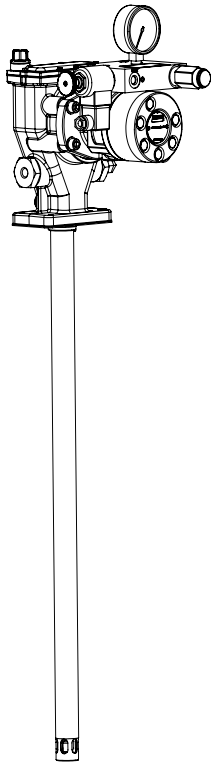
LINCOLN

Operation, assembly, disassembly and troubleshooting guide

FlowMaster II rotary driven hydraulic pump, series “A”

85769, 120 lbs.
85847, 40 lbs.



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Page	**375B**

⚠ DANGER

Read manual prior to installation or use of this product. Keep manual nearby for future reference. Failure to follow instructions and safety precautions may result in death or serious injury.

SKF

Contents

Safety

Read and carefully observe these installation instructions before installing/operating/troubleshooting the assembly. The assembly must be installed, maintained and repaired exclusively by persons familiar with the instructions.

Install the assembly only after safety instructions and this guide have been read and are completely understood.

Adequate personal protection must be used to prevent splashing of material on the skin or in the eyes.

Always disconnect power source (electricity, air or hydraulic) from the pump when it is not being used.

This equipment generates very high grease pressure. Extreme caution should be used when operating this equipment as material leaks from loose or ruptured components can inject fluid through the skin and into the body. If any fluid appears to penetrate the skin, seek attention from a doctor immediately.

Do not treat injury as a simple cut. Tell attending doctor exactly what type of fluid was injected.

Any other use not in accordance with instructions will result in loss of claim for warranty or liability.

- Do not misuse, over-pressurize, modify parts, use incompatible chemicals, fluids, or use worn and/or damaged parts.
- Do not exceed the stated maximum working pressure of the pump or of the lowest rated component in your system.
- Always read and follow the fluid manufacturer's recommendations regarding fluid compatibility, and the use of protective clothing and equipment.
- Failure to comply may result in personal injury and/or damage to equipment.

Explanation of signal words for safety

⚠

This is the safety alert symbol. It is used to alert you to potential physical injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

⚠ **SAFETY INSTRUCTIONS**

Safety instruction signs indicate specific safety-related instructions or procedures.

⚠ **DANGER**

Indicates a hazardous situation which, if not avoided, will result in death or serious injury.

⚠ **WARNING**

Indicates a hazardous situation which, if not avoided will result in death or serious injury.

⚠ **CAUTION**

Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

Use of this manual

Overview

This service page details the procedure that must be followed while installing, operating and repairing the FlowMaster II rotary driven hydraulic pump.

All required parts, tools, and equipment needed to complete the operation of the FlowMaster II rotary driven hydraulic pump are defined and listed within this manual. Review of the parts list and nomenclature is recommended before starting disassembly or operation.

Appropriate use

All pump models are exclusively designed to pump and dispense lubricants using hydraulic power. The specifications are shown in **table 1** for the pump.
The maximum specification ratings should not be exceeded.

Any other use not in accordance with instructions will result in loss of claims for warranty and liability.

General description and information

The FlowMaster II rotary driven hydraulic pump is a fully hydraulically operated adjustable grease pump.

A 24 V DC solenoid valve is incorporated as a method to turn the pump on and off.

On this model the pressure gauge is optional and may or may not be shown in the graphics in this manual.

Table 1 details the grease output in proportion to the hydraulic input, which is affected by temperature.

Grease output is proportional to the hydraulic input flow. The pump is primarily designed for centralized lubrication systems such as the single line parallel. Single line progressive and two line systems. An integrated pump control manifold is incorporated with the input flow and pressure.

The pump is driven by the rotary motion of the hydraulic motor. Rotary motion is converted to reciprocating motion through an eccentric crank mechanism. The reciprocating action causes the pump cylinder to move up and down. The unit is a positive displacement double-acting pump, as grease output occurs during both the up and down stroke.

During the down stroke, the pump cylinder is extended into the grease. Through the combination of shovel action and vacuum generated in the pump cylinder chamber, the grease is forced into the pump cylinder. Simultaneously, grease is discharged through the outlet of the pump.

The volume of grease during intake is twice the amount of grease output during one cycle. During the upstroke, the inlet check closes, and one half of the grease taken in during the previous stroke is transferred through the outlet check and discharged to the outlet port.

Fig. 1, **page 5** is the hydraulic schematic showing the key sub-assemblies of the pump. **Fig. 3**, **page 7** depicts the actual location of those items.

Inspection

If over pressurizing of the equipment is believed to have occurred, contact the factory authorized warranty and service center nearest you for inspection of the pump.

Specialized equipment and knowledge is required for repair of this pump.

Annual inspection by the factory authorized warranty and service center nearest you is recommended.

Damaged pumps

Do not use any pump that appears to be damaged, badly worn or operates abnormally.

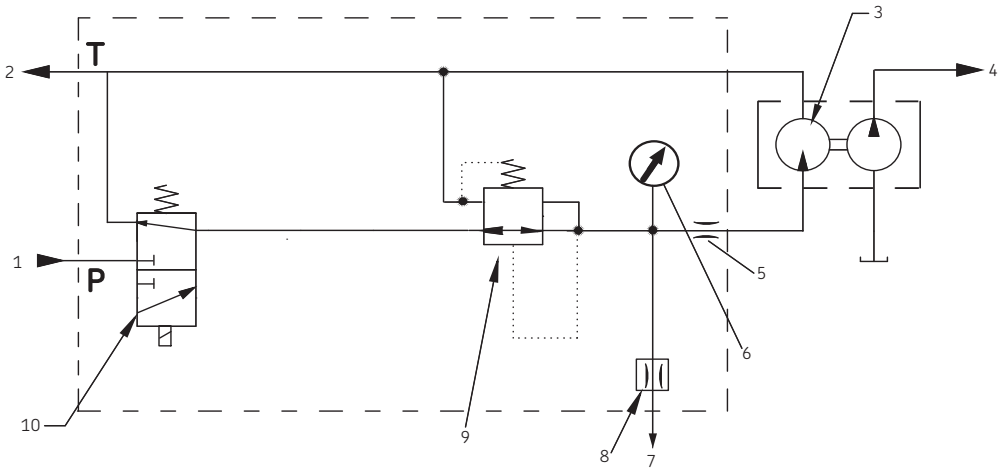
Remove the pump from service and contact the factory authorized warranty and service center nearest you for repairs. A listing of authorized warranty and service centers is available upon request.

Table 1

Pump specifications

Hydraulic inlet flow	1.5 U.S. gpm *(5,7 liters/min.)*
Operating temperature	–40 to 150 °F *(–40 to 65 °C)*
Operating working hydraulic pressure	360 psi *(25 bar)*
Solenoid voltage, for the on/off solenoid	24 V DC
Hydraulic inlet port, in	SAE 4
Tank return port, in	SAE 6
Supply inlet hydraulic pressure	Maximum 3,000 psi *(206 bar)*
Pump outlets, in	1/4 in. NPTF
Maximum hydraulic fluid temperature	250 °F *(121 °C)*
Pump ratio with manifold	10:1

Fig. 1



Call out	Nomenclature
1	Hydraulic fluid inlet port SAE 4 ORB
2	Hydraulic fluid return to tank SAE 6 ORB
3	Hydraulic motor
4	Lube outlets 0.25 in. NPTF
5	Flow control valve
6	Pressure gauge
7	Hydraulic fluid to vent valve
8	Orifice 0.013 in. *(0.33 mm)* diameter
9	Pressure reducing valve
10	Solenoid valve

Diagram 1

Grease output vs. temperature at 1.5 U.S. gpm (*5,7 liters/min.*) hydraulic flow rate

