LINK-BELT SPEEDER CORP., CEDAR RAPIDS, IOWA

DETAIL SPECIFICATIONS

JULY 10, 1953

MODEL LS-51 ½-YARD SPEED-O-MATIC CONTROLS

CRAWLER MOUNTING

LOWER FRAME—All welded structural steel unit. The two main cross members are 8"-23 pound I-beams. The track side frame members are 12" x 20.7 pound channels.

TWO LINK-BELT SPEEDER lug driven tracks each being made up of 28 continuous multiple hinged shoes, 9" pitch, of manganese alloy steel, self-cleaning. When long track lower is furnished, each track is made up of 33 shoes.

TRACK SHOES:

Standard Tracks (9'-6" overall length)
- Standard 20" flat, total ground contact 3800 sq. in. or 26.4 sq. ft.
- Optional 16" flat, total ground contact 3040 sq. in. or 21.1 sq. ft.
- Optional 24" flat, total ground contact 4560 sq. in. or 31.6 sq. ft.

Long Tracks (11'-4" overall length)
- Optional 20" flat, total ground contact 4680 sq. in. or 32.5 sq. ft.
- Optional 16" flat, total ground contact 3744 sq. in. or 26.0 sq. ft.
- Optional 24" flat, total ground contact 5616 sq. in. or 38.9 sq. ft.

TRACK SHOE PINS—1⅛" diameter.

TRACK ROLLERS—Six double-tread cast steel rollers per track side frame. Each roller 8½" tread diameter with tread rims flame hardened, bronze bushed with two 2⅜" bushings mounted on a 2" diameter axle. Long track side frames contain eight double-tread forged steel rollers.

TRACK CARRIER ROLLERS—Two double-tread cast iron rollers per track side frame. Each roller 8" tread diameter and is mounted on a 1½" diameter axle.

TRACTION SHAFT—2 piece 2⅞" diameter, LB 4140 steel. Traction bevel gear, 10.857" pitch diameter, 19 cast teeth, 3" face, alloy steel, fully enclosed in steel case, running in oil bath. Traction bevel pinion 10.286" pitch diameter, 18 cast teeth, 3" face. Shaft mounted in three bronze bushings.

TRAVEL AND STEERING JAW CLUTCHES—8 teeth sliding jaw clutches, splined on traction shaft. S-O-M hydraulic controlled.

TRAVEL AND STEERING BRAKES—Two external contracting band two-way brakes, one for each crawler track, 13" diameter x 3" wide. Spring applied, S-O-M hydraulic release. Steers either way in either direction. Brakes also serve as traction lock since each brake is powerful enough to hold machine on any grade it can climb.

TRACTION SHAFT DRIVE SPROCKETS—One per side for transmitting power from the traction shaft to the rear track drive sprocket. Each 7.10" pitch diameter, 11 tooth, cast steel sprocket bronze bushed to end of traction shaft.

INTEGRAL TRACK DRIVE WHEEL AND SPROCKET—One per crawler track side frame. The drive wheel is 23⅛" in diameter, has nine pockets to receive the track shoe lugs. Welded integral with the drive wheel is a chain drive sprocket, 17.86" pitch diameter, 28 tooth, made of cast steel. The unit is bushed with two 3" long bronze bushings floating on a 3" diameter axle.

TRACK TAKE-UP ROLLERS—One per track side frame. Each roller double-tread, 23⅛" in diameter, bushed with bronze bushings mounted on a 2" diameter axle.

DRIVE CHAINS—LINK-BELT RC-160—2" pitch, 9/16" diameter pins, 1⅛" diameter rollers.

CENTER PIN—Bolted and welded to the frame members, 5¼" in diameter, cast steel, bronze bushed for vertical travel shaft.

TURNTABLE—Cast steel double-flanged with machined roller path 53" in diameter. Internal gear 42" pitch diameter, 84 teeth, 3" face.

DIMENSIONS:

	Standard Track	Long Track
Track bearing length	7'-11"	9'-9"
Center to center of wheels	7'-1"	8'-11"
Overall length of tracks	9'-6"	11'-4"
Overall height of tracks	2'-7"	
Overall width with 16" tracks	7'-10"	
Overall width with 20" tracks	8'-2"	
Overall width with 24" tracks	8'-6"	
Clearance under frame cross members	14"	
Minimum ground clearance	12½"	
Maximum grade climbable	35%	

TRAVEL SPEEDS: Both forward and reverse.
Low gear, normal .96 m.p.h.
High gear, normal, 2.1 m.p.h.

UPPER REVOLVING FRAME

UPPER FRAME—12", 35 lb. channels with cross ties and plates electric welded. Side housings are bolted to main frame members.

CENTER PIN BEARING—Bronze bushing 5¼" bore, 4¼" long.

