

LINK-BELT SPEEDER

LS-68

CONFIDENTIAL DETAIL SPECIFICATIONS

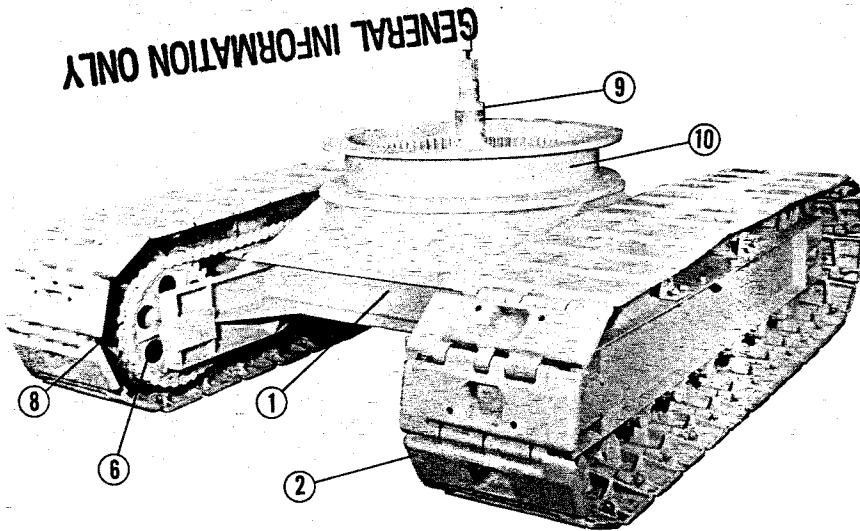
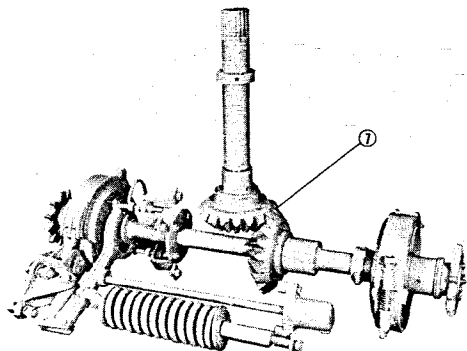
CRAWLER

(Supersedes Specifications CRS2066-2-60)

MOUNTINGS

These illustrations serve as an index to the lower machinery described in these specifications. Numerals shown indicate paragraph number.

GENERAL INFORMATION ONLY



CRAWLER MOUNTINGS

- 1. LOWER FRAMES**—All-welded, stress-relieved, structural steel units, jig line-bored to insure perfect shaft alignment.

Cross Axles—8" wide x 48# wide flange beams.

Track Side Frames—All-welded structural steel units welded to cross axles.

Standard Lower—Main members of 12" x 35# channel.

Long-Wide Lower—Main members of 12" x 35# and 12" x 50# channels.

- 2. TRACKS**—Two lug driven crawler track belts, cast-steel, heat-treated, with self cleaning multiple-hinged shoes.

Track Pins—Steel, heat-treated, 1 1/8" diameter, 13" long.

Ground Contact Area (in square inches)

Shoe Width (inches)	Standard Lower (11' 0" long)	Long-Wide Lower (12' 1" long)
24	5,400	6,100
30	6,750	7,550
36	—	9,100
No. of Shoes	64	70

Optional Extra—Grouser angles—2 1/2" x 1 1/8" x 3/8" angle iron bolted on each track shoe.

