





#### Power Package

A rear mounted, turbocharged direct injection diesel engine is at the heart of this crane. A unique "lockup" torque converter allows engine output to bypass the torque converter when traveling at higher speeds, but on site, it combines with a 12 speed transmission to deliver a wide variety of speed and driving power. During crane operations, a PTO clutchactivated governor restricts the engine to a



pstricts the engine to a maximum of 2,450 rpm. This reduces fuel consumption, noise emissions and wear on the engine. From site-to-site transit to precise pick-and-carry lifts, RK200 offers the optimum power control combination for both safety and efficiency.

#### Attachment

The 4-section box boom is automatically sequenced to allow single lever control over its entire length. A rope crowd system for extending the top boom section keeps the boom light but strong with minimum deflection. The single boom hoist cylinder, mounted further back on the revolving frame, allows better operator visibility to the boom side of the cab.

The twist jib (stowed on the base boom) and the auxiliary sheave (stowed on the boom tip) are ideal for single line operations that may require high speed duty cycle lifting of loads up to three tons. The jib's truss structure and the fold-up auxiliary sheave keep the boom point shorter and narrower to allow a minimized turning radius.

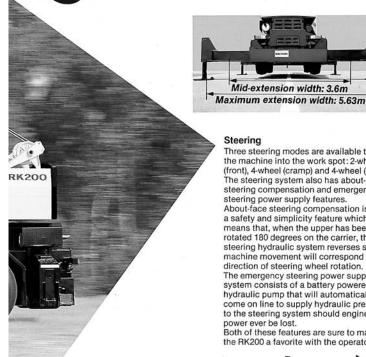
Compared to a swing around jib, the twist jib sets up more easily in confined spaces, but offers better visibility when stowed for travel than an underslung jib.



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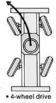
# Gets around, gets into, gets it done.



Three steering modes are available to get the machine into the work spot: 2-whee (front), 4-wheel (cramp) and 4-wheel (crab). The steering system also has about-face steering compensation and emergency steering power supply features About-face steering compensation is both a safety and simplicity feature which means that, when the upper has been rotated 180 degrees on the carrier, the steering hydraulic system reverses so that machine movement will correspond to the direction of steering wheel rotation. The emergency steering power supply system consists of a battery powered hydraulic pump that will automatically come on line to supply hydraulic pressure to the steering system should engine power ever be lost. Both of these features are sure to make

Mid-extension width: 3.6m





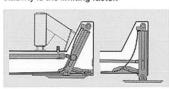
the RK200 a favorite with the operators.



Minimum turning radius = 4.8m

M Outriggers

These exclusive KOBELCO outriggers permit maximum span while still allowing self-storing floats that have the largest surface area in the 20 ton class. Yet they retract to within the machine's traveling width. Besides offering two settings, these outriggers use inverted jack cylinders which keep the easily damaged rods encased in the beam structure. These features plus their low profile when extended make RK200's M outriggers the rigid base necessary for both heavy, closein lifts and for long radius lifts where stability is the limiting factor.



Suspension

On the road, RK200's fully sprung suspension treats the operator like a distinguished passenger. like he is the boss! Riding is smooth, but in the event of hard braking, an anti-nose dive mechanism counteracts the tendancy of the crane to pitch forward. On site, the suspension can be hydraulically locked out for stability to maximize on-rubber ratings, both stationary and pick-and-carry.

As any operator will tell you, getting the machine to go is only half the job, getting it to stop is equally important. RK200 is fitted with "air-over-hydraulic" independent disk brakes all around. Our long experience as a wheel loader maker proved to us the heat and wear resistance qualities of disk brakes over drum brakes. They provide surer braking on long downgrades and in wet conditions, and generally make fewer maintenance demands. The front two disks are doublecalipered as another extra safety feature.

#### Now watch it lift!

Whether you are looking for lift height or reach, we invite you to run RK200's load rating chart against any other comparable machine. RK200 will speak for itself. But in addition to what the ratings tell you, note some extra features.

#### On Rubber Lifting

Lifting while on the tires is the ultimate test for a rough terrain crane. Whether standing still or doing a "pick-and-carry" job, RK200 offers full main boom 360 degree on rubber ratings, plus upgraded ratings for over front lifts. Suspension lockout hydraulic cylinders are included as standard for use during all on rubber

#### Positive/Negative Winch Brakes

Most cranes offer their operators only positive or negative winch brake systems. RK200 is one of the few machines to offer both at the shift of a lever. An operator asked to do precision placings can choose the fatigue reducing negative system the winch brake automatically engages to hold the drum when the winch control lever returns to neutral. When faced with repetitious liftings of perhaps lighter loads, an operator may choose to engage the productivity improving positive brake system — so that at control lever neutral the winch drum goes into freefall for control by footbrake pedal pressure. You can get the best of both from RK200.

