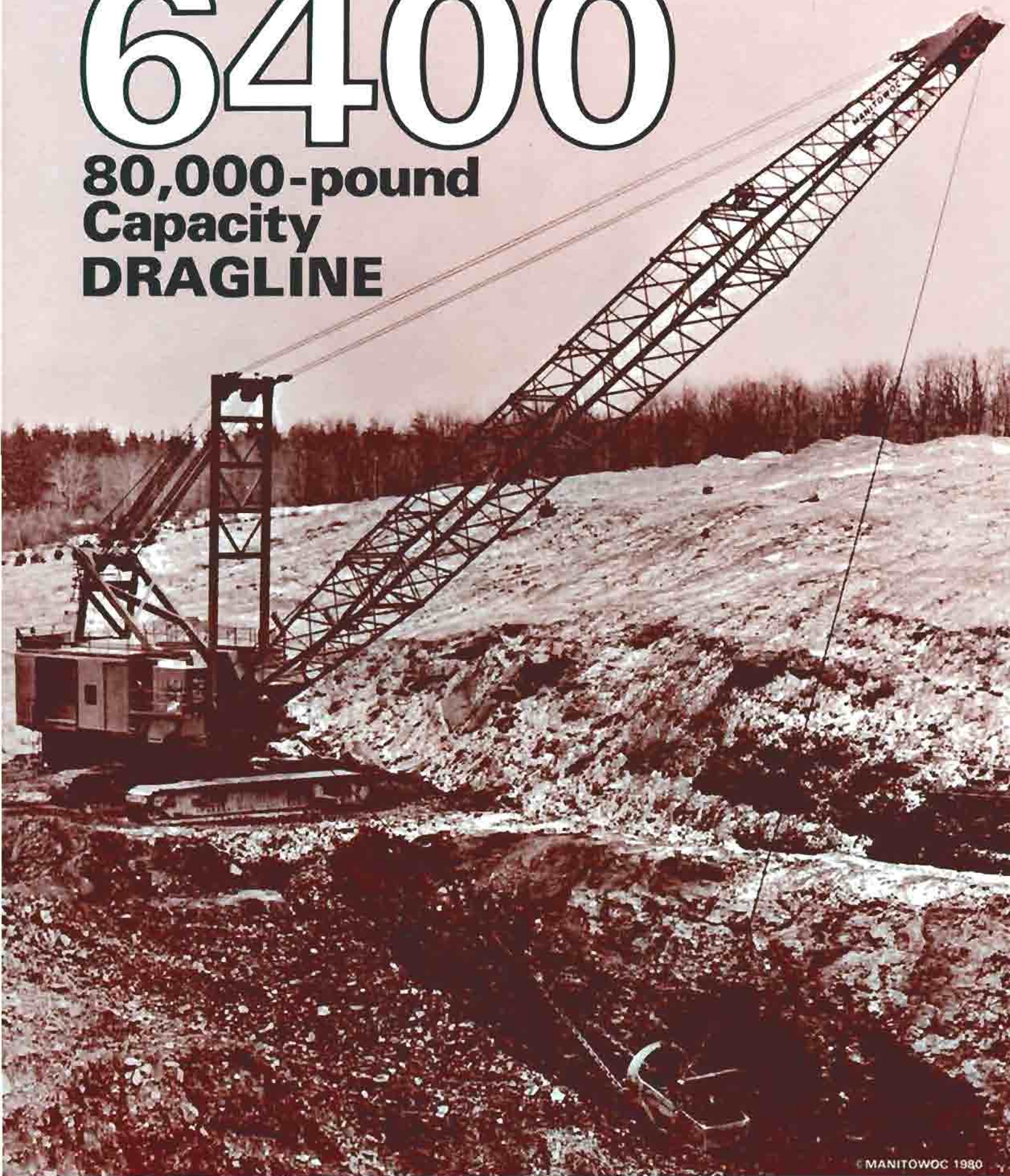




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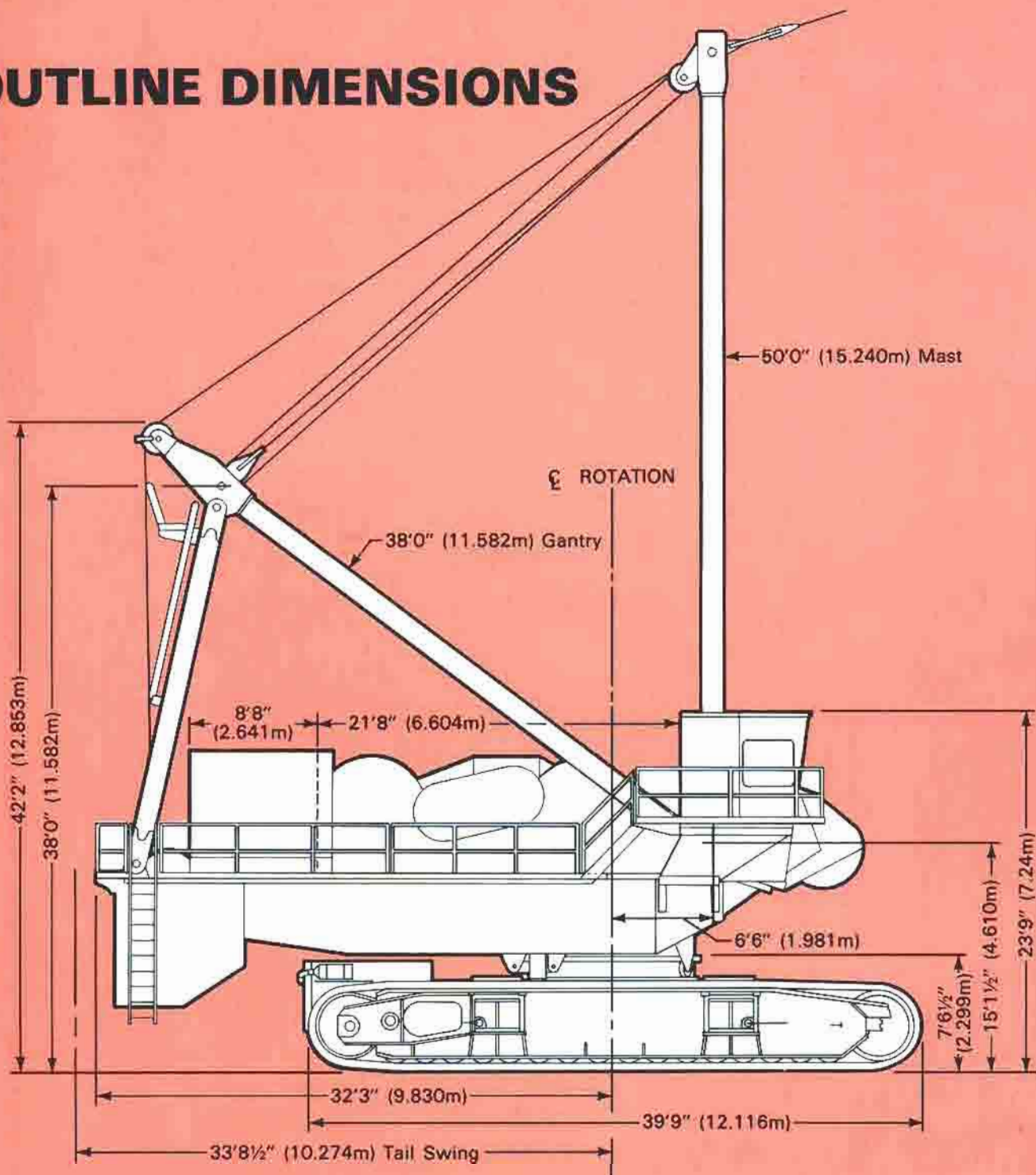
**80,000-pound  
Capacity  
DRAGLINE**







# OUTLINE DIMENSIONS



## WEIGHTS

	Pounds*
<b>DRAGLINE</b> , complete with 160' boom, gantry and backhitch, mast, boom hoist rigging, pendants, rotating bed with machinery, operator's module, counterweights, 39' 9" long crawlers with 83" treads	1,107,720
<b>ROTATING BED</b> , with basic machinery including main drums, power plant and boom hoist	342,145
<b>MACHINERY HOUSE</b> (optional)	33,100
<b>OPERATOR'S MODULE</b>	3,185
<b>CATWALK</b> , including operator's module support	12,150
<b>MAST</b> , 50' with equalizer sheaves	23,370
<b>GANTRY AND BACKHITCH</b> , 38'	26,600
<b>COUNTERWEIGHT (4-PC)</b>	140,000
<b>DRAGLINE FAIRLEAD</b>	14,000
<b>BOOM BUTT</b> —40'	16,475

	Pounds*
<b>BOOM TOP</b> —40' with single sheave boom point	15,780
<b>BOOM INSERT</b> —40' with wire rope roller guides	10,300
<b>SINGLE LENGTH PENDANTS</b> (sets of 4)	
160' Boom Length	6,385
180' Boom Length	7,060
200' Boom Length	7,730
<b>LOWERWORKS:</b>	
Carbody Module, with king pin and roller path	65,350
