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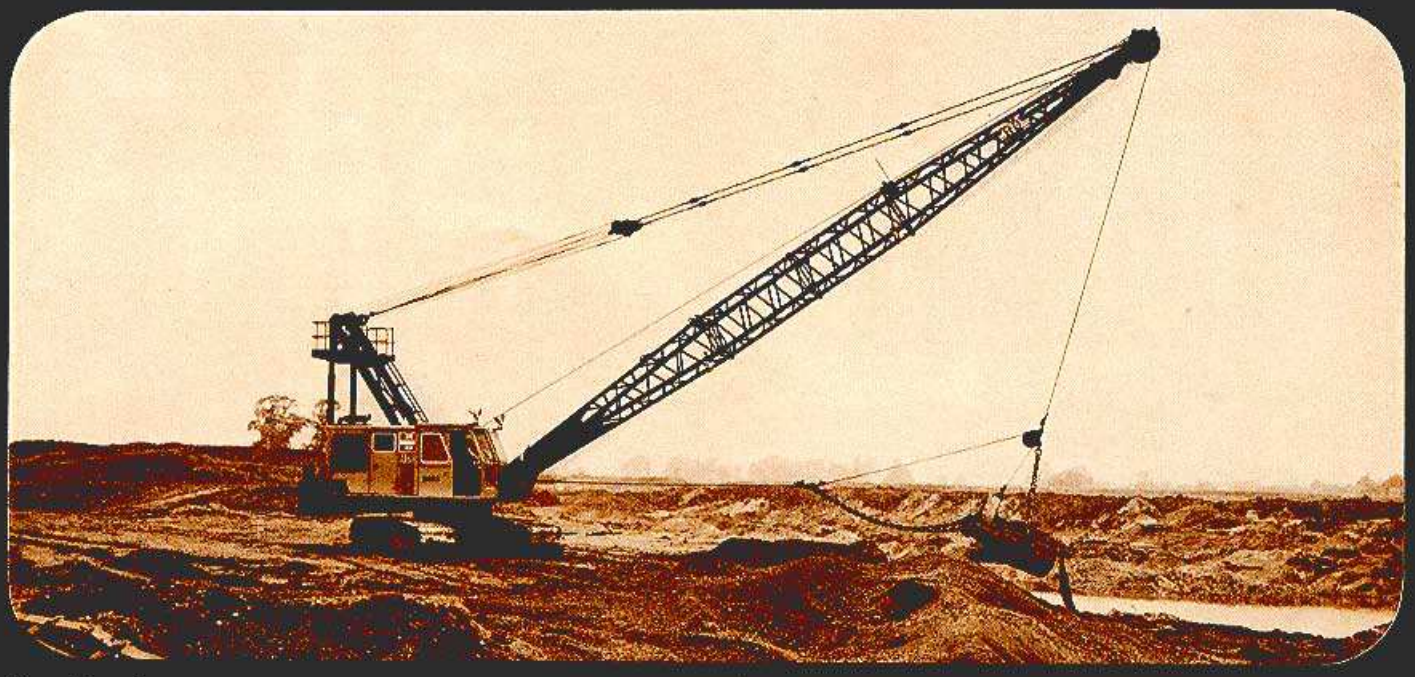
superstructure



Revolving frame

Single-unit heat-treated cast alloy-steel revolving frame of deep box-section design provides rigid foundation for main machinery and power unit. Integral boom-foot lugs.

Main machinery

Simple, open layout for efficient transmission of power. Cast-steel machinery side frames bolted to revolving frame and located by shear plugs.
Single main shaft with side-by-side drums. Swing transmission shaft and boom-hoist unit separately mounted for accessibility. Drumshaft and two-piece main transmission shaft are of heat-treated alloy-steel and mounted in anti-friction bearings. Cast alloy-steel main hoist gear with machine-cut hardened teeth.

Hoist drums

Specially developed hoist drums with Lebus laggings providing adequate rope capacity to match requirements of long boom and fly-jib range.
Power-controlled load lowering is standard equipment for main hoist drum and available for auxiliary hoist.

Drum clutches and brakes

Concentric brake and clutch contact surfaces are separated by cooling spaces. Air-controlled clutches are internal-expanding band-type. External contracting band-type brakes with choice of application systems to suit operating requirements; air-assist is standard; full-air and fail-safe systems optional for lifting crane; direct mechanical for bucket service. Split drum laggings for easy removal.

Boom hoist

Independent boom hoist with single lever control for raising and lowering clutches, safety pawl and spring-set air-released brake. Lebus lagging for correct spooling.

Swing/propel machinery

Air-controlled quick-shift spline-type clutches engage either horizontal swing gear or propel gear.
Clutches interconnected to prevent simultaneous engagement. Internal-expanding two-shoe type reversing clutches, air-controlled. Special propel bevel pinion design allows speedy removal of superstructure for transportation.
Engine-driven blower system for swing/propel reversing clutches, with optional extensions to operating clutches and brakes, gives positive cooling.

Swing brake

V-type swing brake is applied directly to top of vertical swing shaft and has air-assisted spring setting. Brake release is by hand-operated control valve delivering graduated air pressure to balance the application pressure, releasing the brake under extremely accurate control.

Swing lock

Swing lock assembly for positively locking the superstructure to the crawler mounting, i.e. when the machine is being transported. A divert valve is incorporated on the swing lock control lever which reduces air pressure to the swing clutches bringing swing movement to a minimum thereby facilitating the application of the swing lock.

Lubrication

All gears shielded; lubrication fittings easily accessible or grouped in centralised locations. Lubricating-gun mounted inside the operator's compartment lubricates the horizontal gears, swing rack and hoist gears.

Counterweight and counterweight handling

Stability counterweight consists of slab weights bolted to the rear of the superstructure. These counterweights, and also the rear-end casting, can be removed by means of an independent hydraulic assembly, details of which are given on page 5.

Operator's controls and cab

Air control for all machine functions. All-metal cab with separate offset operator's compartment.
Wide-opening doors and hatches provide easy access to machinery.
Full vision through large safety-glass windows. Wiper for upper front window.

Twin-lever dual-governor control

Two independent levers, conveniently located at the driver's position, provide sensitive control of the setting of the engine and torque-converter output-shaft governors. This system enables the relationship between power and speed to be adjusted to suit operating conditions.

crawler mounting

Specially designed to give increased stability and manœuvrability for heavy lifting service.

Side frame assemblies

Single-unit cast alloy-steel side frames.

Round-type driving tumblers are heat-treated alloy-steel castings for smooth propel and long life. Tumblers are mounted on adjustable shafts for maintaining propel-chain tension. Heat-treated alloy-steel take-up tumblers are similarly mounted for crawler belt adjustment.

Upper rollers are bushed castings. Lower rollers are bushed alloy-steel castings, differentially hardened. The rollers are small diameter single-path type providing good support along the lower length of the crawlers combined with lateral flexibility.

The roller shafts are housed in bearing blocks which are bolted to the underside of the crawler frame.

Bearings have piston-ring type seals. Track links are heat-treated alloy-steel with hardened roller path and driving lugs. Two-pin connexion.

Each side frame, complete with crawler links and propel chains, can be removed as a unit to reduce the size and weight of the crane for transportation purposes. A special stub shaft with square-section mating-ends is incorporated into each outer section of the horizontal propel shaft to facilitate this operation.

The optional hydraulic counterweight handling assembly can be used to assist in the removal and installation of the crawler side frames.

Axles

Deep I-section cast alloy-steel axles secured to truck frame by large bolts and shear plugs. Machined axle ends located in side frames allowing easy removal for transportation purposes.

Propel machinery

Power transmitted directly from vertical propel shaft in truck frame to driving chains by a bevel gear reduction and horizontal propel shaft.

Propel bevel gears are enclosed and run in oil. Easy manœuvrability by spring-set air-released steering jaw clutches and V-type propel brakes. Interlock of clutches prevents simultaneous disengagement.

Brakes are set by springs with air-assist for extra holding power.

Truck frame

One-piece heat-treated alloy-steel casting designed to accommodate the ball-bearing swing circle and incorporating an integral oil-tight housing for the propel bevel gears.

X-design ensures strength and accurate alignment of horizontal and vertical propel shafts.

Towing eyes are provided at the front of the truck frame.

Swing circle

Consists of two independent rows of precision balls and spacers. Permanently adjusted and requires only occasional lubrication. Mounted on the truck frame and bolted to the revolving frame, the swing circle incorporates the internal-tooth flame-hardened swing rack.

front-end equipment

The boom is of welded lattice construction with high-tensile alloy-steel angle chord members and round-tube lacing members. The sheave pins in the boom point structure carry the four main hoist sheaves for lifting crane service. All boom-head sheaves are mounted on ball bearings.

The boom point can be quickly connected for dragline or grabbing crane service.

Basic boom length is 50ft *15,24m* comprising a 25ft *7,62m* lower section and a 25ft *7,62m* upper section, which can be extended to maximum of 160ft *48,77m* by the insertion of 10ft *3,05m*, 20ft *6,10m* and 30ft *9,14m* intermediate sections.

