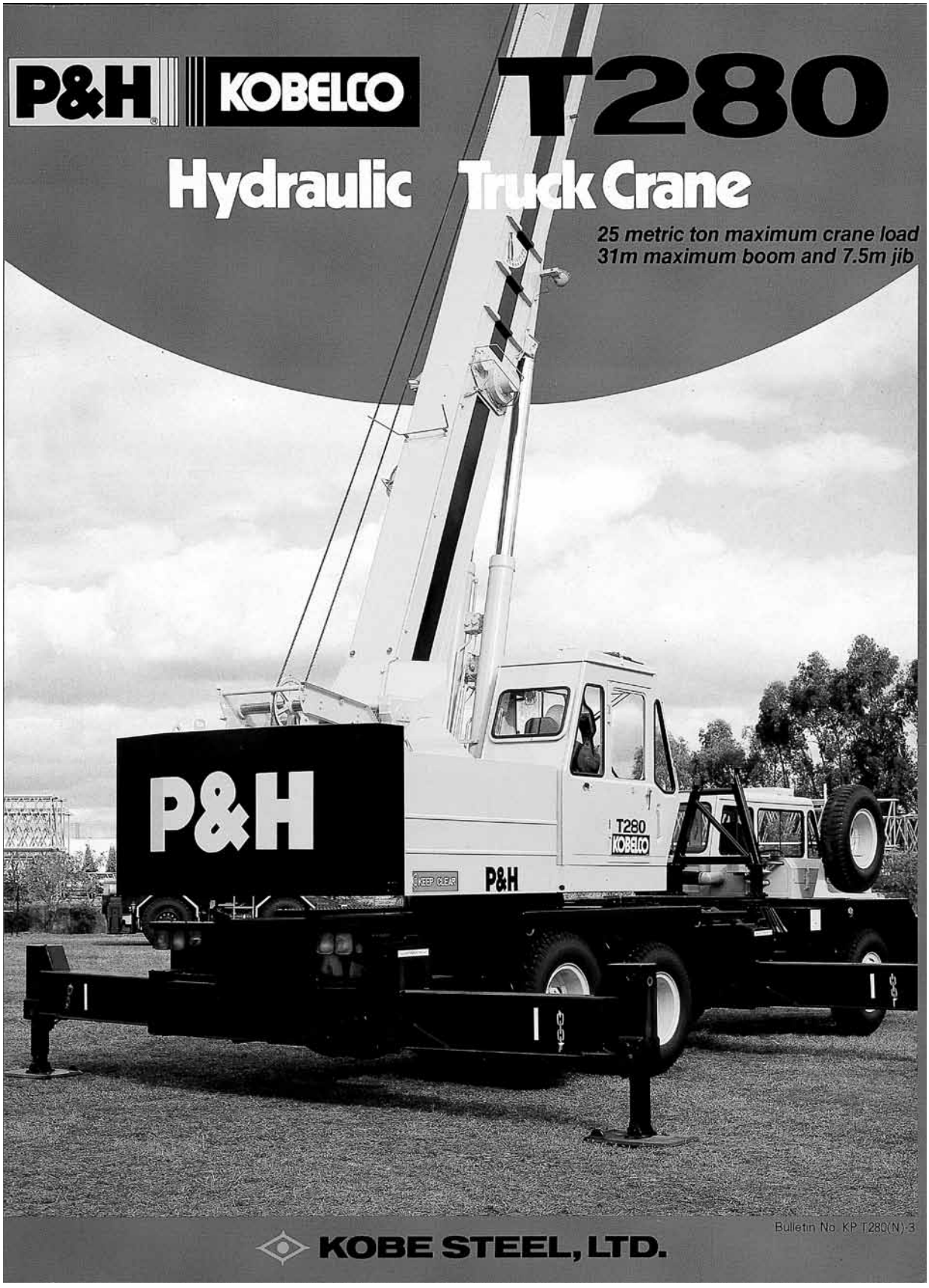
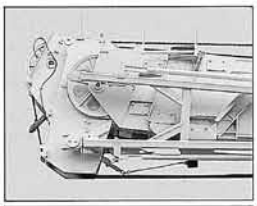

P&H
KOBELCO
T280
Hydraulic Truck Crane
25 metric ton maximum crane load
31m maximum boom and 7.5m jib
P&H
T280
KOBELCO
KEEP CLEAR
P&H
Bulletin No. KP T280(N)-3
KOBE STEEL, LTD.

