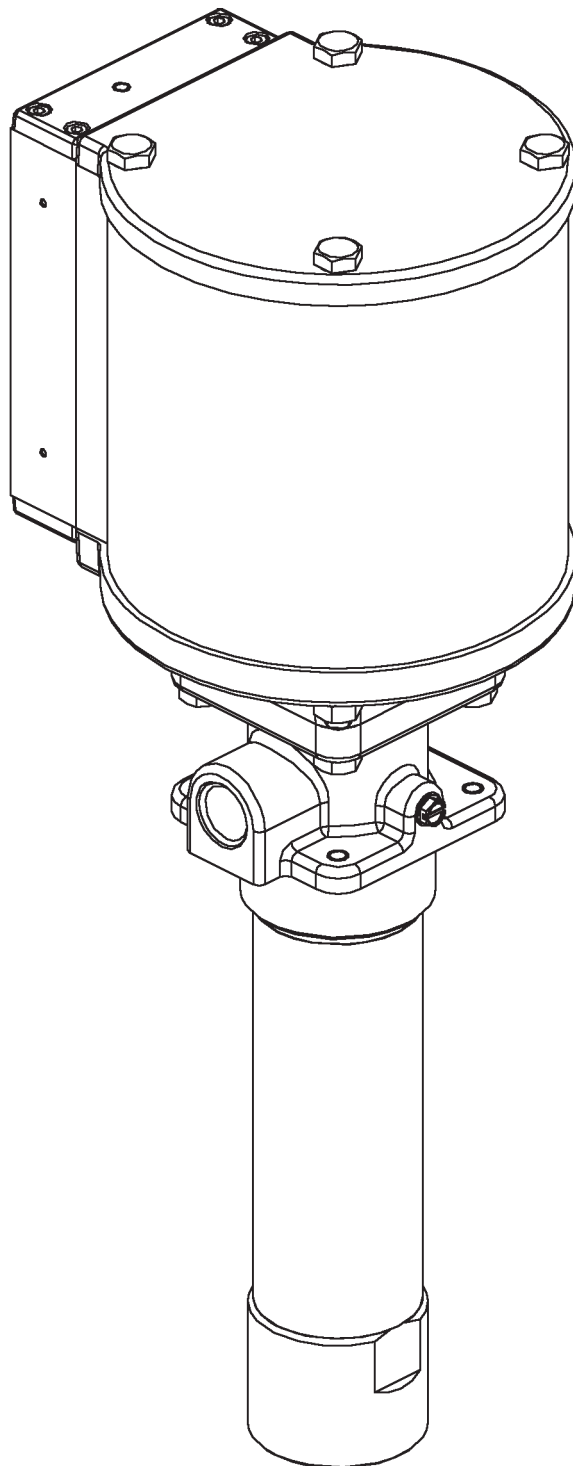




MODEL V410000000  
PMV 10:1 OIL PUMP  
SERIES "A"



Patent Pending

# MODEL V410000000 PMV 10:1 OIL PUMP



## SAFETY

Read and carefully observe these operating instructions before operating the PMV Oil Pump. The pump must be operated, maintained and repaired exclusively by persons familiar with the operation instructions. Operate the pump only after safety instructions and this operation manual is fully understood.

Adequate personal protection is recommended to prevent splashing of material on the skin or in the eyes.

Always disconnect air coupler from pump when the pump is not being used.

Always wear eye protection.

## WARNING

If any fluid appears to penetrate the skin, get emergency medical immediately. Do not treat injury as a simple cut. Tell attending physician exactly what fluid was injected.

## Pump Specifications

Pumping Ratio - 10:1

Air Pressure - 40-150 psi [2.7-10.3 bar]

Max. Output Pressure - 1500 psi [103 bar]

Air Inlet - 3/8 NPTF

Material Outlet - 1/2 NPTF

Material Inlet - 1-1/2 NPTF

Airmotor Bore Dia. - 4-1/4 in. [108 mm]

Stroke - 3-1/4 in. [82.5 mm]

Output per cycle - 7.2 cu. in. [118 cc]

Wetted Parts - Carbon Steel, Brass, Zinc, Polyurethane, Nitrile

## DESCRIPTION

Model V410000000 is an air operated double acting pump for dispensing low and medium viscosity lubricants from tanks or drums. The pumps are self-priming.