A fly jib of 15ft *4,57m* or 30ft *9,14m* in length is available to extend the range of the lifting crane equipment.

Multi-piece pendent suspension is employed with multi-part continuous rope suspension between the rear-hitch lowerable high A-frame and the floating bridle ; with multi-piece pendants from the floating bridle to the boom point.

All boom lengths can be raised from ground level without assistance by means of the rear-hitch lowerable A-frame in the raised position ; with multi-part continuous rope suspension between the A-frame and the floating bridle and multi-piece pendants between the floating bridle and the boom point.

heavy-duty machine options

Different crane applications call for different crane equipment. Heavy-duty machines can be fitted with a number of optional items to suit different site requirements.

Independent propel
Gives immediate propel availability or machine movement in conjunction with swing for accurate load location in crane work; includes gears, air-operated clutches and brakes, mounted in special bracket.

Third drum
Comprises third drum assembly mounted at boom foot, complete with drive chain and sprockets, bearing brackets, operating valves and levers.

Load indicators
Standard indicator is of mechanical pendulum type with scales indicating boom angle and also load/radius for a specified boom length.
A visible and audible automatic load indicator of approved make can be fitted as an optional extra.

Hoist-line movement sensing unit
This comprises drive wheel, spring-loaded against outer face of clutch housing, with flexible drive to a rotating sensing knob at the driver's position. A flexible control cable, complete with hand grip, is also provided.

Auxiliary hoist lagging
Consists of a 26in *660mm* diameter Lebus lagging, suitable for 22mm rope, to give auxiliary hoist facility.

Power-controlled lowering of auxiliary hoist line
Comprises air-controlled drive clutch, gear and shaft, drive chain and sprockets, giving controlled reverse-motion of hoist drum.

Hook blocks for main hoist
Triple-sheave block to handle maximum capacity. Single-sheave swivel-hook block available to suit other duties.

Boom-angle limit device
At a pre-set boom angle, the air supply to the boom-hoist clutch is exhausted and the boom-hoist brake is automatically set, thus preventing the boom from exceeding the maximum angle. A warning whistle is also incorporated.

Hydraulic counterweight-handling assembly
Comprises portable hydraulic-pump unit powered by single-cylinder petrol engine, controls, hoses with quick-release couplings, cylinders and hydraulic fluid. Links to enable unit to be used for crawler side-frame movement included.

Blower equipment for operating clutches and brakes
Additional ducting to right-hand or left-hand operating clutch and brake, as specified by customer.

Alternative systems for operating brakes
Full-air type, retaining operator "feel", may be fitted in place of standard air-assisted type.
Also available:
Fail-safe system with spring-set, air-released brakes for lifting crane.
Direct mechanical type for bucket service.

Alternative power unit
Dorman 8JT turbo-charged water-cooled diesel with torque-converter may be supplied as an alternative to the Cummins NT855PTC.

Lighting equipment
Engine-driven alternator with rectifier provides 24-volt dc supply for cab-mounted floodlights, interior lights and hand-lamp. Additional boom-mounted floodlights available.

Air-operated fuel transfer pump
Can be fitted instead of standard manual semi-rotary pump.

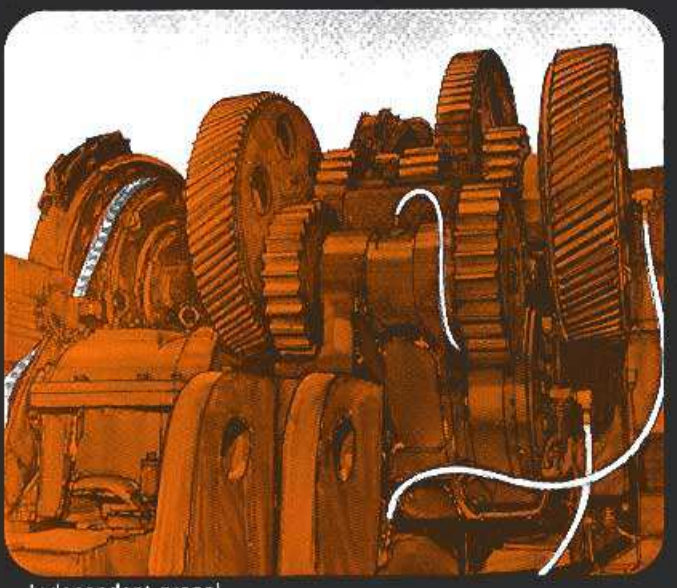
Heater for operator's compartment
Water-circulation heater with electrically-driven fan.

Extra windscreen wiper
Electrically-operated wiper for lower front window of cab.

Windscreen washers—air-operated
Two for upper front window of cab or one for upper front window and one for lower front window.

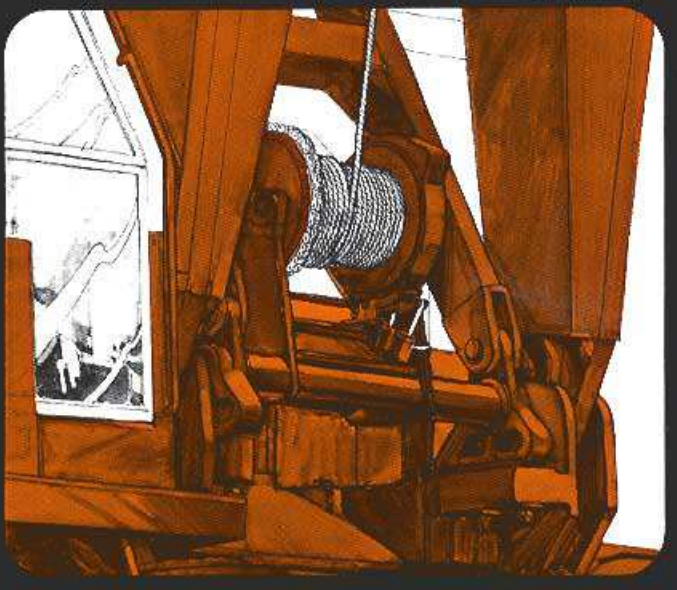
Cleaning-down hose
Comprises air-control valve, 15ft *4,57m* hose and blow gun.

Supplementary maintenance kits.
For power unit and machine.

