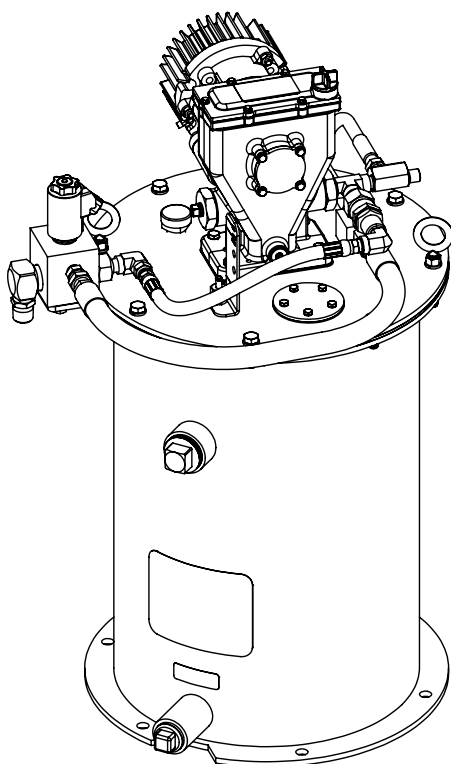


# FlowMaster II rotary driven electric pump, 24 V DC

Model 85728, series "A"

Model 85729, series "A"

Model 85730, series "A"



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Form number	404567
Section	C8
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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.

 **WARNING**

Indicates a hazardous situation which, if not avoided will result in death or serious injury. Please refer to the 85737 and 85738 pump operation manual, **section C8, page 353**, series for all other safety considerations

 **WARNING**

Do not exceed 3,000 psi (207 bar) maximum supply inlet electric pressure or 3,500 psi (241 bar) maximum outlet pressure. Exceeding the rated pressures may result in damage to system components and personal injury.

Description

General description

Models 85728, 85729 and 82730 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 II rotary driven electric pump includes a motor speed control and built in circuit protection to prevent control burnout.

The FlowMaster II pump is fully automatic when used with Model 85530 Controller and a pressure switch. The FlowMaster II pump is double acting, dispensing lubricant on both the “up” and “down” strokes. This unit is designed to be used with SL-V, SL-1, SL-11, SL-32 and SL33 series injectors or a combination of these.

Models 85728, 85729 and 82730 include follower plate and mechanical low level indicator. Model 82730 also includes an electrical high level switch to indicate when reservoir is full.

Appropriate use

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

**Product specification**

Supply voltage	24 V DC
Ambient operating temperature	–40 to +150 °F (–40 to +66 °C)
Container capacity	
85728	60 lbs. (27 kg)
85729	90 lbs. (41 kg)
85730	120 lbs. (57 kg)

Do not exceed an outlet grease pressure of 4,000 psi (276 bar)

## System operation

### Operation with model 85530 system controller

When model 85530 times out, it will initiate a lube cycle. The solenoid is energized to deliver electric pressure to the pump and vent valve. The 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 cutting off electric oil pressure to the pump and vent valve. 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 holes at the bottom of the reservoir. For models 85728 and 85729 drill six  $\frac{1}{2}$  in. (13 mm) holes. The use of  $\frac{7}{16}$  in. (10 mm) bolts will offer some flexibility in securing the reservoir to the equipment. For model 85730 drill four  $\frac{5}{8}$  in. (15 mm) holes. The use of  $\frac{1}{2}$  in. (12 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 as shown in **fig. 1** and **2**.

Please refer to the 85737 and 85738 operation manual, **section C8, page 353**, series for setting the pump control on the 24 V DC motor.

## Putting pump into operation

### Filling reservoir

- To bulk fill the reservoir, remove the lower and upper pipe plugs from the side of the reservoir. Attach the appropriate bulk-filling pump to the lower inlet (1 NPT). Fill reservoir until grease appears at the top 1  $\frac{1}{4}$  NPT vent high level port. Remove the bulk filling pump. Replace both pipe plugs.

## Maintenance and 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.

### In case of system malfunction

- Use the **trouble shooting charts** (**page 11**) to determine where to look if problems occur.
- See the sections below for placement 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.

#### **WARNING**

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

## Outlet check service

The pump will not build up sufficient lubricant pressure if the outlet check (7) is fouled. Foreign material may lodge beneath the check ball (42) or between check disc (39) and the seat of bushing assembly (38).

Sealing surfaces of the seat must form a perfect seal. Clean parts or replace if pitted, worn or scored. (→ fig. 3, 4 and 5 pages 6, 7 and 8.)

- 1 Turn off and disconnect the electric and 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 in. To 1 1/2 in., a large 24 in. (600 mm) adjustable wrench and a smaller 10 in. (254 mm) adjustable wrench.
- 3 Remove hose and elbow (8 and 9).
- 4 Remove outlet check assembly (7) and adapter (6) by loosening adapter (6) from tee (4).
- 5 Remove adapter (6) from outlet check assembly (7).
- 6 Remove outlet connector (43) from bushing (38).
- 7 Remove ball check seat (40) from outlet connector (43).
- 8 Inspect all check components (38, 39, 40, 42) for presence of foreign material, scoring and or other damage, which may cause internal leakage. Replace components if damage is found.
- 9 If foreign material is present, clean components and reassemble. Be sure to always replace gaskets (37) and (41) whenever vent valve is disassembled. Reverse the above procedure to reassemble. Torque check assembly to 100 ft.lbf. (135 Nm).

## Follower

If follower foam appears to be damaged or does not wipe the sides of the container effectively service may be necessary (→ fig. 3, 4 and 9, pages 6, 7 and 9).

