

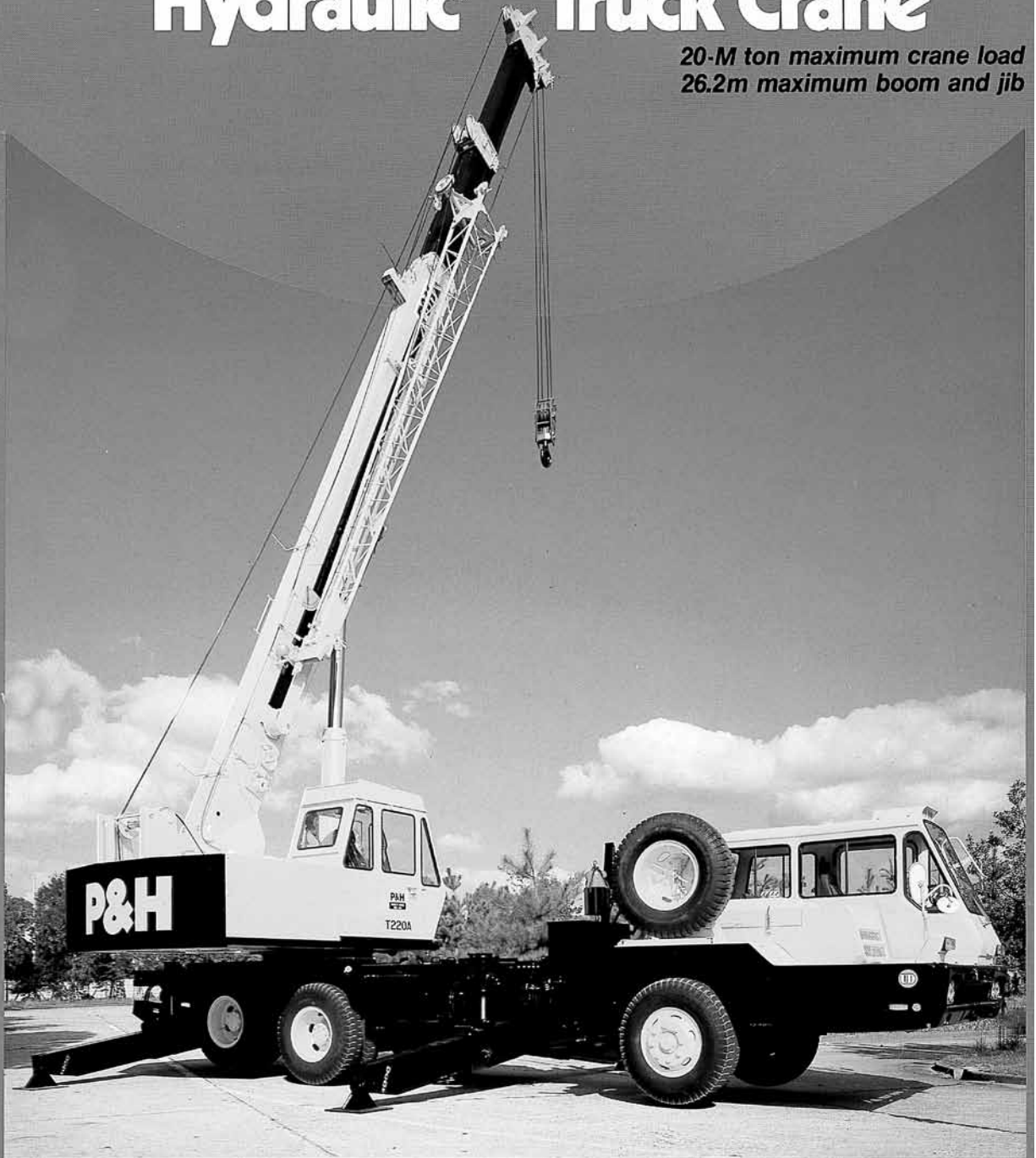
**P&H**

**KOBELCO**

# T220A

## Hydraulic Truck Crane

*20-M ton maximum crane load  
26.2m maximum boom and jib*



**KOBE STEEL, LTD.**

Bulletin No. KP-T220A-2

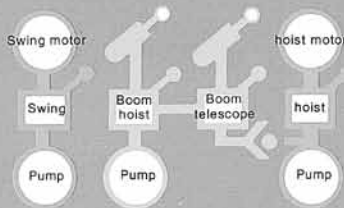
# A new standard of and reliability

## The greatest lifting capacity in its class

This model can hoist a 6.25 metric ton (13,780 lbs.) load with a 18.2m (59'-9") boom at an 8m (26'-3") operating radius, and 4.45 metric ton (9,810 lbs.) load with a 26.2m (85'-11") boom at a 10m (32'-10") operating radius. It also displays extra performance for loading and high elevation work.

## 3-pump system for efficient operation

This allows independent or combined operation of all three basic functions. Movement is always steady, smooth and sure.



## Easy, precise inching

A special control valve in the hoist circuit allows high/low speed selection via a single lever which controls both the main and auxiliary winches. In the low-speed range, precise, stepless inching can be made regardless of load or engine speed.

