

OPERATION, SERVICE AND PARTS INSTRUCTION MANUAL



HYDRAULIC POWER PUMPS 940m3 & 960m3 SERIES

For all Pumps with Serial No. Code KR & KS



Read and understand this material before operating or servicing this equipment. Failure to understand how to safely operate this tool could result in an accident causing serious injury or death.

Introduction

The 940M3 and 960M3 Series are high pressure hydraulic power pumps which are simple to operate, lightweight, durable and portable.

These power pumps have a built-in high volume / low pressure pumping feature which gives fast approach ram action and automatic changeover to low volume / high pressure when pressure exceeds 200 psi. The pumping unit consists of a steel pump block, vane-operated low-pressure stage, radially driven single-

piston high-pressure stage, high pressure safety valve set at 10,000 psi, low pressure relief valve set at 200 psi and an internally located relief valve which unloads the high pressure stage of the pump and permits the motor to be re-started while load is being held up to 10,000 psi.

The pump is controlled by a two-position toggle switch, which has ON in the forward position, and OFF in the opposite position.



SAFETY ALERT SYMBOL

The symbol above is used to call your attention to instructions concerning your personal safety. Watch for this symbol. It points out important safety precautions. It means **“ATTENTION! Become alert! Your personal safety is involved!”** Read the message that follows and be alert to the possibility of personal injury or death.

⚠ DANGER

Immediate hazards which, if not avoided, **WILL** result in severe personal injury or death.

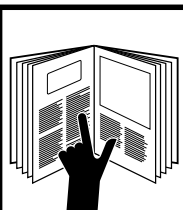
⚠ WARNING

Hazards or unsafe practices which, if not avoided, **COULD** result in severe personal injury or death.

⚠ CAUTION

Hazards or unsafe practices which, if not avoided, **COULD** result in minor personal injury or property damage.

Safety is a critical factor in the design of Greenlee equipment. The best program starts with a safety-conscious operator. The information highlighted in this bulletin describes operating practices for the benefit of the workers who will use our equipment in their daily jobs. Comments from users are appreciated.



⚠ DANGER

A person who has not read and does not understand all operating instructions is not qualified to operate this tool.

Failure to read and understand safety instructions may result in injury or death.

SAVE THESE INSTRUCTIONS

Additional copies of this manual are available upon request at no charge.

IMPORTANT SAFETY INSTRUCTIONS

⚠ DANGER

- Do not connect the pump to any system or system component other than those supplied by Greenlee and rated at less than 10,000 psi (68,950 kPa).
- Do not alter the internal high-pressure relief valve setting.
- Do not use this pump in a hazardous environment. Hazards include open flame and flammable liquids or gases.

Failure to observe these warnings will result in severe injury or death.

⚠ WARNING

- Inspect pump, hoses, couplers and fittings for wear or damage. Replace worn, damaged or missing components with Greenlee replacement parts.
- Do not twist, kink, curl, paint or cut the hydraulic hoses.
- Wear eye protection when operating this equipment.
- Disconnect the pump from the power supply, rotate the release valve lever to AUTO RELEASE, and disconnect the hose from the ram and the pump before performing any service.

Failure to observe these warnings could result in severe injury or death.



⚠ WARNING

Electric shock hazard:

- Do not expose power tools to rain.
- Do not immerse the pendant switch in water or other liquid.

⚠ CAUTION

- The pump is heavy, weighing up to 75 lbs. Follow NIOSH work practices for manual lifting. If in doubt, get help.
- Unplug pump when not in use and when changing accessories.
- Do not use the hose to pull, lift, or carry the equipment.
- Always work in an area providing good footing and support.
- Keep work area well-lit, free of clutter, and dry.

Failure to observe these precautions could result in injury or property damage.



⚠ WARNING

Skin Injection Hazard:

High pressure oil easily punctures skin causing serious injury, gangrene or death. If injured seek medical help immediately to remove oil.

Do not use fingers or hands to check for leaks.

Depressurize hydraulic system before disconnecting the hose.