- 1 Disconnect electric supply from pump.
- 2 Remove the eight bolts (2) and lock washers (3) 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 (53) from the follower plate (36).
- 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 (61) on top of the follower.
- 7 Remove the follower weight (62) and foam (60). Replace the foam 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.

## Mechanical low level indicator

If the indicator pin appears to drop prematurely or water is noticeable on top of the follower then the indicator seal (54) may be damaged (→ fig. 3, 4 and 8, pages 6, 7 and 8).

- 1 Remove the eight bolts (2) and lock washers (3) which hold the cover on to the reservoir.
- 2 Inspect the reservoir gasket seal (19) 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 (52) from the indicator rod assembly (53).
- 5 Hold the indicator plug (57) with a wrench while removing the indicator nut (55).
- 6 Remove and replace the o-ring (54).
- 7 Reassemble in the reverse of the above procedure. Torque the indicator nut (55) to 20 ft.lbf. (27 Nm)

## Safety unloader valve

Safety unloader valve (31) (→ fig. 3, and 4 page 6 and 7) is not serviceable and should be replaced if malfunction is apparent. Upon reassembly, tighten to 10 ft.lbf. (13,5 Nm).

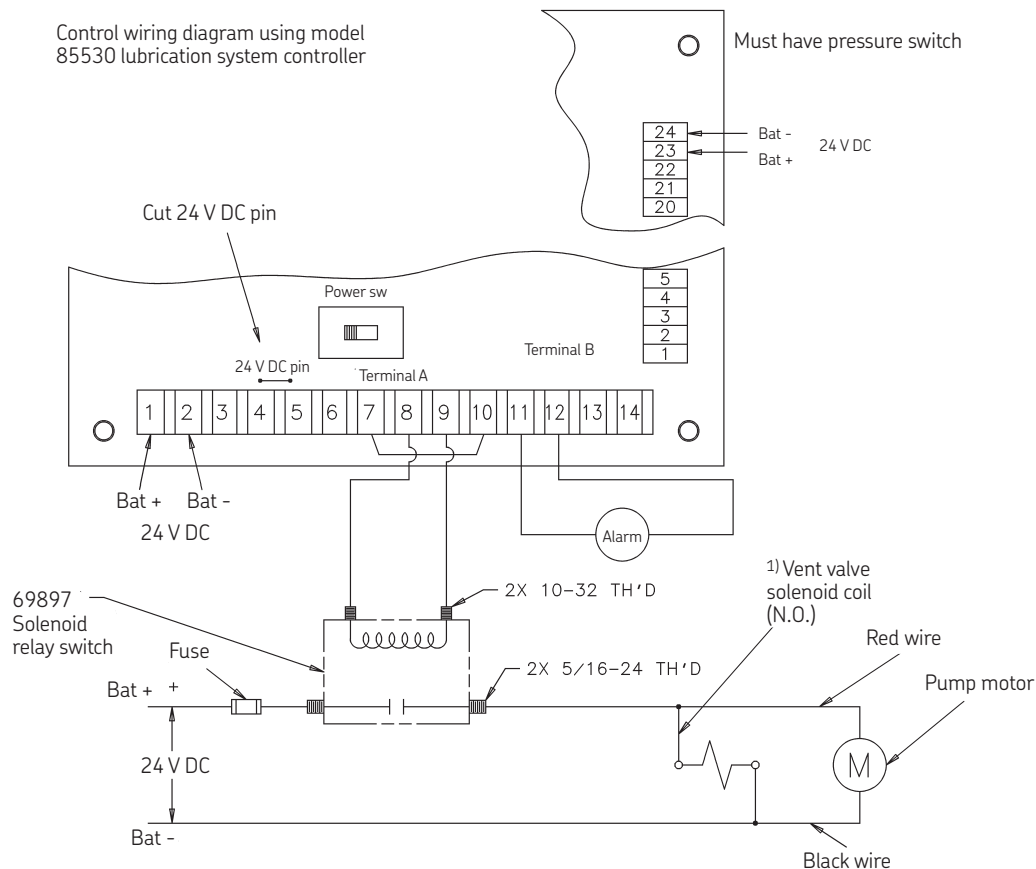
The safety unloader (9) is set to open at 3,750 to 4,250 psi (258 to 293 bar) lubricant pressure. If pressure switch fails to operate and shut off electric supply to pump, the safety unloader will open at approximately 4,000 psi (275 bar) to relieve lubricant supply line pressure (safety unloader is preset and cannot be adjusted.)

## Bare pump assembly

Please refer to the Operation Manual (section C8, Page 353 series) for the bare pump assembly (15) (→ fig. 3 and 4, pages 6 and 7).

Fig. 1

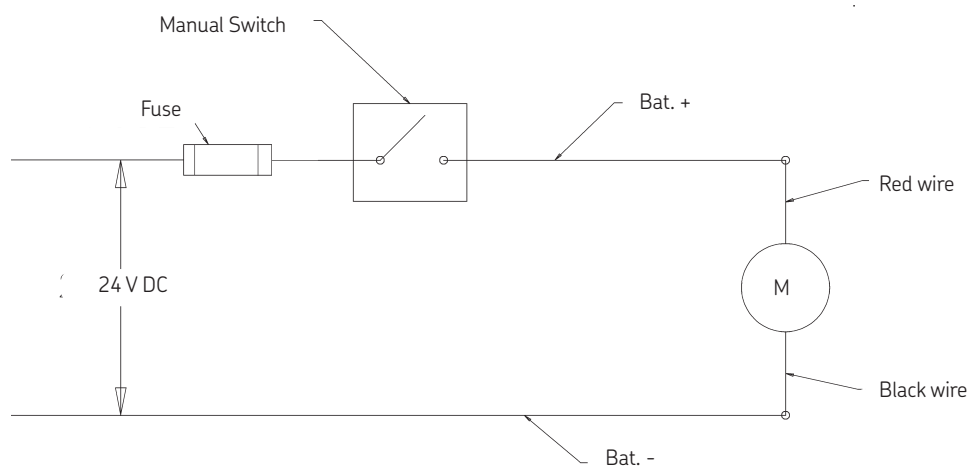
## Pump with controller



<sup>1)</sup> Note: If a third wire is present (green/yellow) it can be clipped and removed as it is not necessary for a ground wire.