#### "Hydrotorque" Swing Control

An original Kobe Steel development, "hydrotorque" is another way that RK200 lets the operator choose how he will most effectively operate. This swing system comes with two brake modes: "Free" (no brake applies at control lever neutral) for doing less precise cycle work like concrete pourings. The operator can establish a productivity enhancing "swing flow" pattern where both swing start and stop operations are done via the single swing control lever. "Braked" mode (a swing brake automatically engages at control lever neutral) is better for precision work like structural component and machinery placings. Hydrotorque's smooth motion with these two braking modes, plus the inching and line speed attributes of RK200's winch system make this machine a winner whether its speed or accuracy you

want, have them both!



# Instrument panel design revolutionized through the latest electronic technology!



#### AT KOBE STEEL

We build performance into our cranes. We then must depend on the operator to get this performance out into the field where it can contribute to the profitability of the crane user—and also to our good reputation as a machinery maker. Therefore it is to everyone's benefit that the operator have as much information as possible so that he can safely extract the machine's full work potential.

#### **Electronic Assistance**

Take a seat in the operator's cab and you will see how the machine communicates with its operator. Collected into three panels directly in front of the operator are electronic indicators of how the machine is currently operating. This removes much of the guess work that operators previously had to include in their decisions on how to procede with a job. With this electronic assistance, there is less operator tension for longer hours of safer, more productive work.

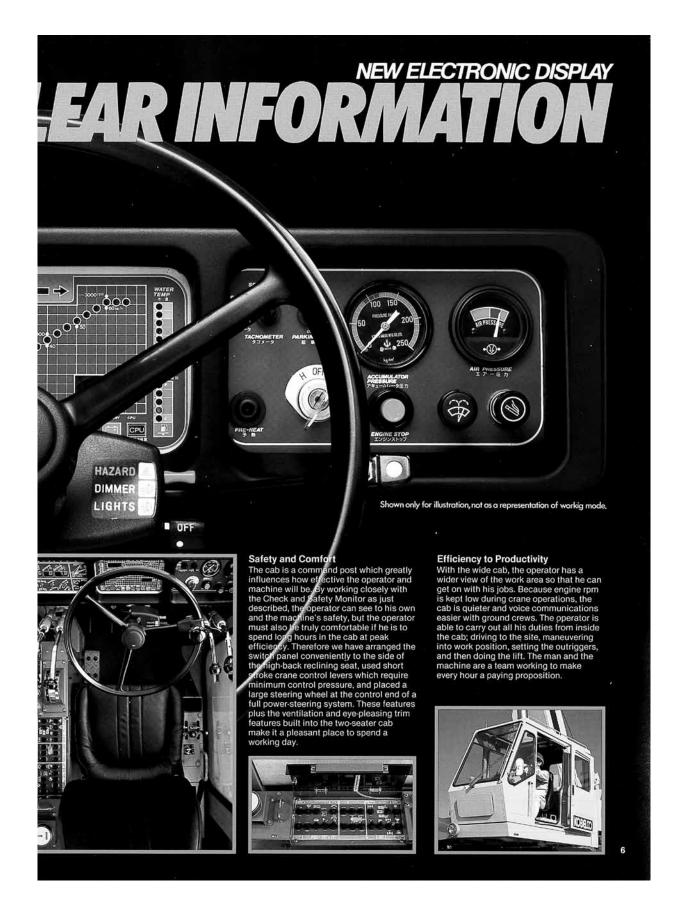
Easy Indicators
Operators new to electronic devices need not worry about getting themselves tuned into these indicators. For example, look at the center panel and you will see where speedometer and tachometer readings are given digitally (upppr left corner) and graphically (along the center range line by green signal lamps). The operator can choose to operate by speedometer or tachometer readout by en aging one or the other via the selector switch (upper left on the right side panel). Water and torque converter oil temperatures as will as fuel level and many other operating factors are indicated by signal lamps. Nothing could

#### Check and Safety Monitor

· When the operator starts to use the crane, he must set some switches on the left side panel to inform the on-board computer (overload warning device) of how he intends to operate. Corresponding lamps light up (see the panel's lower and right sides) to allow the operator to confirm that he has programmed the computer correctly for the outrigger and boom/jib/auxiliary sheave combination he will actually use.

