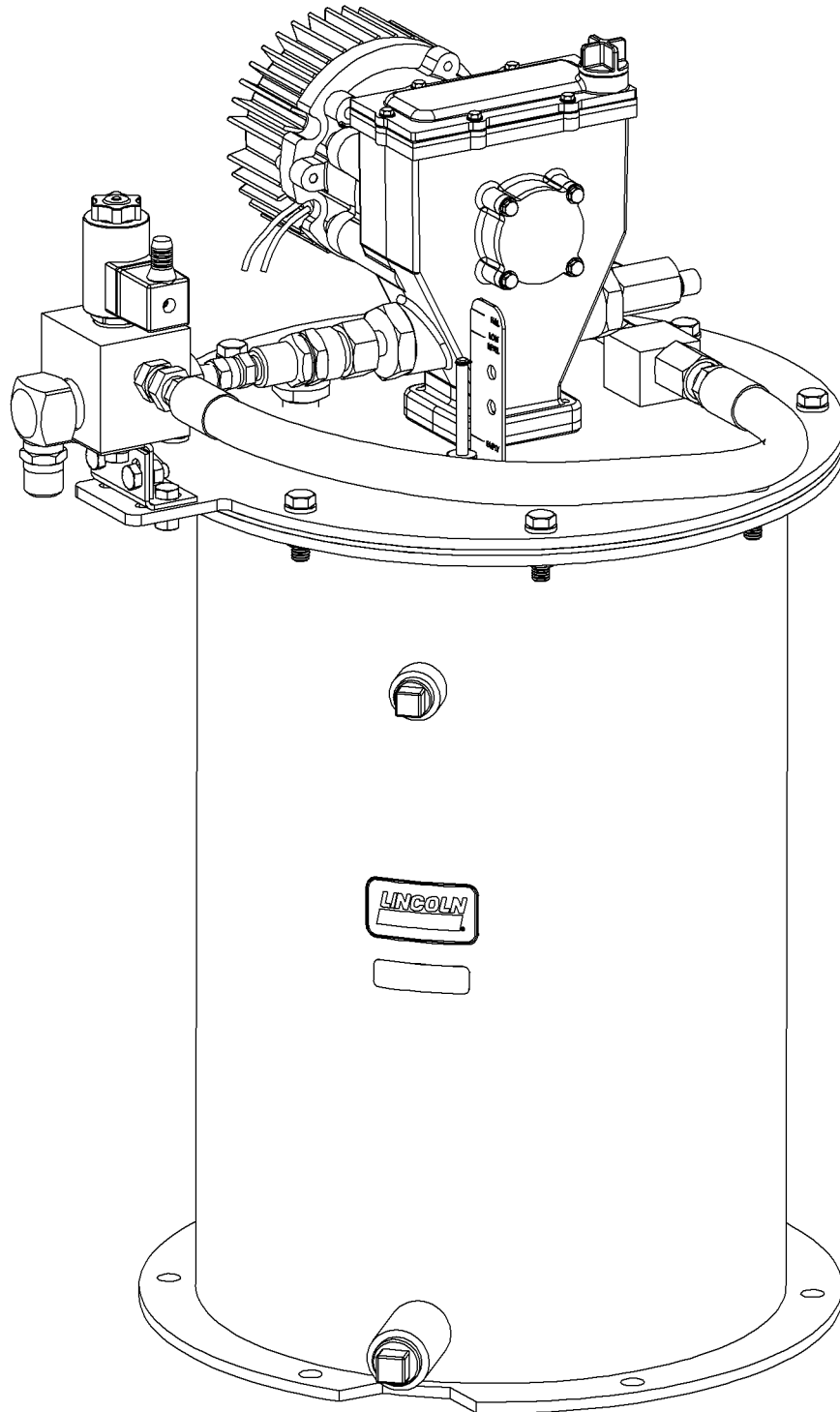


**FlowMaster™ Rotary Driven Electric Pump (24 VDC)  
Models 85471, 85472 & 85473  
Series "B"**





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**DESCRIPTION**

**General Description**

The Models 85471, 85472 and 85473 are pumping units designed to operate a Centro-Matic® lubrication system. The units include a vent valve to relieve the line pressure to recharge the injectors. FlowMaster™ Rotary Driven Electric Pump includes a motor speed control and built in circuit protection to prevent control burnout.