## Three-section, telescoping boom

The boom is made of high tensile strength steel plate. Its two hydraulic telescoping sections can be extended or retracted simultaneously and are controlled by a single lever.



Max. lifting capacity = **20,000**

# efficiency

## Smooth swinging

A special brake valve and disc brake have been added to the independent hydraulic swing circuit for smoother swinging from swing start to swing stop.



0 kg × 3.0 m (44,090 lbs. × 9'-10')

Max. boom & jib length = 26.2 m + 7.3 m (85'-11" + 23'-11")

**Wider deluxe cab**

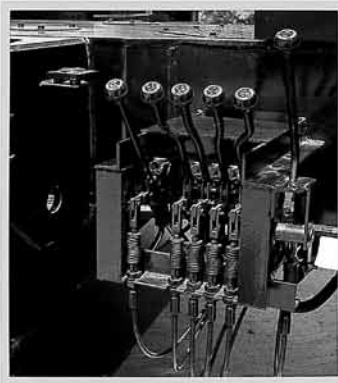
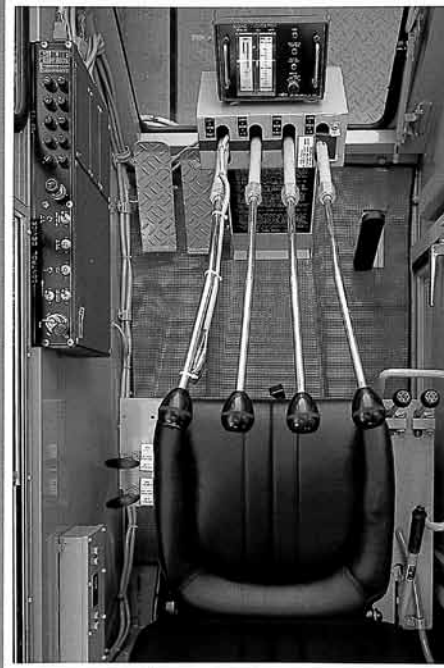
- For better ventilation and visibility, the cab has extra-wide front and side windows in addition to a skylight. Skylight and front window are provided with large wipers.
- Highback reclining seat allows comfortable high-elevation work. Cab is human-engineered for superb safety, convenience and comfort.

**Easy operation control**

The four main operating levers are arranged on a centralized control stand for easier, faster manipulation. The levers are short-throw, finger-control types and their lengths can be adjusted for the operator's reach. All meters are easily visible.