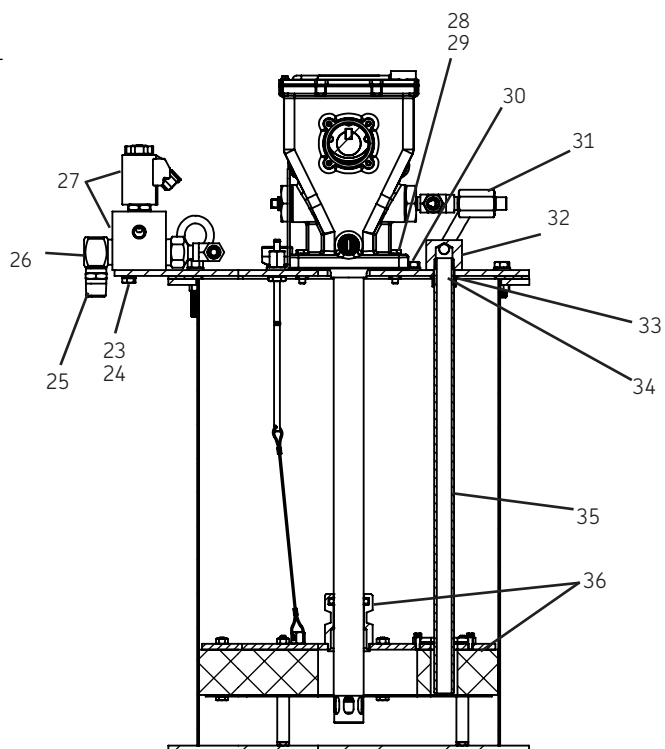
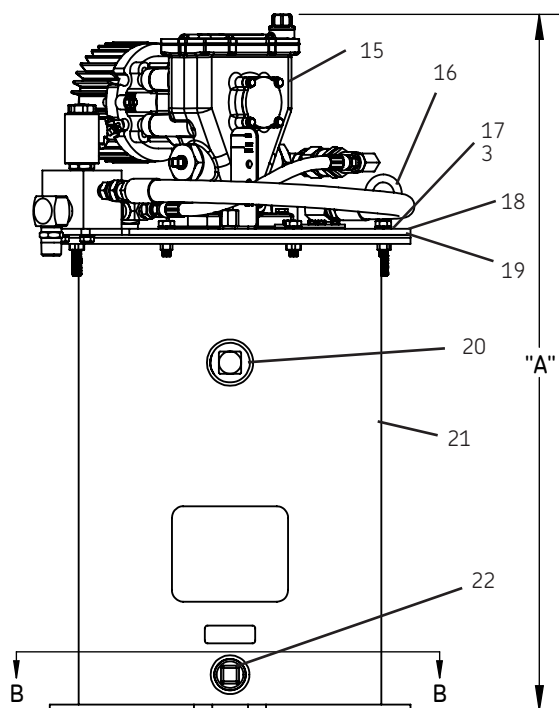
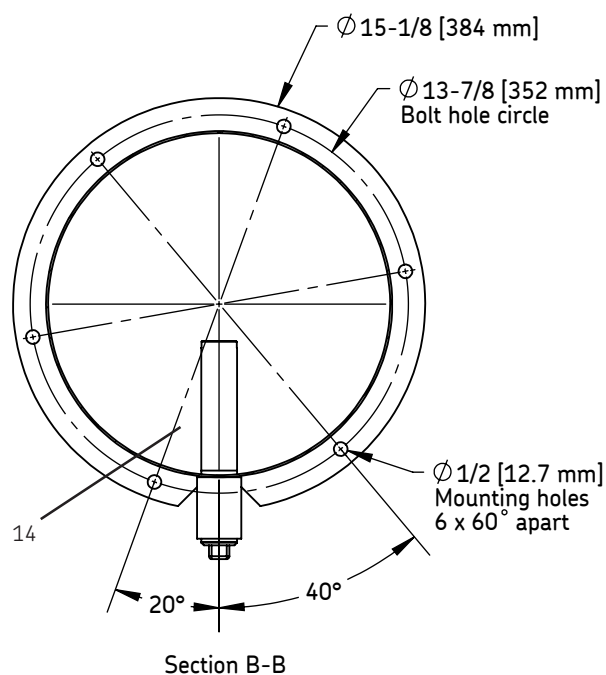
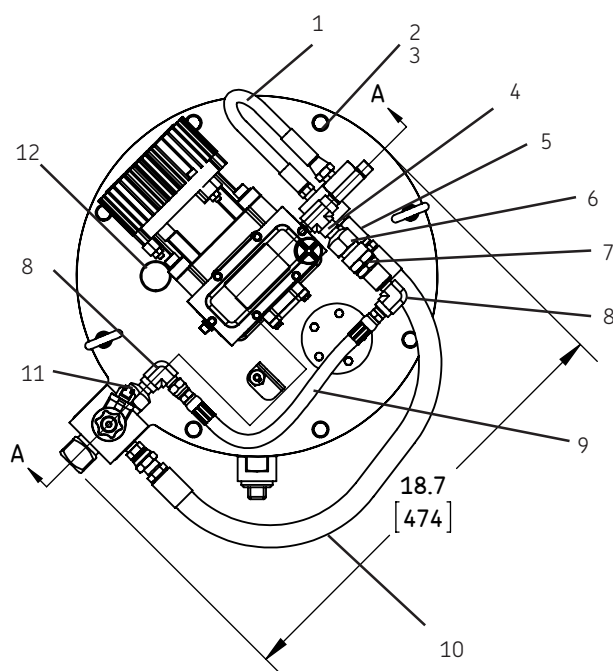
Fig. 2

## Pump without controller



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.

