P&H 435-TC

CRANE, DRAGLINE, CLAMSHELL

THE MOST VERSATILE TRUCK CRANE IN THE 35-TON CLASS

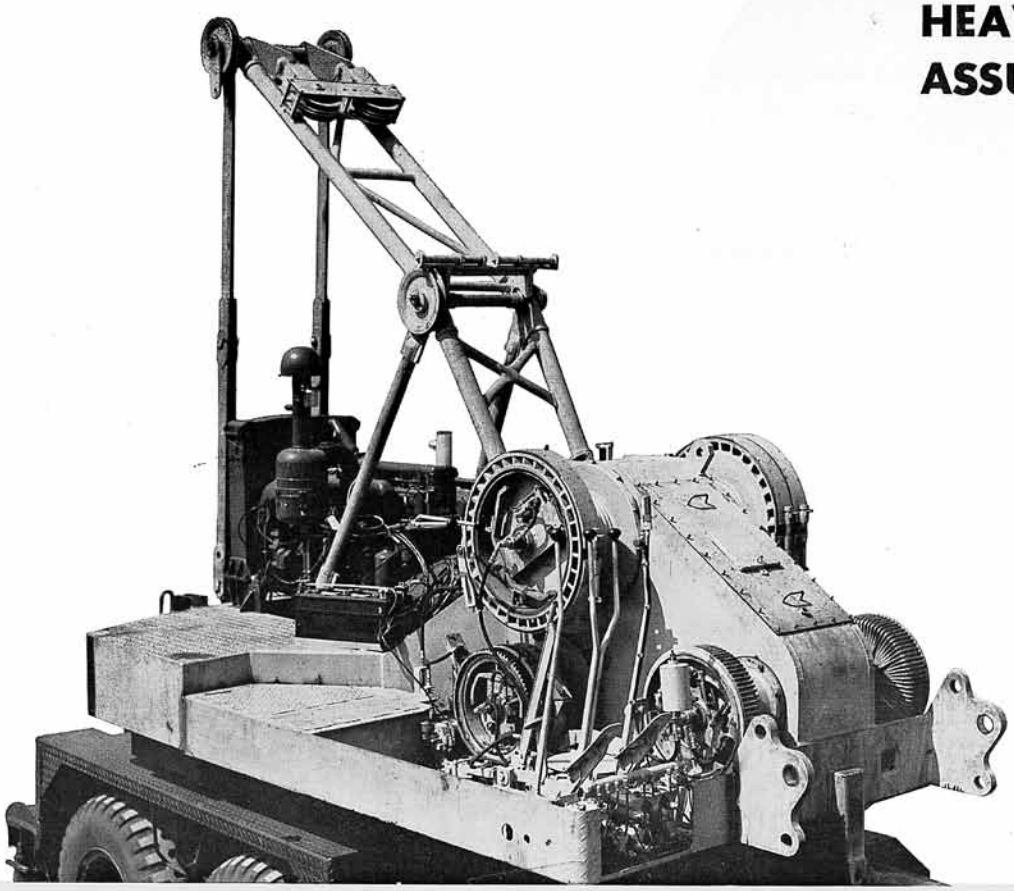
All these features are offered as standard equipment only by P&H.

- **"Triple-safe"** independent planetary boom hoist provides precise positive control over power raising and lowering of boom.
- **Exclusive P&H Power Box** design gives positive gear lubrication in oil bath, keeps dirt out.
- **P&H Live Roller Circle** distributes weight of upper and load uniformly for smoother swings.
- **"Full feel"**, positive action hydraulic controls.
- **Pin-connected T-1** high capacity tubular steel boom.
- **Handles 170′ boom**
- **Heavy duty rear axles** assure longer wear.
- **Air brakes** on all eight wheels.
- **Torsion Bar** distributes side loads—increase stability.
- **Quick,** on-the-job conversion to any attachment.
- **Power steering** for easier handling—greater maneuverability.
- **Aluminum outrigger** floats reduce weight for easier, quicker conversion to highway travel.
- **8×4 carrier** designed and constructed to work perfectly with upper.

Bulletin No. KP-435T-3

KOBE STEEL, LTD.

HEAVY DU
ASSURES P



EXCLUSIVE P&H LIVE ROLLER CIRCLE FOR FAST, EASY SWINGING

The proven, highly successful live roller circle supports the P&H upper on the carrier. Machine weight and work load is distributed over 26 heavy steel rollers which function as one giant roller bearing. Faster, smoother swings are the result with less power required to move the load.

Six easily adjustable hook rollers anchor upper and carrier and provide positive countering.

- Air service brakes on all 8 wheels for greatest safety.
- Heavy duty transmission with power to climb 28% grades.

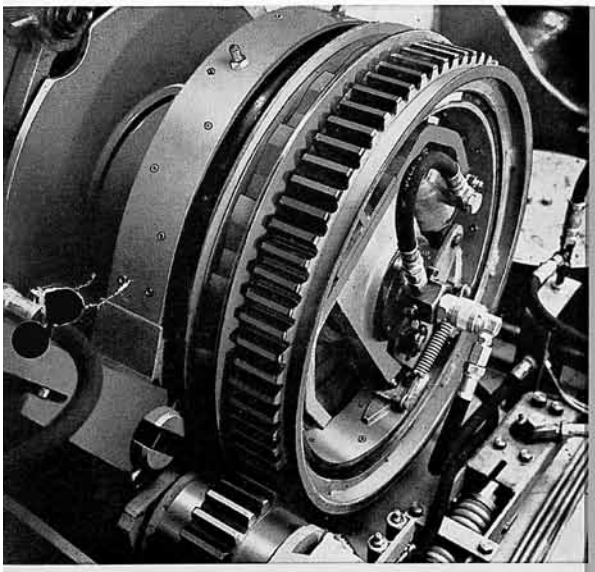
Mitsubishi K351 Carrier

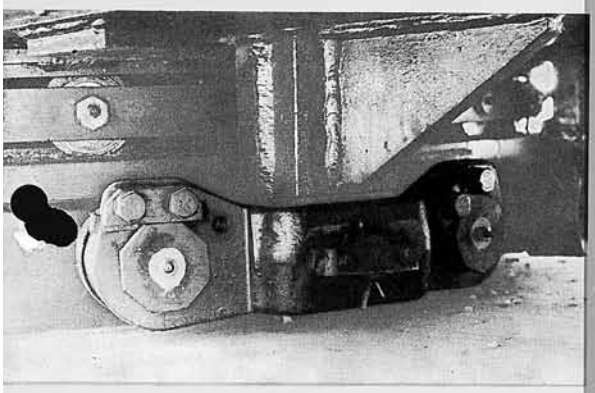
TY, COMPACT, EFFICIENT, SEALED POWER BOX
EAK PERFORMANCE

P&H exclusive design power box is compact and all welded. Completely sealed in, all power transmission machinery runs in a continuous oil bath that needs changing but once a year. No dirt or grit can enter. This all means less wear, less maintenance, less down-time.