Transverse Beams (each 34,650)	69,300
Power Plant	11,400
Crawler Assemblies (2) with 83" wide crawler treads and hydraulic motors (each assembly 163,060)	326,120

\*Weights are approximate and may vary between machines as a result of design changes and component variations.



## POWER PLANTS

		Cylinder	Bore	Stroke	Cubic Inch Displacement	Net HP @ RPM (at flywheel)
Upperworks	Cummins KTA-3067-C1600	V16	6.25	6.25	3067	1600 @ 2000
Lowerworks	Cummins KT-1150-C450	6	6.25	6.25	1150	450 @ 2000

## OPERATIONAL DATA

Boom Length — Feet	160	180	200
Bucket Size — Cubic Yards	15 <sup>①</sup>	12 <sup>①</sup>	10 <sup>①</sup>
Boom Angle — Degrees	30	30	30
Dumping Radius — Feet	145	162	180
Dumping Height — Feet	70	80	90
Digging Depth — Feet	95	105	115
Bucket Throw — Feet <sup>②</sup>	32	35	38
Max. Allowable Load — Pounds	80,000	66,000	55,000
Hoist Drum Size, Dia. x Width — Inches	50 x 58	50 x 58	50 x 58
Hoist Rope Dia. — Inches	2	1¾	1¾
Single Layer Spooling Capacity — Feet	360	404	404
Drag Drum Size, Dia. x Width — Inches	50 x 58	50 x 58	50 x 58
Drag Rope Dia. — Inches	2¼	2	1¾
Single Layer Spooling Capacity — Feet	326	360	404

① Based on material weight of 3,000 pounds per cubic yard.

