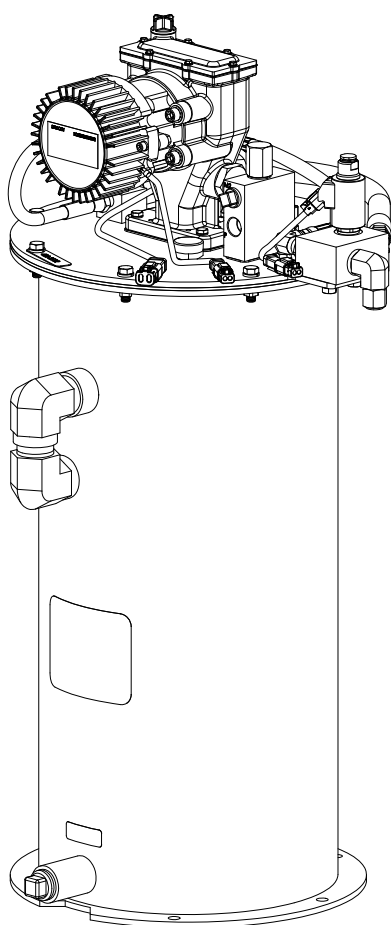


FlowMaster II rotary driven electric pump (24 V DC)

Model 85859, series “A”



Date of issue **August 2016**

Form number **404696A**

Read manual prior to installation or use of this product. Keep manual nearby for future reference.

Contents

Safety	2
Explanation of safety signals	2
Overview	2
Maintenance and repair	3

Safety

Read and carefully observe these installation instructions before installing, operating or troubleshooting the referenced equipment. Referenced equipment must be installed, maintained and repaired exclusively by persons familiar with the instructions.

Always disconnect power source (electricity, air or hydraulic) from equipment, if applicable, when it is not being used.

Adequate personal protection must be used to prevent material from contacting the skin or eyes.

If any fluid appears to penetrate the skin, seek medical treatment immediately. Do not treat injury as a simple cut. Tell attending physician exactly what fluid was injected. Failure to comply may result in personal injury and/or damage to equipment.

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

- Never exceed maximum specification ratings of the equipment.
- Do not misuse, modify parts, or use worn and/or damaged parts.
- Always read and follow the manufacturer's recommendations regarding the use of protective clothing and equipment.

Explanation of safety signals

⚠ 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.

Mechanical shut-off valve specifications	
Maximum operating pressure	6 000 psi (413,6 bar)
Operating temperature	-40 to +150 °F (-40 to +65 °C)
Port shut-off body	1/2 NPTF

System specifications	
Supply voltage	24 V DC
Ambient operating temperature	-40 to +150 °F (-40 to +66 °C)
Container capacity	90 lb (41 kg)

Overview

Model 85859 is a FlowMaster II rotary driven pumping unit designed to operate a Centro-Matic lubrication system.

The pump includes motor speed control and built in circuit protection to prevent control burnout. The pump is double acting, dispensing lubricant on both "up" and "down" strokes. The model 85859 also includes:

- A 2 in. (50,8 mm) follower plate.
- An electric float switch.
- A vent valve for relieving line pressure to recharge the injectors.
- A mechanical shut-off valve.

This unit is for use with SL-V, SL-1, SL-11, SL-32 and SL-33 series injectors.

Mechanical shut-off valve

The mechanical shut-off valve automatically shuts off the filling of the reservoir without power applied to the system.

As grease flows through the valve and into the reservoir, the follower raises until it contacts the pivot arm. The pivot arm then raises until it contacts the pin on the shut-off valve and closes the valve. When the valve closes, the flow of the grease to the reservoir stops.

Shut off the fill pump and relieve pressure between the fill pump and the shut-off valve in order to disconnect the fill line safely.

Keep the pressure relief valve activated until the supply line pressure on the gauge falls below 200 psi (13 bar). The fill line can then be removed at the quick disconnect point.

Installing the pump

Locate unit so that electric power connection is accessible.

- 1 Mark center locations of the six holes at the bottom of the reservoir.
- 2 Drill six 1/2 in (13 mm) holes. Use 7/16 in (11 mm) bolts for added flexibility in securing reservoir to the equipment.
- 3 Connect lubricant outlet of pump to system with suitable hose capable of 3 500 psi (241 bar) working pressure.

Bare pump assembly

Refer to 85738 operation manual **404517** for setting pump speed on 24 V DC motor.