CONICAL ROLLERS—Four conical rollers 7" diameter, 2¾" face, 2¾" inside diameter bronze bushing 3" long, C1045 heat treated steel. Rollers are mounted individually, two in front and two in rear.

GASOLINE ENGINE—Waukesha 6BZ, 6 cylinder, 4 cycle, "L head," 4" bore x 4½" stroke.
Piston Displacement—320 cubic inches.
Governed Speed—High idle speed 1700 r.p.m. 55 h.p. @ full load speed of 1510 r.p.m. Peak torque 200 foot pounds @ 1000 r.p.m. A.M.A. horsepower rating 38.4.
Lubrication—Pressure force feed to all crankshaft, camshaft, connecting rod bearings and to piston pins. Sump capacity 8 quarts.
Ignition—Battery 19 plate, 6 volt. Spark plugs ⅝"—18 mm.
Generator—Delco-Remy.
Carburetor—Zenith.
Starter—Delco-Remy.
Radiator—Perfex.
Cooling System—Circulating pump, capacity 7 gallons.
Fuel Tank—36 gallon capacity.
Clutch—Twin Disc Model C-110-P2, 10" diameter, single plate, 2¼" diameter shaft.

DIESEL ENGINE—Caterpillar D311, 4 cylinder, 4" bore x 5" stroke.
Piston Displacement—252 cubic inches.
Governed Speed—Piston speed 1333 f.p.m. @ high idle speed of 1780 r.p.m. 47 h.p. @ full load speed of 1600 r.p.m. Peak torque 161 foot pounds @ 1100 r.p.m. A.M.A. horsepower rating 25.6.
Lubrication—Full pressure. Gear type pump. Oil cooler. Capacity of crankcase 3.5 gallons.
Air Cleaner—Donaldson.
Starting System—2 cylinder gasoline engine, 10 h.p. @ 3000 r.p.m.
Magneto—American Bosch, on starting engine.
Fuel System—Individual injection pumps, and single orifice type injection valves. Fuel transfer pump.
Fuel Filter—Absorbent type.
Fuel Tank—36 gallon capacity.
Cooling System—Built in water circulating pump and belt driven fan. System capacity 7.4 gallons.
Clutch—Twin Disc Model C-110-HP2, 10" diameter, single plate, 2¼" diameter shaft.

DIESEL ENGINE—Caterpillar D315, 4-cylinder, 4½" bore x 5½" stroke.
Piston Displacement—350 cubic inches.
Governed Speed—Piston speed 1460 f.p.m. @ high idle speed of 1780 r.p.m. 55 h.p. @ full load speed of 1600 r.p.m. Peak torque 188 foot pounds, @ 1250 r.p.m. A.M.A. horsepower rating 32.4.
Lubrication—Full pressure. Gear type pump. Oil cooler. Capacity of crankcase 3.62 gallons.
Air Cleaner—Donaldson.
Starting System—2 cylinder gasoline engine, 10 horsepower @ 3000 r.p.m.
Magneto—American-Bosch, on starting engine.
Fuel System—Individual injection pumps, and single orifice type injection valves. Fuel transfer pump.
Fuel Filter—Absorbent type (replaceable).
Fuel Tank—36 gallon capacity.
Cooling System—Built in water circulating pump and belt driven fan.
Clutch—"Twin Disc", Model 17227, 11½" diameter, single plate, 2¼" diameter shaft.

DIESEL ENGINE—General Motors Model 2030C, type "70" injectors, 2 cycle, 2 cylinders, 4¼" bore x 5" stroke.
Piston Displacement—141.9 cubic inches.
Governed Speed—Piston speed 1333 f.p.m. @ high idle speed of 1780 r.p.m. 54 h.p. @ full load speed of 1600 r.p.m. Peak torque 187 foot pounds @ 1275 r.p.m. A.M.A. horsepower rating 14.4.
Lubrication—Full pressure with oil cooler and filter. System capacity 2.5 gallons.
Air Cleaner—Heavy duty oil bath type.
Starting System—Electric starting motor with solenoid, battery, charging generator, and 12 volt voltage regulator.
Fuel Tank—36 gallon capacity.
Governor—Variable speed type.
Cooling System—Jacket water circulating pumps. Capacity of system 3 gallons.
Clutch and Power Take-Off—Rockford. Shaft diameter 2¼".