② Bucket throw dependent on operator's skill.

③ 75% of maximum pull.

LINE SPEED VS. LINE PULL	Single Line Pull Lbs.	Single Line Speed FPM
Rear Drag Drum, 2¼" Wire Rope	0	500
	20,000	450
	40,000	400
	60,000	340
	80,000	280
	100,000	220
Front Hoist Drum, 2" Wire Rope	165,000 <sup>③</sup>	120
	220,000	Stall
	0	840 <sup>④</sup>
	20,000	690 <sup>④</sup>
	40,000	540 <sup>④</sup>
	60,000	360 <sup>④</sup>
	80,000	260 <sup>④</sup>
	100,000	120 <sup>④</sup>

④ Hoist speeds are with interlock engaged and total bucket load of 80,000 pounds.

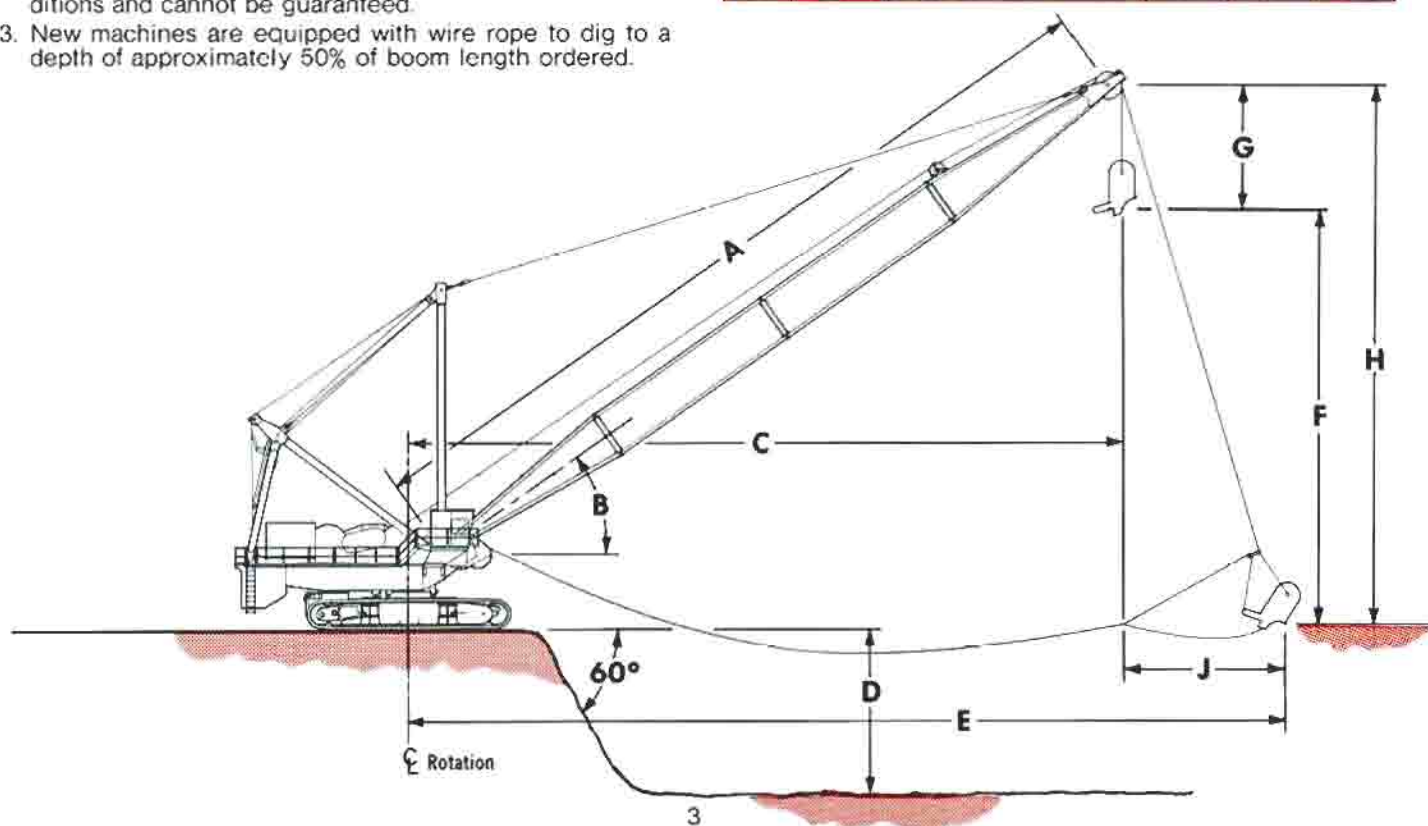
**NOTE:** Hoist line tension varies with 80,000 pound bucket load at different bucket positions through cycle.

## RANGE CHART

The working ranges in the table below are based on the following conditions:

1. Dimension "F" is based on a "G" dimension of 25'.
2. Dimension "D" is based on a 20' floor level bottom to fill the bucket and casting distance "J" equal to approximately ½ the dumping height "F". The two dimensions are also based on maximum drum capacity with one layer of rope, using 50" drums. The depth of cut, casting distance, and digging reach, may vary considerably depending on digging conditions, design of bucket, and operator's skill. Maximum digging depths are attainable under ideal conditions and cannot be guaranteed.
3. New machines are equipped with wire rope to dig to a depth of approximately 50% of boom length ordered.

