



SECTION 13 - SPECIFICATIONS

SPEEDS

Crawler Travel.....	1.1 M.P.H.
Swing Speed.....	4.0 R.P.M.
Reverse Shaft Speed (High Idle)	
L.H. Gear - Prior Machines.....	46.5 R.P.M.
L.H. Gear - Later Machines.....	48.8 R.P.M.

LS78 Machine Weights (Approximate)

*Basic Machine.....	36,400#
Shovel.....	45,200#
Trench Hoe.....	45,200#
Dragline.....	43,300#
Crane - Clamshell.....	43,000#
Maximum Lifting Crane (Long Wide).....	57,610#

*Based on Std. Lower with "A" Counterweight and 24" Track Shoes. For long lower frame add 2,050# to std. weight shown.

HC78A MACHINE WEIGHTS* (APPROXIMATE)

C.C.C. Truck 6 X 4.....	26,500#
C.C.C. Truck 8 X 4.....	27,800#
C.C.C. Truck 6 X 6.....	27,330#
Shovel.....	65,200#
Trench Hoe.....	65,200#
Dragline.....	60,800#
Crane - Clamshell.....	60,500#

*Complete Machine Weights based on C.C.C. Truck 6 X 4.

LS78 DIMENSIONS

*Overall Height (Low Mast).....	10'-6"
*Height of Boom Hinge Pin.....	5'-0"
*Cab Clearance Height.....	10'-1"
*Retractable Gantry Height-Lowered.....	10'-7"
*Retractable Gantry Height-Raised.....	13'-8"
Width of Cab.....	7'-10"
Tailswing (Counterweight "A").....	10'-0"
Tailswing (Counterweight "AB & "ABC")	10'-3"

*Figures on 24" Track Shoes - Add 1/2" for each width increase.

HC78A DIMENSIONS

	C.C.C. Carrier
Overall Heights (Low Mast).....	12'-1"
Height Boom Foot Hinge Pin.....	6'-7"
Cab Clearance Height.....	11'-9"
Overall Height, Retractable Gantry Lowered.....	12'-3"
Overall Height, Retractable Gantry Raised.....	15'-7"
Width of Cab.....	7'-10"
Tailswing (Counterweight "A").....	10'-2"
Maximum Overall Width (Over Tires).....	8'-0"
Turning Radius (Centerline Front Outside Tire).....	39'-8"

APPROXIMATE WEIGHTS OF COMPONENTS

Basic Upper (No Counterweight).....	20,000#
Basic Lower (24" Track Shoes).....	13,750#
Long Lower (24" Track Shoes).....	15,700#
Long Wide Lower (24" Track Shoes).....	20,800#
Deduct for removal of each side frame	
assy.-Long Wide Lower.....	9,400#
Upper W/Ind. Swing (No Counterweight)..	21,000#
Counterweight "A" (D315G, D318G, UD370)..	4,000#
Counterweight "A" (GM3030C, 135GK).....	4,550#

APPROXIMATE WEIGHTS OF COMPONENTS

Counterweight "A" (Truck Only).....	12,400#
Counterweight "A" (GM3082, UD370).....	4,000#
Counterweight "A" (135GZ, GM3030C, D320A).....	4,550#
Counterweight "AB" (D315, D318G, UD370, GM3030C).....	7,300#
Counterweight "AB" (GM3030C, 135GK, 135GZ, D320A).....	7,850#
Counterweight "ABC" (D315G, D318G, UD370, GM3082).....	8,800#
Counterweight "ABC" (GM3030C, 135GK, 135GZ, DA320A).....	9,350#
Counterweight "ABCD" (D135G, D318G, UD370, GM3082).....	14,750#
Counterweight "ABCD" (GM3030C, 135GK, 135GZ, D320A).....	15,300#
Shovel Attachment.....	8,800#
Hoe Attachment.....	8,800#
Crane & Clamshell Attachment (26" Deep Boom).....	6,600#
Crane & Clamshell Attachment (34" Deep Boom).....	7,250#
Dragline Attachment (26" Deep Boom)....	6,900#
Dragline Attachment (34" Deep Boom)....	7,550#