The FlowMaster pump is fully automatic when used with Model 85530 Controller and a pressure switch. The FlowMaster pump is double acting, dispensing lubricant on both the “Up” and “Down” strokes. This unit is designed to be used with SL-1, SL-11, SL-32 and SL-33 series injectors or a combination of these.

Models 85471, 85472 and 85473 all include follower plates and low level indicators.

**Appropriate Use**

- The pump on this unit is exclusively designed to pump and dispense lubricants using 24 VDC power.
- 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.

**SAFETY**

Read and carefully observe these operating instructions before unpacking and operating the pump! The pump must be operated, maintained and repaired exclusively by persons familiar with the operating instructions. Local safety regulations regarding installation, operation and maintenance must be followed.

Operate this pump only after safety instructions and this service manual are fully understood.



This symbol indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury. Please refer to the operation manual, section C8, page 298 series for all other safety considerations.

**PRODUCT SPECIFICATIONS**

Supply Voltage	<b>24 VDC</b>
Ambient oper. temp. °F (°C) -	<b>-40 to +150 (-40 to +66)</b>
Weight, Lbs (Kg) -	
- 85471	<b>93 (41)</b>
- 85472	<b>99 (44)</b>
- 85473	<b>102 (45)</b>
Container capacity , Lbs (Kg) -	
- 85471	<b>60 (27)</b>
- 85472	<b>90 (41)</b>
- 85473	<b>120 (54)</b>

Do not exceed an outlet grease pressure of 5000 PSI.



**SYSTEM OPERATION**

**Operation with Model 85530 System Controller**

When Model 85530 times out, it will initiate a lube cycle. The solenoid and pump motor are energized to close the electric vent valve and start the pump. Pump begins dispensing lubricant through injectors to the bearings.

When all bearings have received lubricant, pressure rises in the system to actuate the pressure switch. When pressure switch actuates, the control is reset to de-energize the solenoid valve and motor. Pump stops, pressure vents and pressure switch de-actuates. Control begins timing toward next lube event.

**INSTALLING THE PUMP**

Place the unit in the approximate location making sure that electric power connections are accessible. Mark center locations of the six holes at the bottom of the reservoir. Then drill six 1/2” (13 mm) holes. The use of 7/16” (11 mm) bolts will offer some flexibility in securing the reservoir to the equipment.

Lubricant outlet of pump should be connected to system with suitable hose capable of 3,500 PSI (241 bar) working pressure.

Be careful to connect the red electric motor lead to the positive side of the circuit. The motor is polarity sensitive and will not

run if wired incorrectly. Wire the pump motor and vent valve (if used) as shown in Illustrations 1.

Please refer to the 85567 operation manual, section C8, page 298, series "A" for setting the pump speed control on the 24VDC motor.

### Low Level Kit (Model 85490)

Low Level Kit is recommended whenever higher viscosity greases or lower temperatures are encountered and when an external indicator of lubricant level is desired. The kit is composed of a follower with wiper and a level indicator gage located on the cover of the reservoir.

## PUTTING PUMP INTO OPERATION

### Filling Reservoir

- To bulk fill the reservoir, remove the lower and upper pipe plugs from the side of the reservoir (see Figure 4). Attach the appropriate bulk-filling pump to the lower inlet (3/4 NPT). Fill reservoir until grease appears at the top 1/2 NPT vent high level port. Remove the bulk-filling pump. Replace both pipe plugs.
- To use the reservoir with a five-gallon pail of lubricant (Model 85571 only), first remove the six bolts that secure the lid. Remove the entire assembly of lid, pump and vent valve. Using pipe wrench or vice grips, remove the filler nipple extension (43) (View A-A) attached inside the reservoir at the 3/4 NPT inlet nipple. Insert opened pail of lubricant and reattach lid and pump assembly.