DIESEL ENGINE—International UD-9A, 4 cylinder, 4.4" bore x 5.5" stroke.
Piston Displacement—334.5 cubic inches.
Governed Speed—Piston speed 1210 f.p.m. @ high idle speed of 1480 r.p.m. 55 h.p. @ full load speed of 1320 r.p.m. Peak torque 232 foot pounds @ 800 r.p.m. A.M.A. horsepower rating 31.
Lubrication—Full pressure, crankcase pan capacity 2¾ gallons.
Air Cleaner—Heavy duty 8" oil bath type.
Starting System—Built in gasoline conversion type. Starting magneto and carburetor International Harvester Company. Electric starter 12 volt.
Fuel Injection System—Type—solid injection with precombustion chambers. Injection pump single plunger flange mounted type.
Fuel Filter—Purolator, replaceable element.
Fuel Tank—36 gallon capacity.
Governor—Bosch flyball type.
Cooling System—Centrifugal pump, cooling system capacity 17 gallons.
Clutch and Power Take-Off—regular clutch, Rockford, single plate, over center, clutch diameter 12", shaft 2¼" diameter.

TRANSMISSION—Quadruple width ⅝" pitch Link-Belt roller chain enclosed in a chain case.

Engine	Engine Pinion	Chain Wheel
Waukesha 6BZ	19 Tooth	141 Tooth
Caterpillar D311	18 Tooth	141 Tooth
Caterpillar D315	18 Tooth	141 Tooth
General Motors 2030C	18 Tooth	141 Tooth
International UD9A	19 Tooth	123 Tooth

REDUCTION SHAFT—2⅞" diameter C1040 steel, mounted on ball bearings.
Shaft Speed—204 revolutions per minute @ full load speed.
Drive Pinion—20 cut teeth, 4/5 diametral pitch, 5" pitch diameter, 2½" face, case hardened S.A.E. 2315 hot rolled steel heat treated 512-600 Brinell.

REVERSE SHAFT—3" diameter LB4140 steel mounted on ball bearings.
Shaft Speed—54 revolutions per minute @ full load speed.
Spur Gear—19" pitch diameter, 4/5 diametral pitch, 76 machine cut teeth, 2¼" face, mounted on ball bearings.
Bevel Gear—9.1428" pitch diameter, 1.75/2 diametral pitch, 16 cast teeth, 2¾" face, heat treated and splined to shaft.
Swing and Travel Clutches—17¼" diameter x 4" face, two shoe internal expanding type S.O.M. hydraulic controlled. Clutch spiders are splined to shaft.

REAR DRUM—10⅜" between flanges, 18" diameter brake flange, 3" wide. Removable cast steel grooved laggings, either 9" or 11" root diameter, are bolted to the brake flange which is splined to shaft.
Shaft—2-9/16" diameter C1040 steel, mounted on ball bearings.
Shaft Speed—54 revolutions per minute @ full load speed.
Drum Gear—19" pitch diameter, 4/5 diametral pitch, 76 cut teeth, 2¼" face, mounted on ball bearings.
Drum Clutch—17¼" diameter, 4" face, two shoe internal expanding type. S.O.M. hydraulic controlled. Clutch spider is splined to shaft.
Drum Brake—18" diameter x 3" face external contracting band type, hydraulically operated.

FRONT DRUM—10⅜" between flanges, 18" diameter brake drums 3" wide. Removable cast steel grooved laggings, either 9" or 11" root diameter, or split cast steel sprocket are available for use on this drum.
Shaft—2-9/16" diameter LB4140 steel, mounted on ball bearings.
Shaft Speed—54 revolutions per minute @ full load speed.
Drum Gear—19" pitch diameter, 4/5 diametral pitch, 76 cut teeth, 2¼" face, mounted on ball bearings.
Drum Clutch—17¼" diameter, 4" face, two shoe internal expanding type, S.O.M. hydraulic controlled. Clutch spider is splined to shaft.
Drum Brake—18" diameter x 3" face external contracting type, hydraulically operated.

Retract Gear—13" pitch diameter, 4/5 diametral pitch, 52 cut teeth, 2¼" face, mounted on ball bearings.
Retract Clutch—11" diameter, 3" face, two shoe internal expanding type, S.O.M. hydraulic controlled. Clutch spider is splined to shaft. Retract speed 79 revolutions per minute.

INDEPENDENT RAPID BOOM HOIST—Spur gear driven drum, 4" wide, 7" root diameter.
Shaft—3" diameter C1040 steel, mounted on ball bearings.
Shaft Speed—54 revolutions per minute @ full load speed.
Gears—19" pitch diameter, 4/5 diametral pitch, 76 cut teeth, 2¼" face, mounted on ball bearings.
Hoist Clutch—17¼" diameter, 4" face, two shoe internal expanding type, S.O.M. hydraulic operated. Clutch spider is splined to shaft.
Brake—16" diameter, 2½" face, external band type, spring applied.
Lowering rate controlled by engine speed with ratchet type clutch.
Independent locking ratchet to lock boom at a fixed angle.

