

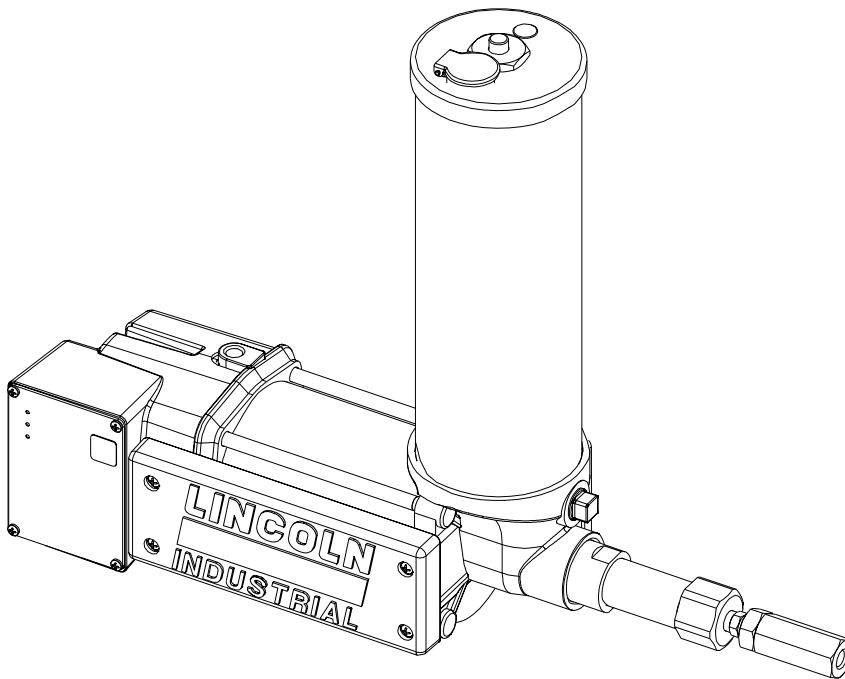
## Air Operated Single Stroke Pumps with Controls, Air Return

Models for Fluids: 85430, 85431, 85432, 85433

Models for Grease: 85434, 85435, 85436, 85437

Series "A"

CE (230 VAC Models only)©



© Indicates change

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### Warning!

This symbol identifies the potential for a **hazardous** situation. If this warning is not followed, a serious injury could occur.

## Description

### General Description

The pumps are air operated, single stroke, positive displacement units and should be used to deliver lubricant under pressure to the metering devices (injectors). A four way solenoid valve to control air input and adjustable timer to control the lubrication cycle are integrated into the pump body. The pump can be used to deliver oil or grease depending upon the model per product specification below. Pump models 85434, 85435, 85436, and 85437 for grease application have a special high volume refill fitting. All pump models have a control panel with indicator lights. The pumps should be installed with reservoir upright for proper operation.

Pump models 85432 and 85433 do not have a reservoir, and are designed for remote automatic or bulk fill capabilities. Refill inlet pressure should not exceed 80 PSIG (5.4 Bar).

### Appropriate Use

- All models are exclusively designed for use in Centralized Lubrication Systems delivering lubricants.
- The maximum ratings given should not be exceeded.
- Any other use not in accordance with the 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.



### Electrical Warning!

This symbol identifies the potential for a **hazardous electrical** situation. If this warning is not followed, a serious injury could occur.

## Product Specification

Model	Pump	Ratio	Control Voltage 50/60 Hz	Current Consumption	Electrical Enclosure Rating	Output Per Stroke Cu. In. (cc)	Reservoir Capacity	
							Pint (Liter)	Cu. In. (cc)
85430	Fluid	20:1	120 VAC	8.5 VA	NEMA12	2.4 (39.3)	4 1/2 (2.1)	123 (2000)
85431			240 VAC					
85432			120 VAC				N/A	N/A
85433			240 VAC					
							Lb. (Kg.)	Cu. In. (cc)
85434	Grease	31:1	120 VAC	8.5 VA	NEMA12	1.4 (18.7)	4 (1.81)	120 (1967)
85435			240 VAC					
85436		25:1	120 VAC					
85437			240 VAC					

Model	Air Inlet	Lubricant Outlet	Air Pressure		Air Consumption @100 P.S.I. (6.8 bar)	Operating Temp. Range
			Min.	Max.		
85430	1/4"	1/4"	20	150	.5 SCF (14.0 l(n)) Per stroke	-10° F
85431	(Female)	NPTF (Female)	PSIG (1.4 Bar)	PSIG (10.2 bar)		(-23° C)
85432						
85433						
85434	1/4"	1/4"	20	150	.5 SCF (14.0 l(n)) Per stroke	-10° F
85435	(Female)	NPTF (Female)	PSIG (1.4 bar)	PSIG (10.2 bar)		(-23° C)
85436						
85437						

## Control Operation (See Illustration 1 for Operating Control Descriptions)

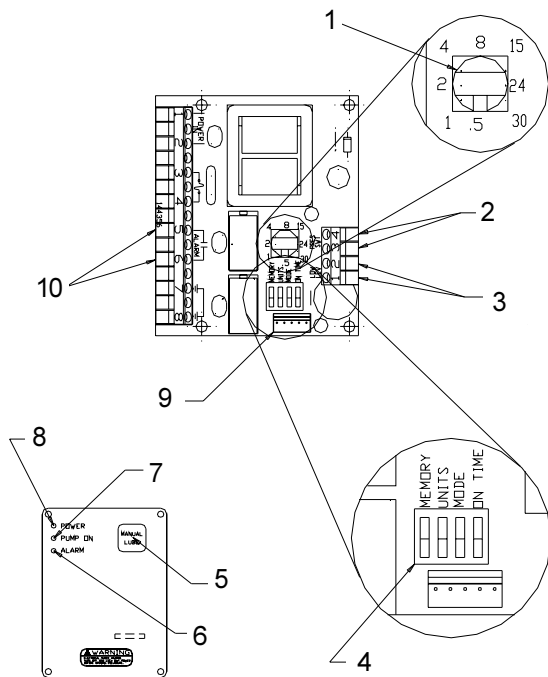
### Timer Mode

- When the **Mode Switch** is set to **Timer**, the pump will deliver lubricant at timed intervals as set on the rotary switch, and **Units** switch setting.
- The rotary switch on the timer/controller board sets the time between lube events (**Off** time).
- A low-level switch may also be added to indicate a low lubricant level in the reservoir.
- When a low-level condition is detected, the **Alarm L.E.D.** will light, alarm contacts connected to terminals 5 & 6 will close and the lubrication sequence will stop.
- The pump assembly will remain in the alarm mode until the reservoir is refilled and the unit is reset by turning the power off and on or the **Manual Lube** button is pressed.
- Pressing the **Manual Lube** button will always initiate a lube event.

