

# LubeMaster<sup>®</sup> Floor Mount or Wall Mount Pump Package

3A2781A

EN

*Provides a constant supply of lubrication to pump components. For professional use only.*

*Maximum Working Pressure: 5000 psi (340 bar, 34.0 MPa)*

The LubeMaster Pump Package includes the following components:

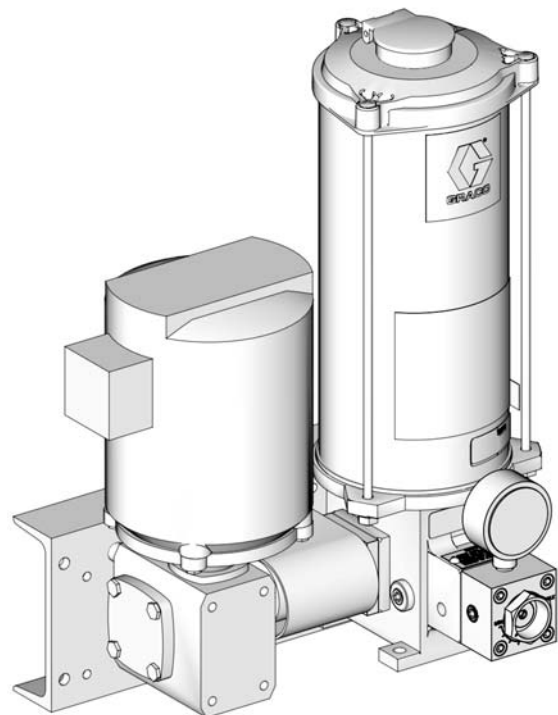
- Reservoir
- Oil or Grease Pump

See page 6 for part number information.



## **Important Safety Instructions**

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



ti30111a

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# Part Number

Use the Part Number Key provided below to identify each component included in your LubeMaster Pumping System Part Number. The Codes associated with each Option (A-D) that make up the Part Number are provided in the tables below. For example, Part Number - LM1321 is a LubeMaster pump system with a 12 pint plastic oil reservoir. It has a 10:1 reduction ratio and is floor mounted. It is powered with a 115/230V, 1/2 hp, 1 PH, 60 hz, 1725 RPM motor and does not have a low level switch.

**NOTE:** Some part number configurations are not available. Contact Graco Customer Service or your local Graco distributor for assistance.

Part Key:        **L** **M** **A** - **B** - **C** - **D**

Part Example: **L** **M** **1**    **3**    **2**    **1**

**LM = LubeMaster**

## Option A: Reservoir Options

Code	Reservoir Size: pints (liters)	Oil or Grease	Plastic or Metal
1	12 (5.68)	Oil	Plastic
2	20 (9.46)	Oil	Plastic
3	12 (5.68)	Oil	Metal
4	20 (9.46)	Oil	Metal

Code	Reservoir Size: pounds (kg)	Oil or Grease	Plastic or Metal
5	12 (5.44)	Grease	Plastic
6	20 (9.07)	Grease	Plastic
7	12 (5.44)	Grease	Metal
8	20 (9.46 L)	Grease	Metal
9	No Reservoir, Overhead Supply		

## Option B: Drive Options

Code	Description	
	Reduction Ratio	Mounting Option
1	None	
2	Clutch Drive With Arm	
3	10:1	Floor Mounting
4	10:1	Wall Mounting
5	60:1	Floor Mounting
6	60:1	Wall Mounting

## Option C: Motor Options





Code	Voltage	Horsepower	PH	Hz	RPM
1	None				
2	115/230	1/2	1	60	1725
3	230/460	1/2	3	60	1725
4	115/230	1/2	1	60	1140
5	230/460	1/2	3	60	1140

## Option D: Low Level Switch Options





Code	Size	Oil or Grease	SPDT	Amps	Watts
1	No low level switch				
2	12 (5.68 L)	Oil	X	15	
3	20 (9.46 L)	Oil	X	15	
4	12 and 20 pounds (5.44 and 9.07 kg)	Grease			
5	12 (5.68 L)	Oil	X		10
6	20 (9.46 L)	Oil	X		10

# Warnings

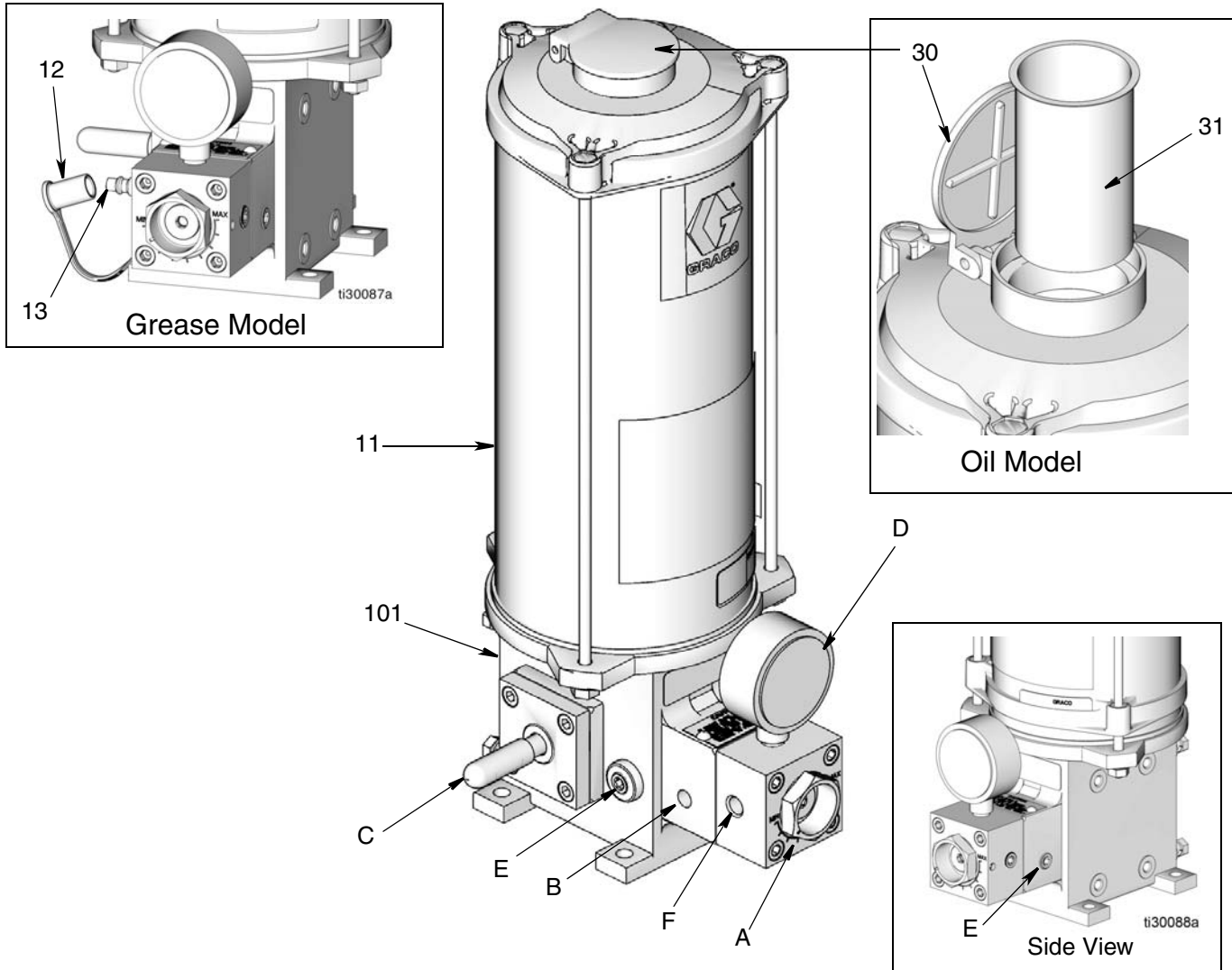
The following warnings are for the setup, use, grounding, maintenance, and repair of this equipment. The exclamation point symbol alerts you to a general warning and the hazard symbols refer to procedure-specific risks. When these symbols appear in the body of this manual or on warning labels, refer 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.

 <h1 style="margin: 0;">WARNING</h1>	
	<p><b>ELECTRIC SHOCK HAZARD</b></p> <p>This equipment must be grounded. Improper grounding, setup, or usage of the system can cause electric shock.</p> <ul style="list-style-type: none"> <li>• Turn off and disconnect power at main switch before disconnecting any cables and before servicing or installing equipment.</li> <li>• Connect only to grounded power source.</li> <li>• All electrical wiring must be done by a qualified electrician and comply with all local codes and regulations.</li> </ul>
	<p><b>SKIN INJECTION HAZARD</b></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. <b>Get immediate surgical treatment.</b></p> <ul style="list-style-type: none"> <li>• Do not point dispensing device at anyone or at any part of the body.</li> <li>• Do not put your hand over the fluid outlet.</li> <li>• Do not stop or deflect leaks with your hand, body, glove, or rag.</li> <li>• Follow the <b>Pressure Relief Procedure</b> when you stop dispensing and before cleaning, checking, or servicing equipment.</li> <li>• Tighten all fluid connections before operating the equipment.</li> <li>• Check hoses and couplings daily. Replace worn or damaged parts immediately.</li> </ul>
	<p><b>FIRE AND EXPLOSION HAZARD</b></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"> <li>• Use equipment only in well ventilated area.</li> <li>• Eliminate all ignition sources, such as cigarettes and portable electric lamps.</li> <li>• Ground all equipment in the work area.</li> <li>• Keep work area free of debris, including rags and spilled or open containers of solvent and gasoline.</li> <li>• Do not plug or unplug power cords or turn lights on or off when flammable fumes are present.</li> <li>• Use only grounded hoses.</li> <li>• <b>Stop operation immediately</b> if static sparking occurs or you feel a shock. Do not use equipment until you identify and correct the problem.</li> <li>• Keep a working fire extinguisher in the work area.</li> </ul>

# ⚠️ WARNING

	<p><b>EQUIPMENT MISUSE HAZARD</b></p> <p>Misuse can cause death or serious injury.</p> <ul style="list-style-type: none"> <li>• Do not operate the unit when fatigued or under the influence of drugs or alcohol.</li> <li>• Do not exceed the maximum working pressure or temperature rating of the lowest rated system component. See <b>Technical Data</b> in all equipment manuals.</li> <li>• Use fluids and solvents that are compatible with equipment wetted parts. See <b>Technical Data</b> in all equipment manuals. Read fluid and solvent manufacturer's warnings. For complete information about your material, request Safety Data Sheet (SDS) from distributor or retailer.</li> <li>• Turn off all equipment and follow the <b>Pressure Relief Procedure</b> when equipment is not in use.</li> <li>• Check equipment daily. Repair or replace worn or damaged parts immediately with genuine manufacturer's replacement parts only.</li> <li>• Do not alter or modify equipment. Alterations or modifications may void agency approvals and create safety hazards.</li> <li>• Make sure all equipment is rated and approved for the environment in which you are using it.</li> <li>• Use equipment only for its intended purpose. Call your distributor for information.</li> <li>• Route hoses and cables away from traffic areas, sharp edges, moving parts, and hot surfaces.</li> <li>• Do not kink or over bend hoses or use hoses to pull equipment.</li> <li>• Keep children and animals away from work area.</li> <li>• Comply with all applicable safety regulations.</li> </ul>
 	<p><b>ENTANGLEMENT HAZARD</b></p> <p>Rotating parts can cause serious injury.</p> <ul style="list-style-type: none"> <li>• Keep clear of moving parts.</li> <li>• Do not operate equipment with protective guards or covers removed.</li> <li>• Do not wear loose clothing, jewelry or long hair while operating equipment.</li> <li>• Equipment can start without warning. Before checking, moving, or servicing equipment, follow the <b>Pressure Relief Procedure</b> and disconnect all power sources.</li> </ul>
	<p><b>PERSONAL PROTECTIVE EQUIPMENT</b></p> <p>Wear appropriate protective equipment when in the work area to help prevent serious injury, including eye injury, hearing loss, inhalation of toxic fumes, and burns. Protective equipment includes but is not limited to:</p> <ul style="list-style-type: none"> <li>• Protective eyewear, and hearing protection.</li> <li>• Respirators, protective clothing, and gloves as recommended by the fluid and solvent manufacturer.</li> </ul>

# System Identification (Floor Mount Model Shown)



**FIG. 1**

- A Pump Adjustment Nut
- B Pump Inlet
- C Drive Shaft
- D Pressure Gauge
- E Drain and Drain Plug (Oil Models: one on each side of base); (Grease Models: one on the opposite side of the base from the fill stud (13))
- F Pump Outlet
  
- 11 Reservoir Assembly (Oil or Grease)
- 12 Fill Cap (Grease Only)
- 13 Fill Stud (Grease Only)
- 30 Fill Cap (Oil Only)
- 31 Filter Screen (Oil Only)
- 101 Pump Body

# Component Identification

All LubeMaster Pump Packages include the following components:

- A reservoir (11) for holding the lubricant.
- A standard pump (101).

## Reservoirs (11) - Oil or Grease

- Container for holding oil or grease.
- Grease models include a follower plate.
- The reservoir mounts directly to LubeMaster pump.

### Oil Reservoirs

- Reservoirs for oil models have a fill cap (30) and screen (31), located on top (FIG. 2).

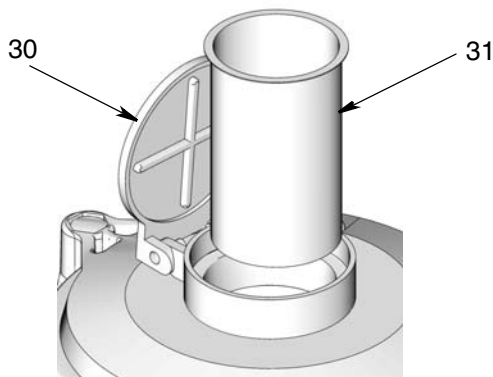


FIG. 2

### Grease Reservoirs

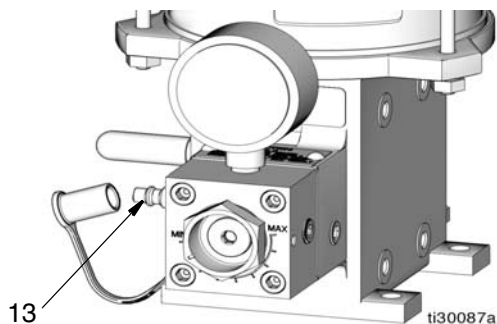


FIG. 3

- Grease reservoirs require an external air-free supply source connected to the fill stud (13).

## Pump (101)

- The pump can be driven by an electric motor or by a rotating or oscillating machine motion.
- The pump must always be installed with the reservoir (11) in a vertical position to ensure proper operation.
- Always use lockwashers with mounting bolts and make certain that the bolts are properly torqued.

## Motors and Drives

### Gear Reducer

#### NOTICE

Gear reducer units are shipped without lubricant. Before operating, always check lubricant level and fill per manufacturers instructions. Operation without lubricant will damage the gear reducer. A table of suggested lubricants is provided on page 24.

Gear reducers have either a 10:1 or 60:1 reduction or an oscillating clutch drive that can be activated by a machine motion.



#### ENTANGLEMENT HAZARD

An exposed drive shaft must be guarded to enclose the shaft.

- A shaft guard is included if the pump is configured with a gear reducer.
- The user must provide a guard for any other configuration.

### Low-Level Switch





Low-level switches protect the system against excessive pressure and low lubricant levels. The switch provides an electrical signal when the lubricant level in the reservoir is low.

# Installation Instructions

The reference letters and numbers used in the following sections, refer to FIG. 1.

Components are completely assembled when you first receive the LubeMaster Pump Package from the factory. Reassembly instructions for these components are provided in the Maintenance and Repair section of this manual, beginning on page 17.