SPEED-O-MATIC SYSTEM

DESCRIPTION	ITEM NO.	OPERATING RANGE	RANGE
Pump, Vickers	IJ1336	4.7 G.P.M. at 1200 R.P.M.	
Oil Filter Assembly	JC1864		Replace Element
Relief Valve	JC1683	1250 P.S.I. Operating Range	
Unloader Valve	JC1795	900 to 1050 P.S.I. Operating Range	
Accumulator	JC2598	900 to 1050 P.S.I.	Nitrogen Gas Pre-charge 650 P.S.I.

CAPACITIES

Fuel Tank.....	43 Gal.	See S.O.M. Specifications
Hydraulic Sump Tank.....	7 Gal.	
Upper Transmissions Case (Above 32°).....	9.5 Gal.	SAE140EP



SECTION 13 - SPECIFICATIONS - CONTINUED

CAPACITIES - Continued	See S.O.M. Specifications
Upper Transmission Case (Below 32°).....	9.5 Gal. SAE 90EP
Standard Swing Bevel Gear Case (Above 32°).....	1.5 Gal. SAE140EP
Standard Swing Bevel Gear Case (Below 32°).....	1.5 Gal. SAE 90EP
Independent Swing Bevel Gear Case (Above 32°).....	1.5 Gal. SAE140EP
Independent Swing Bevel Gear Case (Below 32°).....	1.5 Gal. SAE 90EP
Standard Lower Frame Gear Case.....	7 Gal. SAE140EP
Long & Long Wide Lower Frame Gear Case.....	7.5 Gal. SAE50
Chain Case (Above 32°).....	4 Gal. SAE50
Chain Case (Below 32°).....	4 Gal. SAE20

(ROOT DIAMETER INCHES)	LAGGINGS	
	FRONT DRUM	REAR DRUM
Crane.....	12"-12" Smooth Alt.	12"-12" Smooth Alt.
Clamshell.....	14"	14"
Dragline.....	12" Std. 14" Alt.	14"
Pile Driver.....	14"	14"
Trench Hoe.....	12" Std. 14" Alt.	14"
Shovel.....	16"	12" Std. 14" Alt.
Third Drum.....	9" Std.-14" Alt.	

NOTE: Front Drum and Rear Drum Laggings are not Interchangeable.

ENGINE SPECIFICATIONS (PRIOR MACHINES 7DP620, 7D648)

ENGINES	WAUKESHA	GENERAL MOTORS	CATERPILLAR	CATERPILLAR	INTERNATIONAL
	135GK	3030C	D315G	D318G	UD370
Number of Cylinders.....	6	3	4	6	4
Bore and Stroke, Inches.....	4-1/4 X 5	4-1/4 X 5	4-1/2 X 5-1/2	4-1/2 X 5-1/2	4-5/8 X 5-1/2
Piston Displacement, Cubic Inches	426	212.8	350	525	370
Governed Speed (High Idle) r.p.m.	1695	1895	1790	1530	1895
Full-Load Speed, r.p.m.....	1540	1775	1680	1415	1735
Net Engine H.P. Full-Load Speed..	70	70	70	70	70
Peak Torque, ft.-lbs.(max.).....	275	238	245	288	244
Peak Torque, r.p.m.....	800	800	1050	980	1150
Oil Cooler.....	No	Yes	No	No	No
Oil Filter.....	Yes	Yes	Yes	Yes	Yes
Crankcase Capacity, Gallons.....	3	3.75	3.75	5.5	2.75
Starting System.....	Direct Electric starting 12 volt (2-6 volt batteries)	Direct Electric starting 12 volt (2-6 volt batteries)	Direct Electric starting 24 volt (2-12 volt batteries)	Direct Electric starting 24 volt (2-12 volt batteries)	Direct Electric starting 12 volt (2-6 volt batteries)
Ignition.....	Distributor 12 volt	None	None	None	None
Air Cleaner - Make.....	Donaldson	Donaldson	Donaldson	Donaldson	Donaldson
Type.....	Oil Bath	Oil Bath	Oil Bath	Oil Bath	Oil Bath
Fuel Tank Capacity, Gallons....	43	43	43	43	43
Fuel Injection Pump.....	None	G.M.	Caterpillar	Caterpillar	International
Carburetor.....	Updraft	None	None	None	
Fuel Filter (Replaceable).....	None	Yes	Yes	Yes	Yes
Cooling System Capacity, Gallons with Radiator.....	7.5	5.75	8.2	11.8	13