VERTICAL DRIVE SHAFT—3½" diameter C1040 steel, mounted on anti-friction bearings, splined for bevel, low and high speed gears.
Bevel Gear—9.71" pitch diameter, 1.75/2 diametral pitch, 17 cast teeth, 2¾" face, heat treated.
Low Speed Gear—7.66" pitch diameter, ¾ diametral pitch, 23 cut teeth, 2¼" face.
High Speed Gear—11.33" pitch diameter, ¾ diametral pitch, 34 cut teeth, 2¼" face, splined to shaft.

VERTICAL SWING SHAFT—3½" diameter C1040 steel, mounted in bronze bearings, splined for swing gear and pinion.
Swing Gear—11.33" pitch diameter, ¾ diametral pitch, 34 cut teeth, 2½" face.
Swing Pinion—6" pitch diameter, 2 diametral pitch, 12 cast teeth.

VERTICAL TRAVEL SHAFT—3¾" O.D. x 2" I.D. C1040 tubular steel shaft, mounted in bronze bearings, splined for bevel and high and low speed gears.
High Speed Gear—7.66" pitch diameter, ¾ diametral pitch, 23 cut teeth, 2¼" face.
Low Speed Gear—11.33" pitch diameter, ¾ diametral pitch, 34 cut teeth, 2½" face.
Bevel Gear—10.28" pitch diameter, 1.75/2 diametral pitch, 18 cast teeth, 3" face.

INDEPENDENT SWING (Available as extra on new machine or for field installation).
Shaft—3" diameter C1040 steel, mounted on ball bearings.
Shaft Speed—54 revolutions per minute @ full load speed.
Gears—19" pitch diameter, 4/5 diametral pitch, 76 cut teeth, 2¼" face, mounted on ball bearings.
Bevel Gear—9.143" pitch diameter, 1.75/2 diametral pitch, 16 cast teeth, 2¾" face, splined to shaft.
Swing Clutches—17¼" diameter x 4" face, two shoe internal expanding type S.O.M. hydraulic controlled. Clutch spiders are splined to shaft.
Swing Center Drive Shaft—4¼" O.D. x 2¾" I.D. C1020 tube shaft mounted on bronze bearings. Bevel gear is splined to tube, 11.429" pitch diameter, 1.75/2 diametral pitch, 20 cast teeth, 2¾" face. The center drive shaft is bronze bushed to a non-rotating shaft. The non-rotating shaft is C1040 steel, 2½" in diameter. Upper end is suspended on swing reverse shaft with a bronze bearing, lower end is mounted in the rotating base.
Swing Gear—8.33" pitch diameter, ¾ diametral pitch, 25 cut teeth, 2¾" face, heat treated and splined to tube. Thrust ball bearing is used for band gear thrust.

SWING MECHANISM—The swing pinion which is splined to the vertical swing shaft engages with the turntable gear, 42" pitch diameter, 2 diametral pitch, 84 cast teeth, 3" face. The swing lock is mounted on the revolving upper and engages with the teeth in the turntable gear. This operation is manually controlled from the operator's position independent of all other controls.

GANTRY:
Low—Standard equipment. Tubular front members and bar rear tension members, pin connected.
Retractable—Recommended for booms 40' long or over. The gantry is retracted and bail bolted to links on head shaft for shovel and trench hoe operations.

CAB—No. 12 gauge steel sides and top. Sliding doors on ball bearing rollers. Inside height 6'4", width 7'10". The panels in the operator's cab are of safety glass.

COUNTERWEIGHT:

	Counterweight "A" Shovel	Counterweight "A and B" Crane, Clam, Drag, Trench Hoe, Pile Driver	Counterweight "C" Lifting Crane Service Only
Waukesha 6BZ	2950	4450	6150
Caterpillar D311	2200	3700	6150
Caterpillar D315	2200	2950	6150
General Motors 2030C	2950	4450	6150
International UD-9A	2200	3700	6150

WEIGHTS: (Approximate)

Basic Machine (Standard)	22,500 pounds
Crane Boom Attachment — 30' boom	3,400 pounds
Shovel Attachment	5,500 pounds
Trench Hoe Attachment	6,300 pounds
Pile Driver	3,500 pounds

GENERAL INFORMATION ONLY

DIMENSIONS:

Tail swing radius—low gantry	7'- 4"
Tail swing radius—retractable gantry	7'-11"
Radius of boom hinge pin	3'- 1"
Height of boom hinge pin	5'- 0"
Standard low gantry height	10'- 1"
Retractable gantry height—raised	12'-10"
Retractable gantry height—retracted	10'- 6"
Counterweight clearance from ground	3'- 4"
Width of cab	7'-10"

LAGGINGS—Root diameter given in inches

	Front Drum	Rear Drum
Crane	11	9
Clamshell	11	11
Dragline	9	11
Pile Driver	11	11
Trench Hoe	9	11
Shovel	—	9

For combination crane-dragline, crane-clamshell or crane-trench hoe, the rear drum will be furnished with the 11" lagging.