Models 85728 and 85729

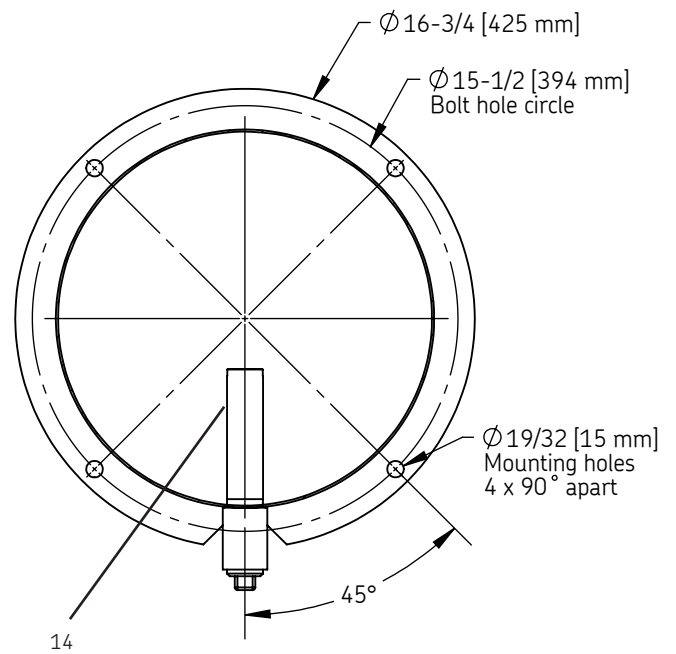
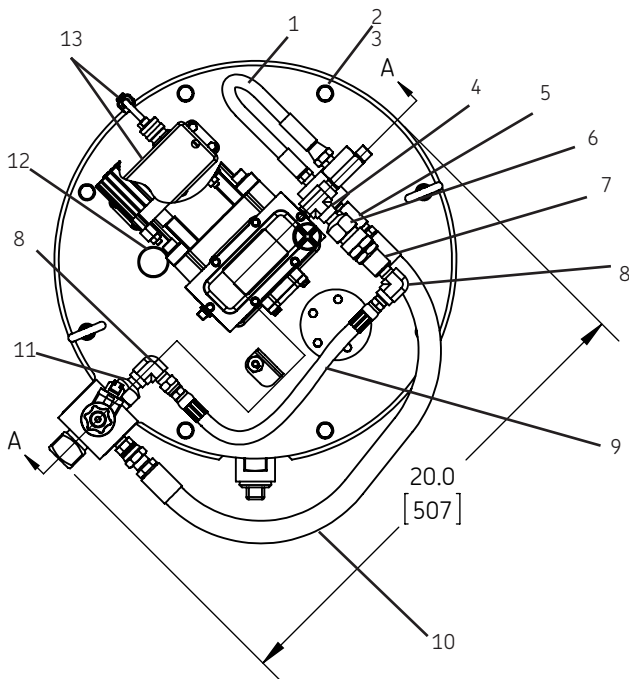


