

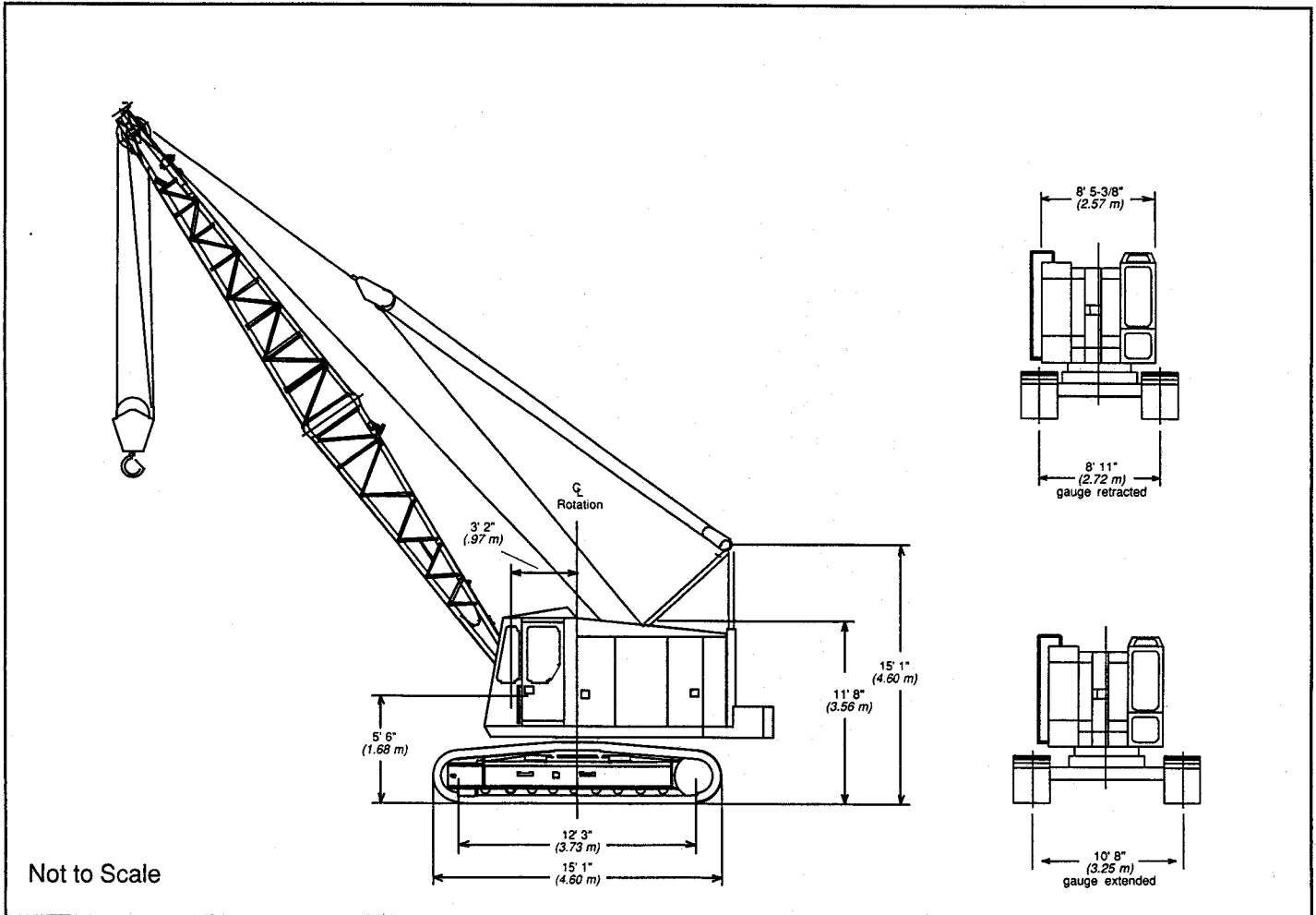
Specifications

Wire rope crawler/excavator

GENERAL INFORMATION ONLY

LS-108D

50 Ton (45.39 metric ton)



General dimensions	feet	meters
Basic angle boom length	40' 0"	12.19
Overall height:	—	—
— Retractable high gantry raised	15' 1"	4.60
— Retractable high gantry lowered	11' 8"	3.56
— Standard low gantry	11' 1"	3.38
Overall width of cab less catwalks	8' 5-3/8"	2.57
Overall width of cabs with catwalks both sides	11' 6-3/8"	3.51
Clearance under counterweight "A"	3' 10"	1.17
Clearance under counterweight "AB"	2' 10"	0.86
Tailswing of counterweight "A"	11' 4"	3.45
Tailswing of counterweight "AB"	11' 9"	3.58