### Controller Mode

- When the **Mode Switch** is set to **Controller**, the pump will operate as in the **Timer** mode with pressure monitoring capabilities added.
- A pressure switch must be installed on the supply line.
- The pressure switch will reset the controller when set pressure is detected.
- The unit will initiate an alarm when the pump fails to develop sufficient pressure to actuate the pressure switch within the **On Time** setting.
- Either a low-level condition or a low-pressure condition will cause the unit to go into alarm.
- When an alarm condition is detected the **Alarm L.E.D.** will light, alarm contacts connected to terminals 5 & 6 will close and the lubrication sequence will stop.
- The pump assembly will remain in the alarm mode until the reservoir is refilled and the unit is reset by turning the power off and on or the **Manual Lube** button is pressed.
- Pressing the **Manual Lube** button will always initiate a lube event.

Illustration 1



Keypad Controls

Illustration 1

- |   |                                      |
|---|--------------------------------------|
| 1. Rotary Switch - Cycle (Off) Timer Setting - Point Slot to desired time printed on board. | 5. Manual Lube Push Button           |
| 2. Pressure Switch Terminals  | 6. "Alarm" L.E.D. Indicator, Red     |
| 3. Low Level Switch Terminals   | 7. "Pump On" L.E.D. Indicator, Green |
| 4. Toggle Switches:   | 8. "Power" L.E.D. Indicator, Green   |
| Memory* - Dn = off, Up = on   | 9. Keypad Ribbon Connector           |
| Units - Dn = Minutes, Up = Hours  | 10. Alarm Contact Terminals          |
| Mode - Dn = Controller, Up = Timer  |                                      |
| On Time - Dn = 10 Sec.  |                                      |
| Up = 30 Sec.  |                                      |

Illustration 2

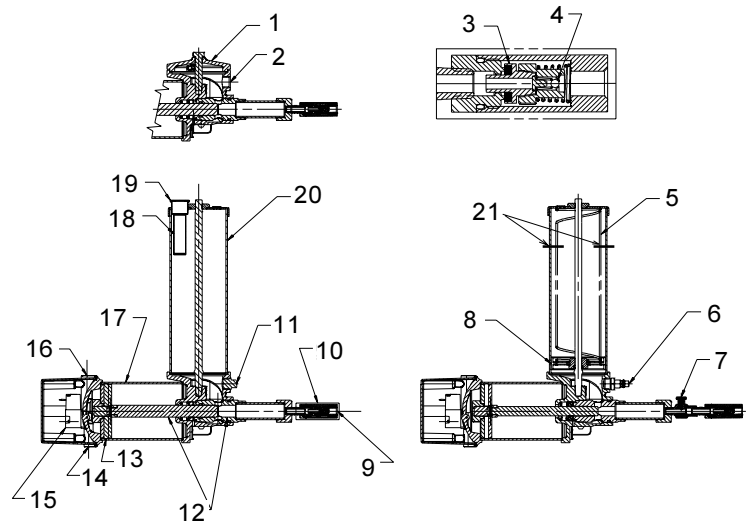
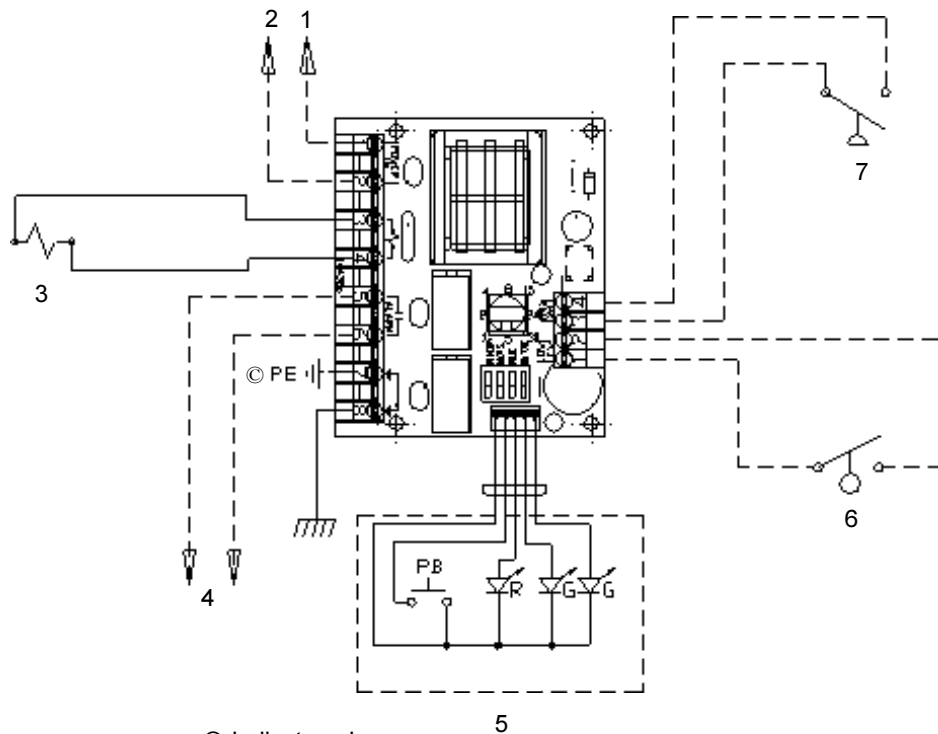


Illustration 2

- |                              |                           |
|------------------------------|---------------------------|
| 1. Body Cap                  | 11. Drain Plug            |
| 2. Lubricant Inlet 1/2" NPTF | 12. Bushing & Plunger     |
| 3. Check                     | 13. Air Piston            |
| 4. Check Ball                | 14. Air Exhaust 1/8" NPTF |
| 5. Follower Spring           | 15. Solenoid Valve        |
| 6. Filler Fitting            | 16. Air Inlet 1/4" NPTF   |
| 7. Vent Plug                 | 17. Air Cylinder          |
| 8. Follower                  | 18. Lubricant Strainer    |
| 9. Lube Outlet 1/4" NPTF     | 19. Filler Cap            |
| 10. Outlet Check & Vent      | 20. Reservoir Tube        |
|                              | 21. Air Vent, Both Sides  |

\***Memory: On/Off**, When set to **On**, the timer/controller will "remember" where it is in the time sequence for up to 3 hours when power is removed from the board. This function is used to eliminate over lubrication caused by frequent power up/down sequences, which may be necessary in the function or set-up of the machine. When set to **off**, the unit will initiate a lube cycle each time power is applied to the unit.