The P&H power box is also the key to scientific weight distribution on the upper deck resulting in a lower center of gravity and resultant possible lifting capacity. The rugged frame is jig bored after welding for perfect, permanent shaft alignment.

All shafts are involute splined, turn in anti-friction bearings.



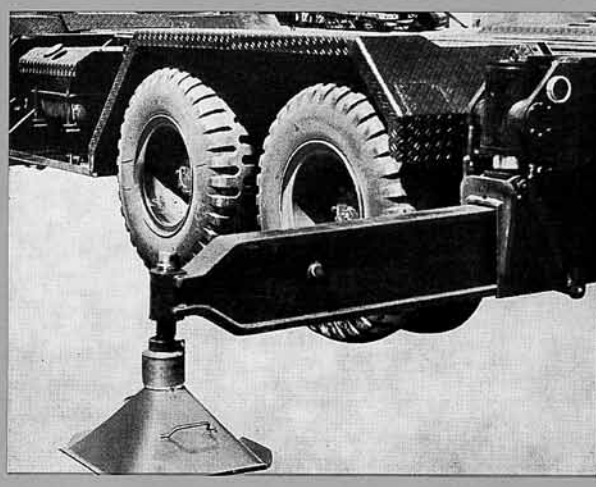


Adjustable hook rollers take maximum loads with less tipping action.

Hydraulic outriggers are individually set from a convenient control box.
Dually hydraulic action is horizontal and vertical . . . cuts setup time to a minimum.

FAMOUS P&H DESIGN PRINCIPLES BACK UP OUTSTANDING P&H PERFORMANCE

- P&H independent planetary boom hoist is a working boom hoist that provides smoother, safer boom operation. Boom can be raised or lowered instantaneously, entirely independent of all other work motions.
- Rugged 32mm (1¼-inch) steel plate forms the frame for the 435-TC power box. All-welded into an integral unit, frame assures perfect alignment of all parts without extra weight.
- Simple, fast, dependable . . . direct-acting hydraulic controls provide instantaneous unvarying response. The operator "feels" the load at all times. This system is easy on the operator . . . is unaffected by weather conditions.



BASIC MACHINE

UPPER MACHINERY

POWER PLANT:
Diesel: Mitsubishi 6DB 10C-K (std.) ..... 93 hp @ 1,400 rpm
G.M. 4-53, 4 cyl. (opt. extra) ..... 88 hp @ 2,200 rpm
Cat., D330, 4 cyl. (opt. extra) ..... 88 hp @ 2,200 rpm
Cummins NHC-4-CI (opt. extra) ..... 90 hp @ 1,600 rpm

TRANSMISSION: 2-speed; high gear is normal operating speed.
FUEL TANK ..... 220 ℓ (58 gallons)
THROTTLE: Hand grip control for all operations, standard.
CONTROLS: Direct acting hydraulic.
SWING CLUTCHES: Two shoe type, internal expanding
CLUTCHES: Band type, internal expanding.
BRAKES: Band type, external contracting.
BOOM HOIST ASSEMBLY: Independent planetary gear type, with external ratchet and automatic brake provides for raising and lowering boom under power and locking boom. Drum mounted on anti-friction bearings.
Boom hoist line speed (raising) ..... 48 m/min (157 fpm)
Boom hoist line speed (lowering) ..... 28 m/min (92 fpm)
MAIN OPERATING DRUMS: Drums opposite each other mounted on anti-friction bearings on single drum shaft. See attachment sheets for further details.
THIRD DRUM: Mounts on L.H. extension of independent boom hoist drum shaft (opposite boom hoist drum). Does not interfere with any other machine function. Available for application to all machines with crane boom type attachments, optional extra.
GANTRY: High gantry, folding type.
COUNTERWEIGHT: External single piece removable casting for all attachments.

MITSUBISHI K351
8×4 CARRIER

WEIGHT: Including turrent and outriggers,
with 12:00×20—18 ply tires ..... 19,540 kg (42,990 lbs.)
FRAME:
Reinforced channel all welded high strength steel construction
OUTRIGGER HOUSINGS: Double box type front and rear.
OUTRIGGER BEAMS:
High strength steel box ..... full length—reinforced
Extended position from center of truck ..... 2.73 m (8'-11")
Screw jack at beam ends.
HYDRAULIC OUTRIGGERS: Total of 8 double acting hydraulic cylinders provide independent horizontal and vertical motion of each beam, standard. Manual outriggers, optional extra.
POWER PLANT:
Diesel: Mitsubishi, 8DC, 8 cyl. ..... 250 hp @ 2,200 rpm
CLUTCH:
Single dry disc.
TRANSMISSIONS:
Main transmission: 5 speeds forward, plus reverse.
Auxiliary transmission: 2 speeds.
BRAKES—SERVICE: Air on all 8 wheels.
HAND BRAKE: Mechanical at propeller shaft.
SUSPENSION:
Front and rear—
Torque rods plus equalizer beams.
STEERING: Ball and nut type.
FUEL TANK: Capacity ..... 200 ℓ (53 gals.)
TIRES: Twelve 12:00×20—18 ply, on and off highway type, standard.
CAB: Steel—two men type—low profile cab—safety glass.
LIGHTS: Headlights, tail lights, stop lights, directional signal lights—front and rear, license plate light. Reflectors on front and rear. Front and rear lights and license plate recessed in frame 24 volt electrical system.
EQUIPMENT: Front skirts and dirt shields, front and rear fenders engine hood, leatherette cushion seats, 24 volt battery, horn, rear view mirror, windshield wiper, illuminated instrument panel, with speedometer, ammeter oil pressure gauge, fuel gauge, water temperature indicator, low air pressure indicator light, tow hooks—front and rear, dash mounted air brake locking valve, tools and accessories including two jacks and a set of four aluminum jack floats. (outrigger)