Note: The above table on laggings indicates the root diameter lagging that will be furnished for the attachment indicated unless order specifies otherwise. The rear drum lagging and front drum lagging are not interchangeable.

SPEEDS AND LINE PULLS (FULL LOAD SPEED)

Swing Speed	4.9 r.p.m.—With Independent Swing—4.5 r.p.m.
Shovel Crowd Speed	101 f.p.m.
Shovel Retract Speed	146 f.p.m.
Boom Hoist Speed—7" diameter	130 f.p.m. (average)
Rear Drum Lagging Speeds:	
9" root diameter	12,000 lbs. @ 134 f.p.m.
11" root diameter	9,950 lbs. @ 162 f.p.m.
Front Drum Lagging Speeds:	
9" root diameter	12,400 lbs. @ 134 f.p.m.
11" root diameter	10,200 lbs. @ 162 f.p.m.

Note—Line pull is based on Waukesha 6BZ engine, UD9A & D315 F.L.S.
For Cat. D311 multiply by 86%
For G.M. 2030C multpily by 98.8%

SPEED-O-MATIC CONTROL SYSTEM

Speed-o-Matic is a closed power hydraulic system with all lines remaining filled with oil at all times and the operating pressure is transmitted through the oil. The Speed-o-Matic system includes a hydraulic pump to provide a constant supply of oil under pressure and an accumulator to maintain the pressure without fluctuation. The pressure is admitted to the operating cylinders by short throw levers and thus performs all the work. The lines do not have to fill with oil before pressure can be developed to actuate the piston in the operating cylinder and therefore Speed-o-Matic control is instantly responsive without lag, uncertainty of action, jerk or drag. It is surer and safer due to its instantaneous and accurate response giving faster operating cycles and eliminating operator fatigue.

CONTROLS:

Pump—Vickers, Inc. No. V-210-5-1A-L.H., 4.7 g.p.m. at 1200 r.p.m.

Oil Filter—Made by Link-Belt Speeder with Skinner ribbon type filter element.

Relief Valve—Made by Link-Belt Speeder. Used to prevent damage to the hydraulic system should the unloading valve fail to function. Set for 1200 p.s.i.

Unloading Valve—Made by Link-Belt Speeder. Used for unloading the pump when the pressure in the system reaches a maximum of 1025 p.s.i. and to load the pump when the pressure drops to 875 p.s.i.

Accumulator—Made by Link-Belt Speeder. Piston type. Precharged with nitrogen gas to 650 p.s.i. Pressure range 850 to 1050 p.s.i.

Sump Tank—7 gal. capacity. Constructed of 12 ga. sheet steel with strainer assembly. Breather filter used to filter air entering tank.

Control Valves—Made by Link-Belt Speeder. Variable pressure type.

SHOVEL ATTACHMENT – (CHAIN CROWD)

BOOM—16'-0" center to center of pins made of steel plates welded into a rigid box.

Shipper Shaft—2½" diameter A4140 chrome molybdenum steel heat treated 270-300 Brinell.

Crowd Pinions—17 alloy steel cast teeth, 2½" diametral pitch, 6.8" pitch diameter, 2" face, heat treated 240-280 Brinell.

Shipper Shaft Chain Sprocket—19 cast teeth, 2" pitch, 12.15" pitch diameter.
Boom Head Sheaves—Cast Steel 16⅝" pitch diameter. Live sheave has 3½" long hub with one bronze bushing 2½" I.D. x 3½" long.
Boom Hoist Sheaves—7" pitch diameter made of cast iron.

DIPPER STICKS—Box section all welded steel 4" wide x 7" deep with steel racks welded to bottom side. Standard length 13'.

BUCKET (STANDARD)—.51 cubic yard Link-Belt Speeder 29½" wide at front, 30½" wide at rear, cast steel head, ¼" body plate, ⅝" lip plate with bevelled cutting edge hardened with stoodite, four removable cast alloy steel teeth 3½" wide x 12" long. Door made of ⅜" plate with heavy hinges cut from 1" thick plate.

BUCKET (ALTERNATE)—.53 cubic yard Link-Belt Speeder 29½" wide at front, 30½" wide at rear, cast steel head, ¼" body plate, manganese cast steel front with cutting edge cast integral, four manganese steel removable teeth 3" wide x 8" long. Door made from ⅜" plate with heavy hinges cut from 1" thick plates.

PADLOCK BLOCK—Sheave 16⅝" pitch diameter, 3½" long hub with bronze bushing 2½" I.D. x 3½" long.