Announcing the T280 with a 500k horizontal rated crane load with a 31m main boom.

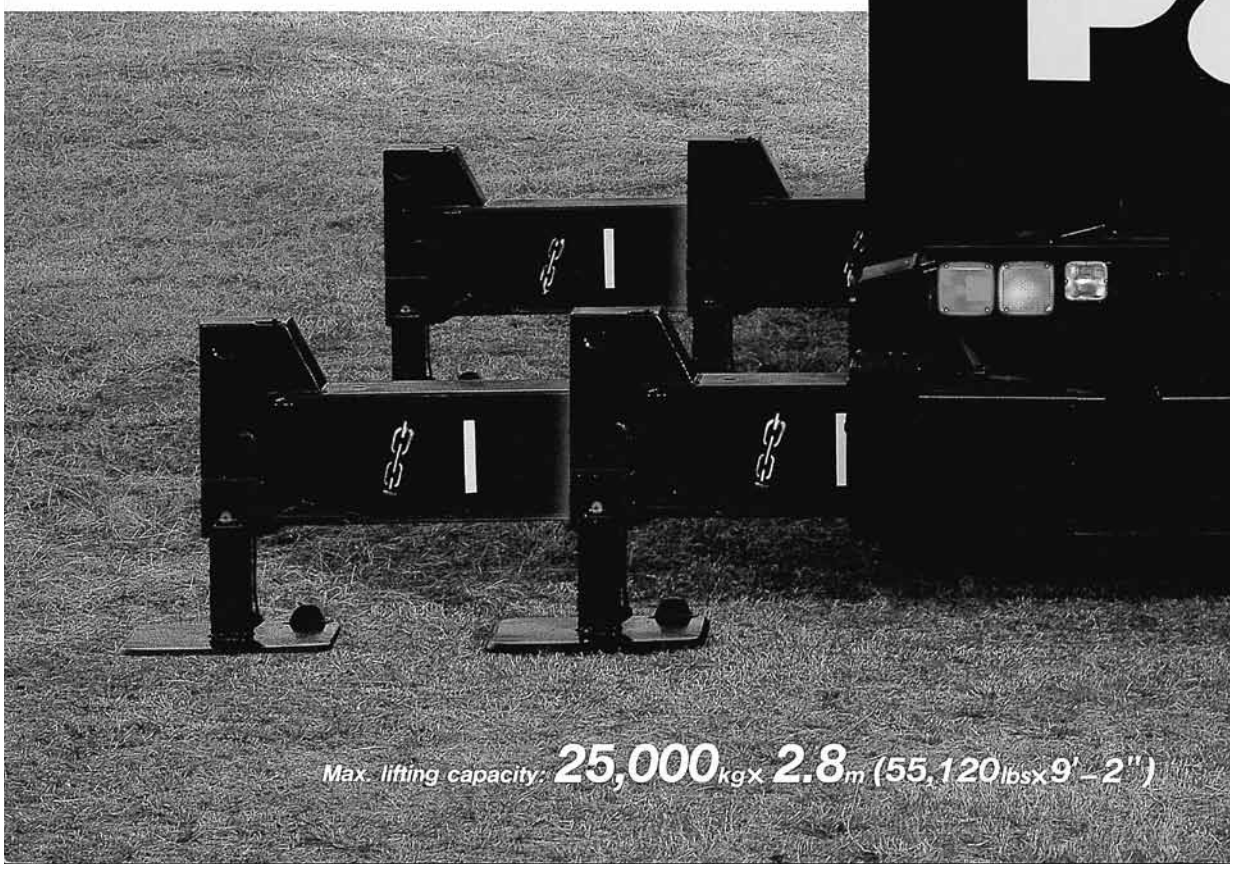
Unparalleled lifting stability

The T280 provides an unparalleled lifting stability with its rear mounted boom and boom hoist cylinders, and M-type hydraulic outriggers for extremely wide extension width. The rated crane load of the 31m (101'-8") main boom is 500kg (1,100lbs) when the boom is horizontally positioned, the performance is second to none. The truck crane has the largest lifting capacity at all boom lengths, the widest working range, and the largest lift from ground level in its class. The machine can handle any job, be it a job handling heavy loads, a job at elevated heights, or a job requiring a long reach.