Assembly Instructions

These power pumps are completely assembled and are shipped to you as a complete pumping unit. The only assembly necessary is the connection of the ram to the pump and the power cord to the proper electrical outlet.

Operating Instructions

The 940M3 and 960M3 power pumps are designed to operate at 10,000 psi intermittently. For continuous service, as production work, the pressure should not exceed 6,000 psi. (This limitation is for motor protection only.)

Before operating pump, check the following to assure proper service:

1. Check for proper power connections and for tightness of hose connections before starting pump.
2. Check hydraulic oil with dipstick (52). Oil should be within 1/2" of reservoir top.
3. Start motor and allow pump to idle a few minutes. This will allow the hydraulic oil to work into the moving parts and give prime to pump.

Power Connection

All power pumps shipped from Greenlee are wired for 115 volts, 60 Hz, Single Phase, AC operation unless 230-volt operation is requested at time of order. If 230-volt operation is required at a later time, follow wiring diagram for re-wiring.

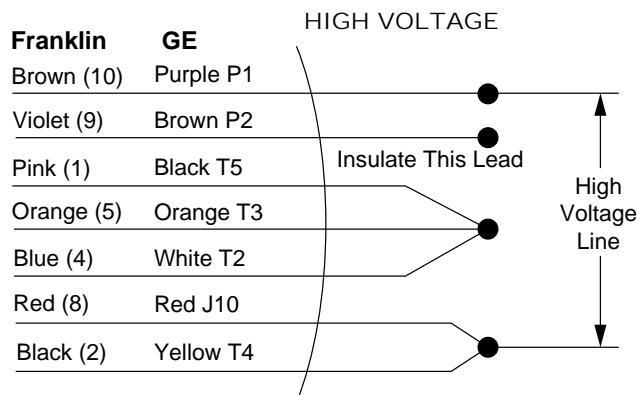
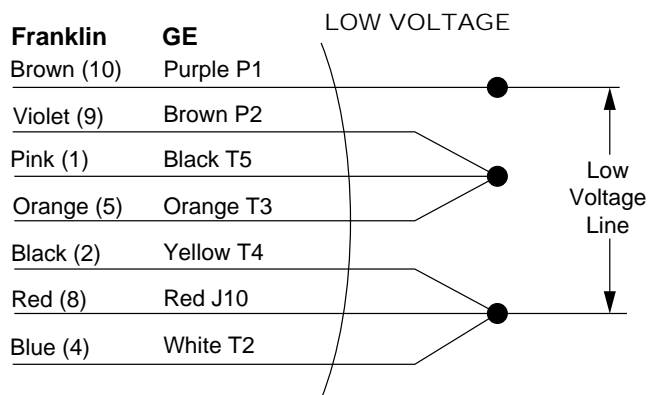
Note: Greenlee will not be liable for any damage to a pump or personal injury resulting from re-wiring to a higher voltage.

CAUTION

For your protection, ground unit before using. On the 940M3 and 960M3 Series pumps the electric motor is equipped with an approved 3-conductor cord and 3-blade grounding-type attachment plug to be used with the proper grounding-type receptable, in according with the National Electrical Code. The green-colored conductor in the cord is the grounding wire, which is attached to the metal frame of the unit inside the housing and to the longest blade of the attachment plug cap. (If extension cords are used, they should have sufficient rated capacity and a properly connected grounding circuit.)

Motor Wiring Diagram

CONNECTIONS FOR CW ROTATION (VIEW MOTOR FROM LEAD END)



Pump Specifications

PUMP MODEL	CONTROL NO.	CONTROL VALVE	POWER SOURCE			PUMPING CAPACITY CU. IN./MIN.		HEIGHT	BASE	RESERVOIR CAPACITY	USABLE OIL VOL. QT.	APPROX. WT.
			TYPE	H.P.	VOLTS	100 PSI	10,000 PSI					
940m3 Basic	501.8348.6	Optional	AC	1 (15 min.)	115/230	150	30	21 ¹ / ₈ "	10 ¹ / ₂ x 12	8 Qts.	6-1/4 Qts.	82#
960m3 Basic	501 8349.4	Optional	AC	1 ¹ / ₂ (15 min.)	115/230	300	60	22 ¹⁵ / ₁₆ "	10 ¹ / ₂ x 12	8 Qts.	6-1/4 Qts.	92 #

Servicing Instructions

Filling Oil Reservoir. The oil reservoir must be kept filled with a good grade of light hydraulic oil—Greenlee 905 0806.8 hydraulic oil or equal in order for the pump to operate properly.