## Wiring Diagram



### Wiring Diagram

1. L1
2. L2
3. Air Solenoid Valve
4. Optional Alarm wired by customer
5. Keypad with indicator lights and manual lube push button
6. Optional Low Level Switch wired by customer
7. Optional Pressure Switch wired by customer

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### Pump Operation (See Illustration 2)

- When a lube cycle is initiated by the timer, the 4-way solenoid valve is energized, allowing compressed air to enter the left side of the Air Cylinder. The piston with plunger moves to the right, dispensing the charge of lubricant from the bushing cavity.
- When the pump "On" time expires, the solenoid valve is de-energized routing the air pressure to the right side of the air piston and venting the air on the left side of the air piston to the exhaust port in the cylinder head. The air piston and plunger move back to the left. In its extreme left position, the plunger has retracted opening the bushing port, permitting lubricant to flow into the bushing cavity.
- Lubricant pressure from the supply line is allowed to "vent" back through the Ball Check into the bushing cavity, thus allowing the injectors to reset.

### Installing the Pump (See Illustrations 3, 4 & 5)

- Pump must be mounted with the reservoir in a vertical position.
- Mount to an even, stable and solid surface.
- Mount with two 1/2" [12 mm] screws. (2 mounting holes are provided on back of pump body).
- Mount in area away from dust, dirt and moisture (pumps are not designed for wash down environments or for outside weather conditions).
- Allow sufficient space for servicing, filling and operating the pump.
- Mount in an area where the pump can be observed for monitoring lubricant level and pump operation, unless auxiliary-monitoring equipment is installed.

### Electrical Connections (See Wiring Diagram)

- A terminal wiring diagram is located on the backside of the keypad assembly.
- One 1/2" conduit opening is provided on the left side of the Timer/Controller enclosure. An additional 1/2" conduit knock out is located adjacent to the opening.
- All wiring and fusing is to be in accordance with the National Electric Code or regulations of the regulating agency where the unit is to be installed.

### Optional Devices

#### Pressure Switch

- Model 69630 pressure switch should be installed in the supply line to the injectors.
- The pressure switch must be wired "Normally Open" with connections to low voltage terminals 3 & 4. See Wiring Diagram.
- The mode switch on the timer/controller board must be set for Controller operation for the pressure switch to be effective.
- The pressure switch should be adjusted to a pressure high enough to insure proper system operation.
- Switch Ampacity: 1 MA at 5 VDC.

## Low Level Switch

- Use low-level switch 83696 with models 85430 and 85431. A low-level switch is not available for models 85432 and 85433.
- Use low-level switch 83671 with models 85434, 85435, 85436 and 85437.
- The low-level switch is to be wired "Normally Open" with connections to low voltage terminals 1 & 2. See Wiring Diagram.
- When the low level switch closes, an alarm will be initiated.
- The low-level option can be used in either the **Timer** or **Controller** mode.
- Switch ampacity: 1 MA at 5 VDC.

## Alarm Contacts

- Relay contacts are provided on the Timer/Controller board for connecting an external alarm device. These contacts may be used for a light, horn or another warning device, or they may be used for machine shut down in the event of a lube failure.
- The alarm is to be connected to terminals 5 and 6. See Wiring Diagram.
- The contacts will close on a fault condition.
- Contact ratings: 2 amps inductive load @ 30 VDC, 120 VAC and 250 VAC. **Do Not Exceed Ratings.**

## Putting Pump into Operation

### Filling Fluid Reservoirs

- The transparent lubricant reservoir is filled with oil through the filler cap at the top of the reservoir.
- The lubricant strainer should be removed from the filler cap and cleaned periodically before filling.

### Filling Models 85432 and 85433

- These pumps are designed to be provided with lubricant from a remote reservoir or priming system.
- Overhead reservoirs may be used to supply lubricant to the pumps via gravity feed.
- A manifold supply system may be used in supplying multiple pumps from bulk storage tanks. Inlet pressure must not exceed 80 PSI [5.4 BAR].

### Filling Grease Reservoirs

- Use Manual Filler Pump 81834 to fill the reservoir through the filler fitting in the pump body.
- Attach the filler coupler on the delivery hose to the filler fitting. Stroke the filler pump handle until lubricant seepage is noted at the air ventholes in the reservoir (see Illustration 2). Note that the lower edge of the follower must rise above the vent holes to expel entrapped air from the lubricant.



**Warning!** When filling the reservoir, caution should be used as extreme pressure can cause damage to reservoir and follower assembly.

### Priming Supply & Feed Lines

- Prime lines with lubricant to expel air for the proper operation of the pump and system.
- Manual lube button can be used to prime the supply lines.

## Setting the Timer/Controller



**Warning!** Electrical shock hazard. Disconnect and lockout all power to the pump unit before removing the keypad of the timer compartment.

- Remove four Phillips head screws holding the keypad to the front of the timer compartment.
- Set the toggle switch settings as required for **Memory, Units, Mode of Operation** and **On Time**. See Illustration 1.
- Set the rotary switch for the required pump cycle times (**Off Time**) by pointing the indicator or slot to the time settings printed on the circuit board around the switch.
- Install keypad by carefully folding the ribbon cable back across the timer board, taking care not to pinch the cable between the keypad and front face of the enclosure.
- Secure with four Phillips head screws.

## Maintenance & Repair

### General Maintenance

- Good housekeeping will go a long way in keeping a lubrication system running without problems for many years of use.
- Keep area around pump clean. Clean off filling area prior to filling reservoir. Clean area around filler after filling. Lubricants will attract dirt like a magnet.
- Keep lubricants clean and free of dirt and debris. Use filtered lubricants to refill reservoirs.

### In Case of Trouble

#### (See Trouble Shooting Chart Page 12)

- Problem areas can be broken down into 3 areas: electrical, pneumatic and hydraulic.
- 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 pump and control.
- Each part is identified with a number keyed to the matching part on the exploded illustrations.
- When required, tool sizes are also specified in each step.
- Pay particular attention to the **Warning** and **Caution** statements to prevent personal injury and possible damage to pump components.
- Do not use solvents on acrylic reservoirs.