SECTION 13 - SPECIFICATIONS - CONTINUED

ENGINE SPECIFICATIONS (PRIOR MACHINES 7DP620, 7D648) - Continued

ENGINES	WAUKESHA 135GK	GENERAL MOTORS 3030C	CATERPILLAR D315G	CATERPILLAR D318G	INTERNATIONAL UD370
Clutch - Type.....	Friction	Friction	Friction	Friction	Friction
Make.....	Twin-Disc	Allison	Twin-Disc	Twin-Disc	Twin-Disc
Model.....	SP-111-HP1	Heavy Duty	17227	16167	SP-111-HP1
Shaft Diameter, Inches.....	2-1/4"	2-1/4"	2-1/4"	2-1/4"	2-1/4"
Plate Diameter, Inches.....	11-1/2"	11-1/2"	11-1/2"	14"	11-1/2"
Number of Plates.....	1	1	1	1	1
Muffler.....	No	Yes	No	No	No
Trans. - No. Chain Wheel Teeth...	161	161	161	161	161
No. Engine Pinion Teeth.	19	17	18	21	17

ENGINE SPECIFICATIONS (EFFECTIVE MACHINES 7DP620, 7D648)

ENGINES	WAUKESHA 135GZ	WAUKESHA HYD. COUP.	GENERAL MOTORS 3030C	GENERAL MOTORS 3030C HYD. COUP.	GENERAL MOTORS 3082 TOR.CONV.	CATERPILLAR D320A	INTER- NATIONAL UD370
Number of Cylinders.....	6	6	3	3	3	4	4
Bore & Stroke, Inches...	4-3/8 X 5	4-3/8 X 5	4-1/4 X 5	4-1/4 X 5	4-1/4 X 5	4 X 5	4-5/8 X 5-1/2
Piston Disp. cu. in.....	451	451	212.7	212.7	212.7	252	370
Governed speed(hi. idle), r.p.m.	1780	1780	1990	1990	1352	2510	1880
Full-load Speed, r.p.m....	1620	1620	1870	1870	1870	2330	1750
Peak torque, ft.-lbs.(max.)	335	335	246	246	637	236	254
Peak Torque, r.p.m.	800	800	1000	1000	Stall	1600	1350
Oil Cooler	No	No	Yes	Yes	Yes	Yes	No
Crankcase Capcy. Gals...	3	3	3.75	3.75	3.75	4.5	2.75
Starting system	Direct Electric starting 12 volt (2-6 volt batteries)	Direct Electric starting 12 volt (2-6 volt batteries)	Direct Electric starting 12 volt (2-6 volt batteries)	Direct Electric starting 12 volt (2-6 volt batteries)	Direct Electric starting 12 volt (2-6 volt batteries)	Direct Electric starting 24 Volt (4-6 volt batteries)	Direct Electric starting 12 volt (2-6 volt batteries)
Fuel Injection pump	None	None	G.M.	G.M.	G.M.	Caterpillar	I-H
Carburetor	Updraft	Updraft	None	None	None	None	Auxiliary
Fuel filter (replaceable)	None	None	Yes	Yes	Yes	Yes	Yes
Cooling system capcy. gals	7.5	7.5	5.75	5.75	5.75	6.3	13
Clutch -	Hydraulic		Hydraulic		Caterpillar		
type	Friction	Coupling	Friction	Coupling	Clutch	1.56 ratio	Friction
make	Twin-Disc	Twin-Disc	Rockford	Twin-Disc	between	planetary	Twin-Disc.
model	SP- 11-HP-1	SP- 111-HP-1	PTA- 11111	SP- 111-HP-1	engine and Converter	reduction gear with band clutch	SP- 111-HP-1
Shaft diameter, Inches	2-1/4"	2-1/4"		2-1/4"			2-1/4"
Plate diameter, Inches	11-1/2"	11-1/2"		11-1/2"			11-1/2"
Number of plates	1	1		1			1
Muffler	No	No	Yes	Yes	Yes	No	No
Transmission-							
No. chain wheel teeth	161	161	161	161	161	161	161
No. engine pinion teeth	19	19	17	17	25	21	18