LINK-BELT SPEEDER

Link-Belt Speeder
Cedar Rapids, Iowa

Link-Belt Speeder (Canada), Ltd.
Woodstock, Ontario

3. **TRACK ROLLERS**—Forged-steel, single flanged, heat-treated, 10" diameter, mounted on sintered iron bushings.
Axles—Steel, 2½" diameter.
Standard Lower—Seven rollers per side frame.
Long-Wide Lower—Eight rollers per side frame.
~~Optional Extra—Sealed crawler track rollers mounted on hardened axles.~~
4. **TRACK CARRIER ROLLERS**—Two per side frame. Cast-iron, single flanged, 9" diameter.
Axles—Steel, 1½" diameter.
5. **TRACK IDLER ROLLER**—One per side frame. Cast-steel, heat-treated, 23⅝" diameter, mounted on bronze bushings. Take-up bolts at ends of axles allow tension adjustment of track shoe belt.
Axles—Steel, heat-treated, 2½" diameter.
6. **TRACK DRIVE ASSEMBLY**—One per side frame consisting of a track drive sprocket and chain sprocket welded integrally, mounted on bronze bushings. Drive chain take-up is shim adjustable to provide drive chain tension.
Axles—Steel, heat-treated, 3" diameter.
Drive Sprocket—Cast-steel, heat-treated, 9 driving lugs.
Chain Sprocket—Cast-steel, heat-treated, 31 cast teeth.
7. **TRACTION SHAFT**—Two-piece, steel, heat treated, 2⅞" diameter, joined by a splined coupling, mounted on three bronze bushings.
Bevel Gear—Cast-steel, heat-treated, 19 teeth, involute-splined to shaft. Fully enclosed and running in oil.
Jaw Clutches and Brake Drums—Jaw clutches are splined to and slide on shaft engaging jaws on brake drums. Brake drums 13" diameter, 3" face, splined to drive sprockets. Brake drum assembly is bronze bushed in lower frame and floats on shaft.
Brakes—Two-directional, external contracting, which act as digging locks, are spring engaged, and Speed-o-Matic power hydraulic released. Jaw clutch and brake action is interconnected so that brake bands are not released until full Speed-o-Matic power hydraulic pressure is available engaging jaw clutch. Jaw clutches operate independently providing steer and travel function.
Drive Sprockets—Cast-steel, heat-treated, 12 cast teeth, involute-splined to brake drum.
8. **DRIVE CHAINS**—Link-Belt RC 160, 2" pitch.
9. **CENTERPIN**—Seamless tube, 5½" outside diameter, welded to lower frame top plate.
10. **ROLLER PATH WITH INTEGRAL RING GEAR**—Cast-steel, double-flanged, with machined roller path, 53" outside diameter. Internal gear, 42" pitch diameter, 84 cast teeth, 3" face.