### Timer/Controller Replacement

#### (See Illustration 6)



**Warning!** Electrical shock hazard. Disconnect and lockout all power to the pump unit before removing the keypad from the timer compartment.

(Note: Replacement of timer/controller board or keypad does not require the removal of the pump assembly from the mounting surface.)

1. Turn off the air and power supply to the pump unit.
2. Remove the keypad (34) from the face of the pump enclosure, by removing the four Phillips head screws (29).
3. Disconnect the ribbon cable connection from the keypad (34) by gently pulling the plug from the timer controller board (32).

4. Disconnect the wire connections from the wire terminals on the timer/controller board (32). Note where each wire is connected on the terminal strips.
5. Remove the timer/controller board (32) by removing the four Phillips head screws (33).
6. Reassembly is the reverse of the above procedure.
7. Be sure that all wires are connected to the correct locations on the terminal strips.
8. Connect the ribbon cable plug from the keypad (34) to the mating plug on the timer/controller board (32). The plug should be plugged into the timer/controller board (32) so that the ribbon cable has no twist in it; it must be parallel to the face of the enclosure when the keypad (34) is installed.
9. When reinstalling the keypad (34), be sure that the ribbon cable is gently folded into the enclosure behind the keypad (34), and not pinched between the keypad (34) and enclosure.

## Solenoid Valve Replacement (See Illustration 8)



**Warning!** Electrical shock hazard. Disconnect and lock out all power to the pump unit before removing the keypad of the timer compartment.

(Note: Replacement of the solenoid valve does not require removal of the pump assembly from the mounting surface.)

1. Turn off air supply to pump assembly.
2. Turn off the power supply to the pump unit.
3. See Timer/Controller Replacement, above, to remove the keypad (34) and timer/controller board (32).
4. Remove the enclosure (30) by removing two Phillips head screws (29) from the side of the enclosure.
5. As the enclosure (30) is removed from the assembly, gently pull the solenoid and green ground wires through the grommet (31) in the enclosure back towards the solenoid valve (25).
6. Remove the solenoid valve (25) using a 3/32 Allen wrench to remove the two cap screws (27) holding it to the bottom of the cylinder head (23). Do not lose the gasket (24) that is placed between the valve and cylinder head (23).
7. When replacing the solenoid valve, make sure the solenoid valve is the correct part number and voltage as the valve to be replaced.
8. Reassemble in reverse of the above procedure. Take care in pulling the solenoid and green ground wires through the grommet (31).

## Oil Reservoir Service (See Illustration 9)

(Note: Replacement of the reservoir tube does not require removal of the pump assembly from the mounting surface.)

1. Turn off the air supply to the pump assembly.
2. Turn off the power supply to the pump unit.
3. Remove lubricant from the lubricant reservoir. Oil pump reservoirs may be drained by removing the drain plug (51) from the right side of the pump unit with a 9/16 wrench.
4. Clean off reservoir tube and area around reservoir to prevent getting dirt into the lubrication system.



**Warning!** Failure to drain reservoir will result in lubricant leakage out of reservoir when the nut (36) securing the reservoir in place is removed.

5. Remove nut (36) from the top of the reservoir cap (38) using a 1-3/8 wrench.
6. Remove reservoir cap (38) from top of reservoir.
7. Slide the reservoir tube off the pump over the center post.
8. Remove gasket (41) if necessary.
9. Reassemble in reverse of the above procedure.
10. Tighten nut (36) to 10 to 15 ft.-lbs. [13.5 to 20.3 n-m].

## Grease Reservoir Service (See Illustration 11)

(Note: Replacement of the reservoir tube does not require removal of the pump assembly from the mounting surface.)

1. Turn off the air supply to the pump assembly.
2. Turn off the power supply to the pump unit.
3. Remove lubricant from the lubricant reservoir. Grease pumps may be emptied by carefully removing the filler fitting (52) from the unit with a 7/8 wrench. (Depending on how full the reservoir is, the grease may flow out of the reservoir very rapidly.)



**Warning!** Failure to remove all lubricant from reservoir could result in a high spring force from the follower spring (47) and/or a rapid discharge of grease when nut (36) is loosened or removed.

4. Clean off reservoir tube and area around reservoir to prevent getting dirt into lubrication system.
5. Remove nut (36) from top of reservoir cap (38) using a 1-3/8 wrench. Carefully hold reservoir cap against any residual spring force while removing nut (36).
6. Remove reservoir cap (38) from top of reservoir.
7. Holding the follower down with the follower spring (47), carefully work the reservoir tube (40) off of the follower, leaving the follower and spring in place on the pump assembly.
8. Remove the follower spring (47).
9. Remove follower assembly by sliding up to the threads in the center rod (42), and then threading the follower assembly counter-clockwise over the threaded portion of the center rod. Do not force or pull the follower off of the center rod or damage will result to the o-ring (46) inside of follower bushing (35).
10. Remove gasket (41) if necessary.
11. Disassemble the follower assembly by removing retaining ring (48), using external ring pliers, from bushing (35). Washers (49) and follower packing (50) can now be removed from bushing (35). Remove o-ring (46) from the internal groove in the inner hole of the bushing (35); use a pointed tool, such as a pick.
12. Reassemble in reverse of the above procedure with the following hints:
13. When reinstalling the follower assembly onto the center rod (42) lubricate the center tube liberally with grease. Lubricate the o-ring (46) and the inside of bushing (35) with grease. Thread, turning clockwise, the follower assembly down over the center rod treads. Do not force or drive with hammer, or o-ring damage will result in leakage of lubricant around follower. Slide the follower assembly down to the bottom of the center rod (42).
14. When installing the reservoir tube, lubricate the follower packing lips (50) and the inside of the reservoir tube (40) with grease. The reservoir tube will have two vent holes in the side wall of the tube close to one end of the tube. The reservoir tube (40) must be placed on the pump with the vent holes near the upper side of the pump assembly. Place the reservoir tube down over the follower packing (50), working the packing lips up into the reservoir tube with your fingers until the entire follower assembly is inside the reservoir.
15. Tighten nut (36) to 10 to 15 ft.-lbs. [13.5 to 20.3 n-m].

## Outlet Check and Vent Assembly Service (See Illustration 7)

(Note: Service of the outlet check and vent assembly does not require removal of the pump from the mounting surface.)