## Dimensions

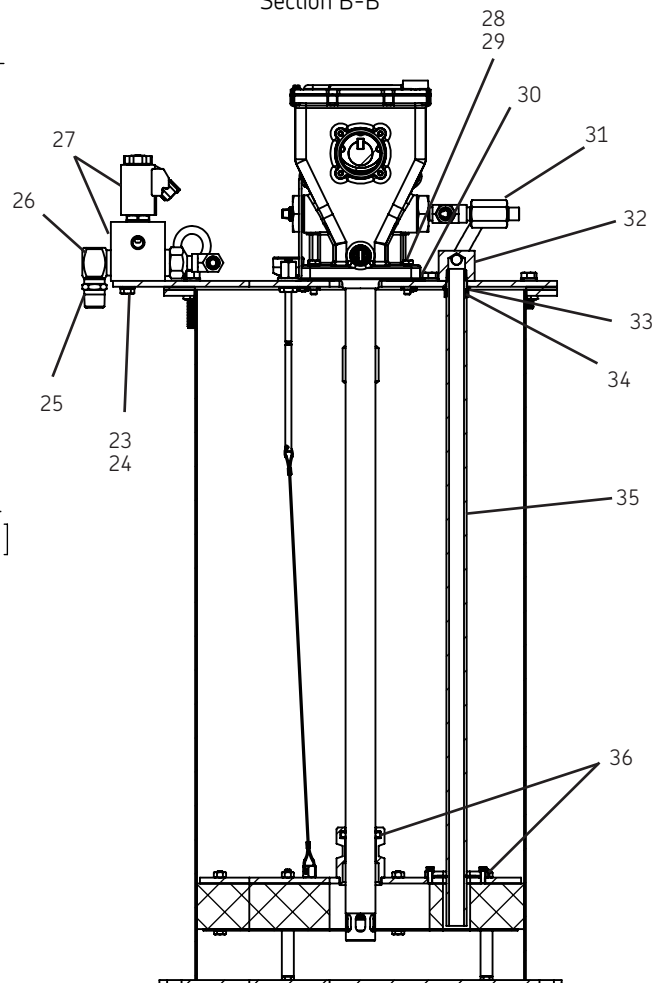
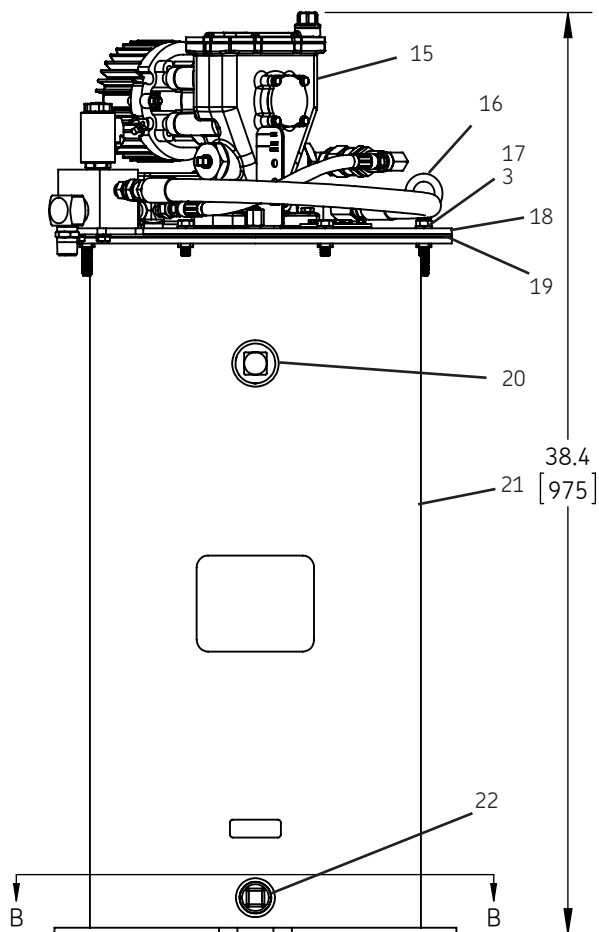
Model	Dimension "A"
85728	29.2 in. (741 mm)
85729	37.4 in. (950 mm)

## Section A-A

Model 85730



Section B-B



Section A-A

Fig. 5

Outlet check assembly (7)

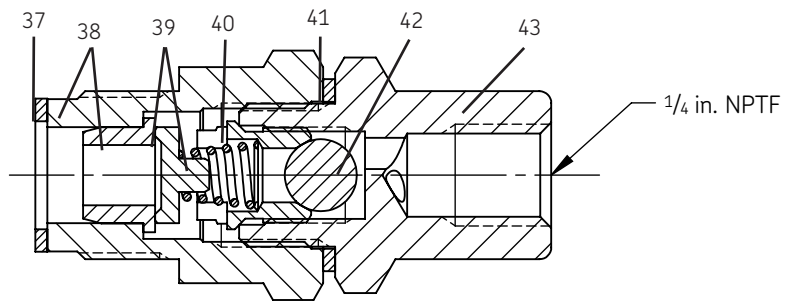


Fig. 6

Electric vent valve (27)