CROWDING ACTION—The front drum has a split 20 cast tooth 2" pitch, 12.79" pitch diameter sprocket, and is reversed by a spur gear drive. Crowd and retract chains are 2" pitch heavy duty type with alloy steel side bars and pins. The front drum sprocket drives to a countershaft at the base of the boom and up to the shipper shaft. Both drives have takeup idlers. The shipper shaft has two manganese steel pinions engaging with the crowd racks on the dipper sticks. Crowd and retract are handled with one lever. A hydraulic power-operated dipper trip is standard.

CABLES—Improved plow steel, hemp center, regular lay preformed.
Boom Hoist—½" diameter, 6 x 19 — 100 feet long. (4 part line)
Hoist—⅝" diameter, 6 x 19 — 62 feet long.
Trip—5/16" diameter, 8 x 19 — 25 feet long

CRANE, CLAMSHELL AND DRAGLINE ATTACHMENTS

BOOM—Two piece 30 foot boom (upper and lower sections each 15 feet in length with 2" x 2" x ¼" corner angles. Boom is of box type all welded lattice construction with continuous angle lacing. Boom foot one inch thick with 1½" diameter pins. Width of boom over chord angles of head shaft 11¾". Head machinery sheaves 12½" pitch diameter with hub 3" long bronze bushed for a 2½" diameter shaft. Standard boom is bolted together, pin connected is available.

BOOM BACKSTOP—Dual telescopic tubular type available with standard and retractable gantry.

BOOM EXTENSIONS—Lengths available 5 and 10 foot. Box type all welded latticed construction with continuous angle lacing. Corner angles 2" x 2" x ¼" with 1" x 1" x 3/16" lattice angles.

JIB EXTENSION—Length 10 foot. Side members are of 4"-5.4# channels, with lattice angles of 1" x 1" x 3/16". End sheaves 11" O.D. x 8" root diameter mounted on roller bearing 3¼" O.D. x 2" I.D. x 1⅝" long.
The strut for the jib is 3'-2" high and is mounted on the base plates on the jib boom. A deflector sheave for the hoist line is mounted in the framework of the strut. Cable run from the end of the jib boom to the top of the strut and then tie into the bottom section of the boom.

FAIRLEADER—Full revolving type mounted on two ball bearings with two bronze bushed 11½" diameter sheaves. Two ball bearing mounted guide rollers, 3½" O.D. x 20" long with case hardened wearing surface guide the cable onto the sheaves.

DRAGLINE BUCKET—Machine will handle any standard make dragline bucket of ½ yard capacity.

CLAMSHELL BUCKET—The machine will handle any standard make clamshell bucket of ½ yard capacity.

TAGLINE WINDER—Rud-O-Matic Model 630 spring wound drum type, mounted on the lower section of the boom with cable attached directly to the bucket or hook block. Cable pull-out off the drum is 40' to 50' from neutral.

BOOM HOIST BRIDLE—Consists of a fabricated steel frame containing three 8" O.D. cast steel sheaves. These sheaves are bronze bushed 2" O.D. x 1½" I.D. x 1⅝" long, lubricated through their pins.

CABLES:

	Boom Length 30	35	40 feet
Boom Hoist—½" diameter, 6 x 19 (6 parts line)*	140	140	140 feet
Dragline:			
Hoist—⅝" diameter, 6 x 9*	80	88	95 feet
Inhaul—⅝" diameter, 6 x 19**	38	43	48 feet
Bridle—½" diameter, 6 x 19*	15	15	15 feet
Clamshell:			
Holding line—½" diameter, 6 x 19*	76	86	96 feet
Closing line—½" diameter, 6 x 19*	106	116	126 feet
Tagline—5/16" diameter, 8 x 19*	45	50	55 feet

Crane:
Hoist—1/2" diameter, 6 x 19*
For lengths see table below:

Boom Length in Feet	Cable Length in Feet from Given Parts of Line			
	1	2	3	4
30	70	110	140	180
35	80	120	160	200
40	90	140	180	230
45	100	150	200	250
50	110	170	220	280

Jib (10' in length):

Whip line—1/2" diameter, 6 x 19 (1 part)*	95	105	115 feet
Whip line—1/2" diameter, 6 x 19 (2 part)*	140	155	170 feet
Jib guyline—1/2" diameter, 6 x 19*	22	22	22 feet
Boom guyline—1/2" diameter, 6 x 19*	58	68	78 feet

Extender Cables (Standard Equipment for Crane Boom Attachments)
Extender cables connect the boom head anchor to the boom hoist bridle. Cables are 3/4" diameter improved plow steel independent wire rope center, lang lay modified steel with forged steel zinc fitted sockets at each end. Basic extender cables for the 30' boom are 12' 3 1/2" long. For each boom extension that is added to the basic boom, an extra extender cable equal in length to the section added is used.