General dimensions	30" (0.76 m) Shoes		36" (0.91 m) Shoes	
Overall Width	feet	meters	feet	meters
side frames extended	13' 2"	4.01	13' 8"	4.16
side frames retracted	11' 5"	3.48	11' 11"	3.63

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Machine working weights - approximate

Based on standard machine including GM4-71N diesel engine and friction clutch, turntable bearing, independent swing and travel, swing brake, retractable high gantry, boom lowering clutch, 15' 1" (4.60 m) long crawler lower and sealed track rollers, plus the following components:	Crawler mounting 15' 1" (4.60 m) overall length			
	Counterweight "A"		Counterweight "AB"	
	Pounds	kilograms	Pounds	kilograms
Lifting crane — includes necessary drum laggings, 10-part boomhoist reeving, 30" (.76 m) wide track shoes and Basic 40' (12.19 m) angle boom Max. 130' (39.62 m) angle boom	70,260 77,433	31 870 35 124	83,860 91,033	38 039 41 293
Dragline — includes necessary drum laggings, hoist and inhaul wire ropes, fairlead, 30" (.76 m) wide track shoes, and maximum 70' (21.34 m) angle boom.	73,090	33 154	----	----
Clamshell — includes necessary drum laggings, holding and closing lines, tagline, 30" (.76 m) wide track shoes and maximum 70' (21.34 m) angle boom.	72,767	33 007	----	----

Weight deductions for transporting - approximate

Deduct for the following components:	Crawler mounting 15' 1" (4.60 m) overall length	
	Pounds	kilograms
Counterweight "A"	12,000	5 443
Counterweight "AB"	25,600	11 612
Basic 40' (12.19 m) angle boom including head machinery and pendants	4,938	2 240
Crawler side frames with 30" (.76 m) shoes	16,500	7 484
Crawler side frames with 36" (.91 m) shoes	17,200	7 802

Crawler mounting

■ Lower frame

All welded, precision machined; line bored for horizontal travel shaft.

■ Turntable bearing

Inner race with integral internal swing gear is mounted on lower frame.

■ Crawler side frames

Power hydraulically extended/retracted, and removable without disconnecting track drive chains.

■ Track drive sprockets and idler wheels

Cast steel, heat treated, involute splined to shafts which are mounted on bronze bushings. Track/chain drive sprockets splined on single shaft which is mounted on bronze bushings in crawler side frames; one assembly per side frame. Idlers wheels are cast steel, heat treated, mounted on bronze bushings; one track idler wheel per side frame. Axle adjusted for track take-up.

■ Track carrier rollers

Two cast iron rollers and one slide rail on top of each side frame.

■ Track rollers

Sealed for lifetime lubrication; nine per crawler side frame.

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■ Tracks

Heat treated, self-cleaning, multiple hinged track shoes joined by one piece full floating pins; 43 shoes per side frame. Standard; 30" (.76 m) wide. *Optional*; 36" (.91 m) wide.

Track/chain adjustment - Track drive chains adjusted by shimming axles of track/chain drive sprockets. Track adjusted with threaded adjusting bolt attached to track idler (wheel) axles.

■ Travel

Travel independent of swing; permits simultaneous swing and travel with separate set of shafts and clutches. Four-piece traction shaft joined with involute splined couplings; inner traction shaft mounted on bronze bushings in precision bored lower frame. Outer traction shaft engages splines in chain drive sprockets which are mounted on bronze bushings in side frames. Powered by bevel gear drive enclosed in oil within lower frame.

Steering - Power hydraulic, travel/steer jaw clutches hydraulically engaged, spring released. External contracting band brakes, spring applied, hydraulically released for travel/steer/digging/parking. Brakes simultaneously released by interconnecting mechanical linkage as jaw clutches are pre-loaded or fully engaged; brakes are automatically set when travel/steer levers are in neutral. Two 18" (.46 m) diameter by 4" (.10 m) wide brake bands; effective lining area 164 sq. in. (1 058 cm²) per brake.

Ground contact area and ground bearing pressure

Based on standard machine equipped with "AB" counterweight and 40' (12.19 m) angle boom.