GENERAL INFORMATION ONLY

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LINK-BELT SPEEDER

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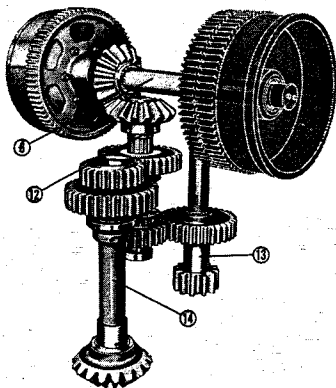
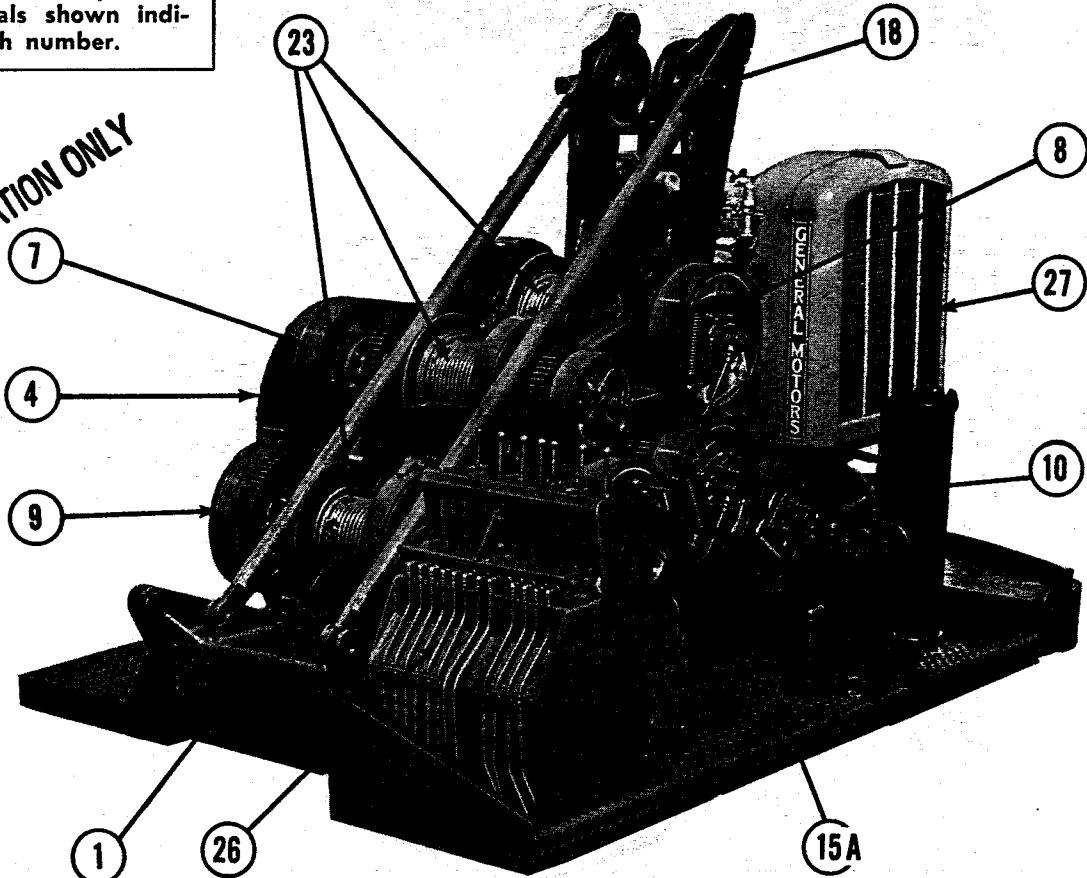
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68 SERIES

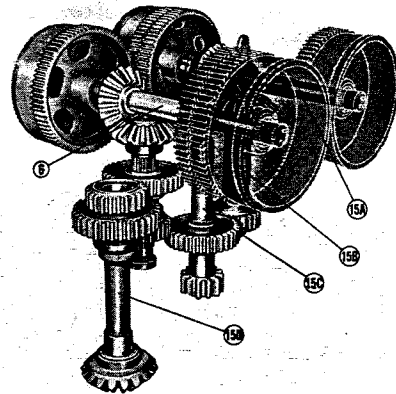
UPPER MACHINERY

These illustrations serve as an index to the main machinery described in these specifications. Numerals shown indicate paragraph number.