Note—**Improved plow steel, independent wire rope center, lang lay preformed.
* Improved plow steel, hemp center, regular lay preformed.

TRENCH HOE ATTACHMENT

BOOM—16' 6" center to center of pins, box section formed plates welded steel.

BOOM FOOT IDLER ROLLER AND PIN—Boom foot pin 2 1/2" diameter x 32" long. A4140 chrome molybdenum steel heat treated 228-265 Brinell. Boom foot pin set screwed in fixed position to boom foot and oscillates in bronze bushings in brackets mounted on front of revolving frame. Flanged cast iron idler roller 11" O.D., 6 3/4" long, greased thru hub.

INHAUL CABLE SHEAVES ON BOOM—Sheave pin 2 1/2" diameter x 20 1/4" long. C1040 cold drawn steel. Cast steel sheaves 16" O.D. x 13 1/2" R.D. Live sheave mounted on bronze bushing 2 1/2" I.D. x 3" O.D. x 3" long, greased thru hub.

BOOM PEAK SHAFT FOR ARM—2" diameter x 15" long. C1040 cold drawn steel. Pin is drilled thru both ends and secured from turning by bolting thru bosses welded on the arm. Peak shaft rotates on two bronze bushings 2 1/2" O.D. x 2" I.D. x 4" long mounted in the boom peak. Shaft is greased through boom peak hub.

ARM—8'-0" long overall pin center, box section formed plates welded steel.

ARM MACHINERY—Hoist sheave mounted in movable bridle of welded plate construction. Cast steel sheave 13 3/4" O.D. x 11 5/8" R.D. mounted on bronze bushing 3" O.D. x 2 1/2" I.D. x 2" long, greased thru hub. Sheave mounted on 2 1/2" diameter C1040 cold drawn steel shaft. Bridle mounted on two bronze bushings 2" O.D. x 1 1/2" long and lubricated thru hub. Bridle connected to arm with 1 1/2" diameter C1040 cold drawn steel pin.

BUCKET AND CONNECTIONS—Solid Bottom .51 cu. yd. capacity, 36" cutting width, 30" wide inside with single lugs and 1 3/4" dia. x 18 1/2" long cold finished steel pin to engage lug on arm. Pitch brace double channel reinforced welded construction. 55" pin centers. Brace secured to bucket with 1 1/2" dia. x 5 3/4" long C1040 cold drawn steel pin, and to arm with 1 1/2" dia. x 5 3/4" long C1040 cold drawn steel pin, and to arm with 1 1/2" dia. x 12 5/8" long C1040 cold drawn steel pin. Both arm and pitch brace connections on bucket are equipped with case hardened steel bushings.

ALTERNATE BUCKET—LINK-BELT SPEEDER, solid bottom .50 cu. yd. capacity 31" cutting width 24" wide inside. Same connections to arm as above.

BUCKET BAIL—Horizontal sheave type. Welded reinforced plate construction. Cast steel sheave 16" O.D. x 13 1/2" R.D. mounted on bronze bushing 2 1/2" I.D. x 3" O.D. x 3" long. C1040 2 1/2" dia. cold drawn shaft, greased through shaft. Bail connected to bucket with 2 cast steel links on each side with 2" diameter C1040 cold drawn steel pins.

BUCKET BAIL BRIDLE—Cast steel bridle sheave frame with double lug to engage single lug on bail hitch with 1½" diameter x 5" long cold finished steel pin. Lug on bail hitch has hardened steel bushing 2" O.D. x 1½" I.D. x 1½" long. Bridle frame has cleaning tooth engaging groove of sheave to keep it free from packing with material. Cast steel sheave 12¾" O.D. x 1¼" root diameter mounted on bronze bushings 3" O.D. x 2½" I.D. x 2" long. Sheave pin 2½" diameter x 4" long A4140 chrome molybdenum steel turned, ground and polished. Heat treated 270-300 Brinell.

GANTRY—7'-8" long from peak shaft to foot pin. Gantry feet engage boom foot lugs same as a shovel or crane boom. Main members of gantry are 2½" std. pipe.

GANTRY PEAK SHAFT AND CENTER SHEAVE FOR 2 PART HOIST—Steel peak shaft 2½" diameter x 28" long. Cast steel sheave 16" O.D. x 13.5" root diameter mounted on bronze bushing 3" O.D. x 2½" I.D. 3" long. Oiled through hub. Cast iron deflector sheave 7" O.D. x 5⅛" R.D.