Rugged, lightweight boom

A completely new boom design. . . functionally-designed layout of auxiliary and boom telescope sheaves and jib (Pat. pending). This results in a rugged boom with a minimum deflection and easy handling. Travelling is also simplified by the streamlined design.



Rear-mount boom hoist cylinders

Two powerful cylinders are used to hoist the boom. The boom foot and boom hoist cylinder foot are positioned in the extreme rear to increase lifting capacity. Clear visibility is also assured during operation.

KOBELCO's exclusive M-type hydraulic outriggers (Pat. pending)

- The outriggers are compact when stored and wide when extended. The new M-type hydraulic outriggers are the fruits of Kobe Steel's advanced technology. The max. extension width is 6.0m, (19'-8") the longest in its class. Coupled with oversized floats, they significantly improve machine stability during work.
- The jack cylinder protrudes slightly above the beam, and is protected from damage by a cover. Handling the load near the crane can be done with safety. The cylinder rods are not exposed outside the beams, so there is no fear of oil leaks caused by rod damage.
- Beams and jacks can be operated from either side of the carrier. They can be controlled independently or simultaneously with the main control lever.

Automatic storing floats

Floats are large and almost identical in size to ordinary floor plates. Despite their size, they are automatically stored flush with the vehicle's width. The special storing design for the jack cylinder and floats results in the longest extension width in its class.

Max. boom & jib length: 31m+7.5m (101'-8"+24'-7")

Newly designed twist jib stored on the side and turned downward for extension (Pat. pending)

The compression truss construction jib is sturdy, lightweight and compact. For storage, the extended jib is twisted so that its sides face up and down, and then turned upward to be held beside the boom. This storage arrangement assures the driver safe travelling with a wider view. Since the jib is turned downward for extension, the space required for setting can be minimal. Setting is easy even in confined areas.

Revolutionary Hydrotorque for smooth swing

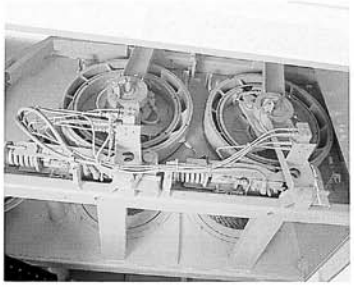
This new hydraulic swing system uses a pressure control system to deliver a superb swing performance. The swing torque, that is, the pressure applied to the hydraulic motor can be precisely controlled by the movement of the lever. No shocks at starts and stops. In addition, no swing speed variations can be caused since the system is not affected by the variations in engine rpm.

Selection of free swing and swing lock at a flip of a switch

A neutral brake function is added to the Hydrotorque.® This brake function allows two different swing operations — free swing and brake lock — when the swing lever is in neutral. To switch the operations, just flip the snap switch. Since operations can be selected according to the job, jobs can be done safe and sure.

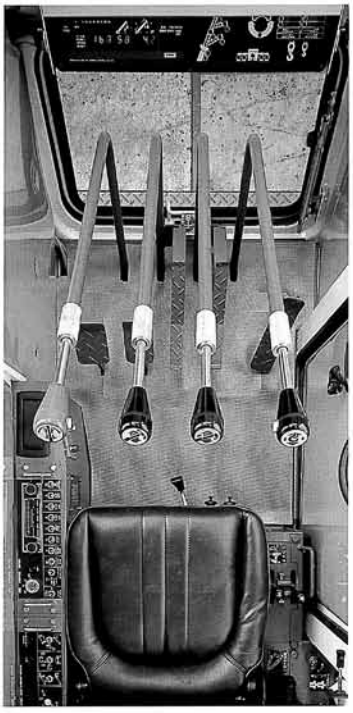
2-system winch brakes for added safety

Both the main and auxiliary winches use a negative/positive brake system. The negative brake automatically functions when the winch lever is returned to neutral with the clutch lever set at ON. In addition, it functions when the clutch lever is set at OFF. With the negative brake, the utmost safety is assured.
The positive brake, identical to that of an automobile in function, allows free-fall braking by depressing the foot brake when the clutch lever is at FREE position.



