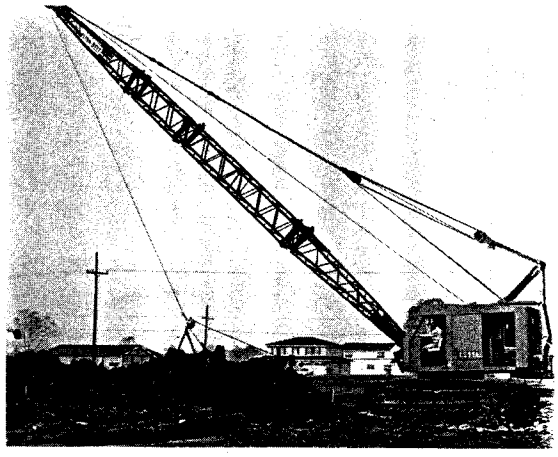
FLYSHEET LS-98A

CRAWLER MOUNTED CRANE

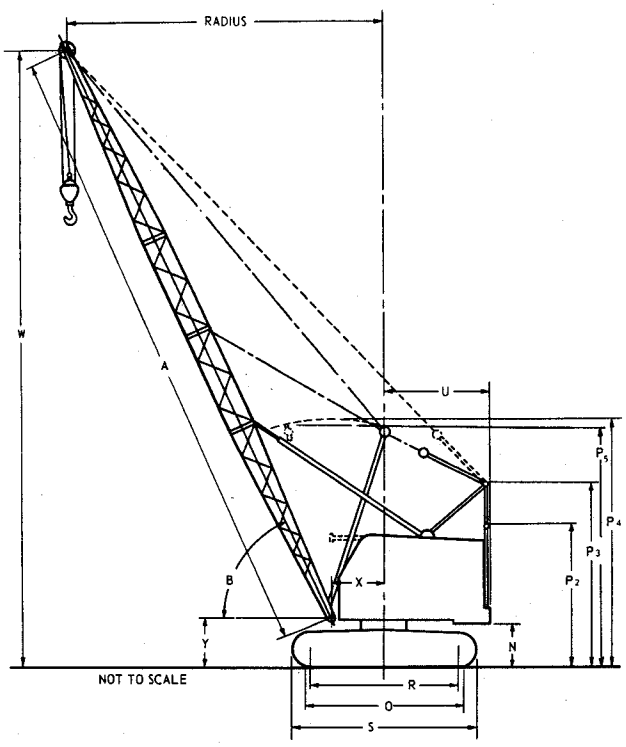
GENERAL INFORMATION ONLY

Dimensions
Working ranges
Lifting capacities
Specifications



DIMENSIONS AND WORKING RANGES

CRAWLER – 9'6" Gauge, 15' 1" Long Overall



Basic boom length	A	40' 0"
Boom angle	B	
Height of boom hinge pin		
Angle boom	Y	5' 5"
"Hi-Lite" boom	Y	4' 0"
Radius of boom hinge pin		
Angle boom	X	3' 2"
"Hi-Lite" boom	X	4' 1"
Overall height, retractable gantry lowered	P2	11' 7"
Overall height, retractable gantry raised	P3	14' 11"
Overall height, boom mast vertical	P4	24' 11"
Overall height, boom mast, with 40' boom horizontal	P5	12' 9"
Tailswing of counterweight "A"	U	11' 4"
Tailswing of counterweight "AB"	U	11' 9"
Ground clearance under counterweight "A"	N	3' 10"
Ground clearance under counterweight "AB"	N	3' 5"
Crawler ground bearing length	O	13' 4"
Center to center of track drive sprocket and idler roller	R	12' 3"
Overall crawler length	S	15' 1"
Overall width		
with 24" wide track shoes		11' 6"
with 30" wide track shoes		12' 0"
with 36" wide track shoes		12' 6"
with 42" wide track shoes		13' 0"
Overall width less tracks		10' 8"
Overall cab width		8' 0"
Minimum ground clearance		1' 3"

Miscellaneous:
Swing speed . . . . . 4 r.p.m.
Travel speed . . . . . Low .79 High 1.78 m.p.h.

Approximate Working Weights with retractable gantry, 24" wide track shoes, but no bucket, hook block or tagline winder:
Clamshell with 40' angle boom and ctwt. "A" . . . . . 63,785 lbs.
Dragline with 40' angle boom and ctwt. "A" . . . . . 64,365 lbs.
Lifting Crane with 40' angle boom and ctwt. "AB" . . . . 71,785 lbs.
Lifting Crane with 40' "Hi-Lite" boom and ctwt. "AB" . . . . . 73,630 lbs.