SECTION 13 - SPECIFICATIONS - CONTINUED

SPECIAL TOOLS	
ITEM NO.	DESCRIPTION
PX108	Tube Bender 3/8"
PX109	Tube Bender 1/2"
PC124	Tube Cutter
PX110	Tube Flaring Tool
PC123	Flexible Hose Assembly Tool, 3/8"
PC134	Drift 3"
PB38	5/32" Allen Wrench for 5/16" Allen Set Screw
PC30	3/16" Allen Wrench for 3/8" Allen Set Screw
PC31	1/4" Allen Wrench for 1/2" Allen Set Screw
PX17	Open end Ratchet Wrench Set (Set consists of one drive handle, one ratchet head and one each of the following size sockets, 3/4", 3/16", 7/8", 15/16", 1" and 1-1/16")
PX79	Snap Ring Removal Kit consisting of the following six items:
PX80	Snap Ring Removal Tool, tips open to 2" center to center.
PX81	Tip, set, 90° 1/8" point.
PX82	Tip, set, 45° 1/8" point.
PX83	Tip, set, offset 1/8" point.
PX84	Tip, set, straight 1/8" point.
PX85	3/32" Allen Wrench.
PX207	Snap Ring Tool consisting of the following five items:
PX208	Snap Ring Removal Tool, tips open to 3-5/8" center to center.
PX209	Tip, set, 90° 5/32" point.
PX210	Tip, set, 45° 5/32" point.
PX211	Tip, set, straight, 5/32" point.
PX212	1/8" Allen Wrench for 1/4" Set Screw.
PX179	Tool Box (All Models)
1P6	Clutch Adj. Bolt Wrench - Drum Brake - Traction Brake on Crawler.
PA30	Tread Member Wrench (Crawlers Only)
8P1	Counterweight Wrench (All Models)
PC45	Grease Gun -- 1 Lb.
PR150	Grease Gun Hose.
PC35	Auto Pump Oiler -- 1 Pt.
PC241	Gear Grease -- one 18 Oz. Aerosol Can.
PC52A	Pressure Gun Grease -- 5 Lb. Can.
8S308	Boom Foot Adjusting Bar (Shovel Only.)
8S239	Spring Compressor Plate (Shovel Only.)
8P123	Spanner Wrench (Crawler only) Vertical Travel Shaft Lower Nut.
1P130	Slide Hammer Puller (Crawler only) Horizontal Traction Shaft.
8P467	Clutch Adjusting Nut Wrench
8P468	Clutch Adjusting Bolt Wrench



SECTION 13 - SPECIFICATIONS

PIPELINER

SPEEDS

Crawler Travel (Low).....	.87 M.P.H.
Crawler Travel (High).....	1.75 M.P.H.
Swing Speed.....	4.0 R.P.M.
Reverse Shaft Speed (High Idle)	
Left Side.....	46.5 R.P.M.
Reverse Shaft Speed (High Idle)	
Right Side.....	49.4 R.P.M.