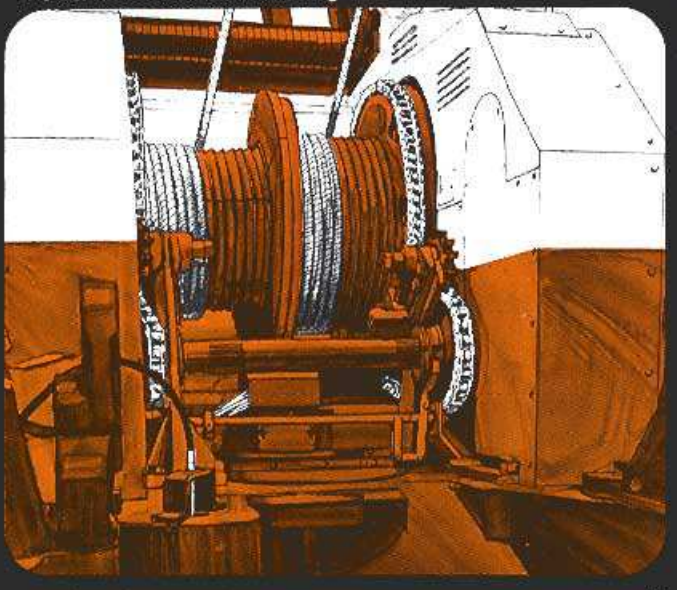


Independent propel

Third drum



Power-controlled load lowering



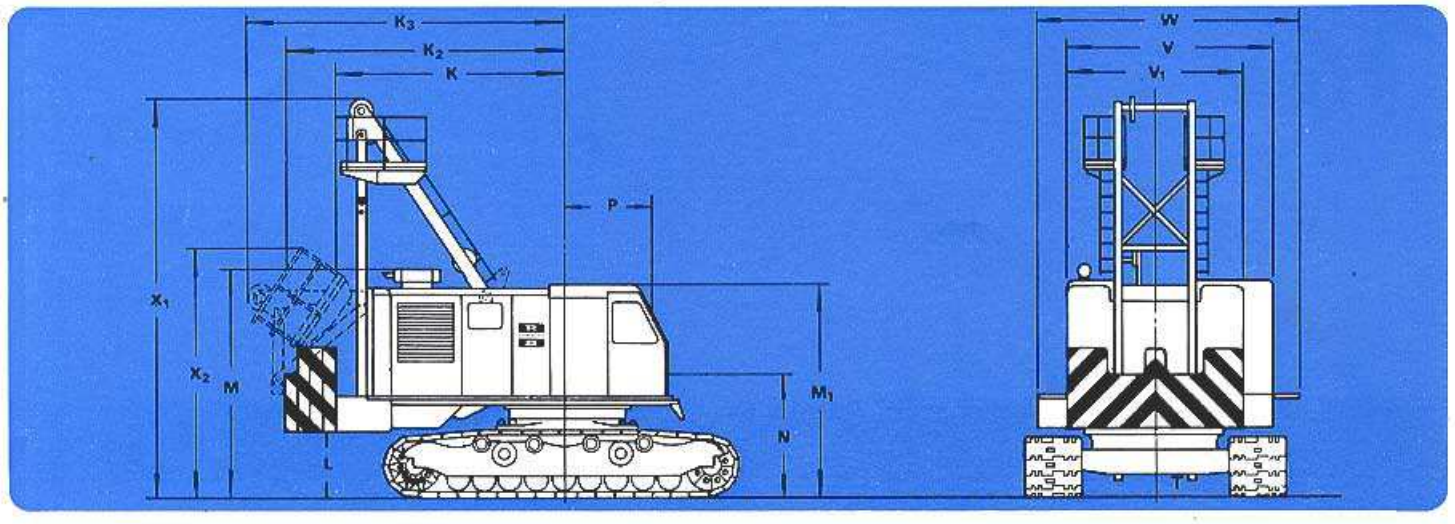
approximate weights

With diesel power, long and wide mounting, 50ft *15,24m* boom and appropriate counterweight	Lifting crane, including hook block lb	*kg*	Dragline, including bucket lb	*kg*	Grabbing crane, including bucket lb	*kg*
Working	212 410	*96 350*	197 950	*89 790*	195 850	*88 840*
Domestic shipping	210 410	*95 440*	195 950	*88 885*	193 850	*87 930*
Packed for export	218 510	*99 120*	205 950	*93 420*	203 850	*92 470*

The above weights will vary considerably for different combinations of front-end equipment, etc.

Stability counterweight	Lifting crane		Dragline, grabbing crane or magnet crane	
	Amount	Location	Amount	Location
	35 000lb *15 800kg*	Three 9500lb *4310kg* and one 6500lb *2950kg* weights outside rear-end casting	19 000lb *8620kg*	Two 9500lb *4310kg* weights outside rear-end casting

clearance dimensions



K	Clearance radius of rear-end casting	13' 11½" *4,25m*	T	Clearance under mounting (propel gear-case)	1' 6" *457mm*
K_2	Clearance radius over external rear counterweight	16' 1" *4,90m*	V	Width of cab without platforms	11' 11½" *3,56m*
K_3	Clearance radius over folded A-frame	18' 9¼" *5,72m*	V_1	Width of rear-section of cab (operator's compartment removed)	10' 6" *3,20m*
L	Clearance under frame to ground level	3' 9½" *1,15m*	W	Width over superstructure with platforms	15' 2" *4,63m*
M	Clearance height over exhaust (handrails removed)	14' 0" *4,27m*		Overall width of machine with platforms	15' 5½" *4,71m*
M_1	Height of cab	12' 9" *3,88m*	X_1	Height over erected A-frame	23' 7½" *7,20m*
N	Height of boom-foot pin above ground level	7' 3¼" *2,21m*	X_2	Height over folded A-frame with handrails and platforms	14' 11¼" *4,55m*
P	Distance from boom-foot pin to centre of rotation	5' 2" *1,58m*			

crawler mounting

	Width of track links	C to C of crawler belts	Overall width	C to C of tumblers approx.	Overall length approx.	Height of crawler tracks	Approximate bearing area
Long frame, wide axle	42" *1,07m*	12' 3" *3,73m*	15' 9" *4,70m*	17' 3" *5,26m*	20' 6" *6,25m*	44" *1,12m*	126ft² *11,70m²*

power units

Make and model	Cummins NT 855 PTC	Dorman 8JT
Type	Turbo-charged, water-cooled diesel	Turbo-charged, water-cooled vee-form diesel
Torque converter	Clark 16.1	Clark 16.1
Cylinders	Six, 5·50" *140mm* bore x 6" *162mm* stroke	Eight, 5·12" *130mm* bore x 4·92" *125mm* stroke
Ratings:		
Engine hp (gross)	291 *217 kW*	278 *207 kW*
Engine speed rev/min	2000	1900
Torque-converter output-shaft hp (net)	208 *155 kW*	208 *155 kW*
Torque-converter output-shaft speed rev/min	1300	1300
Operating ranges:		
Ambient temperature	— 8° C to 46°C	— 20°C to 46°C
Altitude	Up to 10 000' *3050m*	Up to 5000' *1525m*
Fuel tank capacity	140 gallons *636 litres*	
Starting system	24-volt electric	

laggings and ropes

Boom suspension

Rear-hitch lowerable A-frame for all boom lengths.

10-part tackle between A-frame and bridle.

Tackle rope 19mm diameter.

Multi-piece pendants 38mm diameter.

Lifting crane

Hoist drum, grooved (RH)	22½" diameter *571mm*
Hoist rope	28mm diameter
Auxiliary hoist drum, grooved (LH)	26" diameter *660mm*
Auxiliary hoist rope	22mm diameter
Boom-point sheaves (four)	27" p diameter *686mm*

Dragline

Hoist drum, grooved (LH)	26" diameter *660mm*
Drag drum, grooved (RH)	26" diameter *660mm*
Hoist rope, one part	26mm diameter
Drag rope, one part	28mm diameter
Boom-point sheave (one)	27" p diameter *686mm*

Grabbing crane

Hoisting and closing drum, grooved (RH)	26" diameter *660mm*
Holding drum, grooved (LH)	26" diameter *660mm*
Hoist rope, one part	26mm diameter
Holding rope, one part	26mm diameter
Boom-point sheaves (two)	27" p diameter *686mm*

rope pulls and speeds

Drum lagging	Diameter	One-part line				Two-part line				Three-part line			
		Pull lbf	kgf	Speed ft/min	m/min	Pull lbf	kgf	Speed ft/min	m/min	Pull lbf	lbf	Speed ft/min	m/min
Right-hand drum	22½" *571mm*	37 470	*17 000*	158·50	*48,31*	72 960	*33 100*	79·20	*24,14*	106 480	*48 300*	52·80	*16,10*
	26" *660mm*	32 580	*14 780*	182·80	*55,75*	—	—	—	—	—	—	—	—
Left-hand drum	26" *660mm*	32 580	*14 780*	182·80	*55,75*	63 440	*28 780*	91·40	*27,88*	—	—	—	—

Swing speed: 3·6 rev/min Propel speed: 83 ft/min *25,30 m/min*

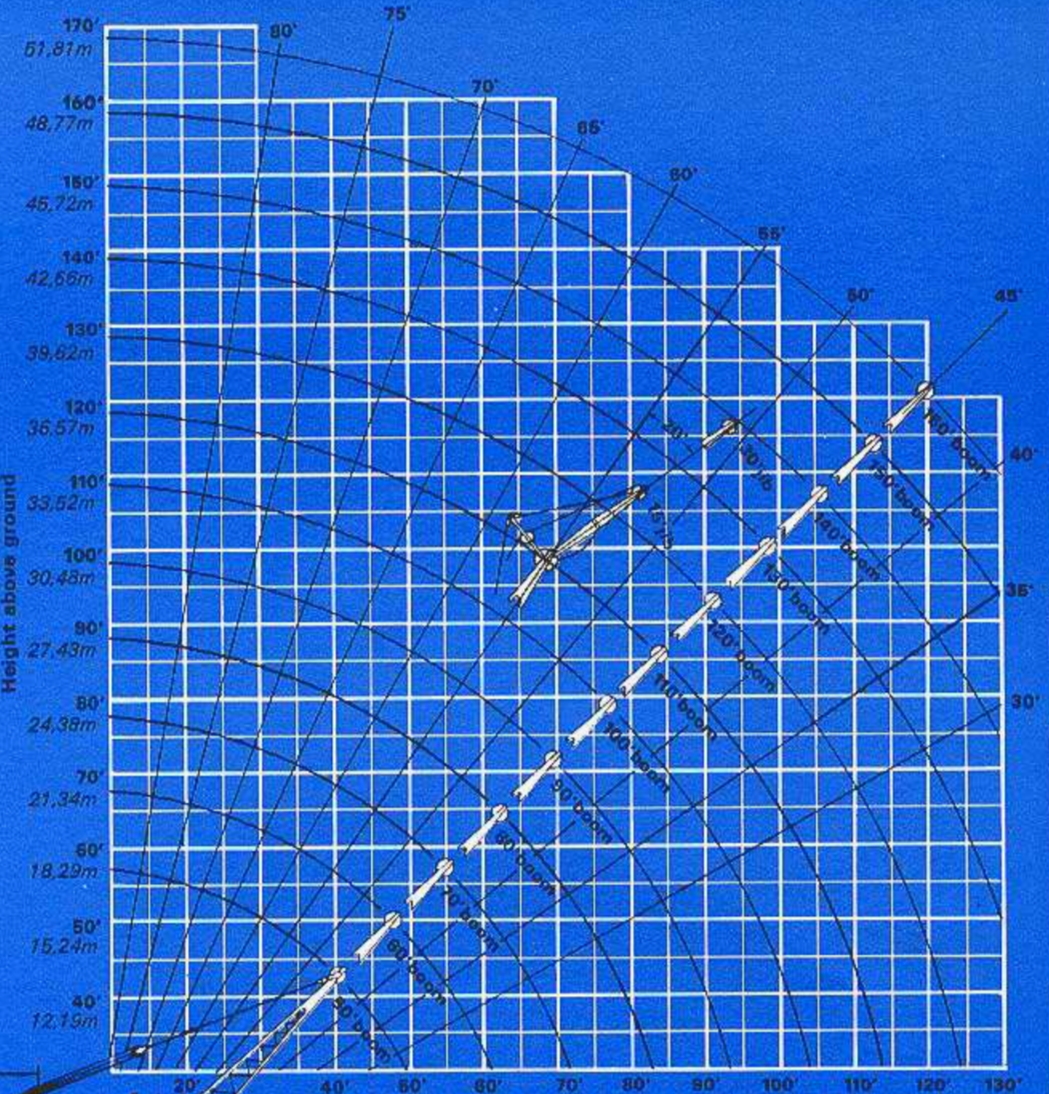
Figures given are based on power unit operating at full-load speed.
When torque converter is stalled, line pulls are approximately twice the figures quoted.