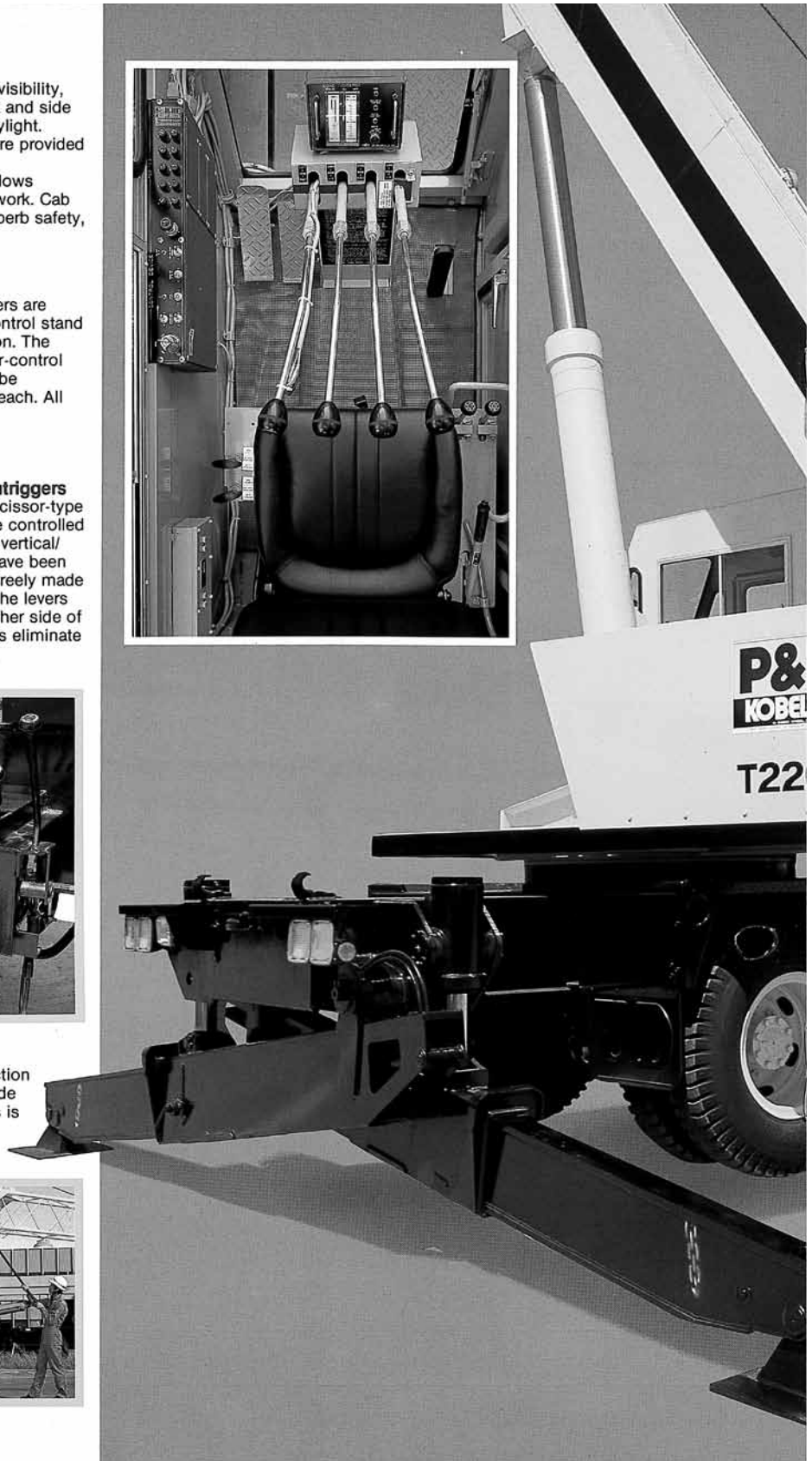
**Easy setting of 6-lever outriggers**

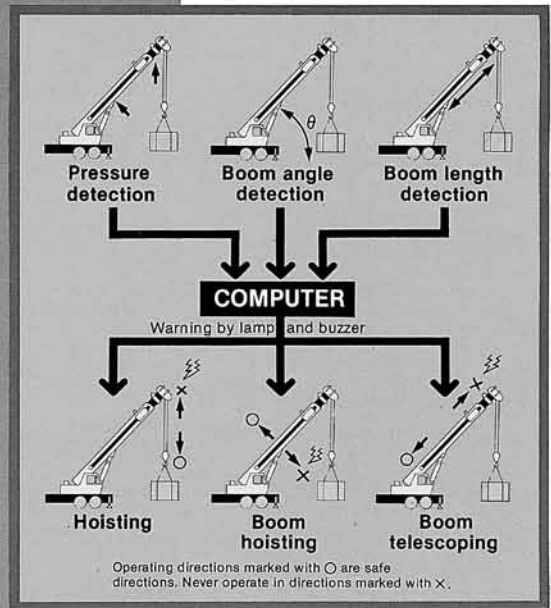
With the field-proven P&H scissor-type outriggers, all operations are controlled with a single lever once the vertical/horizontal selection levers have been set. Each operation can be freely made using the selection levers. The levers can be manipulated from either side of the carrier. Self-storing floats eliminate handling.



**Quick jib setting**

The jib is of lattice construction and can be folded on the side of the boom. Three minutes is all that is required for folding or unfolding.





#### Overload Warning Device "CCS" (No Automatic Shut Off) [optional]

- This device gives the operator advance warning for when the load being lifted reaches 90% of the rated capacity.
- A computer memorizes the stepless and continuous limit (rated) load curves to indicate the precise limit load at all working positions.
- The limit load at any working position is displayed in metric tons on a digital meter for easy confirmation. The same meter is used to display the actual load as measured by a precise boom hoist pressure detection system when the LIFTING IN DISPLAY button is pressed.
- The ratio of the actual load to the limit load is expressed as a percentage.

#### Outstanding mobility

Fast, easy transportation between work sites and through tight passages improves work efficiency, leading to a remarkable rise in the activity rate and profit.

## Specifications

### UPPER



#### SWING UNIT

Hydraulic radial piston motor drives swing pinion through deck mounted planetary gear reducer. 360° continuous rotation.

#### SWING BRAKE

Hand operated disc brake mounted on swing reducer.

