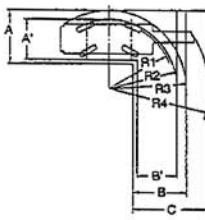
Turning Radius

2-Drive Steering (Front)



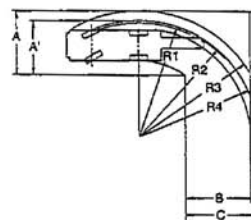
R1	Minimum turning radius	8.60m
R2	Tire clearance with cab	8.78m
R3	Carrier clearance	9.39m
R4	Boom clearance	9.78m
A	Exit width (carrier)	4.63m
B	Exit width (tires)	4.63m
C	Exit width (boom)	5.02m

4-Drive Steering



R1	Minimum turning radius	4.73m
R2	Tire clearance with cab	4.94m
R3	Carrier clearance	5.53m
R4	Boom clearance	6.15m
A	Exit width (carrier)	3.79m
B	Exit width (tires)	3.79m
C	Exit width (boom)	4.38m

2-Drive Steering (Rear)



R1	Minimum turning radius	8.60m
R2	Tire clearance with cab	8.78m
R3	Carrier clearance	9.37m
R4	Boom clearance	8.30m
A	Exit width (carrier)	4.62m
B	Exit width (tires)	4.62m

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



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