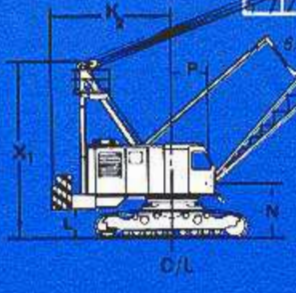
Rear-hitch lowerable A-frame

The rear-hitch A-frame can be lowered and folded over the rear of the machine to reduce overhead clearance, both for transportation and on site. All boom lengths can be raised from ground level, without assistance, by means of the rear-hitch A-frame in the raised position. With the rear-hitch A-frame lowered to reduce overhead clearance height, the maximum length of boom with which the machine can be travelled in the horizontal position is 60ft *18.29m*.

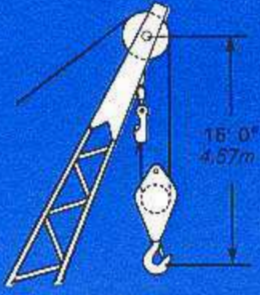
61-RB Heavy-duty lifting crane range diagram

working radius and height above ground at various boom angles





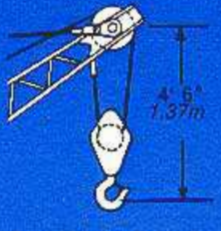
K_2	Clearance radius over external rear counterweight	16' 1" 4,90m
L	Clearance under frame to ground level	3' 9½" 1,15m
N	Height of boom-foot pin above ground level	7' 3½" 2,21m
P	Distance from boom-foot pin to centre of rotation	5' 2" 1,58m
X_1	Height over erected A-frame	23' 7½" 7,20m



Main hoist

93,5 tonnes
triple-sheave hook block

41,7 tonnes
single-sheave hook block



Auxiliary hoist

10,10 tonnes
single-sheave swivel-hook block

lifting crane main-boom service notes

Boom construction

The two-section basic boom is 50' 0" *15,24m* long, and comprises a 25' 0" *7,62m* lower section and a 25' 0" *7,62m* upper section constructed from alloy-steel angles. Boom cross-section 4' 0" *1,22m* deep x 4' 6" *1,37m* wide.

Intermediate sections 10' 0" *3,05m*, 20' 0" *6,10m* and 30' 0" *9,14m* in length may be inserted to make booms up to 160' 0" *43,77m* long. Sections are connected by three-bolt butt-type machined joints.

Knee-type boom safety stops are fitted as standard equipment.

See page 12 for use of fly jibs on booms.

Working loads

The main-boom working loads listed on pages 10 and 11 for lifting crane service are based on USA rating factors and do not exceed 75% of tipping load with the machine standing on firm, level and uniform supporting surface and without appreciable wind. Loads must be freely suspended. The radii specified are loaded radii and the working loads listed are for booms without fly jibs. Working loads include blocks, hooks, slings and other equipment used in handling loads. Proper care must be exercised by the operator at all times to avoid shock or side loadings on the boom (and jib, when fitted) which might hazard crane stability, particularly when operating with long boom at low angles.

Ratings apply only to machines having booms in first-class condition built and recommended by Ruston-Bucyrus Ltd.

The machine should not be operated outside the tabulated range appropriate to the service and the equipment fitted.

Working load reduction for jib

The working loads over the main boom sheaves, at any radius, as given on pages 10 and 11, must be reduced in accordance with the following schedule when a jib is fitted (but not in use).

Length of jib	Working load reduction
15' 0" *4,57m*	2000 lb *907 kg*
30' 0" *9,14m*	2600 lb *1220 kg*

Hook blocks

The weight of the hook block in use, together with any slings or other lifting tackle, must be deducted from the working load to arrive at the actual (net) load lifting capacity for any boom length and radius.

Standard equipment for main hoist: 93,5 tonnes triple-sheave swivel-hook block, 3810 lb *1730 kg.*

Alternative equipment for main hoist: 41,7 tonnes single-sheave, swivel-hook block 1450 lb *660 kg.*

Boom suspension

All boom lengths are suspended by 10-part rope tackle, 19mm diameter, between the rear-hitch, lowerable A-frame and the floating bridle assembly, and multi-piece pendants, 38mm diameter, between the floating bridle and the boom point.

Main-load hoist ropes

Standard equipment for all boom lengths: 28mm diameter six-strand (6/19) type with independent wire-rope core.

Optional equipment: 28mm diameter multi-strand (17 x 26) DYFORM type.

Main-load hoist-rope loads

Recommended parts of reeving with standard rope and hook block are as follows:

1-part line for loads up to	24 750 lb *11 225 kg*
2-part line for loads up to	48 950 lb *22 205 kg*
3-part line for loads up to	72 800 lb *33 020 kg*
4-part line for loads up to	96 100 lb *43 590 kg*
5-part line for loads up to	118 950 lb *53 955 kg*
6-part line for loads up to	141 350 lb *64 115 kg*
7-part line for all greater loads	

Load indicators

Standard indicator is of mechanical pendulum type with scales indicating boom angle and also load/radius for a specified boom length.

Additional load/radius scales for alternative boom lengths or boom/jib combinations are available.

A visible and audible automatic load indicator of approved make can be fitted as an optional extra.

Automatic load indicator standard calibration is based on the ratings listed and on the hoist-line reeving specified below.

Boom length	No. of parts main hoist line
50' 0" *15,24m*	7
60' 0" *18,29m*	6
70' 0" *21,34m*	5
80' 0" *24,38m*	5
90' 0" *27,43m*	4
100' 0" *30,48m*	4
110' 0" *33,52m*	3
120' 0" *36,57m*	3
130' 0" *39,62m*	3
140' 0" *42,67m*	2
150' 0" *45,72m*	2
160' 0" *48,77m*	2