PERFORMANCE
(Based on Engine)

MAX. SPEED: ..... 52 km/h (32.3 mph)
MIN. TURNING RADIUS: ..... 12.0 m
% GRADE 28%

NISSAN PTVW35C
8×4 CARRIER

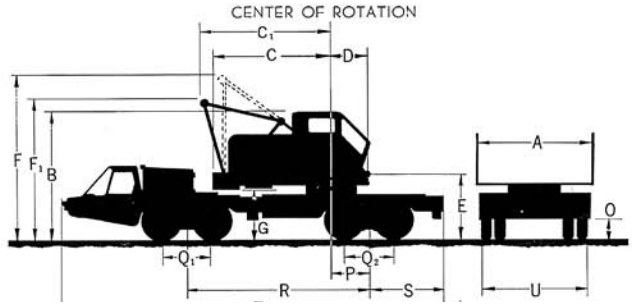
WEIGHT: Including turret and outriggers,
with 12:00×20—18 ply tires ..... 18,300 kg (40,400 lbs.)
FRAME: Reinforced channel all welded high strength steel construction.
OUTRIGGERS HOUSINGS: Double box type front and rear.
OUTRIGGER BEAMS:
High strength steel box ..... full length—reinforced
Extended position from center of truck ..... 2.73 m (8'-11⅛")
Screw jack at beam ends.
HYDRAULIC OUTRIGGERS: Total of 8 double acting hydraulic cylinders provide independent horizontal and vertical motion of each beam, solenoid valve controlled, optional extra.
POWER PLANT:
Diesel: Nissan, PD6 6 cyl. ..... 185 hp @ 2,300 rpm
CLUTCH: Single dry plate.
TRANSMISSIONS:
Main transmission: 5 speeds forward, plus reverse.
Auxiliary transmission: 2 speed.
BRAKES—SERVICE: Oil with air assisted booster on all 8 wheels.
HAND BRAKE: Mechanical at propeller shaft.
SUSPENSION:
Front and rear—Torque rods plus equalizer beams.
STEERING: Hindley worm and roller type, with power booster.
FUEL TANK: Capacity ..... 200 ℓ (53 gals)
TIRES: Twelve 12:00×20—18 ply, on and off highway type, standard.
CAB: Steel—two men type—offset right side of engine, safety glass.
LIGHTS: Headlights, tail lights, stop lights, directional signal lights—front and rear, licence plate light. Reflectors on front and rear. Front and rear lights and licence plate recessed in frame 24 volt electrical system.
EQUIPMENT: Front skirts and dirt shields, Front and rear fenders, engine hood, leatherette cushion seat, 24 volt battery, horn, rear view mirror, windshield wiper, illuminated instrument panel, with speedmeter, ammeter oil pressure gauge, fuel gauge, water temperature indicator, low air pressure indicator light, tow hooks—front and rear, dash mounted air brake locking valve, tools and accessories including two jacks and a set of four aluminum jack floats.

PERFORMANCE
(Based on Engine)

MAX. SPEED ..... 55 km/h (34 mph)
MIN. TURNING RADIUS: ..... 11.9 m (39'-½")
% GRADE: 25%

GENERAL DIMENSIONS

		MITSUBISHI m (ft-ins)	NISSAN m (ft-ins)
A	Width of cab	2.69 (8-10)	2.69 (8-10)
B	Height to top of cab	3.62 (11-10½)	3.71 (12-2)
C	Radius of rear end (counterweight)	3.61 (11-10⅛)	3.61 (11-10)
C_1	Radius of rear end (gantry lowered)	3.85 (12-7⅝)	3.81 (12-6)
D	Center of rotation to boom foot pin (except hoe)	1.05 (3-5⅜)	1.05 (3-5¼)
E	Height from ground to boom foot pin	1.83 (6-0⅛)	1.92 (6-3½)
F	Clearance height over gantry (raised)	5.65 (18-6½)	5.18 (17-0)
F_1	Clearance height over gantry (lowered)	3.80 (12-5⅝)	3.94 (12-11)
G	Counterweight ground clearance	1.32 (4-4)	1.44 (4-8¾)
O	Ground clearance (torque rod)	0.27 (0-10⅝)	0.28 (0-11)
P	Center of rotation to center of rear bogie	1.07 (3-6⅛)	1.10 (3-7¼)
Q_1	Distance between axles (front)	1.45 (4-9⅛)	1.30 (4-3⅜)
Q_2	Distance between axtes (rear)	1.35 (4-5⅛)	1.30 (4-3¼)
R	Wheelbase	5.00 (16-4⅞)	4.80 (0-189)
S	Center of rear bogie to rear of carrier	1.86 (6-1¼)	1.93 (6-4)
T	Overall length of carrier with outriggers	10.40 (34-1⅜)	9.51 (31-2½)
U	Overall width of carrier (11.00×20 tires)	2.87 (9-5)	2.82 (9-3)
V	Turning radius (min.)	12.00 (39-4⅜)	11.9 (39-½)



CRANE 35 Ton
SPECIFICATIONS

P&H CRANE BOOM

The P&H boom has lattice-type, all-welded construction and chords of tubular T-1 steel which provides the strongest crane boom available with the lowest relative weight.

- The P&H open-throat design provides greater load clearance. Boom point sheaves ride on anti-friction bearings for longer wear.
- Booms feature an "offset" head for added clearance factor which gives increased lifting height for each boom length.
- P&H pin connections permit fast, easy erection and takedown.

GENERAL DATA

BOOM: Tubular T-1 steel chords, lattice construction.
Basic length, open throat, pin connected in two equal sections ..... 9.14 m (30'-0")
With three offset boom point sheaves on anti-friction bearings, bottom diameter ..... 3.64 m (14⅝")
12 part boom point sheave, optional extra.

HOOK BLOCK ..... 35 Ton
Three sheave with swivel hook and 7 part hoist line, standard.

POWER CONTROLLED LOAD LOWERING: Planetary device for lowering load under power, left hand smooth drum, optional extra.

GANTRY: High gantry, folding type, standard.

