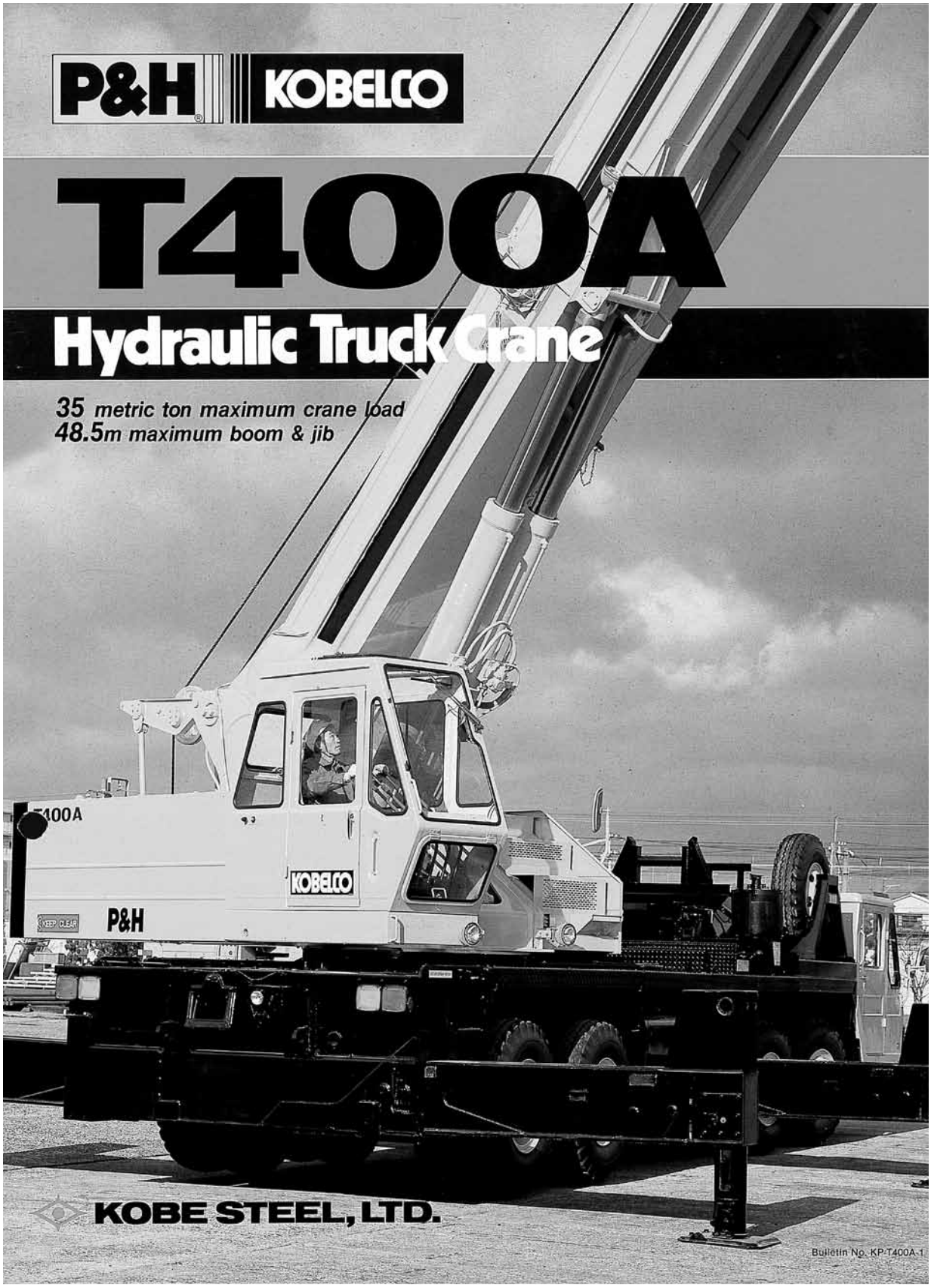

P&H
KOBELCO
T400A
Hydraulic Truck Crane
35 metric ton maximum crane load
48.5m maximum boom & jib
KOBELCO
P&H
KOBE STEEL, LTD.
Bulletin No. KP-T400A-1

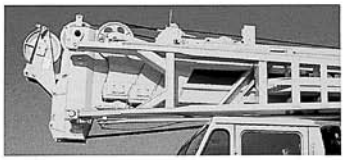
35-ton jobs are a b

Unsurpassed lifting stability

The T400A excels in lifting stability, benefiting from a strong, light boom, M-type hydraulic outriggers for extremely wide extension width, and the rear mounting of the boom, boom cylinders, and winch. The machine can handle any job: heavy loads, jobs at elevated heights, or jobs requiring a long reach.