**Note:** If five gallon pail lubrication is to be used (for Model 85571 only), then the wing screw kit 273431 should be used in place of the hex bolt (10). Do not use follower assembly with the 5 gallon pail.

## WARNING

When filling the reservoir, caution should be used as extreme pressure can cause damage to the reservoir or serious personal injury.

## MAINTENANCE & REPAIR

### General Maintenance

- Keep area around pump clean. Clean off filling port area prior to filling reservoir. Clean area around filler after filling as lubricants will attract dirt.
- Keep lubricants clean and free of dirt and debris.
- When replacing grease pails be especially careful to prevent any foreign matter from entering the grease pail or contaminating the grease, as it adheres to the pump.

### In Case of System Malfunction

#### (See Trouble Shooting Chart Page 9)

- Use the **Trouble Shooting Charts** to determine where to look if problems occur.
- See the sections below for replacement and repair of specific areas of the check valve, vent valve or safety unloader valve.
- Each part is identified with a number keyed to the matching part on the illustrated views.
- General recommendations of tools required are also specified in each step.
- Pay particular attention to the **Warning** statements to prevent personal injury and possible damage to pump components.

### Outlet Check Service

#### (See Figures 2, Page 6)

The pump will not build up sufficient lubricant pressure if the outlet check (21) is fouled. Foreign material may lodge beneath the Check Ball (49) or between check disc (46) and the seat of bushing assembly (45). Sealing surfaces of the seat must form a perfect seal. Clean parts or replace if pitted, worn or scored.

1. Turn off and disconnect the electric power supply to the pump assembly.
2. Standard tools required are a bench mounted vice, a set of open end wrenches ranging from 7/16" to 1-1/2", a large 24" (600 mm) adjustable wrench and a smaller 10" (254 mm) adjustable wrench.
3. Remove bolts, nuts and lock washers (25, 26 & 27).
4. Loosen adapter union (20). Set vent valve assembly to the side.
5. Remove entire outlet check assembly (21) by loosening adapter (22) from pump outlet.
6. Remove adapter (22) from outlet check assembly (21).
7. Remove outlet connector (50) from bushing (45).
8. Remove ball check seat (47) from outlet connector (50).
9. Inspect all check components (46, 45, 47 & 49) for presence of foreign material, scoring and or other damage, which may cause internal leakage. Replace components if damage is found.
10. If foreign material is present, clean components and reassemble. Be sure to always replace gaskets (44) & (48) whenever vent valve is disassembled. Reverse the above procedure to reassemble. Torque check assembly to 100 ft.-lbs. (13.5 N-M).

### Follower (see Figures 4, 5 & 6 Page 6)

If follower wiper appears to be damaged or does not wipe the sides of the container effectively service may be necessary.

1. Disconnect electric supply from pump.
2. Remove the eight bolts (10) and lock washers (9) which attach the cover to the reservoir.
3. Lift the entire pump, vent valve, cover assembly and follower out of the reservoir.



4. Unscrew the low level indicator (3) from the follower plate (34).
5. Now remove the entire follower assembly from the pump tube. After removing the follower assembly from the pump tube wipe off the excess grease which will allow clean access to the eight bolts that must be removed.
6. Loosen and remove the eight nuts (53) on top of the follower.
7. Remove the follower weight and the wiper (51). Replace the wiper with a new one.
8. Reassemble in the reverse of the above procedure making sure that the long bolts are staggered with the small ones and that they extend below the follower.

### Low Level Indicator (see Figure 4 & 5 Page 6)

If the indicator pin appears to drop prematurely or water is noticeable on top of the follower then the indicator seal (1) may be damaged.

