

Instructions



Model 25 Force Feed Direct Rotary Lubricator

3A2099D

EN

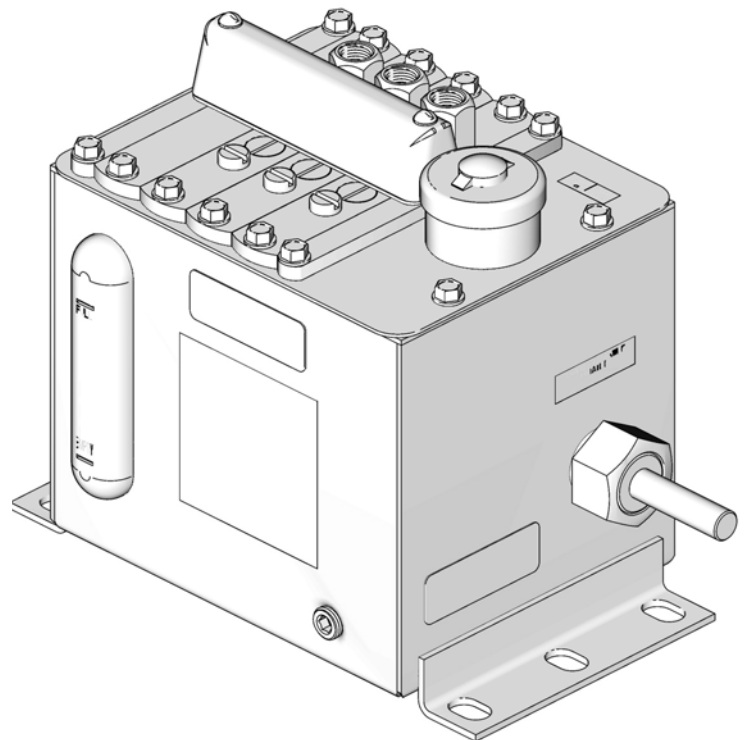
Suction fed box lubricator for dispensing mineral oil-based or synthetic lubricants. For professional use only.



Important Safety Instructions

Read all warnings and instructions in this manual. Save these instructions.

See page 2 for model information



CE  II 2 G Ex h T6 Gb

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Models

Model Specifications

Model	Max # of Pumps	Dimensions inch (cm)		Approximate Capacity pints (liters)	Direct End Rotary Drive A = Right E = Left	
		A	B		Right (A)	Left (E)
MAA†#A	1-4	7.59 (19.28)	8.84 (22.45)	6.25 (2.95)	X	
MAA†#E	1-4	7.59 (19.28)	8.84 (22.45)	6.25 (2.95)		X
MAB†#A	5-8	11.59 (29.44)	12.84 (32.61)	9.25 (4.37)	X	
MAB†#E	5-8	11.59 (29.44)	12.84 (32.61)	9.25 (4.37)		X
MAC†#A	9-12	16.59 (42.14)	17.84 (45.31)	13 (6.15)	X	
MAC†#E	9-12	16.59 (42.14)	17.84 (45.31)	13 (6.15)		X
MAD†#A	13-16	20.59 (52.3)	21.84 (55.47)	16 (7.57)	X	
MAD†#E	13-16	20.59 (52.3)	21.84 (55.47)	16 (7.57)		X
MAE†#A	17-20	25.29 (64.24)	26.84 (68.17)	19.75 (9.34)	X	
MAE†#E	17-20	25.59 (64.24)	26.84 (68.17)	19.75 (9.34)		X

† = Pump (Pick A or B from Pump Table below).

= Number of Pumps (Pick letter from Pump Quantity Table below)

Pump Table (†)

1000 PSI (MPa/ bar) Maximum pressure

Part No.	Pick	Piston Size	Drops/Stroke		Cubic Inch/Stroke		CC/Stroke		Stokes/Minute	
		inch (cm)	Max	Min	Max	Min	Max	Min	Max	Min
562949	A	3/16 (0.47)	6	0.17	0.0122	0.0003	0.199	0.005	60	3
562950	B	5/16 (0.79)	12	0.25	0.0245	0.0005	0.399	0.008	60	3

NOTE: Pump displacement based on SAE30 Oil (SUS @ 100°F (37.78°C) at room temperature.







Pump Quantity (#)

Pick Letter	Pump Quantity
A	0
B	1
C	2
D	3
E	4
F	5
G	6
H	7
J	8
K	9
L	10

M	11
N	12
P	13
R	14
S	15
T	16
U	17
V	18
W	19
X	20

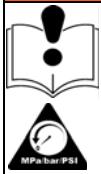
Warnings

The following warnings are for the setup, use, grounding, maintenance, and repair of this equipment. The exclamation point symbol alerts you to a general warning and the hazard symbols refer to procedure-specific risks. When these symbols appear in the body of this manual, refer back to these Warnings. Product-specific hazard symbols and warnings not covered in this section may appear throughout the body of this manual where applicable.