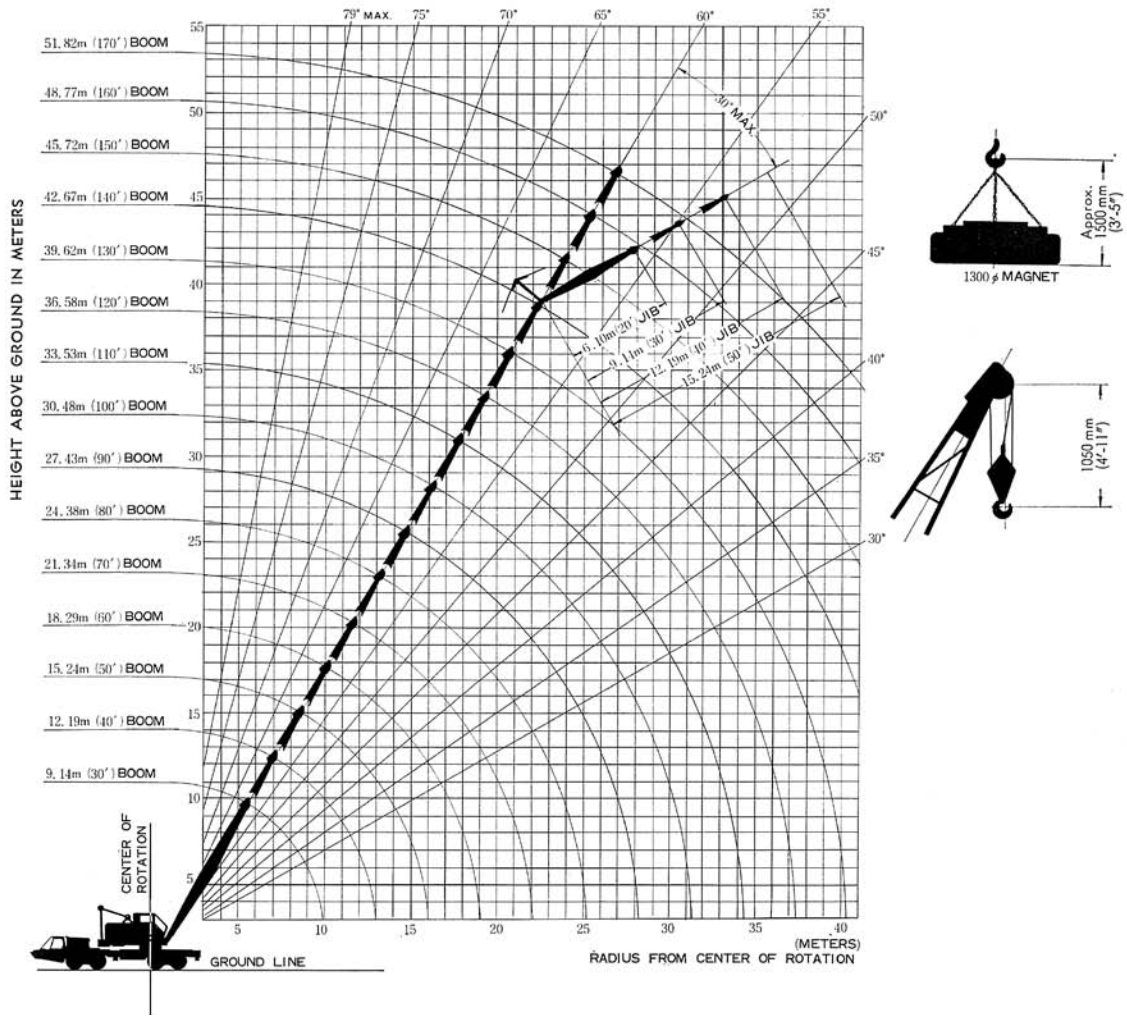
WORKING WEIGHT: (including block) ..... 38,740 kg (85,230 lbs.)
[6,800 kg (15,000 lbs.) counterweight included in working weight, furnished as standard.]

DRUM SHAFT ASSEMBLY

Lifting Crane Drums (P.D.)	Cable Dia.	Max. Cable Capacity	* Line Pulls	* Line Speeds
**L.H. (Grooved) 340 mm (13⅜")	20 mm (¾")	130 m (427')	7,450 kg (16,400 lbs.)	51 m/min. (167 fpm)
R.H. (Grooved) 340 mm (13⅜")	20 mm (¾")	130 m (427')	7,450 kg (16,400 lbs.)	51 m/min. (167 fpm)

*Line pulls and line speeds based on single line in normal operating gear. To fit job requirements, line pull and line speed can be varied by shifting into another gear.