Filling reservoir

To bulk fill reservoir, attach the supply line to port "P" on shut off valve. Refer to **figure 3, page 5** and verify system is connected and start fill pump.

When reservoir is full, shut-off valve will close. Grease in fill line will be under high pressure. Relieve grease pressure before disconnecting fill hose by opening pressure relief valve.

⚠ WARNING

Do not over-fill reservoir. Extreme pressure can damage reservoir.
Failure to comply can cause death and/or serious personal injury.

Refer to **Filling reservoir with optional 278552 bypass manifold assembly, page 5**.

Maintenance and repair

General maintenance

- Keep area around pump and filling port clean, as lubricants attract dirt and debris.
- Keep lubricants free of contaminants.

⚠ WARNING

Do not perform maintenance or service on assembly with any power source connected.

Failure to comply can cause death and/or serious personal injury.

System malfunction

Refer to **Troubleshooting, page 6** for determining common problems and solutions.

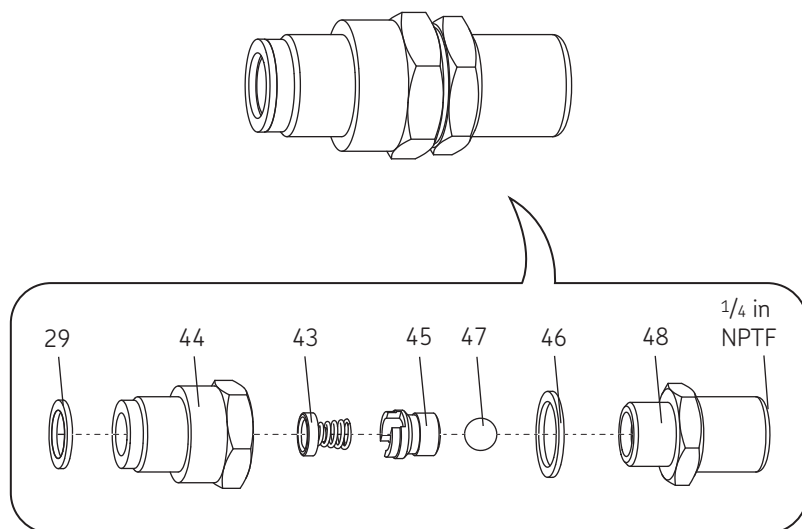
Outlet check service

Refer to **fig. 1**. The pump will not build up sufficient lubricant pressure if the outlet check assembly (5) is fouled. Foreign material may lodge beneath the steel ball (47) or between check bushing assembly (44) and the seat of pump check disc assembly (43). Sealing surfaces of seat must fully seal.

- 1 Remove hose assembly (11).
- 2 Remove entire outlet check bushing (5), street elbow (6) and adapter (4).
- 3 Remove elbow (6) and adapter (4) from outlet check bushing (5).
- 4 Remove outlet connector (48) from check bushing assembly (44).
- 5 Remove pump check disc assembly (43) from outlet connector (48).
- 6 Inspect all check components (43, 44, 45, 47) for presence of foreign material, scoring and or other damage, that may cause internal leakage. Replace components if damage is found.
- 7 Replace gaskets (29) and (46) whenever outlet pump check disc assembly (43) is disassembled.

Fig. 1

Outlet check assembly (5)



- 8 For assembly, torque outlet connector (48) and check bushing assembly (44) to 100 ft-lbf (13.5 Nm).

Upon reassembly, tighten to 10 ft. lbf. (13.5 Nm). Safety unloader is preset and non-adjustable.

- 4 Loosen and remove nuts (56) and weighted follower plate (57) on top of the follower.
5 Remove and replace follower foam (55).

Safety unloader valve

Refer to **fig. IPB1, page 7**. If pressure switch fails to operate, safety unloader (15) activates at 3 750 to 4 250 psi (259 to 293 bar) lubricant pressure to relieve supply line pressure. Safety unloader (15) is not serviceable and must be replaced if malfunctioning occurs.

⚠ WARNING

Do not operate without safety unloader installed.

If not installed, install safety unloader before using pump.

Failure to comply may result in death or serious personal injury.

⚠ WARNING

Do not plug outlet of safety unloader. Plugging safety unloader outlet will result in pressure build up.

Failure to comply may result in death or serious personal injury.

