

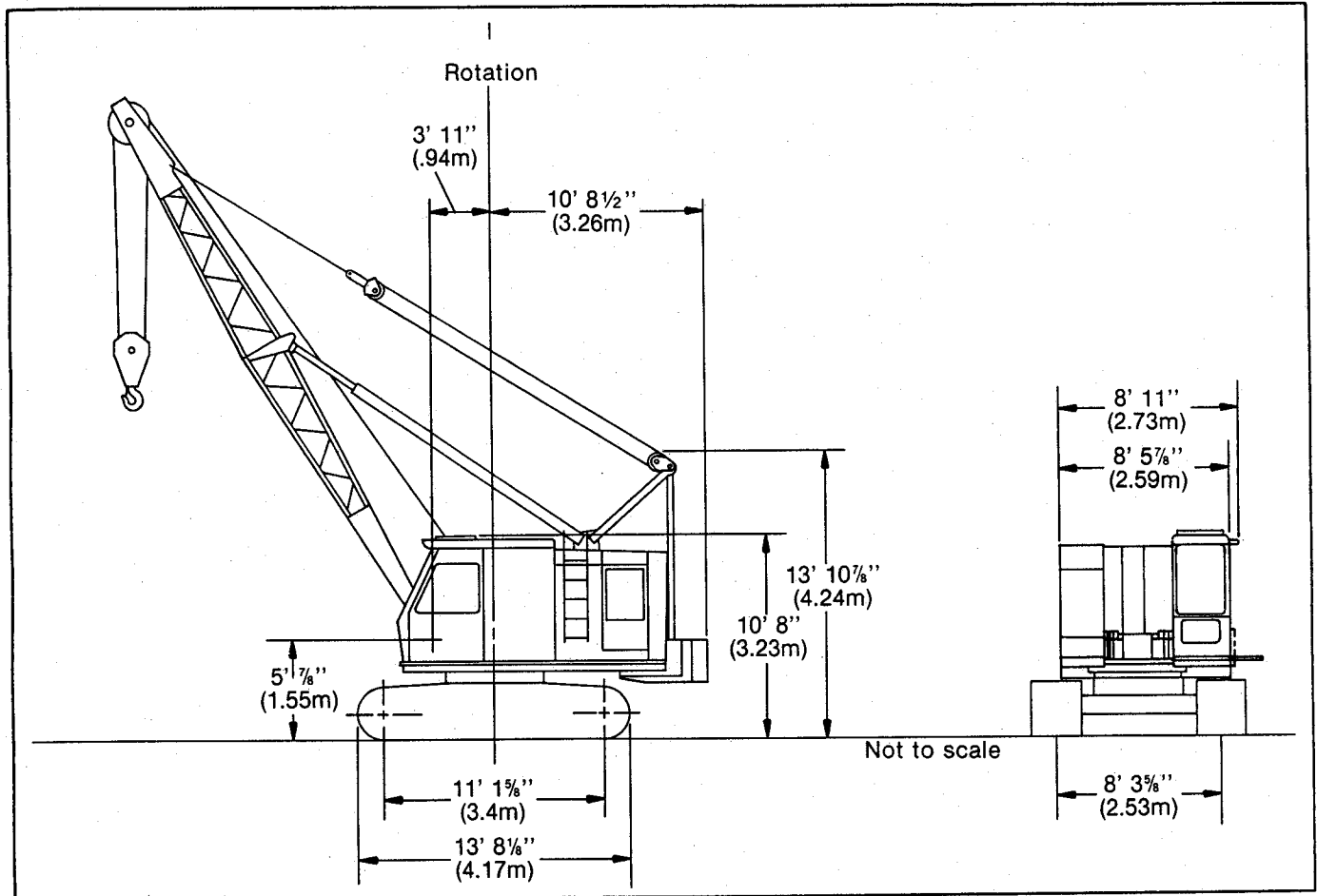
LS-78C Specifications

27.5 ton (25 metric ton)

GENERAL INFORMATION ONLY

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Wire rope crawler crane/excavator