Track shoes		Ground contact area		Ground bearing pressure	
inches	meters	sq. in.	cm ²	p.s.i.	kPa
30	0.76	9,500	61 305	8.83	60.86
36	0.91	11,500	74 212	7.29	50.28

Travel speed - 0.79 mph (1.27 km/hr).

Gradeability - 30%.

Revolving upperstructure

■ Frame

All-welded, precision; machinery side housings bolted to upper frame.

■ Turntable bearing

With integral swing (ring) gear. Inner race with integral internal swing gear is mounted on lower frame;

outer race is bolted to machined surface on upper revolving frame.

■ Engines

Full pressure lubrication, oil filter, air cleaner, hour meter and throttle, electric control shutdown.

■ Fuel tank

58 gallon (220 L) capacity; equipped with fuel sight level gauge, flame arrester, and self-closing cap with locking eye for padlock.

Engine Specifications	GM 4-71N with friction clutch	GM 4-71N with torque converter	GM 6-71N with friction clutch
Number of cylinders	4	4	6
Bore and stroke: inch (mm)	4-1/4 x 5 108 x 127	4-1/4 x 5 108 x 127	4-1/4 x 5 108 x 127
Piston displacement: cubic inches (cm ³)	284 4 650	284 4 650	426 6 982
High idle speed - rpm	1,990	2,150	1,990
Engine rpm @ full load speed	1,840	2,000	1,840
Net engine horsepower @ full load speed	110 (82 027 W)	125 (93 213 W)	125 (93 213 W)
Peak torque: foot pounds joules	351 476	372 504	420 570
Peak torque - rpm	1,200	1,200	1,000
Electrical system	12-volt	12-volt	12-volt
Batteries	one 12-volt	one 12-volt	one 12-volt
Clutch or power take-off	Friction clutch	Disconnect between engine and converter	Friction clutch
Transmission: number chain wheel teeth number engine pinion teeth	161 17	161 28	161 17

Power train

Transmission

Quadruple roller chain enclosed in oil tight chain case with integral chain lubrication pump for oil stream lubrication; oil flow indicator switch.

Machinery gear train

"Full Function" design; two-directional power available to all operating shafts; shafts mounted on anti-friction bearings in precision bored machinery side housings. All load hoisting/lowering, swing and boom hoist functions completely independent of one another. Standard travel is independent of swing and allows all functions to be completely independent of each other. Components such as gears, pinions, chain wheels, brake drums and clutch spiders are involute splined to shafts. Drum gear/clutch drum assemblies are bolted together and mounted on shafts on anti-friction bearings. Machine-cut teeth on drum gears, pinions, spur gears and chain wheel.

Reduction shaft - Two-piece shaft, mounted in side housings on anti-friction bearings, joined by involute splined coupling.

Drive pinions - Two heat treated with machine-cut teeth, involute splined to shaft. Pinions mounted on shaft outside of machinery side housings.

Principal operating functions

Control system

Speed-o-Matic power hydraulic control system requiring no bleeding. Variable operating pressure transmitted to all two-shoe clutch cylinders as required. System includes constant displacement, engine-driven, vane-type hydraulic pump to provide flow of oil; accumulator to maintain system operating pressure, unloader valve to control pressure in accumulator, relief valve to limit maximum pressure buildup in system, full-flow filter with 40 micron disposable filter element, and variable pressure control valves to control clutches and other operating cylinders.

Load hoisting and lowering

Wire rope drum gear train (front and rear main, and optional third, operating drums) powered by chain transmission from engine. Speed-o-Matic power hydraulic clutch control of all load hoisting/lowering functions.

Front and rear main operating drums

Two-piece, removable, grooved laggings bolted to brake drums which are splined to shafts. Extended length shafts permit installation of optional power load lowering clutches.

Lifting crane, clamshell or magnet operation: 15-1/4" (.39 m) front and rear drum laggings grooved for 3/4" (19 mm) rope.

Dragline operation: 15-1/4" (.39 m) rear drum lagging grooved for 3/4" (19 mm) rope and 15-1/4" (.39 m) front drum lagging grooved for 7/8" (22 mm) rope.

Third operating drum: *Optional*; mounts forward of front main operating drum. Two-piece 9" (.23 m) root diameter lagging grooved for 5/8" (16 mm) rope bolted to brake drum which is splined to shaft.

Note: Third drum limitations:

Dragline application: Lagging must be removed from third drum. To prevent interference of inhaul rope with third drum brake enclosure it is necessary to use 10' (3.05 m) longer inhaul rope than normal to leave minimum of four wraps of rope at anchor end of drum.