GENERAL INFORMATION ONLY



STANDARD SWING AND TRAVEL



OPTIONAL INDEPENDENT SWING AND TRAVEL

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LINK-BELT SPEEDER

Link-Belt Speeder
Cedar Rapids, Iowa

Link-Belt Speeder (Canada), Ltd.
Woodstock, Ontario

Specifications CRS2100-9-65

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NB 65-40 - 10-5-65

GENERAL INFORMATION ONLY

1. **UPPER FRAME**—All-welded, stress-relieved, jig-machined unit with main members of 12" x 35# ship channel. Side housings are bolted to main frame members.
2. **CENTERPIN BEARING**—Bronze bushing, 5¼" inside diameter, 4¼" long.
3. **TURNTABLE ROLLERS**—Adjustable conical hook type rollers, forged steel, heat treated, 7" diameter, 2¾" face.
Six Rollers—Standard on LS and UC—Two equalized pairs in front and two individual rollers in rear mounted on bronze bushings.
Six Rollers—Optional extra on LS and UC—Two equalized pairs in front and two individual rollers in rear mounted on anti-friction bearings.
Eight Rollers—Standard on HC, optional extra on LS and UC—Two equalized pairs in both front and rear mounted on bronze bushings.
Eight Rollers—Optional extra all models—Two equalized pairs in both front and rear mounted on anti-friction bearings.
4. **TRANSMISSION**—¾" pitch Link-Belt quadruple roller chain enclosed in chain case. Oil drip lubrication. Engine pinion is heat-treated. Chain wheel, cast iron, involute-splined to reduction shaft. Number of teeth—engine pinion and chain wheel—refer to engine section.
5. **REDUCTION SHAFT**—Steel, 3" diameter, mounted on ball bearings. Shaft speed: 204 r.p.m. @ full-load speed.
Two Drive Pinions—Forged steel, heat-treated, machine-cut teeth, involute-splined to shaft.
6. **REVERSE SHAFT**—Steel, 3" diameter, mounted on ball bearings. Shaft speed: 54 r.p.m. @ full-load speed.
Spur Gears—Cast-steel, machine-cut teeth, mounted on ball bearings.
LS—Spur gears heat-treated on machines without independent swing and travel.
Bevel Gear—Cast-steel, heat-treated, involute-splined to shaft.
Clutches—Internal expanding two-shoe type (aluminum alloy shoes), 17¼" diameter, 4" face, Speed-o-Matic power hydraulic actuated. Clutch spiders—heat-treated, involute-splined to shaft.
Clutch Shells—Cast-iron alloy, ribbed for heat dissipation, bolted to spur gears.
7. **FRONT MAIN OPERATING DRUM**—Serves as crowd and retract drum for shovel, inhaul drum for hoe and dragline, holding or closing drum for clamshell, and hoist drum for lifting crane. A two-piece split removable chain sprocket (for shovel), or a two-piece split removable drum lagging (for all other front-end attachments) is bolted to the brake drum; for application and sizes refer to the drum lagging section.
Shaft—Steel, 3" diameter, mounted on ball bearings. Standard shaft speed: 54 r.p.m. @ full-load speed. Extended shaft to accommodate lowering clutch or doubled speed clutch—standard.
Spur Gears—Cast-steel, machine-cut teeth, mounted on ball bearings.
LS—Spur gear, right-hand, heat-treated.
Brake—Two-piece external contracting band, 18" diameter, 3" face, mechanically operated.
Brake Drum—Cast-iron, involute-splined to shaft.
Clutches—Internal expanding two-shoe type (aluminum alloy shoes), Speed-o-Matic power hydraulic actuated. Clutch spiders—heat-treated, involute-splined to shaft.
Right Hand Clutch—17¼" diameter, 4" face, standard.
Left Hand Clutch—11" diameter, 3" face. Standard with shovel attachment as retract clutch.
—Optional extra for other attachments as reversing clutch for power load lowering.
Clutch Shells—Cast-iron alloy, ribbed for heat dissipation, bolted to spur gears.
Two-Speed Drum—Optional Extra—By using an idler gear to transmit the power to a spur gear and clutch on the left hand end of the drum shaft, the shaft is driven at double the speed and in the same direction as with the standard right hand hoist clutch. Retract clutch for shovel or reversing clutch for power load lowering are not available with this arrangement.
Idler Shaft—Steel, heat treated, 2" diameter.
Idler Gear—Steel, heat treated, machine cut teeth, mounted on ball bearings.
Spur Gear—Cast steel, machine cut teeth, mounted on ball bearings.
Clutch and Clutch Shell—Same description as left hand clutch and clutch shell normally used for shovel retract or power load lowering.
8. **REAR MAIN OPERATING DRUM**—Serves as a hoist drum for all attachments. Two-piece split removable drum lagging is bolted to the brake drum; for application and sizes refer to the drum lagging section.
Shaft—Steel, 3" diameter, mounted on ball bearings. Standard shaft speed: 54 r.p.m. @ full-load speed.
LS—Extended shaft to accommodate lowering clutch or doubled speed clutch—Optional extra.
HC-UC—Extended shaft to accommodate lowering clutch—Standard. Extended shaft to accommodate doubled speed clutch—Optional extra.
Spur Gears—Cast-steel, machine-cut teeth, mounted on ball bearings.
Brake—Two-piece external contracting band, 18" diameter, 3" face. Mechanically operated.
Brake Drum—Cast-iron, involute-splined to shaft.
Clutches—Internal expanding two-shoe type (aluminum alloy shoes), 17¼" diameter, 4" face, Speed-o-Matic power hydraulic actuated. Clutch spiders—heat-treated, involute-splined to shaft.
Clutch Shells—Cast-iron alloy, ribbed for heat dissipation, bolted to spur gears.
Right Hand Clutch—Standard.
Left Hand Clutch—Optional Extra. Reversing clutch for power load lowering.
Two-Speed Drum—Optional Extra—By using an idler gear to transmit the power to a spur gear and clutch on the left