Deluxe, complete cab with added safety and comfort

The cab is extremely attractive, designed for improved work efficiency. It contains: Check-and-Safety monitor for safe operation. Side console with neatly-arranged switches for convenience. Long main control levers that can be easily controlled with a short stroke. Boom hoist and boom telescope levers with pedals for hand/foot control selection (for ex. left hand for swing, right hand for winch and right foot for accelerating or left foot for boom hoist). High-back reclining seat. Decorated door trim and walls. Door window is rolled up and down by handle.



Check-and-Safety monitor

- Computerized monitoring display of crane operation. All necessary information during crane operation is displayed by digital and lamp indicators on a single panel for at-a-glance confirmation.
- Over load prevention data for 7 important factors are displayed. They are: lifted load (actual load), load limit (rated crane load), load moment, boom angle, boom length, operating radius and lift from ground level. All data are digitally displayed, except for the load moment (%) which is indicated by a lamp.
- Working points are indicated by respective lamps on the illustrations of the main boom, jib, auxiliary sheave, working area, outrigger and main/auxiliary hook blocks (drum revolution/optional). Safety monitors are provided for over load, boom angle limit, over wind, over rewind, oil temperature, accumulator pressure, jib extended, or stored.
- Automatic stopping devices assure safe crane operation against over loading and over winding.

Roomy cab with excellent visibility

The Check-and-Safety monitor is inset in the front window frame for better front view. Operation stand is eliminated to provide enough leg room and clear downward view. The T280's cab offers roominess and excellent visibility.

Gantry designed for improved serviceability

- Simple yet rugged gantry can be turned rearward by simply removing a pin to provide an access for easier boom maintenance and servicing.

T280 Hydraulic Truck Crane

Specifications

UPPER

SWING UNIT
Hydraulic radial piston motor drives swing pinion through deck mounted planetary gear reducer. 360° continuous rotation. Hydrotorque® circuit controls hydraulic pressure by four check valves. Brake valve can select free or lock when swing control lever in neutral position.

SWING BRAKE
Hand operated disc brake mounted on swing reducer.

SWING GEAR
Internal spur gear.

SLEWING RING
Single row ball bearing swing circle.

MAIN WINCH
Mounted on rear part of revolving frame. Driven by hydraulic plunger motor through double stage gear reducer and clutch.
Clutch: Band type, internal expanding with hydraulic power.
Brake: Band type. Both positive and negative brake system provided.
Drum: 352mm (13.9") P.C.D., 603.5 mm (23.8") wide, 528mm (20.8") dia. franges.
Max. drum capacity ..... 280m (919')
Hoist wire rope ..... U4 × SES(39) 16mm (0.63") dia. 165m (541') length.

AUX. WINCH
Mounted on rear part of revolving frame. Driven with the same hoist motor that drives main winch through double stage gear reducer.
Clutch: Band type, internal expanding with hydraulic power.
Brake: Band type. Both positive and negative brake system provided.
Drum: 352 mm (13.9") P.C.D., 603.5 mm (23.8") wide, 528mm (20.8") dia. flanges.
Max. drum capacity ..... 280m (919')
Hoist wire rope ..... U4 × SES(39) 16mm (0.63") dia. 85m (279') length.
(Main winch drum and aux. winch drum have the same dimensions except wire rope length.)

BOOM HOIST
Two double acting cylinders with integral safety holding valve.

BOOM TELESCOPE
Full power telescoping by two full power cylinders with holding valve and wire ropes.

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

OPERATOR'S CAB
All weather, full vision with safety glass.

SAFETY DEVICES
Boom angle indicator, over wind alarm buzzer, relief valves to prevent over-pressure to hydraulic circuits, safety holding valves for boom hoist and telescopic cylinders, counter balance valve for hoist motor. Overload Warning Device (automatic stopping), safety monitor (include over wind, over rewind, oil temperature, accumulator pressure, drum revolution—optional, jib stored or extended).

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 4-inline 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.
Fourth pump actuates pilot circuits for clutches and negative cylinders.

MOTORS
One, hydraulic radial piston motor for swing.
One, hydraulic plunger motor for hoist.

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

OIL RESERVOIR
Capacity ..... 410 liters (108.3 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.

OUTRIGGERS
KOBELCO hydraulic M-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) ..... 230 PS at 2,300 rpm

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 (52.8US 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

BRAKE
Service: 2 circuit air brake; 6 wheels internal expanding.
Emergency, Parking: Spring loaded brake, acting on 4 rear wheels, variable air operated.
Auxiliary: Exhaust brake.