Model V410000000 is a stub pump with a 1-1/2 NPT threaded inlet. It may mounted in the bung opening of an oil drum by using an optional bung bushing and suction tube (see page 3). It may also be attached to a reservoir standpipe or with an optional suction kit and hose for large bulk tanks. See INSTALLATION section on page 3 for recommendations on mounting the pump.

## APPROPRIATE USE

The pump is for pumping low and medium viscosity lubricants. These lubricants include automotive petroleum based and synthetic motor oils, transmission fluids, and petroleum based hydraulic fluids.

## WARNING

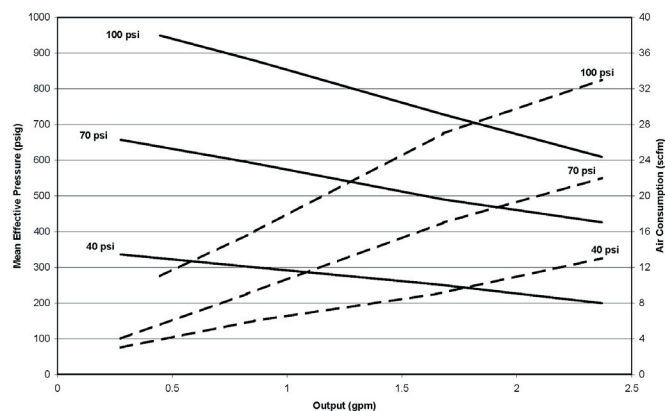
**It is dangerous to dispense fluids that are not recommended with this pump. Failure to heed this warning may cause serious damage or injury.** These pumps are not intended, nor should it be used to pump fuels, such as gasoline, fuel oil, or Diesel fuels. Many solvents and fluids such as windshield washer solvent, anti freeze, brake fluid and water will damage pump components and may cause pump to seize, rendering the pump unusable. Any other use not in accordance with instructions will result in loss of claim for warranty or liability.

The pump is designed for delivering lubricants directly from a reservoir into another container, crankcase, or gearbox. They may be used with tank mounted or overhead reel applications with or without fluid meters.

## WARNING

The pumps are to be operated with clean, dry compressed air only. Operation with flammable gasses is prohibited. Maximum air pressures should not be exceeded. Failure to heed this warning may result in serious personal injury, property damage, and failure of the pump.

Performance Chart



### WARNING

**FAILURE TO HEED THE FOLLOWING WARNINGS INCLUDING MISUSE, OVER PRESSURIZING, MODIFYING PARTS, USING INCOMPATIBLE CHEMICALS AND FLUIDS, OR USING WORN OR DAMAGED PARTS, MAY RESULT IN EQUIPMENT DAMAGE AND/OR SERIOUS PERSONAL INJURY, FIRE, EXPLOSION, OR PROPERTY DAMAGE.**

- Do not exceed the stated maximum working pressure of the pump or of the lowest rated component in your system.
- Do not alter or modify any part of this equipment.
- Do not operate this equipment with combustible gas or fuel, gasoline, diesel fuel, kerosene, etc.
- Do not attempt to repair or disassemble the equipment while the system is pressurized.
- Make sure all fluid connections are securely tightened before using this equipment.
- Always read and follow the fluid manufacturer's recommendations regarding fluid compatibility, and the use of protective clothing and equipment.
- Check all equipment regularly and repair or replace worn or damaged parts immediately.
- Never point the dispensing valve at any part of the body or at another person.
- Never try to stop or deflect material from dispensing valve or leading connection or component with your hand or body.
- Always check equipment for proper operation before each use, making sure safety devices are in place and operating properly.
- Always follow the pressure relief procedure after shutting off the pump, when checking or servicing any part of the system, and when installing, cleaning or changing any part of the system.

### INSTALLATION

Pumps are tested in light oil before shipment. To avoid system contamination, flush the pump with the lubricant to be dispensed before installing the pump.

Flush all supply lines, hoses, reels and fittings used in the dispensing system with mineral spirits or other petroleum based solvent to remove dirt, chips and other foreign matter that may damage the pump or other system components. The components should be blown dry with air after flushing.