1. Remove the eight bolts (10) and lock washers (9) which hold the cover on to the reservoir.
2. Inspect the reservoir gasket seal (39) for damage. If damage is apparent then replace the gasket seal.
3. Remove the entire pump, vent valve and follower assembly from the reservoir.
4. Remove the retaining ring (82) from the indicator rod assembly (3).
5. Hold the indicator plug (4) with a wrench while removing the indicator nut (2).
6. Remove and replace the O-ring (1).
7. Reassemble in the reverse of the above procedure. Torque the indicator nut (2) to 20 ft.-lbs.

### Safety Unloader Valve

#### (See Item 28, Page 7)

Safety unloader valve (28) is not serviceable and should be replaced if malfunction is apparent. Upon reassembly, tighten to 10 ft-lbs. (13.5 N-M).

The safety unloader (28) is set to open at 3,750 to 4,250 PSI lubricant pressure. If Pressure Switch fails to operate, the Safety Unloader will open at approximately 4,000 PSI to relieve lubricant supply line pressure (Safety Unloader is preset and cannot be adjusted.)



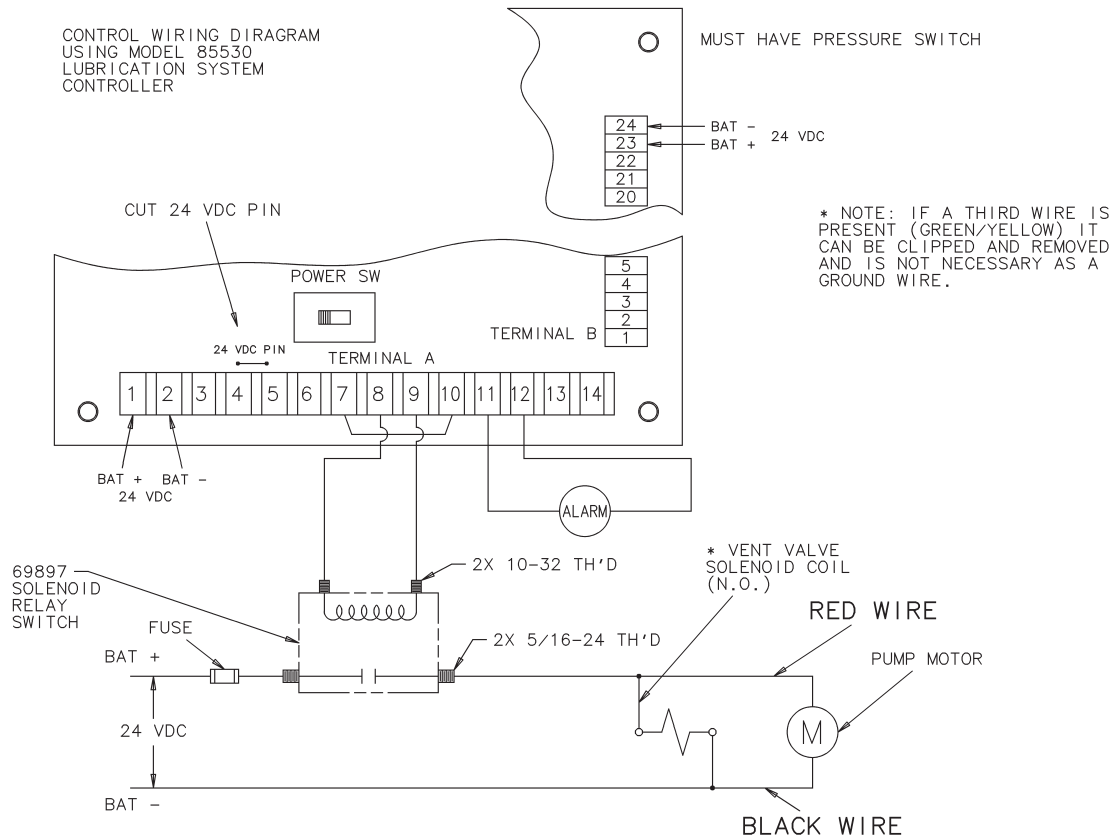
## WARNING

Do not plug the outlet of the safety unloader. Plugging the safety unloader outlet could result in pump damage and serious personal injury.