 WARNING	
 	<p>FIRE AND EXPLOSION HAZARD</p> <p>When flammable fluids are present in the work area, such as gasoline and windshield wiper fluid, be aware that flammable fumes can ignite or explode. To help prevent fire and explosion:</p> <ul style="list-style-type: none"> • Use equipment only in well ventilated area. • Eliminate all ignition sources, such as cigarettes and portable electric lamps. • Keep work area free of debris, including rags and spilled or open containers of solvent and gasoline. • Do not plug or unplug power cords or turn lights on or off when flammable fumes are present. • Ground all equipment in the work area. • Use only grounded hoses. • If there is static sparking or you feel a shock, stop operation immediately. Do not use equipment until you identify and correct the problem. • Keep a working fire extinguisher in the work area.
  	<p>SKIN INJECTION HAZARD</p> <p>High-pressure fluid from dispensing device, hose leaks, or ruptured components will pierce skin. This may look like just a cut, but it is a serious injury that can result in amputation. Get immediate surgical treatment.</p> <ul style="list-style-type: none"> • Do not point dispensing device at anyone or at any part of the body. • Do not put your hand over the fluid outlet. • Do not stop or deflect leaks with your hand, body, glove, or rag. • Follow the Pressure Relief Procedure when you stop dispensing and before cleaning, checking, or servicing equipment. • Tighten all fluid connections before operating the equipment. • Check hoses and couplings daily. Replace worn or damaged parts immediately.



WARNING

**EQUIPMENT MISUSE HAZARD**

Misuse can cause death or serious injury.

- Do not operate the unit when fatigued or under the influence of drugs or alcohol.
- Do not exceed the maximum working pressure or temperature rating of the lowest rated system component. See **Technical Data** in all equipment manuals.
- Use fluids and solvents that are compatible with equipment wetted parts. See **Technical Data** in all equipment manuals. Read fluid and solvent manufacturer's warnings. For complete information about your material, request MSDS from distributor or retailer.
- Do not leave the work area while equipment is energized or under pressure. Turn off all equipment and follow the **Pressure Relief Procedure** when equipment is not in use.
- Check equipment daily. Repair or replace worn or damaged parts immediately with genuine manufacturer's replacement parts only.
- Do not alter or modify equipment.
- Use equipment only for its intended purpose. Call your distributor for information.
- Route hoses and cables away from traffic areas, sharp edges, moving parts, and hot surfaces.
- Do not kink or over bend hoses or use hoses to pull equipment.
- Keep children and animals away from work area.
- Comply with all applicable safety regulations.

**MOVING PARTS HAZARD**

Moving parts can pinch, cut or amputate fingers and other body parts.

- Keep clear of moving parts.
- Do not operate equipment with protective guards or covers removed.
- Pressurized equipment can start without warning. Before checking, moving, or servicing equipment, follow the **Pressure Relief Procedure** and disconnect all power sources.

**ENTANGLEMENT HAZARD**

Rotating parts can cause serious injury.

- Keep clear of moving parts.
- Do not operate equipment with protective guards or covers removed.
- Do not wear loose clothing, jewelry or long hair while operating equipment.
- Equipment can start without warning. Before checking, moving, or servicing equipment, follow the **Pressure Relief Procedure** and disconnect all power sources.

**PERSONAL PROTECTIVE EQUIPMENT**

You must wear appropriate protective equipment when operating, servicing, or when in the operating area of the equipment to help protect you from serious injury, including eye injury, hearing loss, inhalation of toxic fumes, and burns. This equipment includes but is not limited to:

- Protective eye wear, and hearing protection.
- Respirators, protective clothing, and gloves as recommended by the fluid and solvent manufacturer.

Installation

Component Identification

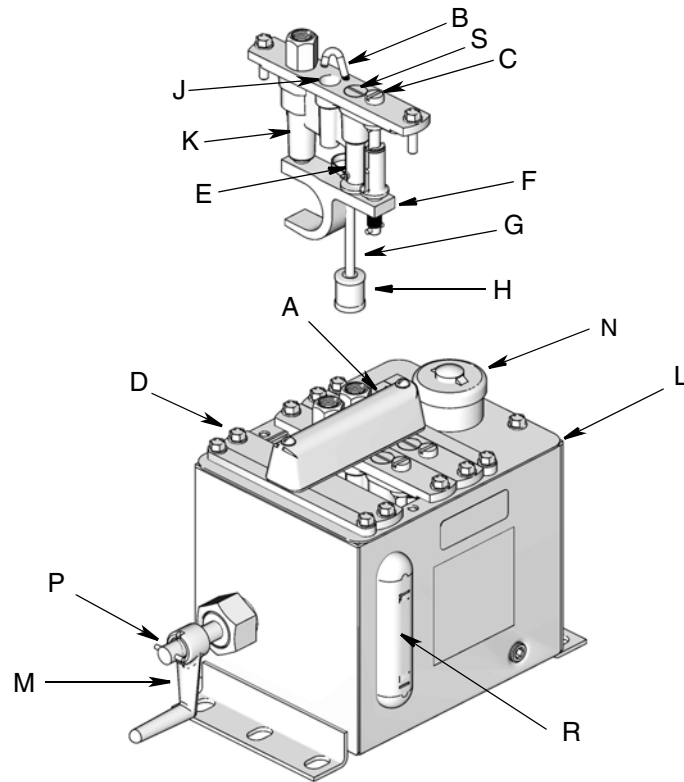





FIG. 1

Key:

- A Sight feed cover
- B Drip tube
- C Feed regulator
- D Pump mounting screws
- E Metering plunger
- F Pump crosshead
- G Inlet tube
- H Inlet strainer
- J Sight chamber well
- K Discharge plunger (shown at top of stroke)
- L Reservoir
- M Hand Crank
- N Fill cover
- P Drive shaft
- R Sight glass
- S Outlet Valve Metering Circuit

Grounding

						
<p>The equipment must be grounded. Grounding reduces the risk of static and electric shock by providing an escape wire for the electrical current due to static build up or in the event of a short circuit.</p>						

Installation Procedure

NOTE: Reference letters used in the following instructions refer to Parts page 10 or Component Identification, page 5.

The lubricator should be solidly mounted and aligned to connect the drive shaft to the proper stroking or rotary motion. This drive motion, through the lubricator drive, should operate the lubricator drive shaft and hand crank shaft between 3 and 60 RPM. There is one pump stroke for every revolution of the hand crank shaft, which is an extension of the drive shaft shaft.

- Select a mounting surface that will satisfy the following goals:
 - Is able to support the weight of the reservoir and fluid when filled to capacity.

NOTE: When possible, mount to a surface that experiences little or no vibration.
 - Allows easy access to the lubricator for filling the reservoir and periodic maintenance.
 - The lubricator must be grounded through the mounting bolts.
- Install reservoir (L) to the mounting surface. Use the mounting diagram (page 13) to determine location to drill mounting holes.
- Install bolts through reservoir and mounting holes and tighten securely.
- Install protective guards around all drive components.
- Remove fill cap (A) and fill reservoir with new or clean, filtered fluid until it reaches the top of the reservoir gauge glass.

Start Up

NOTE: Reference letters used in the following instructions refer to Component Identification, page 5.

- For initial start-up, prime the pump by removing screw from outlet metering circuit (S) (FIG. 2) and filling the small chamber with oil. Reattach the screw, making sure the spring lines up vertically.
- Adjust the pump for maximum delivery by turning the feed regulator (C) counter-clockwise as indicated by the directional arrow (FIG. 2).

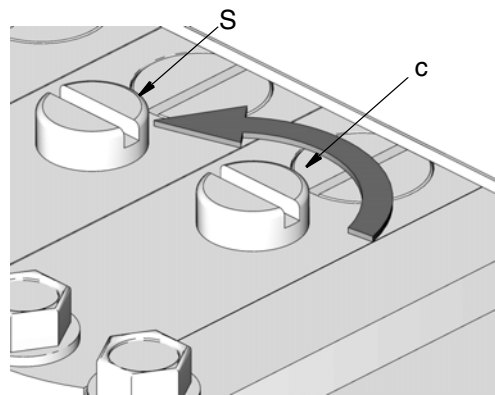


FIG. 2

- Operate pumps at this setting and bleed lubrication lines at the terminal check valve to assure full lubrication.

Feed Rate Regulation

The proper drive shaft shaft RPM is determined from the required maximum and minimum pump feed rates.

Each pumping unit is regulated independently by means of the feed regulator (C). When a pump is correctly set to its required feed rate, the feed rate can still be increased or decreased by the feed regulator (C). In most cases due to the wide adjustment range of the pump units, there will be considerable allowance in the selection of the proper drive shaft speed.

- Turn the feed regulator (C) clockwise to DECREASE the feed.
- Turn the feed regulator (C) counter-clockwise to INCREASE the feed.

Hand Crank Operation

The hand crank (M), located on the end of the lubricator (FIG. 3) is used for starting or for momentarily increasing the lubricant supply while the lubricator is in operation. It operates all feeds at once, but does not affect feed regulation.

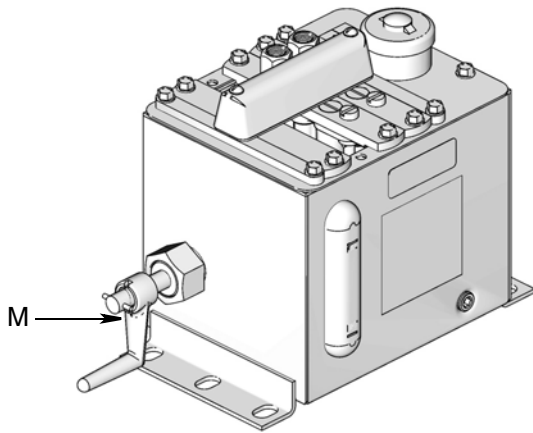


FIG. 3

Refilling the Reservoir

Remove fill cap (N) and fill reservoir with new or clean, filtered fluid until it reaches the top of the reservoir sight glass (R).