**Grooved drum with power lowering.



Crane Rated Loads in Kg (Pounds) without Outriggers

Operating Radius in Meter (Ft.-Ins.)	9.14 m (30') Boom		12.19 m (40') Boom		15.24 m (50') Boom		18.29 m (60') Boom		21.34 m (70') Boom		24.38 m (80') Boom		27.43 m (90') Boom		30.48 m (100') Boom	
	Over Side	Over Rear	Over Side	Over Rear	Over Side	Over Rear	Over Side	Over Rear	Over Side	Over Rear	Over Side	Over Rear	Over Side	Over Rear	Over Side	Over Rear
3.65	14,720	22,000	...	...	...	...	...	...	...	...	...	...	...	...	...	...
(12-0)	(32,380)	(48,400)	...	...	...	...	...	...	...	...	...	...	...	...	...	...
4	13,110	19,450	13,010	19,350	...	...	...	...	...	...	...	...	...	...	...	...
(13-1)	(28,840)	(42,790)	(28,620)	(42,570)	...	...	...	...	...	...	...	...	...	...	...	...
5	10,010	14,230	9,910	14,140	9,810	14,060	...	...	...	...	...	...	...	...	...	...
(16-5)	(22,020)	(31,310)	(21,800)	(31,110)	(21,580)	(30,930)	...	...	...	...	...	...	...	...	...	...
6	8,010	11,150	7,910	11,070	7,810	10,980	7,710	10,900	7,610	10,810	...	...	...	...	...	...
(19-8)	(17,620)	(24,530)	(17,400)	(24,340)	(17,180)	(24,160)	(16,960)	(23,980)	(16,740)	(23,780)	...	...	...	...	...	...
7	6,680	9,120	6,580	9,040	6,480	8,950	6,380	8,870	6,280	8,780	6,180	8,690	...	...	...	...
(22-11)	(14,696)	(20,060)	(14,480)	(19,890)	(14,260)	(19,690)	(14,040)	(19,510)	(13,820)	(19,320)	(13,600)	(19,120)	...	...	...	...
8	5,660	7,680	5,570	7,600	5,480	7,510	5,390	7,430	5,300	7,340	5,210	7,260	5,120	7,170	5,030	7,080
(26-3)	(12,450)	(16,900)	(12,250)	(16,720)	(12,060)	(16,520)	(11,860)	(16,350)	(11,660)	(16,150)	(11,460)	(15,970)	(11,260)	(15,770)	(11,070)	(15,580)
9	4,900	6,610	4,810	6,520	4,720	6,440	4,630	6,350	4,540	6,270	4,450	6,180	4,360	6,100	4,270	6,010
(29-6)	(10,780)	(14,540)	(10,580)	(14,340)	(10,380)	(14,170)	(10,190)	(13,970)	(9,990)	(13,790)	(9,790)	(13,600)	(9,590)	(13,420)	(9,390)	(13,220)
10	...	...	4,180	5,690	4,090	5,610	4,000	5,520	3,910	5,440	3,820	5,350	3,730	5,260	3,640	5,180
(32-10)	...	...	(9,200)	(12,520)	(9,000)	(12,340)	(8,800)	(12,140)	(8,600)	(11,970)	(8,400)	(11,770)	(8,210)	(11,570)	(8,010)	(11,400)
11	...	...	3,670	5,030	3,590	4,940	3,510	4,860	3,430	4,770	3,350	4,690	3,270	4,600	3,190	4,520
(36-1)	...	...	(8,070)	(11,070)	(7,900)	(10,210)	(7,720)	(10,690)	(7,550)	(10,490)	(7,370)	(10,320)	(7,190)	(10,120)	(7,020)	(9,940)
12	...	...	3,260	4,490	3,180	4,400	3,100	4,320	3,020	4,230	2,940	4,150	2,860	4,060	2,780	3,970
(39-4)	...	...	(7,170)	(9,880)	(7,000)	(9,680)	(6,820)	(9,500)	(6,640)	(9,310)	(6,470)	(9,130)	(6,290)	(8,930)	(6,120)	(8,730)
14	...	...	...	...	2,550	3,570	2,470	3,490	2,390	3,400	2,310	3,320	2,230	3,230	2,150	3,140
(45-11)	...	...	...	...	(5,610)	(7,850)	(5,430)	(7,680)	(5,260)	(7,480)	(5,080)	(7,300)	(4,910)	(7,110)	(4,730)	(6,910)
16	...	...	...	...	...	...	2,040	2,880	1,960	2,800	1,880	2,710	1,800	2,620	1,720	2,540
(52-5)	...	...	...	...	...	...	(4,490)	(6,340)	(4,310)	(6,160)	(4,140)	(5,960)	(3,960)	(5,760)	(3,780)	(5,590)
18	...	...	...	...	...	...	1,660	2,420	1,580	2,330	1,500	2,250	1,420	2,160	1,340	2,070
(59-0)	...	...	...	...	...	...	(3,650)	(5,320)	(3,480)	(5,130)	(3,300)	(4,950)	(3,120)	(4,750)	(2,950)	(4,550)
20	...	...	...	...	...	...	...	...	1,320	1,970	1,240	1,880	1,160	1,800	1,080	1,710
(65-7)	...	...	...	...	...	...	...	...	(2,900)	(4,330)	(2,730)	(4,140)	(2,550)	(3,960)	(2,380)	(3,760)
22	...	...	...	...	...	...	...	...	...	...	1,020	1,590	940	1,500	860	1,410
(72-2)	...	...	...	...	...	...	...	...	...	...	(2,240)	(3,500)	(2,070)	(3,300)	(1,890)	(3,100)
24	...	...	...	...	...	...	...	...	...	...	...	...	750	1,260	670	1,170
(78-8)	...	...	...	...	...	...	...	...	...	...	...	...	(1,650)	(2,770)	(1,470)	(2,570)
26	...	...	...	...	...	...	...	...	...	...	...	...	580	1,050	500	970
(85-3)	...	...	...	...	...	...	...	...	...	...	...	...	(1,280)	(2,310)	(1,100)	(2,130)