## Grounding

				
<p>The equipment must be grounded to reduce the risk of static sparking and electric shock. Electric or static sparking can cause fumes to ignite or explode. Improper grounding can cause electric shock. Grounding provides an escape wire for the electric current.</p>				

Install a 12 gauge (1.5 mm) minimum ground wire between the LubeMaster pump package and a true earth ground.






## Pressure Relief Valves

### Pressure Relief Valves

				
<p>To prevent over-pressurization, which can result in equipment rupture and serious injury, a pressure relief valve appropriate for the lubrication system must be installed close to every pump outlet to alleviate unintended pressure rises in the system and protect the pump from damage.</p>				

- Only use a pressure relief valve that is rated for no more than the working pressure of any component installed in the system. See Technical Data, page 35.
- Install a pressure relief valve close to every pump outlet and before any auxiliary fitting.

## Choosing an Installation Location

				
<p><b>AUTOMATIC SYSTEM ACTIVATION HAZARD</b></p> <p>The system is equipped with an automatic timer that activates the pump lubrication system. Unexpected activation of the system could occur and result in serious injury, including skin injection and amputation.</p> <p>Before you install or remove the lubrication pump from the system, disconnect and isolate all power supplies and relieve all pressure.</p>				

- Select a location that will adequately support the weight of the pump and lubricant, as well as all plumbing and electrical connections.
- Refer to the mounting hole layouts provided in the Dimensions section of this manual beginning on page 37. No other installation configuration should be used.
- Use designated mounting holes and provided configurations only.
- Use fasteners that are strong enough to support the weight of the pump and lubricant when securing the pump to the mounting surface.

## Pump Installation Procedure

1. Secure with attaching hardware to installation location. Make certain all fasteners are tightened to the proper torque.
2. Install all guards and mechanical linkages or connections removed at the pump drive shaft.
3. Install the reservoir.
4. Electrically reconnect the pump drive.
5. Fill system with lubricant. See Filling the Reservoir instructions, beginning on page 9.



# Setup

## Filling the Reservoir

### Material Cleanliness

Make sure that lubricant used to fill the system is clean. If there is doubt about cleanliness, lubricant should be filtered before being introduced into the system. System life and consistent operation will both be improved by using clean lubricant.

After filtering the lubricant, make sure the lubricant supply is protected from debris.

On all pumps, the lube piston diameter is very close to the diameter of the chamber in the pump body. Contaminants in the lubricant could cause scoring in this area, resulting in erratic pump operation and costly parts replacement.

### Temperature Effects

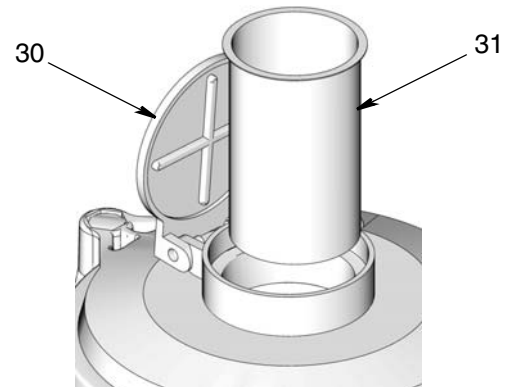
Flow characteristics of the lubricant may change if the area the unit is used in goes through drastic temperature changes. Choose a lubricant that will flow properly at all temperatures expected in the system environment.

### Overhead Supply Adapter Assemblies Only

The recommended inlet pressure is 15 psi (0.103 MPa, 1.03 bar) or less.

## Filling Oil Reservoirs

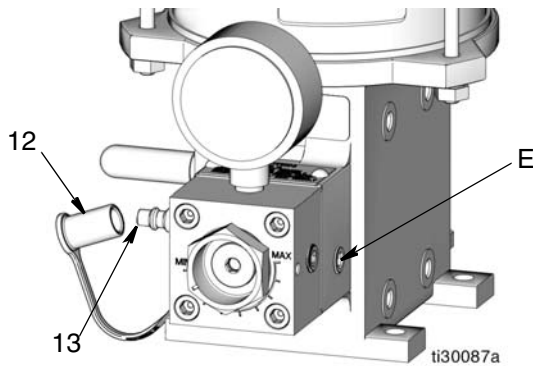
Oil reservoirs have a fill cap (30) and filter (31).



**FIG. 4**

1. Wipe the area around the fill cup to avoid contamination during filling.
  2. Open the fill cap (30) and slowly pour oil into the reservoir (11) through the filter screen (31).
- NOTE:** The filter screen (31) will remove large particles which may be present in the oil.
3. When filling is complete, close fill cap (30) and wipe any spillage.

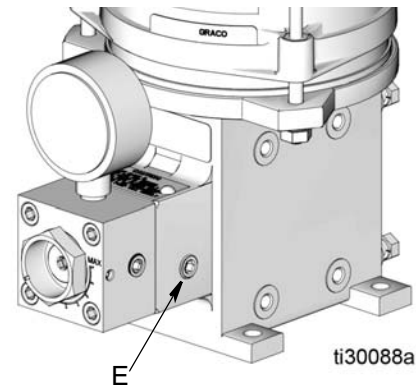
## Filling Grease Reservoirs



**FIG. 5**

- Filling grease reservoirs requires an external, air-free supply source be connected to the fill stud (13).
- To avoid introducing air into the system, make sure there is enough grease in the supply source to fill the reservoir without being disconnected.
- Operate the supply source at a steady speed to allow air-free filling of the reservoir. Filling the reservoir too fast may result in air pockets.
- The level of grease is checked by visual means.
  - In reservoirs with plastic cylinders, the grease level can be viewed through the cylinder.

1. Remove cover (12)
2. Connect grease supply source to fill stud (13).
3. Loosen the drain plug (E) (located on the opposite side of the base from the fill stud (13) (FIG. 6).



**FIG. 6**

4. Slowly begin to fill the reservoir, allowing air trapped under follower to exhaust out the open drain plug.
  5. When grease free of air flows from the drain, tighten the plug (E) and continue to fill the reservoir until follower is at the vent hole in reservoir tube (any remaining air and small amount of grease will exit drain).
  6. When filling is complete, turn off the supply source and disconnect it from the fill stud (13). Replace the cover (12).
- NOTE:** A check valve in the fill stud will prevent lubricant from being forced back out.
7. Loosen system mainline connection at pump outlet.
  8. Operate pump until lubricant free of air flows from outlet port.
  9. Tighten mainline connection at pump. Pump is now free of air.

**NOTE:** If the pump will not take a prime, it may be helpful to inject several ounces of heavy oil through the fill stud. The pump will then prime on oil pulling the grease behind it. If it becomes necessary to use this method, all injected oil should be discharged at the loosened system mainline connection along with any air.

## System Filling

After the reservoir is filled as described in Filling the Reservoir, page 9, fill the remainder of the system by attaching a hand pump to the system downstream from the pump manifold block assembly and cycle the hand pump until the system is filled.

## Manifold Bleeding

Proper filling of the system will reduce the chance of air entrapment. The pump block manifold assembly (117, page 28) must be bled to remove air which will be trapped inside the pump. Cycle the pump several times until air-free lubricant is dispensed.

**NOTE:** Manual air bleeding procedures are necessary in the event any system components are loosened, disconnected or otherwise removed after their initial installation.

## Adjusting the Clutch Drive

The degrees of throw of the clutch lever is adjustable from 12 to 60 degrees. Table 1 (page 12) provides the minimum/maximum pump outputs. The actual pump output for your installation may be computed by using the Calculating Pump Output procedure (page 12).

Using the clutch lever diagram provided in FIG. 7 determine the anticipated clutch lever throw angle.

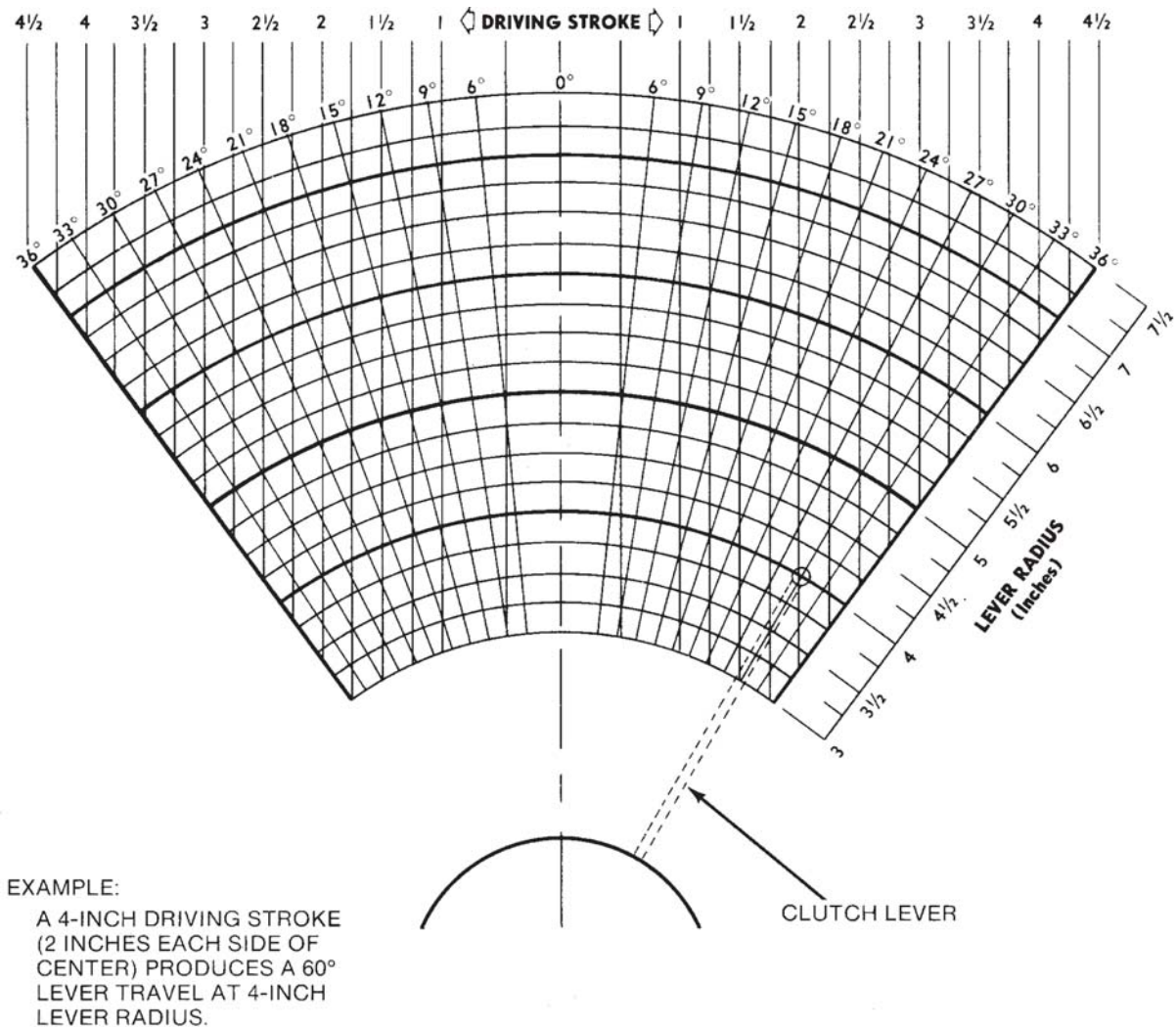


FIG. 7

### Clutch Drive - Calculating Pump Output

The standard pump output can be varied, from 0.010 to 0.050 cubic inches (0.1639 to 0.8195 cu. cm) per cycle, by changing the position of the pump adjustment sleeve (2) (FIG. 1, page 6) located below the pressure gauge (3). The high volume pump has a fixed output.

To calculate the pump output per hour, use the following formulas:

$$\frac{360^\circ}{\text{Degrees of Throw}} = \text{Effective Ratio}$$

\* Degrees of Throw can be found by using clutch lever diagram (FIG. 7, page 11)

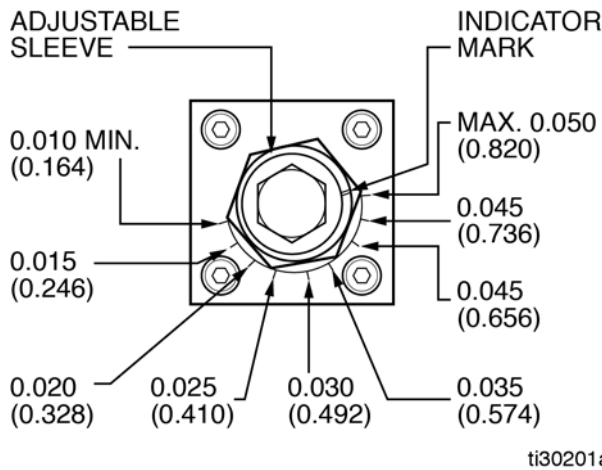
$$\frac{\text{IMPULSES/HOUR}}{\text{RATIO}} = \text{PUMP STROKE PER HOUR}$$

Pump strokes per hour x 0.010 = Minimum Pump Output per Hour  
 Pump strokes per hour x 0.050 = Maximum Pump Output per Hour

**Table 1: Minimum / Maximum Pump Output**

Degrees of Throw	Effective Ratio	Impulses Per Minute	Output Per Hour Pump Strokes Per Hour	Cubic Inches (Cubic Centimeters)/hour	
				Minimum	Maximum
12	30:1	5 Minimum	10	0.100 (1.639)	0.500 (8.195)
60	6:1	150 Maximum	1500	15.00 (245.8)	75.00 (1229)

### Standard Pump Adjustment



**FIG. 8**

**Table 2: Standard Output/Stroke Adjustment**

Percent of Output	Output Per Stroke Cubic Inches (Cubic Centimeters)	Adjustment Mark
100	0.050 (0.820)	Max.
90	0.045 (0.737)	*1st
80	0.040 (0.656)	*2nd
70	0.035 (0.574)	*3rd
60	0.030 (0.492)	*4th
50	0.025 (0.410)	*5th
40	0.020 (0.328)	*6th
30	0.015 (0.246)	*7th
20	0.010 (0.164)	Min.

\* All marks are counting clockwise from the maximum setting.

# Operation



## Startup

Before attempting to operate any system, check the following:

- Ensure the reservoir is securely fastened to the pump and that the fill cap or grease-fill fitting is easily reached.
- Check that the pump is securely fastened in place.
- Check that gear reducer has been filled with proper lubricant.
- Check all electrical connections to any controllers, level switches or pressure switches used on the system.
- Check that all accessories plumbed into the output manifold block assembly are secure.
- Make sure all hose or tubing connections are tight.
- Check that the reservoir is filled with lubricant. See Filling the Reservoir, page 9.
- Check that all filling and bleeding steps have been completed.
- Check the output of the lubricant pump. Adjust the output as described in the Clutch Drive - Calculating Pump Output, page 12.
- If the pump is equipped with a clutch drive, verify it is properly adjusted as described in the Adjusting the Clutch Drive section, page 11.

The unit is now ready to run. The pump is cycled by an external source, such as a timer, counter, control package, or customer-supplied drive. Once this external source is engaged, the unit will cycle as programmed.

While the system is operating, periodically check the following components:

- Check that the pump is cycling according to schedule.
- Visually check the unit for leaks and loose fittings. Make sure that hoses do not become kinked and are not rubbing on anything.
- If the reservoir is not equipped with a low-level switch, visually check the lubricant level and refill before all lubricant is used.

**NOTE:** If the reservoir is allowed to run dry, excess air will be introduced into the system, requiring that the system be bled.

## Pressure Relief Procedure



Follow the Pressure Relief Procedure whenever you see this symbol.



This equipment stays pressurized until pressure is manually relieved. To help prevent serious injury from pressurized fluid, such as skin injection, splashing fluid and moving parts, follow the Pressure Relief Procedure when you stop dispensing and before cleaning, checking, or servicing the equipment.