Rugged, lightweight boom

A completely new boom design is used, with a functionally-designed layout of auxiliary sheave (Pat. pending) 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.

Newly designed twist jib (Pat. pending)

The jib is sturdy, lightweight and compact. Its compression truss basic section incorporates a box-construction tip that can be extended when necessary. 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.

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 6.08m, 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.

Automatic storing floats

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

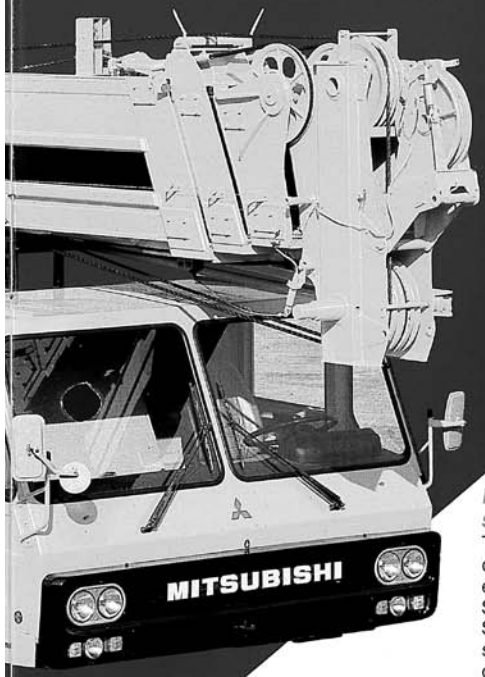
Revolutionary Hydrotorque® for smooth swing

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

eeze with P&H KOBELCO



Max. lifting capacity: 35,000kg × 3m

Max. boom & jib length: 34m + 14.5m

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.

Easy boom extension

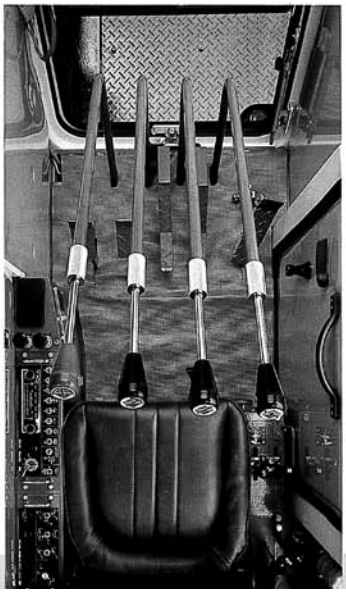
A single lever controls boom extension, from 10.96m to 34m. This is much simpler and more efficient than conventional models, which require different levers for each extension stage.

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 T400A's cab offers roominess and excellent visibility.

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.



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.

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.

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 PARKING 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: 396mm P.C.D., 617.5mm wide, 594mm dia. flanges.
Max. drum capacity 295m
Hoist wire rope ..... U4 × SeS(39), 18mm dia. 190m 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: 396mm P.C.D., 617.5mm wide, 594mm dia. flanges.
Max. drum capacity 295m
Hoist wire rope ..... U4 × SeS(39), 18mm dia. 110m 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, — 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 cylinders, boom telescope cylinders and winch motor asist for high speed.
Second pump actuates winch motor.
Third pump actuates swing motor via outrigger hydraulic system.
Fourth pump actuates pilot circuits for clutches and negative brake cylinders, boom sequencing changeover valve, and 4 check valves in swing circuit.

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

OIL RESERVOIR
Capacity ..... 540 liters

CARRIER

MAKE AND MODEL
Mitsubishi Motors Corp. K354LP Truck Crane Carrier.

TYPE
Front engine, forward control, left hand steering, 8 × 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
Mitsubishi 8DC81A Diesel Engine, 4 cycles, water cooled.
8 cylinders in 90°V.
Max. output (DIN) ..... 269PS at 2,300 rpm
Max. torque (DIN) ..... 93kg-m at 1,400 rpm

ELECTRICAL SYSTEM
24 volt DC. Battery: 12 volt, 140 A.H. × 2

FUEL TANK
300 liter capacity.

CLUTCH
Dry single plate, hydraulic control with air booster.