1. Turn off the air supply to the pump assembly.
2. Turn off the electrical power to the pump assembly.
3. Drain or remove lubricant from the reservoir. (See **Reservoir Service** section of this manual for proper procedure.)
4. Disconnect supply line from outlet check and vent assembly.
5. Remove outlet check and vent from the outlet adapter (1) or vent body (54) of pump. Use a 1-1/2" wrench to hold the outlet adapter (1) or a 1" wrench to hold vent body (54). Use a 9/16" wrench on nipple (55).
6. Grip the check body (63) in a vise and remove the check seat (56) with a 1" wrench.
7. Remove loose components from pump body.
8. If pump is used for grease, to prevent parts loss, it might be a good idea to clean all components in solvent before further disassembly.
9. Remove check retainer (61) from check (58) by gripping check retainer in vise and removing check with 11/16" wrench.
10. Remove ball stop (59), spring (60) and ball (64) from check retainer.
11. Reassembly is the reverse of the above procedure.

## Pump Tube and Air Cylinder Service (See Illustration 8)



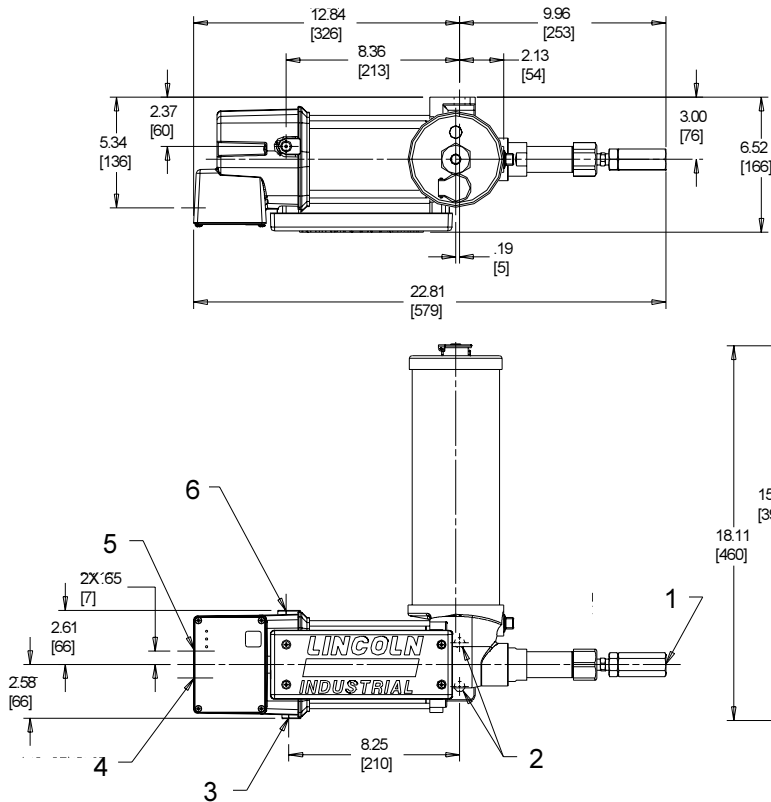
**Warning!** Electrical shock hazard. Disconnect and lock out all power to the pump unit before removing the keypad of the timer compartment.

(Note: Any servicing of the pump tube or air cylinder of the pump is best performed after the pump assembly is removed from the mounting surface.)

1. Turn off the air supply to the pump assembly.
2. Turn off the power supply to the pump assembly.
3. Disconnect the supply line from the pump outlet.
4. Drain or remove lubricant from the reservoir. (See **Reservoir Service** section of the manual for proper procedure.)
5. Remove pump from mounting surface.
6. When servicing the pump, keep work area clean and free of dirt to prevent contamination of the lubrication system.
7. Remove timer/controller board (32) and keypad (34) following procedure in the **Timer/Controller Replacement** section of this manual.
8. Remove the enclosure (30) and solenoid valve (25) following the procedure in the **Solenoid Valve Replacement** section of this manual.
9. Remove the reservoir assembly following the procedure in the **Oil or Grease Reservoir Service** section of this manual.
10. Remove the outlet check and vent assembly, following the procedure in the **Outlet Check and Vent Assembly Service** section of this manual.
11. Remove the outlet adapter (1) from pump tube (3) with a 1-1/2" wrench. The pump tube may be held with a small pipe wrench if necessary. Note the presence of a gasket (2) on both ends of the pump tube.
12. Remove the pump tube (3) from the bushing & plunger assembly (6) with a small pipe wrench. Hold the bushing with a 1-1/2" wrench.

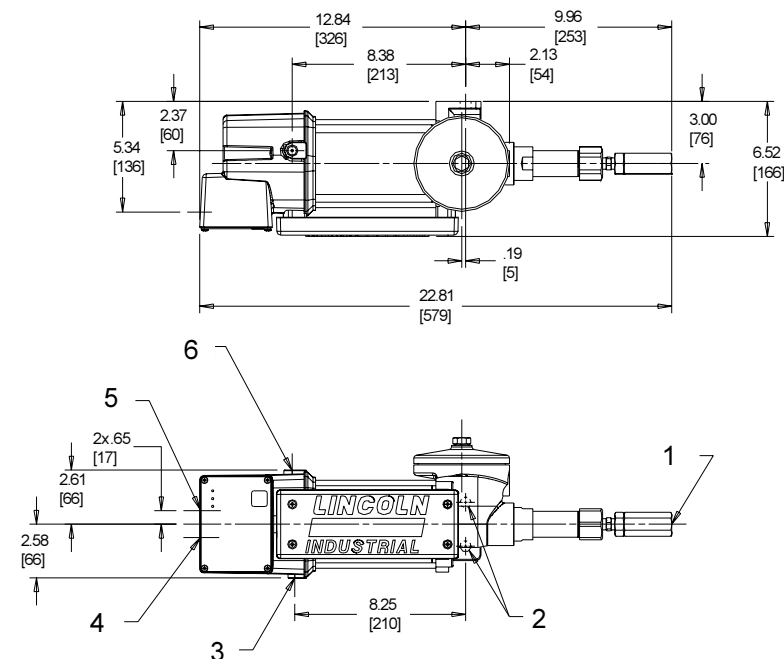
13. Remove the air transfer bar (13) by removing four Phillips head screws. Remove two o-rings (12) from both ends of the transfer bar.
14. Remove the cylinder head (23) by removing four hex nuts (28) using a 9/16" wrench.
15. Remove the air cylinder (21) by sliding off of air piston. Air piston may stay with air cylinder when the cylinder is removed. Hold the air piston in place while sliding the air cylinder off, over the piston. Remove two gaskets (20) from both ends of the air cylinder.
16. Carefully remove the air piston and plunger assembly from the pump assembly, by pulling out to the air cylinder side of the pump.
17. Remove the bushing (6) from the pump, with a 1-1/2" wrench.
18. Remove gasket (7), washers (8), gland packing(s) (9), and spring (10) from inside of pump body.
19. The air piston may be disassembled from the plunger by gripping on packing stud (15) with a 3/4" wrench or carefully clamping in a vise on the flats provided, and using a 1-1/2" wrench to remove the piston nut (19).
20. After the piston nut (19) is removed, the washer (18), packing (17) and washer (16) can be removed from the packing stud (15).
21. Remove pin (14) which holds packing stud to plunger (6). This is a slip fit and should be easily removed unless damaged or severely worn.
22. Reassembly will be the reverse of the above procedure with the following hints:
23. When reinstalling the bushing (6) into the pump body, apply a liberal amount of grease to o-rings (5) and (4) (if used) to prevent o-ring damage on assembly.
24. Apply grease to packing(s) (9) prior to reinsertion into pump body. When installing gasket (7), washers (8), packing(s) (9), and spring (10) into pump body, slide assembled air piston and plunger (6) through the pump body.
25. Slide spring (10), washer (8), packing(s) (9) and washer (8) onto plunger. Place gasket (7) on bushing and slide bushing onto plunger.
26. Carefully slide the bushing into the opening on the pump body and screw into place. Before tightening, move the plunger in and out of the bushing, checking for smooth operation. Tighten bushing.
27. Grease inside of air cylinder liberally prior to assembly.
28. Torque four nuts (28) to 10 to 15 ft.-lbs. [13.5 to 20.3 n-m]. Apply torque to the four nuts evenly and gradually, working in a cross pattern until all nuts are tight.