1. Verify pump is stopped and disconnected from power source.
2. Using a wrench, slowly loosen the outlet fitting (a, FIG. 9) connected to the pump block manifold assembly until the fitting is loose and no more lubricant or air is leaking from the fitting.

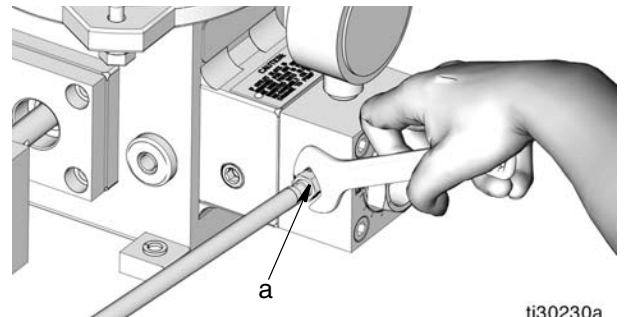
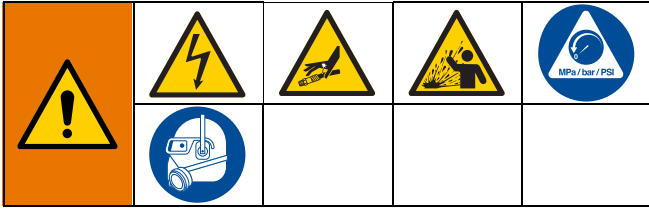


FIG. 9

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# Troubleshooting



Many system problems may be caused by loose connections or trapped air in the system. Before removing system components, check all connections to make sure they are tight. Also make sure the system is properly bled.

Problem	Cause	Solution
No lubrication is dispensed from pump, but pump is rotating	Reservoir is empty	Refill as required. See Filling The Reservoir, page 9.
	Check valve is defective	Clean and install seal repair kit.
	Adjustment sleeve seals are defective	
	Problem is in the pump	See Pump is Not Running or Requires Servicing section of this Troubleshooting Table.
Pump is Not Running or Requires Service	Yoke connector pin and piston are defective	Replace defective parts using Pump Drive Repair Kit.
	Sheared drive motor key	Replace key.
	Broken pump drive shaft	Replace defective parts using Pump Drive Repair Kit.
	Piston is not engaged in sleeve	Replace defective parts using Output Manifold Kit.
No lubrication is dispensed from pump and drive shaft is not rotating	Motor is not running	Refer to Motor is Not Running section of this Troubleshooting Table.
	No gear reducer output	Refer to No Gear Reducer Output section of this Troubleshooting Table.
	Defective pump input shaft	Replace defective parts using Pump Drive Repair Kit.
Motor is Not Running	Power is off	Turn power on.
	Electric connections to motor or timer are loose	Check all connections and tighten securely.
	Timer/controller is set incorrectly or defective	Set timer/controller to correct setting. If unit is still not functioning, repair or replace timer/controller.
No Gear Reducer Output	Key is sheared or missing at coupling	Replace key.
	Defective gearbox	Gearbox must be replaced. For this repair unit must be returned to an authorized Graco repair facility.

Problem	Cause	Solution
Clutch drive is operating but there is no flow	Reservoir is empty	Refill as required. See Filling The Reservoir, page 9.
	Clutch is defective	Remove clutch and operate pump manually. <ul style="list-style-type: none"> <li>• If there is output, replace clutch. For this repair unit must be returned to an authorized Graco repair facility.</li> <li>• If there is no output, see Pump is Not Running or Requires Servicing section of this Troubleshooting Table.</li> </ul>
	Fluid temperature is below 12°F (-11°C)	Do not attempt to operate until temperature problem is corrected.
Erratic pump output	System was not bled properly	Bleed manifold. See Manifold Bleeding, page 11.
	Pump seals, check valves or o-rings are defective	Replace defective parts using Pump Drive Repair Kit.
	Pump adjustment assembly is leaking or sucking air during return stroke	Tighten output manifold block assembly components.
	Piston or bore is worn	Replace defective parts using Output Manifold Kit.
<b>Grease Models</b>		
Lubricant is leaking from the reservoir	Hex nuts (1) are not tight	Tighten hex nuts (1). Torque to 5 ft. lbs (6.78 N•m).
	Damaged or worn gasket (8)	Replace gasket (8).
	Cracks or nicks in reservoir tube (11) or reservoir is dented or out-of-round	Replace reservoir tube (11).
Restricted movement of follower plate	Dented or out-of-round reservoir tube (11)	Replace reservoir tube (11).
Pump will not take a prime	Grease will not pull into pump through quick disconnect	Inject several ounces of heavy oil through the grease fill quick disconnect. The pump will then prime on oil, pulling the grease behind it. If it becomes necessary to use this method, all injected oil should be discharged at the loosened system supply connection along with any air.
<b>Oil Models</b>		
Oil reservoir is filling very slowly	Fill screen (31) located in fill cap (30) is clogged	Clean or replace fill screen (31).

Problem	Cause	Solution
Lubricant is leaking from the reservoir	Hex nuts (1) are not tight	Tighten hex nuts (1). Torque to 5 ft. lbs (6.78 N•m)
	Damaged or worn gasket (8)	Replace gasket (8)
	Cracks or nicks in reservoir tube (11) or reservoir is dented or out-of-round	Replace reservoir tube (11)
	<u>Overhead supply adapter only:</u> Exceeded recommended inlet pressure of 15 psi (0.103 MPa, 1.03 bar)	Decrease pressure to 15 psi (0.103 MPa, 1.03 bar) or less



# Maintenance and Repair

## Pumps: Oil and Grease Models



### AUTOMATIC SYSTEM ACTIVATION HAZARD

The system is equipped with an automatic timer that activates the pump lubrication system. Unexpected activation of the system could occur and result in serious injury, including skin injection and amputation.

Before you install or remove the lubrication pump from the system, disconnect and isolate all power supplies and relieve all pressure.

### Preparing for Maintenance

Refer to FIG. 10 for reference numbers used in the following instructions.

Before proceeding with any maintenance, the following procedure must be completed:

1. Disconnect all electrical power and air supplies to the pump.
2. **Relieve pressure**, page 13.
3. For pumps with oil reservoirs, remove pipe plug (116, FIG. 10) and drain oil into a suitable, clean container.  
  
Omit Step 3 for pumps with grease reservoirs. Install plug (116) after draining is complete.
4. Remove the reservoir.
5. Remove pump body assembly from its mounting as follows:
  - a. Remove all guards and mechanical linkages or connections at the pump drive shaft (104).
  - b. Remove all attaching hardware securing pump body (101) in place.
  - c. Remove all grease or oil from the pump body (101).

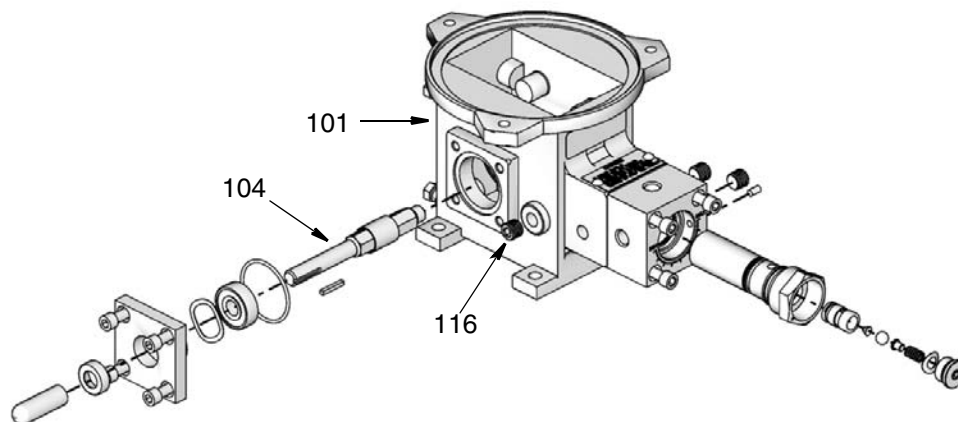


FIG. 10

# Grease Reservoirs

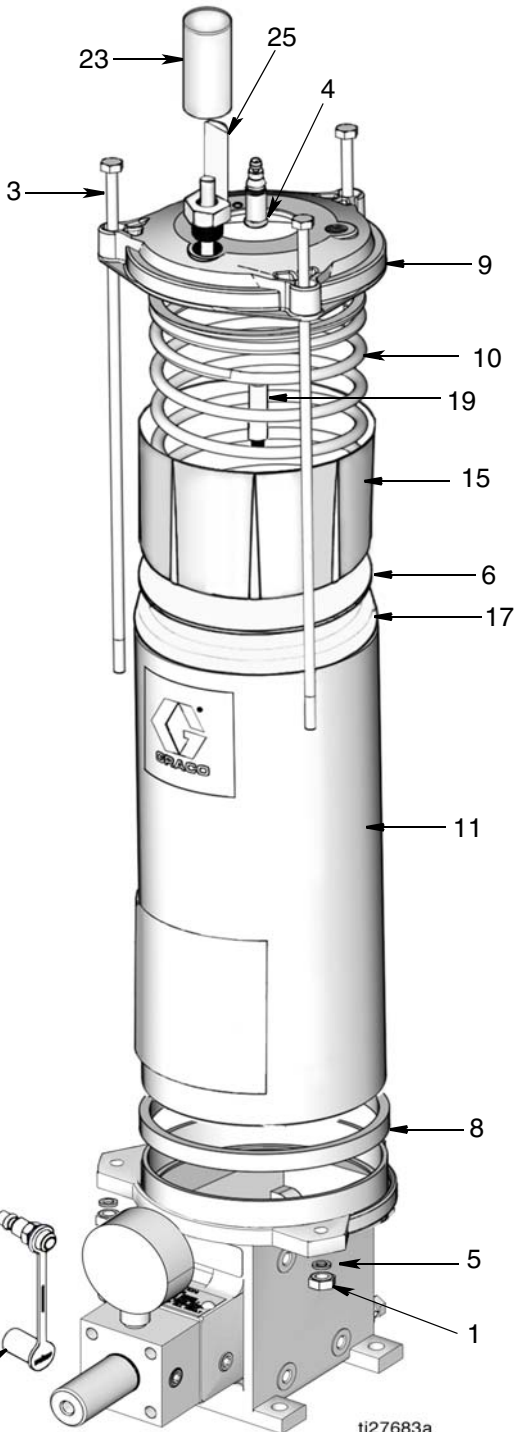


FIG. 11

## Disassembly

The disassembly procedure may be performed with the reservoir mounted on the pump. However, some mounting locations are too restrictive to provide access to all components.

If installation requires dismounting of the reservoir, drain the reservoir of lubricant before removing the attaching hardware. This will reduce the weight of the reservoir and reduce the chance of spillage.



### FLYING PARTS HAZARD

The expansion spring (10) is always under great tension and could be propelled with enough force to cause serious injury. Never remove retaining ring (4) or cable assembly (19).

1. Slowly open reservoir drain (E, FIG. 1, page 6) and allow lubricant to be forced from the reservoir into a bucket or similar container.

All lubricant must be drained before removing the attaching hardware to reduce the weight of the reservoir and reduce the chance of spillage.

2. Properly dispose of emptied grease adhering to all applicable safety regulations and municipality codes.
3. Remove fill stud (13) if necessary.
4. Remove hex nuts (1) and lockwashers (5) from tie rods (3).
5. Remove tie rods (3) from reservoir cap (9).
6. Lift reservoir (11) from pump keeping reservoir cap (9) in position on top of the tube.
7. Slide reservoir (11) away from reservoir cap (9) until it is free of follower cups (15 and 17).
8. Remove gasket (8) from pump.

**NOTE:** Further disassembly is only possible at the factory. If damage is apparent on the follower cups (15 and 17), cable assembly (19), spring (10) or reservoir cap (9) the unit cannot be serviced and the reservoir assembly must be replaced.

## Assembly

Before assembling, lubricate followers and tube inner diameter with the same lubricant used in the system.

1. Slide reservoir (11) over follower cups (15 and 17) being careful not to distort the follower cup lips. Slide reservoir tube up until it contacts reservoir cap (9).
2. Install new gasket (8) on pump.
3. Place reservoir (11) on gasket (8) and rotate reservoir cap (9) until holes in the cap line up with holes in the pump.
4. Install tie rods (3) through holes in reservoir cap (9) and pump.
5. Install lockwashers (5) and hex nuts (1) on tie rods (3) and torque to 5 ft-lbs (6.78 N•m).
6. Install fill stud (13) and dust cap (12) in pump.

When the assembly is completed, any components which were removed to ease disassembly should be reinstalled on the reservoir.

## Low-Level Switch Assemblies

Refer to FIG. 12 for reference numbers used in the following instructions.

If the grease level runs down and the switch assembly fails to perform as required:

- check all electrical connections to make sure they are secure
- check for any physical obstructions which might be preventing the switch from operating. If an obstruction is found, disassemble the unit and clear the obstruction.

If switch assembly is damaged, replace the switch assembly using the following procedure.

## Disassembly



1. Disconnect all electrical power, air supplies and relieve pressure to the lube system. (See **Pressure Relief Procedure** on page 13)

2. Disconnect and remove all wiring from the low level switch (304).
3. Remove low level switch (304) from bracket (a).
4. Remove retainer ring (b) and spring (c).
5. Remove three screws (d) and bracket (a).

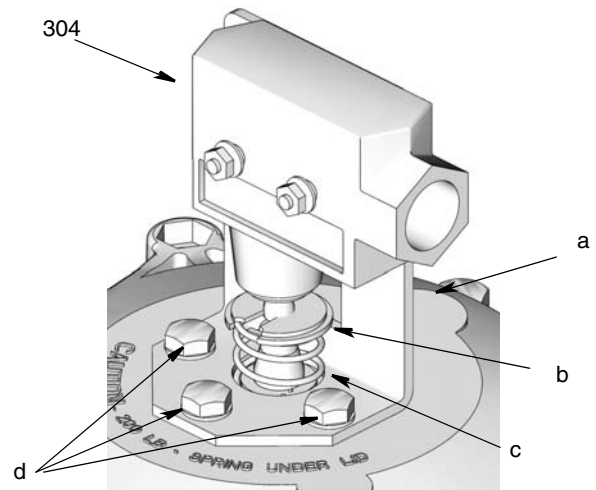


FIG. 12

## Assembly

1. Attach bracket (a) to grease reservoir cover using three self-tapping screws (d) (FIG. 12).
2. Place spring (c) (FIG. 12) over tip of level indicator.
3. Compress spring (c) and place retainer ring (b) between spring and tip of level indicator (FIG. 12).
4. Attach low level switch (5) to bracket (a) (FIG. 12).
5. Wire low level switch (304a) in accordance with local electrical codes. Refer to wiring diagram (FIG. 13).

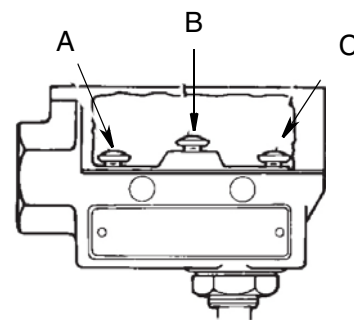


FIG. 13: Low Level Switch Wiring

- A Normally closed
- B Normally open
- C Common

## Oil Reservoirs



Refer to FIG. 14 for reference numbers used in the following instructions.