⚠ CAUTION

Never use synthetic fluids or fluids with poor lubricating qualities, i.e., brake fluids, etc., as permanent injury to the pump will result.

Eight quarts are required of which 6-1/4 quarts are usable. A minimum of 1-3/4 quarts must be at the bottom of the reservoir at all times during operation. Be sure that your complete operation does not require more than the usable amount of oil.

To refill or add oil to the reservoir, proceed as follows:

1. Remove vent unit from top of reservoir (B).
2. Add oil to within 1/2" of top of reservoir when ram is retracted.
3. Install vent unit (B) securely in place.

⚠ CAUTION

Check to see that vent unit is not clogged before attempting to operate pump.

Draining Oil Reservoir. Unscrew and remove 3/8 inch pipe plug (60) from side of pump base. Turn pump on its side to drain all oil from reservoir. Be sure to replace plug before refilling reservoir with oil.

Flushing System. As long as these pumps are used as outlined in the operating instructions, long, trouble-free performance can be expected. To maintain this performance, it is absolutely essential that dirt or other foreign matter be kept out of the system as this is the most common cause of hydraulic system failure. Therefore, when opening up the pump for any reason, such as making pipe connections, adjusting pressure or any repair, be sure to exercise extreme care in cleanliness and to use clean tools and cloths. If, at any time, dirt is suspected to have found its way into the system, the entire oil system should be flushed as follows:

1. Drain oil from reservoir.
2. Fill reservoir with any recommended flushing oil or clean kerosene and operate pump. Work the control handle back and forth several times during flushing to wash all foreign particles from the control valve unit.

Note: Do not operate pump for a very long time as system is not designed to operate with flushing oil or kerosene.

3. Drain flushing oil or kerosene from reservoir and refill with new oil.

Motor Maintenance

The 1 HP or 1-1/2 HP motors used on these power pumps, when in need of repairs, should be repaired by the manufacturer of the motor or at one of the qualified GE service stations.