DRUM ROPE CAPACITIES LINE SPEEDS AND LINE PULL

		FRONT DRUM						REAR DRUM						BOOMHOIST DRUM						
		Lagging		Line Pull and Speed		Drum Capacities		Lagging		Line Pull and Speed		Drum Capacities		Lagging		Line Pull and Speed		Drum Capacities		
Attachment	Wire Rope Dia.	Root Dia.	Groove	F.P.M. 1st Layer	Pull, lbs. 1st Layer	1st Layer Cap.	Total Cap.	Root Dia.	Groove	F.P.M. 1st Layer	Pull, lbs. 1st Layer	1st Layer Cap.	Total Cap.	Root Dia.	Groove	F.P.M. 1st Layer	Pull, lbs. 1st Layer	1st Layer Cap.	Total Cap.	Wire Rope Dia.
Crane	5/8"	13-1/4"	Smooth	145		66'	769'	13-1/4"	Smooth	145	22,500	66'	769'	9"	5/8" dia.	120	27,100	22'	342'	5/8"
	3/4"	13-1/4"	Smooth	146	23,100	54'	481'	13-1/4"	Smooth	146	22,400	54'	481'							
Clamshell	5/8"	15-1/4"	3/4" dia.	166	20,300	57'	495'	15-1/4"	3/4" dia.	166	19,700	57'	495'							
	3/4"	15-1/4"	3/4" dia.	167	20,200	58'	451'	15-1/4"	3/4" dia.	167	19,600	58'	451'							
	7/8"	15-1/4"	7/8" dia.	169	19,300	50'	304'													
														THIRD DRUM						
Dragline	3/4"	13-1/4"	7/8" dia.	146	23,100	43'	439'	15-1/4"	3/4" dia.	167	19,600	58'	451'	9" (std.)	5/8" dia.	120	10,000	35.2'	297.1'	5/8"
	7/8"	13-1/4"	7/8" dia.	148	22,800	44'	343'							11"	5/8" dia.	145	8,200	42.5'	208.5'	5/8"

Front drum is under-winding; rear drum is over-winding; third drum is under-winding. Line pull and speed are based on engine full load speed. For combination crane-clamshell or crane-dragline, the rear drum is furnished with 15-1/4" diameter lagging. Only the smooth laggings are interchangeable. On dragline operation, you must remove all rope from the third drum to prevent interference of dragline inhaul rope with third drum brake. On lifting crane (front drum), to prevent interference of hoist line with third drum brake enclosure, quantity of line on front drum must be limited in certain cases.

LS-98A CAPACITIES WITH ANGLE BOOM

PCSA Class 10-101
Refer to all notes on page 3

Capacities are based on machine equipped with retractable gantry in fully raised position.

BOOM					
Length	Radius	Angle	Point Height W	Ctwt. "A"	Ctwt. "AB"
40'	10'	80°	44'11"	62,300	80,000
	11'	79°	44' 8"	52,080	66,110
	12'	77°	44' 6"	44,680	56,780
	13'	76°	44' 3"	39,070	49,700
	14'	74°	43'10"	34,680	44,160
	15'	73°	43' 8"	31,140	39,700
	20'	65°	41'10"	20,410	26,160
	25'	57°	39' 1"	14,980	19,310
	30'	48°	35' 2"	11,700	15,170
	35'	37°	29'10"	9,500	12,400
	40'	23°	21' 2"	7,930	10,410
50'	12'	80°	54' 9"	44,550	56,650
	13'	79°	54' 6"	38,920	49,550
	14'	78°	54' 4"	34,500	43,990
	15'	76°	54' 1"	30,960	39,510
	20'	70°	52' 7"	20,190	25,940
	25'	64°	50' 6"	14,730	19,060
	30'	58°	47' 9"	11,440	14,910
	35'	50°	44' 1"	9,230	12,130
	40'	43°	39' 4"	7,650	10,130
	50'	21°	23' 1"	5,530	7,460
60'	14'	80°	64' 6"	34,340	43,830
	15'	79°	64' 4"	30,780	39,340
	20'	74°	63' 1"	19,970	25,720
	25'	69°	61' 5"	14,490	18,820
	30'	63°	59' 2"	11,190	14,660
	35'	58°	56' 4"	8,970	11,870
	40'	52°	52'11"	7,380	9,870
	50'	39°	43' 2"	5,250	7,190
	60'	19°	24' 9"	3,890	5,470
70'	20'	76°	73' 6"	19,760	25,510
	25'	72°	72' 0"	14,260	18,590
	30'	68°	70' 1"	10,940	14,410
	35'	63°	67'10"	8,710	11,610
	40'	58°	65' 0"	7,120	9,600
	50'	48°	57' 6"	4,980	6,920
	60'	36°	46' 3"	3,620	5,200
	70'	17°	26' 2"	2,660	4,000

BOOM					
Length	Radius	Angle	Point Height W	Ctwt. "A"	Ctwt. "AB"
80'	20'	78°	83' 9"	19,550	25,300
	25'	74°	82' 6"	14,030	18,360
	30'	70°	80'10"	10,690	14,160
	35'	67°	79' 0"	8,460	11,360
	40'	63°	76' 6"	6,860	9,340
	50'	54°	70' 5"	4,710	6,650
	60'	45°	61'10"	3,340	4,930
	70'	33°	49' 6"	2,390	3,730
	80'	16°	27'11"	1,680	2,840
90'	20'	79°	93'11"	19,340	25,090
	25'	76°	92'10"	13,800	18,130
	30'	73°	91' 5"	10,450	13,920
	35'	69°	89' 8"	8,210	11,100
	40'	66°	87' 7"	6,600	9,080
	50'	59°	82' 4"	4,450	6,380
	60'	51°	75' 3"	3,070	4,650
	70'	42°	65' 9"	2,110	3,450
	80'	31°	52' 4"	1,410	2,570
	90'	15°	29' 2"	860	1,880
100'	25'	77°	103' 1"	13,570	17,900
	30'	74°	101'10"	10,210	13,680
	35'	71°	100' 4"	7,960	10,850
	40'	68°	98' 6"	6,340	8,820
	50'	62°	93'10"	4,180	6,110
	60'	55°	87' 9"	2,800	4,380
	70'	48°	79'11"	1,840	3,180
	80'	40°	69' 6"	1,130	2,290
	90'	30°	55' 1"	590	1,610
	100'	14°	30' 6"	---	1,060

LS-98A CAPACITIES WITH TUBULAR "Hi-Lite" BOOM

PCSA Class 10-107
Refer to all notes on page 3

Capacities are based on machine equipped with retractable gantry in fully raised position.