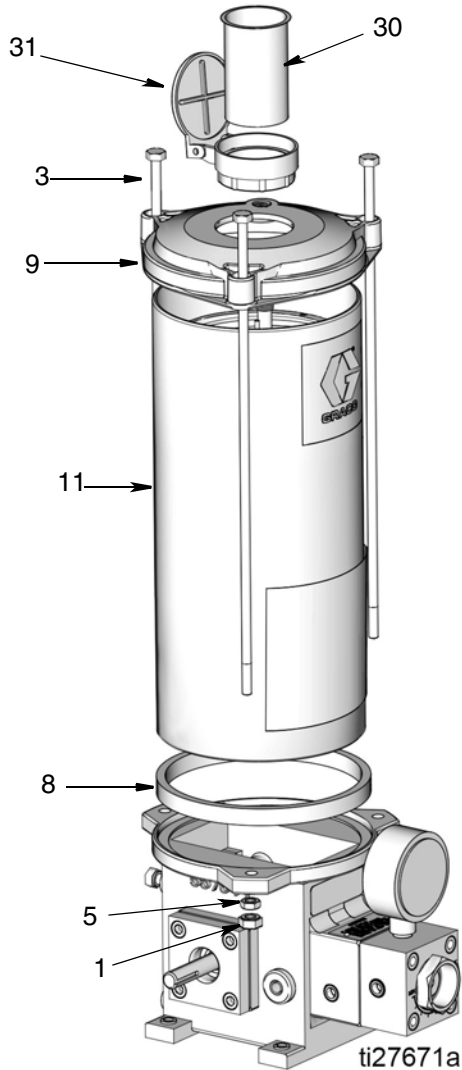


FIG. 14

### Disassembly

The disassembly procedure may be performed with the reservoir mounted on the pump. However, some mounting locations may be too restrictive to provide access to all components.

If installation requires dismantling of the reservoir, make sure the reservoir is drained of lubricant before removing the attaching hardware. This will reduce the weight of the reservoir and reduce the chance of spillage.

1. Drain oil (see Preparing for Maintenance on page 17). Allow oil to drain into bucket or similar container and properly dispose of emptied oil.
2. Remove three hex nuts (1) and lock washers (5) from tie rods (3).
3. Remove tie rods (3) from reservoir cover (9).
4. Remove reservoir cover (9) from reservoir (11).
5. Remove fill screen (30) from fill cap (31) and clean screen.
6. Remove reservoir (11) from pump.
7. Remove and discard gasket (8) from pump.

### Assembly

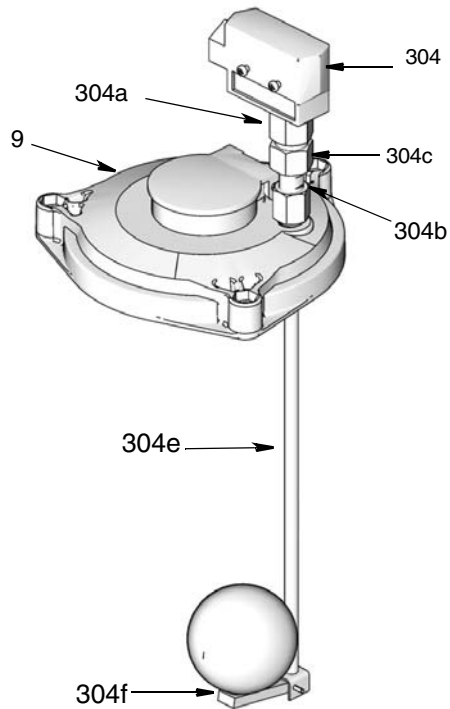
1. Install fill screen (30) in fill cap (31).
2. Install new gasket (8) in pump.
3. Position reservoir (11) on pump and position reservoir cover (9) on tube.
4. Align holes in reservoir cover (9) and holes in pump. Install tie rods (3) through holes in cover and pump. The heads of tie rods (3) must fit into the hexagonal depressions on the upper surface of the reservoir cover (9).
5. Install lock washers (5) and hex nuts (1) on tie rods (3).
6. Torque nuts to 5 ft-lbs (6.78 N.m).

**NOTE:** When the assembly is completed any components which were removed to ease disassembly should be reinstalled on the reservoir.

## 15 Amp Low-Level Switch Assembly Option



Refer to FIG. 15 for reference numbers used in the following instructions.



**FIG. 15**

If the oil level runs low and the assembly fails to perform as required, the unit may have to be disassembled to replace a defective switch assembly.

Before disassembling, check all electrical connections to make sure they are secure and check for any physical obstruction which might be preventing the float from operating.

### Disassembly

1. Disconnect all electrical power and all air supplies to the lube system.
2. Remove cover (9) from reservoir (11).
3. Unscrew union nut (304c) from switch adapter (304a).
4. Unscrew switch adapter (304a) from switch (304).
5. Remove actuating rod, part of low-level lower assembly (304f), from remaining assembly.

6. Unscrew low-level lower assembly (304e) from low-level adapter (304b).
7. Unscrew low-level adapter (304b) from reservoir cover.
8. Remove low-level adapter (304b) from union nut (304c).

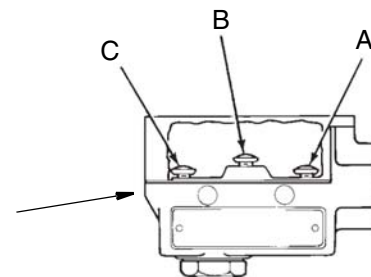
### Assembly

The following procedure is used for installing a new assembly in a reservoir. If your assembly was removed for repairs, Steps 1 and 2 do not apply.

1. Remove cover (9) from reservoir (11).
2. Remove 1/4 inch plug (7) from reservoir cover (9).
3. Insert low-level adapter (304b) into union nut (304c).
4. Screw low-level adapter (304b) into the reservoir cover (9) and tighten securely.
5. Screw low-level lower assembly (304e) into low-level adapter (304b) and tighten securely.

If float portion of low-level lower assembly was removed during disassembly, apply Loctite® to the attaching bolt and securely attach the float to the arm.

6. Insert the actuating rod, part of low-level lower assembly (304e), into this assembly.
7. Screw switch adapter (304a) into switch (304) and tighten securely.
8. Screw union nut (304c) onto switch adapter (304a) and tighten securely.
9. Install cover (9) on reservoir (11).
10. Wire switch (304) in accordance with local electrical codes. Refer to wiring diagram (FIG. 16).



**FIG. 16**

- A Normally closed
- B Normally open
- C Common

## 10-Watt Low-Level Assembly Options



Refer to FIG. 17 for reference numbers used in the following instructions.

No maintenance is required on the 10 watt low-level assemblies used on oil reservoirs.

If the oil level runs low and the assembly fails to perform as required the unit may have to be disassembled to replace a defective and switch. Before disassembling, check all electrical connections to make sure they are secure and check for any physical obstructions preventing the float from operating.

### Disassembly

1. Relieve pressure and disconnect all electrical power and air supplies to the lube system.
2. Disconnect two 22 AWG wires from the top of the adapter (304k).
3. Disconnect adapter (304k) from the conduit.
4. Remove the cover (9) from the reservoir (11).
5. Unscrew coupler (304m) from adapter (304k). Use caution to not twist the wires too much.
6. Unscrew coupler (1304m) from coupling (304n).
7. Unscrew coupling (304n) from switch (304p).
8. Unscrew adapter (304k) from the reservoir cover (9).

### Assembly

The following procedure is used for installing a new assembly in a reservoir. If your assembly was removed for repairs, steps 1 and 2 do not apply.

1. Remove the cover (9) from the reservoir (11).
2. Remove the 1/4 inch pipe plug from the cover. Screw adapter (304k) in and tighten it securely.
3. Guide two 22 AWG wires from switch (304p) through coupling (304n).
4. Screw coupling (304n) onto switch (304p) and tighten securely.
5. Guide two 22 AWG wires through coupler (304m).
6. Screw coupler (304m) into coupling (304n).
7. Guide two 22 AWG wires through adapter (304h).
8. Screw coupler (304m) into adapter (304k). Use caution to not to twist the wires too much.
9. Tighten the connection.
10. Connect switch (304p) in accordance with local electrical codes.

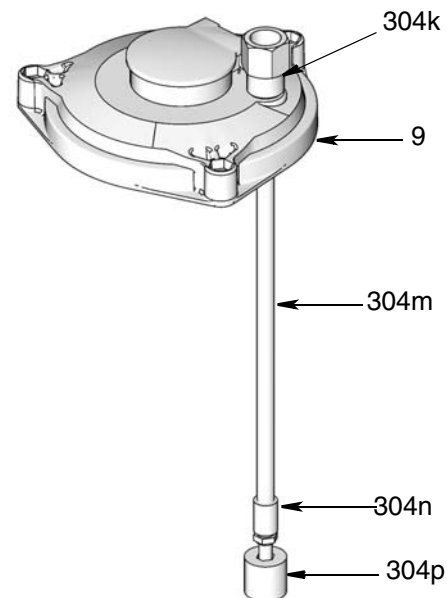


FIG. 17

## Overhead Supply Adapter



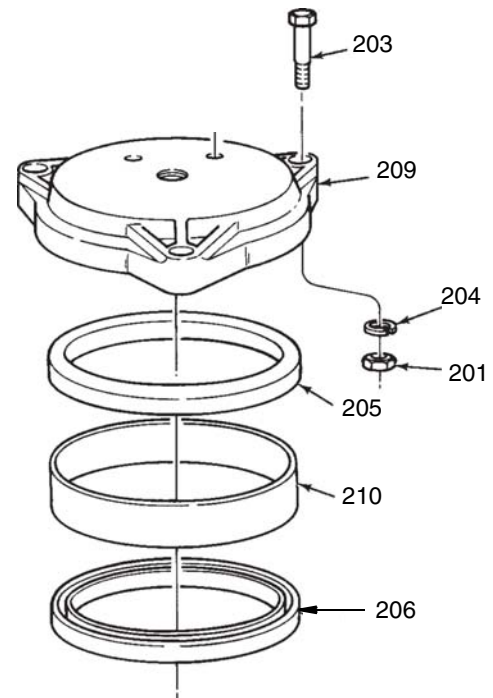
Refer to FIG. 18 for reference numbers used in the following instructions.

### Disassembly

The disassembly procedure may be performed with the adapter mounted on the pump. However, some mounting locations may be too restrictive to provide access to all components.

If installation requires dismounting of the adapter, make sure the adapter is drained of lubricant before removing the attaching hardware. This will reduce the weight of the adapter and reduce the chance of spillage.

1. Shut off the lubricant supply to the overhead supply adapter and drain oil from reservoir. See Preparing for Maintenance on page 17 for reservoir draining instructions. Properly dispose of emptied oil adhering to all applicable safety regulations and municipality codes.
2. Remove three nuts (201) and lock washers (204) from screws (203).
3. Remove screws from reservoir cap (209).
4. Remove reservoir cover (209) from adapter tube (210).
5. Remove adapter tube (210) from pump.
6. Remove and discard gaskets (205 and 206).



**FIG. 18**

### Assembly

1. Install lower gasket (206) on pump body.
2. Install adapter tube (210) on gasket (206).
3. Install reservoir gasket (205) on top of adapter tube (210).
4. Install reservoir cap (209) on reservoir gasket (205).
5. Rotate reservoir cover (209) until screws (203) can be installed through holes in cap and pump. Heads of screws (203) must fit into the hexagonal depressions on the upper surface of the reservoir cover (209).
6. Install lock washers (204) and nuts (201) on screws (203).
7. Torque nuts to 5 ft-lbs (6.78 N•m).

When the assembly is completed any components which were removed to ease disassembly should be reinstalled on the adapter.

### Pump Drive Repair Kit 563915

See instructions included with repair kit for procedure.

## Output Manifold Repair Kit 563916

See instructions included with repair kit for procedure.

## Seal Repair Kit 563921

See instructions included with repair kit for procedure.

## Installation After Maintenance

After pump maintenance has been accomplished, perform the following procedure to return the unit to service.

1. Locate the pump body and assembled parts at the position from which it was removed and secure with attaching hardware. Make certain all fasteners are tightened to the proper torque.
2. Install all guards and mechanical linkages or connections removed at the pump drive shaft.
3. Install the reservoir.
4. Electrically reconnect the pump drive.
5. Replace drain plug (116).

## Drive and Motor

There is little maintenance required on the clutch drive.

The clutch drive assembly replacement part number 563383 is available from Graco. Contact your local Graco distributor for assistance in ordering this part.

## Recommended Lubricants for Enclosed Gear Reducers

AMBIENT (Room) TEMP	RECOMMENDED OIL (or equivalent)	VISCOSITY RANGE SUS @ 100° F (38°C)	LUBRICANT AGMA NO.	ISO VISCOSITY GRADE NO. +
-30° to 225° F** (-34° to 107°C)	MOBIL SHC 634* SYNTHETIC	1950/2150	---	320/460
40° to 90° F (4.4° to 32.2°C)	MOBIL 600W CYLINDER OIL	1920/3200	7 or 7C	460
80° to 125° F (26.7° to 51.7°C)	MOBIL EXTRA HECLA SUPER CYLINDER OIL	2850/3600	8 or 8C	680

The gear reducer requires 7.8 ounces (230.7 ml) of clean lubricant as listed above.

The lubricant must remain free from oxidation and contamination by water or debris, since only a very thin film of oil stands between efficient operation and failure. To assure long service life, the reducer should be periodically drained (preferably while warm) and refilled to the proper level with a recommended gear oil. Under normal environmental conditions oil changes are suggested after the Alternative AGMA Lubricants initial 250 hours of operation and thereafter at regular intervals of 2500 hours or every 6 months.

Synthetic lubricants will allow extended lubrication intervals due to its increased resistance to thermal and oxidation degradation. It is suggested that the initial oil change be made at 1,500 hours and, thereafter, at 5,000 hour intervals.

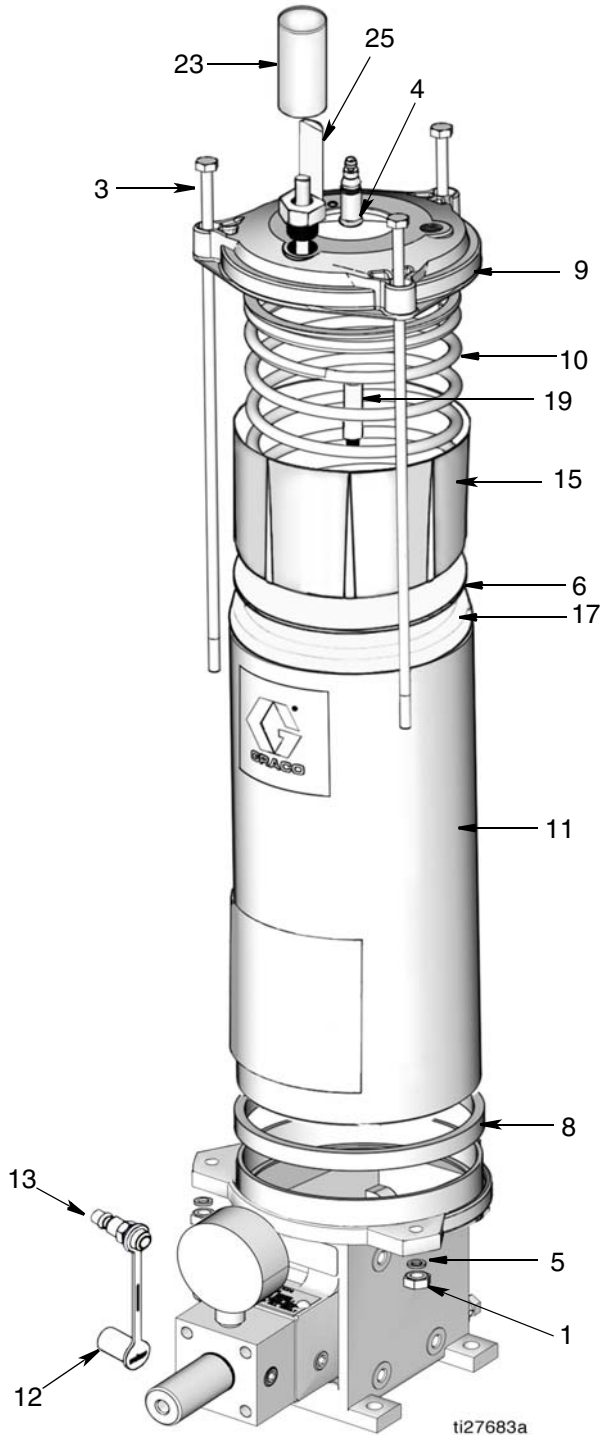
## Alternative AGMA Lubricants

MANUFACTURER	LUBRICANT NAME	AGMA RATING
Getty Refining Co.	Veedol Asreslube 98	8 EP
Getty Refining Co.	Veedol Asreslube 95	7 EP
Getty Refining Co.	Veedol Asreslube 90	6 EP
Lubrication Engr. Inc.	Almasol 609	8
Lubrication Engr. Inc.	Almasol 608	7
Mobil Oil Corp.	Mobilgear 634	8 EP
Mobil Oil Corp.	Mobil Extra Hecia Super	8
Mobil Oil Corp.	Mobil Cylinder 600W	7
Shell Oil Co.	Omala 460	7 EP
Shell Oil Co.	Valvala J460	7
Shell Oil Co.	Omala 680	8 EP
	Valvala J680	8
Texaco Inc.	Meropa 680	8 EP
Texaco Inc.	Meropa 460	7 EP