STEERING
Recirculating ball screw type with linkage power assistance.

SUSPENSION
Front: Semi-elliptic leaf springs with shock absorber.
Rear: Equalizer beams and torque rods.

FRONT AXLE
Reverse—elliot type, I beam. Rated load 6,200kg (13,670-lbs.)

REAR AXLE
Full floating type, Rated load 22,000kg (48,500 lbs.)

FINAL REDUCTION
Hypoid gear. Ratio 6.166.

TIRES
Front: Single × 2, 10.00-20-16PR
Rear: Dual × 4, 10.00-20-16PR

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 three power telescoping sections, all welded high tensile steel plate box type construction.
Fully retracted length ..... 10m (32'-10")
Fully extended length ..... 31m (101'-8")

JIB
High tensile steel square pipe, truss construction, 7.5m (24'-7") length. Twist jib (Storage on left hand side of boom basic section, downward turning for jib stretch) with suspension rod. Single sheave with ball bearing.

HOOK BLOCK
Main: 25 metric ton (55,120 lbs.) four sheaves with swivel hook and safety latch.
Jib: Weighted ball with swivel hook and safety latch.

AXLE LOAD

With jib, spare tire, tool and 2-man crew (150kg 330 lbs.) (approx.)

	Left hand drive	Right hand drive
Total (G, V, W)	23,340kg (51,460 lbs.)	23,340kg (51,460 lbs.)
Front axile	6,100kg (13,450 lbs.)	6,100kg (13,450 lbs.)
Rear axile	17,240kg (38,010 lbs.)	17,240kg (38,010 lbs.)

PERFORMANCE

Max. rated lifting capacity		25 metric ton x 2.8m (55,120lbs x 9'-2")
Boom length		10 ~ 31m (32'10"-101'-8")
Twist jib length		7.5m (24'-7")
Boom derricking angle		-3° ~ 80°
Boom derricking time		55 sec. (-3° ~ 80°)
Boom telescoping time		110 sec (10 ~ 31m boom)
Hoist speed (Main & aux. winches)	High	100m/min (328.1 fpm) (4th layer)
	Low	50m/min (164.0 fpm) (4th layer)
Main hoist hook speed (8 part line)	High	12.5m/min (41.0 fpm) (4th layer)
	Low	6.25m/min (20.5 fpm) (4th layer)
Aux. hoist hook speed (Single part line)	High	86m/min (282.2 fpm) (2nd layer)
	Low	43m/min (141.1 fpm) (2nd layer)
Swing speed		3.2rpm
Max. travelling speed		71km/h (44.1 mph)
Gradeability (tan θ)		0.25
Min. turning radius		9.5m (31-2")
Gross vehicle weight with jib		23,340kg (51,460 lbs.)

Lifting Capacities

RATED LOADS IN KGS (LBS)

With outriggers fully extended to 6.0m (19'-8") centers — over side and rear.