Minor Hydraulic Trouble Chart

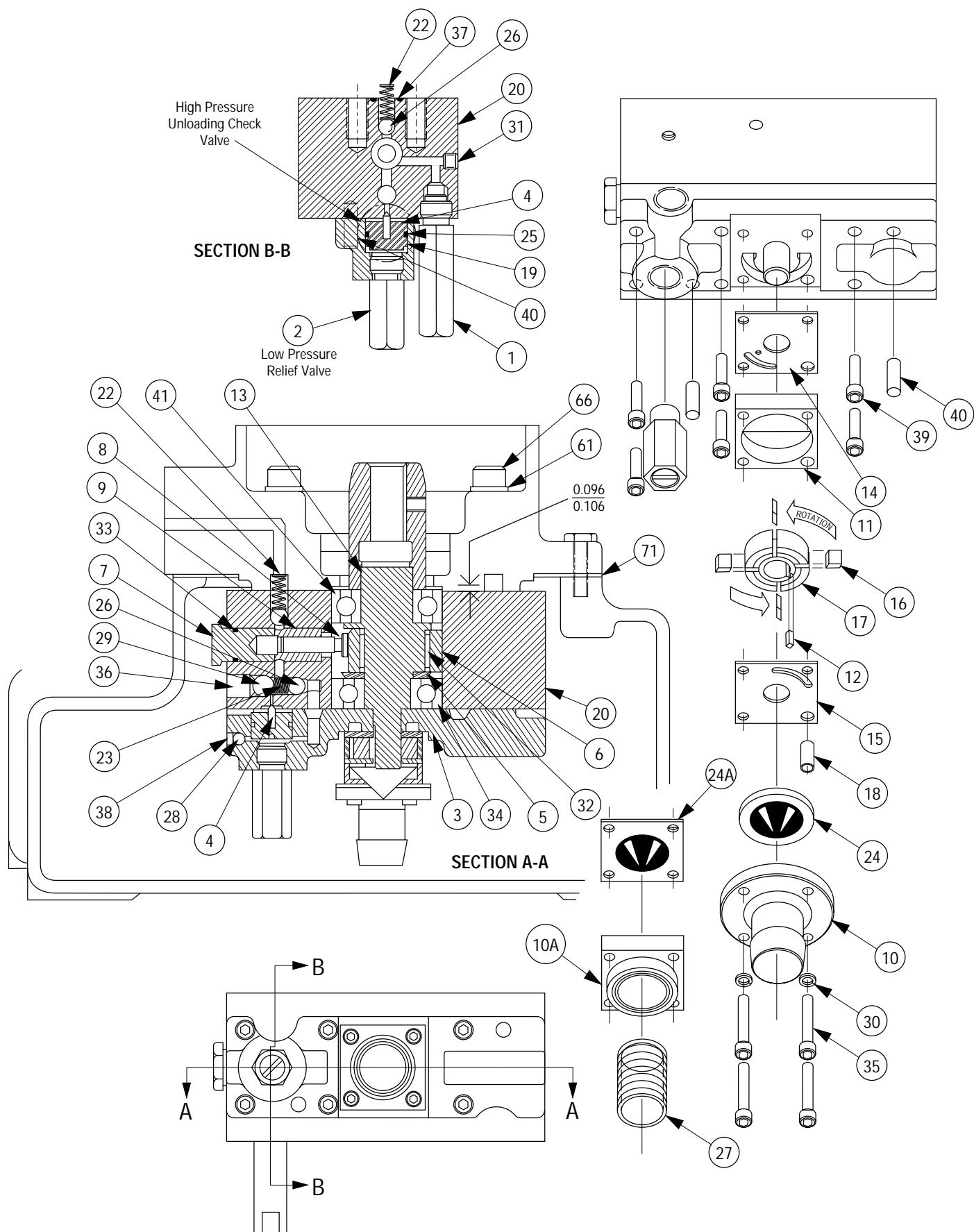
The hydraulic unit should be observed constantly for out-of-the-ordinary performance and unusual noises. If any of these are present, shut off pump and take corrective steps immediately to avoid possible expensive repairs later on. In most cases, a minor repair will solve the problem but it is suggested that, if trouble

continues, the unit should be returned to the factory or to a qualified Service Station for the proper repair. Under no conditions allow unqualified personnel to attempt to repair the pump, particularly the pump block unit, as serious, irreparable damage may result.