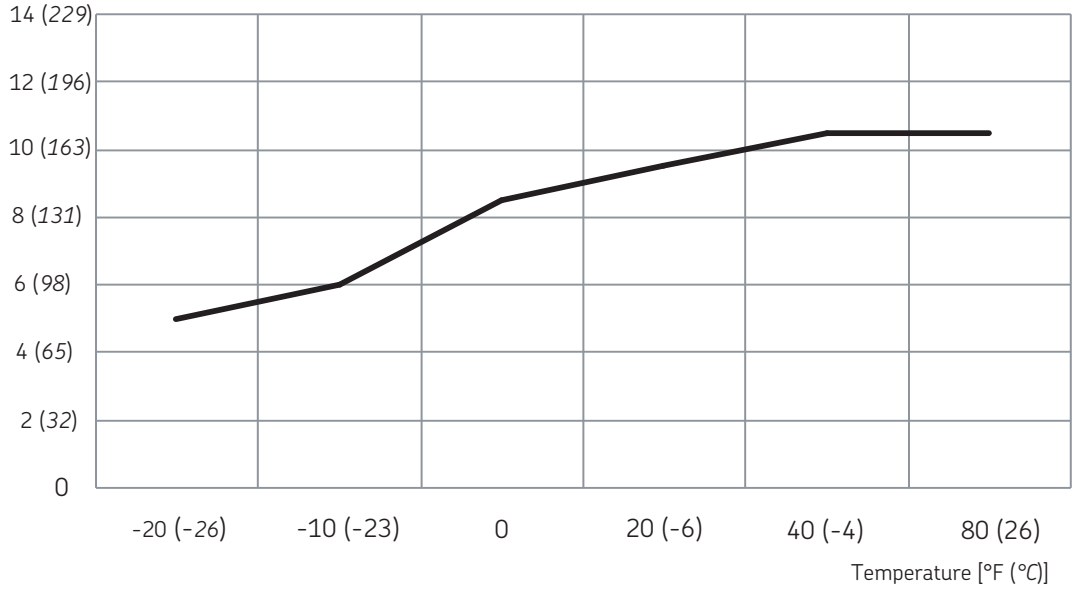
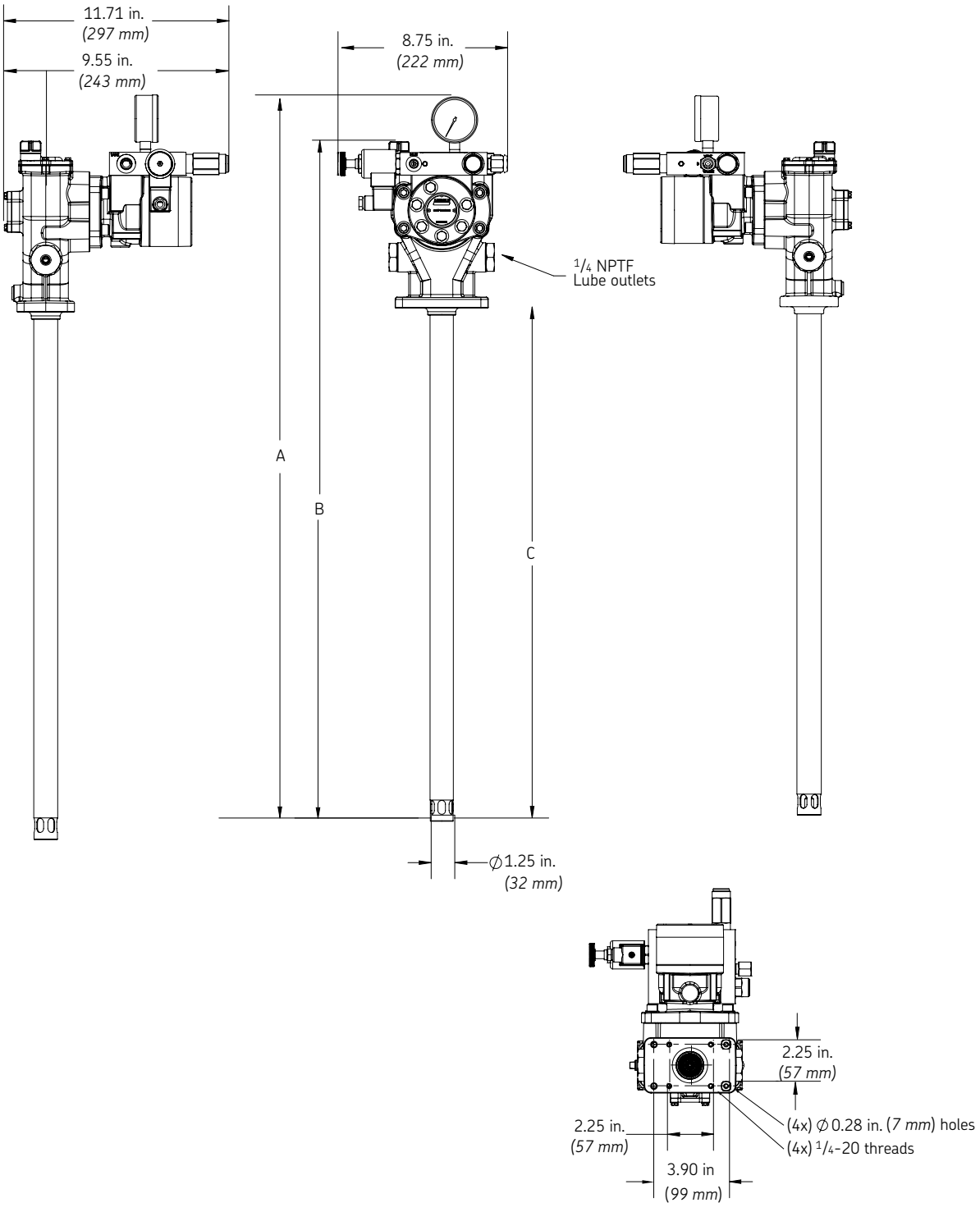


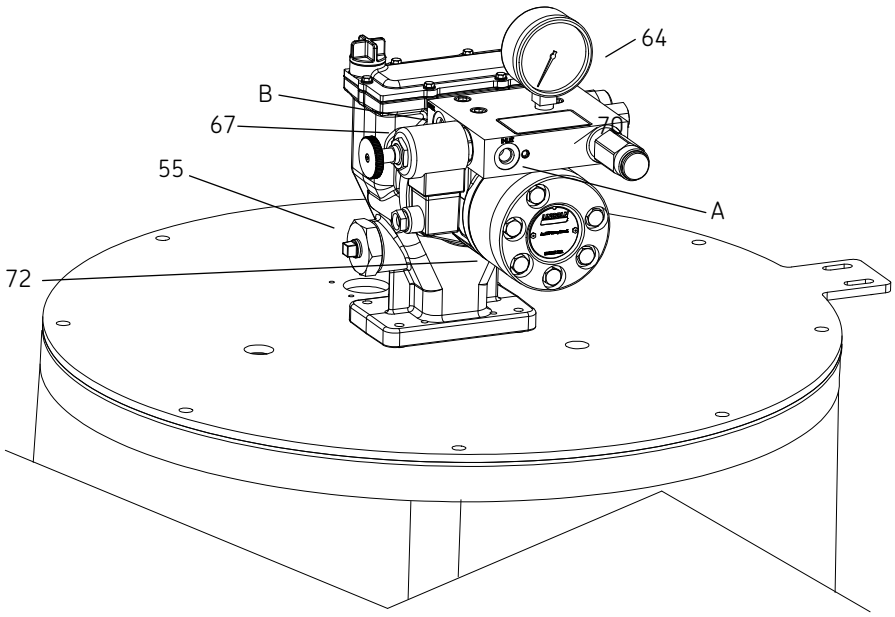
Fig. 2

Pump dimensions



Model	Dimension A in. (*mm*)	Dimension B in. (*mm*)	Dimension C in. (*mm*)
85847	27.10 (*688*)	24.69 (*627*)	15.76 (*400*)
85769	38.90 (*988*)	36.49 (*927*)	27.56 (*700*)

Fig. 3



Call out	Nomenclature
A	Hydraulic fluid inlet port SAE 4 ORB
B	Hydraulic fluid return tank SAE 6 ORB
72	Hydraulic motor
70	Pressure reducing valve
69	Flow regulator
67	Solenoid valve
64	Pressure gauge
55	Lube outlets 1/4 NPTF