BOOM					
Length	Radius	Angle	Point Height W	Ctwt. "A"	Ctwt. "AB"
40'	10'	82°	43' 7"	62,850	80,000*
	11'	80°	43' 5"	52,510	69,070
	12'	79°	43' 2"	45,020	59,300
	13'	77°	43' 0"	39,350	51,890
	14'	76°	42'10"	34,900	46,090
	15'	74°	42' 6"	31,320	41,420
	20'	67°	40' 8"	20,460	27,240
	25'	59°	38' 1"	14,960	20,060
	30'	50°	34' 6"	11,630	15,720
	35'	39°	29' 5"	9,390	12,810
	40'	26°	21' 7"	7,780	10,710
50'	12'	81°	53' 5"	45,070	59,040*
	13'	80°	53' 2"	39,380	51,920
	14'	79°	53' 0"	34,920	46,110
	15'	77°	52'10"	31,330	41,430
	20'	71°	51' 5"	20,440	27,230
	25'	65°	49' 5"	14,930	20,040
	30'	59°	46'10"	11,590	15,690
	35'	52°	43' 4"	9,360	12,780
	40'	44°	38'10"	7,750	10,680
	50'	23°	23'10"	5,590	7,870

BOOM					
Length	Radius	Angle	Point Height W	Ctwt. "A"	Ctwt. "AB"
60'	15'	80°	63' 0"	31,300	41,400
	20'	75°	61'10"	20,390	27,180
	25'	70°	60' 2'	14,870	19,970
	30'	64°	58' 1"	11,530	15,620
	35'	59°	55' 5"	9,290	12,710
	40'	53°	52' 1"	7,680	10,620
	50'	40°	42' 7"	5,530	7,810
	60'	21°	25'·8"	4,140	6,010
70'	15'	81°	73' 1"	31,250	41,350
	20'	77°	72' 2"	20,320	27,100
	25'	73°	70'10"	14,780	19,890
	30'	68°	69' 0"	11,440	15,540
	35'	64°	66'10"	9,200	12,620
	40'	59°	64' 1"	7,590	10,520
	50'	49°	56'20"	5,440	7,720
	60'	37°	46' 1"	4,060	5,930
	70'	20°	27' 7"	3,090	4,670

(Continued next page)

TUBULAR "HI-LITE" BOOM (Continued)

BOOM				Ctwt. "A"	Ctwt. "AB"
Length	Radius	Angle	Point Height W		
80'	20'	79°	82' 5"	20,240	27,020
	25'	75°	81' 2"	14,690	19,800
	30'	71°	79' 8"	11,340	15,440
	35'	67°	77'10"	9,100	12,520
	40'	63°	75' 6"	7,490	10,420
	50'	55°	69' 6"	5,340	7,620
	60'	46°	61' 2"	3,960	5,830
	70'	35°	49' 4"	3,000	4,580
	80'	18°	29' 2"	2,280	3,650
90'	20'	80°	92' 7"	20,150	26,930
	25'	77°	91' 6"	14,590	19,700
	30'	73°	90' 2"	11,240	15,330
	35'	70°	88' 6"	8,990	12,410
	40'	67°	86' 6"	7,380	10,310
	50'	59°	81' 5"	5,220	7,510
	60'	52°	74' 6"	3,850	5,730
	70'	43°	65' 4"	2,890	4,470
	80'	33°	52' 4"	2,180	3,550
	90'	17°	30'10"	1,630	2,830
100'	25'	78°	101'10"	14,490	19,600
	30'	75°	100' 7"	11,130	15,220
	35'	72°	99' 1"	8,880	12,300
	40'	69°	97' 4"	7,270	10,200
	50'	63°	92'10"	5,110	7,390
	60'	56°	86'11"	3,730	5,600
	70'	49°	79' 2"	2,770	4,350
	80'	41°	69' 1"	2,060	3,430
	90'	31°	55' 2"	1,520	2,730
	100'	16°	32' 4"	1,080	2,160
110'	25'	79°	112' 0"	14,380	19,490
	30'	76°	110'11"	11,010	15,110
	35'	74°	109' 7"	8,760	12,180
	40'	71°	108' 0"	7,150	10,080
	50'	65°	104' 0"	4,990	7,270
	60'	59°	98' 8"	3,600	5,480
	70'	53°	92' 1"	2,640	4,230
	80'	46°	83' 7"	1,940	3,310
	90'	39°	72' 8"	1,400	2,610
	100'	29°	57'10"	960	2,050
	110'	16°	33' 8"	610	1,590

BOOM				Ctwt. "A"	Ctwt. "AB"
Length	Radius	Angle	Point Height W		
120'	30'	78°	121' 2"	10,900	14,990
	35'	75°	120' 0"	8,640	12,060
	40'	73°	118' 6"	7,030	9,960
	50'	68°	114'11"	4,860	7,150
	60'	62°	110' 2"	3,480	5,350
	70'	57°	104' 4"	2,520	4,100
	80'	51°	96'11"	1,810	3,190
	90'	44°	87'10"	1,270	2,480
	100'	37°	76' 1"	840	
	110'	28°	60' 5"	---	1,470
	120'	15°	35' 0"	---	1,090
130'	30'	79°	131' 5"	10,780	14,880
	35'	76°	130' 4"	8,520	11,940
	40'	74°	128'11"	6,900	9,830
	50'	69°	125' 7"	4,730	7,020
	60'	65°	121' 5"	3,350	5,220
	70'	60°	116' 1"	2,390	3,970
	80'	54°	109' 6"	1,680	3,060
	90'	49°	101' 7"	1,140	2,350
	100'	43°	91' 8"	710	1,800
	110'	35°	79' 5"	---	1,340
	120'	27°	62'10"	---	970
	130'	14°	36' 4"	---	640

*These capacities are the maximum capacities and are based on factors other than the machine's tipping condition. (See Note 1 Lifting Crane.)