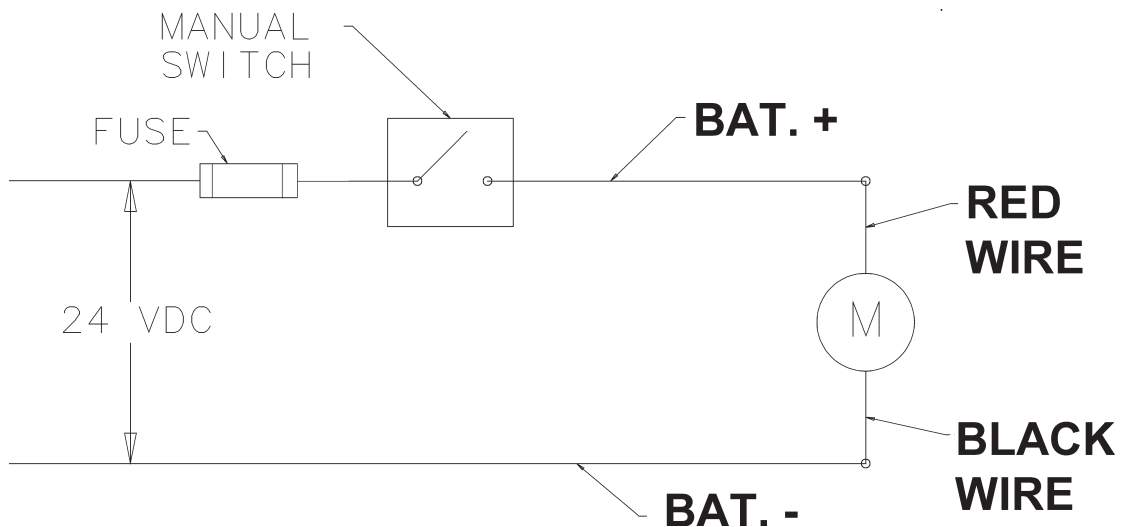
### Bare Pump Assembly (See Lower Right hand View, Page 7)

Please refer to the Operation Manual (C8, Page 298 series) for the bare pump assembly (37).

CONTROL WIRING DIAGRAM  
USING MODEL 85530  
LUBRICATION SYSTEM  
CONTROLLER



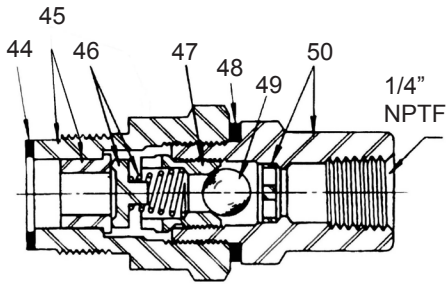
### PUMP WITHOUT CONTROLLERS



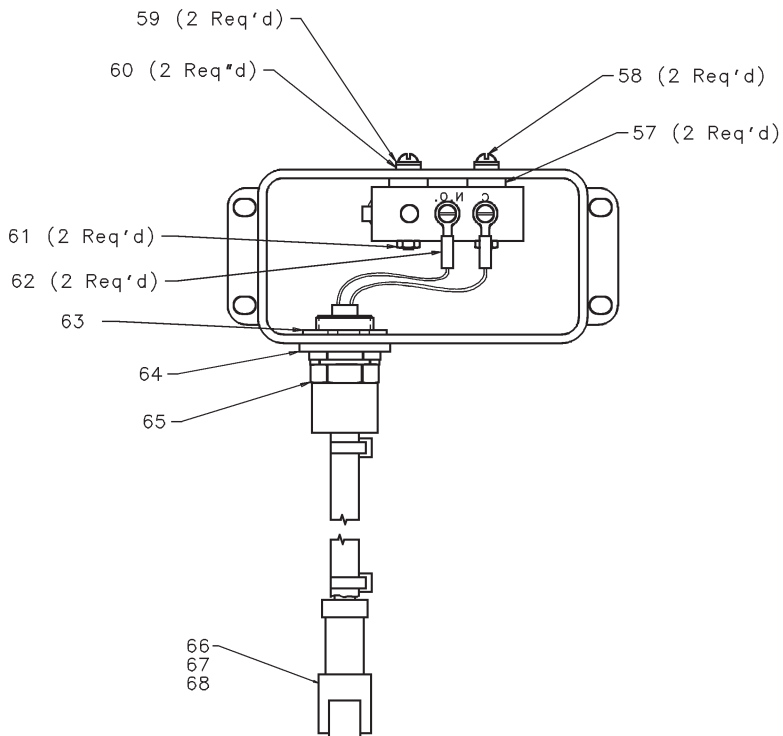
#### NOTE:

Be sure to connect red motor lead to the positive side of the circuit. The motor is polarity sensitive and will not run if improperly wired.

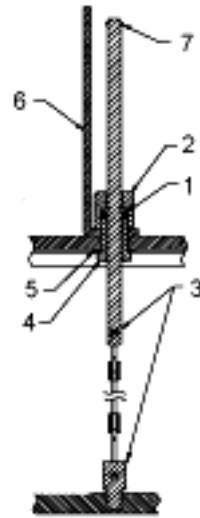
Illustration 1



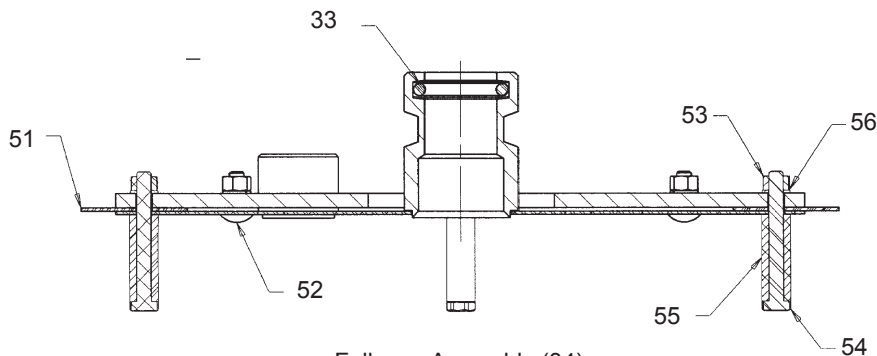
Outlet Check Assembly (21)  
Figure 2



©Conduit Box Assembly  
Model 85473 Only  
Figure 3