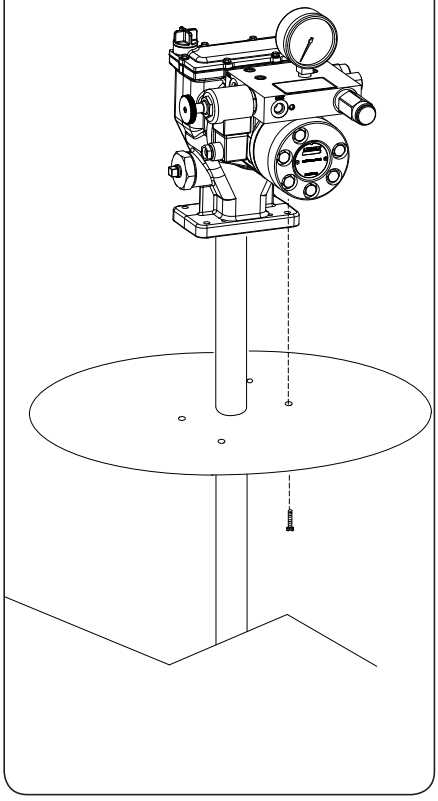
Installing the Pump

The pump was tested in lightweight oil which was left in to protect the pump from corrosion. Flush the pump before connecting it to the system to prevent contamination of the grease with residual oil.

The pump has flow and pressure controls integrated into the manifold (**66**) which are not adjustable by the user. A normally closed on/off solenoid valve (**67** and **68**) is also integrated into the manifold and will start or stop the pump operation. A manual override is on the pump that will allow starting and stopping of the pump.

1. Mount the pump securely on the drum cover so that it cannot move or vibrate during operation. Refer to **fig. 4**.
2. Attach hydraulic supply line to the inlet and return line to the manifold ports.
3. Connect material supply line to the pump outlet.
4. Plug the unused outlet on the opposite side of the pump.
5. Install high pressure shut-off valve in the material supply line. (Required).
6. Connect a 24 V DC power supply to the solenoid coil (**74**), using the supplied plug.

Fig. 4



Notice

If it is necessary to drill mounting holes into reservoir cover, refer to **fig. 2** for hole pattern and dimensions.

Operation

⚠ WARNING

Do not exceed 400 psi *(27 bar)* working hydraulic pressure. Use high pressure components to reduce risk of serious injury including fluid injection and splashing in the eyes or on the skin.

All accessories connected to the pump outlet must have at least 5,000 psi *(344 bar)* minimum hydraulic operating pressure. All accessories connected to the pump inlet must have at least 3,000 psi *(206 bar)* minimum working pressure.

Failure to comply may result in personal injury.

Notice

All pumps are factory set at 360 psi *(25 bar)* working inlet hydraulic pressure, with a flow rate of 1.5 U.S. gallons/min. *(5,7 liters/min.)*. Settings are not adjustable.

Notice

Fig. 5 depicts the location of the operating valves for the pump.

1. Shut off the material supply line valve.
2. Turn on the hydraulic pressure.
3. Energize the solenoid on/off valve.
4. Prime the pump by slowly opening the shut-off lubricant supply line valve.
5. Purge air from the pump.
6. Verify lubricant is flowing evenly from the pump.

Notice

Do not exceed maximum operating temperature of the hydraulic fluid 250 °F *(121 °C)*.

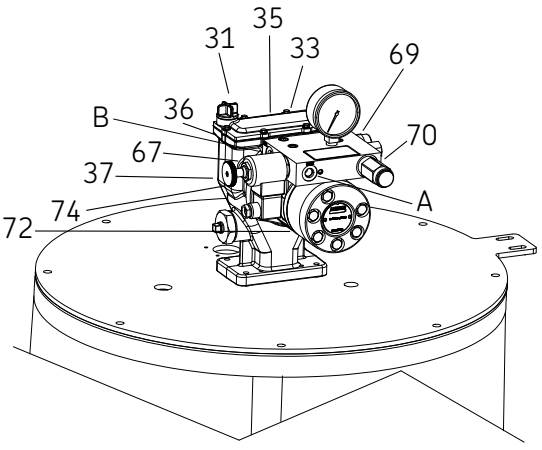
Never allow the pump to run dry of lubricant. A dry pump quickly speeds up, creating friction heat, which can damage the seals. Monitor supply lubricant level and refill when necessary.

Failure to comply may result in damage to equipment.

Crankcase oil service interval

- Check the oil level after every 750 hours of machine operation, or monthly.
- Change the oil after every 2,000 hours of machine operation or every year.
- Use SAE 10W30 motor oil in all units used in an ambient temperature of –40 to 150 °F *(–40 to 65 °C)*. For ambient temperatures of 50 to 70 °F *(10 to 21 °C)* use Mobil Aero HFA low temperature oil.
- Oil level should be at indicating dot on dipstick (middle of crankshaft).
- Use 10W30 motor oil 15 oz. *(0,44 l)*.

Fig. 5



Call out	Nomenclature
A	Hydraulic fluid inlet port SAE 4 ORB
B	Hydraulic fluid return to tank SAE 6 ORB
55	Lube outlet ¼ NPTF
64	Pressure gauge
69	Flow regulator
67	Solenoid valve with manual override
70	Pressure reducing valve
72	Hydraulic motor

Disassembly

Pump

1 Place pump into a vise.
2 Remove dipstick (**31**). Refer to **fig. 6**.
3 Drain crankcase oil.
4 Remove housing cover screws (**33**).
5 Remove housing cover (**35**) and gasket (**36**).
6 Remove the hydraulic motor mounting screws (**74**) and lock washers (**73**).
7 Remove hydraulic motor (**72**).
8 Remove manifold assembly mounting screws (**65**).
9 Remove manifold assembly (**66**).
10 Remove pressure reducing valve (**70**).
11 Remove flow regulator (**69**).
12 Remove solenoid valve cartridge (**67**).
13 Remove the outlet pin nuts (**55**) from both sides of the pump housing (**37**). Refer to **fig. 7**.
14 Using a blunt tool, remove the o-rings (**54**), (**53**) and back up washer (**52**) from outlet pin nuts (**55**).
15 Loosen the screws (**44**) holding the shaft cover (**46**) on the pump housing (**37**).
16 Remove the retaining ring (**48**) from the pump shaft (**40**).
17 Remove the pump shaft (**40**) by pushing the pump shaft on the retaining ring (**48**) side.
18 Remove the retaining ring (**63**) from the housing tube (**60**). Refer to **fig. 7**.
19 Remove the shovel plug (**62**) from the housing tube (**60**).
20 Remove the spiral retaining ring (**61**).
21 Loosen and remove the tube housing (**60**). Refer to **fig. 7**.
22 Remove the bronze bearing (**56**) from the tube housing (**60**). Refer to **fig. 8**.
23 Using a flat, blunt tool, remove the o-ring (**57**) from the tube housing (**60**).
24 Remove the back up washer (**58**) from the tube housing (**60**).

Notice
Slight force may be necessary to remove the eccentric (**5**) and crank rod (**7**) from the housing (**37**). Tap on the crank rod (**7**) until the eccentric (**5**) is above the pump housing (**37**) and can be pulled from the pump housing (**37**).

Fig. 6

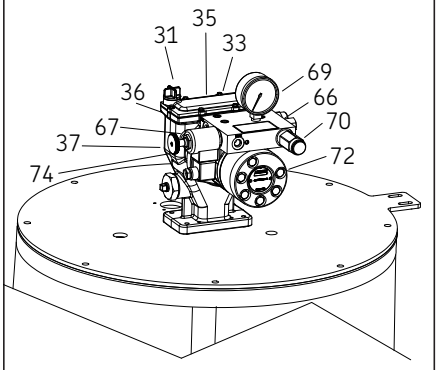


Fig. 7

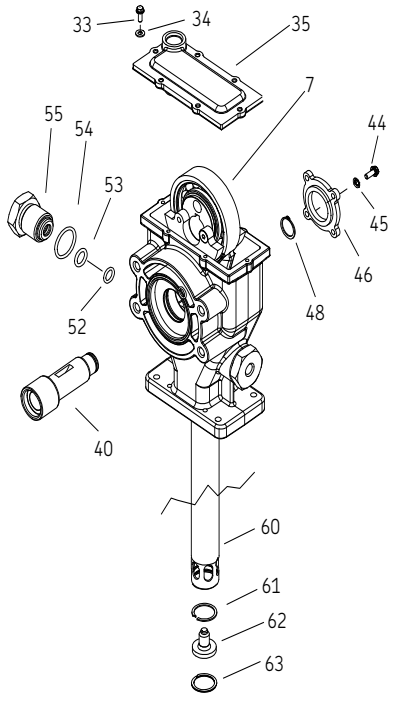
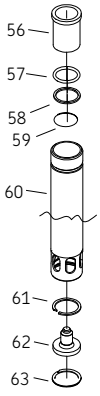


Fig. 8



25 Using a flat, blunt tool, remove the o-ring (**59**) from the tube housing (**60**).
26 Using a rubber mallet and piece of brass or other suitable piece of soft metal, tap on the crank rod (**7**) inside the housing (**37**).
27 Pull the eccentric (**5**) and crank rod (**7**) out of the top of the pump housing (**37**).