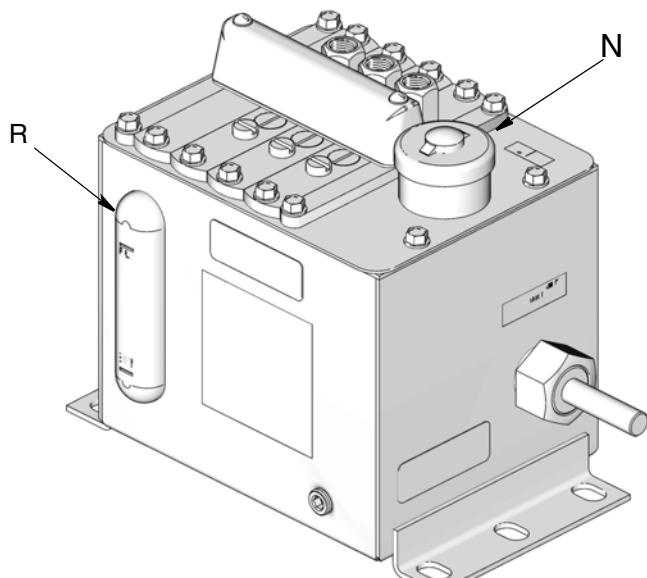


FIG. 4

Service

Pressure Relief Procedure



Fluid under pressure can be injected through the skin and cause serious injury. To reduce the risk of injury from injection, splashing fluid or moving parts, follow the Pressure Relief Procedure whenever you:

- are instructed to relieve the pressure,
- check, clean or service any system equipment,

1. Turn off power supply to the lubricator.
2. Open any drain valves in the system.
3. Leave the drain valve open until you are ready to pressurize the system.
4. If you suspect that the pressure is not fully relieved after following the previous steps, using a rag to cover the hose end coupling or a fitting on the fluid line then slowly loosen the coupling or fitting and allow the pressure to be relieved gradually. Then loosen the part completely.

Cleaning

Clean lubricator periodically to eliminate contamination that may have occurred in the fluid.

1. Stop lubricator. Follow the **Pressure Relief Procedure** before performing any service procedures.
2. Remove all pumping units.

- a. Remove the discharge line connection and the pump mounting screws (D) (FIG. 5).

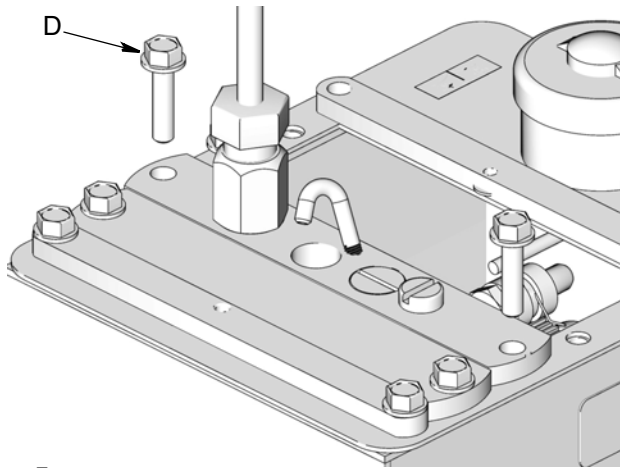


FIG. 5

- b. Loosen the adjacent pump mounting screws (D).
- c. Lift out front end of pump (end with feed regulator screw), pulling it forward and upward at the same time. This will allow the yoke or crosshead to clear the drive shaft and the pump can be lifted out (FIG. 6).

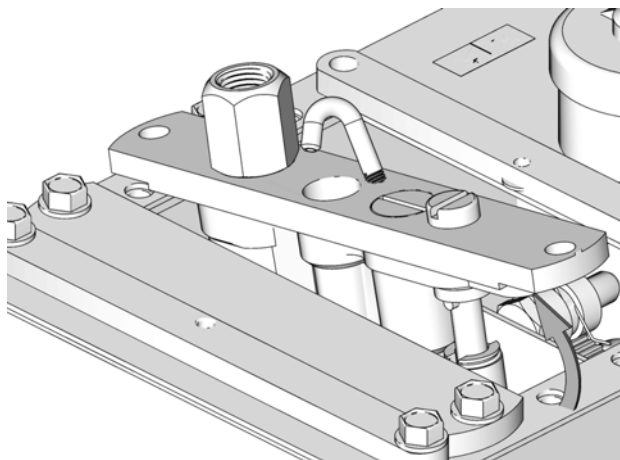


FIG. 6

3. Clean pumps and reservoir by dipping and brushing in a cleaning solvent.
4. Clean all lubricant tubing and check valves thoroughly.