# Parts

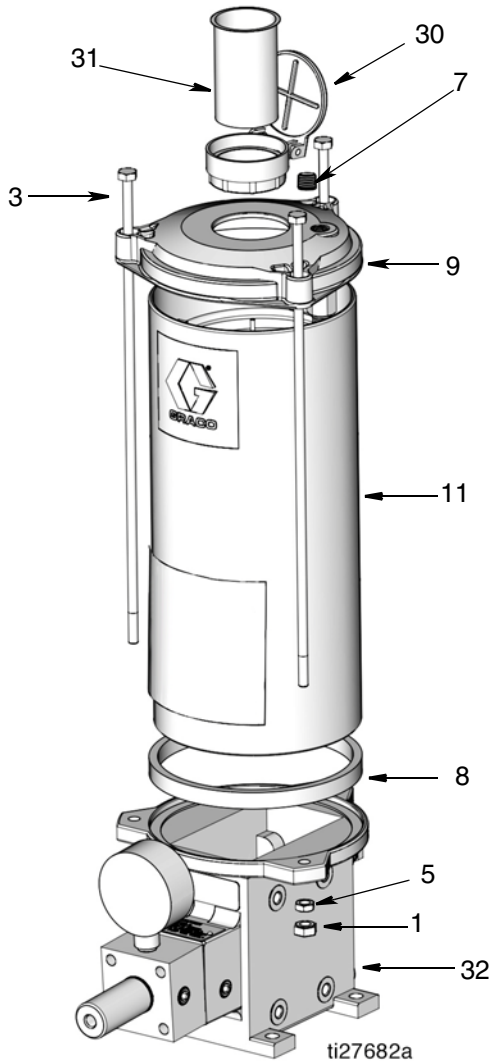
## Grease Reservoirs: 562896, 562897, 562898, 562899



Ref	Part No.	Description	Qty.
	1	NUT, 5/16-18 hex	3
	2	NUT, elastic lock 5/16-18 hex (not shown)	1
	3#	ROD, tie, reservoir	3
	4	RING, retainer, 1/2 ID	1
	5#	WASHER, lock	3
	6	WASHER, reservoir (models 562896, 562897 only)	1
	8◆	GASKET, reservoir	1
	9	COVER, reservoir	1
	10	SPRING, follower	1
	11◆	RESERVOIR	1
	12	557373 CAP, dust fill stud	1
	13	557374 STUD, fill stud assy 1/4 NPT	1
	14	PLATE, reservoir top (not shown)	1
	15	CUP, follower	1
	17	CUP, follower, reservoir	1
	18	WASHER, spacer (models 562898, 562899 only)	1
	19	CABLE, indicator	1
	22	SCREW, drive (models 562898, 562899 only)	1
	23	CAP, protective Moduflo (models 562898, 562899 only)	1
	24	CLIP, indicator 12lb, 20 lb (models 562898, 562899 only)	1
	25	563334 INDICATOR, level assy 5lb (model 562898 only)	1
	563335	BODY, indicator assy 20 lb (model 562899 only)	1
◆ <i>Included in one of the following kits:</i>			
	562902	KIT, reservoir replacement, 12 lb, plastic (model 562896 only)	
	562903	KIT, reservoir replacement, 20 lb, plastic (model 562897 only)	
	564270	KIT, reservoir replacement, 12 lb, metal (model 562898 only)	
	564271	KIT, reservoir replacement, 12 lb, metal (model 562899 only)	
# <i>Included in one of the following kits</i>			
	258286	KIT, tie rod (models 562896, 562898 only)	
	258285	KIT, tie rod (models 562897, 562899 only)	

# Parts

## Oil Reservoirs: 562892, 562893, 562894, 562895



Ref. No.	Part No.	Description	Qty.
1#		NUT, 5/16-18 hex	3
3#		ROD, tie, reservoir	3
5#		WASHER, lock	3
7		PLUG, dryseal 1/4 nptf	2
8◆		GASKET, reservoir	1
9		COVER, reservoir	1
11◆		RESERVOIR	1
30	557797	CAP, fill, reservoir	1
31	557799	SCREEN, filter	1
32	563380	PUMP, assembly	1

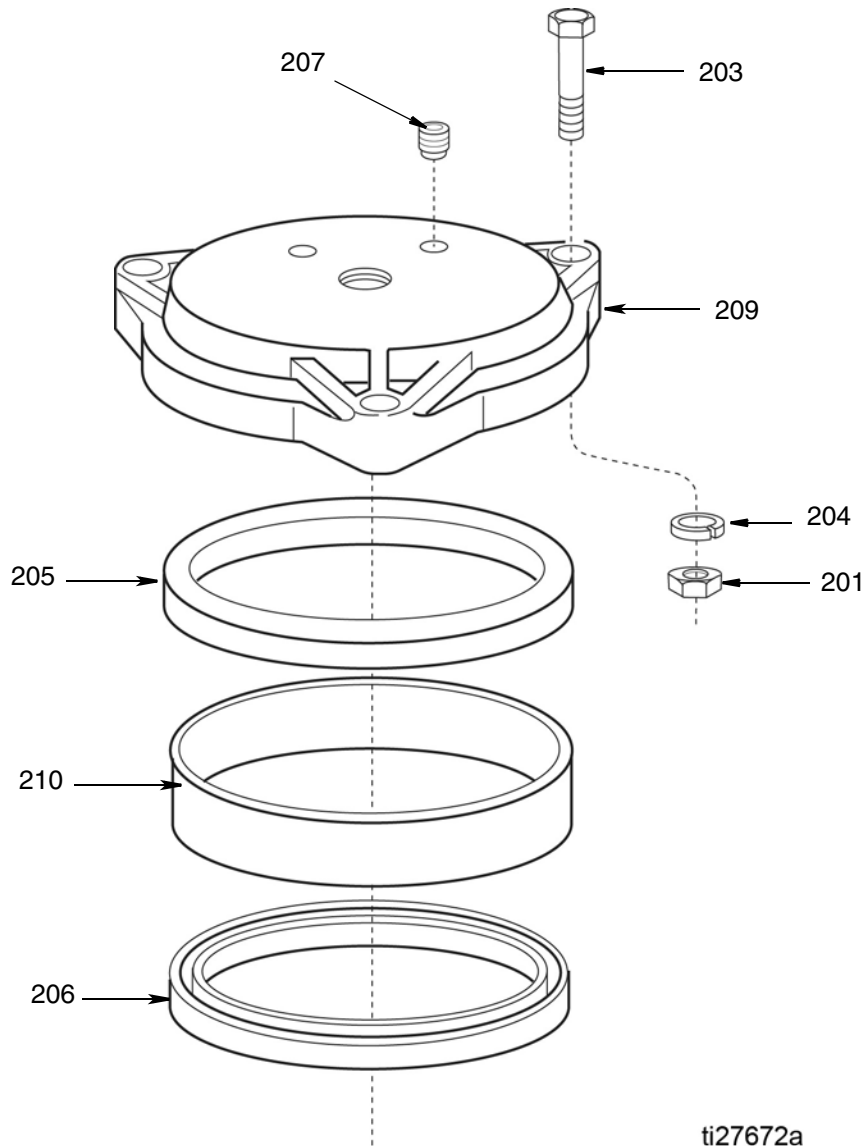
◆ *Included in one of the following kits:*

562902	KIT, reservoir replacement, 12 lb, plastic (model 562892 only)
562903	KIT, reservoir replacement, 20 lb, plastic (model 562893 only)
564270	KIT, reservoir replacement, 12 lb, metal (model 562894 only)
564271	KIT, reservoir replacement, 12 lb, metal (model 562895 only)

# *Included in one of the following kits*

258286	KIT, tie rod (models 562892, 562894 only)
258285	KIT, tie rod (models 562893, 562895 only)

# Overhead Supply Adapter Assembly 562908



ti27672a

Ref	Part No.	Description	Qty.
201		NUT, 5/16 - 18 hex	3
202		PLUG, stl 1/2 pipe hex soc (not shown)	1
203		SCREW, hex hd cap, 5/16	3
204		WASHER, lock	3
205	557333	GASKET, 6, 12, 20 lb reservoir	1
206	557334	GASKET, lower reservoir	1
207		PLUG, dryseal 1/4 nptf	1
209		CAP, resv 12 lb bolt	1
210		TUBE, adapter	1

## Pump Body Assembly: 563380

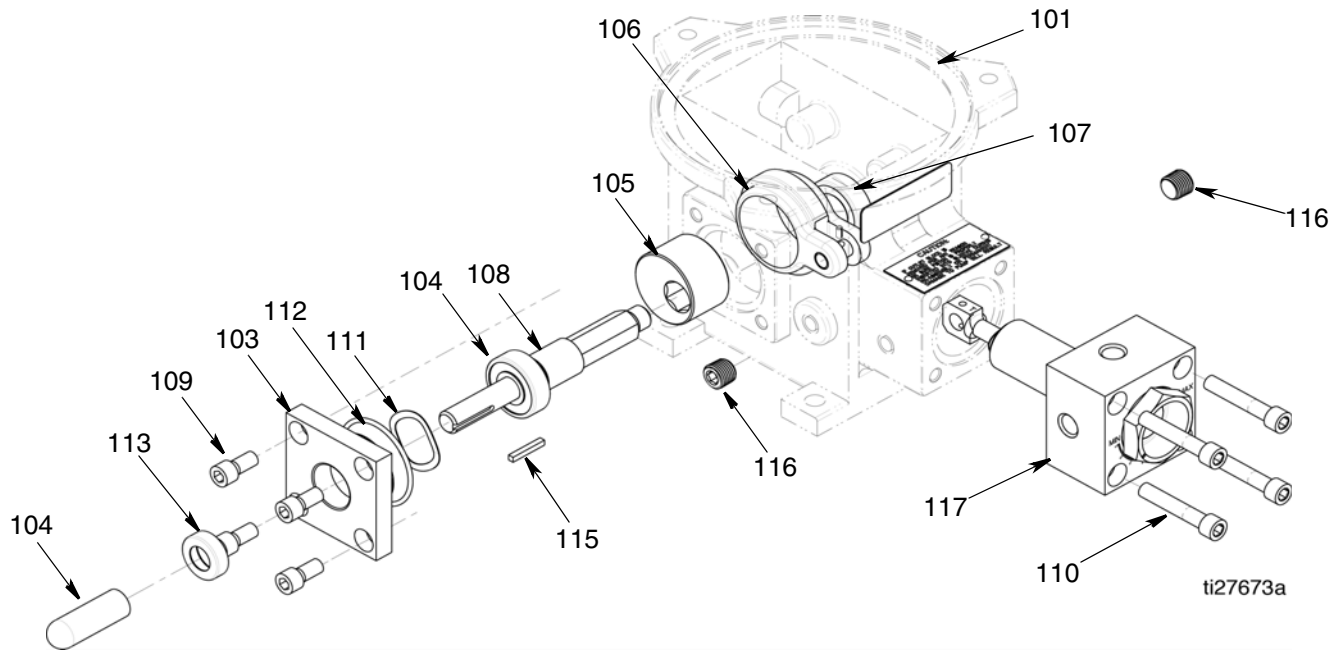
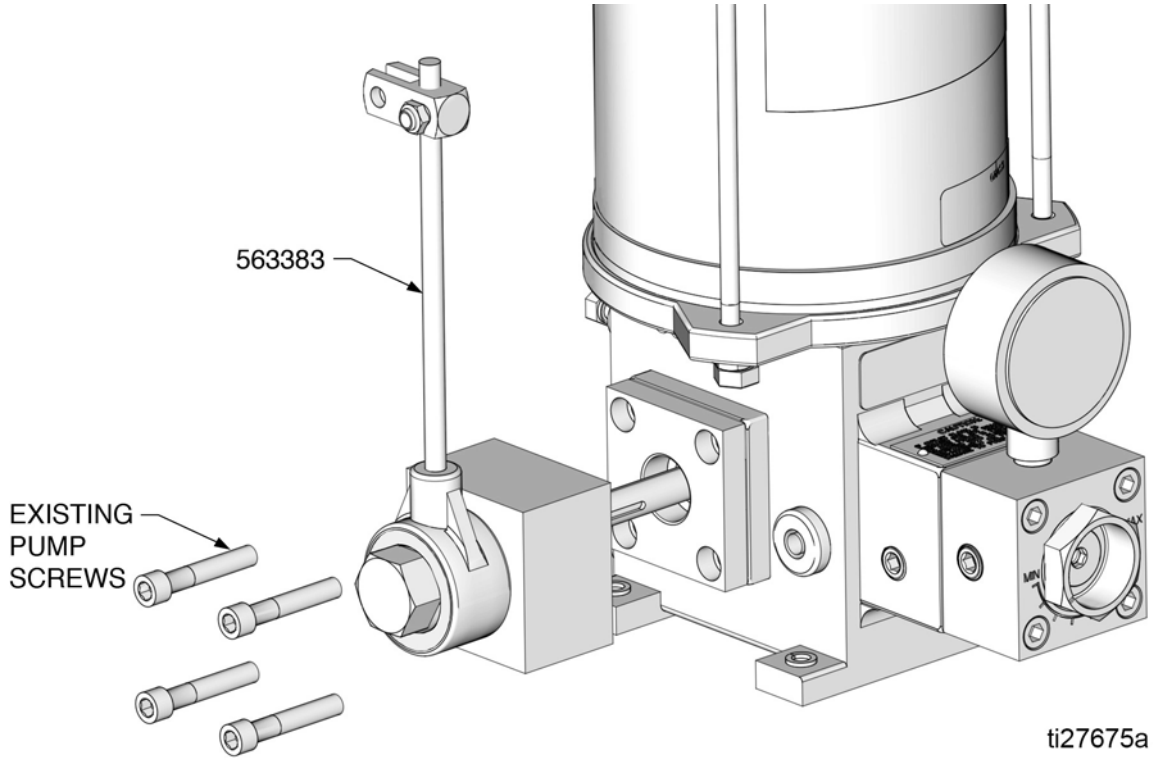


FIG. 19

Ref	Parts No.	Description	Qty.
101	557644	BODY, pump	1
102	556361	BEARING, ball, 0.50 ID x 1.37 OD (not shown)	1
103		PLATE, end	1
104		SHAFT, assembly	1
105		CAM	1
106	560773	YOKE	1
107		SPACER, 0.75 ID x 0.344 long	1
108		SPACER, 0.75 ID x 0.969 long	1
109		SCREW, SHCS 5/16 -18 x 0.50	4
110		SCREW, SOC head cap, 5/16	4
111		WASHER	1
112		O-RING	1
113	556576	SEAL, lip, 0.50 ID, 1.00 OD, 0.25 W	1
114		CAP, protective	1
115		KEY, square, 0.125 x 0.875 lg	1
116	557391	PLUG, dryseal, 1/4 NPTF	3
117		PUMP, block manifold assembly	1