GENERAL INFORMATION ONLY

hand end of the drum shaft, the shaft is driven at double the speed and in the same direction as with the standard right hand hoist clutch. Reversing clutch for power load lowering is not available with this arrangement.

Idler Shaft—Steel, heat treated, 2" diameter.

Idler Gear—Steel, heat treated, machine cut teeth, mounted on ball bearings.

Spur Gear—Cast steel, machine cut teeth, mounted on ball bearings.

Clutch and Clutch Shell—Same description as left hand clutch and clutch shell normally used for shovel retract or power load lowering on front drum shaft.

9. **THIRD OPERATING DRUM—Optional Extra**—Serves as an extra drum, particularly valuable for pile driving and operations that require "snaking in" a load. Unit is mounted in auxiliary housing and bolted to main revolving frame. Two-piece split removable drum lagging is bolted to brake drum; for sizes refer to drum lagging section.

Shaft—Steel, heat-treated, 3" diameter, mounted on ball bearings. Shaft speed: 54 r.p.m. @ full-load speed.

Spur Gear—Cast-steel, machine-cut teeth, mounted on ball bearings.

Brake—Two-piece external contracting band, 18" diameter, 3" face, mechanically operated.

Brake Drum—Cast-iron alloy, involute-splined to shaft.

Clutch—Internal expanding two-shoe type (aluminum alloy shoes), 17¼" diameter, 4" face, Speed-o-Matic power hydraulic actuated. Clutch spider—heat-treated, involute-splined to shaft.

Clutch Shell—Cast-iron alloy, ribbed for heat dissipation, bolted to spur gear.

Operational Limitations—

Shovel—Third drum unit must be removed.

Dragline and Hoe—If front main operating drum is used for inhaul, remove drum lagging from third drum. If third drum is used for inhaul drum, leave minimum of three wraps of cable at anchor end to prevent interference of cable with cylinder of fairleader.

10. **INDEPENDENT BOOMHOIST**—This unit mounts in main side housing on machines not equipped with independent swing and travel. Unit relocated on LS and UC with independent swing and travel. Spur gear driven with boom raising through a clutch, and boom lowering controlled by engine compression through either a ratchet and pawl mechanism or through a clutch for extra precision. A boom locking pawl, manually controlled from the operator's position, is provided.

Shaft—Steel, heat-treated, 3" diameter, mounted on ball bearings. Shaft speed: 54 r.p.m. @ full-load speed.

Spur Gears—Cast-steel, machine-cut teeth, mounted on ball bearings.

LS—Spur gear, right hand, heat-treated on machines without independent swing and travel.

Cable and Brake Drum—Ductile-iron, 9" root diameter, 4½" wide, involute-splined to shaft, with brake drum and safety ratchet cast integral.

Brake—External contracting band, 16" diameter, 3" face. Spring applied, and Speed-o-Matic power hydraulic released.

Clutch-Hoist—Internal expanding two-shoe type (aluminum alloy shoes), 17¼" diameter, 4" face, Speed-o-Matic power hydraulic actuated. Clutch spider—heat-treated, involute-splined to shaft.