Reassembly

1. Before replacing pump, position yoke down as far as possible (FIG. 7).

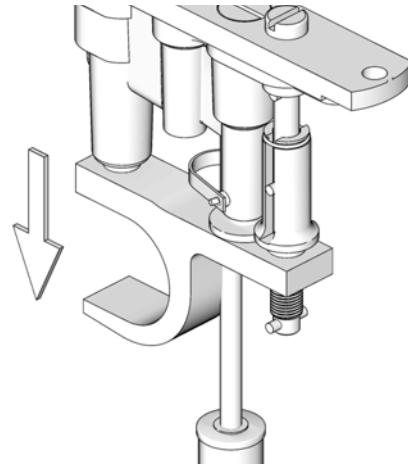


FIG. 7

2. Install pump by inserting the back end of the pump (end without the feed regulator screw) in the reservoir first (FIG. 8).

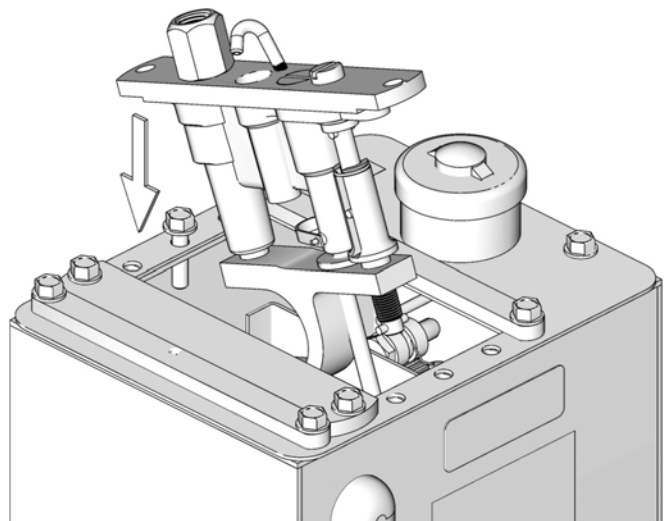
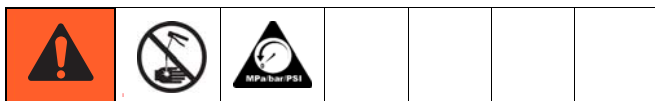


FIG. 8

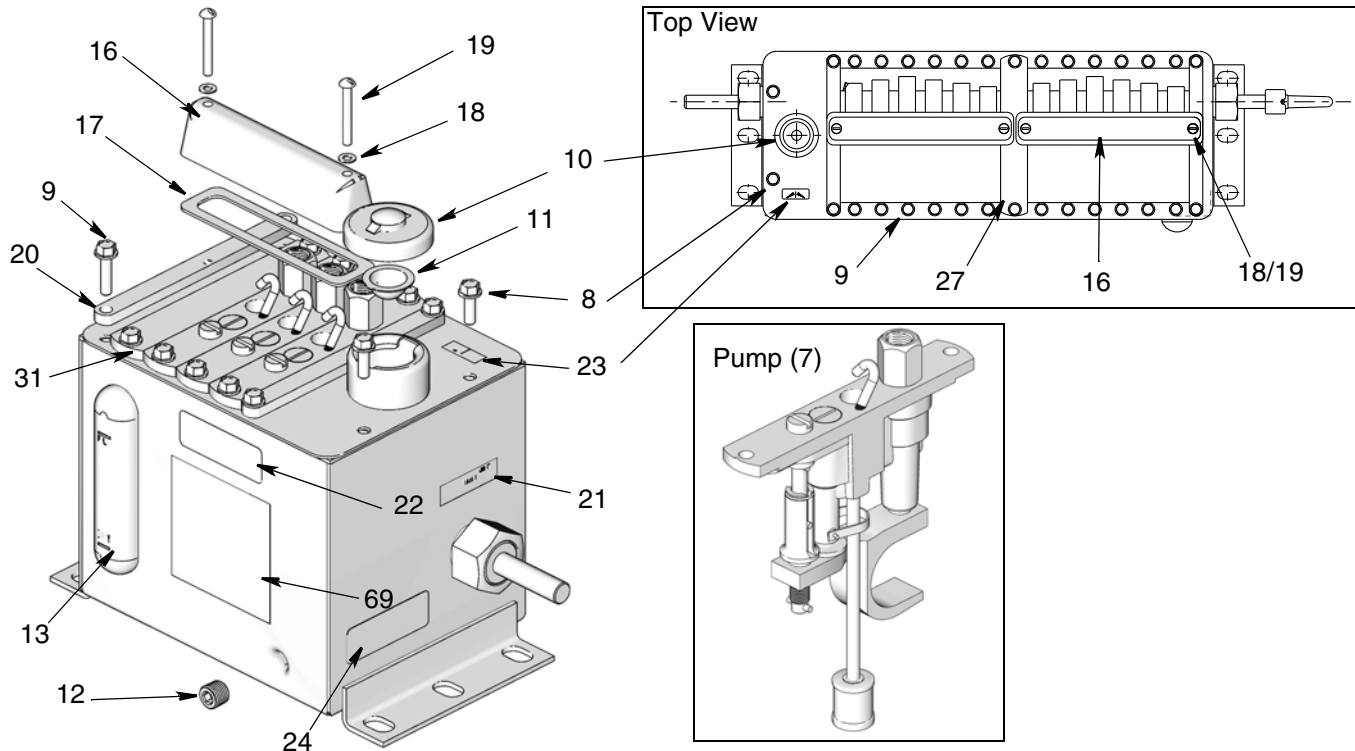
3. Connect discharge line to pump outlet.
4. Install pump mounting screws (D) and using a wrench, tighten screws securely.
5. Fill reservoir (page 7) and bleed lubrication lines at terminal check valve to assure full lubrication before putting equipment back into operation.