General dimensions	Feet	meters
Basic boom length	—	—
—26° (0.66 m) angle boom	30' 0"	9.14
—34° (0.86 m) angle boom	40' 0"	12.19
Ground clearance under cwt. "A"	3' 2-3/4"	0.98
Ground clearance under cwt. "AB"	2' 10-3/4"	0.88
Minimum ground clearance	12"	0.32
Overall cab width	8' 5-7/8"	2.59

General dimensions	Feet	meters
Tailswing of counterweight "A"	10' 2-1/2"	3.11
Tailswing of counterweight "AB"	10' 8-1/2"	3.25
Overall width with 30" (0.75 m) shoes	10' 9-5/8"	3.29
Overall width with 36" (0.95 m) shoes	11' 2-5/8"	3.45

Machine working weights – approximate

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Based on standard machine including ISUZU 6SAI Diesel engine with friction clutch, turntable bearing, independent boom hoist with lowering clutch, independent swing/travel, single speed travel, swing brake, retractable high gantry plus the following components:	26" boom		34" boom	
	Cwt. "A"	Cwt. "AB"	Cwt. "A"	Cwt. "AB"
	Pounds	Pounds	Pounds	Pounds
Lifting crane - includes power load lowering clutch on front drum, necessary drum laggings, 12-part boomhoist reeving, 30" (0.75 m) wide track shoes, and one of the following booms with the necessary main load hoist wire rope. Basic Boom	53,134	60,588	54,504	61,949
Dragline - includes necessary drum laggings, hoist and inhaul wire ropes, fairlead, 30" (0.75 m) wide track shoes and one of the following booms: Basic boom:	53,434	-	54,804	-
Clamshell - includes necessary drum laggings, holding and closing wire ropes, tagline, 30" (0.75 m) wide track shoes and one of the following booms: Basic boom	53,459	-	54,829	-

Weight Deductions for transporting – approximate

Deduct for the removal of the following components:	Pounds
Counterweight "A"	7,850
Counterweight "AB"	15,300
Basic 30' (26") angle boom Tip (includes head machinery)	1,285
Base (1)	1,845
Basic 40' (34") angle boom Tip (includes head machinery)	1,905
Base (1)	2,655
Base (1) - Includes: boom backstops, bridle frame, boom pendants and necessary wire ropes.	

Ground contact area

Note: To determine ground bearing pressure, divide total weight of machine as shown above by the respective ground contact area.

Track shoes		Ground contact area	
inches	meters	in ²	cm ²
30	0.76	8,660	55,870
36	0.91	10,430	67,310

LS-78C Performance Specifications

GENERAL INFORMATION ONLY

Wire rope and rope drum data

Main load hoist wire rope length - using 3/4" (19 mm) diameter wire rope

Parts of line	Boom lengths															
	30' (9.14 m)		40' (12.19m)		50' (15.24m)		60' (18.29m)		70' (21.34m)		80' (24.38m)		90' (27.43m)		100' (30.48m)	
	ft.	meters	ft.	meters	ft.	meters	ft.	meters	ft.	meters	ft.	meters	ft.	meters	ft.	meters
1	75	22.86	95	28.96	115	35.05	135	41.15	155	47.24	175	53.34	195	59.44	215	65.53
2	110	33.53	140	42.67	170	51.82	200	60.96	230	70.10	260	79.25	290	88.39	320	97.54
3	145	44.20	185	56.39	225	68.58	265	80.77	305	92.96	345	105.16	385	117.35	425	129.54
4	180	54.86	230	70.10	280	85.34	330	100.58	380	115.82	430	131.06	480	146.30	530	161.54
5	215	65.53	275	83.82	335	102.11	395	120.40	455	138.68	515	156.97	575	175.26	635	193.55
6	250	76.20	320	97.54	390	118.87	460	140.21	530	161.54	600	182.88	670	204.22	740	225.55
7	285	86.87	365	111.25	445	135.64	525	160.02	605	184.40	685	208.79				
8	320	97.54	410	124.97	500	152.40	590	179.83	680	207.96						

Dragline or clamshell wire rope lengths - using 3/4" (19mm) diameter wire rope

Attachments	Function	Parts of line	Boom Lengths					
			30' (9.14m)		40' (12.19m)		50' (15.24m)	
			Feet	meters	Feet	meters	Feet	meters
Dragline	Hoist Inhaul	1	75	22.86	95	28.96	115	35.05
		1	40	12.19	52	15.35	64	19.51
Clamshell	Holding Closing	1	85	25.91	105	32.00	125	38.10
		1	120	36.58	140	42.67	160	48.77