A	Boom Length	160'	180'	200'
B	Boom Angle	30°	30°	30°
C	CL of Rotation to Center Dump	145'	162'	180'
D	Depth Cut (Approx.)	95'	105'	115'
E	Digging Reach (Approx.)	177'	197'	218'
F	Dumping Height	70'	80'	90'
H	Height From Grade to CL of Boom Point	95'	105'	115'
J	Casting Distance	32'	35'	38'





## LOWER MACHINERY AND STRUCTURE

(Covered by U.S. Patent No. 4,600,704 and other U.S. and Foreign Patent Applications.)



**CARBODY MODULE:** A heavy ribbed square steel fabrication designed to connect to transverse beams by hook pins on top and hydraulically operated lock pins on bottom.



**TRANSVERSE BEAMS:** Two fabricated beams pin connect to carbody. The beam ends form wings to receive crawler frames on large machined surfaces.



**CRAWLER GEAR AND TUMBLER:** Transmit drive torque. Cast steel with a large bushing on each end and a grease pocket in center. Mounted on stationary shaft which is supported at both ends in the side frame. Tumbler is of self-cleaning design with alternate sides open.

**CRAWLER SIDE FRAMES:** Two deep reinforced fabrications containing pockets to house 16 intermediate 20 inch diameter double flange rollers per side frame. Intermediate rollers mounted on 6 inch diameter shafts. Side frames fully enclose travel gear and provide integral pockets with machined surfaces to accept transverse beams. Side frames pin connect to transverse beams. Optional two hydraulic rams per side pin-connected to crawler side frames and carbody module to assist with crawler installation and removal by pulling or pushing crawler frames on transverse beams.

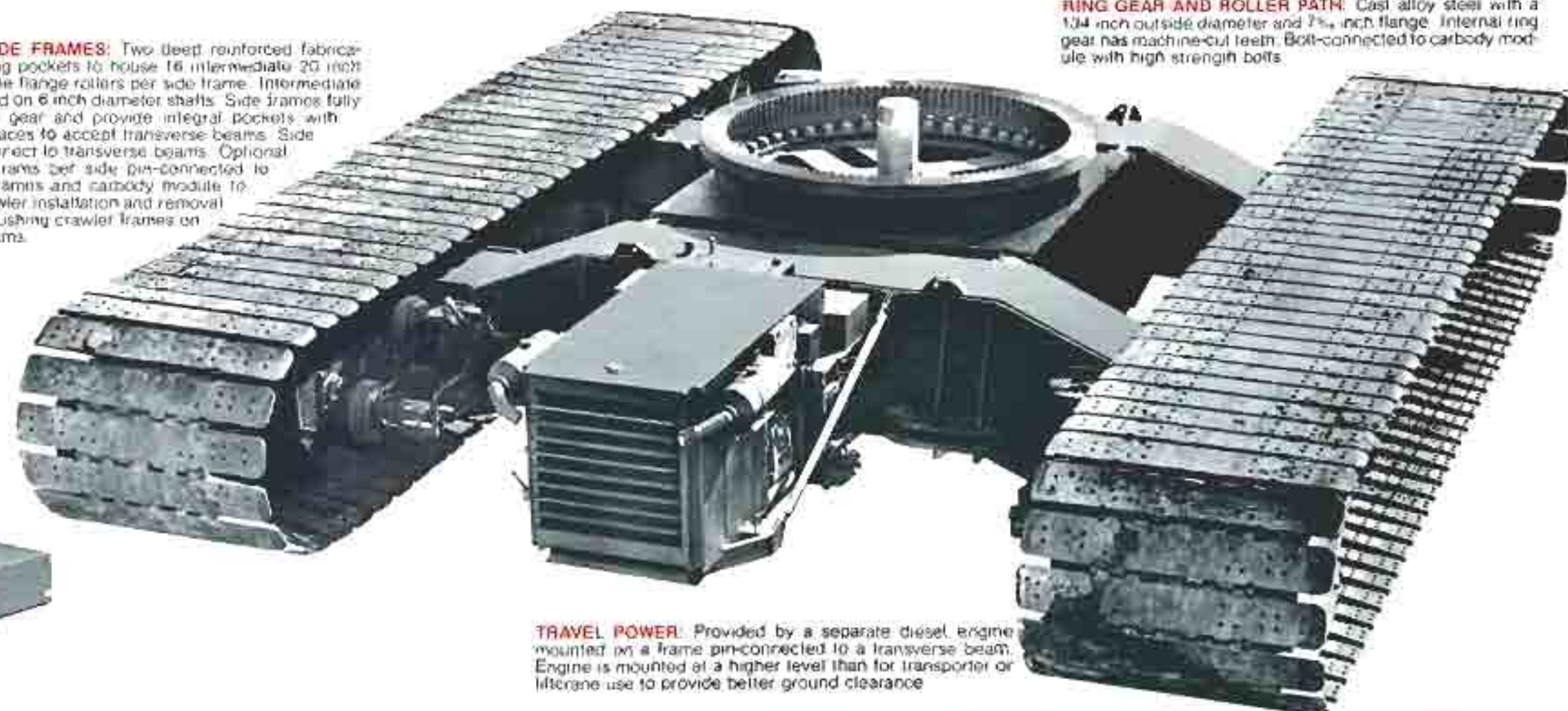
**CRAWLER FRONT IDLER:** Cast steel with double flanges. Roller shaft is stationary and straddle mounted on end of crawler side frames. Adjustment is by hydraulic jack and U-shaped shims which hold shaft in position.