End of procedure.

Crankrod and eccentric

1 Remove pivot screws (**11**) from the crankrod (**7**). Refer to **fig. 9**.

> **Notice**
> Wrist pin bushings (**12**) often stick in wrist pin anchor (**13**). It may be necessary to use a 5/16–24 bolt from kit **(276275)** to remove the wrist pin bushings (**12**).

2 Using a 5/16 in.–24 bolt, press out wrist pin bushing (**12**).
3 Loosen and remove the wrist pin anchor (**13**) from reciprocating tube (**25**). Refer to **fig. 10.**
4 Pull the cup seal (**16**) out of the wrist pin anchor (**13**).
5 Remove the steel backup ring (**17**).
6 Place the plunger link rod (**20**) in a vise.
7 Using an open ended wrench, loosen the plunger link rod (**20**) and remove from the outlet pin (**8**).
8 Remove the plunger link rod (**20**).
9 Remove the retainer clip (**19**) from the plunger link rod (**20**).
10 Using a blunt tool, remove the o-ring (**18**) from the plunger link rod (**20**).
11 Remove the back up washer (**15**) from the plunger link rod (**20**).
12 Remove the o-ring (**14**) from the plunger tube (**52**).
13 With the crank rod in a vise and using the special tool (**T1**) provided in tool kit, 276275 remove the plunger link rod (**20**). Refer to **fig. 11**.
14 Place the end of the plunger link rod (**20**) into the hole of the tool (**T1**).
15 Align the outlet hole of the plunger link rod (**20**) with the hole in the special tool (**T1**). Refer to **fig. 11**.
16 Insert the pin included in the tool kit (276275) through the tool and into the plunger link rod (**20**) outlet hole.
17 Turn the tool counter clockwise to loosen the lower bushing and plunger (**24**) from the plunger link rod (**20**).
18 Remove the plunger (**24**).
19 Remove the check rod from (**22**) the lower bushing and plunger (**24**).
20 Remove the ball (**23**) from the lower bushing and plunger (**24**).
21 Remove the spring (**21**) from the link rod (**20**).

End of procedure.

Fig. 9

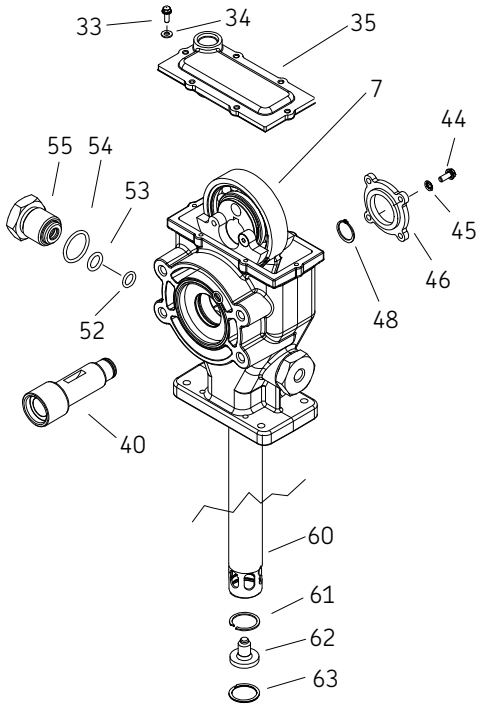
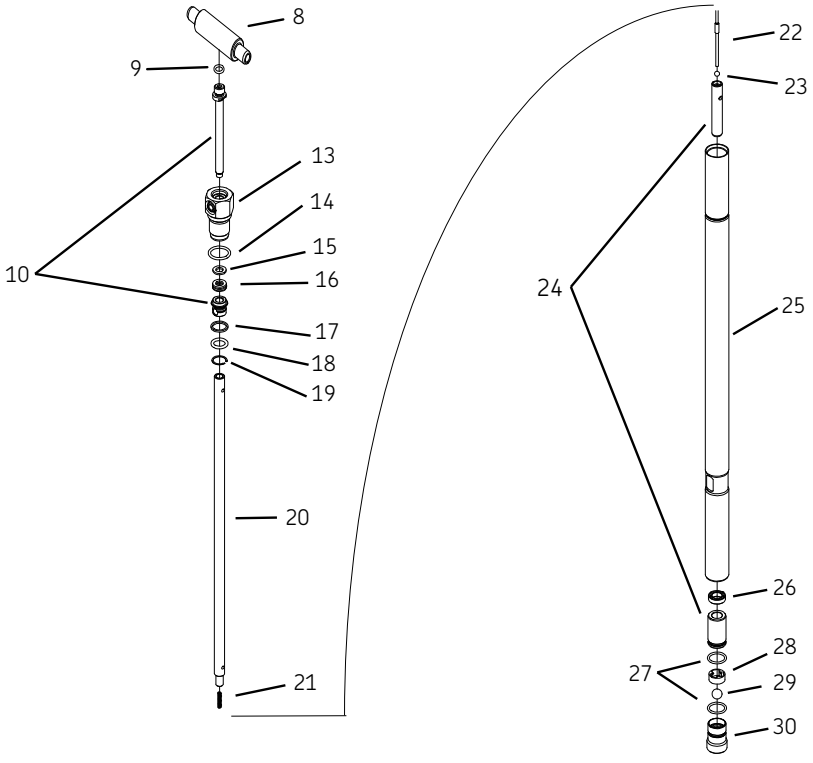


Fig. 10



Reciprocating tube

1 Loosen the check seat housing (**30**) with 3/8 in. *(9 mm)* hex head wrench. Refer to **fig. 11**.
2 Remove the check seat housing (**30**) from the reciprocating tube (**25**).
3 Remove the ball cage (**28**), check ball (**29**) and o-ring seal (**27**) from the check seat housing (**30**).
4 Remove the lower bushing (**24**) from the reciprocating tube (**25**).
5 Remove the lower cup seal (**26**) from the reciprocating tube (**25**).

Crankrod

1 Using a hex head wrench, loosen and remove the two flat head screws (**1**) from the eccentric (**5**). Refer to **fig. 12**.
2 Remove the counterbalance weights (**2**).
3 Remove the outer (**3**) and inner (**4**) retaining ring from both sides of the crank rod (**7**).
4 Place the crankrod (**7**) on the supplied 2 1/2 in. *(62 mm)* diameter steel pipe.
5 Drive the crank eccentric (**5**) out of the ball bearing (**6**).
6 Drive the ball bearing (**6**) out of the crank rod (**7**).

End of procedure.