Troubleshooting



Problem	Cause	Solution
<p>Pump sight well fills and overflows into adjacent sight wells</p>	<p>Dirty or inoperative pump discharge valves</p>	<ol style="list-style-type: none"> 1. Flush discharge check valves. <ol style="list-style-type: none"> a. Turn feed regulator to full open. b. Operate hand crank rapidly. 2. Remove discharge check valves if condition still exists. <ol style="list-style-type: none"> a. Shut down unit or turn feed regulator to full closed. b. Remove discharge line connections. c. Remove outlet connection from pump unit. d. Remove check valve. Clean and reseat, if necessary, (care must be exercised to prevent marking the bottom surfaces when reseating) or replace as conditions require. e. Check top and bottom surfaces of the check valve. These must be free from radial nicks and scratches, as these surfaces seal against the discharge pressure. Any leakage around the threads of the outlet connection can be traced back to a dirty or marked check valve cage, outlet connector, or cylinder sealing surfaces. f. Install check valve in pump housing. Make sure the ball and spring side of the cage faces up. g. Replace outlet connection. h. Replace discharge line connection and put pump back in operation.
<p>Erratic performance</p>	<p>Pump cannot bring air into sight chamber through gasket due to contamination with dirt or paint</p>	<p>Make sure sight glass is open to atmospheric pressure through the felt gasket between the glass and reservoir.</p>
<p>Gauge glass leakage</p>	<p>Sight glass and/or gasket is damaged</p>	<p>Drain lubricator. Check for leaks. Replace sight glass and/or gasket.</p>

Parts



Ref Part No.	Description	Qty
7	562949 PUMP, assembly, 0.187 diameter M25	1
	562950 PUMP, assembly, 0.312 diameter M25	1
8	SCREW, 1/4-20X.75 hex	2
9	SCREWS (1-4 pumps)	12
	SCREWS (5-8 pumps)	20
	SCREWS (9-12 pumps)	30
	SCREWS (13-16 pumps)	38
	SCREWS (17-20 pumps)	48
10	557171 COVER, oil, hole	1
11	557149 STRAINER, filter	1
12	PLUG, dry seal, 1/4 nptf	1
13	563923 KIT, sight glass with gasket and nuts	1
16	556690 SIGHTGLASS (4 feed) (1-4 pumps)	1
	556694 SIGHTGLASS (8 feed) (5-8 pumps)	1
	556692 SIGHT GLASS (6 feed) (9-12 pumps)	2
	556694 SIGHT GLASS (8 feed) (13-16 pumps)	2
	556692 SIGHT GLASS (6 feed) (17-20 pumps)	2
	556694 SIGHT GLASS (8 feed) (17-20 pumps)	1
17	556723 GASKET, sight, 4 FD (1-4 pumps)	1
	556725 GASKET, sight, 8 FD (5-8 pumps)	1
	556724 GASKET, sight, 6 FD (9-12 pumps)	2
	556725 GASKET, sight, 8 FD (13-16 pumps)	2
	556724 GASKET, sight, 6 FD (17-20 pumps)	2
	556725 GASKET, sight, 8 FD (17-20 pumps)	1
18	555744 WASHER (1-4 pumps)	2
	WASHER (5-8 pumps)	2
	WASHER (9-12 pumps)	4
	WASHER (13-16 pumps)	4
	WASHER (17-20 pumps)	6

Ref Part No.	Description	Qty
19	SCREW, #10-32 x 1.50 (1-4 pumps)	2
	SCREW, #10-32 x 1.50 (5-8 pumps)	2
	SCREW, #10-32 x 1.50 (9-12 pumps)	4
	SCREW, #10-32 x 1.50(13-16 pumps)	4
	SCREW, #10-32 x 1.50(17-20 pumps)	6
20	557035 PLATE, sight glass	2
21a	RIGHT SIDE direct drive rotary	1
21b	LEFT SIDE direct drive rotary	1
22	LABEL, name, serial number	1
23	LABEL, oil regulating	1
24	LABEL, identification	1
27	557037 PLATE, sight glass (1-4 pumps)	0
	PLATE, sight glass (5-8 pumps)	0
	PLATE, sight glass (9-12 pumps)	1
	PLATE, sight glass (13-16 pumps)	1
	PLATE, sight glass (17-20 pumps)	2
31	557036 PLATE, blank - For quantities, see page 11	-
69▲	16G243 LABEL, safety warning	1

▲ Replacement Danger and Warning labels, tags, and cards are available at no cost.