lifting crane

no fly jib fitted

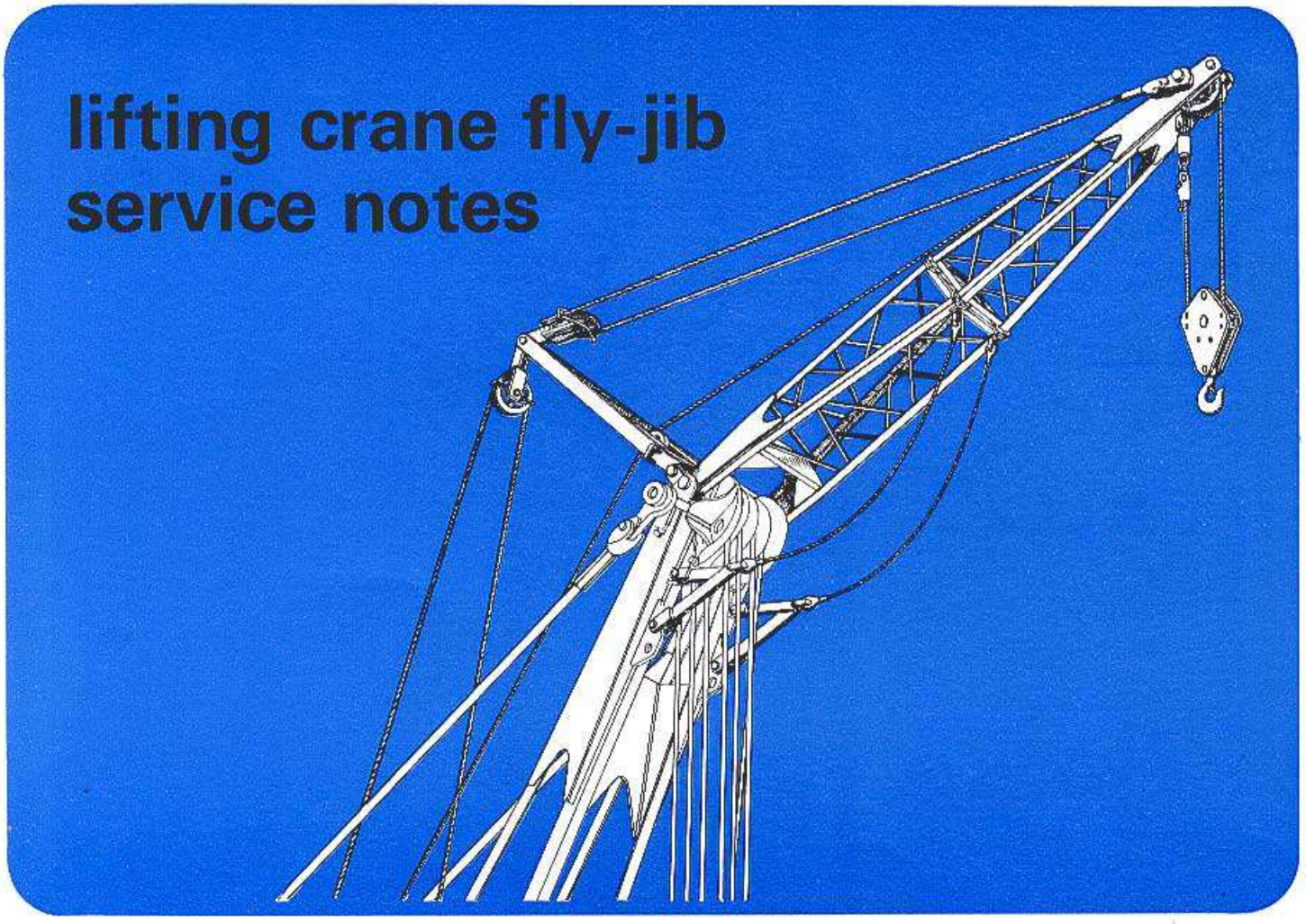
Length of boom ft	Length of boom m	Operating radius ft	Operating radius m	Equivalent angle of boom degrees	Approximate height of boom-point sheave pin above ground ft	Approximate height of boom-point sheave pin above ground m	Capacities based on USA rating factors: Maximum counterweight lb	Maximum counterweight kg	Bucket service counterweight lb	Bucket service counterweight kg
		15	4,57	78	56	17,07	183 800	83 370	154 500	70 080
		20	6,10	73	55	16,76	115 400	52 345	96 700	43 865
		25	7,62	66	53	16,15	83 500	37 815	69 800	31 660
50	14,24	30	9,14	60	51	15,55	65 000	29 485	54 100	24 540
		35	10,67	54	48	14,63	52 900	23 995	43 900	19 915
		40	12,19	46	43	13,10	44 400	20 140	36 800	16 690
		48	14,63	30	33	10,06	35 100	15 920	28 900	13 110
		25	7,62	71	64	19,51	83 000	37 650	69 300	31 435
		30	9,14	66	62	18,90	64 500	29 255	53 600	24 310
60	18,29	35	10,67	60	59	17,90	52 400	23 770	43 400	19 685
		40	12,19	55	56	17,07	43 900	19 915	36 300	16 465
		50	15,24	42	47	14,32	32 700	14 830	26 800	12 155
		57	17,37	30	38	11,58	27 500	12 475	22 400	10 160
		20	6,10	78	76	23,16	114 500	51 935	95 800	43 455
		25	7,62	74	74	22,55	82 500	37 420	68 800	31 205
		30	9,14	70	73	22,25	64 000	29 030	53 100	24 085
70	21,34	40	12,19	60	68	20,72	43 400	19 685	35 800	16 240
		50	15,24	51	51	18,59	32 300	14 650	26 300	11 930
		60	18,29	39	51	15,55	25 200	11 430	20 400	9255
		65	19,81	30	44	13,41	22 600	10 250	18 200	8055
		22	6,70	78	86	26,21	98 900	44 860	82 600	37 465
		30	9,14	72	83	25,30	63 700	28 895	52 800	23 950
		40	12,19	65	79	24,08	43 100	19 550	35 400	16 055
80	24,38	50	15,24	56	74	22,56	31 900	14 470	26 000	11 795
		60	18,29	47	66	20,12	24 900	11 295	20 100	9115
		70	21,34	36	57	17,37	20 100	9115	16 000	7255
		74	22,56	30	48	14,63	18 500	8390	14 700	6665
		24	7,31	78	95	28,95	86 600	39 280	72 100	32 705
		30	9,14	74	94	28,65	63 100	28 620	52 300	23 725
		40	12,19	68	90	27,43	42 500	19 280	34 900	15 830
90	27,43	50	15,24	60	85	25,90	31 400	14 245	25 500	11 565
		60	18,29	53	79	24,08	24 300	11 020	19 500	8845
		70	21,34	44	70	21,34	19 500	8845	15 500	7030
		83	25,30	30	53	16,15	15 100	6850	11 800	5350
		26	7,92	78	105	32,00	76 800	34 835	63 800	28 940
		30	9,14	76	104	31,70	62 700	28 440	51 900	23 540
		40	12,19	70	101	30,79	42 100	19 095	34 500	15 650
100	30,48	55	16,76	60	94	28,65	27 100	12 290	21 800	9890
		70	21,34	50	83	25,30	19 100	8665	15 100	6850
		80	24,38	42	74	22,56	15 600	7075	12 100	5490
		91	27,74	30	59	17,98	12 700	5760	9650	4375
		28	8,53	78	115	35,05	68 800	31 205	57 000	25 855
		40	12,19	72	112	34,14	41 800	18 960	34 200	15 515
		50	15,24	66	108	32,92	30 600	13 880	24 700	11 205
110	33,52	60	18,29	60	103	31,39	23 600	10 705	18 800	8535
		80	24,38	47	88	26,82	15 300	6940	11 800	5350
		90	27,43	40	77	23,47	12 600	5715	9500	4310
		100	30,48	30	63	19,20	10 500	4760	7750	3515

main-boom ratings

Length of boom ft	Length of boom m	Operating radius ft	Operating radius m	Equivalent angle of boom degrees	Approximate height of boom-point sheave pin above ground ft	Approximate height of boom-point sheave pin above ground m	Capacities based on USA rating factors — Maximum counterweight lb	Capacities based on USA rating factors — Maximum counterweight kg
120	36,57	30	9,14	78	125	38,10	61 900	28 075
		40	12,19	73	122	37,19	41 300	18 735
		50	15,24	68	119	36,27	30 100	13 655
		60	18,29	63	114	34,75	23 100	10 480
		70	21,34	58	108	32,92	18 300	8300
		90	27,43	45	92	28,04	12 000	5445
		100	30,48	38	81	24,69	9950	4515
130	39,62	33	10,06	78	134	40,84	53 700	24 360
		40	12,19	75	133	40,54	40 900	18 550
		50	15,29	70	129	39,32	29 700	13 470
		70	21,34	60	120	36,58	17 800	8075
		90	27,43	50	106	32,31	11 700	5305
		100	30,48	43	96	29,26	9550	4330
		110	33,52	37	84	25,60	7850	3560
140	42,67	35	10,67	78	144	43,89	49 100	22 270
		40	12,19	76	143	43,59	40 600	18 415
		50	15,24	72	140	42,67	29 400	13 335
		70	21,34	63	131	39,93	17 500	7940
		90	27,43	53	119	36,27	11 300	5125
		100	30,48	48	110	33,53	9200	4175
		110	33,52	42	100	30,48	7550	3425
150	45,72	37	11,28	78	154	36,97	44 700	20 275
		40	12,19	77	153	36,66	39 900	18 100
		50	15,24	73	151	46,05	28 700	13 020
		60	18,29	69	147	44,83	21 700	9845
		80	24,38	60	138	32,09	13 300	6030
		100	30,48	51	124	37,82	4550	3880
		120	36,57	40	104	31,72	5450	2470
160	48,77	39	7,01	78	164	50,02	41 000	18 595
		50	15,24	74	161	49,10	28 300	12 835
		60	18,29	70	158	48,19	21 300	9660
		70	21,34	66	154	46,91	16 500	7485
		80	24,38	62	149	34,34	13 000	5895
		100	30,48	54	137	41,78	8150	3695
		120	36,57	44	119	36,29	5050	2290

For service notes see page 9

lifting crane fly-jib service notes



Jib construction

Jibs are of all-welded lattice construction with alloy-steel angle-type chord members and mild-steel lacing members. Basic length of jib is 15' 0" *4,57m* comprising 7' 6" *2,28m* upper and lower sections with three-bolt butt-type machined joints between the sections.

Jib cross section 1' 6" *457mm* deep x 2' 0" *610mm* wide.

An intermediate section 15' 0" *4,57m* in length is available to enable a maximum jib length of 30' 0" *9,14m* to be obtained.

Jib service notes

Jibs are designed for load lifting purposes only and are not suitable for dragline or grabbing crane operation.

Jibs may only be used at 20° offset to the centre-line of the main boom.

All permissible combinations of boom and jib are given on page 13 and the machine should not be operated outside the tabulated range appropriate to the service and the equipment fitted.

Working loads

Jib working loads listed on page 13 are applicable to machines fitted with 10-part boom-suspension tackle and lifting crane counterweight.

Working loads are given in terms of boom/jib lengths and boom angles but must not exceed 22 400 lb *10 160 kg* with 15' 0" *4,57m* jib and 13 500 lb *6120 kg* with 30' 0" *9,14m* jib.

Working loads are based on USA rating factors and do not exceed 75% of tipping load and are for a machine standing on firm, level ground.