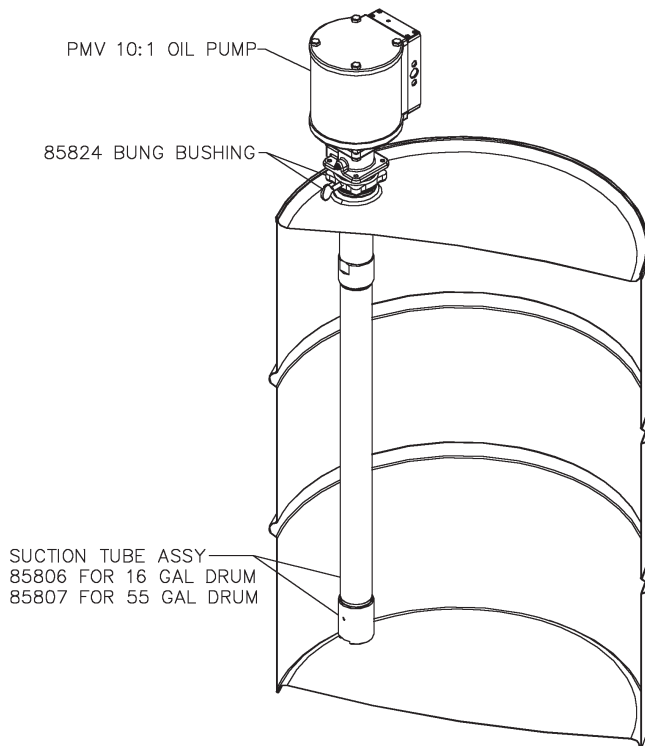
Placement of a low restriction shut-off valve (such as a ball or gate valve) into the system between the pump outlet and overhead delivery system is recommended. This will allow the pump to be removed from the system for service without draining the entire system down.

Lincoln recommends using a filter/regulator (3/8" NPT port size) such as a Lincoln #602136 in the air supply line to the pump to regulate the air pressure to the pump.

Lincoln does not recommend using Teflon tape pipe sealant when making connections to this pump.

#### Bung Bushing Installation

- Thread bung bushing into 2" NPT bung on top of reservoir drum or tank. (See illus. #1) Tighten bung bushing securely into bung thread. (Illus. #1 is illustrating a 55-gallon drum; other containers will be installed in a similar manner.)
- Insert pump tube through bung bushing. Tighten thumb screw.



**Illustration 1**

#### **Bung Bushing Installation in Tank or Drum.**

Note: 55 Gal Drum Shown, 16 Gal, 250 Gal, & 275 Gal are similar.

# MODEL V410000000 PMV 10:1 OIL PUMP



## Stand Pipe Installation

- A shut off valve should also be installed ahead of the pump standpipe so that the pump can be removed for service without the necessity of draining the tank for pump removal.
- Apply pipe thread sealant to 1-1/2 NPT male thread on standpipe and thread into pump inlet, tightening securely for leak free joint.
- Install connections to pump outlet. Open the shut-off valve ahead of the pump, and check for leaks. (All connections to pump outlet must be complete, and control valves must be closed before opening the valve between the pump and a full tank of lubricant. Otherwise the tank may be drained through the pump.)

The pumps may be used with suction tube configurations other than those listed above.

Lincoln #85949 Universal Suction Kit includes a suction tube that may be cut to fit. A foot valve is also included with the kit.

Lincoln #84945 Remote Suction Kit includes a suction tube, hose, and bung bushing. The remote kit will allow the pump to be mounted separate from the reservoir. A Lincoln 275413 Wall Bracket, for example, may be used to secure the pump to a wall or other stationary surface. The lubricant barrel can be easily changed without removing the entire pump from the lubricant reservoir.

## WARNING

Thermal expansion of oil can damage components of the lubrication system. Install pressure relief valve Lincoln P/N 282957.