Drum wire rope capacities:

Wire rope layer	Front or rear drum - 14" (0.36 m) root diameter grooved lagging, 3/4" (19 mm) wire rope				Third drum - 11" (0.28 m) root diameter grooved lagging, 5/8" (16 mm) wire rope				Boomhoist drum - 9-3/4" (0.245 m) root diameter smooth lagging, 9/16" (14 mm) wire rope			
	Rope per layer		Total wire rope		Rope per layer		Total wire rope		Rope per layer		Total wire rope	
	Feet	meters	Feet	meters	Feet	meters	Feet	meters	Feet	meters	Feet	meters
1	61	18.8	61	18.8	51	15.8	51	15.8	24	7.3	24	7.3
2	68	20.8	130	39.6	57	17.5	109	33.3	26	8.1	50	15.4
3	74	22.7	204	62.3	63	19.3	172	52.5	29	8.9	79	24.3
4	80	24.6	285	86.9					31	9.7	111	34.0
5									34	10.5	146	44.5
6									37	11.3	193	55.8
7									39	12.1	227	67.9
8									42	12.9	265	80.8

LS-78C Load Hoisting Performance

Available Line speed and line pull - based on ISUZU 6SA1 with friction clutch, at 1600 rpm full load speed.

Line pulls are not based on wire rope strength. See wire rope chart for maximum permissible single part of line working loads.

Rope Layer	14" (0.36 m) Front Drum				14" (0.36 m) Rear Drum			
	fpm	m/min	pounds	kilograms	fpm	m/min	pounds	kilograms
1	196	59.8	18,450	8369	196	59.8	17,897	8118
2	216	65.9	16,753	7509	216	65.9	16,250	7371
3	236	72.0	15,342	6959	236	72.0	14,881	6750
4	256	78.0	14,149	6418	256	78.0	13,726	6226

Rope Layer	11" (0.28 m) Third Drum			
	fpm	m/min	pounds	kilograms
1	164	49.9	20,855	9460
2	181	55.2	18,821	8537
3	199	60.6	17,149	7779

Wire rope: size, type and working strength

	Size: diameter		Type	Maximum Permissible Load	
	inches	mm		pounds	kilograms
Boom hoist	9/16	14	N	9,600	4354
Main load hoist	3/4	19	N	16,800	7620
Dragline inhaul	3/4	19	M	16,800	7620
Dragline hoist	3/4	19	N	16,800	7620
Clamshell Holding (hoist)	3/4	19	N	16,800	7620
Clamshell closing	3/4	19	N	16,800	7620
Third drum	5/8	16	N	11,700	5307
Boom pendants - 26" angle boom	1	25	N	29,500	13381
Boom pendants - 34" angle boom	1-1/8	29	N	31,700	16829

Wire rope: types available

- Type "M" - 6 X 25 (6 X 19 class), filler wire, extra improved plow steel, preformed, independent wire rope center, right lay, lang lay
- Type "N" - 6 X 25 (6 X 19 class), filler wire, extra improved plow steel, preformed, independent wire rope center, right lay, regular lay

Specifications

Crawler lower

Lower frame

All welded precision machined; line bored 8' 4" gauge X 13' 8" length.

Turntable bearing

Inner race with internal swing gear bolted to lower frame. Outer race bolted to upper frame.

Crawler side frames

All welded - side frames welded integral with lower frame cross axles.

Track drive sprockets and idler wheels

Cast steel, heat treated; mounted on bronze brushings.

Track rollers

Seven per side; tractor-type, oil filled for lifetime lubrication.

Track carrier rollers

Two heat treated, tractor-type oil filled rollers mounted on top of each crawler side frame.

Tracks

Heat treated, self cleaning, multiple hinged track shoes joined by one piece full floating pins: 39 shoes per side frame. Standard shoes 30" wide; optional shoes 36" wide.

Track chain adjustment - Track drive chain adjusted by positioning axle of chain drive sprocket with jack screw and shims. Track adjusted with threaded adjusting bolt attached to track idler (wheel) axle.