# Clutch Drive Assembly: 563383



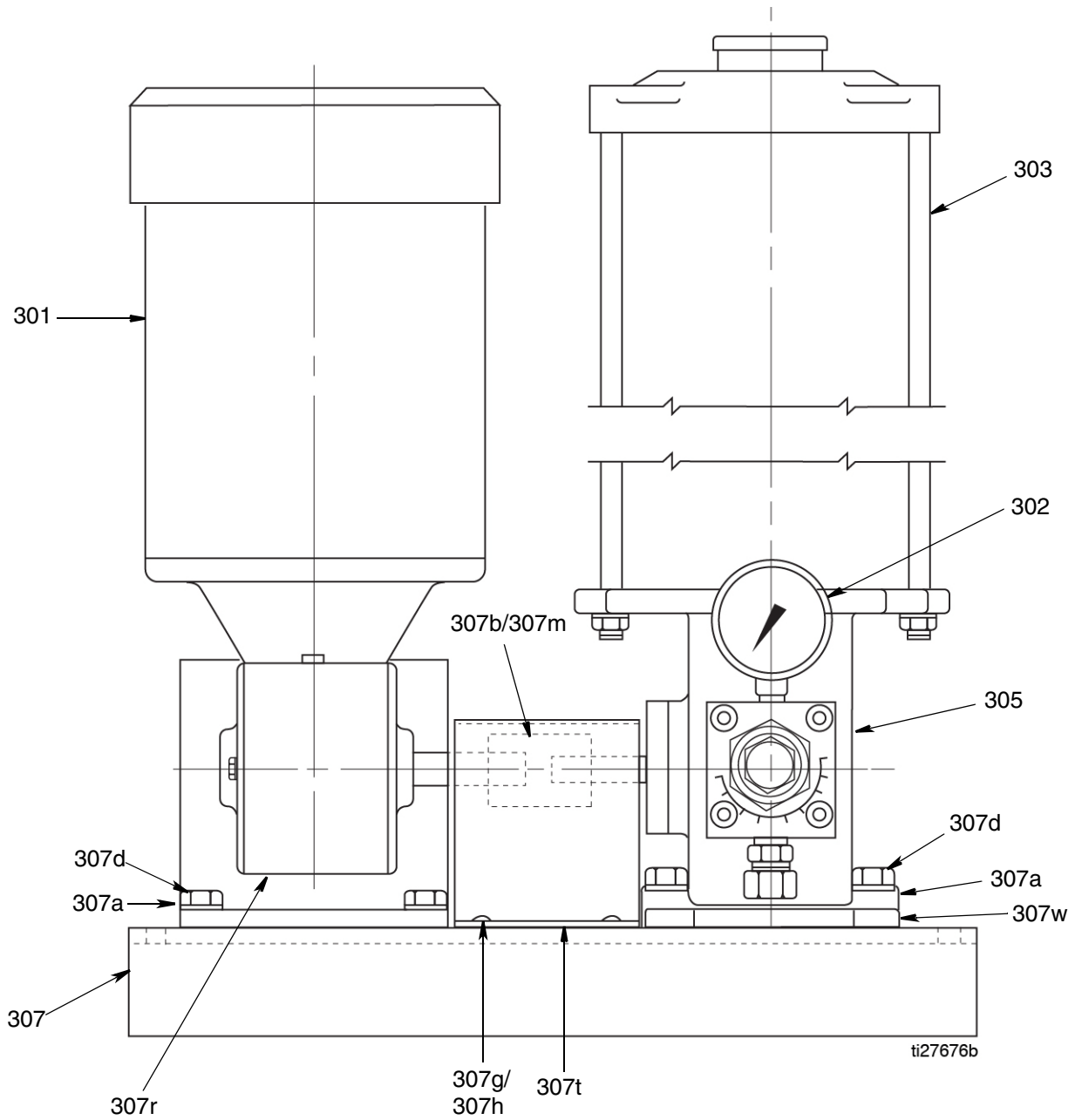
## LubeMaster Pump

Ref. No.	Part No.	Description	Qty	Ref. No.	Part No.	Description	Qty
301	557271	MOTOR, 115/230 volt, single-phase, 1/2 hp, 1725 rpm		307c		SCREW, cap hex hd (models 563386, 563387)	4
	557270	MOTOR, 230/460 volt, three-phase, 1/2 hp, 1725 rpm				SCREW, cap, hex hd (models 563388, 563389)	8
	557272	MOTOR, 115/230 volt, single-phase, 1/2 hp, 1140 rpm		307d		SCREW, 3/8-16 x 7/8 hex hd (models 563386, 563387)	4
	557273	MOTOR, 230/460 volt, three-phase, 1/2 hp, 1140 rpm		307f		SCREW, hex hd cap, 5/15 (models 563388, 563389) (not shown)	4
302	557713	GAUGE, liq 5,000 psi, 1/4 NPT b/m		307g		SCREW, #10-32 x 3/8 rd hd mach	4
303	562892	RESERVOIR, plastic oil, 12 pt		307h		WASHER, #10 internal tooth lock	4
	562893	RESERVOIR, plastic oil, 20 pt		307j		WASHER, 3/8 plain flat (models 563388, 563389) (not shown)	8
	562894	RESERVOIR, metal, oil, 12 pt		307k		WASHER, 5/16 plain flat (models 563388, 563389) (not shown)	4
	562895	RESERVOIR, metal, oil, 20 pt		307m		COUPLER, 5/8 x 1/2	1
	562896	RESERVOIR, plastic, grease, 12 lb		307n		TAG, oil, fill (not shown)	1
	562897	RESERVOIR, plastic, grease, 20 lb		307p		LABEL, name serial (not shown)	1
	562898	RESERVOIR, metal, grease, 12 lb		307r		GEAR REDUCER, 10:1 (models 563386, 563388)	1
	562899	RESERVOIR, metal, grease, 20 lb				GEAR REDUCER, 60:1, 56C flange (models 563387, 563389)	1
	562908	RESERVOIR, power prime		307t		GUARD, coupling, paint	1
304	563015	SWITCH, II 12 pt		307u		PLATE, mounting (models 563386, 563388)	1
	563016	SWITCH, II, 20 pt		307v		BRACKET, mtg (models 563388, 563389)	1
	563317	SWITCH, II assy, 20 pt oil cyl		307w		SPACER, pump (models 563388, 563389)	4
	563322	SWITCH, grease reservoir		307y		SPACER, reducer (models 563386, 563387)	4
305	563380	BODY, pump assy		307z		SCREW, 3/8-16 x 1.00 hex hd cap (models 563388, 563389)	4
306	563383	CLUTCH, drive					
307	563386	BASE, wall mtg 10:1					
	563387	BASE, wall mtg 60:1					
	563388	BASE, floor mtg 10:1					
	563389	BASE, floor mtg 60:1					
307a		WASHER, lock, 3/8	4				
307b		WASHER, lock	4				

# Motorized LubeMaster Pump with Gear Reducer and Motor (Up to 20 lbs): Floor Mounting

563388 - Base, Floor Mounting 10:1

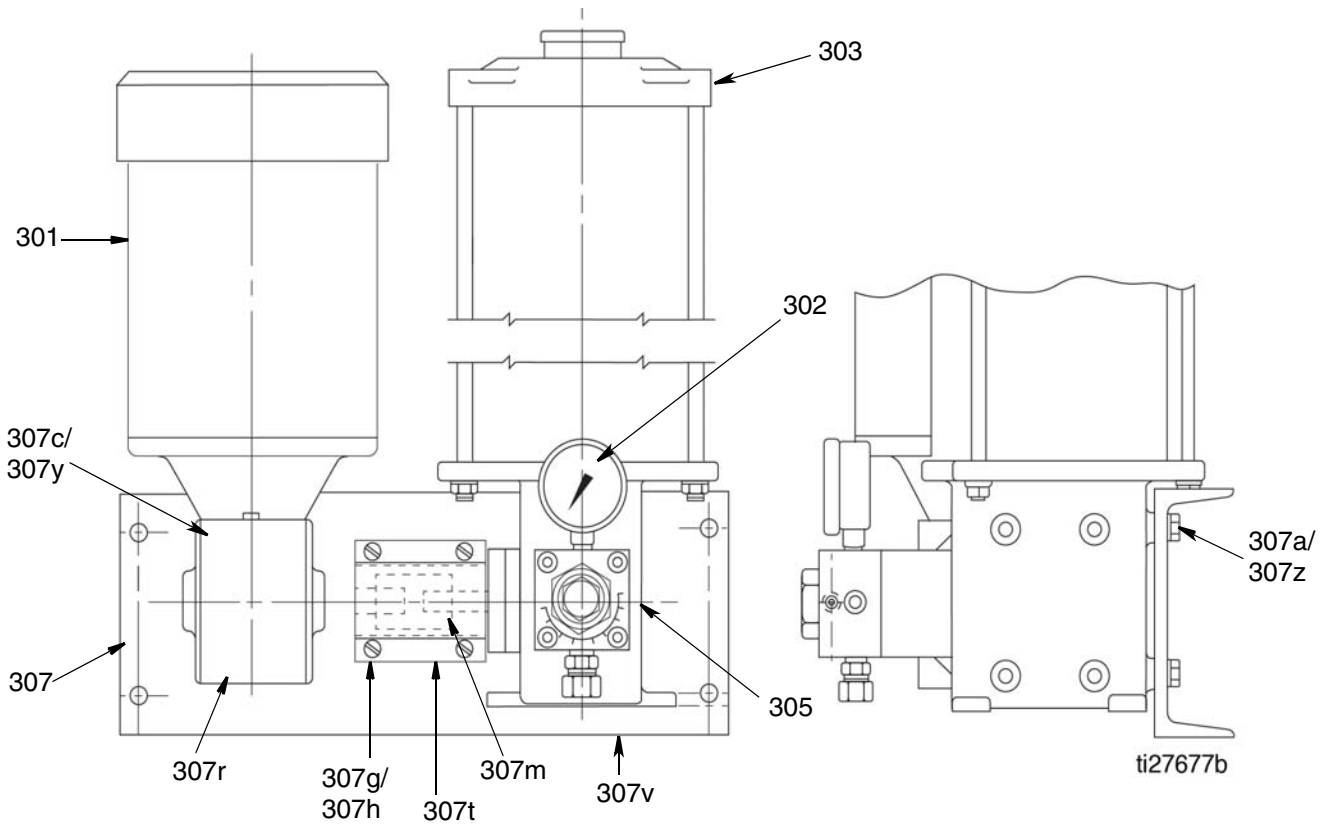
563389 - Base, Floor Mounting 60:1



# Motorized LubeMaster Pump with Gear Reducer and Motor (Up to 20 lbs): Wall Mounting

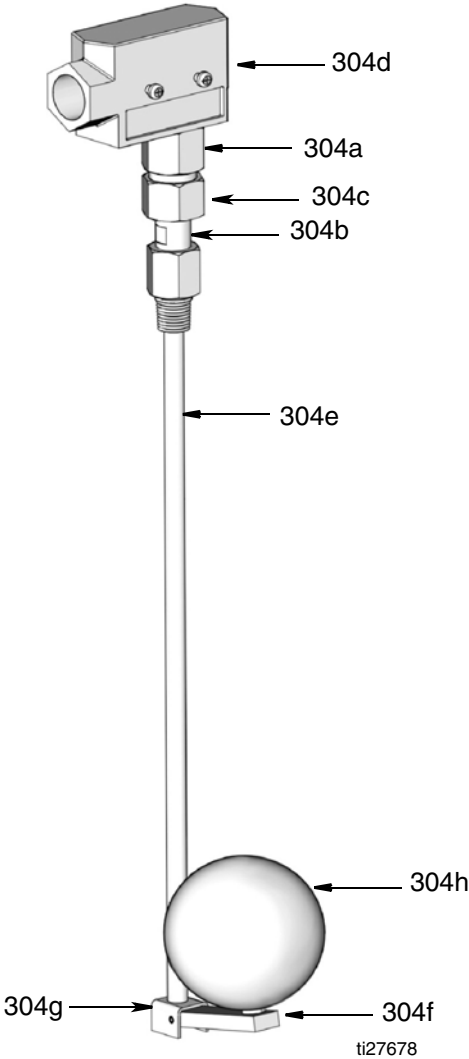
563386 - Base, Wall Mounting 10:1

563387 - Base, Wall Mounting 60:1

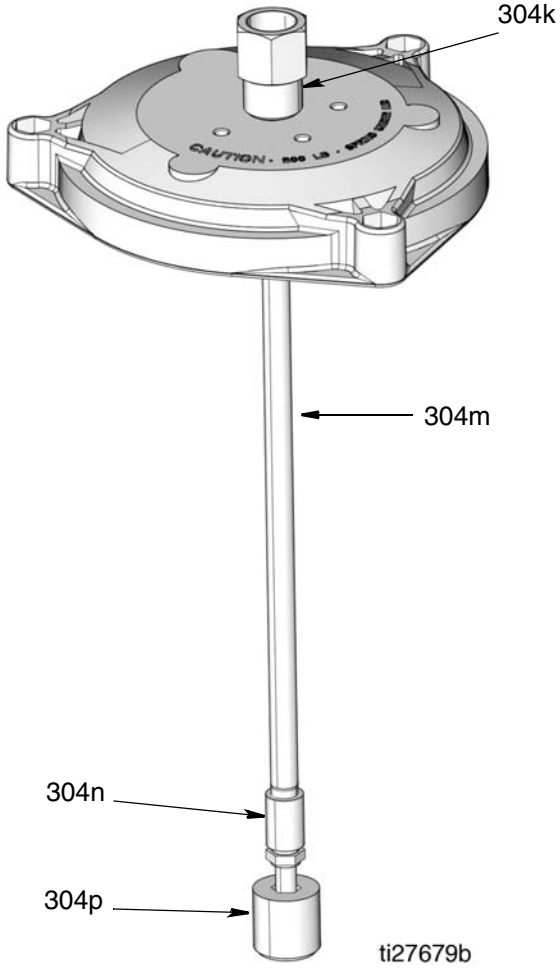




### Oil Reservoir 15 Amp Low-Level Assemblies



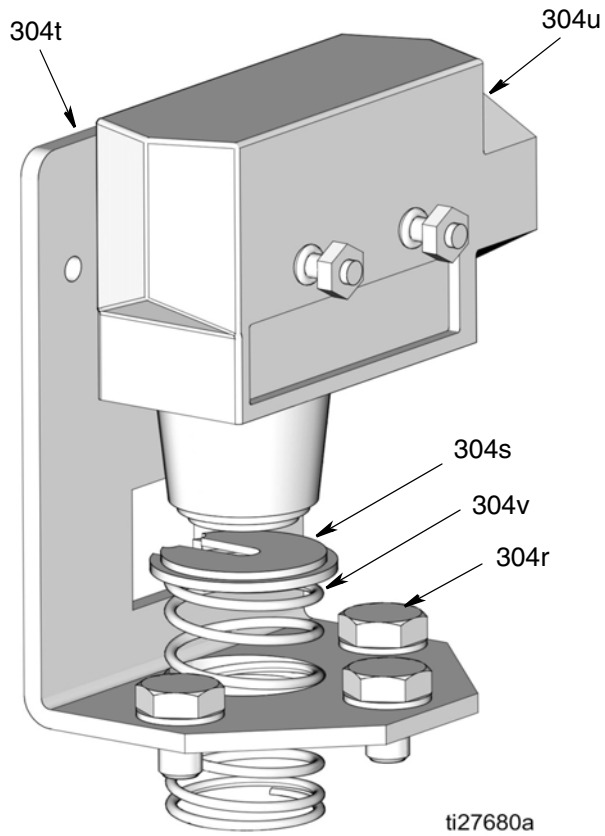
### Oil Reservoir 10-Watt Low-Level Assemblies