## Thermal Expansion

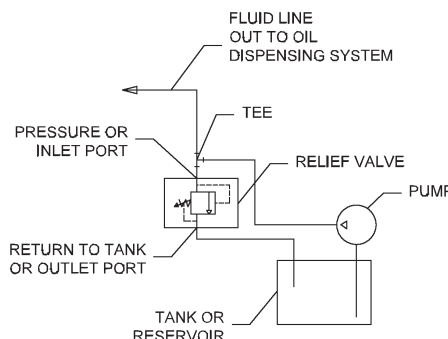
Oil distribution systems where the oil reservoir tank is remotely located from the piping and overhead hose reels, or where the piping system is located overhead and the reservoir is located at floor level may be subject to thermal expansion. Thermal expansion can occur where the oil reservoir is located in an area away from the remaining distribution system, and exposed to temperatures that are much lower than what the rest of the system is exposed to.

For example: where an oil reservoir is located outside a heated building, and the hose reels and piping system are located at ceiling level in a heated shop. When the cool oil is pumped from the reservoir into the warm building and allowed to warm up, the oil will expand. The oil has no place to expand, because it is trapped between the pump's check valves and the control valves on the end of the dispensing hose. As the oil warms and expands, the pressure will rise. When there is an extreme temperature difference, the pressure may rise to a level beyond the ratings of the system components, causing damage to the plumbing or other components in the system.

Thermal expansion may also occur when any system that is stalled against pressure, remains inactive when a large temperature rise occurs. As above, the oil pressure in the system will rise, as it warms, and can cause system or component damage if the pressure exceeds the system component pressure ratings.

Lincoln recommends that a 1500 PSI pressure relief valve, such as Lincoln P/N 282957, be installed into the fluid connections from the pump outlet. A pipe tee can be added at the pump outlet and the relief valve connected into the tee, with the connection from the distribution system connected into the remaining outlet in the tee. The return to tank connection on the relief valve should be routed back to the oil reservoir tank.

When the 282957 valve is properly installed, should the pressure rise above the cracking pressure of the relief valve (1500 PSI), the valve will open and vent the oil back to the reservoir tank, therefore protecting the system from over pressurization. The relief valve will close when the pressure has been relieved. Normal operation of the distribution system should not be affected when the valve actuates.