#### SWING GEAR

Internal spur gear.

#### SLEWING RING

Single row ball bearing swing circle—swing gear integral.



#### MAIN WINCH

Mounted on rear part of revolving frame. Driven by hydraulic plunger motor through planetary reducer and clutch.

**Clutch:** shoe type, internal expanding with hydraulic power.

**Brake:** band type, direct acting wheel cylinder and master cylinder

**Drum:** 280mm (11.0") P.C.D., 435mm (17.1") wide, 412mm (16.2") dia. flanges.

Max. drum capacity . . . . . 180m (591')

Hoist wire rope . . . . . IWRC 6 × Fi (22 + 7) c/o, 14mm (0.55") dia. 150m (492') length.



#### AUX. WINCH

Mounted on rear part of revolving frame. Driven with the same hoist motor that drives main winch through planetary gear reducer.

**Clutch:** shoe type, internal expanding with hydraulic power.

**Brake:** band type, direct acting wheel cylinder and master cylinder.

**Drum:** 280mm (11.0") P.C.D., 225mm (8.9") wide, 412mm (16.2") dia. flanges.

Max. drum capacity . . . . . 91m (299')

Hoist wire rope . . . . . IWRC 6 × Fi (22 + 7) c/o, 14mm (0.55") dia. 85m (279') length.

### BOOM HOIST

One double acting cylinder with integral safety holding valve.



#### BOOM TELESCOPE

Full power telescoping by a full power cylinder with holding valve and wire ropes.

#### CONTROLS

Four adjustable hand control levers for swing, telescope, boom hoist and winch, two short hand levers for main and aux. winch clutch ON-OFF. One short hand lever for swing brake lock. Two brake pedals for main and aux. winch drum brake. Foot pedal for engine throttle control.



#### OPERATOR'S CAB

All weather, full vision with safety glass, carrier engine start and shut off switches.