**Illustration 3**  
**Models 85430 and 85431 (Dimensions are in Inches [mm])**



- Illustration 3**
1. Lube Outlet 1/4" NPTF
  2. 2X  $\varnothing$  .53 [13] Mounting Holes
  3. 1/8" NPTF Air Exhaust
  4. 1/2 Conduit Knock-Out
  5. 1/2 Conduit Opening
  6. Air Inlet 1/4" NPTF

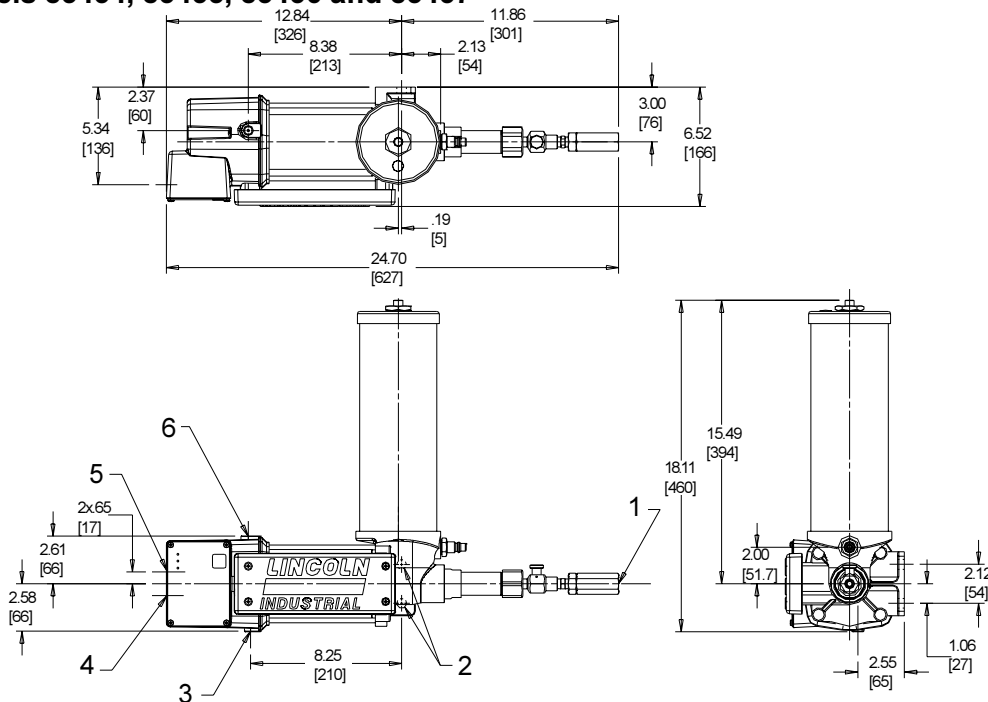
**Illustration 4**  
**Models 85432 and 85433 (Dimensions in Inches [mm])**



- Illustration 4**
1. Lube Outlet
  2. 2X  $\varnothing$  .53 [13] Mounting Holes
  3. 1/8" NPTF Air Exhaust
  4. 1/2 Conduit Knock-Out
  5. 1/2 Conduit opening
  6. Air Inlet 1/4" NPTF
  7. Oil Inlet 1/2" NPTF

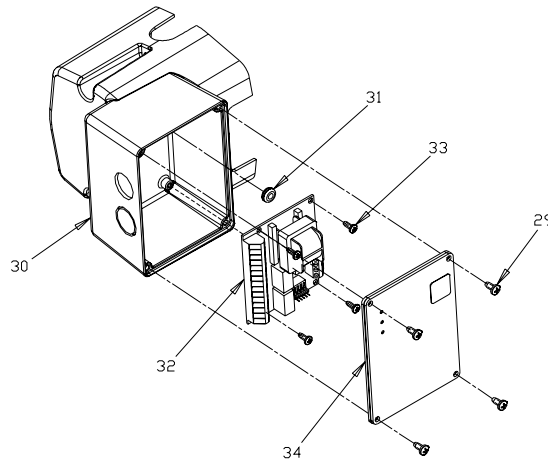


**Illustration 5**  
**Models 85434, 85435, 85436 and 85437**

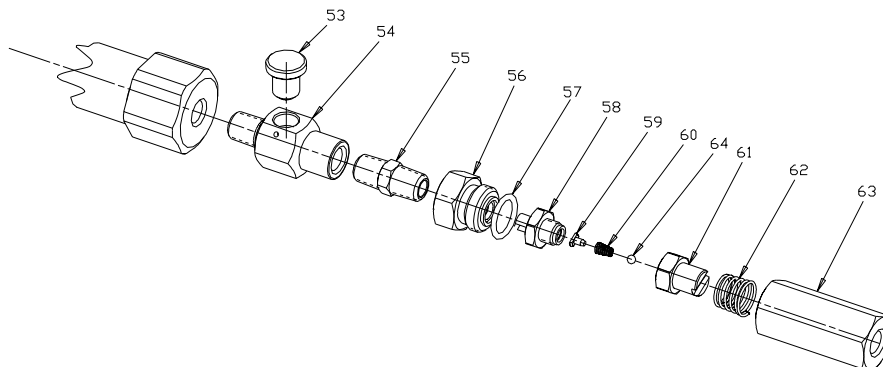


**Illustration 5**  
 1. Lube Outlet 1/4" NPTF  
 2. 2x o .53 [13] Mounting Holes  
 3. 1/8" NPTF Air Exhaust  
 4. 1/2 Conduit Knock-Out  
 5. 1/2 Conduit Opening  
 6. Air Inlet 1/4" NPTF