- · Besides acting as an overload warning device, the computer monitors and collects vital crane operation factors into a single location for the operator's easy a single location for the operator's easy reference. By noting such factors as boom angle and length, load moment (ratio), operating radius, lift height, actual load being lifted and allowable maximum load, the operator can choose to operate in such a way as to maximize the crane's lifting potential without gambling that he is asking too much and compromising safety. All these items are digitally indicated except for the "load moment" which uses a series of lamps to indicate the percentage of the maximum rated load being lifted.
- If the operator fails to respect the crane's oad limits, the computer is equipped to hydraulically discontinue operation except for corrective measures (operation to the safe side). It also has an automatic stop to prevent overhoisting (two-blocking).







### **Specifications**





#### **SWING UNIT**

Hydraulic radial piston motor drives swing pinion through deck mounted planetary and spur gear reducer, 360° continuous rotation. By employing four check valves, "Hydrotorque" circuit controls hydraulic pressure in the motor. Brake valve allows operator to select free or

automatic brake when swing control lever is in neutral position.

#### **SWING BRAKE**

Hand operated disc brake.

#### **SWING GEAR**

Internal spur gear

#### SI FWING RING

Single row ball bearing integral with swing gear.



WINCHES

Mounted side-by-side, power raising and lowering; free fall; hydraulic motor drive and spur gear reduction. Clutches: Hydraulically boosted shoe type Brakes: Band type; both positive and negative brake

Drums: 352mm P.C.D., 528mm dia. flanges; Width: 357mm (Main),

204mm (Auxiliary). Hoist wire rope: Non-twist, U4×SeS(39), c/o H class, 16mm dia.

Length: 145m (Main), 75m (Auxiliary, optional).

Double acting hydraulic cylinder with holding valve, boom angle indicator mounted on base boom section.



#### **BOOM TELESCOPE**

Full power telescoping by two hydraulic cylinders (with holding valves) and wire ropes.

#### CONTROLS

Four adjustable hand control levers for swing, telescope, winch, and boom hoist (boom hoist lever with foot-operated pedal on right hand drive only); two short hand levers for main and auxiliary winch clutches and negative brake ON-OFF. One short hand lever for swing parking brake, one lever for transmission gear selection (with high/low switch), swing lock pin (two holes), winch drum lock knobs, two pedals for main and auxiliary winch drum brakes (during free fall), foot-operated pedal for engine throttle control, and travel brake pedal.



#### **OPERATOR'S CAB**

All weather, full vision with safety glass, sliding door and roll down window, and roof window with wiper. Auxiliary seat provided behind driver's seat (optional).

#### SAFETY ENHANCING DEVICES

Overhoist alarm buzzer, relief valves in hydraulic circuits, holding valves for boom hoist and telescope cylinders, counter balance valve for winch motor, Check and Safety Monitor on dash, Overload Warning Device (automatic stopping), winch drum locks, swing brake lock pin, lock valve for outrigger vertical cylinder, emergency steering system, anti-nose-dive valve, about-face steering compensator valve, outrigger single pilot check valve, axle lockout valve, lower limit mechanism (optional), and backup warning alarm.



HYDRAULIC SYSTEM

Power for all motions of upper structure and outriggers is delivered from carrier engine power take-off to the motors and cylinders through 3 inline gear pumps and a single gear pump.

First pump actuates boom hoist cylinder, telescope cylinders, and winch motor assist for high speed.

Second pump actuates winch motor.

Third pump actuates pilot circuits for clutches, negative brake cylinders, boom sequencing changeover valve and 4 check valves in

Fourth pump actuates swing motor or steering via outrigger hydraulic system, priority valve, and suspension axle lockout.

#### MOTORS

One, hydraulic radial piston motor for swing.

One, hydraulic plunger motor for hoist.

#### CONTROL VALVES

One set of 3 stack, 4-way valves; one set of 2 stack, 4-way valves, and one remote control valve.

#### OIL RESERVOIR

EQUIPMENT



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Cab heater/defroster (optional), radio, windshield wiper/ washer, cigarette lighter, ashtray, sun visor, vinyl floor mat, tachograph (optional), engine tachometer, engine hourmeter, engine trouble alarm, air supply valve, paper element type air cleaner, fuel/water separator, three working lights, horn, outrigger sight level bubble, load centering button on winch lever (braked swing

mode only), air conditioner for cooling purpose only (optional), towing hooks (one front, two rear), fenders and ladder for jib mounting (optional).