**CRAWLER TREADS:** 80 inches wide, constructed of cast alloy steel, closed box section design with large center driving lug. 77 treads per crawler side frame. Each pad connected by two high carbon steel pins.

**KING PIN:** Cast steel. Bolted to carbody module with high strength bolts. Provides pivot for rotating upperworks. Takes horizontal load only, no uplift. Pressure-lubricated bronze bearings in rotating bed.

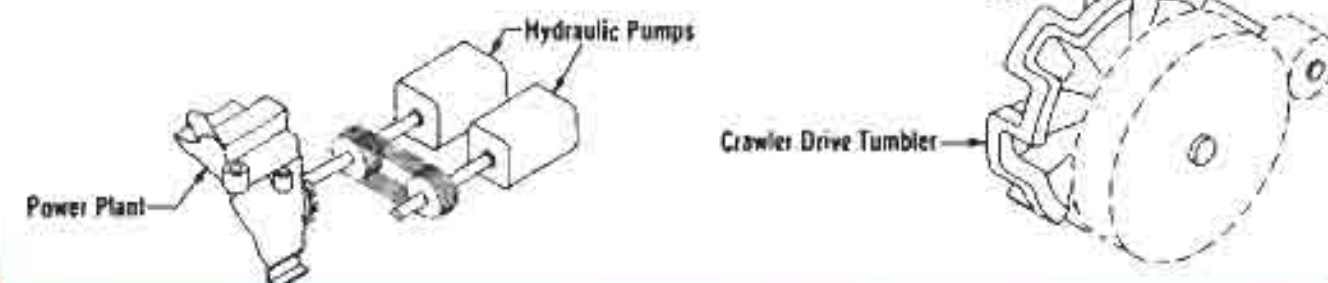
**RING GEAR AND ROLLER PATH:** Cast alloy steel with a 1/4 inch outside diameter and 7 1/2 inch flange. Internal ring gear has machine-cut teeth. Bolt-connected to carbody module with high strength bolts.



**TRAVEL POWER:** Provided by a separate diesel engine mounted on a frame pin-connected to a transverse beam. Engine is mounted at a higher level than for transporter or lifter use to provide better ground clearance.

## LOWERWORKS POWER TRAIN

**TRAVEL DRIVE:** Provided by independent hydraulic drive on each crawler. Power is transmitted from the hydraulic motors (one variable and one fixed displacement motor per crawler) to the crawlers via a planetary gear arrangement and a reduction gear train to the drive tumbler. This eliminates the need for conventional drive chains. Two variable displacement reversible pumps run the hydraulic motors allowing the motors to change travel direction providing travel in both directions as well as the ability to counter-rotate the crawlers since the drive units are independent.







# UPPER MACHINERY AND STRUCTURE

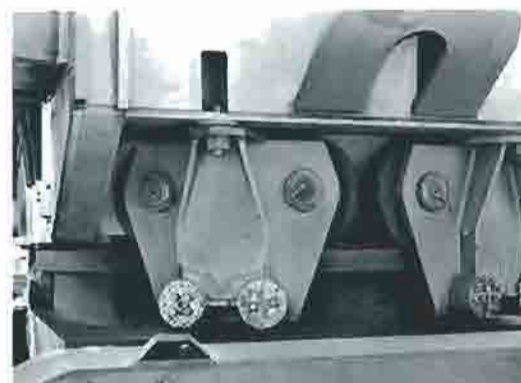
(Covered by U.S. Patent No. 3,989,325 and other U.S. and Foreign Patent Applications)

**ROTATING BED:** An 11-foot wide deep section weldment, provides a rigid deck for hoist unit with power plant, boom hoist, swing machinery, house rollers and hook rollers.