VALVE CONNECTION SCHEMATIC

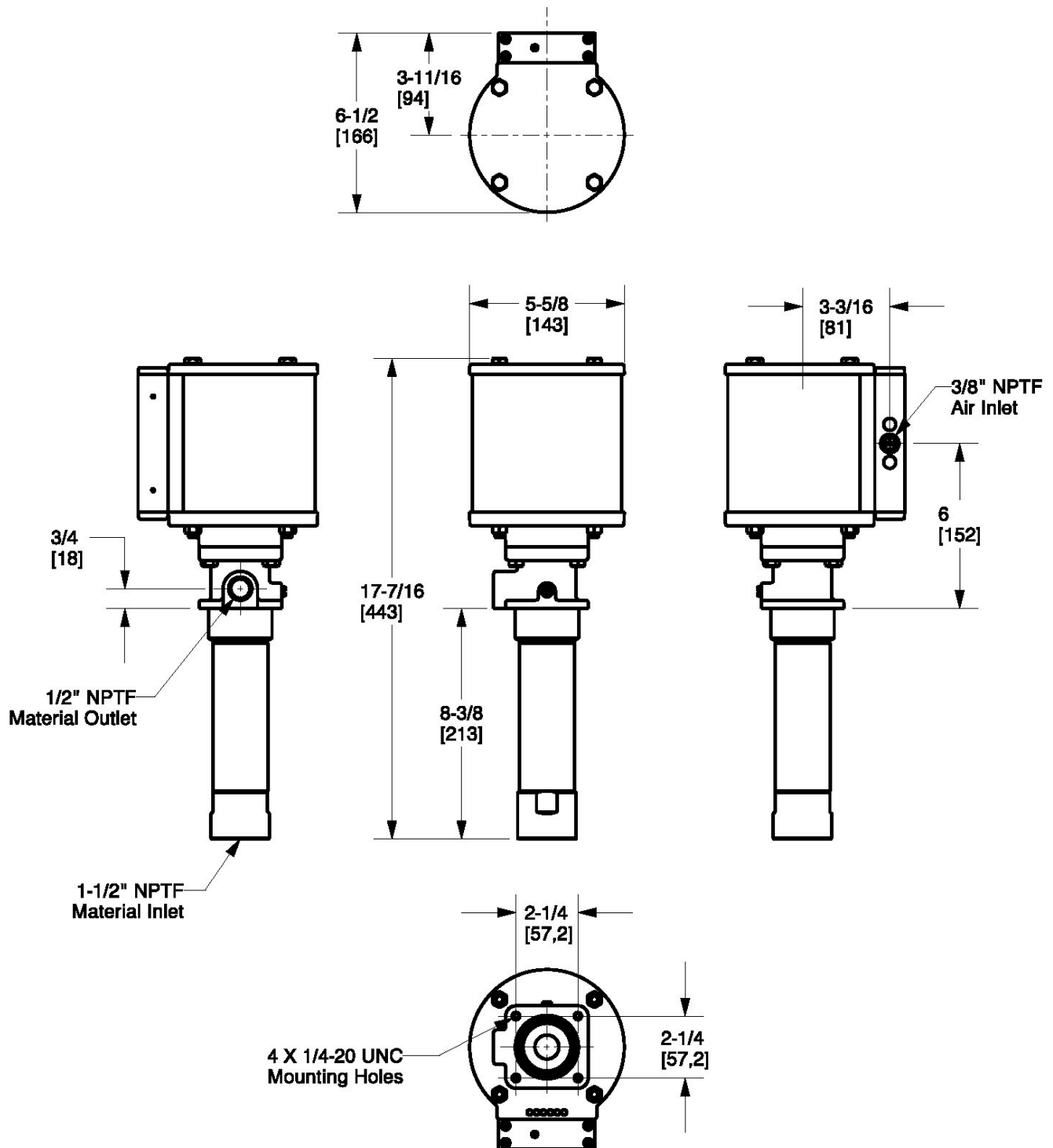


Illustration #2

# MODEL V410000000

## PMV 10:1 OIL PUMP



### SYSTEM START-UP

When operating the pump in a system for the first time, air must be purged from the system. Expelling air from the pump is very critical for the pump to prime and operate reliably. Before connecting the pump to a system, make sure the pump is placed into a container of the oil that is to be dispensed. Connect a short length of hose to the pump outlet and direct the open end of the hose into a container to catch the oil. Operate the pump at low air pressure, 40 PSI, until the pump primes, and oil flows smoothly from the end of the hose.

The system can now be connected to the pump outlet. Purge the entire system in a similar manner, slowly pumping oil through all reels and control valves until oil, free of air, flows smoothly from each outlet.

### PRESSURE RELIEF PROCEDURE

The following procedure should be followed when it becomes necessary to shut the system down for service or container changes.

- Disconnect the air supply from the air inlet of the pump.
- Bleed the lubricant pressure off the system by opening a dispensing valve into a container. Hold the valve open until all flow from the system stops.
- Close the shut-off valve between the pump and reservoir on standpipe installations (if present).
- Close the shut-off valve between the pump outlet and supply lines (if present).
- Slowly loosen the lubricant supply line at the pump outlet. A very small volume of oil will leak from the threads. If pressure is present, stop the loosening procedure and repeat the steps above.

### REPAIR

Repair is limited to the service parts listed on following pages. In most cases, service is going to be the replacement of soft seals in the pump. See illus. 3 and 4 for internal components of the pump, and Illustration 5 for internal components if its an air valve

Contact your nearest authorized Lincoln Service Dealer or Lincoln Technical Services for assistance.

When ordering replacement parts, order by part number and description. The model number and series letter may also be required.