NOTES

Lifting Crane

1. For lifting 80,000 pounds with 3/4" rope, six parts of 3/4" type A hoist rope is required.
2. Capacities shown are in pounds, and unless indicated by an asterisk (*), are based on 75% of minimum tipping loads, with machine standing on firm level ground. Deduction must be made for weight of hook block, hook, sling, grapple, etc.
3. When using boom mast as a short boom, maximum lifting capacity of the mast is 14,000 pounds from 10' minimum radius to 20' maximum radius.
4. "Hi-Lite" boom mast with mid-point suspension pendants is required for all main boom lengths exceeding 100 feet, but may be used throughout the entire range of boom length. Mast backstops must be in place and operative.

Dragline, clamshell and magnet

1. Dragline capacities are equal to the crane capacities with counterweight "A", except limited to a maximum of 11,800 pounds.
2. Clamshell and magnet capacities are equal to 90% of the crane capacities with counterweight. "A", except limited to a maximum of 13,600 pounds.
3. All dragline, clamshell and magnet capacities are for ideal job conditions. The user must make allowances for rapid cycle operation, soft or uneven supporting surfaces, etc.
4. Dragline, clamshell and magnet capacities include weight of bucket or magnet plus load.
5. Boom length should not exceed 60 feet.

GENERAL INFORMATION ONLY

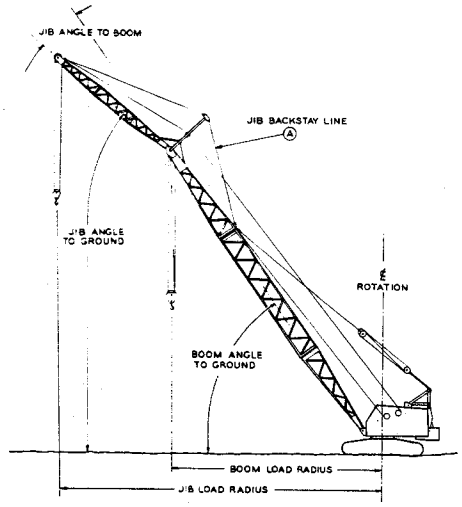
MAXIMUM BOOM-JIB MACHINE CAN LIFT OFF GROUND UNASSISTED

LIFT OFF GROUND	Counterweight "A"		Counterweight "AB"	
	Boom	Boom + Jib	Boom	Boom + Jib
Angle boom:				
Over ends	100′	80′ + 40′	100′	90′ + 40′
Over sides	100′	70′ + 40′	100′	80′ + 40′
"Hi-Lite" boom:				
Over ends	130′	90′ + 40′	130′	110′ + 40′
Over sides	110′	80′ + 40′	120′	100′ + 40′

LS-98A JIB CAPACITIES

Jib Angle To Ground	JIB LENGTH		
	20′	30′	40′
80°	12,000	10,000	8,000
65°	10,000	8,000	6,000
50°	8,000	6,000	4,000
35°	7,500	5,500	3,500
20°	7,500	5,500	3,500

1. Capacities shown are in pounds and are based on Link-Belt Speeder jibs. Jib cross-section: Angle, 22-3/4" wide by 18" deep (bolted). Tube, 25-1/4" wide by 19-1/4" deep (pin connected). Use jibs with a 10′ 0" high mast in the proper working position.
2. To determine jib angle to ground, deduct jib angle to boom from the boom angle to ground.
3. The jib backstay line (A) is anchored to the boom upper section.
4. The jib angle to boom must not exceed 30°.
5. Determining machine jib capacities:
   a. Add the length of boom plus length of jib used.
   b. Determine the jib load radius.
   c. Refer to the lifting crane capacity chart and select the boom length that corresponds to the total length of boom and jib in (A) and the radius in (B).
      (1) The jib capacity is equal to the lifting crane capacity unless restricted by the maximum jib capacities shown above.



   d. If the total length of boom and jib exceeds the longest boom length listed in the lifting chart, deduct 200 lbs. from the capacity shown for the longest boom length for the radius required in (B).
      (1) The jib capacity is the resulting figure unless restricted by the maximum jib capacities shown above.
6. Determine lifting crane capacities with jib on the boom:
   a. When operating off the main boompeak sheaves with a jib on the boom, the following reductions in machine lifting capacities must be made:
      (1) 20′ jib – 1,600 lbs.
      (2) 30′ jib – 1,900 lbs.
      (3) 40′ jib – 2,200 lbs.

GENERAL SPECIFICATIONS

CRAWLER MOUNTING

LOWER FRAME – All-welded, stress relieved, precision machined; line bored for travel shaft.