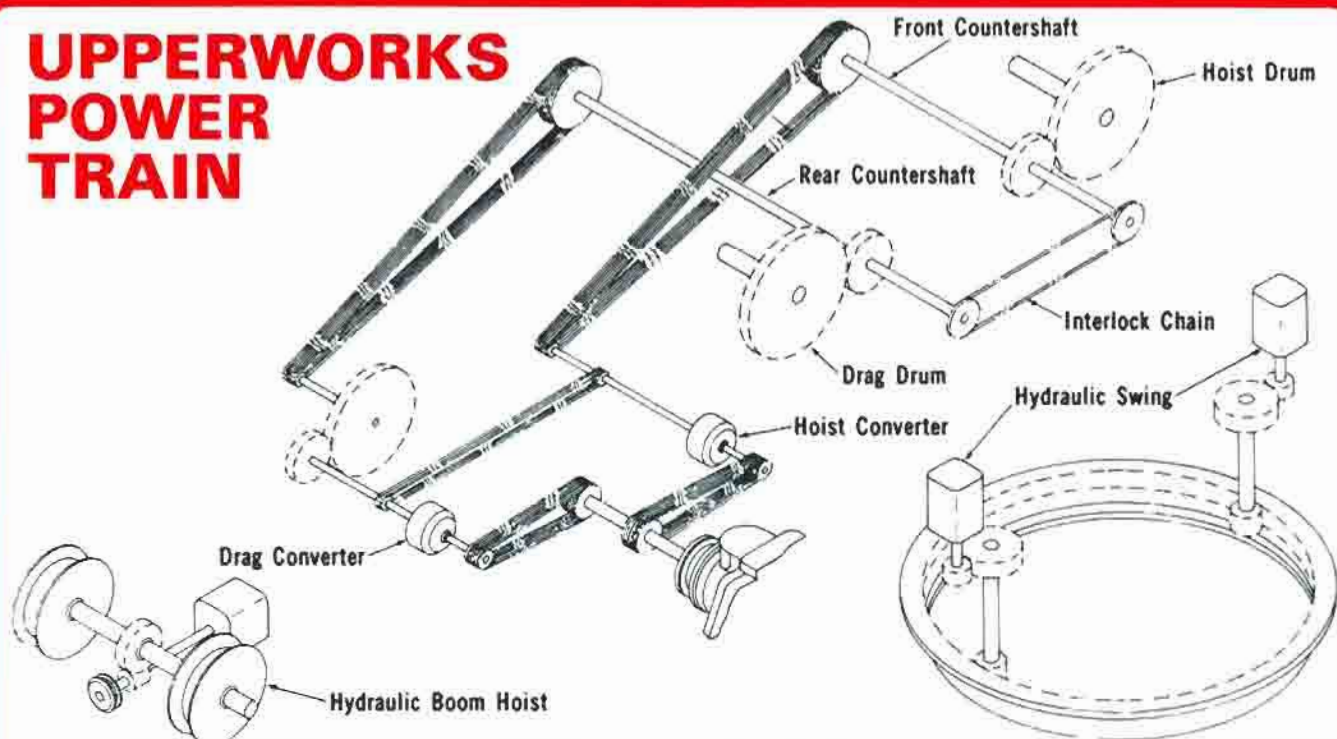
**SWING DRIVE:** Powered through two reversible variable displacement hydraulic pumps or optional electric motors driven by the upperworks power plant.

**HOUSE AND HOOK ROLLERS:** House Rollers, 4 Front, 2 Rear. Hook Rollers, 4 Front, 7 Rear. All antifriction bearing mounted. Hook rollers on eccentric shafts for adjustment. Front dual house and hook roller assemblies are mounted in a single frame which is bolt-connected to a machined surface on underside of rotating bed allowing support frame to equalize roller loads. Rear hook roller assembly consists of 7 hook rollers mounted in a curved beam. Rollers are equally spaced and individually adjustable. Hook roller loads are equalized by beam deflection. Beam is mounted on slide bars for easy decking and undocking of rotating bed.