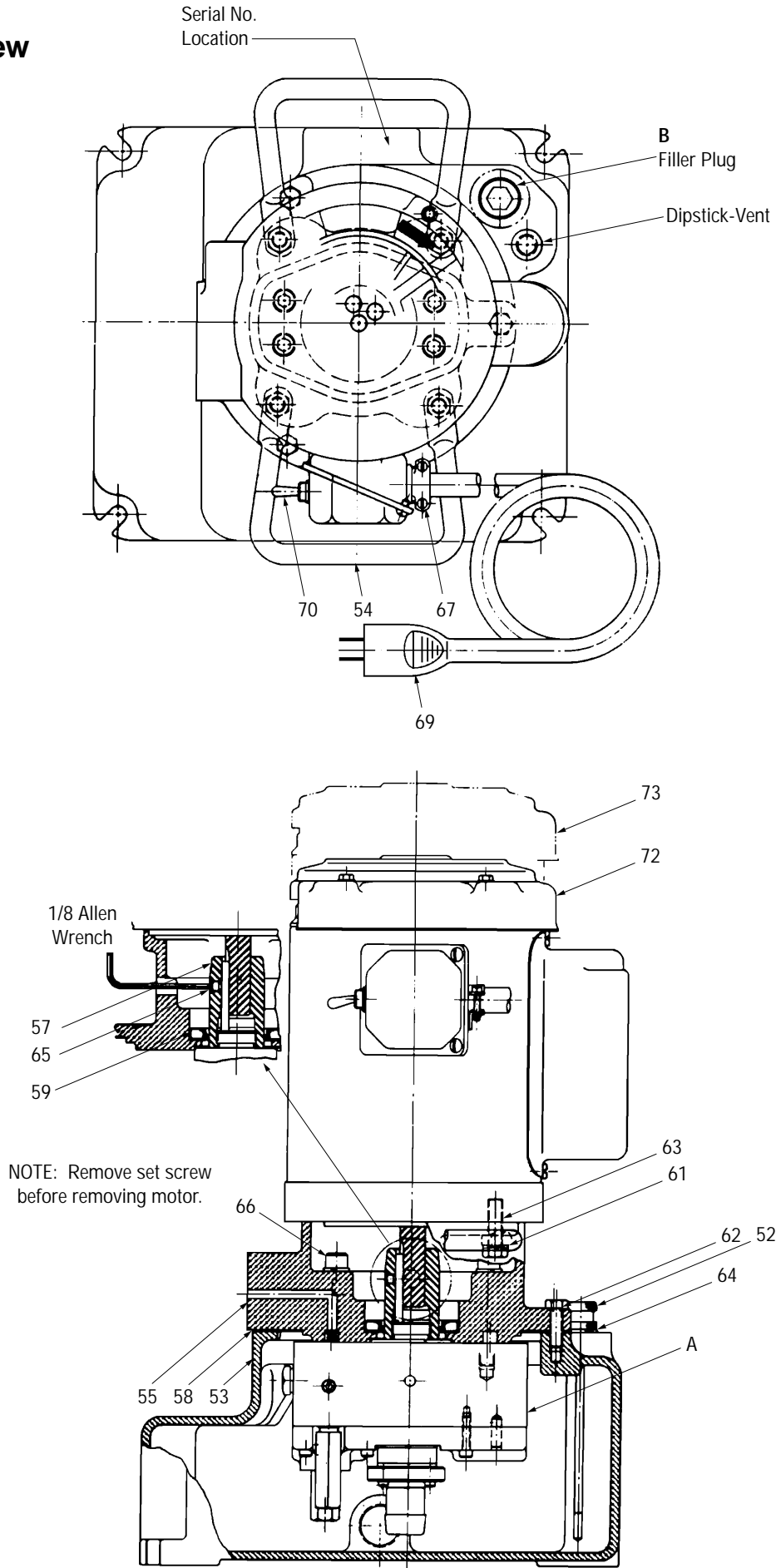
PROBLEM	PROBABLE CAUSE	POSSIBLE REMEDY
Lo-pressure failure	Clogged-up screen	Clean or replace #24.
	Defective valve	Replace #2.
	Defective vanes or rotor	Replace #16 & 17.
	Oil supply low	Add oil.
Hi-pressure failure	Inoperative Lo-pressure stage	See above.
	Defective valve	Replace #1.
	Sticking Plunger	Replace #8 & 9.
	Leaking ball check	Ball seat 9/32 ball (26).
	Sticking relief valve plunger	Check #19 for proper movement.
	Oil supply low	Add oil.
Erratic pressure build-up	Air in circuit, oil, supply low	Add oil, run unit to work out air.
	Dirt in system	Flush out entire oil system and fill with new oil (see page 5).
Necessary to add oil often	Oil leaks	Check for broken lines, loose fittings or connections.
Pump motor will not start	Not plugged into proper receptacle	Check plug-in connection
	Defective switch	Replace #70.
	Defective motor	Send to factory or qualified service center.

If the above corrective measures fail to make the pump function, it is recommended that you send the pump back to the factory or to a qualified service center.