The weight of the hook in use, together with any slings or other lifting tackle, must be deducted from the working load to arrive at the actual (net) load capacity for any jib length and radius.

Standard equipment: 10,16 tonnes single-sheave swivel-hook block 360 lb *163 kg.*

1-part line for loads up to 18 500 lb *8390 kg*

2-part line for all greater loads.

Jib hoist rope

22mm diameter multi-strand (17 x 19) DYFORM type.

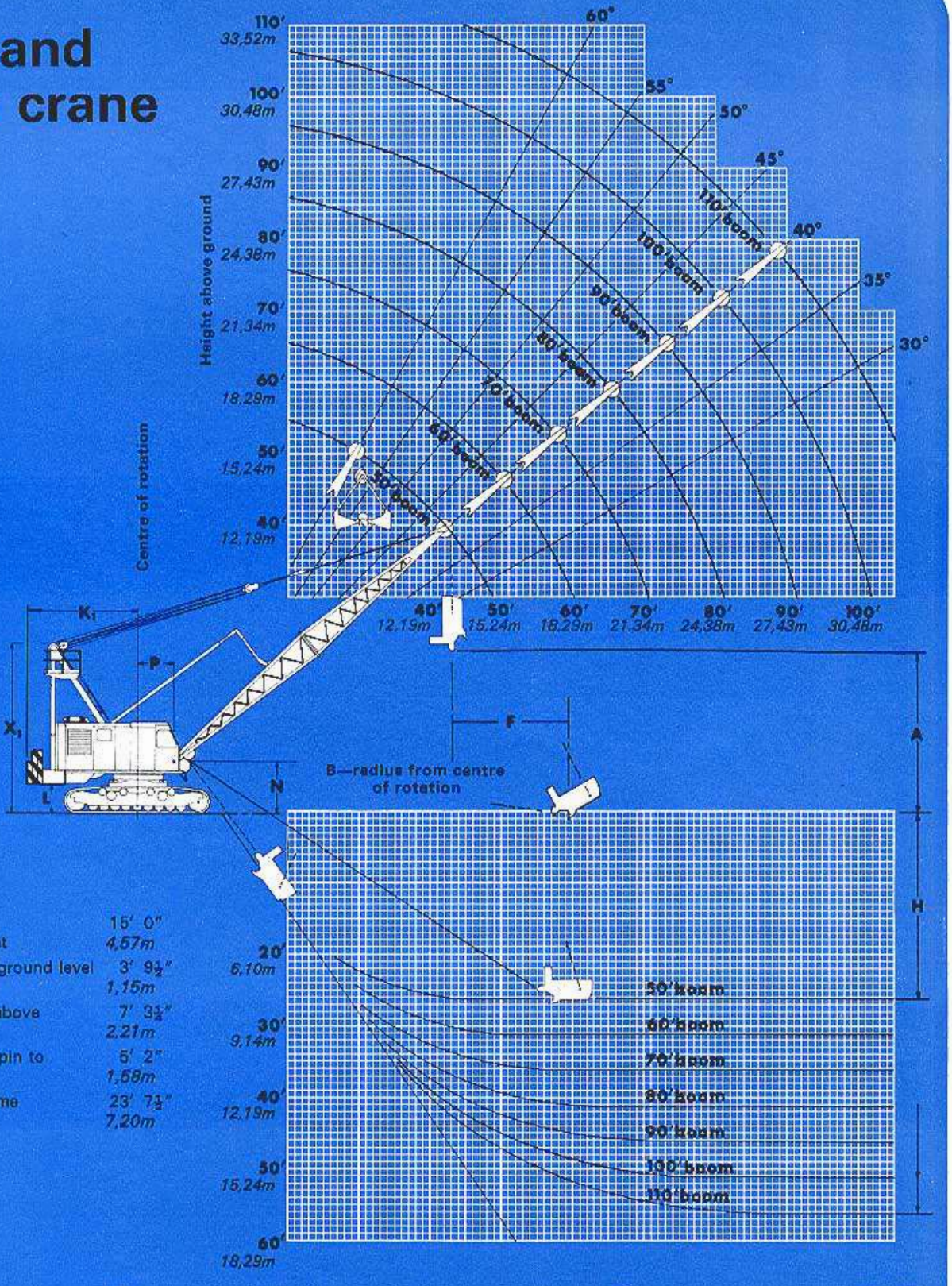
Two-part auxiliary hoist line is standard for all 15' 0" *4,57m* jib combinations; single-part hoist line is standard for 30' 0" *9,14m* combinations. Calibration of visible and audible safe-load indicator (when fitted) is based on the appropriate standard reeving.

lifting crane fly-jib ratings

	Length of main boom		Angle of main boom	Working load over jib sheave		Jib load radius		Approximate height of jib point	
	ft	m	degrees	lb	kg	ft	m	ft	m
15 ft 4,57m fly jib									
93,5 tonnes main hook block fitted to main hoist	80	24,38	76	22 400	10 160	33	10,06	98	29,87
			72	22 400	10 160	40	12,19	96	29,26
			65	22 000	9980	50	15,24	91	27,74
			58	21 000	9520	60	18,29	85	25,91
			47	16 600	7630	74	22,55	73	22,25
	90	27,43	76	22 400	10 160	38	10,97	108	32,92
			74	22 400	10 160	45	13,71	107	32,62
			68	22 000	9980	50	15,24	102	31,09
			62	21 000	9520	60	18,29	97	29,57
			55	17 700	8030	70	21,34	90	27,43
			45	13 100	5940	83	25,30	78	23,78
	100	30,48	76	22 400	10 160	38	11,58	118	35,97
			70	22 000	9980	50	15,24	113	34,44
			64	21 000	9520	60	18,29	109	33,22
			59	17 200	7800	70	21,34	102	31,09
			52	13 600	6170	80	24,38	95	28,96
			45	10 600	4810	91	27,74	84	25,60
41,7 tonnes main hook block fitted to main hoist	110	33,53	76	22 400	101100	41	12,49	127	38,71
			67	22 000	9980	60	18,29	120	36,58
			61	18 300	8300	70	21,34	114	34,75
			56	14 700	6670	80	24,38	108	32,92
			50	11 900	5400	90	27,43	99	30,18
			43	9750	4420	100	30,48	89	27,13
	120	36,58	76	22 400	10 160	43	13,10	137	41,76
			69	21 500	9750	60	18,29	131	39,93
			64	17 800	8070	70	21,34	126	38,41
			59	14 200	6440	80	24,38	120	36,58
			54	11 400	5170	90	27,43	112	36,61
			48	9250	4200	100	30,48	103	31,39
	130	39,62	76	22 400	10 160	46	14,02	147	44,80
			70	21 100	9570	60	18,29	142	43,28
			66	17 400	7890	70	21,34	137	41,76
			61	13 800	6260	80	24,38	132	40,23
			56	11 000	4990	90	27,43	125	38,10
			51	8850	4010	100	30,48	117	35,66
			46	7100	3220	110	33,53	108	32,92
	140	42,67	76	22 400	10 160	48	14,63	156	47,55
			71	20 800	9430	60	18,29	152	46,33
			67	17 100	7760	70	21,34	148	45,11
			63	13 500	6220	80	24,38	143	43,59
			59	10 700	4850	90	28,43	137	41,76
			54	8550	3880	100	30,48	130	39,62
			50	6800	3080	110	33,53	122	37,18
30 ft 9,14m fly jib									
93,5 tonnes main hook block fitted to main hoist	80	24,38	76	13 500	6120	42	12,80	111	33,83
			72	12 000	5440	50	15,24	107	32,62
			66	11 500	5220	60	18,29	102	31,09
			57	10 200	4630	74	22,55	93	28,35
	90	27,43	76	13 500	6120	44	13,41	120	37,58
			73	12 000	5440	50	15,24	118	35,97
			68	11 800	5350	60	18,29	114	34,75
			62	11 100	5030	70	21,34	108	32,92
			56	10 200	4630	83	25,30	98	29,87
	100	30,48	76	13 500	6120	47	14,32	130	39,62
			70	12 000	5440	60	18,29	125	38,10
			65	11 700	5310	70	21,34	119	36,27
			60	11 000	4990	80	24,38	113	34,44
			53	10 300	4670	91	27,74	104	31,70
41,7 tonnes main hook block fitted to main hoist	110	33,53	76	13 500	6120	49	14,93	140	42,67
			67	12 400	5620	70	21,34	131	39,93
			62	11 600	5260	80	24,38	125	38,10
			57	10 800	4900	90	27,43	118	35,97
			52	10 300	4670	100	30,48	110	33,53
	120	36,58	76	13 500	6120	52	15,85	149	45,41
			69	12 600	5710	70	21,34	142	43,28
			64	11 800	5350	80	24,38	137	41,76
			60	11 000	4990	90	27,43	130	39,62
			55	10 200	4630	100	30,48	123	37,49
	130	39,62	76	13 500	6120	54	16,46	159	48,46
			66	12 000	5440	80	24,38	148	45,11
			62	11 200	5080	90	27,43	142	43,28
			57	9800	4440	100	30,48	135	41,15
			53	8000	3630	110	33,53	127	38,71

For service notes see opposite

dragline and grabbing crane working ranges



K_1	Clearance radius over external rear counterweight	15' 0" *4,57m*
L	Clearance under frame to ground level	3' 9½" *1,15m*
N	Height of boom-foot pin above ground level	7' 3½" *2,21m*
P	Distance from boom-foot pin to centre of rotation	5' 2" *1,58m*
X_1	Height over erected A-frame	23' 7½" *7,20m*

A	Dumping height	Equal to the height of the boom-point pin, less vertical dimension R given in the tables on pages 16 & 17.
B	Dumping radius	Approximately the same as the operating radius—see ratings table on page 15.
F	Throw of bucket beyond boom point	For a dragline this dimension, usually one-third to one-half of boom length, depends upon the ability of the operator, length of boom, height of boom head, depth of excavation and weight of bucket.
H	Digging depth below ground level	**Dragline** Half operating radius B is a fair average; actual depth depends on character of material and conditions. It is possible when working conditions are unusually favourable and by using suitable ropes, to reach a depth equal to the operating radius.