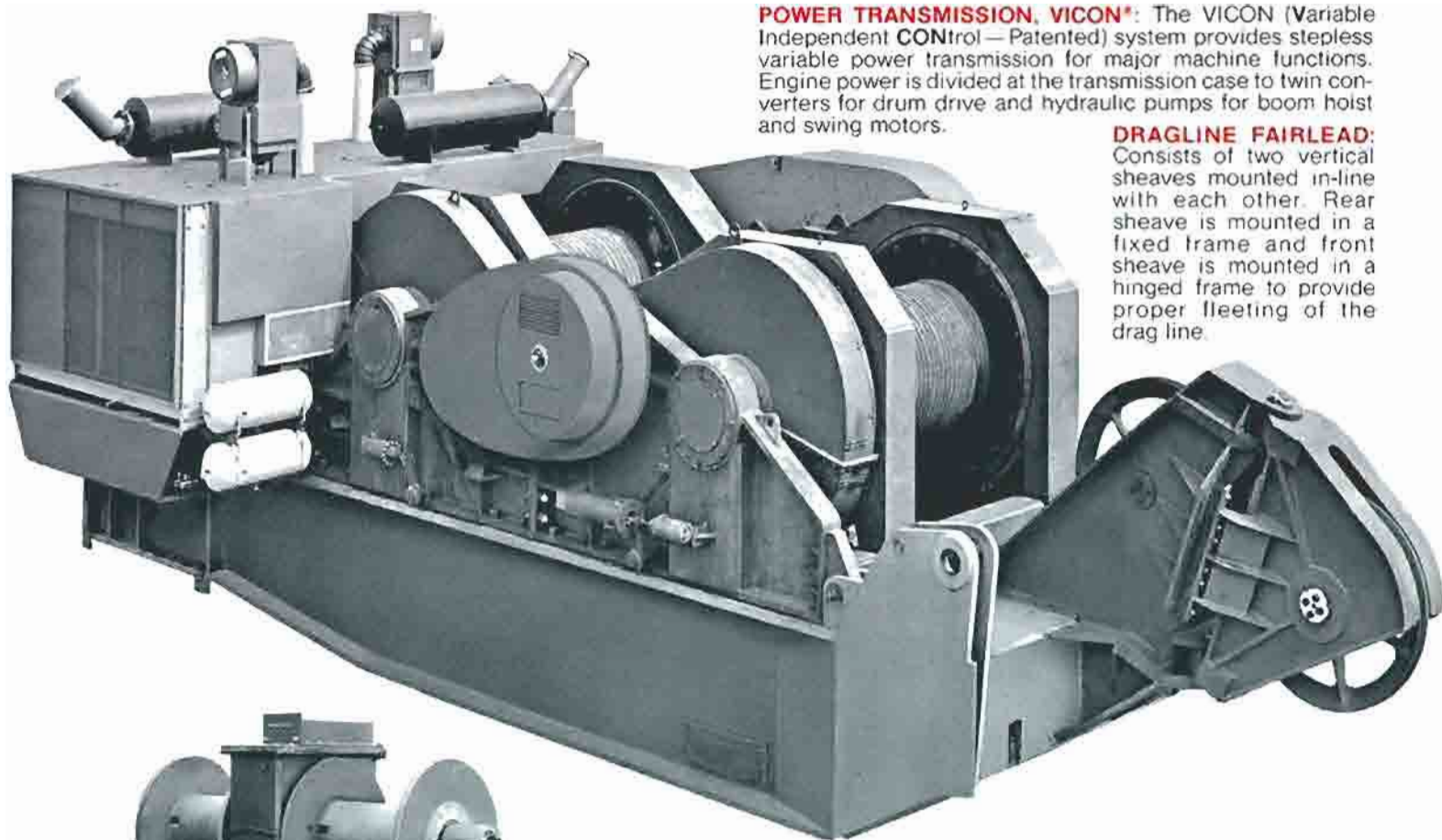


**SWING MACHINERY:** Independent swing consists of two motors (either standard hydraulic or optional electric drive) each powering a swing pinion through two gear reductions. Swing systems are mounted in rotating bed on opposite sides of the ring gear. Power is available for swing acceleration in either direction and deceleration to slow or stop swing motion. Free swing exists when control lever is in neutral position.

## UPPERWORKS POWER TRAIN

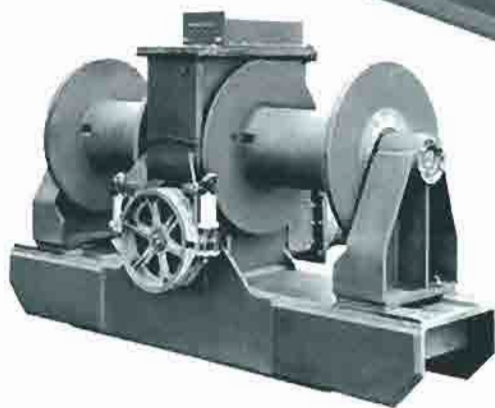






**POWER TRANSMISSION, VICON®:** The VICON (Variable Independent CONTROL — Patented) system provides stepless variable power transmission for major machine functions. Engine power is divided at the transmission case to twin converters for drum drive and hydraulic pumps for boom hoist and swing motors.

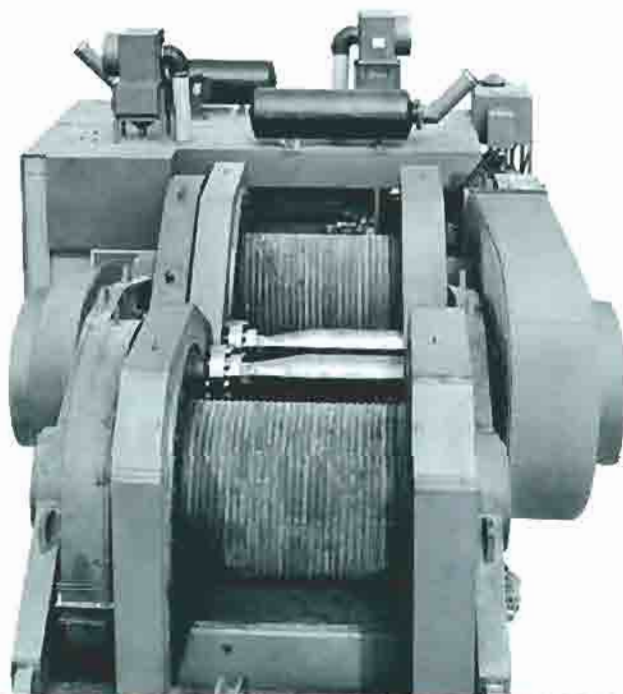
**DRAGLINE FAIRLEAD:** Consists of two vertical sheaves mounted in-line with each other. Rear sheave is mounted in a fixed frame and front sheave is mounted in a hinged frame to provide proper fleeting of the drag line.



**INDEPENDENT BOOM HOIST:** Dual drums, heat treated alloy steel drum shaft driven by bronze worm wheel and worm gear through planetary gear reduction. Gears fully enclosed and run in oil. All rotating shafts antifriction bearing mounted. Automatic boom hoist powered by hydraulic motor providing full range speed control. Boom hoist brake, external contracting band-type, spring applied, air released. Auxiliary brake, external contracting band-type, manually air applied, spring released from operator's module. Ratchet mounted to worm wheel inside gear housing, pawl gravity engaged, air released. Boom hoist mounted in rear of rotating bed.

**BOOM HOIST DRIVE:** Powered through a variable displacement hydraulic pump driven by the upperworks power plant.

**DRUM DRIVE:** Provided by two controlled torque converters. Drag converter powers drag drum through an initial gear reduction to a chain drive to the rear countershaft and a gear drive from the countershaft to the drum. The hoist converter powers the hoist drum through a chain drive to the front countershaft and a gear drive from the countershaft to the drum. The dual independent torque converters split engine power to the hoist and drag drums. Converter outputs are chain connected which allows full power to be supplied to either drum by disengaging the other drum clutch. Drag and hoist drums are connected through a selective interlock chain on the two countershafts which when engaged by an internal expanding band-type clutch on one of the interlock sprockets synchronizes drum rotation allowing drag rope payout due to the weight of the filled bucket to assist the hoisting function, thereby reducing the power required to hoist.