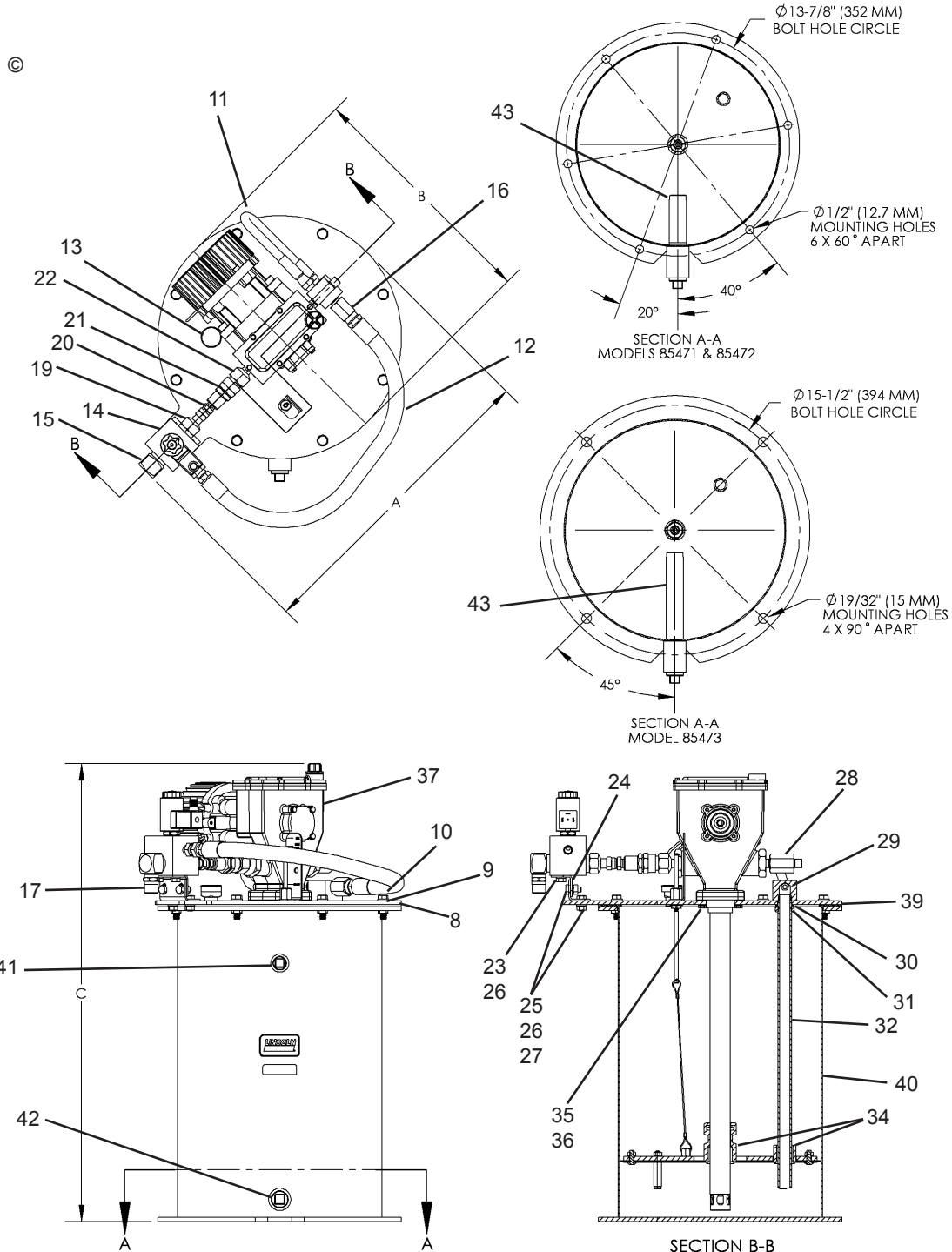


Low Level  
Figure 5



Follower Assembly (34)  
Figure 6

© Indicates change



©

Model No.	Dim. "A"	Dim. "B"	Dim. "C"
85471	19.3 in. (490 mm)	15.1 in. (384 mm)	28.5 in. (724 mm)
85472	19.3 in. (490 mm)	15.1 in. (384 mm)	37.0 in. (940 mm)
85473	20.2 in. (513 mm)	16.8 in. (427 mm)	37.9 in. (963 mm)