TRANSMISSION
10 forward and 2 reverse speeds. Synchromesh (3rd ~ 10th) and constantmesh (1st, 2nd & Rev.) gear.
Gear ratio: 1st—9.153, 2nd—7.098, 3rd—4.783, 4th—3.709, 5th—2.765, 6th—2.144, 7th—1.666, 8th—1.292, 9th—1.000, 10th—0.775, Rev. (L)—8.105, Rev. (H)—6.286

BRAKE
Service: Dual circuit air brake; 8 wheels internal expanding.
Emergency, Parking: Spring loaded brake, acting on 4 rear wheels, variable air operated.
Auxiliary: Exhaust brake.

STEERING
Left hand steering. Ball nut type with power booster.

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

FRONT AXLE
Reverse—"ELLIOT" type, I beam. Rated load 6,500kg × 2 = 13,000kg.

REAR AXLE
Full floating type, Rated load 11,500kg × 2 = 23,000kg.

FINAL REDUCTION
Spiral bevel and helical gear. Ratio 9.148.

TIRES
Front: Single × 4, 11.00—20—14PR
Rear: Dual × 4, 11.00—20—14PR

CAB
All steel welded construction, 2-man, low line type.

LAMPS
Ⓔ marked lamps, except fog lamps, back-up lamp, license lamp.

EQUIPMENT
Car heater, transistor radio, windshield washer, radiator shutter, cigarette lighter, ashtray, sun visor, vinyl floor mat, owner's tool set, tachograph, engine tachometer, P.T.O. hourmeter, engine overrun alarm, engine trouble alarm, air supply valve, paper element type air cleaner, water separator of fuel, tool box, spare tire & wheel.

ATTACHMENTS

BOOM
Four sections, consisting of a boom base and three power telescoping sections, all welded high tensile steel plate box type construction.
Fully retracted length 10.96m
Fully extended length 34m

JIB
High tensile steel square pipe, truss construction and all welded high tensile steel plate box type construction, 8.9m and 14.5m 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: 35 metric ton 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) (approx.)

Total	35,900 kg
Front axle	12,950kg
Rear axle	22,950kg

PERFORMANCE

Max. rated lifting capacity		35 metric ton × 3.0m
Boom length		10.96 ~ 34m
Twist jib length		8.9m, 14.5m
Boom derricking angle		− 3° ~ 82°
*Boom derricking time		61 sec. (− 3° ~ 82°)
*Boom telescoping time		113 sec. (10.96 ~ 34m boom)
*Hoisting line speed (Main winch)	High	95 m/min (4th layer)
	Low	45 m/min (4th layer)
*Main hoist hook speed (8 part line)	High	11.88 m/min (4th layer)
	Low	5.63 m/min (4rd layer)
*Aux. hoist hook speed (Single part line)	High	82 m/min (2nd layer)
	Low	38 m/min (2nd layer)
*Swing speed		2.0 rpm
Max. travel speed		64 km/h (estimate)
Gradeability (tan θ)		28.5% (estimate)
Min. turning radius		11.5m

NOTE *Speed: Subject to no load

T400A Hydraulic Truck Crane

Lifting Capacities

RATED LOADS IN KGS

With outriggers fully extended to 6.08m centers —over side and rear or 360° with front outrigger.						Without outriggers over rear
Operating Radius in Meters	Main Boom					Main Boom
	10.96m Boom	14.80m Boom	18.64m Boom	26.32m Boom	34.00m Boom	10.96m Boom
3.0	35,000	25,000	20,000			7,700
3.5	32,500	25,000	20,000			6,100
4.0	30,000	25,000	20,000	9,100		4,900
4.5	27,600	25,000	20,000	9,100		4,000
5.0	24,000	22,400	20,000	9,100	8,000	3,200
5.5	20,700	19,800	18,200	9,100	8,000	2,650
6.0	18,100	17,100	16,500	9,100	8,000	2,200
6.5	15,700	14,900	14,800	9,100	8,000	1,800
7.0	13,800	13,200	13,100	9,100	8,000	1,500
8.0	10,900	10,700	10,500	9,100	8,000	950
9.0	8,900	8,700	8,500	9,100	8,000	
9.135	8,600	8,500	8,250	8,900	8,000	
10.0		7,200	7,000	7,900	8,000	
11.0		6,000	5,800	6,750	7,000	
12.0		5,000	4,950	5,800	6,200	
12.975		4,200	4,200	5,000	5,400	
14.0			3,600	4,300	4,750	
15.0			3,050	3,800	4,200	
16.0			2,500	3,300	3,700	
16.815			2,100	3,000	3,350	
18.0				2,500	2,900	
19.0				2,150	2,550	
20.0				1,850	2,250	
21.0				1,600	2,000	
22.0				1,300	1,700	
23.0				1,050	1,500	
24.0				800	1,300	
24.495				650	1,200	
26.0					900	
27.0					750	
28.0					600	