Follower

Refer to (→ **fig. 2**) and (→ **fig. IPB 1, page 7**). Service unit if follower foam is damaged or fails to wipe sides of reservoir effectively.

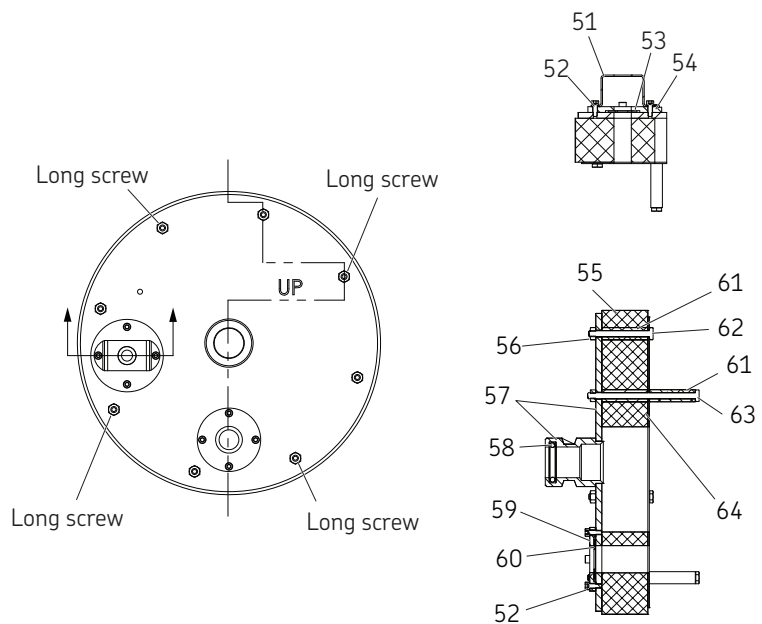
- 1 Remove bolts (17) and lock washers (18) attaching the cover to the reservoir.
- 2 Lift the entire pump, vent valve and cover assembly out of the reservoir.
- 3 Remove the entire follower assembly from the reservoir (37).

NOTE

For assembly, install long bolts staggered with short bolts as shown.

Fig. 2

Follower assembly (24)



Filling reservoir with optional 278552 bypass manifold assembly

- 1 Lock out and tag out electrical systems.
- 2 Relieve pressure from system until gauge is at "0".
- 3 Connect pump to quick connect fitting.
- 4 Turn fill pump on until gauge reaches maximum and fill pump stalls.
- 5 Shut off the fill pump.
- 6 Activate pressure relief valve.
- 7 Reduce pressure until the control manifold gauge is under 200 psi (13,8 bar).
- 8 Disconnect quick connect fitting.

⚠ DANGER

Do not allow pressure to exceed 6 000 psi (413,6 bar).

Do not operate pump without pressure regulator or pressure relief valve to regulate maximum pressure delivered by pump.

Pressure regulator or relief valve not provided.

Failure to comply may result in serious injury or death.

NOTE

For ease of filling tank, pressure relief valve or pressure regulator (not provided) can be mounted remotely.

Refer to **Fig. 3** for proper connection of hoses.

NOTE

Do not fill reservoir until grease level drops at least 1 in (25 mm).