#### SAFETY DEVICES

Boom angle indicator, over hoist alarm bell, relief valves to prevent over-pressure to hydraulic circuits, safety holding valves for boom hoist and telescopic cylinders, counter balance valve for hoist motor, over load relief valve for swing motor and load indicator. Optional: Overload Warning Device.

### HYDRAULIC SYSTEM

#### POWER SYSTEM

Power for all motions of upper structure and outriggers is delivered from carrier engine PTO to the hydraulic motors and hydraulic cylinders through hydraulic pumps mounted on the carrier.

#### PUMPS

Carrier engine PTO drives 3-tandem gear pumps.

First pump actuates boom hoisting cylinder, boom extension cylinder and winch motor.

Second pump actuates winch motor, and first pump assists second pump in case of high speed hoist and lowering operation.

Third pump actuates swing motor via outrigger hydraulic system.

#### MOTORS

One, hydraulic radial piston motor for swing.

One, hydraulic plunger motor for hoist.

#### CONTROL VALVES

One set of 4-stack, 4-way valves and one 4-way valves.

#### OIL RESERVOIR

Capacity . . . . . 290 liters (76.6 US gal.)

### CARRIER

#### MAKE AND MODEL

Nissan Diesel Motor KW30M Truck Crane Carrier.

#### TYPE

Front engine, forward control, left hand or right hand steering, 6 × 4.

#### FRAME

All welded construction, ladder type, box section side member.



#### OUTRIGGERS

P & H hydraulic scissor-type with self-storing floats, eight double-acting hydraulic cylinders for independent horizontal and vertical motion of each beam, manual valve controlled at side of carrier.



#### POWER PLANT

Nissan Diesel Motor PE6 Diesel Engine, 4 cycles, direct injection, water cooled, in-line diesel engine, 6 cylinders.

Max. output (JIS rated) . . . . . 230PS at 2,300rpm

Max. torque (JIS rated) . . . . . 83kg-m (600ft.-lbs.) at 1,200rpm

#### ELECTRICAL SYSTEM

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

#### FUEL TANK

200 liters (52.8 US ga.) capacity.

#### CLUTCH

Dry single plate, hydraulically operated clutch release mechanism with air assisted booster.

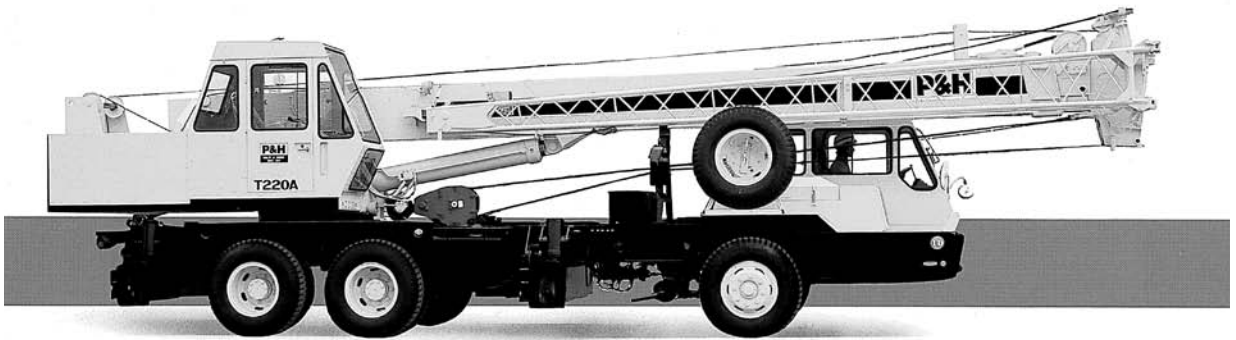
#### TRANSMISSION

Constant mesh, five speeds forward, one reverse, mechanical type transmission.

Gear ratios: 1st—6.540, 2nd—3.780, 3rd—2.511, 4th—1.442, 5th—1.000, rev.—6.533

#### SERVICE BRAKE

**Foot Brake:** Full air brake on all six wheels, dual air line system, internal expanding leading and trailing shoe type.