Independent travel

Travel independent of swing; permits simultaneous swing and travel with separate set of shafts and clutches. Horizontal traction shaft powered through bevel gear drive enclosed in oil. Travel / steer jaw clutch splined to shaft; all shaft components mounted within lower frame. Sprockets on outer ends of shaft chain drive the track drive sprockets inside rear of each crawler side frame.

Travel speed - Standard single speed travel 1.24 mph (2.0 km / h)

Gradeability - 30%

Steering - Power hydraulic. Travel/steer jaw clutches hydraulically engaged, spring released. Spring applied, hydraulically released travel/steer/digging/parking band brakes simultaneously released by interconnecting mechanical linkage to jaw clutches. Brakes automatically set when steer lever is in neutral. Two 20" diameter by 4" wide brake bands. Steer brakes also serve as parking/digging brakes.

Revolving upperstructure

Frame

All-welded, precision machined unit; machinery side housing bolted to upper frame.

Fuel tank

65 gallon (246 L) capacity

Engine Specifications	Isuzu 6SA1 with friction clutch
Number of cylinders	6
Bore and stroke - inch - (mm)	4 - 17 / 32 X 5 - 5 / 16 (115 X 135)
Piston displacement - cubic inches - (cm ²)	513 (8 413)
Engine rpm. at full load speed	1600
Net engine horsepower at full load speed, (H - P)	100 (74600W)
Peak torque - foot pounds - (joules)	375 510
Peak torque - rpm	1,200
Electrical system	24 volt
Batteries	2 - 12 volt
Type of clutch or take-off	Single plate, dry

Power train

Transmission

Triple roller chain enclosed in oil-tight chain case with integral sump.

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. Load hoisting / lowering, swing and boomhoist functions completely independent of each other and all other functions.

Principal operating functions

Control system

Speed-o-Matic® power hydraulic control system, a variable pressure system requiring no bleeding. Operating pressure is transmitted to all two-shoe clutch cylinders, and other hydraulic clutches as required. System includes a constant displacement, engine driven, vane-type hydraulic pump to provide constant flow of oil. An accumulator is used to maintain system operating pressure, unloader valve to control pressure in accumulator, relief valve to control excessive pressure build-up in system, and 40 micron full flow disposable filter element.

Independent travel

Travel independent of all other functions standard; spur gear driven single speed travel.

Clutches - One clutch gear each for forward and reverse. Clutch drum 18" diameter, 4½" wide. Swept area is 254 sq. inches.

Load hoisting and lowering

Independent load hoisting and lowering. **Standard** - hoisting controlled by Speed-o-Matic®, power hydraulic two-shoe clutch and lowering controlled by foot controlled brake. **Optional** - load lowering controlled by Speed-o-Matic®, power hydraulic two-shoe clutch in addition to foot controlled brake.

Load hoist drums

Front and rear main operating drums; two piece, removable laggings bolted to brake drums which are splined to drum shafts. Lift crane, dragline and clamshell laggings are grooved, 14" root diameter.

Third operating drum - Optional mounts forward of front main operating drum. Two piece 11" root diameter drum lagging bolted to brake drum; brake drum splined to shaft.

Note for dragline operation; To prevent interference with inhaul rope, it is necessary to remove third drum rope and lagging.

Drum clutches

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

Load hoist clutches - Front and rear main drums - clutch drums 18" diameter, 4½" face width; swept area is 254 square inches.

Load lowering clutches - Optional; available on front and rear main operating drums. Clutch drums 18" diameter, 4½" face width. Swept area is 254 square inches.

Drum brakes

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

Front and rear main drums - Brake drum 23" diameter, 3½" face width; swept area is 271 square inches.

Optional third drum - Brake drum 18" diameter 3½" face width; swept area is 198 square inches.

Drum rotation indicators

Optional for front and rear drums. Audible-type indicators.

Swing system

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

Swing clutches

Speed-o-Matic® power hydraulic two-shoe lined type clutches. Clutch drums 18" diameter 4½" face width. Swept area is 254 square inches.

Swing brake - External contracting band; spring applied, hydraulically released by operator controlled lever. Brake drum 11" diameter, 2" face width.

Swing lock - Mechanically controlled pawl engages with internal teeth of swing (ring) gear.

Swing speed - 5 rpm.