Clutch Shell—Cast-iron alloy, ribbed for heat dissipation, bolted to spur gear.

Clutch—Lowering—Same description as hoist clutch. Replaces lowering ratchet for extra precision of boom lowering.

Lowering Ratchet—Cast-steel ratchet ring with 24 teeth, bolted to spur gear. Pawl keeper with three staggered heat-treated forged-steel pawls, involute-splined to shaft.

LS—Lowering ratchet and pawl—standard. Lowering clutch—optional extra.

HC-UC—Lowering clutch standard.

11. **BOOMHOIST LEVER KICK-OUT DEVICE**—Safety mechanism activated by boom at minimum radius, automatically kicks out boomhoist control lever and disengages boomhoist clutch. As an added safety feature, the boom must first be lowered before it can be raised again.

LS—Optional extra.

HC-UC—Standard.

12. **VERTICAL DRIVE SHAFT**—Steel, 3½" diameter, mounted on anti-friction bearings. Shaft speed: 50.4 r.p.m. @ full load speed.

Bevel Gear—Cast-steel, heat-treated, involute-splined to shaft.

LS-UC—Spur Gear—High Speed—Cast-steel, machine-cut teeth, involute-splined to shaft, engaged by jaw clutch.

Spur Gear—Low Speed—Forged-steel, machine-cut teeth, involute-splined to shaft, engaged by jaw clutch.

HC—Spur Gear—Forged-steel, machine-cut teeth, involute-splined to shaft.

13. **VERTICAL SWING SHAFT**—Steel, 3½" diameter, mounted on bronze bushings. Shaft speed: 34.1 r.p.m. @ full load speed.

Spur Gear—Forged-steel, machine-cut teeth, involute-splined to shaft.

Swing Pinion—Forged-steel, heat-treated, machine-cut teeth, involute-splined to shaft.

14. **VERTICAL TRAVEL SHAFT**—LS-UC only—Cold drawn tubular steel, 3½" diameter, mounted on bronze bushings.

Spur Gears—High speed and low speed gears cast integral. Cast-steel, heat-treated, involute-splined to shaft.

Bevel Gear—Cast-steel, heat-treated, involute-splined to shaft.

15. **INDEPENDENT SWING AND TRAVEL**—This unit mounts in main side housing and boomhoist unit is relocated to rear. Boomhoist clutch is now on right side and boom lowering ratchet or boom lowering clutch is on left side.

LS—Optional extra.

UC—Standard.