Operating Radius in Meters (ft-in)	Main Boom				Auxiliary Sheave			
	10m (32'-10") boom	17m (55'-9") boom	24m (78'-9") boom	31m (101'-8") boom	10m (32'-10") boom	17m (55'-9") boom	24m (78'-9") boom	31m (101'-8") boom
2.8 (9-2)	25,000 (55,120)				3,000 (6,610)			
3.0 (9-10)	23,200 (51,150)	14,200 (31,310)			3,000 (6,610)	3,000 (6,610)		
3.5 (11-6)	20,000 (44,090)	14,200 (31,310)			3,000 (6,610)	3,000 (6,610)		
4.0 (13-1)	18,000 (39,680)	14,200 (31,310)	7,200 (15,870)		3,000 (6,610)	3,000 (6,610)	3,000 (6,610)	
4.5 (14-9)	16,200 (35,710)	14,200 (31,310)	7,200 (15,870)		3,000 (6,610)	3,000 (6,610)	3,000 (6,610)	
5.0 (16-5)	14,600 (32,190)	13,100 (28,880)	7,200 (15,870)	5,700 (12,570)	3,000 (6,610)	3,000 (6,610)	3,000 (6,610)	3,000 (6,610)
6.0 (19-8)	12,050 (26,570)	11,100 (24,470)	7,200 (15,870)	5,700 (12,570)	3,000 (6,610)	3,000 (6,610)	3,000 (6,610)	3,000 (6,610)
7.0 (23-0)	10,000 (22,050)	9,700 (21,380)	7,200 (15,870)	5,700 (12,570)	3,000 (6,610)	3,000 (6,610)	3,000 (6,610)	3,000 (6,610)
7.5 (24-7)	9,200 (20,280)	9,000 (19,840)	7,200 (15,870)	5,700 (12,570)	3,000 (6,610)	3,000 (6,610)	3,000 (6,610)	3,000 (6,610)
8.0 (26-3)	8,200 (18,080)	7,750 (17,090)	6,800 (14,990)	5,400 (11,900)	3,000 (6,610)	3,000 (6,610)	3,000 (6,610)	3,000 (6,610)
8.25 (27-1)	7,800 (17,200)	7,350 (16,200)	6,600 (14,550)	5,250 (11,570)	3,000 (6,610)	3,000 (6,610)	3,000 (6,610)	3,000 (6,610)
9.0 (29-6)		6,300 (13,890)	6,100 (13,450)	4,850 (10,690)		3,000 (6,610)	3,000 (6,610)	3,000 (6,610)
10.0 (32-10)		5,300 (11,680)	5,450 (12,020)	4,450 (9,810)		3,000 (6,610)	3,000 (6,610)	3,000 (6,610)
11.0 (36-1)		4,450 (9,810)	4,800 (10,580)	4,100 (9,040)		3,000 (6,610)	3,000 (6,610)	3,000 (6,610)
12.0 (39-4)		3,750 (8,270)	4,300 (9,480)	3,800 (8,380)		3,000 (6,610)	3,000 (6,610)	3,000 (6,610)
13.0 (42-8)		3,200 (7,050)	3,700 (8,160)	3,500 (7,720)		2,950 (6,500)	3,000 (6,610)	3,000 (6,610)
14.0 (45-11)		2,750 (6,060)	3,200 (7,050)	3,200 (7,050)		2,500 (5,510)	2,950 (6,500)	2,950 (6,500)
15.0 (49-3)		2,300 (5,070)	2,800 (6,170)	3,000 (6,610)		2,050 (4,520)	2,550 (5,620)	2,750 (6,060)
15.25 (50-0)		2,200 (4,850)	2,750 (6,060)	2,950 (6,500)		1,950 (4,300)	2,500 (5,510)	2,700 (5,950)
16.0 (52-6)			2,450 (5,400)	2,700 (5,950)			2,200 (4,850)	2,450 (5,400)
17.0 (55-9)			2,250 (4,960)	2,400 (5,290)			2,000 (4,410)	2,150 (4,740)
18.0 (59-1)			1,950 (4,300)	2,200 (4,850)			1,700 (3,750)	1,950 (4,300)
19.0 (62-4)			1,700 (3,750)	1,950 (4,300)			1,450 (3,200)	1,700 (3,750)
20.0 (65-7)			1,450 (3,200)	1,750 (3,860)			1,200 (2,650)	1,500 (3,310)
21.0 (68-11)			1,250 (2,760)	1,500 (3,310)			1,000 (2,200)	1,250 (2,760)
22.0 (72-2)			1,050 (2,310)	1,300 (2,870)			800 (1,760)	1,050 (2,310)
22.25 (73-0)			1,000 (2,200)	1,250 (2,760)			750 (1,650)	1,000 (2,200)
23.0 (75-6)				1,150 (2,540)				900 (1,980)
24.0 (78-9)				1,000 (2,200)				750 (1,650)
25.0 (82-0)				900 (1,980)				650 (1,430)
26.0 (85-4)				800 (1,760)				550 (1,210)
27.0 (88-7)				700 (1,540)				
28.0 (91-10)				600 (1,320)				
29.0 (95-2)				500 (1,100)				
29.25 (96-0)				500 (1,100)				

Boom Angle	31m (101'-8") boom +7.5m (24'-7") jib	
	Offset 5°	Offset 30°
80°	2,500 (5,510)	1,250 (2,760)
75°	2,500 (5,510)	1,250 (2,760)
70°	2,050 (4,520)	1,150 (2,540)
65°	1,650 (3,640)	1,070 (2,360)
60°	1,400 (3,090)	990 (2,180)
55°	1,200 (2,650)	910 (2,010)
50°	910 (2,010)	850 (1,870)
48°	820 (1,810)	820 (1,810)
45°	690 (1,520)	640 (1,410)
40°	510 (1,120)	450 (990)
36°	390 (860)	350 (770)

With outriggers mid-extended to 3.9m (12'-10") centers — 360°. / With outriggers fully extended — over front.