Fig. 12

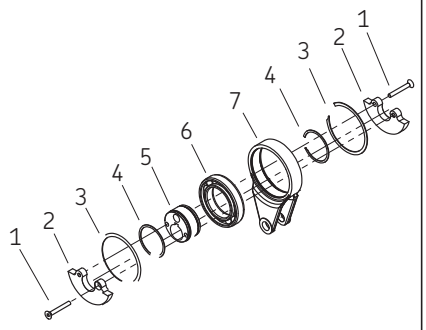
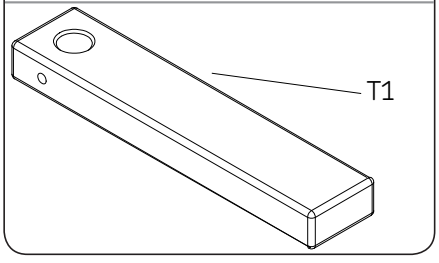


Fig. 11



Assembly

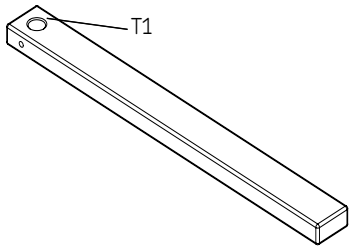
Crankrod and eccentric assembly

1. Place the crank rod (**7**) on the supplied 2 1/2 in. *(62 mm)* diameter steel pipe.
2. Refer to **fig. 13** and install the ball bearing assembly (**6**) into the crank rod (**7**).
3. Place the eccentric (**5**) in the ball bearing (**6**).
4. Place one end of the inner retaining ring (**4**) on top of the eccentric (**5**).
5. Squeeze the other end of the retaining ring (**4**) toward the center and slide retaining ring (**4**) into place.
6. Place one end of the outer retaining ring (**3**) on top of the inner retaining ring (**4**).
7. Squeeze the other end of the retaining ring (**4**) toward the center and slide retaining ring (**4**) into place.
8. Align the holes of the counter-balance weights (**2**) with the threaded holes of the eccentric (**5**) and place on the eccentric (**5**).
9. Insert the flat head screws (**1**) into the counter-balance weight (**2**) and torque the flat head screws (**1**) to a torque of 100–110 in.lbf. *(11,3–12,4 Nm)*.

Pump

1. Install the ball (**23**) into the lower bushing and plunger (**24**). Refer to **fig. 14**.
2. Insert the check rod (**22**) into the pump plunger (**23**).
3. Place the spring (**21**) onto the check rod (**22**).
4. Thread the plunger link rod (**20**) into the pump plunger (**24**).
5. Insert the lower bushing pump plunger (**24**) into the suppled tool.
6. Align the hole in the lower bushing pump plunger (**24**) with the hole in the tool (**T1**).
7. Insert the supplied pin into the hole of the tool (**T1**) and into the lower bushing pump plunger (**24**).
8. Torque the lower bushing pump plunger (**24**) to a torque of 110 to 125 in.lbf. *(12,4 to 14,1 Nm)*.
9. Install the steel back up ring (**17**) onto the threads of upper bushing and plunger end (**10**).
10. Slide the o-ring (**18**) onto the upper bushing and plunger end (**10**).
11. Install the retaining clip (**19**) on the upper bushing and plunger end (**10**).
12. Install the o-ring (**9**) on the upper bushing and plunger end (**10**).
13. Place the outlet pin (**8**) into a vise.
14. Apply Loctite 242 to the threads of the upper bushing and plunger end (**10**).

Fig. 15



15. Thread the upper bushing and plunger end (**10**) into the outlet pin (**8**).
16. Torque to 110 to 125 in.lbf. *(12,4 to 14,1 Nm)*.
17. Install the back-up washer (**15**) in the wrist pin anchor (**13**).
18. Place a new cup seal (**16**) inside the wrist pin anchor (**13**).
19. Clean the threads of the wrist pin anchor (**13**).
20. Install the o-ring (**14**) on the wrist pin anchor (**13**). Refer to **fig 14**.
21. Insert the upper bushing and plunger end (**10**) into the wrist pin anchor (**13**) and tighten.
22. Place the wrist pin anchor (**13**) in a vise.
23. Tighten the wrist pin anchor (**13**) to a torque of 20 to 25 ft.lbf. *(27 to 34 Nm)*.

Fig. 13

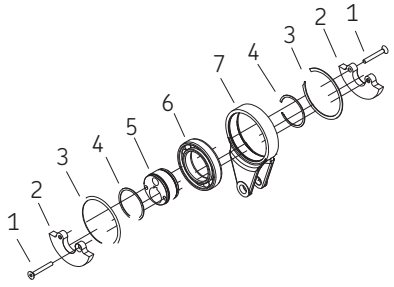
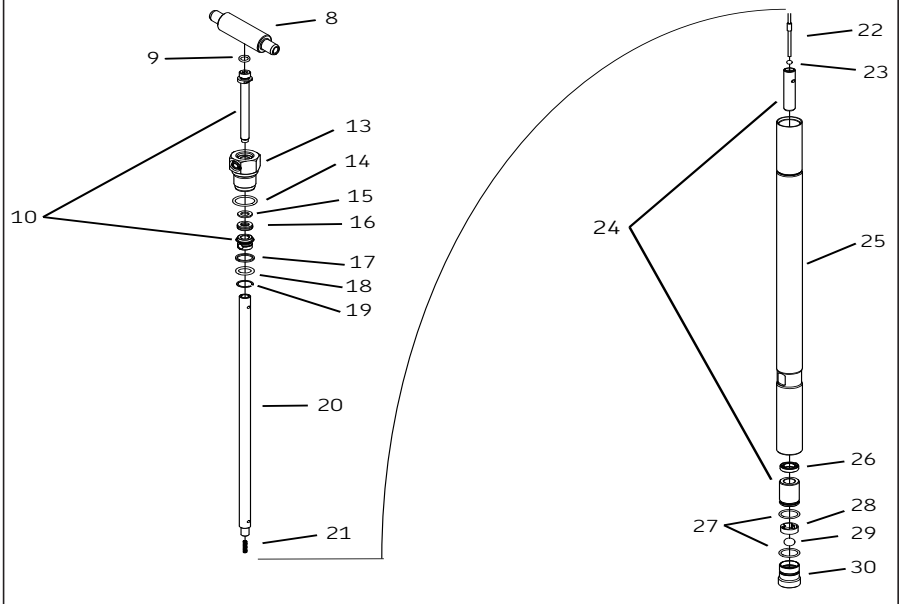
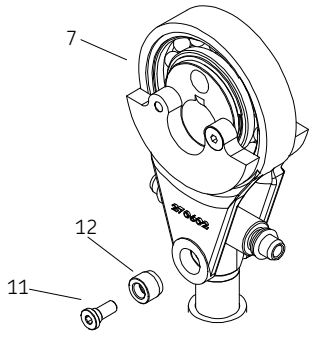


Fig. 14



24 With the wrist pin anchor (**13**) still in the vise, align the crankrod/eccentric assembly (**7**) holes with the wrist pin anchor (**13**) holes. Refer to **fig. 16**.
25 Install the wrist pin bushings (**12**) through the crank rod (**7**) and into the wrist pin anchor (**13**). Refer to **fig. 16**.
26 Apply Loctite 242 to the threads of the wrist pin bushing screws (**11**).
27 Insert and thread the wrist pin bushing screws (**11**) into the crankrod (**7**).
28 Torque bushing screws (**7**) to a torque of 110 to 125 in.lbf. *(12,4 to 14,1 Nm)*.
29 Install the cup seal (**26**) with the slotted side toward the center of the reciprocating tube (**25**).
30 Place a new o-ring (**27**) on the lower bushing and plunger (**24**).

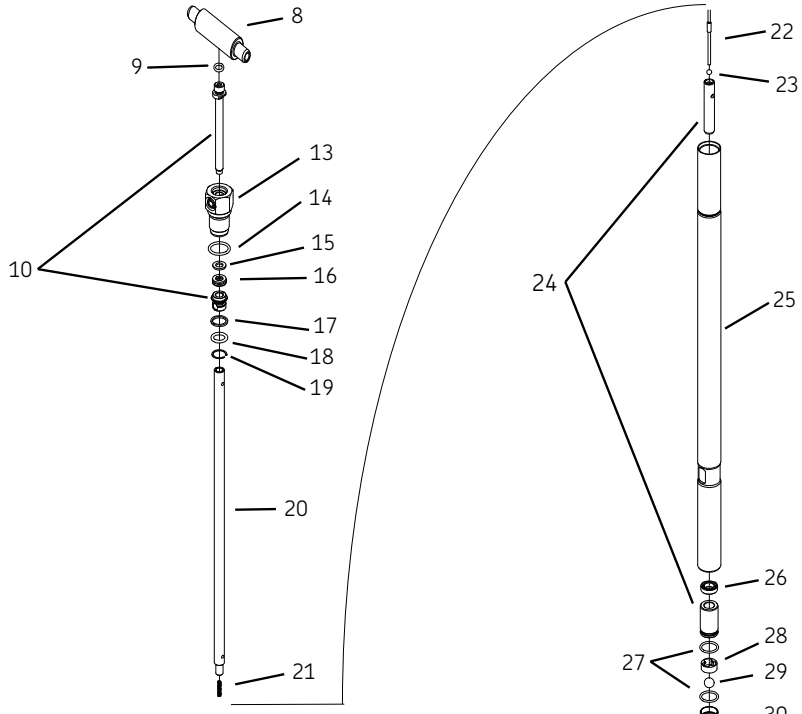
Fig. 16



31 Slide the lower bushing and plunger (**24**) into the reciprocating tube (**25**) with the o-ring (**27**) near the bottom of the reciprocating tube (**25**). Refer to **fig. 17**.
32 Install the steel check cage (**28**) into the reciprocating tube (**25**).
33 Install the ball (**29**) into the steel check cage (**28**).