Fig. 3

Hydraulic schematic

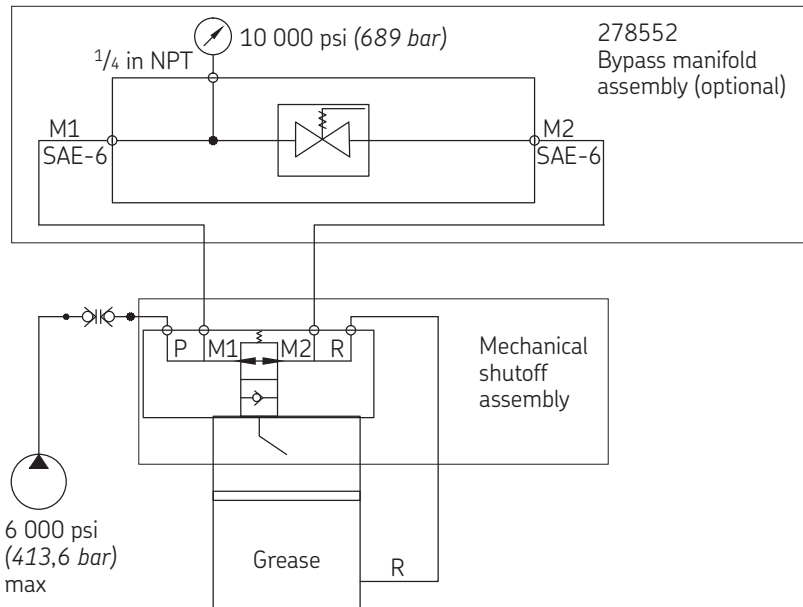
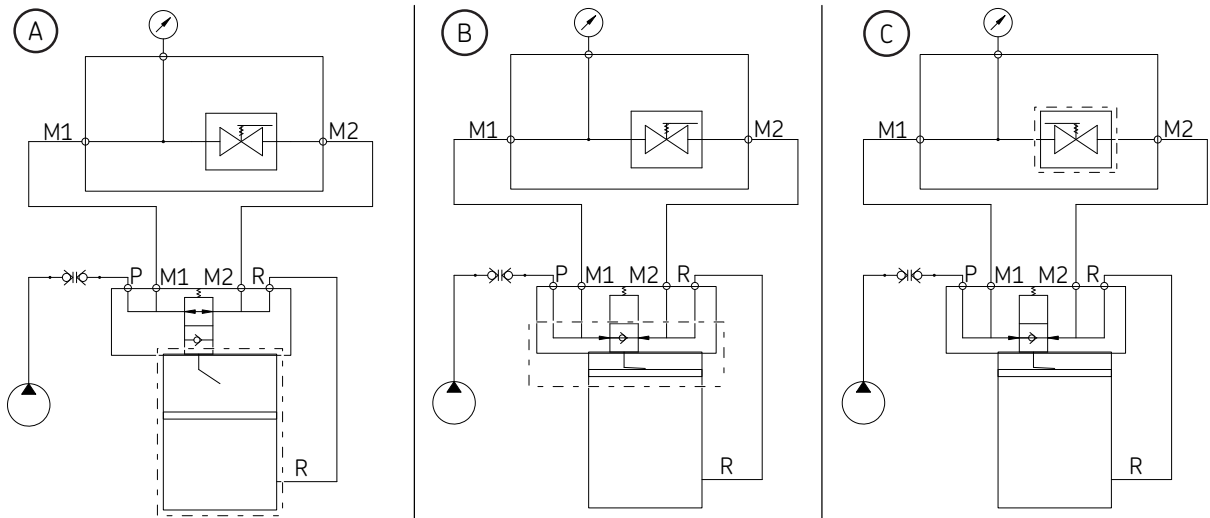


Fig. 4

Mechanical shut-off modes



- A = Reservoir in filling mode
 B = Reservoir filled, shut-off valve closed, pump off
 C = Pressure relieved, safe to uncouple quick disconnect

Float switch

Float switch (8) 277654 consists of a normally open dry-contact switch at top and a series of reed switches below.

Dry contact switch controls a 'full' indicator light or alarm. Reed switches control a level gauge displaying reservoir level in 10% increments. Refer to **fig. 3, page 5**.

Refer to **Float switch** service manual **404394** for more information.