Crane Rated Loads in Kg (Pounds) with Outriggers Fully Extended

Operating Radius in M (Ft.-Ins.)	9.14 m (30') Boom	12.19 m (40') Boom	15.24 m (50') Boom	18.29 m (60') Boom	21.34 m (70') Boom	24.38 m (80') Boom	27.43 m (90') Boom	30.48 m (100') Boom	33.53 m (110') Boom	36.58 m (120') Boom	39.62 m (130') Boom	42.67 m (140') Boom	45.72 m (150') Boom	48.67 m (160') Boom	51.82 m (170') Boom
3.65	35,000	...	...	...	...	...	...	...	...	...	...	...	...	...	...
(12-0)	(77,000)	...	...	...	...	...	...	...	...	...	...	...	...	...	...
4	32,300	32,200	...	...	...	...	...	...	...	...	...	...	...	...	...
(13-1)	(71,060)	(70,840)	...	...	...	...	...	...	...	...	...	...	...	...	...
5	26,000	25,900	25,800	...	...	...	...	...	...	...	...	...	...	...	...
(16-5)	(57,200)	(56,980)	(56,760)	...	...	...	...	...	...	...	...	...	...	...	...
6	21,400	21,300	21,200	21,100	21,000	...	...	...	...	...	...	...	...	...	...
(19-8)	(47,080)	(46,860)	(46,640)	(46,420)	(46,200)	...	...	...	...	...	...	...	...	...	...
7	17,500	17,400	17,300	17,200	17,100	17,000	...	...	...	...	...	...	...	...	...
(22-11)	(38,500)	(38,280)	(38,060)	(37,840)	(37,620)	(37,400)	...	...	...	...	...	...	...	...	...
8	14,700	14,600	14,500	14,400	14,300	14,200	14,100	14,000	...	...	...	...	...	...	...
(26-3)	(32,340)	(32,120)	(31,900)	(31,680)	(31,460)	(31,240)	(31,020)	(30,800)	...	...	...	...	...	...	...
9	12,600	12,500	12,400	12,300	12,200	12,100	12,000	11,900	11,800	11,700	...	...	...	...	...
(29-6)	(27,720)	(27,500)	(27,280)	(27,060)	(26,840)	(26,620)	(26,400)	(26,180)	(25,960)	(25,740)	...	...	...	...	...
10	...	11,000	10,900	10,800	10,700	10,600	10,500	10,400	10,300	10,200	10,100	...	...	...	...
(32-10)	...	(24,200)	(23,980)	(23,760)	(23,540)	(23,320)	(23,100)	(22,880)	(22,660)	(22,440)	(22,220)	...	...	...	...
11	...	9,800	9,700	9,600	9,500	9,400	9,300	9,200	9,100	9,000	8,900	8,800	8,700	...	...
(36-1)	...	(21,560)	(21,340)	(21,120)	(20,900)	(20,680)	(20,460)	(20,240)	(20,020)	(19,800)	(19,580)	(19,360)	(19,140)	...	...
12	...	8,790	8,690	8,590	8,490	8,390	8,290	8,190	8,090	7,990	7,890	7,790	7,690	6,900	5,700
(39-4)	...	(19,340)	(19,120)	(18,900)	(18,680)	(18,460)	(18,240)	(18,020)	(17,800)	(17,580)	(17,360)	(17,140)	(16,920)	(15,180)	(12,540)
13	...	...	7,750	7,650	7,550	7,450	7,350	7,250	7,150	7,050	6,950	6,850	6,750	6,340	5,400
(42-7)	...	...	(17,050)	(16,830)	(16,610)	(16,390)	(16,170)	(15,950)	(15,730)	(15,510)	(15,290)	(15,070)	(14,850)	(13,950)	(11,880)
14	...	...	7,000	6,900	6,800	6,700	6,600	6,500	6,400	6,300	6,200	6,100	6,000	5,800	5,050
(45-11)	...	...	(15,400)	(15,180)	(14,960)	(14,740)	(14,520)	(14,300)	(14,080)	(13,860)	(13,640)	(13,420)	(13,200)	(12,760)	(11,110)
16	...	...	...	5,680	5,580	5,490	5,390	5,300	5,200	5,110	5,010	4,920	4,820	4,720	4,400
(52-5)	...	...	...	(12,500)	(12,280)	(12,080)	(11,860)	(11,660)	(11,440)	(11,240)	(11,020)	(10,820)	(10,600)	(10,380)	(9,680)
18	...	...	...	4,810	4,710	4,620	4,520	4,430	4,330	4,240	4,140	4,050	3,950	3,850	3,750
(59-0)	...	...	...	(10,580)	(10,360)	(10,160)	(9,940)	(9,750)	(9,530)	(9,330)	(9,110)	(8,910)	(8,690)	(8,470)	(8,250)
20	...	...	...	...	4,000	3,910	3,820	3,730	3,640	3,550	3,460	3,370	3,280	3,190	3,100
(65-7)	...	...	...	...	(8,800)	(8,600)	(8,400)	(8,210)	(8,010)	(7,810)	(7,610)	(7,410)	(7,220)	(7,020)	(6,820)
22	...	...	...	...	...	3,380	3,290	3,200	3,110	3,020	2,930	2,840	2,750	2,660	2,570
(72-2)	...	...	...	...	...	(7,440)	(7,240)	(7,040)	(6,840)	(6,640)	(6,450)	(6,250)	(6,050)	(5,850)	(5,650)
24	...	...	...	...	...	...	2,860	2,770	2,680	2,590	2,500	2,410	2,320	2,230	2,140
(78-8)	...	...	...	...	...	...	(6,290)	(6,090)	(5,900)	(5,700)	(5,500)	(5,300)	(5,100)	(4,910)	(4,710)
26	...	...	...	...	...	...	2,510	2,420	2,300	2,240	2,150	2,060	1,970	1,880	1,790
(85-3)	...	...	...	...	...	...	(5,520)	(5,320)	(5,130)	(4,930)	(4,730)	(4,530)	(4,330)	(4,140)	(3,940)
28	...	...	...	...	...	...	...	2,120	2,030	1,940	1,850	1,760	1,670	1,580	1,490
(91-10)	...	...	...	...	...	...	...	(4,660)	(4,470)	(4,270)	(4,070)	(3,870)	(3,670)	(3,480)	(3,280)
30	...	...	...	...	...	...	...	...	1,770	1,680	1,590	1,500	1,410	1,320	1,230
(98-5)	...	...	...	...	...	...	...	...	(3,890)	(3,700)	(3,500)	(3,300)	(3,102)	(2,900)	(2,710)
32	...	...	...	...	...	...	...	...	...	1,460	1,370	1,280	1,190	1,100	1,010
(105-0)	...	...	...	...	...	...	...	...	...	(3,212)	(3,010)	(2,820)	(2,620)	(2,420)	(2,220)
34	...	...	...	...	...	...	...	...	...	...	1,180	1,090	1,000	910	820
(111-6)	...	...	...	...	...	...	...	...	...	...	(2,600)	(2,400)	(2,200)	(2,000)	(1,800)

Operating radius is horizontal distance from centerline of rotation to a vertical line through the gravity center of the load. The gross crane ratings shown are for units mounted on a Mitsubishi K351 carrier with tandem front and rear axles and do not exceed 78% of tipping loads. These ratings include weight of hook block, slings and all other load handling accessories. Ratings with outriggers based on outriggers fully extended. Gantry must be in raised position when machine is working with crane boom attachments. Not more than one 10 ft. insert permitted in booms longer than 100 ft. When boom is equipped with jib, main hook ratings should be reduced by 680 kg (1,500 lbs.) for 6.10 m (20 ft.) or 9.14 m (30 ft.) jib and 900 kg (2,000 lbs.) for 12.19 m (40 ft.) jib. Backstops recommended for all boom lengths. Ratings are contingent upon freely suspended loads and machine standing on a firm, level, uniformly supporting surface. Ratings are contingent upon machine being equipped with proper P&H Boom. Center hitch required for booms, 39.62 m (130 ft.) and over.