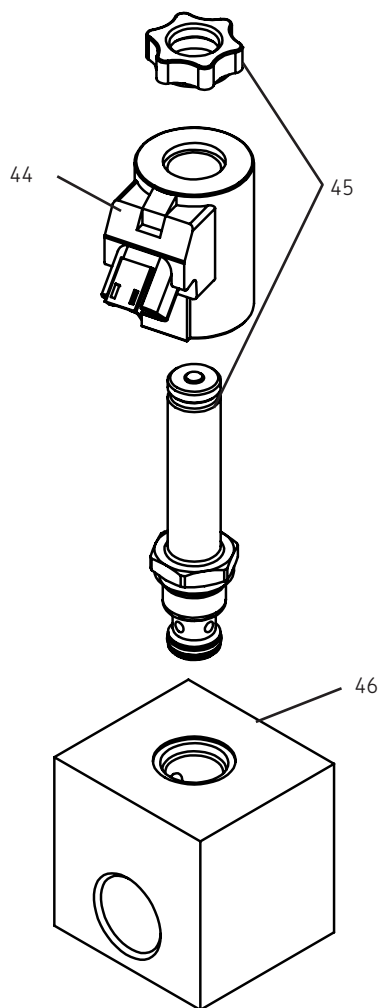


Fig. 7

Low level port

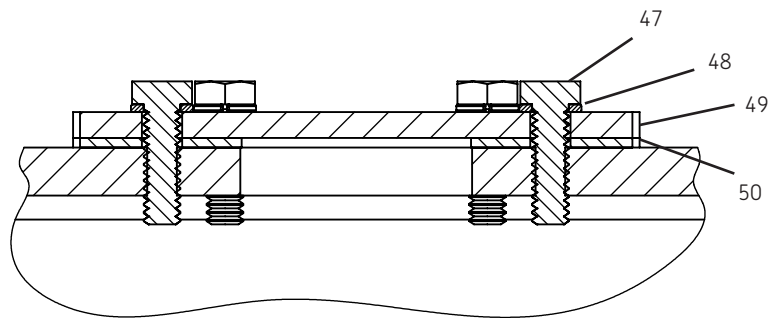
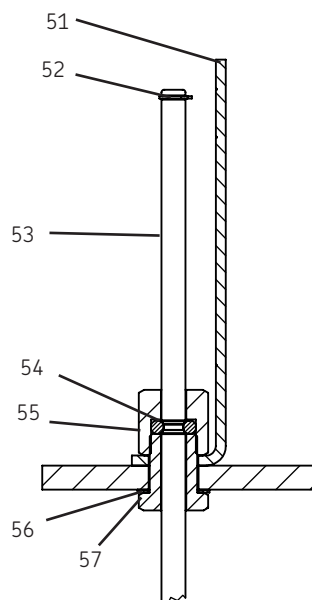
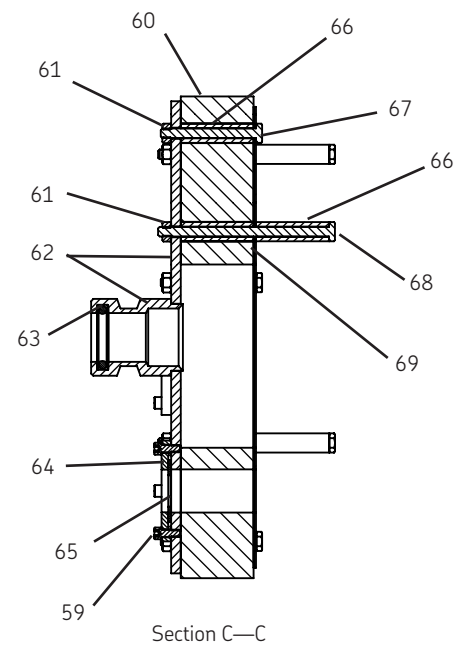
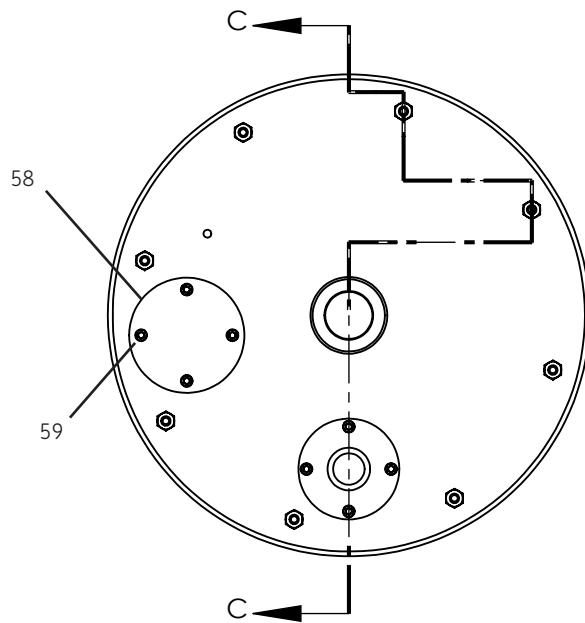


Fig. 8

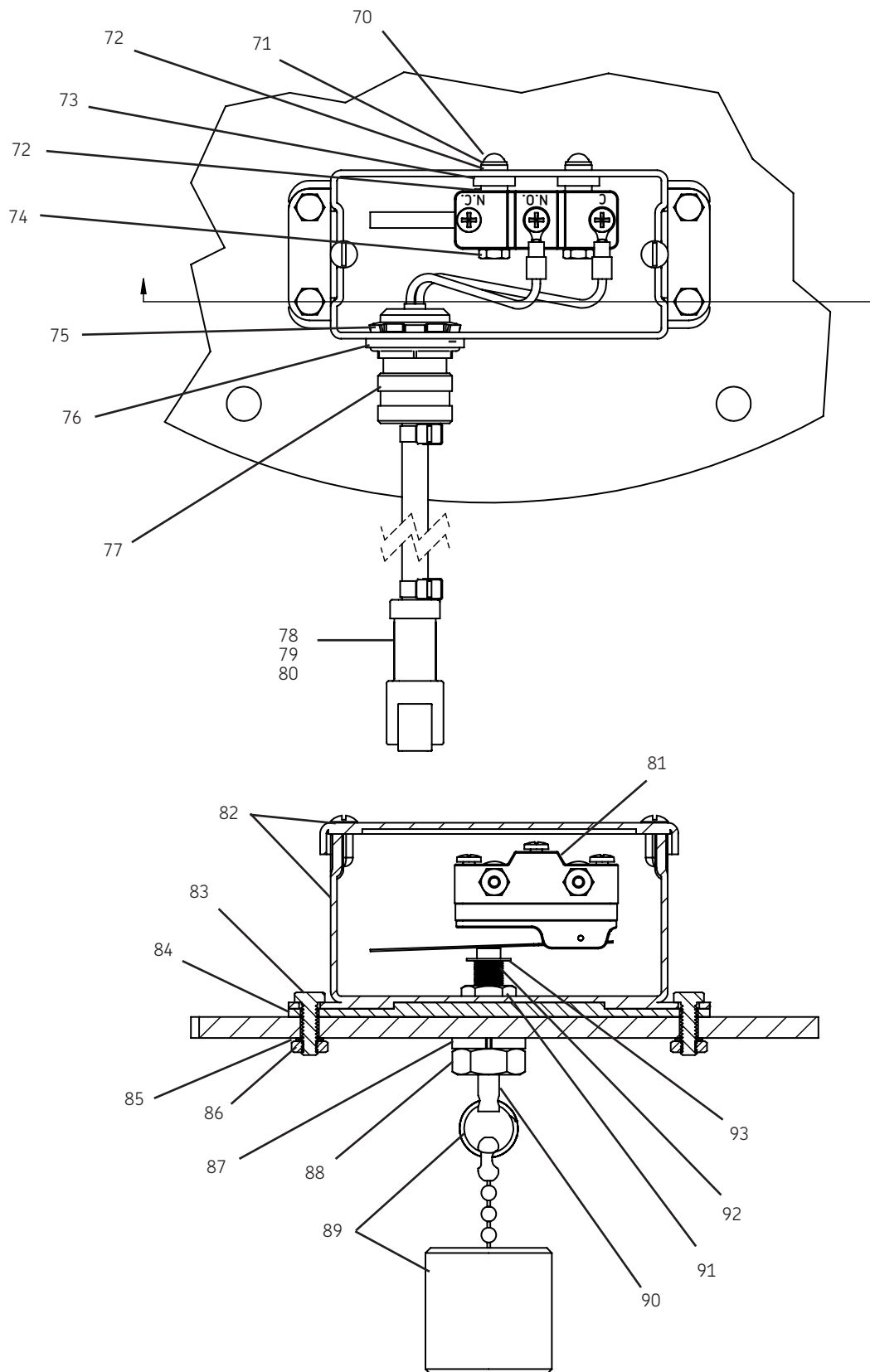
Low level indicator



Follower assembly (36)