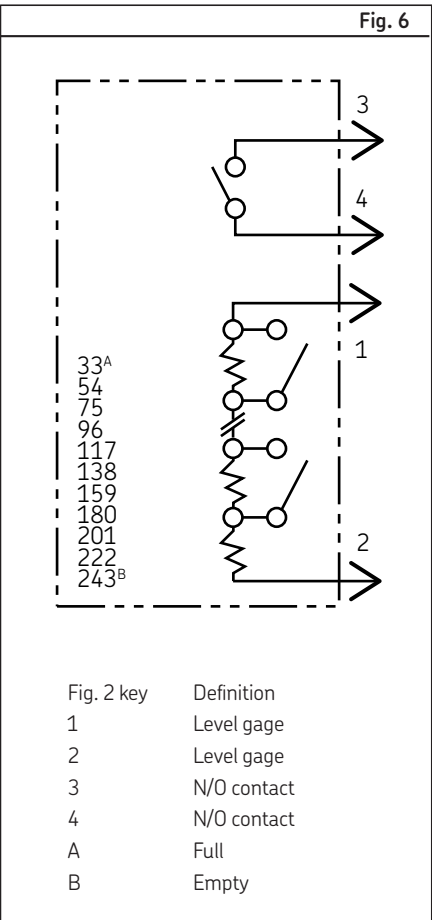
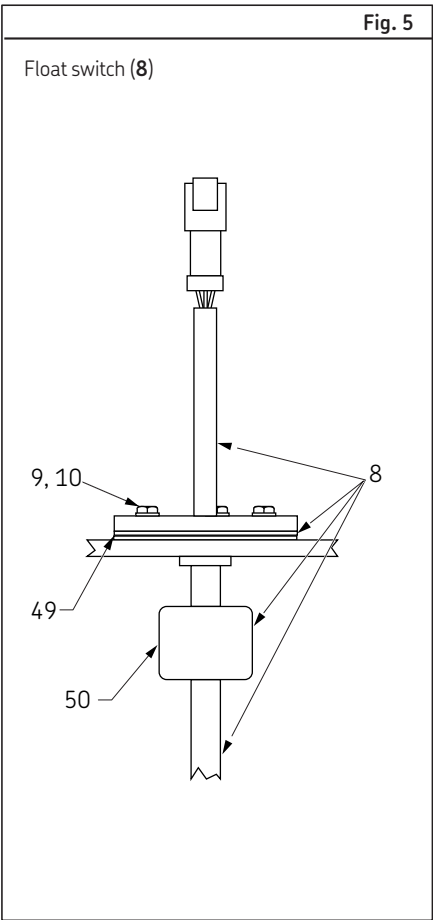
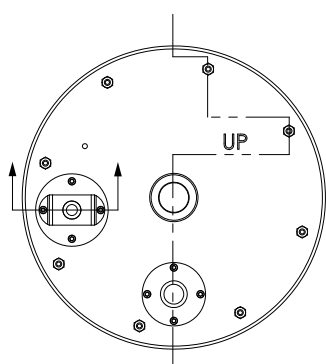
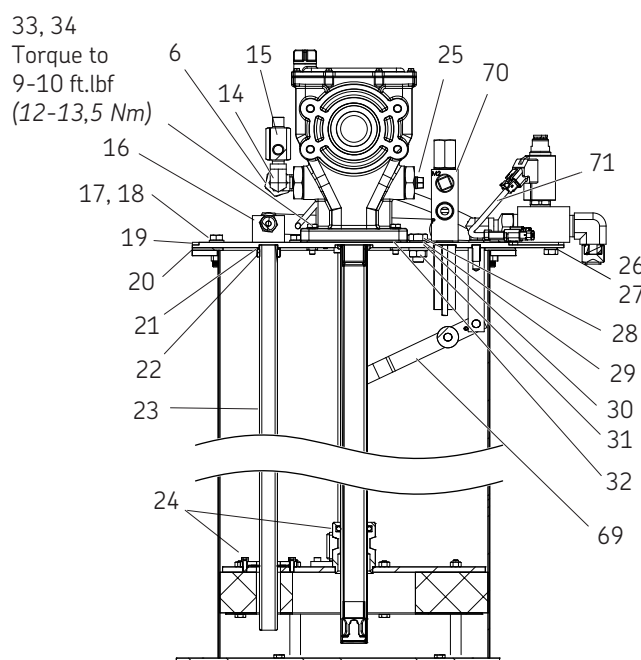
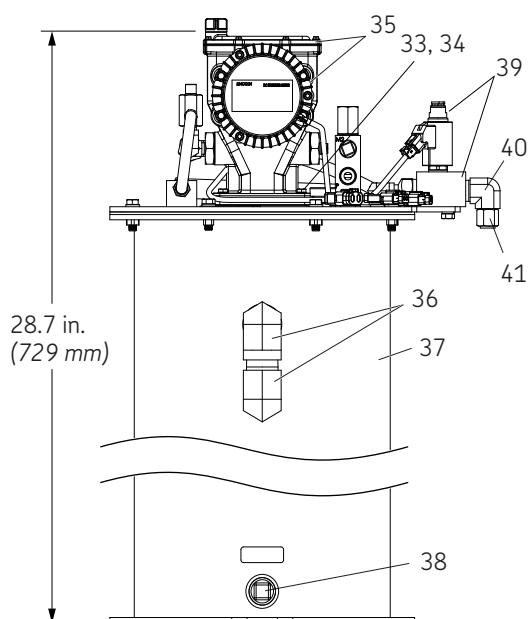
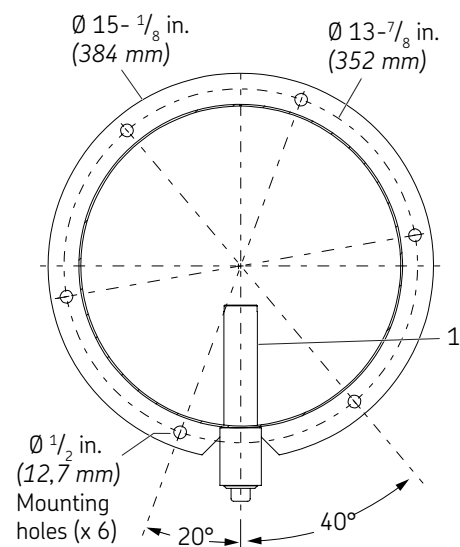
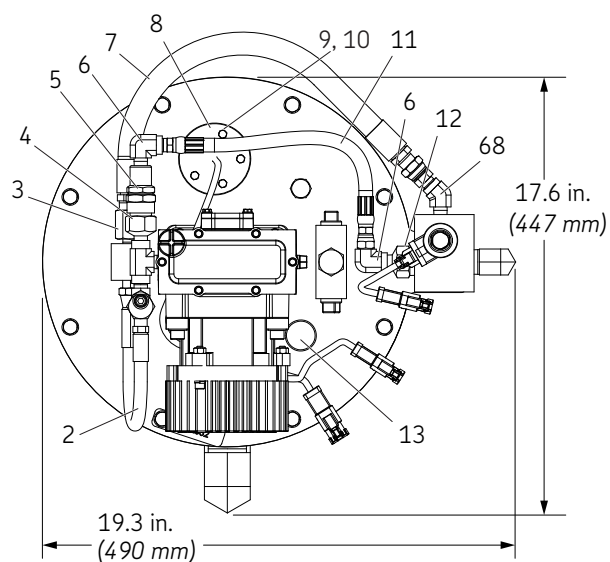
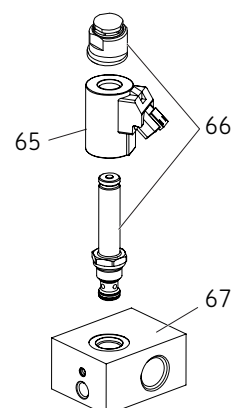
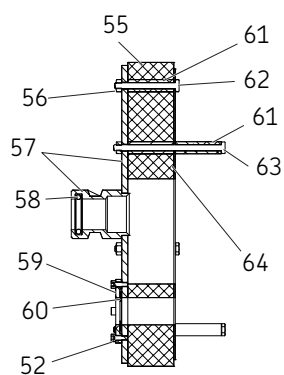
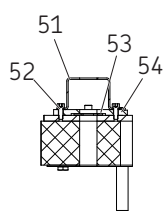