#### PARKING BRAKE

**Hand Brake:** Mechanically operated by hand brake lever, internal expanding duo-servo shoe type, acting on drum at transmission case rear.



#### STEERING

Recirculating ball screw type with linkage power assistance.

#### FRONT SUSPENSION

Semi-elliptic leaf springs with anchor at front and hanging shackle at rear.

#### REAR SUSPENSION

Underhanging high tensile steel equalizer beams with self adjusting spherical bearing at end, includes two torque rods. (No springs)

#### FRONT AXLE

Drop forged steel "I" section beam, reverse "ELLIOT" steering knuckles. 6,200 kg (13,670 lbs.) rated capacity.

#### REAR AXLE

Fully floating, pressed steel banjo type housing, in-line tandem type. 22,000 kg (48,500 lbs.) rated capacity; 11,000 kg (24,250 lbs.)—each axle. Final reduction gear: Single reduction, hypoid gear, reduction ratio 6.166.

#### TIRES

**Front:** Single × 2, 10.00—20—16 PR

**Rear:** Dual × 4, 10.00—20—16 PR

#### CAB

Steel, two-man, semi below floor type offset one side cab.



#### INSTRUMENTS

**Meters:** Speedometer with odometer, tachometer, fuel gauge, water temperature gauge, air pressure gauge and oil pressure gauge.

**Warning Lights:** Low oil pressure and low air pressure.

**Indicating Lamp:** Turn signal, headlight high beam, battery switch, hand brake, exhaust brake, and air heater.

#### LIGHTS

Headlights, tail lights, stop lights, fog lights, licence plate light, parking lights, reverse light, and side clearance lights.

#### EQUIPMENT

Front bumper, full fenders, skirts, horn, rear view mirrors, air tank, boom rack (mounted on carrier frame—no swing on travelling), one spare rim and tire, tools and accessories.

## ATTACHMENTS

#### BOOM

Three sections, consisting of a boom base and two power telescoping sections, all welded high tensile steel plate box type construction.

Fully retracted length . . . . . 10.2 m (33'-6")

Fully extended length . . . . . 26.2 m (85'-11")

#### JIB

Tubular high tensile steel chords, lattice construction, 7.3 m (23'-11") length. Boom side folding type. Single jib sheave with roller bearing.



#### HOOK BLOCK

**Main:** 20 metric ton (44,090 lbs.), four sheaves with swivel hook and safety latch.

**Jib:** Weighted ball with swivel hook and safety latch.

## AXLE LOAD

With jib, spare tire, tools and 2-man crew (130 kg—290 lbs.) (approx.)

	Left hand drive	Right hand drive
Total (G, V, W)	20,370 kg (44,910 lbs.)	20,370 kg (44,910 lbs.)
Front axle	6,050 kg (13,340 lbs.)	6,050 kg (13,340 lbs.)
Rear axle	14,320 kg (31,570 lbs.)	14,320 kg (31,570 lbs.)

## Performance

Max. lifting capacity	20,000 kg × 3.0 m (44,090 lbs. × 9'-10")	
Boom length	10.2—26.2 m (33'-6"—85'-11")	
Jib length	7.3 m (23'-11")	
Max. boom & jib length	26.2 m + 7.3 m (85'-11" + 23'-11")	
Main hoist line speed (4th layer of drum)	hoisting	83 m/min (272.3 fpm)
	lowering	83 m/min (272.3 fpm)
Main hook speed (8 part line)	hoisting	10.4 m/min (34.1 fpm)
	lowering	10.4 m/min (34.1 fpm)
Aux. hoist line speed (4th layer of drum)	hoisting	83 m/min (272.3 fpm)
	lowering	83 m/min (272.3 fpm)
Boom hoisting speed (0°—80°)	73 sec.	
Boom lowering speed (80°—0°)	45 sec.	
Boom telescoping speed	extend	88 sec. (10.2—26.2 m)
	retract	60 sec. (26.2—10.2 m)
Swing speed	0~3.0 rpm	
Max. travelling speed	71 km/h (44.1 mph)	
Gradeability (tan θ)	0.29	
Min. turning radius	9.5 m (31'-2")	
Gross vehicle weight with jib	20,370 kg (44,910 lbs.)	