© Indicates change



**Service Parts©**

**Service Parts**

Item No.	Qty.	Description	Part Number	Item No.	Qty.	Description	Part Number
1	1	O-Ring	249532*	35	4	Hex Screw	50169
2	1	Indicator Nut	16352	36	4	Lock Washer	66186
3	1	Cable Assembly	See Table 1	37	1	Bare Pump Assembly	See Table 1
4	1	Indicator Plug	249357	38		Not Used	
5	1	Washer	48548	39	1	Gasket	See Table 1
6	1	Indicator Bracket	361020	40	1	Container Assembly	See Table 1
7	1	Retaining Ring	68888*	41	1	Pipe plug, Vent	67117
8	1	Drum Cover	See Table 1	42	1	Pipe Plug, Fill	67224
9	8	Lock Washer	66220	43	1	Extension Tube	See Table 1
10	8	Bolt	50015	44	1	Gasket	31029*
11	1	Hose	272711	45	1	Pump Check Disc Ass'y	80206**
12	1	Vent Hose	270726	46	1	Outlet Check Bushing	90204**
13	1	Vent Fitting	249354	47	1	Ball Check Seat	10313*
14	1	Electric Vent Valve	276903	48	1	Gasket	31001*
15	1	Elbow	10160	49	1	Steel ball (3/8" Dia.)	66001*
16	1	Adapter	12989	50	1	Outlet Connector	90860
17	1	Nipple	11197	51	1	Wiper (Nitrile)	249331*
18		Not Used		52	4	Carriage Bolt (Short)	249332
19	1	Nipple	14727	53	8	Nut	51304
20	1	Adapter Union	66645	54	4	Bolt (Long)	50084
21	1	Outlet Check Assembly	81938	55	4	Spacer	249833
22	1	Adapter	12213	56	8	Lock washer	66186
23	2	Hex Head Screw	50034	57	2	Packing	34413-15
24	2	Bracket	270723	58	2	Round Head Screw	50618
25	4	Bolt	50016	59	2	Washer	48350
26	6	Lock Washer	66246	60	4	Gasket	34748
27	4	Nut	51026	61	2	Nut	51080
28	1	Safety Unloader	272722	62	2	Ring Terminal	324059
29	1	Vent Tee	272717	63	1	Conduit Nut	68020
30	1	Gasket	31010	64	1	Sealing O-ring	271911
31	1	Nut	12538	65	1	Cord Connector	271656
32	1	Vent Pipe	See Table 1	66	1	2-way Receptacle	271651
33	1	O-Ring	270720	67	2	Contact Pin	271378
34	1	Follower Assembly	See Table 1	68	1	Wedge Lock	271658

\* Suggested service replacement component  
 + Sold as an assembly. Individual parts not available.  
 # See service page C8-298 series for pump details.

**Table 1©**  
**Table 1**

Model No.	Size	Item 3	Item 8	Item 32	Item 34	Item 37	Item 39	Item 40	Item 43
<b>85471</b>	60 lb.	249762	241085	67420	85489	85567#	249355	271202	249356
<b>85472</b>	90 lb.	271609	241085	271608	85489	85568#	249355	270923	249356
<b>85473</b>	120 lb.	271609	271646	67290	271653	85568#	271944	271649	271943

© Indicates change





**MODELS 85487 & 86258 TROUBLESHOOTING**

CONDITION	POSSIBLE CAUSE	CORRECTIVE ACTION
Pump does not operate.	No electrical power to pump.	Turn on or connect 24 VDC power.
	- Motor Relay Failure	Replace Relay
	- Motor Overheated	Turn power off for 10 minutes and restart.
	- Motor tripped out on locked rotor protection	Remove high pressure or repair cause of locked pump.
	- Broken gearset or shaft.	Repair gearbox
Pump runs excessively.	- Blown Fuse	Replace fuse, check for cause of overload.
	Pump motor polarity is reversed.	Check to see if red motor lead is wired to the positive side of the circuit.
	Pump tube malfunction.	Refer to pump service page.
	Outlet check damage or contamination.	Repair check or remove contamination.
	Vent valve damage or contamination.	Repair vent valve or remove contamination.
Pump speeds up or runs erratically.	System component leaking.	Repair leaks.
	Injector bypassing.	Repair injectors.
	Low level of grease or reservoir is empty.	Refill reservoir.
Pump runs, but output is low.	Follower plate is stuck and separated from grease.	Check follower plate and container for damage.
	Pump piston or checks are worn.	Refer to pump service sheet.
	Motor speed control set too low.	Turn screw to speed up motor. See pump service page.
Lubricant leaking from safety unloader valve.	Faulty inlet or discharge check valve in pump.	Replace faulty components. See pump service page.
	Pressure of system set too high.	Adjust pressure switch setting.
	Safety unloader damaged or contaminated.	Replace safety unloader.

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