MAXIMUM BOOM LENGTHS MACHINE CAN LIFT OFF GROUND

Boom Over	WITH OUTRIGERS		WITHOU OUTRIGERS	
	Boom Only	Boom & Jib	Boom Only	Boom & Jib
Side	42.67 m (140')	30.48 m + 12.19 m (100' + 40')	27.43 m (90')	21.34 m + 6.10 m (70' + 20')
Rear	51.82 m (170')	39.62 m + 12.19 m (130' + 40')	30.48 m (100')	24.38 m + 5.10 m (80' + 20')

MAXIMUM JIB RATED LOADS IN KG (LBS.)

Offset Angle Jib to Boom Under Full Load	6.10 m (20') Jib	9.14 m (30') Jib	12.19 m (40') Jib
10°	4,530 (10,000)	3,630 (8,000)	2,720 (6,000)
20°	4,030 (9,000)	3,180 (7,000)	2,270 (5,000)
30° (max.)	3,630 (8,000)	2,720 (6,000)	1,810 (4,000)

Jib rating at any radius from center of rotation is the same as crane rating shown in table for main boom when operated at that radius, but not to exceed maximum jib ratings shown. For bucket ratings on jib, deduct 20% from maximum jib ratings. Maximum jib operating radius not to exceed length of main boom on which it is being used. Use of outriggers recommended when boom is equipped with jib.

HOIST REEVING IN KG (LBS.)

No. of Parts of Line	1	2	3	4	5	6	7
Maximum Load	5,000 (11,000)	10,000 (22,000)	15,000 (33,000)	20,000 (44,000)	25,000 (55,000)	30,000 (66,000)	35,000 (77,000)

DRAGLINE 0.8 m³ (1 Cu. Yd.)

SPECIFICATIONS

P&H DRAGLINE ATTACHMENT

The 435-TC dragline attachment is built to handle the demands of service.

- T-1 steel tubular boom provides greater strength and added rigidity against twisting strains.
- The extra wide boom foot design spreads the torsional stress of the load.
- 3,400 kg (7,500 lbs.) maximum dragline rating.
- The relative lightness of T-1 steel tubular lattide boom permits heavier loads and faster work cycles.

GENERAL DATA

BOOM: Tubular, T-1 chords, lattice construction.
Basic length, open throat, pin connected in two equal sections ..... 9.14 m (30')
With single boom point sheave on boom centerline, on anti-friction bearings, bottom diameter..... 364 mm (14⅜")
12 part boom hoist reeving, standard.

FAIRLEAD: 2 sheave, swivel caster type, anti-friction bearings. (L.H. mounting.)

GANTRY: High gantry, folding type, standard.

WORKING WEIGHT: (with bucket) ..... 39,800 kg (87,560 lbs.) [6,800 kg (15,000 lbs.) of counterweight included in weight, Furnished as standard].

DRUM SHAFT ASSEMBLY

Dragline Drums	P.D.	Cable Dia.	*Line Pulls	*Line Speeds
L.H. Grooved Digg. Drum	400 mm (15¾")	20 mm (¾")	7,450 kg (16,400 lbs.)	48 m/min (157 fpm)
R.H. Grooved Hoist Drum	400 mm (15¾")	20 mm (¾")	7,450 kg (16,300 lbs.)	48 m/min (157 fpm)

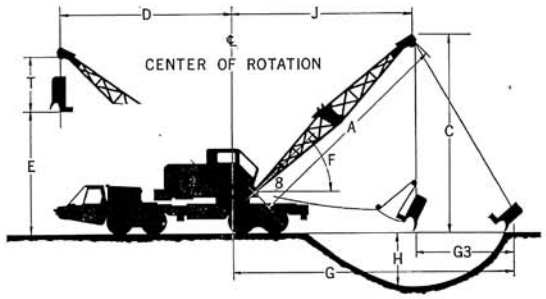
*Line pulls and line speeds based on single line in normal operating gear. To fit job requirements, line pull and line speed can be varied by shifting into another gear.

DRAGLINE RATED LOADS IN KG (LBS.)

Operating Radius in eter (Ft.-Ins.)	9.14 m (30') Boom	12.19 m (40') Boom	15.24 m (50') Boom
7 (22-11)	3,400 (7,480)	.....	.....
8 (26-3)	3,400 (7,480)	.....	.....
9 (29-6)	3,400 (7,480)	3,400 (7,480)	.....
10 (32-10)	.....	3,290 (7,240)	.....
11 (36-1)	.....	2,920 (6,420)	2,860 (6,290)
12 (39-4)	.....	.....	2,560 (5,630)
13 (42-7)	.....	.....	2,290 (5,040)

Above ratings are combined weights of bucket and material.
Maximum boom length recommended for dragline operation ..... 15.24 m (50 ft.)
Limit on dragline rating is ..... 3,400 kg (7,500 lbs.)
Ratings are contingent upon machine being equipped with proper P&H boom.
Maximum allowable heavy digging bucket size ..... 0.8 m³ (1 cu. yd.)
Larger size may be approved depending on type of material, type of bucket—within limitations of rating charts.

To select bucket size best suited for your application, use the following formula:
Refer to charts above to obtain dragline capacity in kg. Dragline Capacity = (cubic meter capacity of bucket) × (weight of material per cubic meter) + (weight of specific dragline bucket).



DRAGLINE WORKING RANGES in Meter (Ft.-Ins.)

		9.14 (30-0)		12.19 (40-0)		15.24 (50-0)	
A	Boom Length						
F	Boom Angle	25°	40°	25°	40°	25°	40°
D	Dumping Radius	9.60 (31-6)	8.38 (27-6)	12.50 (41-0)	10.82 (35-6)	15.24 (50-0)	13.11 (43-0)
E	Dumping Height (Max.)	1.83 (6-0)	3.81 (12-6)	3.20 (10-6)	5.79 (19-0)	4.42 (14-6)	7.77 (25-6)
G	Digging Reach (Approx.).....	11.58 (38-0)	11.13 (36-6)	14.94 (49-0)	14.17 (46-6)	17.98 (59-0)	17.07 (56-0)
G_3	Casting Distance (Approx.)	1.98 (6-6)	2.74 (9-0)	2.44 (8-0)	3.35 (11-0)	2.74 (9-0)	39.6 (13-0)
H	Max. Digging Depth	3.66 (12-0)	3.35 (11-0)	5.49 (18-0)	5.18 (17-0)	6.71 (22-0)	6.40 (21-0)
C	Clearance Height of Boom Point	5.94 (19-6)	7.92 (26-0)	7.32 (24-0)	9.91 (32-6)	8.53 (28-0)	11.89 (39-0)
J	Clearance Radius of Boom Point	9.60 (31-6)	8.38 (27-6)	12.50 (41-0)	10.82 (35-6)	15.24 (50-0)	13.11 (43-0)
T	Height of Dragline Bucket	Varies up to 3.81m (12'-6") depending upon size and make.					