GENERAL INFORMATION ONLY

- A. REVERSE SHAFT FOR SWING**—Steel, heat-treated, 3" diameter, mounted on ball bearings. Shaft speed: 54 r.p.m. @ full-load speed.
Spur Gears—Cast-steel, machine-cut teeth, mounted on ball bearings. Right-hand spur gear heat-treated.
Bevel Gear—Cast-steel, heat-treated, involute-splined to shaft.
Clutches—Internal expanding two-shoe type (aluminum alloy shoes), 17¼" diameter, 4" face, Speed-o-Matic power hydraulic actuated. Clutch spiders—heat-treated, involute-splined to shaft.
Clutch Shells—Cast-iron alloy, ribbed for heat dissipation, bolted to spur gears.
- B. VERTICAL DRIVE SHAFT FOR SWING**—Steel tubing, 4¼" outside diameter, mounted on bronze bushings on pilot shaft, upper end of which is suspended from reverse shaft and lower end mounted in revolving frame. Shaft speed: 42.8 r.p.m. @ full-load speed.
Spur Gear—Cast-steel, heat-treated, machine-cut teeth, involute-splined to shaft.
Bevel Gear—Cast-steel, heat-treated, involute-splined to shaft. Thrust ball bearing is used for bevel gear thrust.
- C. VERTICAL SWING SHAFT**—Same description as for standard Vertical Swing Shaft except shaft speed is 31.5 r.p.m. @ full-load speed.
- D. VERTICAL TRAVEL SHAFT**—Same description as for standard Vertical Travel Shaft.
- 16. SWING LOCK**—A pawl mounted on the inside front of the revolving frame engages with the internal teeth of the ring gear. Mechanically operated from the operator's position.
- 17. SWING BRAKE**—Mounted on front right-hand section of revolving frame with pinion engaging internal teeth of ring gear. Brake is spring engaged and Speed-o-Matic power hydraulic released. This arrangement does not interfere with the mechanical swing lock.
Shaft—Steel, 3½" diameter, mounted on bronze bushings.
Pinion—Forged-steel, heat-treated, machine-cut teeth, involute-splined to shaft.
Brake Drum—Cast-iron, 12" diameter, 2¼" face, involute-splined to shaft.
LS-UC—Optional extra.
HC—Standard.
- 18. GANTRIES**—Mounted on revolving frame to which the boom supporting cables are reeved.
Low Gantry—Front members, 2½" extra heavy pipe. Rear members, steel bars.
Retractable High Gantry—Optional Extra—Upper part of mast is retracted and bail bolted to links on lower head shaft for shovel or hoe operations.
LS-UC—Retractable high gantry required for booms over 40 feet long—optional extra.
HC—Retractable high gantry required for booms over 50 feet long—standard. May be used for powered counterweight removal.
- 19. CAB**—12 gauge steel sides and top. Sliding doors on ball bearing rollers. Safety glass panels in operator's compartment.
- 20. COUNTERWEIGHTS**—Weights shown are in pounds.

Engine Code	LS-68				HC-68A		UC-68
	Ctwt. "A" ¹	Ctwt. "AB" ²	Ctwt. "ABC" ³	Ctwt. "ABCD" ⁴	Ctwt. "A" ⁵	Ctwt. "AB" ⁵	Ctwt. "A"⁵
1	6,000	9,600	11,600	13,600	7,000	9,800	6,150
2	5,200	8,800	10,800	12,800	6,400	9,200	

- ¹ Removable counterweight 3,100 pounds. Available for all lowers.
² Removable counterweight 6,700 pounds. Available for all lowers.
³ Removable counterweight 8,700 pounds. Available for all lowers.
⁴ Removable counterweight 10,700 pounds. Available for long-wide lower only.
⁵ All counterweight removable.
⁶ Removable counterweight 2,000 pounds

Engine Code:	LS-68	HC-68A	UC-68
Waukesha 195GK	1	1	1
Waukesha 190 GLBU	1	1	1
General Motors 3-53	1	1	1
General Motors 3030C	2	2	1

Counterweight Application:

LS-68—Shovel, Hoe, counterweight "A", standard.
 Crane, Dragline, Clamshell, counterweight "AB", standard.
 Crane only, counterweight "ABC" and "ABCD", optional.

HC-68A—All attachments, counterweight "A", standard.
 Crane, counterweight "AB", optional.

UC-68—All attachments, counterweight "A" only.

- 21. WEIGHTS**—Refer to individual flysheets and price list.
- 22. DIMENSIONS**—Refer to individual flysheets.
- 23. DRUM LAGGINGS**—Root diameter given in inches. Cable is wound on drum laggings in the following manner; front drum is under-wound; rear drum is over-wound; third drum is under-wound.

23. DRUM LAGGINGS—Continued

Attachment	Front Drum		Rear Drum		Third Drum	
	Diameter	Groove	Diameter	Groove	Diameter	Groove
Shovel			9	5/8"		
Hoe	10	3/4"	11	5/8"		
Crane	9	5/8"	9	5/8"		
Clamshell	11	5/8"	11	5/8"		
Dragline	10	3/4"	11	5/8"		
Third Drum Alternate					9 11	5/8" 5/8"

The above drum laggings will be furnished for each attachment unless the order specifies otherwise. For combination crane-clamshell or crane-dragline, the rear drum will be furnished with 11" drum lagging. Front and rear drum lagging are not interchangeable. On third drum, 9" drum lagging will be furnished unless 11" drum lagging is specified.