#### MAKE AND MODEL

KOBELCO R-200

#### TYPE

4 wheel drive (4 × 4), 2 wheel drive select.

#### FRAME

High tensile steel welded box structure.



#### **OUTRIGGERS**

KOBELCO hydraulic M-type with self-storing floats, eight double-acting hydraulic cylinders for independent horizontal and vertical motion of each outrigger. Outriggers can be set from inside cab or at side of carrier.



#### **POWER PLANT**

Mitsubishi 6D14T Turbocharged Diesel Engine, 4 cycles, direct injection, water cooled, 6 cylinders.

180PS at 2,800 rpm Max. torque (JIS) . . . . . . . . . . . . 57kg-m at 1,600 rpm

#### **ELECTRICAL SYSTEM**

24 volt DC, Battery: 12 volt, 120 A.H. × 2.

#### **FUEL TANK**

Capacity . ...... 200 liters

#### CLUTCH

Multi-disc, electric shift.

#### TRANSMISSION

12-speed, power shift with high-low range; lockup torque converter.

Gear ratio (forward and reverse)
Low gear: 1st—5.812, 2nd—3.210, 3rd—1.942
High gear: 1st—2.512, 2nd—1.387, 3rd—0.839

#### BRAKES

Service: Air-over hydraulic disc on all 4 wheels, dual caliper on front wheels and single caliper on rear wheels.

Parking: Spring applied, air released shoe type on output shaft of transmission.



#### STEERING

"Orbitrol" hydraulic power steering with emergency system.

About-Face Steering Compensator: Travel in reverse with the same handling characteristics of forward travel

(except steer) is possible with the about-face steering compensator. This handling is possible only when the upper frame is rotated 180°.

#### SUSPENSION

Front/Rear: Leaf springs with axle lockout and shock absorber-like cylinder.

Anti-nose-dive mechanism prevents tendency of crane to pitch forward during hard braking.

#### FRONT/REAR AXLE

Fully floating drive-steer type; non-spin differential on rear axle

#### **FINAL REDUCTION**

2-stage reduction type, ratio 15.39

#### TIRES

Front/Rear: 14.00-24-24PR(OR)

#### LAMPS

European marked lamps except head lamps, license plate lamp, clearance lamp, directional lamp, and parking lamp.



#### воом

Four sections, consisting of a boom base and three power telescoping sections, all welded high tensile steel box construction.

Fully retracted length ..... 8.19m Fully extended length .

#### JIB (OPTIONAL)

High tensile steel square tube, truss construction, twist type.

Side stored, twisted under raised boom, pulled up from under by auxiliary rope. Adjustable tension members for 5° and 30° offsets.

#### **AUXILIARY SHEAVE (OPTIONAL)**

(optional).

Can be stored without resetting auxiliary wire rope. Folded up to store so does not obstruct operator's view during travel; pinned for extension to provide one part line operation. Must be mounted if jib is ordered.



**HOOK BLOCKS** 20 metric ton three sheaves with swivel and safety latch. 3 metric ton weighted hook with swivel and safety latch

AXLE LOADINGS

	Front	Rear	GVW
With jib	11,425kg	11,425kg	22,850kg
Without jib	11,035kg	11,565kg	22,600kg

## PERFORMANCE

Max. rated lifting capacit	ty	20 metric ton × 3.5 m					
Boom length		8.19~25.8m					
Twist jib length		6.8m					
Boom derricking angle		0°~80°					
Boom derricking time		52 sec. (0°~80°)					
Boom telescoping time		99 sec./17.61m					
Main hoist line speed	High	86.6 m/min (3rd layer)					
(6 part line)	Low	43.4 m/min (3rd layer)					
Aux. hoist hook speed	High	86.6 m/min (3rd layer)					
(Single part line)	Low	43.4 m/min (3rd layer)					
Swing speed		3.5 rpm					
Max. travel speed		45 km/h					
Gradeability	tan θ	0.6					