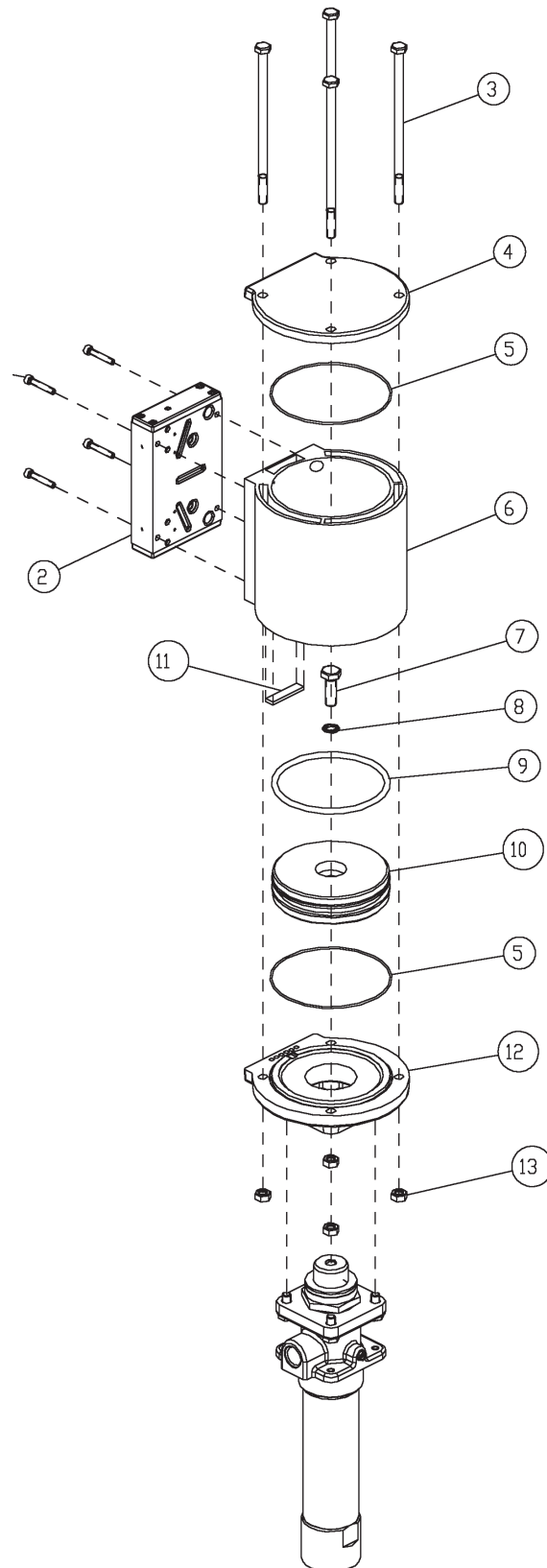


Illustration #3