With outriggers fully extended to 6.08m centers—over side and rear or 360° with front outrigger.				
Boom Angle	34.00m Boom +8.9m Jib		34.00m Boom +14.5m Jib	
	Offset		Offset	
	5°	30°	5°	30°
82°	4,000	2,000	2,700	1,200
80°	4,000	2,000	2,700	1,200
78°	4,000	2,000	2,700	1,200
76°	4,000	2,000	2,340	1,200
74°	3,700	2,000	2,140	1,200
72°	3,370	2,000	1,980	1,200
71°	3,220	2,000	1,900	1,160
70°	3,080	1,940	1,820	1,130
68°	2,850	1,840	1,680	1,060
66°	2,360	1,740	1,550	1,010
64°	1,960	1,520	1,440	980
62°	1,640	1,320	1,340	970
60°	1,340	1,120	1,230	950
58°	1,100	950	1,040	780
56°	880	790	850	650
55°	800	720	750	580
54°	720	650	670	520
52°	560	520	500	410
50°	420	400	370	300

With outriggers mid-extended to 3.8m centers —360°/With outriggers fully extended and front outrigger not extended—over front.					
Operating Radius in Meters	Main Boom				
	10.96m Boom	14.80m Boom	18.64m Boom	26.32m Boom	34.00m Boom
3.0	23,000	20,000	16,000		
3.5	18,500	16,000	14,400		
4.0	15,300	13,100	12,900	9,100	
4.5	13,000	11,200	11,400	9,100	
5.0	11,300	9,700	10,100	9,100	8,000
5.5	9,900	8,500	9,000	9,100	8,000
6.0	8,600	7,500	7,900	8,200	8,000
6.5	7,400	6,700	6,900	7,400	7,300
7.0	6,500	6,000	6,100	6,600	6,700
8.0	5,000	4,700	4,600	5,300	5,600
9.0	3,800	3,600	3,400	4,200	4,500
10.0		2,700	2,600	3,300	3,700
11.0		2,000	1,900	2,600	3,000
12.0		1,500	1,400	2,000	2,450
13.0			900	1,600	2,000
14.0				1,200	1,600
15.0				900	1,300
16.0				600	1,000

NOTE:

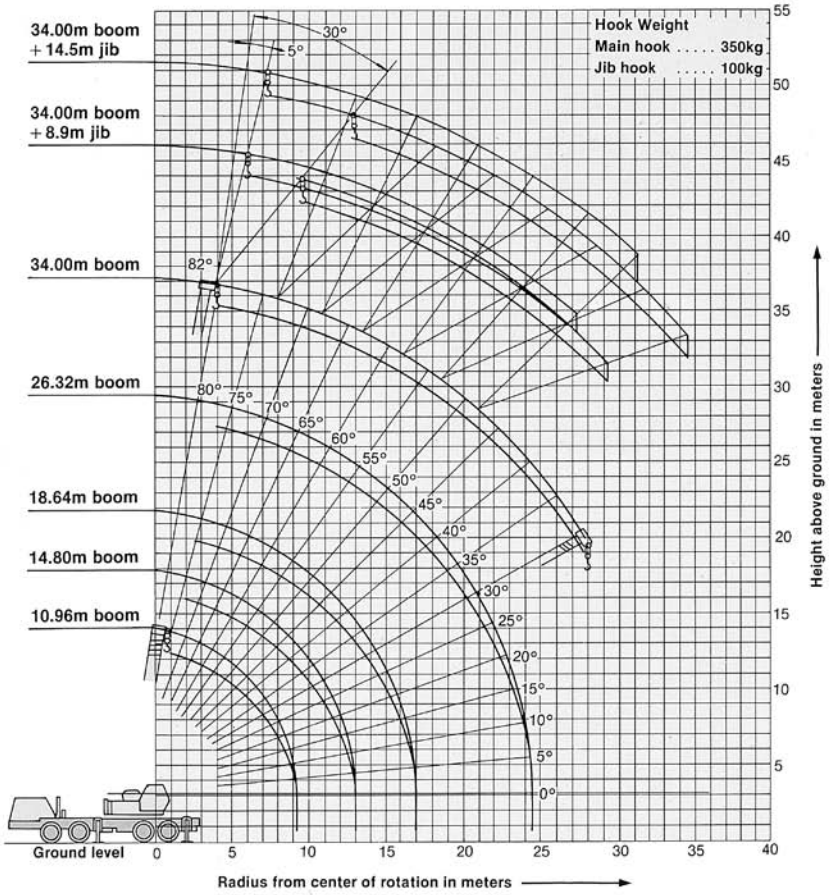
1. Operating radius is the horizontal distance from centerline of rotation to a vertical line through the center of gravity of the load.
2. Load ratings do not exceed 75% of tipping loads.
3. Load ratings are the approvable maximum lifting capacities on a firm and level surface, and include hook block(s), and all other load handing accessories.
   - Main hook block weight: 350kg
   - Auxiliary hook block weight: 100kg
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 and front jack cylinder extended — 360° lifting capacities with the machine leveled. Load ratings with outriggers mid-extended are based on the condition of 3.8m distance of outriggers — 360° lifting capacities or with outriggers fully extend and front jack cylinder not extended — 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. Rated load for auxiliary sheave are reduced the main hook weight (350kg) from the main boom rated road and load per line should not exceed 4,000kg.
9. Standard hoist reevings are shown bellow. Single line load must not exceed 4,400kg.