Table 1		
Model 85858 troubleshooting		
Condition	Possible cause	Corrective action
Pump does not operate.	No electrical power to pump. Motor relay failure. Motor overheated. Motor tripped out on locked rotor protection Broken gearset or shaft. Blown fuse. Pump motor polarity is reversed.	Turn on or connect 24 V DC power. Replace relay. Turn power off for 10 minutes and restart. Remove high pressure or repair cause of locked pump. Repair gearbox. Replace fuse, check for cause of overload. Check to see if red motor lead is wired to the positive side of the circuit.
Pump runs excessively.	Pump tube malfunction. Outlet check damage or contamination. Vent valve damage or contamination. System component leaking. Injector bypassing.	Refer to pump service page 404517 . Repair check or remove contamination. Repair vent valve or remove contamination. Repair leaks. Repair injectors.
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. Refer to pump service page 404517 .
Pump runs, but output is low.	Motor speed control set too low. Faulty inlet or discharge check valve in pump.	Refer to pump service page 404517 . Refer to pump service page 404517 .
Lubricant leaking from safety. unloader valve.	Pressure of system set too high. Safety unloader damaged or contaminated.	Adjust pressure switch setting. Replace safety unloader.
Unable to fill reservoir.	Reservoir is full which closes the shut-off valve. Fill line pressure is too high.	After some grease has been used, retry. Relieve pressure at the relief valve
Shut-off valve does not close.	Contamination in the shut-off valve.	Remove the top block, spring and plunger and remove contamination



See → page 4



Block and guide assembly (70)