Conduit box assembly (13) (model 85730 only)



## Service parts

Item	Description	Qty.	Model 85728	Model 85729	Model 85730
1	Hose assembly	1	272711	272711	272711
2	Hex head screw, $\frac{3}{8}$ -16 x 1 $\frac{1}{4}$	6	50015	50015	50015
3	Lockwasher, $\frac{3}{8}$	8	66220	66220	66220
4	Male run tee	1	276370	276370	276370
5	Adapter	1	12989	12989	12989
6	Adapter	1	12213	12213	12213
7	Outlet check assembly	1	81938	81938	81938
8	Elbow, $\frac{1}{4}$ NPTF	2	277439	277439	277439
9	Hose assembly	1	277441	277441	277441
10	Hose assembly	1	270726	270726	270726
11	Reducer nipple	1	14727	14727	14727
12	Vent fitting	1	249354	249354	249354
13	Conduit box assembly	1	NA	NA	272758
14	Fill tube	1	276853	276853	276853
15	FlowMaster II electric pump	1	85737 <sup>3)</sup>	85737 <sup>3)</sup>	85737 <sup>3)</sup>
16	Eyebolt	2	276300	276300	276300
17	Hex nut, $\frac{3}{8}$ -16	2	51005	51005	51005
18	Drum cover	1	277996	277996	278007
19	Gasket	1	249355	249355	271944
20	Pipe plug, 1 $\frac{1}{4}$ NPT	1	278009	278009	278009
21	Reservoir assembly	1	277702	278008	278000
22	Pipe plug, 1 NPT	1	67346	67346	67346
23	Hex head screw, $\frac{5}{16}$ -18 x $\frac{3}{4}$	2	50016	50016	50016
24	Lockwasher, 5/16	2	66246	66246	66246
25	Nipple	1	11197	11197	11197
26	Elbow	1	10160	10160	10160
27	Electric vent valve, 24 V DC	1	277429 <sup>4)</sup>	277429 <sup>4)</sup>	277429 <sup>4)</sup>
28	Screw, $\frac{1}{4}$ -20x1 $\frac{1}{4}$	4	277728	277728	277728
29	Lockwasher, $\frac{1}{4}$	4	66186	66186	66186
30	Pump gasket	1	277406	277406	277406
31	Safety unloader	1	272722 <sup>2)</sup>	272722 <sup>2)</sup>	272722 <sup>2)</sup>
32	Vent fitting	1	272717	272717	272717
33	Gasket	1	31010	31010	31010
34	Nut	1	12538	12538	12538
35	Vent tube	1	67420	67420	67420
36	Follower assembly	1	85689	85689	85720
37	Gasket	1	31029 <sup>1)</sup>	31029 <sup>1)</sup>	31029 <sup>1)</sup>
38	Outlet check bushing	1	90204 <sup>1)2)</sup>	90204 <sup>1)2)</sup>	90204 <sup>1)2)</sup>
39	Check disc assembly	1	80206 <sup>1)2)</sup>	80206 <sup>1)2)</sup>	80206 <sup>1)2)</sup>
40	Ball check seat	1	10313 <sup>1)</sup>	10313 <sup>1)</sup>	10313 <sup>1)</sup>
41	Gasket	1	31001 <sup>1)</sup>	31001 <sup>1)</sup>	31001 <sup>1)</sup>
42	Steel ball, $\frac{3}{8}$ in.	1	66001 <sup>1)</sup>		
43	Outlet connector	1	90860	90860	90860
44	Solenoid coil, 24 V DC	1	277426	277426	277426
45	Cartridge valve	1	276899	276899	276899
46	Valve body	1	276901	276901	276901
47	Hex head screw, #10-24 x $\frac{5}{8}$	5	50088	50088	50088
48	Lockwasher, #10	5	68991	68991	68991

<sup>1)</sup> Suggested service replacement components.

<sup>2)</sup> Sold as an assembly. Individual parts not available.

<sup>3)</sup> See owner's manual page C8-352 series for pump details.

<sup>4)</sup> → Service page C8, section 328 series for service and troubleshooting.