Operating Radius in Meters	Main Boom			
	10m (32'-10") boom	17m (55'-9") boom	24m (78'-9") boom	31m (101'-8") boom
2.8 (9-2)	25,000 (55,120)			
3.0 (9-10)	23,200 (51,150)	14,200 (31,310)		
3.5 (11-6)	20,000 (44,090)	14,200 (31,310)		
4.0 (13-1)	17,750 (39,130)	14,200 (31,310)	7,200 (15,870)	
4.3 (14-1)	15,500 (34,170)	14,200 (31,310)	7,200 (15,870)	
4.5 (14-9)	14,100 (31,090)	13,500 (29,760)	7,200 (15,870)	
5.0 (16-5)	11,500 (25,350)	11,150 (24,580)	7,200 (15,870)	5,700 (12,570)
6.0 (19-8)	8,050 (17,750)	7,300 (16,090)	7,200 (15,870)	5,700 (12,570)
7.0 (23-0)	5,800 (12,790)	5,300 (11,680)	6,150 (13,560)	5,700 (12,570)
7.5 (24-7)	5,000 (11,020)	4,450 (9,810)	5,350 (11,790)	5,700 (12,570)
8.0 (26-3)	4,300 (9,480)	3,900 (8,600)	4,700 (10,360)	5,000 (11,020)
8.25 (27-1)	4,000 (8,820)	3,550 (7,830)	4,350 (9,590)	4,700 (10,360)
9.0 (29-6)		2,950 (6,500)	3,600 (7,940)	3,900 (8,600)
10.0 (32-10)		2,250 (4,960)	2,850 (6,280)	3,200 (7,050)
11.0 (36-1)		1,800 (3,970)	2,250 (4,960)	2,550 (5,620)
12.0 (39-4)		1,300 (2,870)	1,800 (3,970)	2,100 (4,630)
13.0 (42-8)		900 (1,980)	1,400 (3,090)	1,650 (3,640)
14.0 (45-11)		550 (1,210)	1,100 (2,430)	1,400 (3,090)
15.0 (49-5)			900 (1,980)	1,150 (2,540)
16.0 (52-6)			650 (1,430)	900 (1,980)
17.0 (55-9)			450 (990)	750 (1,650)
18.0 (59-1)				550 (1,210)
19.0 (62-4)				400 (880)

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

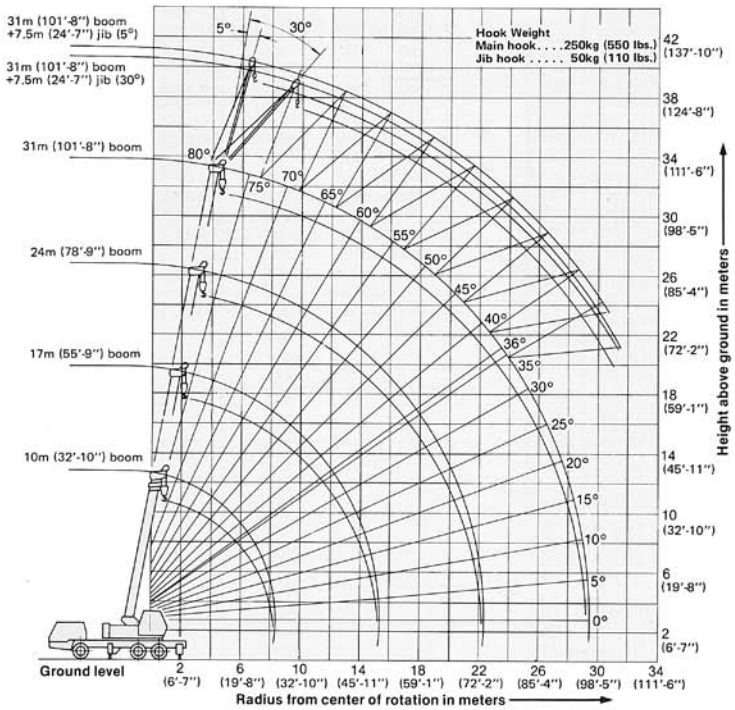
NOTE:

1. Operating radius is the horizontal distance from centerline of rotation to a vertical line through the center of gravity of the load.
2. Load ratings do not exceed 75% of tipping loads.
3. Load ratings are the approvable maximum lifting capacities on a firm and level surface, and include hook block(s), slings, and all other load handling accessories.
   - Main hook block weight: 250kg (550 lbs.)
   - Auxiliary hook block weight: 50kg (110 lbs.)
4. Ratings above the heavy line are based on the machine's hydraulic or structual competence and not on machine stability.
5. Since the operating radius is based on the actual value considered with boom deflection, be sure to operate depending on the actual radius. To operate with the jib mounted on boom, operate basing on actual boom angle only.
6. Load ratings with outriggers fully extended are over rear, over side and over front lifting capacities with the machine leveled. Load ratings with outriggers mid-extended are based on the condition of 3.9m (12'-10") distance of outriggers, and over rear, over side and over front lifting capacities with the machine leveled.
7. To determine load ratings in-between those shown on chart, proceed as follows:
   a. for boom lengths not shown, use rating of rated boom length with lower rating load.
   b. for load radii not shown, use rating of next longer rated radius.
8. Do not lower fully-extended boom with jib at boom angles below 25° or a tipping condition will occur.
9. Standard hoist reevings are shown below. Single line load must not exceed 3,130kg (6,900 lbs.)

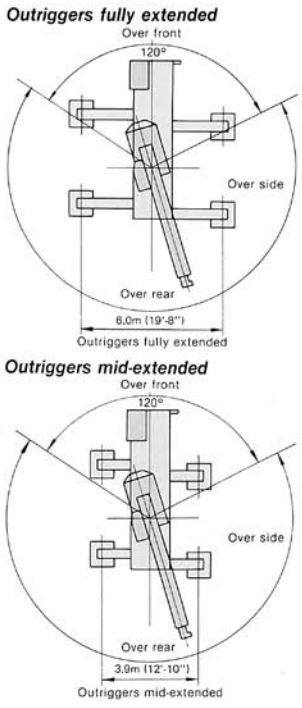
Boom length	10 to 17m (32'-10"– 55'-9")	17 to 24m (55'-9"– 78'-9")	24 to 31m (78'-9"– 101'-8")	Aux. sheave
No. of parts of line	8	6	4	1

10. Over front lifting capacities are less than those of over rear and over side. When turning the machine from over side to over front, be careful not to allow load aloft to exceed over front ratings.
11. 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 (1,540 lbs.) for main hoist line and 500kg (1,100 lbs.) for auxiliary hoist line.

Working Ranges

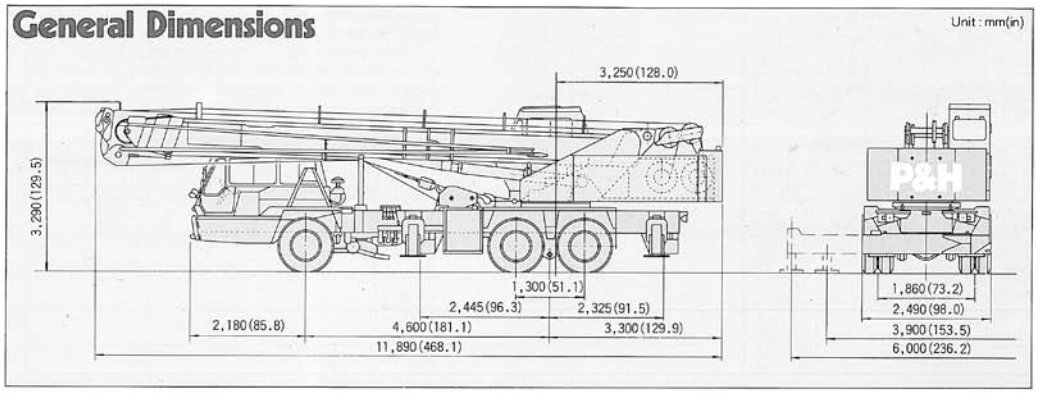


Working Areas



General Dimensions

Unit : mm(in)



P&H KOBELCO

T280

Hydraulic Truck Crane

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

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