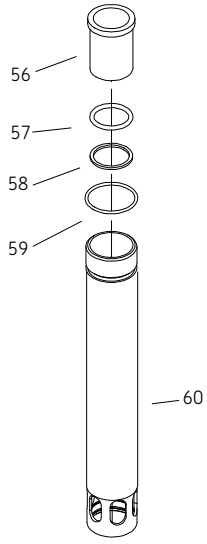
Notice
For ease of installation of the lower cup, use a small piece of tubing to slide the lower cup into the reciprocating tube and over the pump plunger.

Fig. 17



34 Install o-ring (**27**) onto check seat housing (**30**).
35 Apply Loctite 242 or equivalent to the threads of the check seat housing (**30**).
36 Thread the check seat housing (**30**) into the reciprocating tube (**25**) and tighten using a 3/8 in. *(9 mm)* hex key.
37 Torque to 20 to 25 ft.lbf. *(27 to 34 Nm)*.
38 Remove the crank rod (**7**) from the vise.

Fig. 18



39 Refer to **fig. 18** and insert the o-ring (**59**) into the housing tube (**60**).
40 Place the back up washer (**58**) into the housing tube (**60**).
41 Insert the o-ring (**57**) into the housing tube (**60**).
42 Insert the bronze bearing (**56**) into the housing tube (**60**).
43 Position the crankrod assembly (**7**) over the top of the pump housing (**37**) and lower into the pump housing (**37**).

Notice
Failure to align the key on the shaft and the key way in the eccentric will result in damage to equipment.

44 Align the crank rod (**7**) with the shaft (**40**) mounting hole. Refer to **fig. 19** and **fig. 20.**

45 While aligning the key (**39**) on the shaft (**40**) with the eccentric key way (**5**), slide the shaft (**40**) into the eccentric (**5**). Refer to **fig. 20**.

46 Install the retaining ring (**48**) on the shaft. (**40**).

Fig. 19

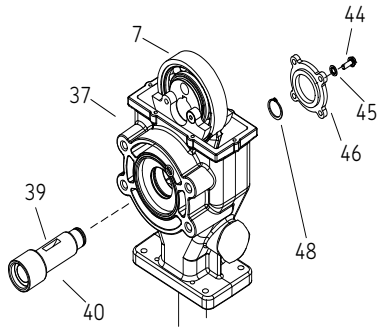
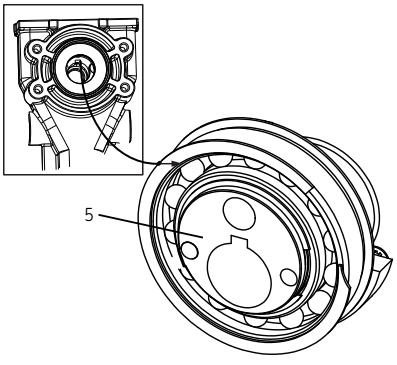


Fig. 20



47 Install the shaft cover (**46**) on the pump (**37**). Refer to **fig. 23**.

48 Insert and thread screws (**44**) with lock washers (**45**) into shaft cover (**46**) and pump housing (**37**).

49 Install new cover gasket (**36**) on pump housing (**37**). Refer to **fig. 21**.

50 Install the pump cover (**35**).

51 Install the screws (**33**) with o-rings (**34**) into the pump cover (**35**).

52 Torque the screws (**33**) to a torque of 10 to 15 in.lbf. *(1,1 to 1,6 Nm).*Insert and thread the housing tube (**60**) into the pump housing (**37**). Refer to **fig. 22**, **page 15**.

53 Install the hydraulic motor (**72**) on the pump housing (**37**).

54 Thread the hydraulic motor mounting screws (**74**) with lock washers (**73**) into the pump housing (**37**).

55 Torque the mounting screws (**74**) to a torque of 50 to 55 ft.lbf. (*67,8 to 74,5 Nm*). Refer to **fig. 22**, **page 15**.

56 Install the o-rings (**71**) in the motor (**72**). Refer to **fig. 22**.

57 Place the manifold (**66**) on the hydraulic motor (**72**).

58 Thread the four manifold mounting screws (**65**) into the manifold (**66**).

59 Torque the screws to 20 to 25 ft.lbf. *(27,1 to 33,9 Nm).*

60 Install the manual override solenoid valve (**67**) into the manifold (**66**).

61 Torque the solenoid valve (**67**) to a torque of 25 to 30 ft.lbf. *(33 to 40 Nm).*

62 Install the pressure reducing valve (**70**) in the manifold (**66**).

63 Torque the pressure reducing valve (**70**) to a torque of 35 to 40 ft. lbf. *(47 to 54 Nm).*

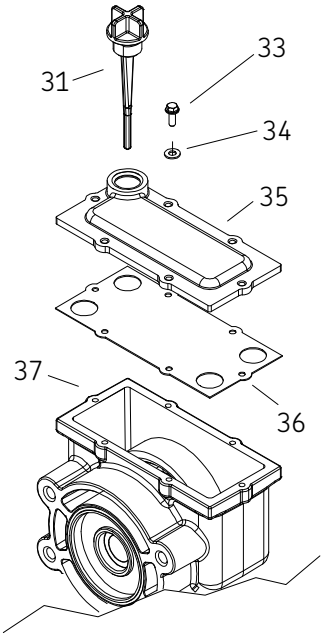
64 Install the flow regulator (**69**) into the manifold (**66**).

65 Torque the flow regulator (**69**) to a torque of 35 to 40 ft.lbf. *(47 to 54 Nm).*

66 Refer to **fig. 22**, **page 15** and torque the housing tube (**60**) to a torque of 20 to 25 ft.lbf. *(27,1 to 33,9 Nm).*

67 Refer to **fig. 22** and insert the retaining ring (**61**) into the second groove of the housing tube (**60**).

Fig. 21



68 Install the shovel plug (**62**) into the housing tube (**60**).

69 Install the spiral retaining ring (**63**).

70 Install the o-ring (**54**) in the outlet pin mounting hole groove of the pump housing (**37**), as shown in **fig. 22, page 15**.

71 Install the back up washer(**52**) inside the outlet pin nut (**55**).

72 Install the o-ring (**53**) inside the outlet pin nut (**55**).

73 Line up the outlet pin and thread the outlet pin nut (**55**) into the pump housing (**37**).

Notice
Refer to **page 8** crankcase oil service for oil recommendations.

74 Torque to 30 to 35 ft.lbf. *(40 to 47 Nm).*

75 Fill the crankcase with oil up to indicator dot on dipstick (**31**).

76 Install the crank case oil dip stick (**31**) and torque to 10 to 15 in.lbf. (*1,1 to 1,7 Nm).* Refer to **fig. 22**, **page 15**.

End of procedure.