# Lifting Capacities

## MAIN BOOM RATED LOADS IN KGS (LBS.)

Operating Radius in Meters (ft.-in.)	10.2m (33'-6") Boom	18.2m (59'-9") Boom	26.2m (85'-11") Boom
3.0 (9-10)	20,000 (44,090)	11,000 (24,250)	
3.5 (11-6)	17,500 (38,580)	11,000 (24,250)	
4.0 (13-1)	15,500 (34,170)	11,000 (24,250)	
4.5 (14-9)	13,600 (29,980)	11,000 (24,250)	6,000 (13,230)
5.0 (16-5)	12,100 (26,680)	11,000 (24,250)	6,000 (13,230)
5.5 (18-1)	10,800 (23,810)	11,000 (24,250)	6,000 (13,230)
6.0 (19-8)	9,550 (21,050)	9,900 (21,830)	6,000 (13,230)
7.0 (23-0)	7,400 (16,310)	7,750 (17,090)	6,000 (13,230)
8.0 (26-3)	5,900 (13,010)	6,250 (13,780)	6,000 (13,230)
9.0 (29-6)		5,200 (11,460)	5,200 (11,460)
10.0 (32-10)		4,350 (9,590)	4,450 (9,810)
11.0 (36-1)		3,650 (8,050)	3,750 (8,270)
12.0 (39-4)		3,100 (6,830)	3,200 (7,050)
13.0 (42-8)		2,650 (5,840)	2,750 (6,060)
14.0 (45-11)		2,300 (5,070)	2,400 (5,290)
15.0 (49-3)		2,000 (4,410)	2,100 (4,630)
16.0 (52-6)		1,700 (3,750)	1,800 (3,970)
17.0 (55-9)			1,600 (3,530)
18.0 (59-1)			1,400 (3,090)
19.0 (62-4)			1,200 (2,650)
20.0 (65-7)			1,000 (2,200)
21.0 (68-11)			900 (1,980)
22.0 (72-2)			750 (1,650)
23.0 (75-6)			650 (1,430)
24.0 (78-9)			500 (1,100)

## HOIST REEVING—14mm (0.55") Dia.

Parts of Line	1	4	6	8
Max. Load kg (lbs.)	2,500 (5,510)	6,000 (13,230)	11,000 (24,250)	20,000 (44,090)

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

## JIB RATED LOADS IN KGS (LBS.)

Main Boom Angle	10.2—26.2m Boom + 7.3m Jib (33'-6"—85'-11" Boom + 23'-11" Jib)
80°	2,500 (5,510)
75°	2,500 (5,510)
70°	2,100 (4,630)
65°	1,800 (3,970)
60°	1,500 (3,310)
55°	950 (2,090)
50°	550 (1,210)
45°	300 (660)