DIMENSIONS

Overall Height (Low Mast).....	11'- 3"
Height of Boom Hinge Pin.....	5'- 9"
Cab Clearance Height.....	10'-10"
Retractable Gantry Height-Lowered..	12'- 1"
Retractable Gantry Height-Raised...	14'- 9"
Width of Cab.....	7'-10"
Tailswing(Counterweight "A").....	10'- 0"
Tailswing(Counterweight"AB" &"ABC").	10'- 3"

APPROXIMATE WEIGHTS

Lower Frame.....	21,350#
Standard Upper(Without Counterweight).....	20,100#
Upper W/Ind. Swing (No Counterweight).....	21,000#
Std. Counterweight "A"(GM3030C)....	4,550#
STD. Counterweight "AB"(BM3030C)...	7,850#
Std. Counterweight "ABC"(GM3030C)..	9,350#
Hoe Attachment.....	8,800#
Crane & Clamshell Attachment (26" Deep Boom).....	6,600#
Dragline Attachment(26" Deep Boom).	6,900#

LAGGINGS

(ROOT DIAMETER INCHES) FRONT DRUM-REAR DRUM

Crane.....	12"	12"
Clamshell.....	14"	14"
Dragline.....	12"	14"
Pile Driver.....	14"	14"
Trench Hoe.....	12"	14"
Third Drum...9" or 11".....		

NOTE: Front Drum and Rear Drum Laggings are not interchangeable.

SPEED-O-MATIC SYSTEM

DESCRIPTION	ITEM NO.	OPERATING RANGE	REMARKS
Pump, Vickers	1J1336	4.7 G.P.M. at 1200 R.P.M.	
Oil Filter Assembly	JC1864		Replace Element
Relief Valve	JC1683	1250 P.S.I.	
Unloader Valve	JC1795	900 to 1050 P.S.I. Operating Range	
Accumulator	JC2598	900 to 1050 P.S.I.	Nitrogen Gas Precharge 650 P.S.I.

CAPACITIES

Fuel Tank.....	43 Gal.
Hydraulic Sump Tank.....	7 Gal. See S.O.M. Specifications

Upper Transmission Case (Above 32°F).....	19.75 Gal.*	SAE140 E.P.
Upper Transmission Case (Below 32°F).....	19.75 Gal.*	SAE 90 E.P.
Standard Swing Bevel Gear Case (Above 32°F.).....	1.5 Gal.	SAE140 E.P.
Standard Swing Bevel Gear Case (Below 32°F.).....	1.5 Gal.	SAE 90 E.P.
Independent Swing Bevel Gear Case (Above 32°F.).....	1.5 Gal.	SAE140 E.P.
Independent Swing Bevel Gear Case (Below 32°F.).....	1.5 Gal.	SAE 90 E.P.
Lower Frame Gear Case.....	7 Gal.	SAE50
Chain Case (Above 32°F.)..	4 Gal.	SAE50
**Chain Case (Below 32°F.)..	3 Gal.	SAE 10W30
Side Frame Reservoir (Each Side).....	18 Gal.	SAE20