#### Lifting Capacities

#### RATED LOADS IN KGS

Operating		1777	Boom	extended	Aux	centers—36 iliary eave	WOIK are	25.80m Boom + 6.8m Jib		
radius in Meters	8.19m Boom	14.06m Boom	19.93m Boom	25.80m Boom	.8.19 ~ 19.93m Boom	25.80m Boom	Boom Angle	Offset 5°	Offset 30°	
3.0	20,000	16,000	S. III	Later of	3,000		80°	3,000	B	
3.5	20,000	16,000	9,000		3,000		75°	3,000	1,500	
4.0	18,500	15,500	9,000		3,000	7. S. F. F.	72°	3,000	1,500	
4.5	16,500	14,200	9,000	6,800	3,000	3,000	70°	2,800	1,350	
5.0	15,000	13,100	9,000	6,800	3,000	3,000	65°	2,400	1,250	
5.5	13,700	12,100	9,000	6,800	3,000	3,000	60°	2,100	1,200	
6.0	12,500	11,200	9,000	6,800	3,000	3,000	55°	1,900	1,150	
6.5	11,500	10,400	8,500	6,800	3,000	3,000	50°	1,500	1,100	
7.0		9,700	8,000	6,800	3,000	3,000	45°	1,200	1,050	
8.0		7,500	7,100	6,100	3,000	3,000	40°	950	950	
9.0		6,000	6,300	5,500	3,000	3,000	35°	750	750	
10.0		4,900	5,400	4,900	3,000	3,000	30°	600	600	
11.0		4,100	4,550	4,400	3,000	3,000	25°	500		
12.0		3,350	3,900	4,000	3,000	3,000	20°	400		
13.0			3,350	3,500	3,000	3,000				
14.0			2,850	3,050	2,650	3,000	2			
15.0			2,500	2,650	2,300	2,500	THE CO.			
16.0			2,150	2,400	1,950	2,200				
17.0			1,850	2,100	1,650	1,900				
18.0			1,600	1,800	1,450	1,600				
19.0				1,600		1,450	100			
20.0				1,450		1,250	-			
22.0			-	1,150		950	1			
24.0				850		650				

Operating radius in Meters		Main	Boom	Auxiliary Sheave					
	8.19m Boom	14.06m Boom	19.93m Boom	25.80m Boom	8.19 – 14.06m Boom	19.93m Boom	25.80m Boom		
3.0	20,000	16,000	2000	(m) (pg)	3,000	(1838)	Colonia I		
3.5	17,500	16,000	9,000	41-11	3,000	3,000	(harris		
4.0	15,000	14,000	9,000		3,000	3,000	- 0		
4.5	11,550	11,350	9,000	6,800	3,000	3,000	3,000		
5.0	9,550	9,250	9,000	6,800	3,000	3,000	3,000		
5.5	8,000	7,350	8,300	6,800	3,000	3,000	3,000		
6.0	6,850	6,250	6,750	6,800	3,000	3,000	3,000		
6.5	5,900	5,450	5,800	6,200	3,000	3,000	3,000		
7.0		4,750	5,100	5,700	3,000	3,000	3,000		
8.0		3,600	4,050	4,300	3,000	3,000	3,000		
9.0		2,850	3,300	3,500	2,650	3,000	3,000		
10.0		2,250	2,650	2,900	2,050	2,500	2,700		
11.0		1,750	2,200	2,450	1,550	2,000	2,250		
12.0		1,450	1,800	2,000	1,250	1,600	1,800		
13.0			1,500	1,700		1,350	1,500		
14.0			1,300	1,450		1,100	1,250		
15.0			1,050	1,250		850	1,050		
16.0			850	1,000		650	800		
17.0			650	800		500	600		
18.0			500	650		350	500		
19.0				550			400		
20.0									
Minimum Angle	-	-		30°	-	-	-		