Note: Dimensions G and G_3 may vary considerably depending on digging conditions and the skill of operator. Dimension H depends on the character of the digging.

CLAMSHELL 0.8 m³ (1 Cu. Yd.)
SPECIFICATIONS

P&H CLAMSHELL ATTACHMENT

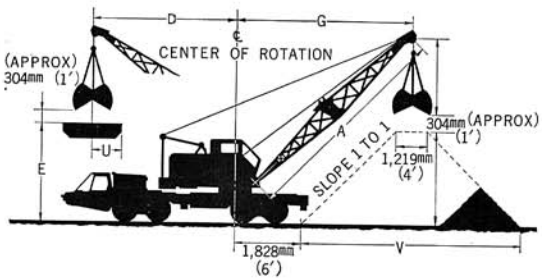
The 435-TC clamshell attachment is built to meet the thoughest service conditions.

- 3,850 kg (8,500 lbs.) maximum clamshell rating.
- The relative lightness of the tubular, T-1 steel lattice boom permits heavier loads and faster work cycles.
- T-1 steel tubular boom provides greater strength and added rigidity against twisting strains.
- The extra wide boom foot design spreads the torsional stress of the load.

DRUM SHAFT ASSEMBLY

Clamshell Drums	P.D.	Cable Dia.	*Line Pulls	*Line Speeds
L.H. Grooved Drum	400 mm (15¾")	20 mm (¾")	7,450 kg (16,400 lbs)	48 m/min (157 fpm)
R.H. Grooved Drum	400 mm (15¾")	20 mm (¾")	7,450 kg (16,400 lbs)	48 m/min (157 fpm)

*Line pulls and line speeds based on single line in normal operating gear. To fit job requirements, line pull and line speed can be varied by shifting into another gear.



GENERAL DATA

BOOM: Tubular, T-1 steel chords, lattice construction.
Basic length, pin connected in two equal sections ..... 9.14 m (30')
Open throat with two offset boom point sheaves on anti-friction bearings, bottom diameter..... 364 mm (14⅜")
12 part boom hoist reeving, Standard.

GANTRY: High gantry, folding type, Standard.

TAGLINE WINDER: Spring Type.

WORKING WEIGHT:
(with bucket) ..... 40,350 kg (88,770 lbs.)
[6,800 kg (15,000 lbs.) of counterweight included in weight, furnished as standard].

CLAMSHELL RATED LOAD IN KG (LBS.)

Operating Radius in Meter (Ft.-Ins.)	9.14 m (30') Boom	12.19 m (40') Boom	15.24 m (50') Boom
6 (19-8)	3,850 (8,470)	.....	.....
7 (22-11)	3,850 (8,470)	3,850 (8,470)	.....
8 (26-3)	3,850 (8,470)	3,850 (8,470)	3,850 (8,470)
9 (29-6)	.....	3,850 (8,470)	3,770 (8,290)
10 (32-10)	.....	3,330 (7,330)	3,270 (7,190)
11 (36-1)	.....	.....	2,870 (6,310)
12 (39-4)	.....	.....	2,540 (5,590)

Clamshell ratings shown also apply to magnet, grapple and all other material handling buckets except dragline which is rated separately. For clamshell and magnet operations, the weight of bucket or magnet is considered a part of the load and the total weight of bucket plus contents or magnet plus load must not exceed the corresponding ratings shown.
Ratings are contingent upon machine being equipped with proper P&H boom, with gantry in raised position.
Maximum boom length recommended for clamshell operation..... 15.24 m (50 ft.)
Limit on clamshell rating ..... 3,850 kg (8,500 lbs.)
Maximum allowable heavy digging bucket size ..... 0.8 m³ (1 cu. yd.)
Large size may be approved depending on type of material, type of bucket—within limitations of rating charts.

To select bucket size best suited for your application, use the following formula:
Refer to charts above to obtain clamshell capacity in kg. Clamshell capacity=(cubic meter capacity of bucket)×(weight of material per cubic meter)+(weight of specific clamshell bucket.)

CLAMSHESS WORKING RANGES in Meter (Ft.-Ins.)

Boom Length A	9.14 m (30')		12.19 m (40')		15.24 m (50')	
Operating Radius D in Meter (Ft.-Ins.)	HEIGHT AND HALF WIDTH OF BIN					
	E	U	E	U	E	U
6 (19-8)	6.3 (20-8)	1.8 (5-11)	.....	.....	.....	.....
7 (22-11)	5.6 (18-5)	2.3 (7-6)	9.2 (30-2)	1.6 (5-3)	.....	.....
8 (26-3)	4.6 (15-1)	3.2 (10-6)	8.6 (28-3)	2.0 (6-7)	.....	.....
9 (29-6)	.....	.....	7.8 (25-7)	2.5 (8-2)	11.6 (38-1)	1.8 (5-11)
10 (32-10)	.....	.....	6.9 (22-8)	3.1 (10-2)	11.0 (36-1)	2.1 (6-11)
11 (36-1)	.....	.....	.....	.....	10.2 (33-6)	2.5 (8-2)
12 (39-4)	.....	.....	.....	.....	9.2 (30-2)	3.0 (9-10)
Height and Width of Stock Pile	F	V	F	V	F	V
	4.72 (15-6)	10.67 (35-0)	6.86 (22-6)	14.94 (49-0)	8.99 (29-6)	19.20 (63-0)
Operating Radius G	7.77 (25-6)		9.91 (32-6)		12.04 (39-6)	
Height—T	Varies to 3.0 m (9'-10") depending upon make and capacity of bucket.					

P&H

Higher Production Capacities
Lower Operating Costs

Data published herein are statistical and for information only. Performance may vary with the conditions encountered. **Kobe Steel, Ltd.** reserves the right to make changes in specifications without advance notice.

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