ROLLER PATH WITH INTEGRAL RING GEAR – Double-flanged, machined roller path. Swing pinion meshes with internal ring gear.

TRACTION SHAFT – Mounted in line bore in bronze bushings. Four-piece, joined with involute splined couplings; powered through bevel gears, enclosed in oil; sprockets on outer ends of shaft chain drive the track-chain sprocket in side frames; travel-steer jaw clutches splined to shaft. All shaft components are mounted within the lower frame. Outer ends of traction shaft supported in side frames.

POWER HYDRAULIC TRAVEL-STEER – For travel or steer, jaw clutches splined to traction shaft are power hydraulically engaged with jaws on brake drums, releasing the spring applied steer-digging brakes. Brake drums are splined to shaft. Jaw clutches and brakes are inter-connected so that brakes are not released until jaw clutches are preloaded or fully engaged.

SIDE FRAMES – Welded to cross axles. One piece track-chain sprocket mounted on bronze bushings. Chain driven from sprocket on traction shaft; one per side frame. Track drive sprocket lugs mesh with shoe lugs; track drive sprocket axle adjusted for chain take-up. Track idler roller mounted on bronze bushings; one per side frame; axle adjusted for track take up. Optional heavy duty track shoes require a heavy duty track chain drive sprocket and idler roller. Idler roller mounted on anti-friction bearings.

TRACKS – Eighty-six, heat-treated, self-cleaning, multiple-hinged shoes. Track shoes joined by one full floating pin. Ground contact area; 24-in. shoes, 7,600 sq. in.; 30-in shoes, 9,500 sq. in.; 36-in. shoes, 11,500 sq. in.; 42-in. shoes, 13,300 sq. in. Optional heavy duty 30-in. and 36-in. track shoes available (requires heavy duty sprocket and idler). Heavy duty shoes joined by two-piece pins.

TRACK ROLLERS – Nine bottom rollers, heat-treated, mounted on sintered iron bushings, per side frame. Two track carrier rollers per side frame. Optional track rollers with dirt seals for increased protection of bushings and axles are available for standard tracks only.

UPPER

UPPER FRAME – All-welded, stress-relieved, precision machined unit. Side housings bolted to upper frame.

TURNTABLE ROLLERS – Eight adjustable, heat-treated, conical, hook-type rollers mounted on tapered roller bearings. Two equalized pairs mounted both front and rear.

TRANSMISSION – Link-Belt quadruple roller chain enclosed in oil tight chain case with integral sump. Pump driven oil stream lubrication. Engine pinion and chain wheel have machine-cut teeth.

REDUCTION SHAFT – Two-piece shaft, joined by an involute splined coupling mounted in side housings on anti-friction bearings.

Two Drive Pinions – Heat-treated, machine-cut teeth, involute splined to reduction shaft. Pinions mounted outside side housings.

CLUTCHES – Speed-o-Matic power hydraulic actuated for swing, operating drums, boomhoist and optional load lowering. Internal expanding two-shoe type, aluminum alloy shoes; 20" diameter, 5" face width. Third operating drum clutch 17-1/4" diameter, 4" face width. Load lowering clutches not available with gear-driven two-speed hoist or auxiliary, two-shoe rear drum brake.

Spiders – Involute splined to horizontal shafts.

DRUMS – Front, rear, and third operating (optional) drums.

Shafts – Mounted in line bores on anti-friction bearings. Front and rear drum shafts only extended to accommodate optional load lowering clutches. Special shaft required to accommodate two-speed, planetary-driven drums.

Spur Gears – Machine-cut teeth; mounted on anti-friction bearings on shaft.

Clutch Drums – Bolted to spur gears.

Brakes – Two-piece, external contracting band, mechanically foot pedal operated, front and rear drum 27" diameter 4" face width, third drum 18" diameter 3" face width.

Brake Drums – Involute splined to drum shaft.

Drum Laggings – Two-piece, removable; bolted to brake drum.

DRUM ROTATION INDICATOR (Optional) – Mounted on control stand. Dial actuated by flexible shaft from front and rear main operating drum shafts.

TWO-SPEED FRONT AND REAR DRUMS (Optional) –

Gear-Drive, Hoist Only – Intermediate gears installed in side housings convert two-shoe load lowering clutches to high-speed hoist clutches; hoist rope speed increased 100% over standard speeds.

Planetary-Driven, Hoist and Lowering – Planetary unit mounts between spur gear and two-shoe clutch drum on extended shaft; available for 70% increase or 40% decrease of standard hoist and load lowering rope speeds. Not available for front drum rope lowering. Two-shoe clutch gives standard speed. Planetary controlled by external contracting band through pushbutton located on clutch control lever.

AUXILIARY TWO-SHOE REAR DRUM BRAKE (Optional) – Increases brake lining contact area by 212 sq. in. Pressure on mechanical brake pedal applies the standard rear drum brake band and the auxiliary two-shoe brake simultaneously. Mechanical linkage actuates the control mechanism of a variable pressure valve to direct hydraulic pressure to the brake cylinder. Lowering clutch, two-speed gear-driven hoist, or two-speed planetary drive unit on lowering side of rear drum not available. Internal expanding two-shoe Speed-o-Matic power hydraulic brake, 20" diameter 5" face, brake spider involute splined to shaft, and brake drum bolted to anchor plate on machinery side housing.

HORIZONTAL SWING – TRAVEL SHAFT – Mounted in line bore on anti-friction bearings.

Spur Gears – Machine-cut teeth. Mounted on shaft on anti-friction bearings.