Exploded View



Exploded View



Parts List

No. 940-M3 Hydraulic Pump (# A, B and 50 - 72)

No. 960-M3 Hydraulic Pump (# A, B, 50 - 71 and 73)

Key	Part No.	Description	Qty
A	501 8236.6	Block Unit, Pump (consists of #1 - 42)	1
1	500 6067.8	Valve Unit, Relief	1
2	501 7766.4	Valve Unit, Relief	1
3	501 8194.7	Plate, Pump Mounting	1
4	500 3493.6	Pin, Seal	1
5	501 8871.2	Spacer, Bearing	1
6	501 1855.2	Race, Outer	1
7	501 1862.5	Plug, Hi-Pressure Plunger	1
8	501 9060.1	Plunger, Hi-Pressure	1
9	501 9059.8	Bushing, Hi-Pressure Plunger	1
10	502 0424.6	Block, Intake	1
10A	501 4859.1	Block, Intake	1
11	501 4861.3	Plate, Pump	1
12	501 4862.1	Key, Lo-Pressure Pump	1
13	501 4876.1	Shaft, Eccentric	1
14	501 7130.5	Plate, Top	1
15	501 7131.3	Plate, Bottom	4
16	501 7135.6	Vane	1
17	501 7136.4	Rotor	1
18	501 7467.3	Dowel, Hollow	1
19	501 8195.5	Plunger, Check Valve	1
20	501 8237.4	Block, Pump	1
22	500 6111.9	Spring, Compression	1
23	501 4865.6	Spring, Compression	1
24	502 1175.7	Screen, Intake	1
24A	501 6599.2	Screen, Intake	1
25	905 0014.8	O-Ring, 5/8 x 3/4 x 1/16	1
26	905 0436.4	Ball, 9/32 Grade #1 Chrome Steel	2
27	905 0490.9	Nipple, Intake (replaced by 10)	1
28	905 0677.4	Ball, 5/32 Grade #1 Chrome Steel	1
29	905 0681.2	Ball, 3/8 Grade #1 Chrome Steel	1
30	905 1526.9	Washer, #8 Hi-Collar Lock	4
31	905 0824.6	Plug, 1/16 NPT Levi-Seal Socket Head Pipe	1
32	905 0911.0	Roller, .125 x .750	30
33	905 1524.2	O-Ring, 1/2 x 5/8 x 1/16	1
34	905 0989.7	Bearing, Single Row Unshielded Ball	1
35	905 0994.3	Screw, #8-32 NF x 1-1/4 Socket Head Cap	4
36	905 1111.5	Screw, 7/16-20 NF x 1/2 Cup Point Socket Set	1
37	905 2817.4	O-Ring, 7/16 x 9/16 x 1/16	1
38	905 1241.3	Screw, #10-32 NF x 3/16 Flat Point Socket Set	1
39	905 1471.8	Screw, No. 10-32 NF x 7/8 Socket Head Cap	6
40	905 1472.6	Lok-Dowel, 1/4 x 3/4	2
41	905 1473.4	Bearing, Single Row Unshielded Ball	1
52	501 5646.2	Dipstick Unit	1
53	501 5695.0	Reservoir	1
54	501 2663.6	Handle	1

Parts List (cont'd)

Key	Part No.	Description	Qty
55	501 8292.7	Plate, Motor Mounting	
57	501 8238.2	Adapter, Drive Shaft	1
58	501 5701.9	Gasket, Reservoir	1
59	905 0320.1	Seal, 1-3/8 ID x 2-3/8 OD x 7/16 Thick Oil	1
61	905 0506.9	Washer, 3/8 x .136 x .070 Lock	8
62	905 0522.0	Screw, 5/16-18 NC x 1" Hex Head Cap	3
63	905 0532.8	Screw, 3/8-16 NC x 1-1/4 Hex Head Cap	4
64	905 0387.2	O-Ring, 7/16 x 5/8 x 3/32	1
65	905 1269.3	Screw, 1/4-20 NC x 1/4 Cup Point Head Set	1
66	905 1474.2	Screw, 3/8-24 NF x 2-1/2 Socket Head Cap	4
67	918 5117.3	Connector	1
69	918 5264.1	Cord	1
70	918 5284.6	Switch	1
72	918 5183.1	Motor, 1 HP 1725 RPM (940-M3 Series only)	1
73	918 5466.0	Motor, 1-1/2 HP 3450 RPM (960-M3 Series only)	1
	501 8416.4	Packing Repair Kit	

GREENLEE **TEXTRON**

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