Depth shown on diagram is with standard ropes; one wrap on drum and boom in position indicated—depths for other boom positions may be determined by striking equal arcs from the proposed location of boom-point pin.

Grabbing crane

Digging depth for grabbing crane, using standard ropes, is approximately 8' 0" *2,44m* greater than indicated for dragline.

dragline and grabbing crane ratings

Length of boom		Operating radius		Equivalent angle of boom	Approximate height of boom-point sheave pin above ground		Capacities based on USA rating factors			
							Dragline working load		Grabbing crane or magnet crane working load	
ft	*m*	ft	*m*	degrees	ft	*m*	lb	*kg*	lb	*kg*
		30	*9,14*	60	51	*15,55*	20 800*	*9435*	22 500†	*10 200*
50	*15,24*	40	*12,19*	46	43	*13,11*	20 800*	*9435*	22 500†	*10 200*
		48	*14,63*	30	33	*10,06*	20 800*	*9435*	22 500†	*10 200*
		35	*10,67*	60	59	*17,99*	20 800*	*9435*	22 500†	*10 200*
		40	*12,19*	55	56	*17,08*	20 800*	*9435*	22 500†	*10 200*
60	*18,29*	52	*15,86*	39	45	*13,72*	20 800*	*9435*	22 500†	*10 200*
		55	*16,77*	34	41	*12,50*	20 800*	*9435*	21 250	*9640*
		57	*17,37*	30	38	*11,59*	20 800*	*9435*	20 240	*9180*
		40	*12,19*	60	68	*20,74*	20 800*	*9435*	22 500†	*10 200*
		50	*15,24*	51	61	*18,60*	20 800*	*9435*	22 500†	*10 200*
70	*21,34*	52	*15,86*	48	60	*18,29*	20 800*	*9435*	22 500†	*10 200*
		55	*16,77*	45	57	*17,38*	20 800*	*9435*	20 800	*9430*
		59	*17,99*	40	52	*15,86*	20 800*	*9435*	18 850	*8550*
		65	*19,82*	30	44	*13,42*	18 250	*8280*	16 420	*7450*
		45	*13,72*	60	77	*23,48*	20 800*	*9435*	22 500†	*10 200*
		50	*15,24*	56	74	*22,57*	20 800*	*9435*	22 500†	*10 200*
80	*24,38*	51	*15,55*	55	73	*22,26*	20 800*	*9435*	22 500†	*10 200*
		58	*17,69*	49	68	*20,74*	20 800*	*9435*	18 990	*8610*
		65	*19,82*	42	61	*18,60*	17 890	*8115*	16 100	*7300*
		74	*22,57*	30	48	*14,64*	14 740	*6685*	13 270	*6020*
		50	*15,24*	60	85	*25,92*	20 800*	*9435*	22 500†	*10 200*
		57	*17,37*	55	81	*24,70*	22 800*	*9435*	18 990	*8610*
90	*27,43*	60	*18,29*	53	79	*24,09*	19 560	*8870*	17 600	*7985*
		70	*21,34*	44	70	*21,34*	15 490	*7025*	13 940	*6320*
		83	*25,31*	30	53	*16,16*	11 790	*5345*	10 610	*4810*
		55	*16,77*	60	94	*28,67*	20 800*	*9435*	19 630	*8900*
		56	*17,08*	59	93	*28,36*	20 800*	*9435*	19 120	*8760*
100	*30,48*	70	*21,34*	50	83	*25,31*	15 080	*6840*	13 580	*6160*
		80	*24,38*	42	74	*22,57*	12 120	*5495*	10 910	*4950*
		91	*27,75*	30	59	*17,99*	9660	*4380*	8700	*3950*
		60	*18,29*	60	103	*31,41*	18 830	*8540*	16 950	*7690*
		70	*21,34*	54	96	*29,28*	14 760	*6695*	13 280	*6020*
110	*33,52*	80	*24,38*	47	88	*26,84*	11 790	*5345*	10 610	*4810*
		90	*27,43*	40	77	*23,48*	9530	*4320*	8580	*3890*
		100	*30,48*	30	63	*19,21*	7750	*3515*	6980	*3170*

service notes

General

Maximum length of boom for bucket service is 110' 0" *33,52m*. Loads must be reduced when operating on soft or uneven ground, for bucket suction, or other unfavourable operating conditions.

Boom angles greater than 60 degrees or less than 30 degrees are not recommended for bucket service, and the machine should not be operated outside the tabulated range appropriate to the service and the equipment fitted.

Booms

The basic length is 50' 0" *15,24m* comprising a 25' 0" *7,62m* lower section and a 25' 0" *7,62m* upper section with three-bolt butt-type machined joints, and this can be extended to a maximum of 110' 0" *33,52m* for bucket service by the insertion of appropriate intermediate sections.

Multi-piece pendant type suspension is standard for all boom lengths; 10-part rope 19mm diameter between the rear-hitch lowerable A-frame and the floating bridle. Pendants 38mm diameter.

Dragline service

Working loads listed above are based on USA rating factors and do not exceed 75% of tipping load for the machine when standing on firm and level ground with the boom in the least favourable position.

*Listed working loads represent the weight of the bucket and contents, which must not exceed 20 800 lb *9435 kg*.

Knee-type boom-safety stops may be fitted as optional equipment.

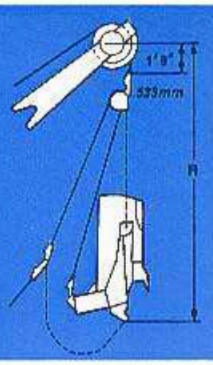
Grabbing (or magnet) crane service

Working loads listed above are based on USA rating factors and do not exceed 68% of tipping load for the machine when standing on firm and level ground with the boom in the least favourable position.

†Listed working loads represent the weight of grab and contents (or magnet and load), which must not exceed 22 500 lb *10 200 kg*.

Knee-type boom-safety stops are fitted as standard equipment.

dragline buckets

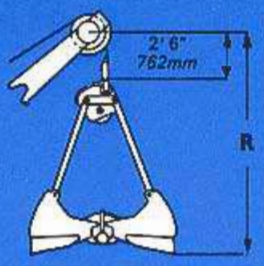


Type		BAX	'Lincoln'						
Capacity	cubic yards *litres*	4½ 3440	4* *3055*	3½* *2675*	3* *2290*	2½ *1910*	2 *1530*	1¾ *1350*	1½ *1150*
Weight empty	lb *kg*	7700 *3495*	7450 *3380*	7000 *3175*	6565 *2980*	4700 *2130*	4250 *1925*	3300 *1495*	2900 *1315*
Vertical dimension R		20' 3" *6,17m*	20' 11" *6,37m*	20' 3" *6,17m*	20' 1" *6,12m*	18' 1" *5,52m*	17' 11" *5,46m*	15' 7½" *4,76m*	15' 3" *4,65m*
Material	**Weight lb per cubic yard** *kg per cubic metre*		**Suspended load—weight of bucket and contents**						
Earth—moist	2500 *1490*	18 950 *8585*	17 450 *7915*	15 750 *7145*	14 065 *6380*	10 950 *4965*	9250 *4195*	7675 *3480*	6650 *3015*
Sand—dry	2700 *1600*	19 850 *8990*	18 250 *8280*	16 450 *7460*	14 665 *6650*	11 450 *5190*	9650 *4375*	8025 *3640*	6950 *3150*
Sand—wet	3300 *1960*	22 550 *10 215*	20 650 *9220*	18 550 *8415*	16 465 *7470*	12 950 *5875*	10 850 *4920*	9075 *4115*	7850 *3560*
Gravel	2900 *1720*	20 750 *9400*	19 050 *8640*	17 150 *7780*	15 265 *6925*	11 950 *5420*	10 050 *4550*	8375 *3795*	7250 *3290*
Loose stone	2700 *1600*	19 850 *8990*	18 250 *8280*	16 450 *7460*	14 665 *6650*	11 450 *5190*	9650 *4375*	8025 *3640*	6950 *3150*
Clay—wet	3000 *1780*	21 200 *9605*	19 450 *8820*	17 500 *7940*	15 565 *7060*	12 200 *5535*	10 250 *4650*	8550 *3875*	7400 *3355*
Coal	1350 *800*	13 775 *6420*	12 850 *5830*	11 725 *5320*	10 615 *4815*	8075 *3660*	6950 *3150*	5660 *2565*	4920 *2230*

* Weights given above are with forged steel chains.