31 - Blank Plate Quantity

Based on Number of Pumps

(Code column relates to
Pump Quantity, see page 2)

Code C	# of Pumps	Code A Picks				
		A	B	C	D	E
A	0	4	8	12	16	20
B	1	3	7	11	15	19
C	2	2	6	10	14	18
D	3	1	5	9	13	17
E	4	0	4	8	12	16
F	5		3	7	11	15
G	6		2	6	10	14
H	7		1	5	9	13
J	8		0	4	8	12
K	9			3	7	11
L	10			2	6	10
M	11			1	5	9
N	12			0	4	8
P	13				3	7
R	14				2	6
S	15				1	5
T	16				0	4
U	17					3
V	18					2
W	19					1
X	20					0

Technical Data

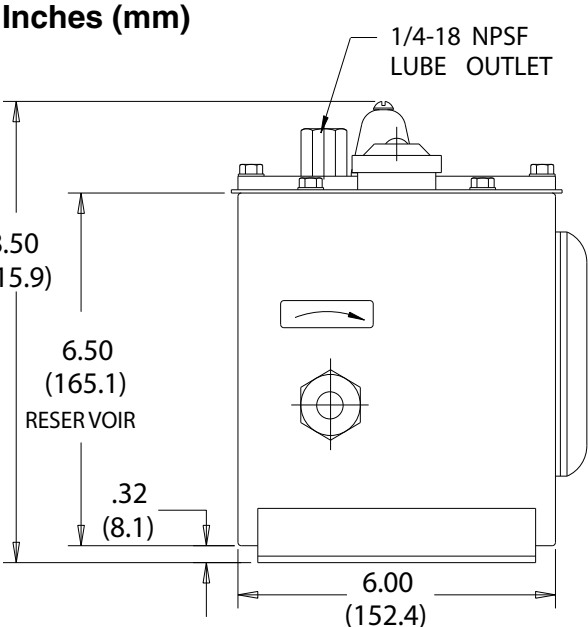
Maximum operating pressure◆	1000 psi (6.89 MPa, 68.9 bar)
Drive Speed	3 to 60 RPM
Number of drops per stroke◆	
5/16 inch model: maximum	12 drops
5/16 inch model: minimum	1/4 drop
3/16 inch model: maximum	6 drops
3/16 inch model: minimum	1/6 drop
Cubic inch per stroke◆	
5/16 inch model: maximum	0.0245
5/16 inch model: minimum	0.0005
3/16 inch model: maximum	0.0122
3/16 inch model: minimum	0.0003
CC per stroke◆	
5/16 inch model: maximum	0.399
5/16 inch model: minimum	0.008
3/16 inch model: maximum	0.199
3/16 inch model: minimum	0.005
Drops per pint◆	14.115
Drops per cubic inch◆	490
Drops per cc◆	30
Strokes per minute◆	
maximum	60
minimum	3
Viscosity*: SSU @ 100°F (37.78°C)	
maximum	5000
minimum	80
Operating Temperature Range	-20°F to 140°F (-28.89°C to 60°C)
Wetted Parts	Fluoroelastomer, gray iron, carbon steel, alloy steel, stainless steel
Approximate Weight (empty)	
Pump	2 lbs (0.9 kg)
Lubricator	
4 Feed Reservoir and 4 pumps	15 lbs (7 kg)
8 Feed Reservoir and 8 pumps	29 lbs (13 kg)
12 Feed Reservoir and 12 pumps	44 lbs (20 kg)
16 Feed Reservoir and 16 pumps	59 lbs (27 kg)
20 Feed Reservoir and 20 pumps	73 lbs (33 kg)

◆ All displacements based on SAE30 oil: SSU @ 100°F (37.78°C) at room temperature.