Lifting crane application: To prevent interference of hoist line with third drum brake enclosure, quantity of line on front drum must be limited in certain cases. Four parts of 5/8" (16 mm) hoist line on 13-1/4" (.34 m) lagging may be used with booms up to 55' (16.76 m) in length at all radii. For longer boom lengths, operation is limited to certain radii and requires special investigation.

Drum clutches

Speed-o-Matic power hydraulic two-shoe clutches; internal expanding, lined shoes. Clutch spiders splined to shafts; clutch drums bolted to drum spur gears and mounted on shafts on anti-friction bearings.

Load hoist clutches

Rear main operating drum - 20" (.51 m) diameter, 5" (.13 m) face width clutch drum; effective lining area 212 sq. in. (1 368 cm²).

Front main operating drum - 20" (.51 m) diameter, 5" (.13 m) face width hoist/inhaul clutch drum; effective lining area 212 sq. in. (1 368 cm²).

Optional; third operating drum - 17-1/4" (.44 m) diameter, 4" (101.60 mm) face width; effective lining area 118 sq. in. (761 cm²).

Load lowering clutches - *Optional*; Speed-o-Matic power hydraulic two-shoe clutches. Front and/or rear main operating drums - 20" (.51 m) diameter, 5" (.13 m) face width; effective lining area 212 sq. in. (1 368 cm²).

Drum brakes

External contracting band; brake drum involute splined to shaft. Mechanically foot pedal operated; foot pedal equipped with latch to permit locking brake in applied position.

Front and rear main drums - Brakes 27" (.69 m) diameter, 4-1/2" (.11 m) face width; effective lining area 301 sq. in. (1 942 cm²).

Optional third drum - Brake 18" (.46 m) diameter, 3-1/2" (88.90 mm) face width; effective lining area 136 sq. in. (877 cm²).

Drum rotation indicators

Standard for front and rear main operating drums. Two rotating dials mounted on control stand; dials actuated by flexible shaft drive from front or rear main operating drum.

Swing system

Standard: swing independent of travel; permits simultaneous swing and travel with separate set of shafts and clutches. Spur gear driven; single bevel gears (enclosed and running in oil) on horizontal swing shaft and vertical swing drive shaft. Swing pinion involute splined to vertical swing shaft, meshes with internal teeth of turntable bearing.

Swing clutches

Speed-o-Matic power hydraulic two-shoe clutches. Standard: 20" (.51 m) diameter, 6-1/2" (.16 m) face width, lined shoes; effective lining area 260 sq. in. (1 678 cm²).

Swing brake - External contracting band; spring applied, power hydraulically released by operator controlled lever. Swing independent of travel; brake drum involute splined to swing brake shaft. Brake 14" (.36 m) diameter, 2-1/4" (57.15 mm) face width; effective lining area 74 sq. in. (477 cm²).

Swing lock - Mechanically controlled double pawl engages with internal teeth of turntable bearing.

Swing speed - 4.0 rpm.

■ Boom/hoist lowering system

Independent, spur gear driven. Precision control boom hoisting and lowering through Speed-o-Matic power hydraulic two-shoe clutches.

■ Boomhoist drum

Grooved, 9" (.23 m) root diameter, wire rope drum involute splined to shaft.

■ Boomhoist drum locking pawl

Operator controlled, mechanically applied and released. Locking pawl engages ratchet teeth on flange of boomhoist drum to hold boom at fixed operating radius.

■ Boomhoist/lowering clutches

Speed-o-Matic power hydraulic two-shoe clutches; one each for boom hoisting and lowering. 20" (.51 m) diameter, 5" (.13 m) face width; effective lining area 212 sq. in. (1 368 cm²).

■ Boomhoist brake

One external contracting band brake; automatically spring applied, hydraulically released. Brake 22" (.56 m) diameter, 3" (76.20 mm) face width; effective lining area 174 sq. in. (1 123 cm²).

Boomhoist limiting device - Provided to restrict hoisting boom beyond recommended minimum radius; located on exterior right hand side of operator's cab.

■ Electrical system

Battery; 12-volt, 225 ampere hour. *Optional*; battery lighting system including two adjustable floodlights located on cab front roof, three interior cab lights, and automotive type wiring. *Optional*; additional 60 watt floodlight mounted on boom (three maximum quantity recommended).

■ Operator's cab

Full-vision, equipped with safety glass panels. Operator's door is hinged; right window slides open. Standard equipment includes dry chemical fire extinguisher, electric windshield wiper, cab heater, defroster fan, machinery guards, bubble-type level and hand grab rails.