30111							Witt	nout outrig	gers								
								Main	Boom								
Operating Radius in Meters	8.19m Boom				14.06m Boom					19.93m Boom				25.80m Boom			
	Over Front (w/2° of center)		360°		Over Front (w/2° of center)		360°		Over Front (w/2° of center)		360°		Over Front (w/2° of center)		360°		
	Station- ary	Pick & Carry (under 5km/h)	Station- ary	Pick & Carry (under 5km/h)	Station- ary	Pick & Carry (under 5km/h)	Station- ary	Pick & Carry (under 5km/h)	Station- ary	Pick & Carry (under 5km/h)	Station- ary	Pick & Carry (under 5km/h)	Station- ary	Pick & Carry (under 5km/h)	Station- ary	Pick & Carry (under 5km/h)	
3.0	11,450	8,000	7,600	5,350	8,100	5,650	6,650	4,650		8							
3.5	10,000	7,000	6,650	4,650	8,100	5,650	6,650	4,650	5,700	4,000	3,800	2,650					
4.0	8,950	6,250	5,600	3,900	8,100	5,650	5,350	3,700	5,700	4,000	3,800	2,650					
4.5	8,000	5,550	4,550	3,200	7,450	5,200	4,300	3,000	5,700	4,000	3,800	2,650					
5.0	7,250	5,050	3,700	2,550	6,650	4,650	3,500	2,450	5,700	4,000	3,800	2,650	3,600	2,500	2,500	1,700	
5.5	6,300	4,400	3,150	2,200	5,900	4,100	3,000	2,100	5,250	3,650	3,250	2.250	3,600	2,500	2,500	1,700	
6.0	5,500	3,850	2,650	1,850	5,150	3,550	2,500	1,750	4,850	3,400	2,850	2,000	3,600	2,500	2,500	1,700	
6.5	4,550	3,200	2,300	1,550	4,450	3,100	2,150	1,500	4,450	3,100	2,500	1,700	3,600	2,500	2,500	1,700	
7.0		Marie Cal			3,900	2,700	1,800	1,250	4,100	2,850	2,150	1,500	3,500	2,450	2,300	1,550	
8.0		4			3,050	2,100	1,250		3,400	2,350	1,600	1,100	3,100	2,150	1.800	1,250	
9.0	- 4				2,450	1,700	850		2,750	1,900	1,200		2,600	1,800	1,350		
10.0					1,950	1,350	550		2,300	1,600	850		2,300	1,600	1,050	10.00	
11.0					1,500	1,050			1,900	1,300	650		2,000	1,400	750		
12.0					1,200				1,500	1,050			1,700	1,200			
13.0									1,250	850			1,450	1,000	6		
14.0									1,050				1,250				
15.0								- Y	850	1			1,050				
16.0							11-11-15						850	1			
17.0												- 2	700				
Minimum Angle (Oper. Rad.)	-	-		- 4	-	15° (11.92m)	25° (11.10m)	45° (8.32m)	25° (16.42m)	35° (14.69m)	50° (11.19m)	55° (9.82m)	40° (18.14m)	50° (14.97m)	60° (11.29m)	65° (9.30m)	

#### OPERATION OF THIS EQUIPMENT IN EXCESS OF RATED LOADS OR DISREGARD OF INSTRUCTIONS VOIDS THE WARRANTY.

Operating radius is the horizontal distance from centerline of rotation to a vertical

Operating radius is the horizontal distance from centerline of rotation to a vertical line through the center of gravity of the load.

Load ratings do not exceed 75% of tipping loads.

Load ratings are the approved maximum lifting capacities on a firm and level surface, and include hook block(s) slings and all other load handing accessories.

Main hook block weight: 200kg.

Main hook block weight: 200kg.

Deduct 500kg from main boom ratings when jib boom is extended.

Ratings in the shaded area are based on the machine's hydraulic or structual limitations and not on machine stability.

Load ratings with putriogers fully extended are over rear, over side and over front.

tions and not on machine stability.

Load ratings with outriggers fully extended are over rear, over side and over front lifting capacities with the machine leveled. Load ratings with outriggers midextended are based on the condition of 3.6m distance of outriggers and over rear, over side and over front lifting capacities with machine leveled. The working radii given in the above charts include allowances for laden boom deflection. The main boom must always be operated on the basis of those figures. However, jib operation limits must be based on main boom angle only. To determine load ratings in-between those shown on chart, 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 longer boom length shown.

- Standard hoist reevings are shown below. Single line load must not exceed 3,340kg. Boom length 8.19m 14.06m 19.93m 25.80m Aux. sheave
- No. of parts of line 6 6 4 4 4 1

  Load ratings for free fall operation are one fifth of rated loads shown above. In this case, each permissible load for single line is 700kg for main hoist line and 500kg for auxiliary hoist line.

  The following items must be observed when operating "without outriggers".
- - a) Axle lockouts must be engaged.

  - a) Axle lockouts must be engaged.
    b) Jib lifts are prohibited.
    c) Free fall operation is prohibited.
    d) Tire inflation pressure must be 8.0 kg/cm².
    e) Parking brake must be applied during load lifting.
    f) Over side load ratings are less than those of front and rear. When swinging from over front or rear to over side, be sure the suspended load will not exceed the over side rating.
    g) When transporting a load (Pick and Carry), the machine must be on firm, level surface. Do not exceed 5 km/h travel speed.
    h) When transporting a load, winch and swing brakes must be locked.
    When minimum angles are indicated at the bottom of load rating table, tipping may result if the boom is lowered beyond that stated angle.