*15 Gal. Capacity For Early Machines

**Effective 7D944 and After





SECTION 13 - SPECIFICATIONS - CONTINUED

ENGINE SPECIFICATIONS

ENGINES	GENERAL MOTORS 3030C	GENERAL MOTORS 3030C HYD. COUP.	GENERAL MOTORS 3082 TOR. CONV.	CATERPILLAR D320A
Number of Cylinders.....	3	3	3	4
Bore & Stroke, Inches.....	4-1/4 X 5	4-1/4 X 5	4-1/4 X 5	4 X 5
Piston Displacement, Cubic Inches.....	212.7	212.7	212.7	252
Governed Speed (High Idle) R.P.M.....	1990	1990	1352	2510
Full-Load Speed, R.P.M.....	1870	1870	1870	2330
Net Engine H.P. Full-Load Speed.....	76	76	86	83
AMA or NACC Horsepower.....	21.7	21.7	21.7	25.6
Peak Torque, ft.-lbs.(Max.)	246	246	637	236
Peak Torque, R.P.M.....	1000	1000	Stall	1600
Lubrication.....	Full Pressure	Full Pressure	Full Pressure	Full Pressure
Oil Cooler.....	Yes	Yes	Yes	Yes
Oil Filter.....	Yes	Yes	Yes	Yes
Crankcase Capacity, Gallons	3.75	3.75	3.75	4.5
Starting System.....	Direct Electric Starting 12 volt 2-6 volt batteries	Direct Electric Starting 12 volt 2-6 volt batteries	Direct Electric Starting 12 volt 2-6 volt batteries	Direct Electric Starting 24 volt 4-6 volt batterie
Air Cleaner-Make.....	Donaldson	Donaldson	None	Dry Type
Type.....	Oil Bath	Oil Bath		Air Cleaner
Fuel Tank Capacity,Gals....	43	43	43	43
Fuel Injection Pump.....	G.M.	G.M.	G.M.	Caterpillar
Fuel Filter(Replaceable)...	Yes	Yes	Yes	Yes
Cooling System Capacity, Gallons with Radiator.....	5.75	5.75	5.75	6.3
Clutch - Type.....	Friction	Hyd. Coup	Clutch	Caterpillar
Make.....	Rockford	Twin-Disc	Between	1.56 Ratio Planet
Model.....	PTA 11111	SP-111-HP-1	Engine and Converter	Reduction Gear with Band Clutch
Shaft Dia., at Pinion End, Inches.....	2-1/4"	2-1/4"		
Plate Dia., Inches.....	11-1/2"	11-1/2"		
Number of Plates.....	1	1		
Muffler.....	Yes	Yes	Yes	No
No. Chain Wheel Teeth.....	161	161	161	161
No. Engine Pinion Teeth....	17	17	25	21

SPECIAL TOOLS

PX108	Tube Bender 3/8"	PX209	Tip, set, 90° 5/32" point
PX109	Tube Bender 1/2"	PX210	Tip, set, 45° 5/32" point
PC124	Tube Cutter	PX211	Tip, set, straight, 5/32" point
PX110	Tube Flaring Tool	PX212	1/8" Allen Wrench for 1/4" Set Screw
PC123	Flexible Hose Assy. Tool, 3/8"	PX179	Tool Box
PC134	Drift 3"	1P6	Clutch Adj. Bolt Wrench-Drum Brake-Traction Brake
PB38	5/32" Allen Wrench for 5/16" Set Screw	PA30	Tread Member Wrench
PC30	3/16" Allen Wrench for 3/8" Set Screw	PB33	Tread Member Adjusting Bar
PC31	1/4" Allen Wrench for 1/2" Set Screw	8P1	Counterweight Wrench
PX17	Open End Ratchet Wrench Set (Set Consists of one drive handle, one ratchet head and one each of the following size sockets, 3/4", 3/16", 7/8", 15/16", 1" and 1-1/16".	PC45	Grease Fun -- 1lb.
PX79	Snap Ring Removal Kit consisting of the following six items:	PR150	Grease Gun Hose
PX80	Snap Ring Removal Tool, tips open to 2"	PC35	Auto Pump Oiler -- 1 Pt.
PX81	Tip, set, 90° 1/8" point	PC241	Gear Grease -- one 18 Oz. Aerosol Can
PX82	Tip, set, 45° 1/8" point	PC52A	Pressure Gun Grease -- 5 Lb. Can
PX83	Tip, set, offset 1/8" point	8P36	Track Release Assembly Tool
PX84	Tip, set, straight 1/8" point	1X827	Pipe Plug
PX85	3/32" Allen Wrench	3443	Padlock Key for "Master" No. 3KA
PX207	Snap Ring Tool consists of the following 5 items:	CH-507	Recess Lock Key
PX208	Snap Ring Removal Tool, tips open to 3-5/8"	8P140	Grease Seal Tool
		8P138	Grease Seal Tool
		8P467	Clutch Adjusting Nut Wrench
		8P468	Clutch Adjusting Bolt Wrench