Ref	Part No.	Description	Qty.
304	563316	SWITCH, low level assy 5 & 12 pt oil cyl	
	563317	SWITCH, low level assy 20 pt oil cyl	
304a		ADAPTER, switch, ll	1
304b		ADAPTER, low level	1
304c		FITTING, union, nut	1
304d		SWITCH, limit, spdt	1
304e		GUIDE, assy float rod	1
304f		ARM, ll float	1
304g		PIN, roll.093 dia 7/8 lg	1
304h		FLOAT, spherical	1
		WASHER, lock, int (not shown)	2
		ROD (not shown)	1
		SCEW, #8 - 32 x 1/2 slot phmach (not shown)	1

Ref	Part No.	Description	Qty.
304	563015	SWITCH, low level 12 pint	
304	563016	SWITCH, low level 20 pint	
304k		ADAPTER	1
304m		COUPLER, 1/8 x 11"	1
		COUPLER, 1/8 x 18"	1
304n		COUPLING, stl 1/8 npt	1
304p		SWITCH, level mtg top	1

## Grease Reservoir Low-Level Assembly



Ref	Part No.	Description	Qty.
304	563322	SWITCH, low level grease reservoir	
304r		SCREW, 1/4-20 x 3/8 hex hd washer	3
304s		RETAINER, cup spr	1
304t		BRACKET, sw low lever paint	1
304u		SWITCH, limit spdt	1
304v		SPRING, primer filter	1

# Technical Data

LubeMaster® Floor Mount or Wall Mount Pump Package		
	US	Metric
<b>Pump Data</b>		
Maximum fluid working pressure	5,000 psi	34 MPa, 340 bar
Max Torque @ Rated Max Pressure	27 ft-lbs	36.61 N.m
Output Range	0.010 - 8.75 in. <sup>3</sup> per minute	0.1639 - 143.41 cm. <sup>3</sup> per minute
Output per Stroke	0.010 - 0.050 in. <sup>3</sup>	0.1639 - 0.8195 cm. <sup>3</sup>
Cycle Rate	1 - 175 strokes per minute	
<b>Motorized Pump</b>		
Gear Ratios	10:1 and 60:1 floor or wall mount	
Output Range	0.19 - 8.62 in. <sup>3</sup> per minute	3.114 - 141.28 cm. <sup>3</sup> per minute
<b>Clutch Drive Pump</b>		
Cycle Rate	5 - 150 impulses per minute	
Degrees of Throw	12° to 60°	
Output Range	0.100 - 75 in. <sup>3</sup> per hour	1.639 - 1,229.25 cm. <sup>3</sup> per hour
<b>Lubricants</b>	Oil or Grease	
<b>Reservoirs</b>		
Material	Plastic or Metal	
<b>Reservoir Capacities</b>		
Oil	12 pint & 20 pint	5.68 liter & 9.46 liter
Grease	12 lb & 20 lb	5.44 kg & 9.07 kg
<b>Operating Temperatures</b>		
Reservoirs		
Plastic	35°F to 135°F	1.7°C to 57.2°C
Metal	20°F to 150°F	-6.7°C to 65.6°C
Oil	20°F to 150°F	-6.7°C to 65.6°C
Grease		
**NLGI #1	20°F to 150°F	-6.7°C to 65.6°C
** NLGI #2	40°F to 150°F	4.44°C to 65.6°C
<b>Options</b>		
Low Level (Ordering Code)		
Code D - Pick 2 Code D - Pick 3	SPTD, 15 amp @ 125, 250, 480 VAC; 1/2 amp @ 125 VDC; 1/4 amp @ 250 VDC	
Code D - Pick 5 Code D - Pick 6	SPST, 10 watts @ 120 VAC	

LubeMaster® Floor Mount or Wall Mount Pump Package		
	US	Metric
Motors (56 C-face)	115/230V 1/2 hp single phase 60 Hz 1725 RPM, T.E. Full load running current 115 Volts, 7.4 Amps; 230 Volts, 3.7 Amps. Inrush at 115 Volts 49 AMPS; 230 Volts 24.5 AMPS.	
	230/460V 1/2 hp three phase 60 Hz 1725 RPM, T.E. Full load running current 230 Volts, 2 Amps; 460 Volts, 1 Amp. Inrush at 230 Volts 12.2 AMPS; 460 Volts 6.1 AMPS.	
	115/230V 1/2 hp single phase 60 Hz 1140 RPM, T.E. Full load running current 115Volts, 7.8 Amps; 230 Volts, 3.9 Amps. Inrush at 115 Volts 49 AMPS; 230 Volts 24.5 AMPS.	
	230/460V 1/2 hp three phase 60 Hz 1140 RPM, T.E. Full load running current 230 Volts, 2.4 Amps; 460 Volts, 1.2 Amps. Inrush at 230 Volts 12.2 AMPS; 460 Volts 6.1 AMPS.	

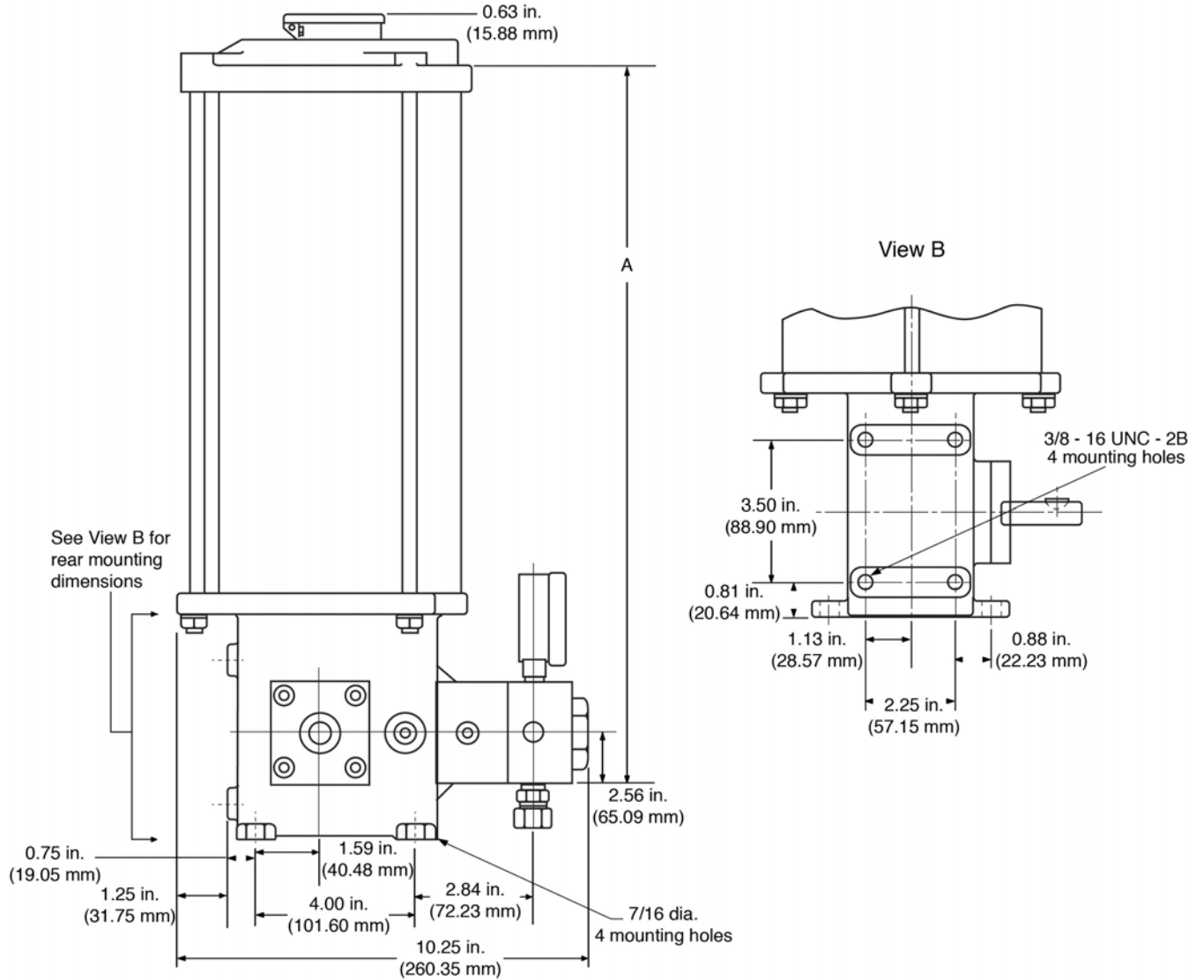
\* These recommended operating temperatures are based on materials used in construction of the pump and reservoir only.

\*\* The grease must be pumpable at the lowest anticipated operating temperature.

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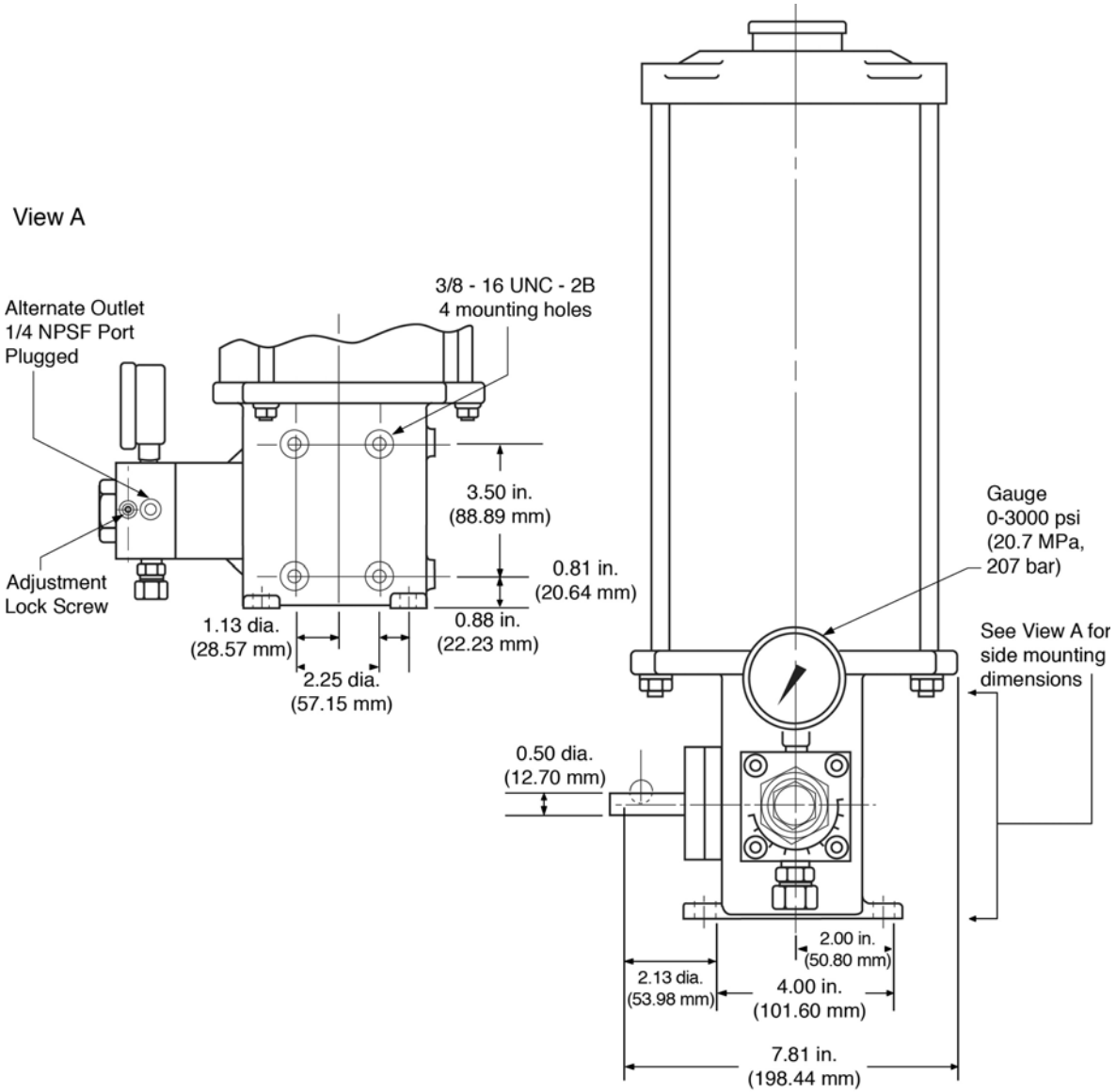
# Dimensions

## Reservoirs



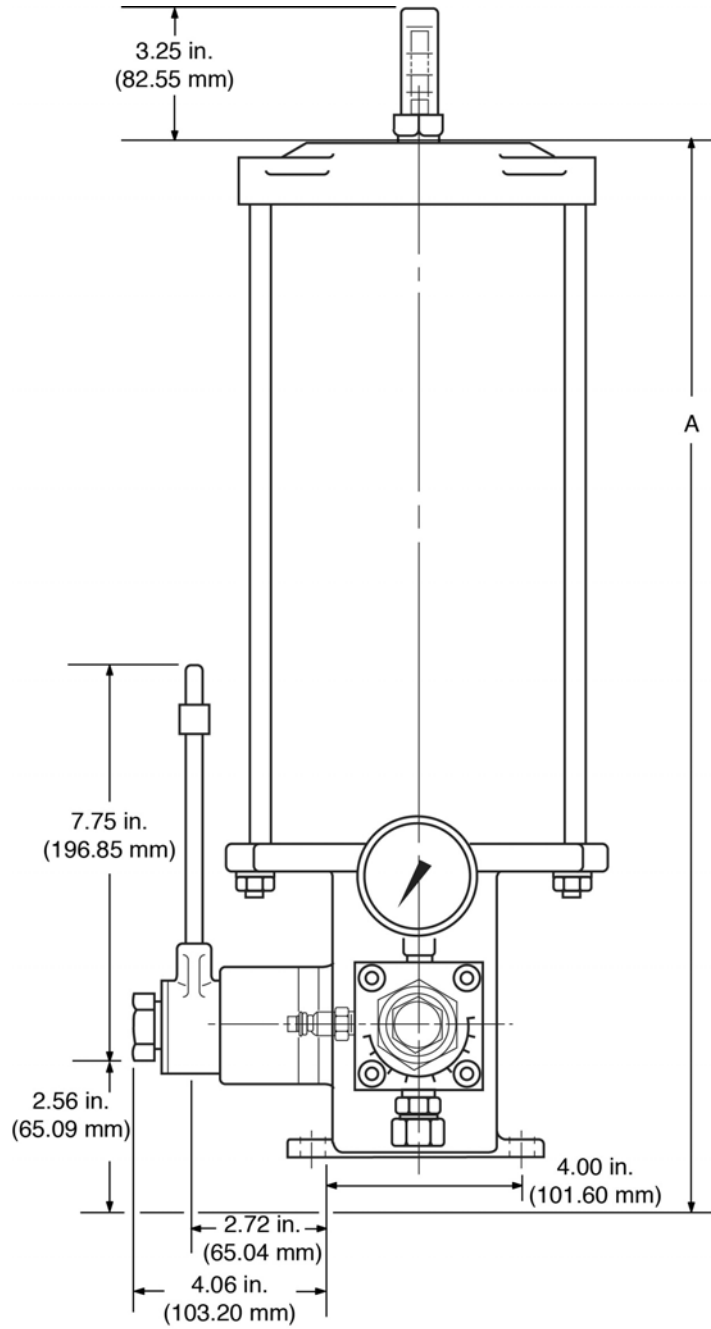
Reservoir Size	A- Dimension	
	Inches	MM
12 Pint Oil	19.56	496.9
12 Lb. Grease		
20 Pint Oil	26.56	674.7
20 Lb. Grease		
Overhead Supply	7.66	194.5