Boom length	10.96m ~ 14.8m	14.8m ~ 18.64m	18.64m ~ 34m	Aux. sheave
No. of parts of line	8	6	4	1

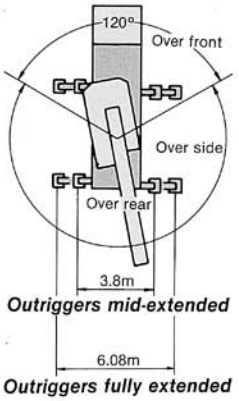
10. Over front lifting capacities are less than those of over rear and over side. When turning the machine from over side to over front, be careful not to allow load aloft to exceed over front ratings.
11. Load ratings for free fall operation are one fifth of rated loads shown above. In this case, each permissible load for single line is 870kg for main hoist line and 800kg for auxiliary hoist line.
12. When performing crane operation without outriggers, employ the ratings in the "without outriggers" column with ground condition and other factors taken into consideration.

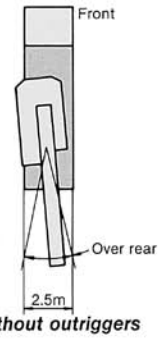
OPERATION OF THIS EQUIPMENT IN EXCESS OF RATED LOADS OR DISREGARD OF INSTRUCTIONS VOIDS THE WARRANTY.

Working Ranges

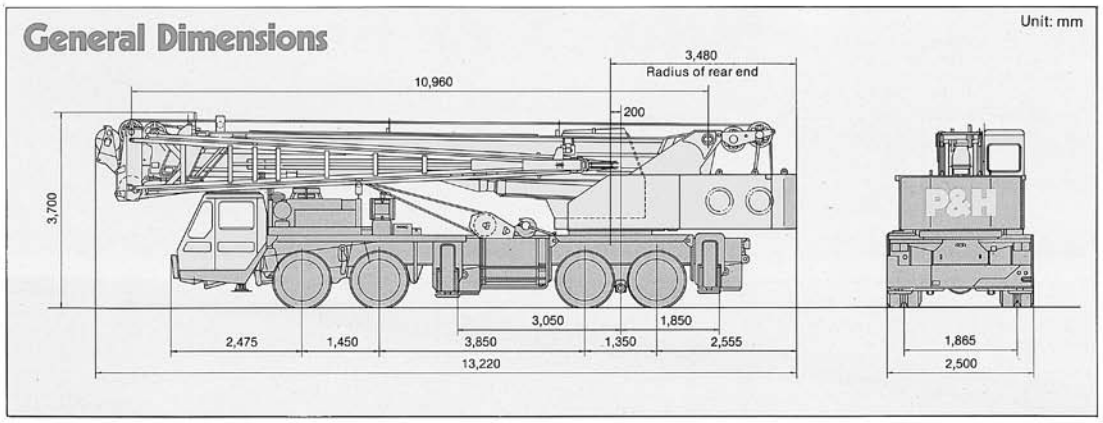


Working Areas





General Dimensions



P&H KOBELCO

T400A

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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