GANTRY SHEAVES FOR 4 PART LINE TO BOOM HOIST DRUM—Two cast iron sheaves 8" O.D. x 6½" root diameter mounted on 2½" diameter peak shaft. Sheaves oiled through hubs.

GANTRY BACKSTOP—Telescoping type. Outer members 2½" standard pipe. Inner members 2" standard pipe. Three rigid gantry positions available on backstop—vertical, 5 degrees forward and 10 degrees forward. Telescoping members rigidly connected with ⅞" bolts.

CABLES:

Gantry—(4 part line) ½" diameter x 66' long—6 x 19 improved plow steel, hemp center, regular lay preformed.

Hoist—(2 part line) ⅝" diameter x 66' long—6 x 19 improved plow steel, hemp center, regular lay preformed.

Inhaul—(2 part line) ⅝" diameter x 58' long—6 x 19 improved plow steel, independent wire rope center, lang lay preformed.

PILE DRIVER ATTACHMENT

PILE DRIVER:

Standard Lead—30' long. Main members (hammer guides) two box sections 1⅞" x 4"—18¾" inside width. Box section made of two 4" x 7.25 lb. standard channels. Framing for guides, two angles 1½" x 1½" x $\frac{3}{16}$" x 30'-0" long with cross members of 1½" x 1½" x $\frac{3}{16}$" x 2'-1" and 1¼" x 1¼" x $\frac{3}{16}$" x 2'-1" long angles alternately spaced at 21" centers to form a ladder. The ladder is latticed with 7 angles 1" x 1" x $\frac{3}{16}$" x 3'-11½" long. Side framing for guides supported by 18 angles 1½" x 1½" x $\frac{3}{16}$" x 12½" long spaced at 3'-6" centers. Sides latticed with 28 angles 1½" x 1½" x $\frac{3}{16}$" x 21" long.

Optional Lead—25' long. Main members (hammer guides) two box sections 1⅞" x 4"—18¾" inside width. Box section made of two 4" x 7.25 lb. standard channels. Framing for guides, two angles 1½" x 1½" x $\frac{3}{16}$" x 25'-0" long with cross members of 1½" x 1½" x $\frac{3}{16}$" x 2'-1" and 1¼" x 1¼" x $\frac{3}{16}$" x 2'-1" long angles alternately spaced at 21" centers to form a ladder. The ladder is latticed with 6 angles 1" x 1" x $\frac{3}{16}$" x 3'-11½" long. Side framing for guides supported by 14 angles 1½" x 1½" x $\frac{3}{16}$" x 12½" long spaced at 3'-6" centers. Sides latticed with 24 angles 1½" x 1½" x $\frac{3}{16}$" x 21" long.

TELESCOPIC STRUTS FOR STANDARD 30' LEAD—Adjustable in length from 8'-1" to 13'-9" in steps of 3". Outer member 2½" standard pipe with single lug at one end for ¾" pin. 7'-5" long from pin to end of pipe. Inner member 2" standard pipe with single lug at one end for ¾" pin. 6'-11" long from pin to end of pipe. Connects to double lugs each side at base of boom and leads.

TELESCOPIC STRUTS FOR OPTIONAL 25' LEAD—Adjustable in length from 7'-4" to 11'-10" in steps of 6". Outer member 2½" standard pipe with single lug at one end for ¾" pin. 6'-8" long from pin to end of pipe. Inner member 2" standard pipe with single lug at one end for ¾" pin. 6'-2½" long from pin to end of pipe. Connects to double lugs each side at base of boom and leads.

HAMMER—1800 lb. cast iron hammer 34½" high x 21⅜" wide x 15" deep. Hammer has hooks for slings to hold hammer, follower cap and plug at top of leads while pile is put in place.

HAMMER OPTIONAL—1000 lb. cast iron hammer 21¼" high x 21⅜" wide x 15" deep. Hammer has hooks for slings to hold hammer, follower cap and plug at top of leads while pile is put in place.

FOLLOWER CAP—325 lb. cast steel 9" high x 21⅜" wide x 12" deep. Bottom of follower cap has 8" diameter x 3½" deep tapered socket to engage top of pile. Top of follower cap has 8" diameter x 3½" deep tapered socket for hard wood plug which takes the hammer blow direct.

FOLLOWER CAP PLUG—Hard wood 12" diameter x 9½" high, ¾" x 2" steel bar 12" O.D. pressed on outside of plug.

CABLES—

	Boom Length 30	35 feet
Hammer Line—½" diameter, 6 x 19, improved plow steel, hemp center, regular lay preformed	76	86 feet
Pile Line—½" diameter, 6 x 19, improved plow steel, hemp center, regular lay preformed	106	116 feet

LINK-BELT SPEEDER RESERVES THE RIGHT TO ALTER THESE SPECIFICATIONS WITHOUT NOTICE

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