■ Machinery cab

Machinery access provided by hinged doors on sides and right front corner; rear doors roll on ball bearing rollers. Cab equipped with roof-top access ladder, electric warning horn, machinery guards, hand grab rails and skid-resistant finish on roof.

■ Catwalks

Optional; for operator's side, or both sides of standard cab; include overhead hand grab rail on sides of cab.

■ Gantry

Standard; retractable high gantry mounted on revolving upperstructure frame to rear of machinery side housing to support boom suspension system. Can be raised or lowered by the boomhoist clutches. Also serves to raise counterweight into position or lower it to the ground.

■ Gantry bail

Pinned to retractable high gantry bail links; serves as connection between gantry and boomhoist wire rope reeving. Contains three or four sheaves mounted on bronze bushings for 8 or 10-part boomhoist wire rope reeving.

■ Counterweight

Removable and held in position by "T" bolts.

Counterweight "A" - 12,000 lbs. (5 534 kg)

Counterweight "AB" - 25,600 lbs. (11 612 kg)

Note: Refer to capacity charts for counterweight requirements.

Counterweight removal device - Power raising and lowering with boomhoist clutches.

Crane booms and jibs

■ Angle boom

Two-piece basic boom 40' (12.19 m) long with open throat top section; 42" (1.07 m) wide, 42" (1.07 m) deep at connections. Alloy steel main chord angles; base section 4" x 4" x 5/16" (101.6 x 101.6 x 7.94 mm); top section and extensions - 4" x 4" x 5/16" (101.6 x 101.6 x 7.94 mm).

Base section - 20' (6.10 m) long; boom feet 1-5/8" (41.33 mm) wide on 38" (.97 m) centers.

Boom extensions - Available in 10' (3.05 m), 20' (6.10 m) and 30' (9.14 m) lengths with appropriate length pendants.

Boom connections - pin connections.

Boom top section - Open throat; 20' (6.10 m) long.

Boompont machinery - Heat treated head sheaves, mounted on anti-friction bearings on boompeak shaft. Three 18" (.46 m) root diameter head sheaves.

■ Tube jib

Two-piece 20' (6.10 m) long; 30" (.76 m) wide, 24" (.61 m) deep at connections. Alloy steel tubular chords 1-1/2" (38.1 mm) diameter.

Base section - 10' (3.05 m) long;

Jib extensions - Available in 10' (3.05 m) lengths with appropriate length pendants.

Jib connections - In-line, tapered pin connections.

Jib tip section - 10' (3.05 m) long; single peak sheave 15-1/4" (.39 m) root diameter mounted on anti-friction bearings.

■ Jib mast

10' (3.05 m) high, mounted on jib base section. Two deflector sheaves mounted within mast to guide whipline; mounted on anti-friction bearings. Two equalizer sheaves mounted on top of mast - one for jib frontstay line, one for jib backstay line.

Jib mast stops - Telescoping type.

Jib staylines - Front and rear staylines vary in length depending on degree of jib offset from boom centerline; backstay lines attached at bottom end of boom top section.

■ **Boompoint sheave guards**

Standard: rigid, round steel rod bolted over top of sheaves and rigid, round steel rods between sheaves. *Optional*; roller-type guards mounted on anti-friction bearings, mounted on brackets beneath sheaves.

Note: Roller-type guards do not permit use of center sheave unless center guard is removed.

■ **Boom stops**

Standard - Dual tubular boom stops with spring loaded bumper ends; fixed horizontal on cab roof.

Optional - Dual tubular lever type backstops with spring loaded bumper ends.

■ **Boomhoist bridle**

Serves as connection between pendants and boomhoist reeving. Bridle contains four or five 9-1/2" (.24 m) root diameter sheaves, for 8 or 10 part boomhoist reeving.

Deflector rollers - Heat treated, tubular steel rollers mounted on anti-friction bearings. Deflect main drum load hoist line over top side of boom; also required when third drum load hoist line passes over top side of boom.

Basic boom - One roller standard on top section.

Recommended: *Optional rollers:* one per boom extension.

Auxiliary equipment

■ **Boom angle indicator**

Standard; pendulum type, mounted on operator's side of boom base section.

■ **Fairlead**

Optional; full revolving type with barrel, sheaves and guide rollers mounted on anti-friction bearings.

■ **Tagline**

Optional; Rud-o-Matic model 648; spring wound drum-type.

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