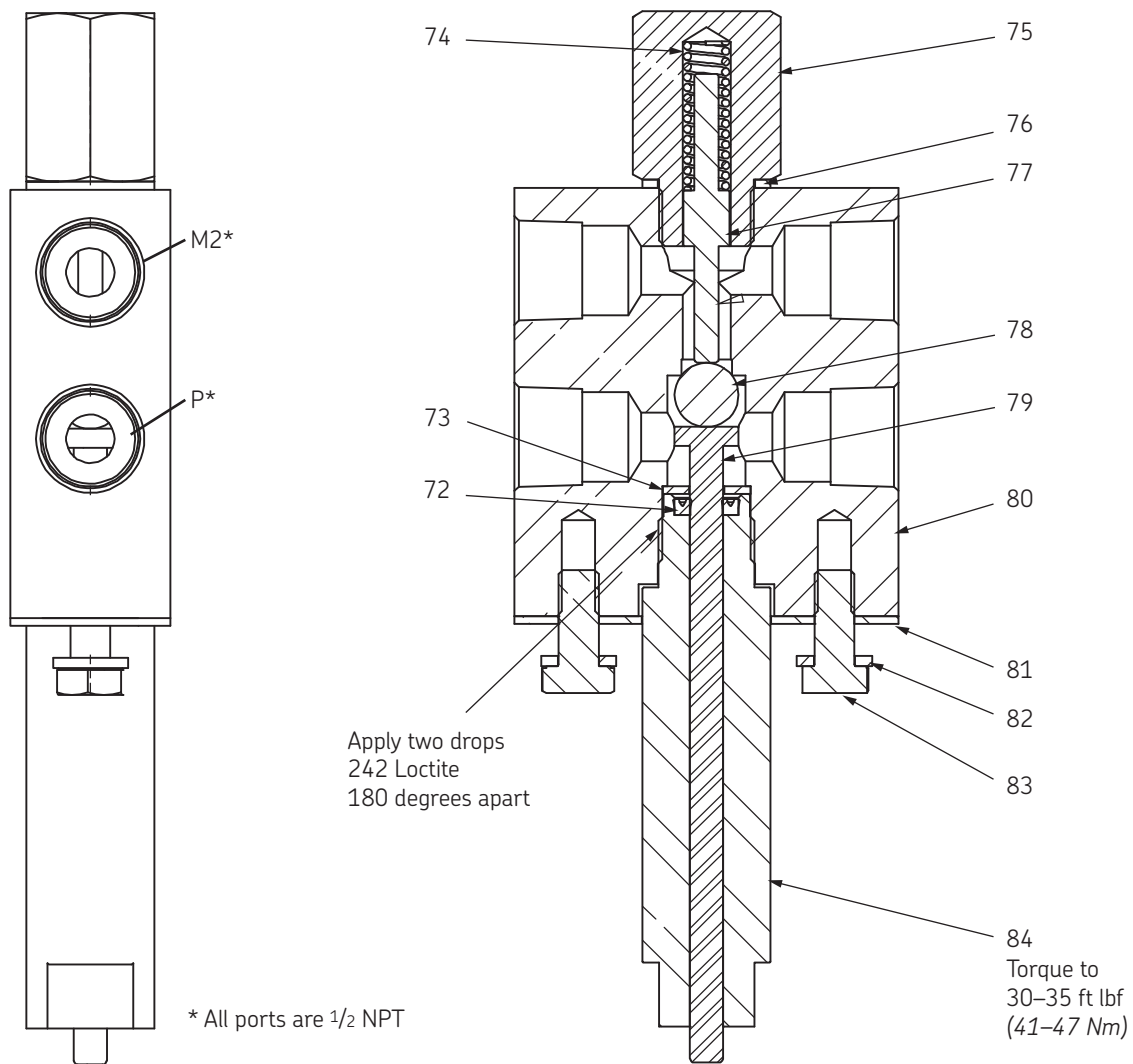


Table 2

Service Parts

Item no.	Description	Qty.	Part no.	Item no.	Description	Qty.	Part no.
1	Extension tube	1	276853	43	Pump check disc assembly	1	80206 ¹⁾²⁾
2	Hose	1	272711	44	Check bushing assembly	1	90204 ¹⁾²⁾
3	Adapter	1	12989	45	Ball check seat	1	10313 ¹⁾
4	Adapter	1	12213	46	Gasket	1	31001 ¹⁾
5	Outlet check assembly	1	81938	47	Steel ball (3/8 in)	1	66001 ¹⁾
6	90° street elbow (1/4 in NPTF)	3	277439	48	Outlet connector	1	90860
7	Vent hose	1	273233	49	Gasket	1	274540
8	Float switch	1	277654	50	Float magnet	1	274543
9	Hex head screw (10–24 x 5/8 in)	5	50088	51	Magnet cover	1	274544
10	Lock washer (#10)	5	68991	52	Socket head screw (10–24 x 1/2 in)	8	50762
11	Hose	1	277441	53	Wiper (fluorocarbon)	1	274319
12	Nipple (1/4 in NPTF x 3/4 in NPTF)	1	14727	54	Wiper cover	1	274320
13	Vent fitting	1	249354	55	Follower foam	1	276894
14	External branch tee (1/4 in NPTF)	1	277947	56	Locknut (1/4–20)	8	51304
15	Safety unloader	1	272722	57	Weighted follower plate	1	276890
16	Vent tee	1	272717	58	O-ring (nitrile)	1	270720
17	Hex head screw (3/8–16 x 1 1/4 in)	8	50015	59	Wiper cover	1	274318
18	Lock washer (3/8 in)	8	66220	60	Wiper (fluorocarbon)	1	274321
19	Drum cover	1	279351	61	Spacer	12	241101
20	Gasket	1	249355	62	Hex head screw (1/4–20 x 2 1/2 in)	4	50062
21	Gasket	1	31010	63	Hex head screw (1/4–20 x 4 1/2 in)	4	241102
22	Nut	1	12538	64	Follower plate	1	276888
23	Vent pipe	1	67290	65	Solenoid coil, 24 V DC	1	277426
24	Follower assembly	1	85706	66	Cartridge valve	1	279218
25	Pipe plug (1/4 in NPTF)	1	67007	67	Vent valve body	1	278958
26	Hex head screw (5/16–18 x 3/4 in)	2	50016	68	45 street ell	1	278847
27	Lock washer (5/16 in)	2	66246	69	Pivot arm assembly	1	279197
28	Hex head screw (1/2–20 x 1 in)	1	50025	70	Block and guide assembly (1/2 in)	1	278668
29	Gasket	2	31029	71	Solenoid cable	1	277841