Bevel Gear – Involute splined to shaft, fully enclosed and running in oil.

INDEPENDENT SWING – TRAVEL SHAFT (Optional) – Mounted in line bore on anti-friction bearings.

Spur Gears – Machine cut teeth, mounted on shaft on anti-friction bearings.

Bevel Gear – Involute splined to shaft, fully enclosed and running in oil.

INDEPENDENT BOOMHOIST – Spur gear driven with precision boom raising and lowering through a clutch. A rope drum locking pawl, manually controlled from operator's position, is provided.

Shaft – Mounted in line bore on anti-friction bearings.

Spur Gears – Machine-cut teeth mounted on anti-friction bearings on shaft.

Rope and Brake Drum – Involute splined to shaft. Ratchet wheel and 22" diameter 3-1/4" face width brake drum are cast integral.

Brake – External contracting band, 22" diameter, 3" face width, spring applied and power hydraulically released.

BOOMHOIST LIMITING DEVICE – When the boom approaches minimum radius, it actuates a diverter valve located in front of the control console, releasing the boom raising clutch, and automatically applying the spring applied boomhoist brake.

VERTICAL SWING SHAFT – Mounted in line bore on anti-friction bearings.

Bevel Gear – Involute splined to shaft; fully enclosed and running in oil.

Swing Pinion – Involute splined to shaft; teeth mesh with internal teeth of ring gear.

Swing Brake – Two-directional, external contracting band; spring-applied and power hydraulically released.

Brake Drum – Involute splined to swing shaft.

SWING LOCK – Mechanically controlled pawl engages with internal teeth of ring gear.

GANTRY – RETRACTABLE – Mounted to upper to support bail, boom suspension system and two boomhoist rope sheaves. Used with all booms. For tubular "Hi-Lite" booms over 100' boom mast is required. Also used for power lowering of counterweight.

Bail – Pinned to gantry frame. Contains four sheaves with non-metallic bushings for 10-part boomhoist with angle boom and four sheaves with anti-friction bearings for 10-part boomhoist with tubular "Hi-Lite" boom; additional sheaves furnished for increased parts of line.

Speed-o-Matic Gantry Jack (Optional) – For power hydraulic raising and lowering of retractable gantry. Controlled from rear of cab.

CAB – Operator's door, rear doors, and front window slide on ball bearing rollers. Full-vision operator's compartment with safety glass panels.

Elevated Operator Cabs (Optional) – Two or four ft. available. Upper portion of 4' cab is hinged and equipped with quick disconnect fittings for easy removal to reduce overall height.

COUNTERWEIGHTS – Removable and held in position by "T"-bolts. Power raising and lowering with boomhoist clutches through retractable gantry.

Ctwt. "A" – Recommended for dragline, clamshell-magnet operation.

Ctwt. "AB" – Two-piece is standard for lifting crane, allowing for counterweight reduction to weight "A".

Tubular "Hi-Lite" Boom

21,400 Ctwt. "AB" } GM4030N – GM4082 – Cummins N-495
12,000 Ctwt. "A" } Waukesha F554G – Waukesha 135GZU
20,650 Ctwt. "AB" } Caterpillar D333C-T
11,250 Ctwt. "A" }

Angle Boom

20,000 Ctwt. "AB" } GM4030N – GM4082 – Cummins N-495
12,000 Ctwt. "A" } Waukesha F554G – Waukesha 135GZU
19,250 Ctwt. "AB" } Caterpillar D333C-T
11,250 Ctwt. A }

CONTROL SYSTEM – Speed-o-Matic power hydraulics, an open system. Operating pressure is transmitted through oil to all operating two-shoe clutch cylinders, swing brake and boomhoist drum and brake cylinders. The system includes a pump to provide a constant flow of oil, an accumulator to maintain operating pressure and variable pressure operator-controlled valves to regulate this pressure to each clutch cylinder.

Pump – Vickers; rated at 4.7 gal. per minute at 1,200 r.p.m.

Oil Filter – Link-Belt Speeder; replaceable Skinner ribbon-type filter element.

Relief Valve – Link-Belt Speeder; set to operate at 1,250 p.s.i.

Unloader Valve – Link-Belt Speeder; set to unload pump at a maximum 1,050 p.s.i. and to load pump when pressure drops below 900 p.s.i.

Accumulator – Link-Belt Speeder; piston-type, precharged with nitrogen gas to 650 p.s.i.

Sump Tank – Link-Belt Speeder; 7 gal. capacity with filter and strainer assembly to keep oil clean.

Control Valves – Link-Belt Speeder; variable pressure type.

ENGINES – Full pressure lubrication, oil filter, air cleaner, hour meter, hand and foot throttles, 60-gal. capacity fuel tank with fuel gauge. Foot throttle optional. **Hand throttle control optional**-lever type mounted on swing control lever, but may be mounted on hoist control lever if specified.