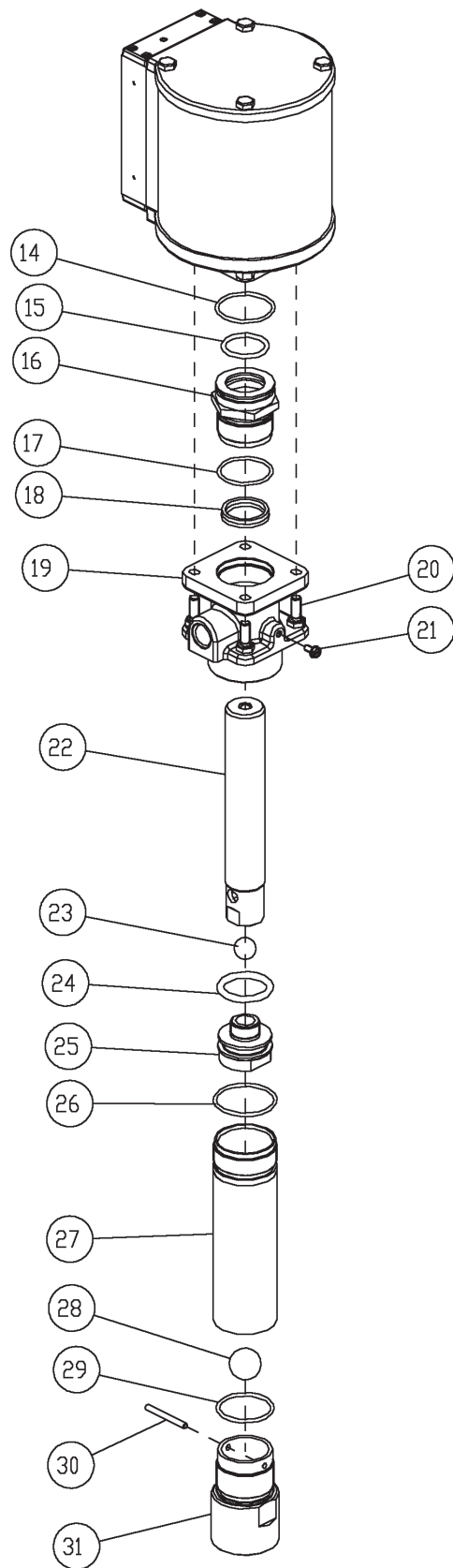
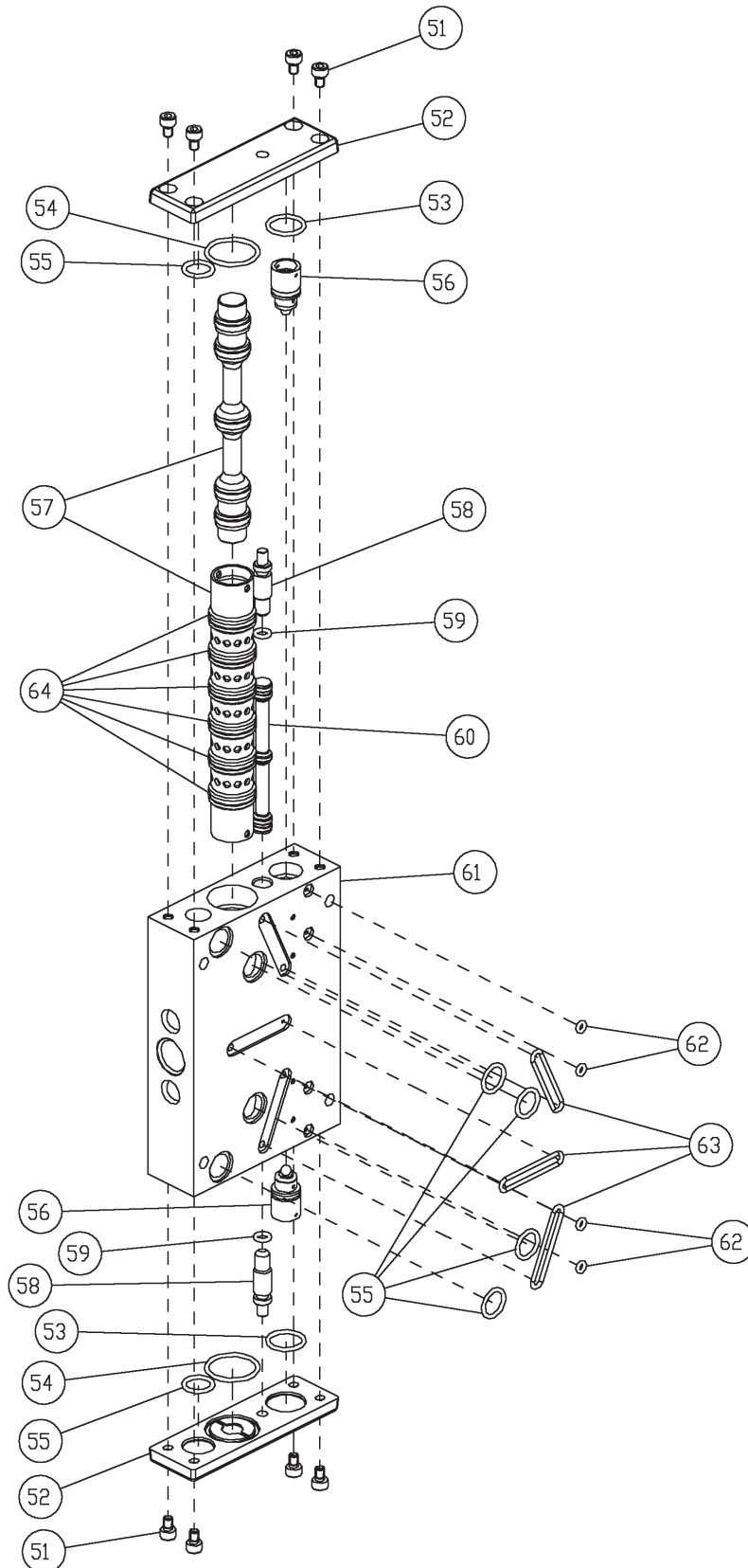