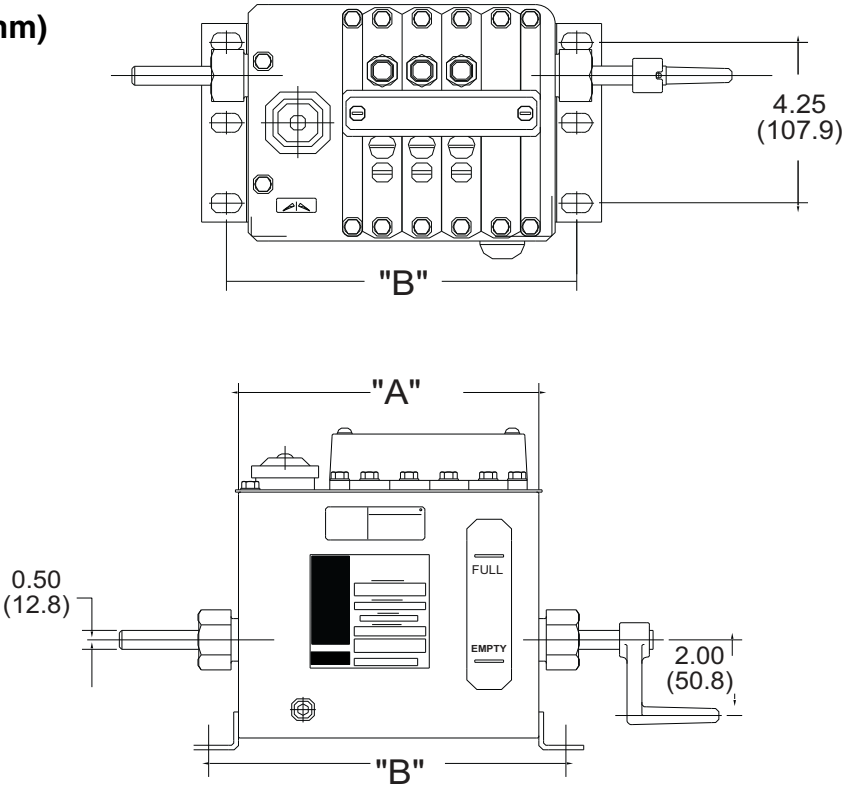
* Approximate viscosities = SAE 10 = 200 SSU @ 100°F (37.78°C); 600 W = 2000 SSU @ 100°F (37.78°C).

Dimensions

No. of Feeds	Reservoir Length (A) inches (mm)	End Lugs (B) inches (mm)	Approximate Capacity pints (L)
1 - 4	7-19/32 (192.8)	8-27/32 (224.5)	6-1/4 (2.9)
5 - 8	11-19/32 (294.4)	12-27/32 (326.1)	9-1/4 (4.3)
9 - 12	16-19/32 (421.4)	17-27/32 (453.1)	13 (6.1)
13 - 16	20-19/32 (523)	21-27/32 (554.7)	16 (7.5)
17 - 20	25-19/32 (650)	26-27/32 (681.7)	19-3/4 (9.3)



Inches (mm)



Graco Standard Warranty

Graco warrants all equipment referenced in this document which is manufactured by Graco and bearing its name to be free from defects in material and workmanship on the date of sale to the original purchaser for use. With the exception of any special, extended, or limited warranty published by Graco, Graco will, for a period of twelve months from the date of sale, repair or replace any part of the equipment determined by Graco to be defective. This warranty applies only when the equipment is installed, operated and maintained in accordance with Graco's written recommendations.

This warranty does not cover, and Graco shall not be liable for general wear and tear, or any malfunction, damage or wear caused by faulty installation, misapplication, abrasion, corrosion, inadequate or improper maintenance, negligence, accident, tampering, or substitution of non-Graco component parts. Nor shall Graco be liable for malfunction, damage or wear caused by the incompatibility of Graco equipment with structures, accessories, equipment or materials not supplied by Graco, or the improper design, manufacture, installation, operation or maintenance of structures, accessories, equipment or materials not supplied by Graco.

This warranty is conditioned upon the prepaid return of the equipment claimed to be defective to an authorized Graco distributor for verification of the claimed defect. If the claimed defect is verified, Graco will repair or replace free of charge any defective parts. The equipment will be returned to the original purchaser transportation prepaid. If inspection of the equipment does not disclose any defect in material or workmanship, repairs will be made at a reasonable charge, which charges may include the costs of parts, labor, and transportation.

THIS WARRANTY IS EXCLUSIVE, AND IS IN LIEU OF ANY OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO WARRANTY OF MERCHANTABILITY OR WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.

Graco's sole obligation and buyer's sole remedy for any breach of warranty shall be as set forth above. The buyer agrees that no other remedy (including, but not limited to, incidental or consequential damages for lost profits, lost sales, injury to person or property, or any other incidental or consequential loss) shall be available. Any action for breach of warranty must be brought within two (2) years of the date of sale.

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Graco Information

For the latest information about Graco products, visit www.graco.com.

TO PLACE AN ORDER, contact your Graco distributor or call to identify the nearest distributor.

Phone: 612-623-6928 **or Toll Free:** 1-800-533-9655, **Fax:** 612-378-3590

All written and visual data contained in this document reflects the latest product information available at the time of publication. Graco reserves the right to make changes at any time without notice.

Original instructions. This manual contains English. MM 3A2099
For patent information: www.graco.com/patents

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11/2011, Revised July 2018