GENERAL INFORMATION ONLY

Boomhoist / lowering system

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

Boomhoist drum

Single smooth 9" root diameter lagging splined to shaft.

Boomhoist drum locking pawl

Operator controlled spring applied and mechanically released.

Boomhoist / lowering clutches

One each for boom hoisting and boom lowering; clutch drum 18" diameter, 4½" face width.

Boomhoist brake

External contracting band brake; automatic, spring applied, hydraulically released.

Boomhoist limiting device - When properly adjusted, device limits booming up beyond predetermined operating radius.

Electrical system

24 volt negative ground system; includes two 12-volt batteries. Std. battery lighting system includes two sealed beam automotive type adjustable flood lights on cab roof and one interior cab light. Optional : additional floodlights mounted on boom.

Note: Three flood lights are the maximum quantity recommended.

Machinery cab

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

Operator's cab

Full vision operator's compartment equipped with safety glass panels. Door is hinged, front window rolls to overhead storage on ball bearing rollers, right side window is fixed, swing up window in cab roof. Standard equipment includes dry chemical fire extinguisher, machinery guards, bubble-type level, hand grab rails, electric windshield wiper, cab heater, defroster fan, sound reduction material in cab.

Catwalks

Standard along operator's side, optional on right side of cab. Fabricated steel; hinged to permit folding vertically along cab sides to reduce overall width of machine for transporting. Includes overhead or side-mounted grab rails.

Gantry

Standard retractable high gantry mounted at rear of cab may be raised or lowered under power. May also be used for power raising or lowering of counterweight.

Gantry bail

Pinned to retractable high gantry. Five sheaves are provided for 12-part boomhoist wire rope reeving. Sheaves mounted on anti-friction bearings. Sealed for lifetime lubrication.

Counterweight

Removable, held in place by "T" bolts. Power raising and lowering by standard retractable high gantry - controlled by boom hoist or boom lowering system.

"A" (7,850 lb.) one piece counterweight standard for lifting crane, clamshell, dragline or magnet.

"AB" (15,300 lb.) - two-piece counterweight, *Optional*; for lifting crane application.

Booms

26" (0.66 m) angle boom

Two-piece basic boom 30' long, 28" deep at connections. Alloy steel main chord angles 2-1/2" X 2-1/2" X 5/16" in base and top sections, 2-1/2" X 2-1/2" X 1/4" in extensions.

Base section - 17' long; boom feet 1-5/8" thick on 35" centers.

Boom extensions - 10' and 20' lengths with appropriate length pendants.

Boom connections - Pin connections.

Top section - Open throat, 13' long.

Boompoint machinery - 18" root diameter head sheaves mounted on anti-friction bearings. Three for lift crane, two for dragline or clamshell. *Optional* - single wide flared sheave for dragline.

34" (0.86 m) angle boom

Two piece basic boom 40' long; 34" wide, 34" deep at connections. Alloy steel main chord angles 3½" X 3½" X 3/8" in base and extension chords, 3½" X 3½" X 5/16" in top section.

Base section - 20' long; boom feet 1-5/8" thick on 35" centers.

Boom extensions - Available in 10' and 20' lengths with appropriate length pendants.

Boom connections - Pin connections.

Top section - Open throat 20' long.

Boompoint machinery - 18" root diameter head sheaves mounted on anti-friction bearings. Three for lift crane, two for dragline or clamshell. *Optional* - single wide flared sheave for dragline.

Items applicable to both angle booms

Boom stops

Dual, tubular telescopic type with spring loaded bumper ends.

Boomhoist bridle

Serves as connection between boom pendants and boomhoist reeving. Sheaves 8-7/16 root diameter mounted on anti-friction bearings, sealed for lifetime lubrication.

Boompoin sheave guards - Standard; rigid, round steel rod bolted over top of 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.

Deflector rollers - Required when third drum wire rope passes over crane boompoin. Recommended for long booms and for short booms when load is being handled on front drum wire rope. Heat treated, tubular steel rollers; mounted on anti-friction bearings. One roller standard on top of base section of either boom. Recommended optional rollers: one per boom extension.

Auxiliary equipment

Boom angle indicator

Standard with either angle boom; 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

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

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Link-Belt Construction Equipment Company Lexington, Kentucky