30	Lock washer (1/2 in)	1	69181	72	U-cup seal	1	271937
31	Hex jam nut (1/2–20)	1	51039	73	Washer	1	277593
32	Pump gasket	1	277406	74	Straight spring	1	55303
33	Hex head screw (1/4–20 x 1 1/4 in)	4	277728	75	Spring housing	1	279162
34	Lock washer (1/4 in)	4	66186	76	Gasket (1 in OD x 771 in ID)	1	31001
35	Bare pump assembly	1	85738 ³⁾	77	Spring pin	1	279165
36	90° elbow (1 1/4 in NPTF)	2	276854	78	Ball (1/2 in Gr 25)	1	203207
37	Reservoir assembly	1	277422	79	Pin	1	277590
38	Pipe plug (1 in NPTF)	1	67346	80	Body	1	278769
39	Electric vent valve, 24 V DC	1	278931 ⁴⁾	81	Gasket	1	279042
40	Elbow (1/2 in ORFS x 3/4 in NPTF[M])	1	276858	82	Lock washer	2	66246
41	Cap (1/2 in ORFS)	1	273141	83	Screws	2	50016
42	Not used			84	Guide	1	277591

1) Suggested service replacement components.

2) Sold only as an assembly. Individual parts not available.

3) Refer to **owner's manual 404517** for pump details.4) Refer to **service page 404675** for service and troubleshooting.

This page is intentionally blank.

This page is intentionally blank.

Warranty

The instructions do not contain any information on the warranty. This can be found in the General Conditions of Sales, which are available at: www.lincolnindustrial.com/technicalservice or www.skf.com/lubrication

skf.com | lincolnindustrial.com

® SKF is a registered trademark of the SKF Group.

® Lincoln is a registered trademark of Lincoln Industrial.

© SKF Group 2016

The contents of this publication are the copyright of the publisher and may not be reproduced (even extracts) unless prior written permission is granted. Every care has been taken to ensure the accuracy of the information contained in this publication but no liability can be accepted for any loss or damage whether direct, indirect or consequential arising out of the use of the information contained herein.

PUB LS/14 16709 EN.R1 · August 2016 · Form 404696A