**Service parts (continued)**

Item	Description	Qty.	Model 85728	Model 85729	Model 85730
49	Cover, low level port	1	277681	277681	277681
50	Gasket, low level port	1	274540	274540	274540
51	Indicator bracket	1	361020	361020	361020
52	Retaining ring	1	68888 <sup>1)</sup>	68888 <sup>1)</sup>	68888 <sup>1)</sup>
53	Cable assembly	1	276852	277421	278018
54	O-ring	1	249532 <sup>1)</sup>	249532 <sup>1)</sup>	249532 <sup>1)</sup>
55	Indicator nut	1	16352	16352	16352
56	Washer	1	48548	48548	48548
57	Indicator plug	1	249357	249357	249357
58	Cover	1	276892	276892	276892
59	Socket head screw, #10-24 x 1/2	8	50762	50762	50762
60	Follower foam	1	276894	276894	278006
61	Locknut, 1/4-20	8	51304	51304	51304
62	Weighted follower plate	1	276890	276890	276890
63	O-ring (nitrile)	1	270720	270720	270720
64	Wiper cover	1	274318	274318	274318
65	Wiper (fluorocarbon)	1	274321	274321	274321
66	Spacer	12	241101	241101	241101
67	Hex head screw, 1/4-20 x 2 1/2	4	50062	50062	50062
68	Hex head screw, 1/4-20 x 4 1/2	4	241102	241102	241102
69	Follower plate	1	276888	276888	276888
70	Round head screw, #6-32 x 1 1/8	2	NA	NA	50618
71	Washer	2	NA	NA	48350
72	Gasket	4	NA	NA	34748
73	Packing	2	NA	NA	34413-15
74	Hex nut, #6-32	2	NA	NA	51080
75	Conduit lock nut	1	NA	NA	68020
76	Sealing o-ring	1	NA	NA	271911
77	Cord connector	1	NA	NA	271656
78	Deutsch plug, 2-way	1	NA	NA	271651
79	Contact pin	2	NA	NA	271378
80	Wedge lock	1	NA	NA	271658
81	Switch	1	NA	NA	68758
82	Conduit box	1	NA	NA	272789
83	Screw, #10-24 x 5/8	4	NA	NA	50088
84	Gasket	1	NA	NA	271657
85	Lockwasher, #10	4	NA	NA	68991
86	Hex Nut, #10-24	4	NA	NA	51100
87	Lockwasher, 1/2	1	NA	NA	69181
88	Hex jam nut, 1/2-20	1	NA	NA	51039
89	Weight assembly	1	NA	NA	271652
90	Rod	1	NA	NA	14259
91	Stud	1	NA	NA	271654
92	Spring	1	NA	NA	55302
93	E-ring	1	NA	NA	66765

<sup>1)</sup> Suggested service replacement components.

<sup>2)</sup> Sold as an assembly. Individual parts not available.

<sup>3)</sup> See owner's manual page C8-352 series for pump details.

## Troubleshooting

Condition	Possible cause	Corrective action
Pump does not operate.	No electric power to pump. <ul style="list-style-type: none"> <li>• Motor Relay Failure</li> <li>• Motor Overheated</li> <li>• Motor tripped out on locked rotor protection</li> </ul> <ul style="list-style-type: none"> <li>• Broken gearset or shaft.</li> <li>• Blown Fuse</li> </ul> Pump motor polarity is reversed.	Turn on or connect electric supply to pump. 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.  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 sheet.
Pump runs, but output is low.	Motor speed control set too low.  Faulty inlet or discharge check valve in pump.	Turn screw to speed up motor. See pump service page.  Replace faulty components. See pump service page.
Lubricant leaking from safety unloader valve.	Pressure of system set too high.  Safety unloader damaged or contaminated.	Adjust pressure switch setting.  Replace safety unloader.

# 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, electric 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.

This warranty gives you specific legal rights. You may also have other rights that vary by jurisdiction.

Customers not located in the Western Hemisphere or East Asia: Please contact Lincoln GmbH and Co. Kg, Walldorf, Germany, for your warranty rights.

## Special limited warranties

### **Special limited 2 year warranty sl-v series, single injectors-85772, 85782, replacement injectors-85771, 85781 and FlowMaster II**

Lincoln warrants the SL-V Injector series and 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 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.

### **Special limited 5 year warranty- limited oil meters, limited fluid control valves, aod (air-operated diaphragm pumps)**

Lincoln warrants the 712 series control valves, 912 series lube meters, electronic lube meters (980, 981, 982 series), our universal inline digital meters (812/813 series), and our AOD pump offering to be free from defects in material and workmanship for five (5) years following the date of purchase. If either is determined to be defective by Lincoln, in its sole discretion, during the warranty period, they will be repaired or replaced, at Lincoln's discretion, without charge.

### **Special DEF (diesel exhaust fluid) limited warranty**

DEF products are warranted to be free from defects in material and workmanship for a period of one (1) year following the date of purchase. The following exceptions to the standard warranty period are in effect:

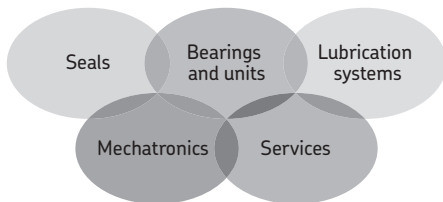
- **85700-30/85700-50 DEF hose reels (bare reel only),**  
277251/277252 AC DEF pumps, and 277256 and 277257 DEF meters are warranted for two (2) years from date of purchase.
- **85623 DEF AOD (air operated diaphragm) pumps**  
are covered under the standard five (5) year AOD pump warranty.

If either is determined to be defective by Lincoln, in its sole discretion, during the warranty period, they will be repaired or replaced, at Lincoln's discretion, without charge.

### **Lincoln Industrial contact information**

To find Lincoln Industrial's nearest service center call one of the following number; customer service 314-679-4200 or you may also use our website [www.lincolnindustrial.com](http://www.lincolnindustrial.com)

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### The Power of Knowledge Engineering

Drawing on five areas of competence and application-specific expertise amassed over more than 100 years, SKF brings innovative solutions to OEMs and production facilities in every major industry worldwide. These five competence areas include bearings and units, seals, lubrication systems, mechatronics (combining mechanics and electronics into intelligent systems), and a wide range of services, from 3-D computer modelling to advanced condition monitoring and reliability and asset management systems. A global presence provides SKF customers uniform quality standards and worldwide product availability.

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