When cast chains are fitted, a reduction of 200 lb *91kg* should be made.

medium-weight grabs



Heaped

15° (C.E.C.E. rating)

Capacities given are heaped and 15° (C.E.C.E. rating) see diagrams

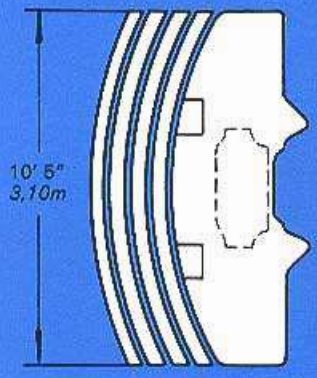
Capacity	cubic feet	100/80	90/72	80/64	71/57	63/51	50/40	44/35
	litres	*2750/ 2250*	*2500/ 2000*	*2250/ 1750*	*2000/ 1600*	*1750/ 1500*	*1500/ 1100*	*1250/ 1000*
Weight empty	lb	6650	5200	5100	3900	3850	3050	2950
	kg	*2975*	*2400*	*2350*	*1800*	*1750*	*1375*	*1350*
Vertical dimension R		14' 6"	13' 8"	13' 5"	12' 7"	12' 6"	11' 6"	11' 4"
		4,42m	*4,17m*	*4,09m*	*3,83m*	*3,81m*	*3,50m*	*3,45m*

Material	**Weight lb per cubic yard** *kg per cubic metre*	**Suspended load—weight of bucket and contents**						
Earth—moist	2500	15 800/ 13 950	13 520/ 11 870	12 500/ 11 010	10 470/ 9080	9675/ 8570	7675/ 6750	7110/ 6190
	1490	*7165/ 6330*	*6135/ 5385*	*5670/ 4995*	*4750/ 4120*	*4390/ 3890*	*3480/ 3060*	*3225/ 2810*
Sand/dry	2700	16 550/ 14 550	14 200/ 12 400	13 100/ 11 500	11 000/ 9600	10 150/ 8950	8050/ 7050	7350/ 6450
	1600	*7505/ 6600*	*6440/ 5625*	*4940/ 5215*	*4990/ 4355*	*4605/ 4060*	*3650/ 3200*	*3335/ 2925*
Sand—wet	3300	18 750/ 16 320	16 200/ 14 000	14 880/ 12 920	12 580/ 10 870	11 550/ 10 080	9160/ 7950	8330/ 7230
	1960	*8505/ 7405*	*7350/ 6350*	*6750/ 5860*	*4705/ 4930*	*5240/ 4570*	*4155/ 3605*	*3780/ 3280*
Gravel	2900	17 300/ 15 150	14 860/ 12 930	13 700/ 11 980	11 520/ 10 020	10/520 9320	8420/ 7350	7670/ 6710
	1720	*7845/ 6870*	*6740/ 5865*	*6215/ 5435*	*5225/ 4545*	*4815/ 4225*	*3820/ 3335*	*3480/ 3045*
Loose stone	2700	16 550/ 14 550	14 200/ 12 400	13 100/ 11 500	11 000/ 9600	10 150/ 8950	8050/ 7050	7350/ 6450
	1600	*7505/ 6600*	*6440/ 5625*	*5940/ 5215*	*4990/ 4355*	*4605/ 4060*	*3650/ 3200*	*3335/ 2925*
Clay—wet	3000	17 650/ 15 430	15 200/ 13 200	13 980/ 12 210	11 790/ 10 230	10 850/ 9520	8610/ 7490	7840/ 6840
	1740	*8005/ 6200*	*6895/ 5985*	*6340/ 5540*	*5350/ 4640*	*4920/ 4320*	*3905/ 3395*	*3555/ 3105*
Coal	1350	11 550/ 10 550	9700/ 8800	9100/ 8300	7450/ 6750	7000/ 6400	5505/ 5050	5150/ 4700
	800	*5240/ 4785*	*4400/ 3990*	*4130/ 3765*	*3380/ 3060*	*3175/ 2905*	*2515/ 2290*	*2335/ 2130*
Coke	850	9690/ 9070	8030/ 7470	7620/ 7120	6130/ 5690	5830/ 5450	4620/ 4310	4350/ 4050
	505	*4395/ 4115*	*3640/ 3390*	*3455/ 3230*	*2780/ 2580*	*2645/ 2470*	*2095/ 1955*	*1970/ 1835*

Note: Data given for medium-weight rehandling grabs.

Additional sizes and types, e.g., coal, general-purpose, excavating, etc., are available to suit duties.

unit dimensions and weights
(for transportation)



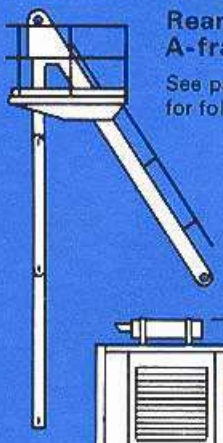
Rear-end casting

10' 5" *3,10m* long
4' 3" *1,30m* wide
3' 1" *940mm* deep

Counterweights (4 pieces)

10' 5" *3,18m* long
3' 8" *1,12m* wide
4' 8" *1,42m* deep
— 3

10' 5" *3,18m* long
3' 8" *1,12m* wide
3' 4" *1,02m* deep
— 1

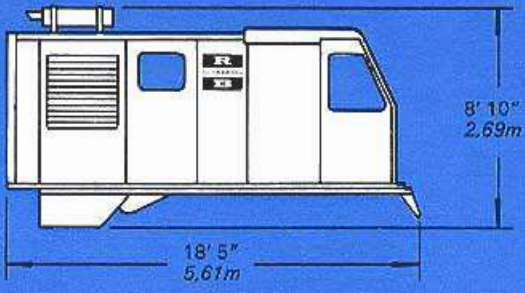


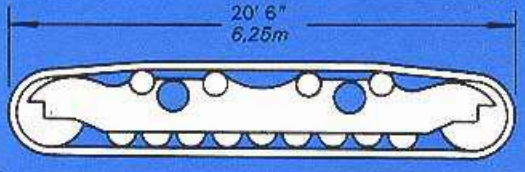
Rear-hitch A-frame

See page 6 for folded arrangement

Superstructure

18' 5" *5,61m* long
10' 6" *3,20m* wide
8' 10" *2,69m* deep



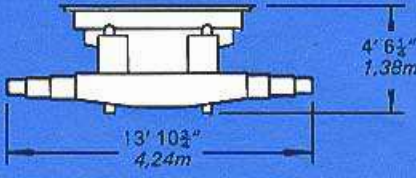


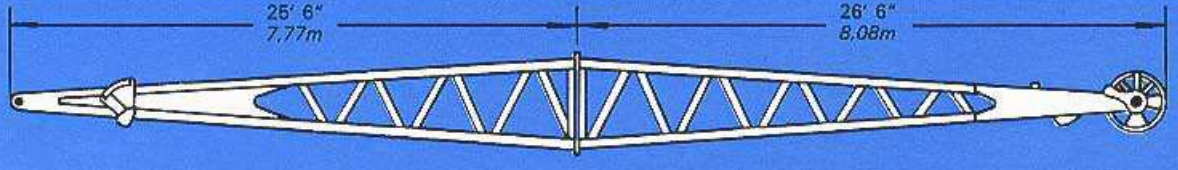
Crawler side-frame assembly

20' 6" *6,25m* long
5' 8½" *1,73m* wide
3' 8" *1,12m* deep

Truck frame, swing circle and axles

13' 10¾" *4,24m* long
8' 7" *2,62m* wide
4' 6¼" *1,38m* deep



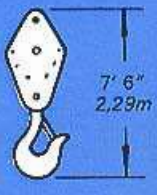


Boom

4' 6" *1,37m* wide
4' 0" *1,22m* deep

UNIT WEIGHTS (approximate)

Boom: upper section	5050 lb	*2290 kg*
lower section	4640 lb	*2105 kg*
Intermediate section (not illustrated) 10' *3,05m* long	1180 lb	*535 kg*
20' *6,10m* long	2100 lb	*950 kg*
30' *9,14m* long	3050 lb	*1385 kg*
Superstructure	54 420 lb	*24 685 kg*
"A" frame	6610 lb	*3000 kg*
Hook block	3810 lb	*1730 kg*
Rear-end casting	22 230 lb	*10 085 kg*
Counterweight—three at 9500 lb *4310 kg* and one at 6500 lb *2950 kg*	35 000 lb	*15 880 kg*
Truck frame	16 460 lb	*7465 kg*
Axles—two (5500 lb *2500 kg* each)	11 000 lb	*5000 kg*
Crawler side-frame assemblies (each 26 100 lb *11 840 kg*)	52 200 lb	*11 840 kg*



Hook block

7' 6" *2,29m* high
3' 4½" *1,03m* wide
2' 5½" *750mm* deep

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