**FRONT AND REAR DRUM AND COUNTERSHAFT ASSEMBLIES:** Front and rear drums with countershafts are mounted as a complete hoist unit with the upperworks power plant and is bolt-connected to the rotating bed. Countershaft drum drive pinion is splined to countershaft. Drum gear hubs are keyed to drum shafts. Steel drums are 62 inches wide, 50 inches in diameter and grooved. Drums have bolted, cast iron, 86 inch diameter brake flanges. Dual air controlled, external contracting band-type drum brakes are located on the front and rear drums. Air controlled, internal expanding band-type drum clutches are mounted on the left side of each of the two countershafts and have heavy duty molded linings.





## FRONT END EQUIPMENT

**BOOM:** 160' basic boom consisting of 40' butt section, two 40' inserts and 40' regular top section; optional 20' and 40' inserts. All welded construction. Inverted angle chords; 100,000 PSI yield steel. Butt, inserts and top 132" wide x 114" deep at bolt-connected joints. Boom point assembly mounted on longitudinal shaft to provide 20 degree motion side to side. Single 65" OD sheave, antifriction bearing mounted. Maximum boom length 200'.

**BOOM RIGGING:** Boom angle controlled by single continuous line reeved between gantry and mast equalizer powered by independent dual drum boom hoist. Two pair 2" diameter pendants connect mast equalizer to boom point. Single length pendants for each boom length.

**WIRE ROPE GUIDE:** Mounted on top side of boom top section. One fleeting sheave bronze bearing mounted for hoistline.

**WIRE ROPE ROLLER GUIDE:** Mounted on top side of boom. Induction hardened. Antifriction bearing mounted.

## GENERAL

**GANTRY AND MAST:** 38-foot gantry and 50-foot mast are of heavy plate fabrication with parallel box section legs. Mounted to fabricated support on front of rotating bed. Gantry is fixed with one piece pin-connected backstays. Movable mast pinned to boom butt.

**FIXED OPERATOR'S MODULE:** Fully enclosed and insulated steel module with large safety glass windows. Mounted to right front of rotating bed on fixed brackets. Isolated from machinery noise. Air signal horn, air windshield wipers, air circulating fan and 24 volt dome light are standard. Heater and air conditioner optional.

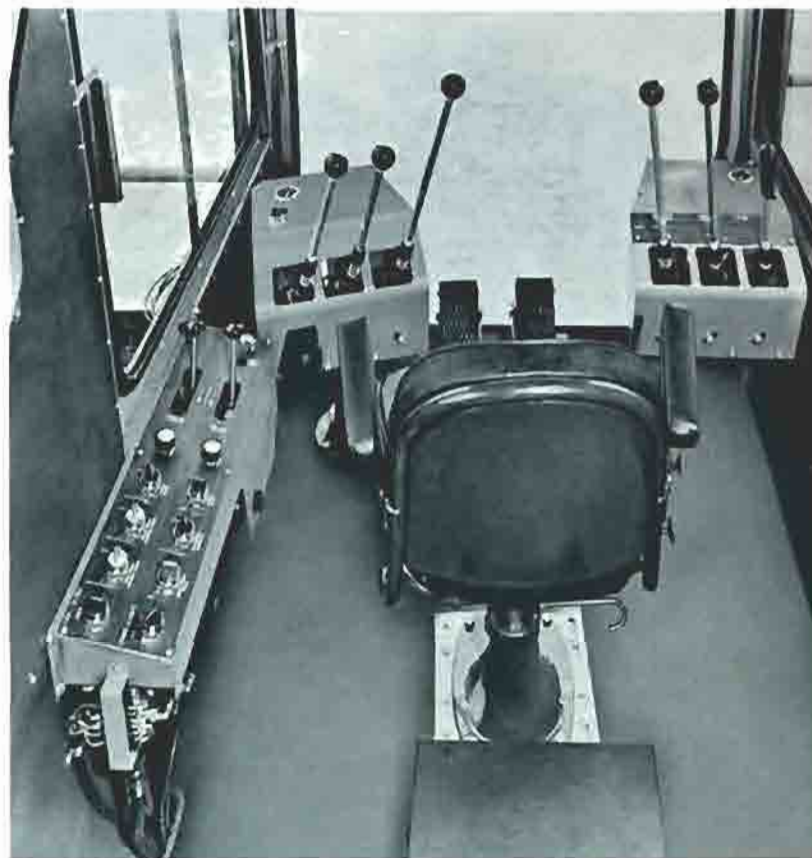
**SWING SPEED:** Variable, 2.1 RPM maximum.

**TRAVEL SPEED:** Variable, 0.8 MPH maximum.

**GRADEABILITY:** 30%.

**GROUND BEARING PRESSURE:** 15.4 PSI, based on total weight of machine evenly distributed over entire contact area of both crawlers.

**CONTROLS:** Modulating air controls for main functions VICON<sup>®</sup> system on front and rear drums. Drum control levers are combination clutch and converter control; first movement engages drum clutch; further movement increases converter output torque permitting variable speed. Air operated treadle type drum brakes. Air actuated hydraulic valves operate boom hoist, swing and travel functions.



*Because of a program of continuing improvements, Manitowoc Engineering Co. reserves the right to change specifications at any time, without notice.*

**MANITOWOC ENGINEERING CO.**  
(A division of The Manitowoc Company, Inc.)  
Manitowoc, Wisconsin 54220