### NOTE:

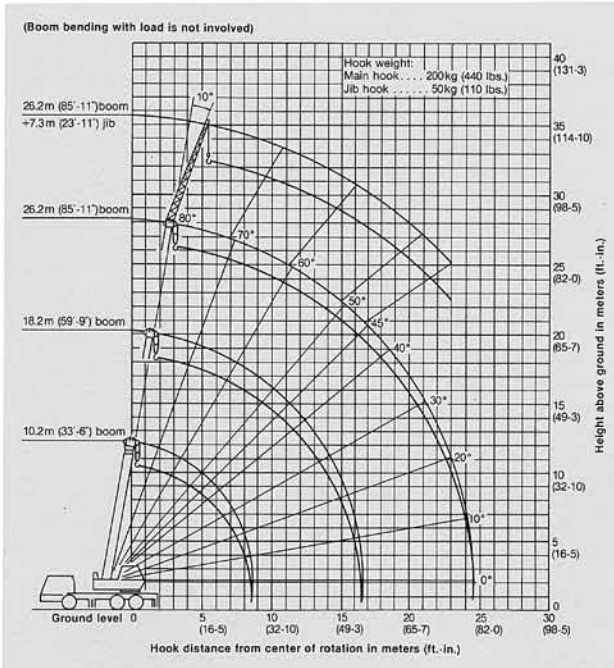
1. Operating radius is horizontal distance from centerline of rotation to a vertical line through the gravity center of the load.
2. The ratings of main boom include weight of main hook [abt. 200kg (440lbs.)] and other hoist attachments.
3. The ratings of jib boom include weight of jib hook [abt. 50kg (110lbs.)] and other hoist attachments.
4. The ratings of jib boom are decided by boom angle.
5. Deduct following figures from main boom ratings when jib boom is extended.

10.2m (33'-6") Boom	650kg (1,430lbs.)
18.2m (59'-9") Boom	600kg (1,320lbs.)
26.2m (85'-11") Boom	550kg (1,210lbs.)

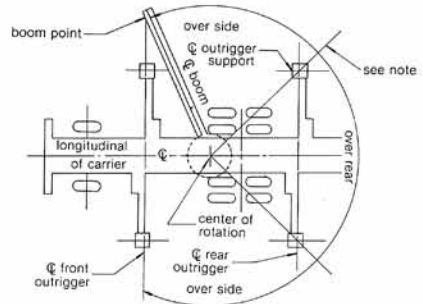
6. Areas on plate where no ratings are shown, operation is not intended or approved.
7. Ratings are contingent upon freely suspended leads and machine standing on a firm, level, uniformly supporting surface.
8. The gross crane ratings shown do not exceed 78% of tipping load.
9. Ratings above the heavy line are based on the machine hydraulic or structural competence and not on machine stability.
10. Ratings shown based on over side and rear with outriggers fully extended and set.



## Working Ranges



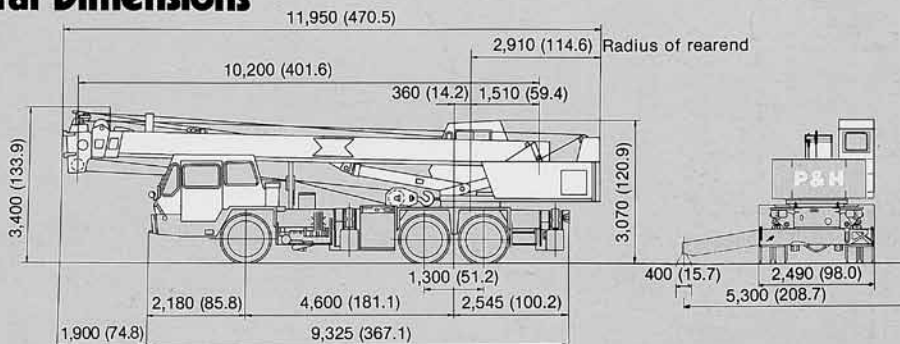
## Working Areas



**NOTE:** These lines determine the limiting position of any load for operation within working areas indicated.

## General Dimensions

Unit: mm (in)



**P&H**



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# Hydraulic Truck Crane

**NOTE:** Due to our policy of continual product improvement, all designs and specifications are subject to change without advance notice. Data published herein is informational in nature and shall not be construed to warrant suitability of the machine for any particular purpose as performance may vary with the conditions encountered. These statements are correct at time of gone to press.



**KOBE STEEL, LTD.**

**CONSTRUCTION MACHINERY DIVISION**

*No. 27-8, 6-chome, Jingumae, Shibuya-ku, Tokyo 150, Japan*

*Phone: Tokyo (03) 797-7021*

*Telex: 2228507 KOBSTL J or KSLCONST J 29757*

*Cable: "KOBESTEEL TOKYO"*

**Address Inquiries to:**

Printed in Japan 86012000F