Troubleshooting

Condition	Possible cause	Corrective action
Pump does not run	No pressure on gauge (**64**)	
	• Closed supply line shut off valve • No power to solenoid valve (**68**) • Faulty solenoid (**68**)	Open shut off valve Correct electrical fault Replace solenoid (**68**)
	• Insufficient hydraulic fluid supply	Check hydraulic supply for proper pressure and flow
	Pressure is shown on gauge (**64**) • Closed fluid outlet line • Pump is stalled due to grease back pressure • Pump is seized or damaged	 Check outlet line and clear obstructions Check vent valve in system Dismantle the pump and repair Defective or seized component See disassembly and assembly procedure
Pump speeds up or runs erratically	Low level of grease or reservoir is empty Follower plate is stuck and separated from grease Pump piston or checks are worn	Refill reservoir Check follower plate and container for damage Disassemble the pump and repair
Pump runs, but output is low	Insufficient hydraulic fluid supply Inlet pressure low Faulty inlet (**29**, **30**), faulty discharge check (**23**, **24**) or damaged o-ring (**27**)	Check hydraulic supply and adjust flow using valve (**69**) Increase pressure using valve (**70**) Replace faulty components
Weepage from housing cover (**35**)	Cup seal (**16**) or o-ring (**14**) wore out	Check seals and replace if necessary
Pump becomes noisy	Crankcase needs oil	Check dipstick (**31**) and fill with oil as required
Pump does not build pressure	Worn wrist pin bushing (**12**) Foreign material holding lower check open	Check the bushings and replace if necessary Dismantle and clear check Consider adding grease filter to system

Parts and tools

Tool list

7/16 in. open end wrench
1 1/2 in. open end wrench
3/4 in. open end wrench

12 in. adjustable wrench
1/8 in. hex head wrench
5/32 in. hex head wrench

1/4 in. hex head wrench
5/16 in. hex head wrench
3/8 in. hex head wrench

1/4 in. drive socket
1/4 in. socket
5/16 in. socket

Pick to remove seals and spiral retaining rings
Small snap ring pliers
Special tool kit 276275

Phillips screwdriver
1/2 in. hex head wrench
Hammer

Torque wrench ft.lbf. and in.lbf. *(Nm)*
Hex head socket adapters (required to torque hex head screws)
Loctite 242 medium strength thread lock or equivalent

Parts list

Item no.	Description	Part no.	Quantity	Item no.	Description	Part no.	Quantity
1	Flat head screw (1/4–28 x 1 3/4)	270635	2	39	Woodruff key	272560	1
2	Counter weight	272197	2	40	Pump shaft	277397	1
3	Retaining ring	270609	2	41	Retaining ring	272561	1
4	Retaining ring	270608	2	42	Ball bearing	272556	1
5	Crank eccentric	270666	1	43	Shaft seal	272554[2)]	1
6	Ball bearing	270607	1	44	Screws	272557	4
7	Crank rod	270665	1	45	Lock washer	66051	4
8	Outlet pin	270670	1	46	Bearing cover	272549	1
9	O-ring (nitrile)	34255[1),2)]	1	47	O-ring	272559[2)]	1
10	Upper bushing and plunger	275000[1)]	1	48	Retaining ring	272563	1
11	Pivot screw	275006	2	49	Ball bearing	272555	1
12	Wrist pin bushing	275005	2	50	Retaining ring	272562	1
13	Wrist pin anchor	274992	1	51	Drain plug	244752	1
14	O-ring	275015[2)]	1	52	Backup washer	249837[2)]	2
15	Backup washer	274998[1),2)]	1	53	O-ring	249838[2)]	2
16	Cup seal (polyurethane)	274999[1),2)]	1	54	O-ring	270719[2)]	2
17	Steel back-up ring	274997[1),2)]	1	55	Outlet pin nut	270619	2
18	O-ring	272791[1),2)]	1	56	Bronze bearing	270674	1
19	Retainer clip	274996[1),2)]	1	57	O-ring (polyurethane)	249839[2)]	1
20	Plunger link rod	See chart	1	58	Backup washer	270652[2)]	1
21	Spring	277168[2)]	1	59	O-ring (nitrile)	34431[2)]	1
22	Check rod	277167	1	60	Housing tube	See chart	1
23	Ball 3/16	66010[2)]	1	61	Retaining ring	277398	1
24	Lower bushing and plunger	275002	1	62	Shovel plug	270707	1
25	Reciprocating tube	See chart	1	63	Retaining ring	270705	1
26	Cup seal (polyurethane)	270625[2)]	1	64	Pressure gauge	270768	1
27	O-ring (nitrile)	275011[2)]	2	65	Socket hd screw (5/16-18 x 1 1/4)	270680	4
28	Ball cage	272179	1	66	Manifold	270771	1
29	Ball 3/16	66001[2)]	1	67	Solenoid valve cartridge	275412	1
30	Check seat	270664	1	68	Din coil (24 V DC)	275592*	1
31	Dipstick with o-ring	275369	1	69	Flow regulator	277818	1
32	O-ring	275015[2)]	1	70	Pressure reducing valve	277819	1
33	Self-threading screw 8 x 1/2	270633	6	71	O-ring (fluorocarbon)	271236[2)]	2
34	Gasket (screw)	252986[2)]	6	72	Hydraulic motor with o-rings	277740	1
35	Housing cover	275009	1	73	Lock washer (3/8)	272566	4
36	Cover gasket (nitrile)	270630[2)]	1	74	Socket hd screw (3/8-16 x 1 1/2)	277405	4
37	Pump housing	278230	1	75	Orifice fitting	270735	1
38	O-ring	272567[2)]	1	76	Din plug	242209*	1

Non-common repair parts

		Part number	
		Model 85769	**Model 85847**
20	Plunger link rod	277383	277975
25	Reciprocating tube	277734	277979
60	Housing tube	277738	277981

[1)] Included in 275186 repair kit
[2)] Included in 277723 repair kit
* Indicates change.