Illustration #4



**Parts List**

Item No.	Description	Qty.	Part No.
1	Socket Head Screw (M5x0.8x30mm)	4	275045
2	Valve Bar Assembly	1	275408
3	Hex Head Screw (M8x1.25x160mm)	4	275040
4	Cylinder Head	1	275050
5	O-ring (nitrile)	2	275038*
6	Air Cylinder	1	275049
7	Hex Head Screw (M10x1.5x30mm)	1	275035
8	Seal (nitrile)	1	275036*
9	O-ring (nitrile)	1	34657*
10	Piston	1	275055
11	Muffler Element	1	275180*
12	Cylinder Base	1	275052
13	Hex Nut	4	275032
14	O-ring (nitrile)	1	34309*
15	O-ring (nitrile)	1	34398*
16	Gland Nut	1	275071
17	O-ring (polyurethane)	1	34770*
18	U-cup (polyurethane/nitrile)	1	275084*
19	Outlet Body	1	275075
20	Hex Head Screw (M8x1.25x20mm)	4	275066
21	Grounding Screw (#10-32x3/8 in)	1	275129
22	Plunger Rod	1	275067
23	Check Ball	1	275083
24	O-ring (polyurethane)	1	275087*
25	Piston	1	275082
26	O-ring (polyurethane)	1	242229*
27	Pump Tube	1	275077
28	Check Ball	1	66203
29	O-ring (polyurethane)	1	275085*
30	Pin	1	275080
31	Foot Valve Body	1	275079



**Illustration #5**



**Parts List**

Item No.	Description	Qty.	Part No.
51	Socket Head Screw (M4x0.7x6mm)	8	275034
52	Valve Bar Cap	2	275060
53	O-ring (nitrile)	2	34392*
54	O-ring (nitrile)	2	275043*
55	O-ring (nitrile)	6	34290*
56	Signal Valve Assembly	2	275409
57	Power Valve Assembly	1	275410
58	Manual Pin	2	275026
59	O-ring (nitrile)	2	34179*
60	Relay Valve Spool Assy	1	275411
61	Valve Bar	1	275059
62	O-ring (nitrile)	4	34527*
63	O-ring (nitrile)	3	34550*
64	O-ring (nitrile)	6	34573*^

\*Denotes parts supplied in Soft Parts Kit No. 275404

^Item 64 also included with Power Valve Assy No. 275058

### Troubleshooting

Condition	Possible Cause	Corrective Action
Pump does not operate	No air or low air to pump.	Make sure air pressure to pump is adequate to operate pump
	Muffler Element (Item 11) clogged.	Remove muffler element and clean or replace.
	Damaged Air Valve Bar Assembly (Item 2).	Replace Air Valve Bar Assembly.
	Damaged Power Valve Assembly (Item 57).	Inspect Power Valve. Replace if damaged or worn.
Erratic operation or short stroking	Insufficient material supply.	Refill material supply.
	Damaged Power Valve Assembly (Item 57).	Inspect Power Valve. Replace if damaged or worn.
	Damaged Signal Valve (Item 56) or Relay Valve (Item 60).	Inspect valves. Replace any damaged seals or worn parts.
Pump operates but dispenses material on only one stroke.	Worn or damaged Piston O-ring (Item 24) or Piston Check (Items 23 and 25).	Inspect and replace if needed.
	Worn or damaged Inlet Check (Items 28 and 31).	Inspect and replace if needed.
	Insufficient material supply. Pump is not intaking enough material to dispense on both strokes.	Check inlet for restrictions. Decrease air pressure to reduce pump speed.
Pump is operating but not dispensing material.	Inlet Check (Items 28 and 31) is not seating or is damaged.	Inspect and replace if needed.

### Declaration of Conformity as defined by Machinery Directive 98/37/EG Annex II A

This is to declare that the design of the PMV 10:1 Oil Pump (Model V410000000) complies with the provisions of Directive 98/37/EG

### Applied Standards:

- EN 292-1 Safety of Machinery - Basic Concepts, General Principles and Design - Part 1: Basic Terminology, Methodology
- EN 292-2 Safety of Machinery - Basic Concepts, General Principles and Design - Part 2: Technical Principles and Specifications - Incorporates amendments 1 (1995) and 2 (1997)
- EN 809 Pumps and Pump Units for Liquids - Common Safety Requirements
- EN 349 Safety of Machinery - Minimum Gaps to Avoid Crushing of Parts of the Human Body

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