# Reservoirs



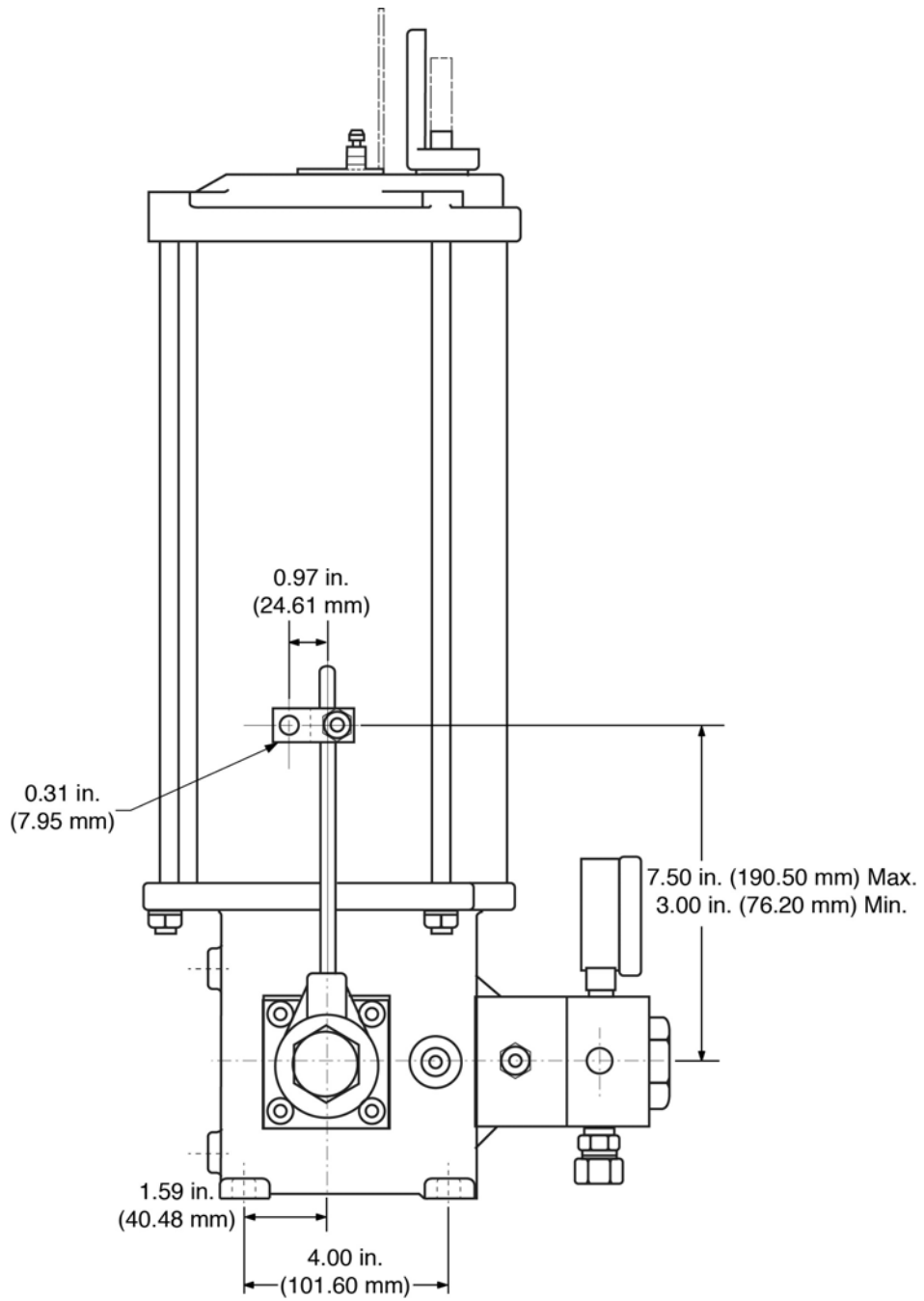
Reservoir Size	A- Dimension	
	Inches	MM
12 Pint Oil	19.56	496.9
12 Lb. Grease		
20 Pint Oil	26.56	674.7
20 Lb. Grease		

# Clutch Drive



Reservoir Size	A- Dimension	
	Inches	MM
12 Pint Oil	19.56	496.9
12 Lb. Grease		
20 Pint Oil	26.56	674.7
20 Lb. Grease		

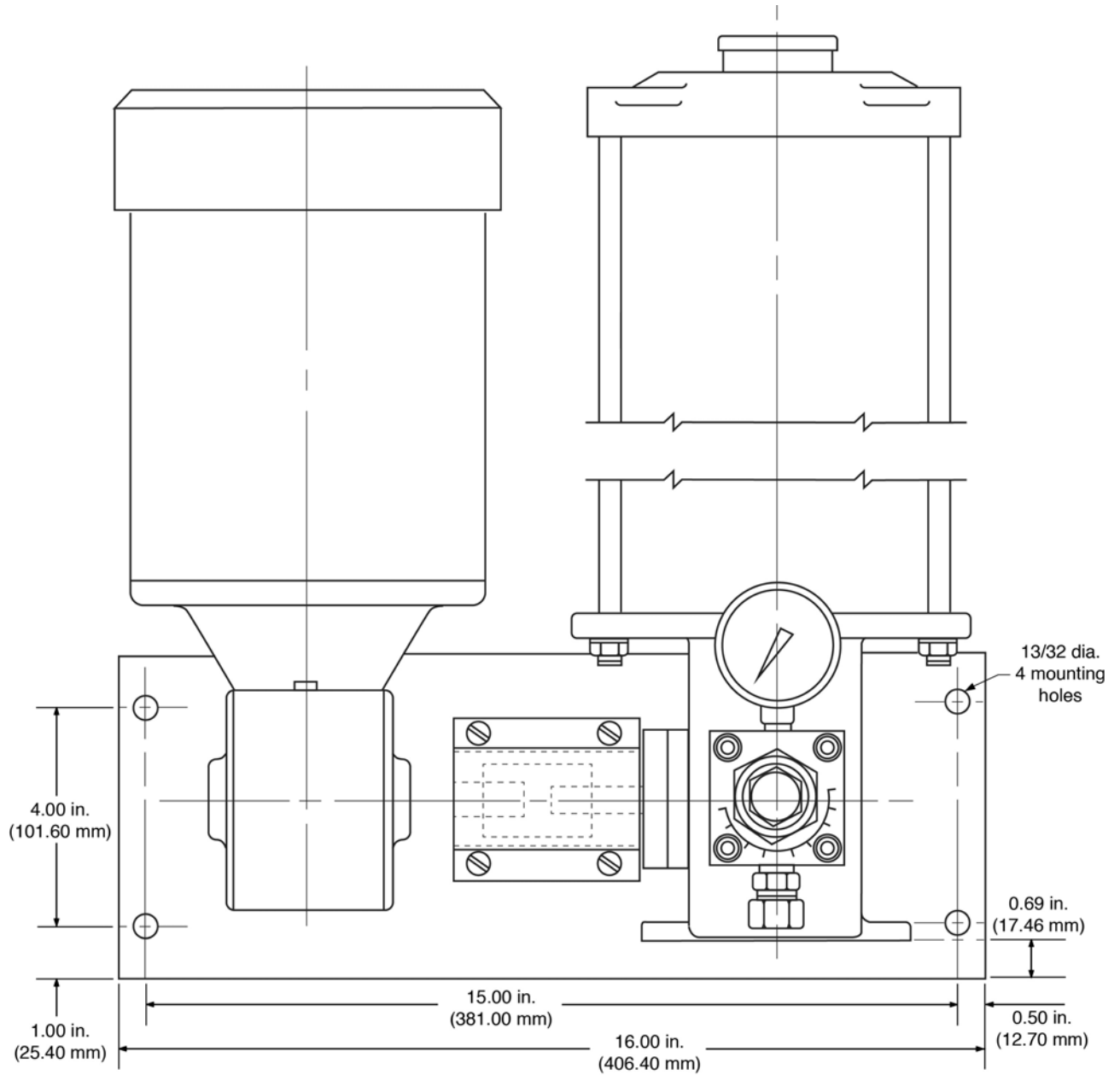
# Clutch Drive





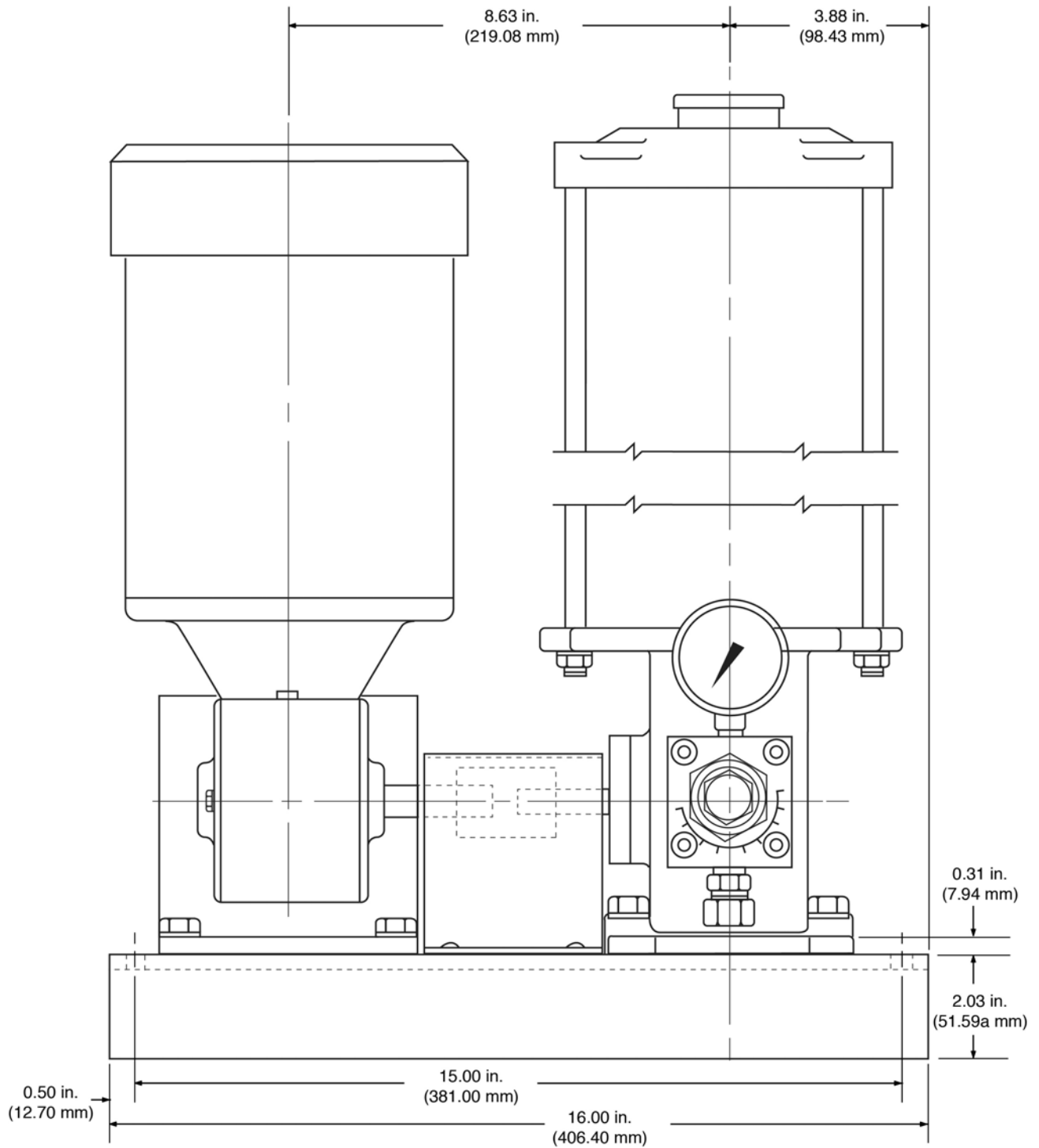
# Motorized LubeMaster (Up to 20lbs): Wall Mounting

Inches (mm)



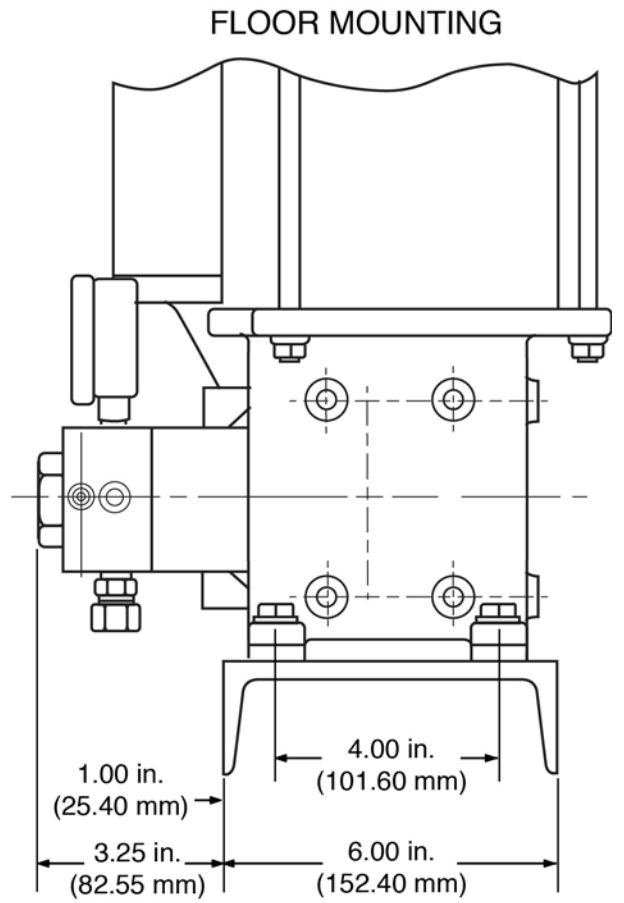
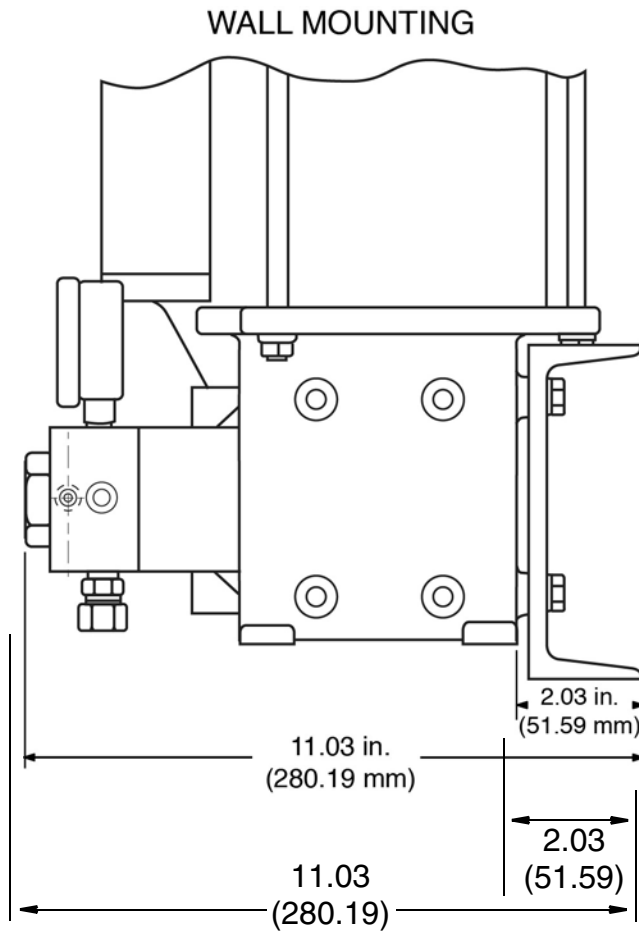
# Motorized LubeMaster (Up to 20lbs): Floor Mounting

Inches (mm)



# Motorized LubeMaster (Up to 20lbs)

Inches (mm)



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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.

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**Graco Headquarters:** Minneapolis

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