	Waukesha F-554-G (1)	Waukesha 135GZU with torque converter (2)	Caterpillar D-333C-T	GM 4-71 Series (Model 4030N)	GM 4-71 Series (Model 4082) with torque converter (3)	Cummins N495
Number of cylinders	6	6	6	4	4	4
Bore and stroke (inches)	4-5/8 x 5-1/2	4-3/8 x 5	4-3/4 x 6	4-1/4 x 5	4-1/4 x 5	5-1/8 x 6
Piston displacement (cu. in.)	554	451	638	283.7	283.7	495
High idle speed, r.p.m.	1,880	1,880 @ pinion 2,135 @ crankshaft	1,990	1,990	1,207 @ pinion 1,670 @ crankshaft	1,880
Engine r.p.m. F.L.S.	1,710		1,890	1,850		1,700
Net engine H.P. @ F.L.S.	109	121	110	110	118	108
Peak torque; Lbs. Ft.	427	730	418	351	1,170	358
Peak torque; r.p.m.	800	(output stall)	1,250	1,200	(output stall)	1,500
Electrical system	12 volt	12 volt	12 volt	12 volt	12 volt	12 volt
Batteries	(4)	2 6-volt	1 12-volt	2 6-volt	1 12-volt	2 12-volt
Clutch – Type	Friction-Hyd. cplg.	Disconnect between engine-converter	Friction	Friction-Hyd. cplg.	Disconnect between engine-converter	Friction
Make	Twin Disc		Twin Disc	Twin Disc		Twin Disc
Model	SP211-HP-1		SP111-HP-1	SP111-HP-1		SP111-HP-1
Transmission –						
No. chain wheel teeth	161	161	161	161	161	161
No. engine pinion teeth	18	18	17	17	28	18

(1) Two-speed Cotta transmission available for lifting crane service; reduces operating speeds approximately 50%.
(2) 2.5 ratio Allison TC0A-377-119 converter.
(3) 3.4 ratio Troqmatic TDC0A 435 converter.
(4) T wo 6-volt with friction clutch; one 12-volt with hydraulic coupling or two-speed Cotta transmission.

FRONT END CRANE BOOM EQUIPMENT

ANGLE BOOM – Two-piece 40' total length, 20' upper and lower sections; 34" deep and 34" wide at connections. Chord angles, alloy steel. Lower section 3" x 3" x 3/8"; upper section 3" x 3" x 5/16".

Boomfoot – 1-5/8" wide on 38" centers.

Boompoint Machinery – Three 18" root diameter sheaves mounted on anti-friction bearings on boompeak shaft. Two or four sheaves, or one wide-mouth sheave for dragline, optional.

Pin Connections – Permit easy removal and additions of extensions.

BOOM EXTENSIONS – Available in 5', 10', 15' and 20' lengths with proper length pendants.

BOOM BACKSTOPS – Dual, rigid type with spring-loaded bumpers.

BOOMHOIST BRIDLE – Serves as a connection between the pendants and live boomhoist rope. Bridle contains five or six 9-1/2" root diameter sheaves mounted on non-metallic bushings for 10-part boomhoist, and bronze bushings for 12-part boomhoist.

JIB – 20' two-piece with 10' upper and lower sections; 10' extensions available for 30' or 40' jib. Jib is 23" wide and 18" deep at the connections; chord angles, lower section 2" x 2" x 1/4", upper section and extensions 2" x 2" x 3/16". Jib and extensions are bolted.

Jib Mast – 10' high, mounted on jib base section; two deflector sheaves mounted on needle bearings for jib hoist line within the mast; two equalizer sheaves for jib front stay and jib backstay lines mounted to top of mast.

Jib Backstop – Wire rope type.

Peak Sheave – Mounted on anti-friction bearings.

Peak Shaft – Anchor is provided at peak of jib for two-part jib hoist line. Jib stay line anchors are suspended from shaft.

"HI-LITE" TUBULAR BOOM – Two-piece 40' total length, 20' upper and lower sections, 41-1/2" deep and 50-1/2" wide at connections. Round tube chords, alloy steel, 2-1/2" with bracing of round steel tubing.

Boomfoot – 2" wide on 48" centers.

Boomfoot Adapter – Required to adapt 38" centers of revolving frame boomfoot lugs to 48" centers of tubular boomfeet.

Boompoint Machinery – Three 18" root diameter sheaves mounted on anti-friction bearings on boompeak shaft. Four sheaves optional.

Pin Connections – Permit easy removal and additions of extensions.

BOOM EXTENSIONS – Available in 10' and 20' lengths with proper length pendants.

BOOM BACKSTOPS – Dual, telescoping; spring cushioned.

BOOMHOIST BRIDLE – Serves as a connection between the pendants and live boomhoist rope. Bridle contains 12" root diameter sheaves mounted on anti-friction bearings.

Without Boom Mast – Five sheaves for 10-part boomhoist and six sheaves for 12-part boomhoist.

With Boom Mast – Connected to mast by a shaft. Six sheaves for 12-part boomhoist; also contains two 9-1/2" diameter sheaves mounted on bronze bushings enabling mast to be used as a short boom.

BOOM MAST – Mounted on boomfoot adapter, supports boomhoist bridle and mid-point suspension pendants. Boom mast and mid-point boom suspension pendants required for all main boom lengths over 100'. Boom mast retracts to 17'9" for use as a short boom. Hydraulic extending cylinders optional.

JIB – Pin connected, two-piece with 10' upper and lower sections. 10' extensions available for 30' or 40' jib. 25-1/4" wide by 19-1/4" deep at connections. Tubular chords, alloy steel, 1-1/4" diameter.

Jib Mast – 10' high, mounted on jib base section. Two deflector sheaves mounted on anti-friction bearings for jib hoist line within the mast. Two equalizer sheaves for jib front stay and jib backstay lines mounted to top of mast.

Jib Backstops – Telescoping type, spring-loaded; pinned from jib mast to boom upper section and from jib mast to jib lower section.

Peak Sheaves – Mounted on anti-friction bearings.