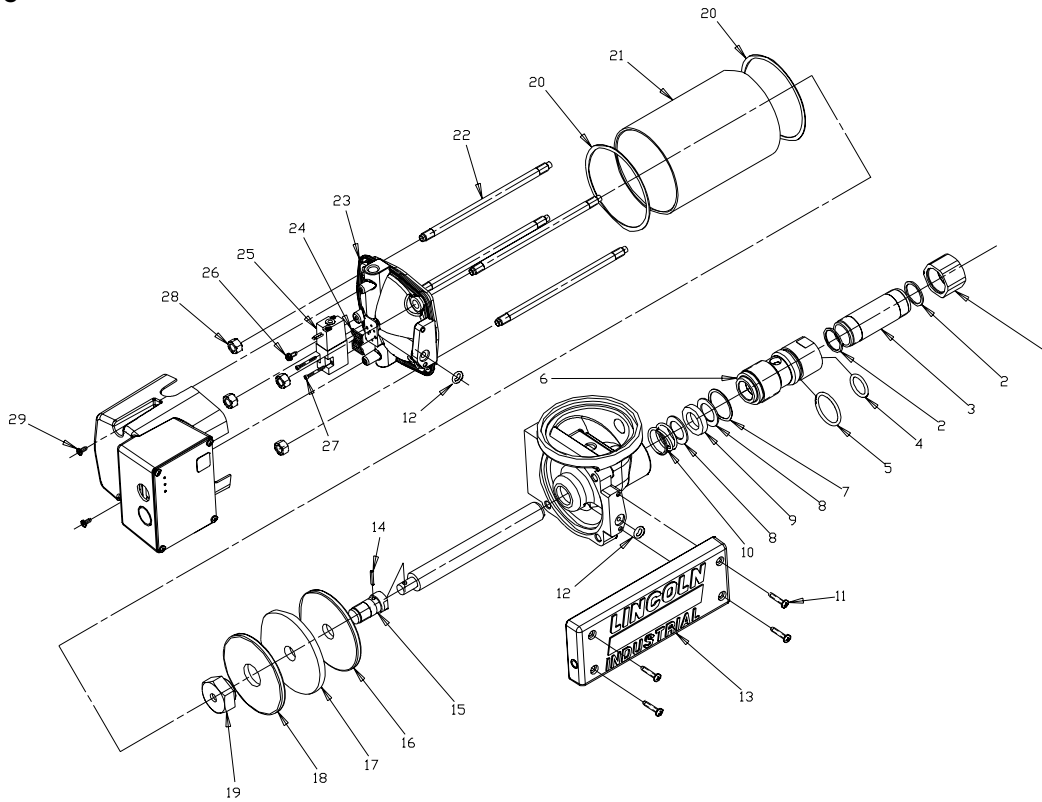
**Illustration 6**  
**All Models**



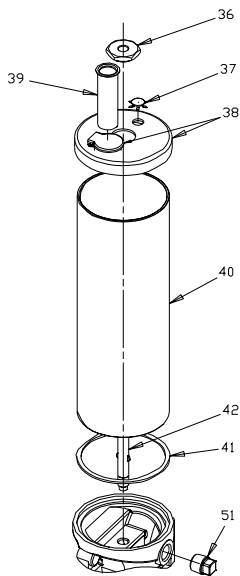
**Illustration 7**  
 (Note: Items 53 and 54 are not used on Models 85430, 85431, 85432 and 85433)



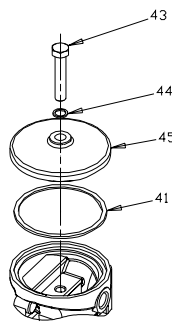
**Illustration 8**  
All Models



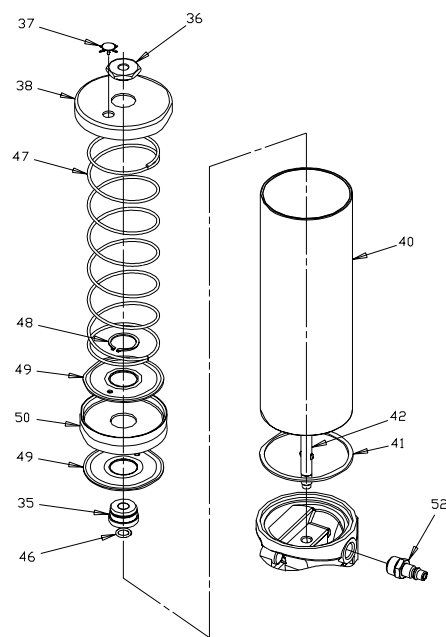
**Illustration 9**  
Models 85430, 85431