24. CABLE CAPACITIES OF DRUMS

- 9" root diameter front, rear or third drum lagging—
Six layers 5/8" cable—total capacity 296'—first layer capacity 35'
Seven layers 1/2" cable—total capacity 422'—first layer capacity 35'
- 11" root diameter front, rear or third drum lagging—
Four layers 5/8" cable—total capacity 208'—first layer capacity 42'
Five layers 1/2" cable—total capacity 320'—first layer capacity 42'
- 10" root diameter front drum lagging—
Four layers 3/4" cable—total capacity 150'—first layer capacity 31'
- 9" root diameter boomhoist drum—
Seven layers 1/2" cable—total capacity 183'—first layer capacity 20'

25. LINE PULL AND SPEEDS—(FULL-LOAD SPEED).

- Boomhoist Cable Speed—**
1/2" Cable—135 f.p.m. on first wrap; 224 f.p.m. on last, or 7th wrap.
- Front Drum Line Pull and Speeds—(1 part line)—**
9" root diameter drum lagging—12,400 pounds @ 134 f.p.m. (1/2" cable)
10" root diameter drum lagging—11,300 pounds @ 150 f.p.m. (3/4" cable)
11" root diameter drum lagging—10,200 pounds @ 162 f.p.m. (1/2" cable)
- Rear Drum Line Pull and Speeds—(1 part line)—**
9" root diameter drum lagging—12,000 pounds @ 134 f.p.m. (1/2" cable)
11" root diameter drum lagging— 9,950 pounds @ 162 f.p.m. (1/2" cable)
- Third Drum Line Pull and Speeds—(1 part line)—**
9" root diameter drum lagging—10,000 pounds @ 134 f.p.m. (1/2" cable)
11" root diameter drum lagging— 8,200 pounds @ 162 f.p.m. (1/2" cable)
- Swing Speed—**
Without independent swing and travel—4.9 r.p.m.
With independent swing and travel—4.5 r.p.m.
- Shovel Operating Speeds—**
Crowd—101 f.p.m.
Retract—146 f.p.m.

26. SPEED-O-MATIC POWER HYDRAULIC CONTROL SYSTEM is an open circuit but the hydraulic lines are filled with oil at all times. Operating pressure is transmitted through the oil to all operating cylinders. The system includes the pump to provide a constant flow of oil, an accumulator to maintain operating pressure, and valves to regulate this pressure to each operating cylinder. Oil pressure and flow to the operating cylinders are controlled through the operation of short levers actuating the variable-pressure valves in the control stand.

- Pump—**Vickers, Inc. Rated at 4.7 gallons per minute @ 1200 r.p.m.
- Oil Filter—**Link-Belt Speeder. Replaceable Skinner ribbon-type filter element.
- Relief Valve—**Link-Belt Speeder. Set to operate @ 1250 p.s.i.
- Unloader Valve—**Link-Belt Speeder. Set to unload the pump at a maximum of 1050 p.s.i. and to load the pump when accumulator pressure drops to 900 p.s.i.
- Accumulator—**Link-Belt Speeder. Piston type precharged with nitrogen gas to 650 p.s.i.
- Sump Tank—**Link-Belt Speeder. Seven gallon capacity with filter and strainer assembly to keep the oil clean.
- Control Valves—**Link-Belt Speeder. Variable-pressure type.

27. ENGINES—See following chart for specifications on individual engine models available.

- Fuel Gauge—**Fuel level gauge on fuel tank.
- Hour Meter—**Registers operational hours of engine.
- Foot Throttle—**Available for all engines.
LS—Optional extra.
HC-UC—Standard.
- Hand Throttle Control—Optional Extra—**For all engines. Twist type, mounted on swing control lever, but may be mounted on hoist control lever if specified.