Fig. IPB 1

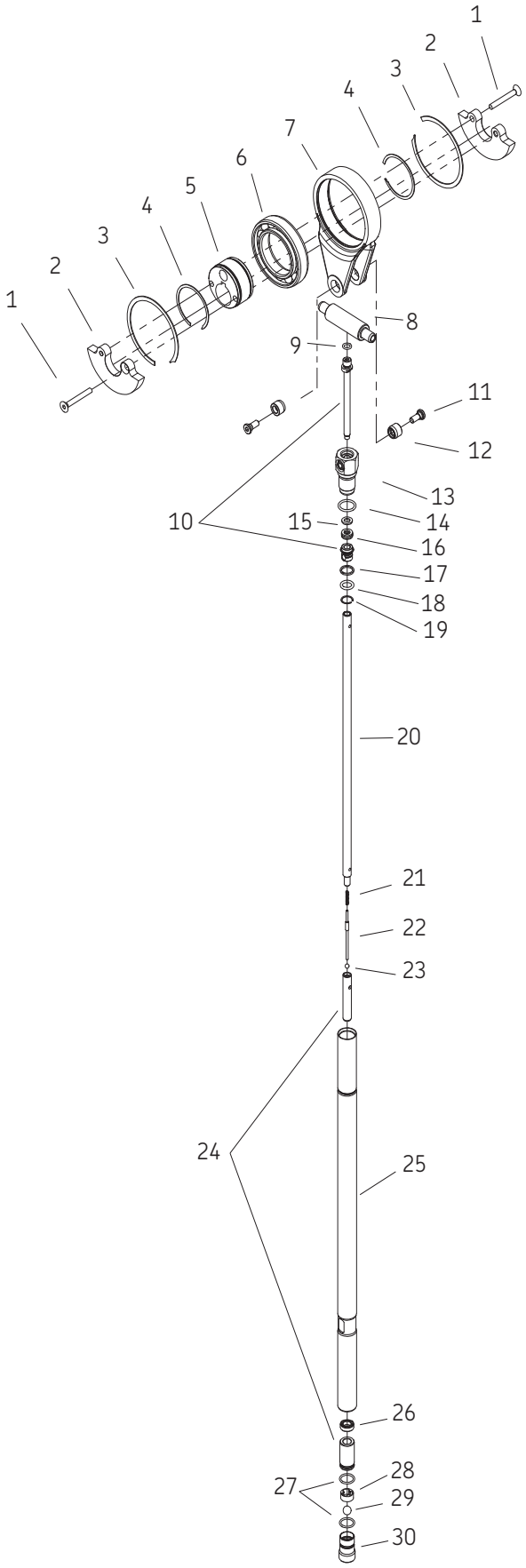

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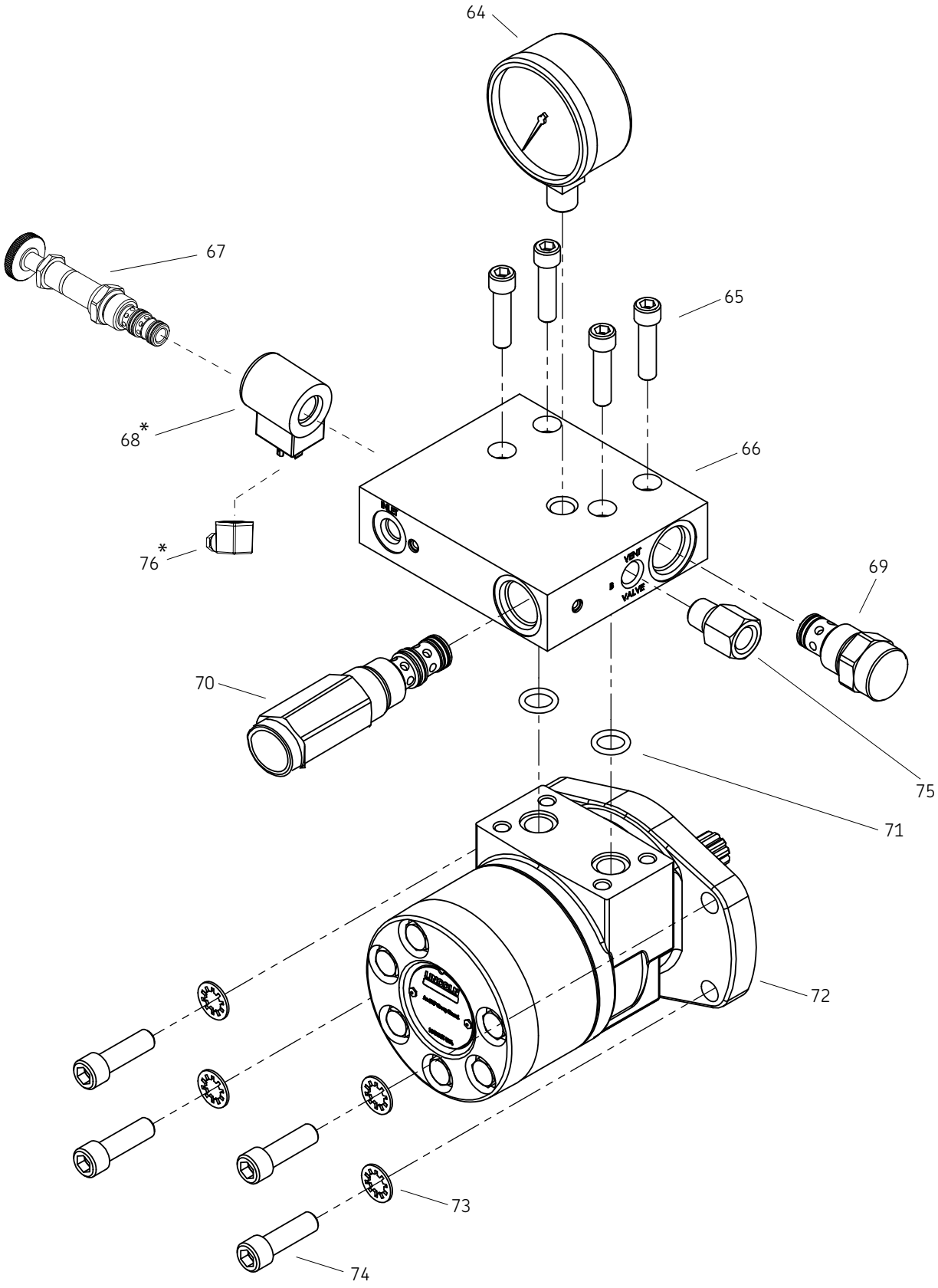
Fig. IPB 2

Fig. IPB 3



* Indicates change.

Lincoln industrial standard warranty

Standard limited warranty

Lincoln warrants the equipment manufactured and supplied by Lincoln to be free from defects in material and workmanship for a period of one (1) year following the date of purchase, excluding there from any special, extended, or limited warranty published by Lincoln. If equipment is determined to be defective during this warranty period, it will be repaired or replaced, within Lincoln's sole discretion, without charge.

This warranty is conditioned upon the determination of a Lincoln authorized representative that the equipment is defective. To obtain repair or replacement, you must ship the equipment, transportation charges prepaid, with proof of purchase to a Lincoln Authorized Warranty and Service Center within the warranty period.

This warranty is extended to the original retail purchaser only. This warranty does not apply to equipment damaged from accident, overload, abuse, misuse, negligence, faulty installation or abrasive or corrosive material, equipment that has been altered, or equipment repaired by anyone not authorized by Lincoln. This warranty applies only to equipment installed, operated and maintained in strict accordance with the written specifications and recommendations provided by Lincoln or its authorized field personnel.

This warranty is exclusive and is in lieu of any other warranties, express or implied, including, but not limited to, the warranty of merchantability or warranty of fitness for a particular purpose. Warranty on items sold by Lincoln, but not manufactured by Lincoln are subject to the warranty consideration, if any, of their manufacturer (such as hoses, hydraulic and electric motors, electrical controllers, etc.) Assistance in making such warranty claims can be offered as required.

In no event shall Lincoln be liable for incidental or consequential damages. Lincoln's liability for any claim for loss or damages arising out of the sale, resale or use of any Lincoln equipment shall in no event exceed the purchase price. Some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages, therefore the above limitation or exclusion may not apply to you.

Special limited warranties

Special limited 2 year warranty

SL-V series, single injectors-85772, 85782,replacement injectors-85771, 85781 and FlowMaster II 85731, 85732, 85733 and 85734

Lincoln warrants the SL-V Injector series and bare FlowMaster II "pump only" models to be free from defects in material and workmanship for two (2) years following the date of purchase. If an injector model (single or replacement) or "bare" FlowMaster II pump is determined to be defective by Lincoln, in its sole discretion, during this warranty period, it will be repaired or replaced, at Lincoln's discretion, without charge.

Special limited 5 year warranty

series 20, 25, 40 bare pumps, pmv bare pumps, heavy duty and 94000 series bare reels

Lincoln warrants series 20, 25, 40 bare pumps, PMV bare pumps, heavy duty (82206), mini bench (81133, 81323), and all 94000 LFR series (single arm and dual arm) bare reels to be free from defects in material and workmanship for five (5) years following the date of purchase. If equipment is determined by Lincoln, in its sole discretion, to be defective during the first year of the warranty period, it will be repaired or replaced at Lincoln's discretion, without charge. In years two (2) and three (3), the warranty on this equipment is limited to repair with Lincoln paying parts and labor only. In years four (4) and five (5), the warranty on this equipment is limited to repair with Lincoln paying for parts only.

Lincoln Industrial contact information

To find Lincoln Industrial's nearest service center in the United States, call customer service at 314-679-4200. For international callers dial 01-314-679-4200. You may also use our website lincolnindustrial.com.

Declaration of conformity according to machinery Directive 89/392/EEC

This is to declare that the design of the FlowMaster II rotary driven hydraulic pump in the version supplied by Lincoln Industrial, One Lincoln Way, St. Louis, MO. 63120, U.S.A., complies with provisions of Directive 89/392/EEC.

Applied harmonized standards in particular:

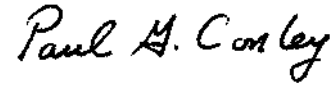
EN 292-1 Safety of machinery part 1 Basic terminology, methodology

EN 292-2 Safety of machinery part 2 technical principles and specifications

EN 982 Safety of machinery, safety requirements for fluid power systems and their components, hydraulics,

EN 1050 Safety of machinery, principles for risk assessment

CE



Paul G. Conley, Chief Engineer
December 16th, 2003

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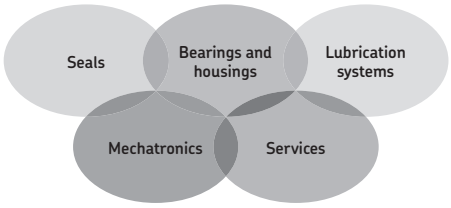

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