**Illustration 10**  
Models 85432, 85433



**Illustration 11**  
Models 85434, 85435, 85436 & 85437



## Repair Parts List

### MODELS

ITEM	QUAN	DESCRIPTION	85430	85431	85432	85433	85434	85435	85436	85437
1	1	Outlet Adapter			13064				13064	
2	2	Gasket			*				**	
3	1	Pump Tube			13063				13063	
4	1	O-Ring (Nitrile)			*				NA	
5	1	O-Ring (Nitrile)			*				**	
6	1	Bushing & Plunger Ass'y			92079		91403		92303	
7	1	Gasket			*				**	
8	2	Washer								
9	+2	Gland Packing (Nitrile)			*				**	
10	1	Spring			55251				55251	
11	4	Tapping Screws			252460				252460	
12	2	O-Ring (Nitrile)			*				**	
13	1	Air Transfer Bar			252713				252713	
14	1	Pin			13145				13145	
15	1	Packing Stud			13144				13144	
16	1	Washer			48210				48210	
17	1	Packing (Nitrile)			*				**	
18	1	Washer			48209				48209	
19	1	Piston Nut			11311				11311	
20	2	Gasket (Fiber/Nitrile)			*				**	
21	1	Air Cylinder			13072				13072	
22	4	Tie Rod			13084				13084	
23	1	Cylinder Head			252712				252712	
24	1	Gasket (4 Way Valve)			252711				252711	
25	1	4 Way Solenoid Valve	252708	252709	252708	252709	252708	252709	252708	252709
26	1	Grounding Screw			324100				324100	
27	2	4-40 Capscrew			252471				252471	
28	4	Nut			51001				51001	
29	6	8-32 Tapping Screws			250635				250635	
30	1	Timer Enclosure			252710				252710	
31	1	Grommet			252462				252462	
32	1	Timer Board	252702	252703	252702	252703	252702	252703	252702	252703
33	4	6-32 Tapping Screw			252463				252463	
34	1	Keypad Ass'y			252704				252704	
35	1	Bushing			NA				14340	
36	1	Nut	51084		NA				51084	
37	1	Plug Button	68797		NA				68797	
38	1	Reservoir Cap	92180		NA				45936	
39	1	Strainer	69128		NA				NA	
40	1	Reservoir Tube	247208		NA				247210	
41	1	Gasket (Nitrile)			*				**	
42	1	Tie Rod	13071		NA				13071	
43	1	Capscrew	NA		50077				NA	
44	1	Gasket	NA		*				NA	
45	1	Body Cap	NA		40412				NA	
46	1	O-Ring (Nitrile)			NA				**	
47	1	Follower Spring			NA				55270	
48	1	Retainer Ring			NA				69034	
49	2	Washer			NA				48467	
50	1	Follower Packing (Nitrile)			NA				**	
51	1	Pipe Plug	67117		NA				NA	
52	1	Filler Fitting			NA				92441	
53	1	Vent Plug			NA				16382	
54	1	Vent Body			NA				11622	
55	1	Nipple			10462				10462	
56	1	Check Seat			237590				237590	
57	1	O-Ring (Nitrile)			*				**	
58	1	Check			*				**	
59	1	Ball Stop			*				**	
60	1	Check Spring			*				**	
61	1	Check Retainer			13557				13557	
62	1	Check Spring			56074				56074	
63	1	Check Body			237591				237591	
64	1	Ball			*				**	
		Soft Parts Kit			252716				252715	

\* Included in 252716 Soft Part Kit (Oil)

\*\* Included in 252715 Soft Parts Kit (Grease)

+ 1 required for 85436 and 85437.

<b>Lube Systems without Alarm Monitoring</b>		
<b>Condition</b>	<b>Possible Cause</b>	<b>Corrective Action</b>
Pump does not operate.	No air to pump.	Turn on or connect air supply to pump.
	No electric power to pump.	Turn on electric power to pump. "POWER" L.E.D. should light, "PUMP ON" L.E.D. Should light when "MANUAL LUBE" is pressed.
Pump does not operate, "PUMP ON" L.E.D. lights, air pressure is present at air inlet.	Exhaust port blocked or restricted	Remove restriction.
	Pump plunger or air piston movement restricted or seized.	Disassemble and determine cause of failure.
	Solenoid valve failure.	Replace solenoid valve.
	Timer/Controller Board failure	Remove and replace.
	Pump outlet blocked or restricted.	Remove blockage or restriction.
Pump cycles when "PUMP ON" L.E.D. is off and does not cycle when "PUMP ON" L.E.D. is on.	Air line connected to exhaust port of Pump Ass'y.	Connect air line to inlet port of Pump Ass'y.
Pump operates, but system fails to cycle.	Injector output adjustment set to minimum output setting.	Adjust injector outputs to correct output setting for system requirements.
	Supply line leaking.	Stop leak. Check all manifold plugs and injector mounting gaskets.
	Lubricant leaking past ball check (Item 64, Illust. 7) or Check packing (Item 58, Illust. 7).	Disassemble outlet check and vent, inspect for foreign particles. Clean or replace parts if worn or damaged.
	Reservoir too low on lubricant	Refill reservoir with lubricant.
	Pump or supply line air is bound.	Purge air from pump, supply line, and injectors, see "Putting Pump into Operation" Section of this manual.
	System too large for pump output.	Calculate system requirement per Planning Manual.
Pump dispenses lubricant, injector pins fail to return.	Restricted supply line.	Remove restriction.
Pump dispenses lubricant, some injectors fail to deliver lubricant.	Pump "On Time" setting too short for system or temperature.	Set Timer/Controller to longer "Pump On" time setting.
	System too large for pump output.	Calculate system requirements per Planning Manual.
Bearing points are over lubricated.	Timer/Controller memory mode is set to off.	Turn on memory mode of timer/controller.
	Injector output adjustment setting too high.	Readjust to lower setting.
Bearing points are under lubricated.	Timer/Controller cycle time setting too low.	Set to longer cycle time or re-evaluate lube requirements
	Injector output adjustment setting too low.	Readjust to higher setting.
	Timer/Controller cycle timer setting does not deliver lubricant often enough.	Set to shorter cycle time or re-evaluate lube requirements.
	System too large for pump output.	Calculate system requirements per planning manual.
"Lube Alarm" L.E.D. turns on with each lube cycle, and pump will not initiate another lube cycle automatically.	Timer/Controller set to "Controller Mode" without a pressure switch in the supply line.	Connect a pressure switch into the supply line and connect to timer/controller or place mode switch in "Timer" mode.
	Low level switch wired incorrectly.	Check low level switch wiring and correct if necessary. Contact closure must be on low level condition.

### Additional Trouble Shooting when Alarm Monitoring is used

Some, but not all, of the injectors are delivering lubricant. There is no alarm condition.	Timer/Controller is set to "Timer" mode.	Set Timer/Controller to "Controller" mode.
	Pressure Switch setting is too low.	Adjust pressure setting switch to setting high enough for all injectors to cycle.
	Pressure Switch wiring is shorted.	Check pressure switch wiring.
"Lube Alarm" L.E.D. turns on with each lube cycle, and pump will not initiate another lube cycle automatically.	Bad electrical connection between Pressure Switch and Timer/Controller.	Check all wiring between pressure switch and Timer/Controller.
	Pressure Switch setting is too high.	Adjust Pressure Switch to setting high enough for all injectors to cycle.
	Pressure Switch is defective.	Rrepair or replace.
	Timer/Controller is defective.	Replace Timer/Controller.
	Low level switch wired incorrectly.	Check low level switch wiring and correct if necessary. Contact closure must be on low level condition.

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