Peak Shaft – Anchor is provided at peak of jib for two-part jib hoist line. Jib front stay line anchors are suspended from shaft.

FAIRLEADER – Full-revolving type with barrel, sheaves and guide rollers mounted on anti-friction bearings.

TAGLINE WINDERS – **Rud-o-Matic Model 648;** spring wound drum type mounted on crane boom. Rope pull off drum – 60' to 75' from neutral. **Morin Tagmaster Model BR** – 0' to 100', adjustable.

BOOM ANGLE INDICATOR – Mounted on boom near base.

ROPE SUPPORTING ROLLERS – To deflect main hoist line over top of boom. Required when third drum rope passes over crane boom. Rollers mounted on anti-friction bearings, following numbers recommended:

Angle Boom – One through 45' two through 65'; three through 85'; four through 100'.

Tubular Boom – One supplied as standard; two through 120'; three through 130'.

ROLLER GUARDS – Angle boom only. For boompoint sheaves. Does not permit the use of center sheaves and is not available for boom equipped with jib.

GENERAL INFORMATION ONLY

WIRE ROPE

TYPE AND SIZE USED

Live Boomhoist – Type "A", 5/8" dia., 3/4" dia.; Type "F", 5/8" dia., 3/4" dia.
Main hoist – Type "A", 3/4" dia.
Jib Hoistline – Type "K", 5/8" dia.
Dragline hoist – Type "A", 3/4" dia.
Dragline inhaul – Type "D", 7/8" dia.
Clamshell holding – Type "A", 3/4" dia.
Clamshell closing – Type "A", 3/4" dia.
Tagline – Type "A", 5/16" dia.
Jib staylines – Type "A", 5/8" dia.; Type "K", 5/8" dia.
Boom pendants – Type "N", 1-1/4" dia., 1-1/8" dia.
Mid-point suspension pendants (Boom mast) – Type "F", 3/4" dia.

WIRE ROPE TYPES

Type "A" – 6 x 25 (6 x 19 class), filler wire, improved plow steel, preformed, fiber center, right lay, regular lay.
Type "C" – 6 x 25 (6 x 19 class) filler wire, improved plow steel, preformed, independent wire rope center, right lay, regular lay. regular lay.
Type "D" – 6 x 25 (6 x 19 class), filler wire, improved plow steel, preformed, independent wire rope center, right lay, lang lay.
Type "F" – 6 x 25 (6 x 19 class), filler wire, improved plow steel, preformed, independent wire rope center, right lay, regular lay.
Type "K" – 18 x 7 non-rotating, improved plow steel, fiber center.
Type "N" – 6 x 25 (6 x 19 class), filler wire, extra-high tensile strength steel, preformed, independent wire rope center, right lay, regular lay.

JIB MAST STAYLINES

ANGLE JIB

Backstay – For all boom lengths, 51' long. Rope length adjusted to fix jib angle to boom.

Frontstay – For all booms with 20' jib, 48' long; with 30' jib, 70'; with 40' jib, 100'.

TUBULAR JIB

Backstay – 52'8" long (44'0" plus two each 4'4" long) for 30° jib to boom angle: removal of 4'4" lengths allow 15° and in-line jib to boom angle.

Frontstay – 20' jib basic pendant 43'9" long. Two pendants 9'6" long supplied with each 10' jib extension.

MAIN HOIST LINE LENGTH

Parts of Line	BOOM LENGTH									
	40′	50′	60′	70′	80′	90′	100′	110′	120′	130′
1	95	115	135	155	175	195	215	235	255	275
2	140	170	200	230	260	290	320	350	380	410
3	185	225	265	305	345	385	425	465	505	545
4	230	280	330	380	430	480	530	580	630	680
5	275	335	395	455	515	575	635	695	755	815
6	320	390	460	530	600	670	740	810	880	950

LIVE BOOMHOIST ROPE LENGTH

Parts of Line	Angle Boom	Tubular Boom	Tubular Boom & Mast
10	310′	310′	–
12	360′	360′	390′

JIB HOISTLINE LENGTH

Shown in Feet	Parts of Line	BOOM LENGTH (Angle or Tubular)									
		40′	50′	60′	70′	80′	90′	100′	110′*	120′*	130′*
20′ Jib Tubular or Angle (except as noted)	1	135	155	175	195	215	235	255	275	295	315
	2	200	230	260	290	320	350	380	410	440	470
30′ Jib Tubular or Angle (except as noted)	1	155	175	195	215	235	255	275	295	315	335
	2	230	260	290	320	350	380	410	440	470	500
40′ Jib Tubular or Angle (except as noted)	1	175	195	215	235	255	275	295	315	335	355
	2	260	290	320	350	380	410	440	470	500	530

*Tubular boom and jib only

DRAGLINE ROPE LENGTH

Rope Lengths Shown in Feet	Parts of Line	BOOM LENGTH				
		40′	45′	50′	55′	60′
Hoist	2	95	105	115	125	135
Inhaul	1	52	58	64	70	76

GENERAL INFORMATION ONLY

CLAMSHELL ROPE LENGTH

Rope Lengths Shown in Feet	Parts of Line	BOOM LENGTH				
		40′	45′	50′	55′	60′
Holding	1	105	115	125	135	145
Closing	1	140	150	160	170	180
Tagline	Furnished with Rud-O-Matic #648					

We are constantly improving our products and therefore reserve the right to change designs and specifications. For certified dimensions, consult factory.

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