

# **SIMPLEX**

**HYDRAULIC & MECHANICAL POWER**

## **P AM & PGM SERIES**

**40 & 50 SERIES**

**AIR & GASOLINE POWER PUMPS**



**Operating & Maintenance Instructions  
For 1 1/2 H.P. Air & Gasoline Pumps  
and 8 H.P. Gasoline Pump.**



**1.5 H.P. Air Pumps**

**3.5 and 8 H.P.  
Gas Pumps**



Part Sheet # 54395  
Revised: B-12-12

**SIMPLEX**

*The world's most complete line of industrial, hydraulic and mechanical lifting and positioning equipment.*

777 Oakmont Lane • Westmont, Illinois 60559 • (630) 590-6990 / Fax (630) 590-6955  
[www.tksimplex.com](http://www.tksimplex.com)

## SAFETY

### 1-1. Working Pressure

The pump's maximum **working pressure is 10,000 PSI (700 kg/cm<sup>2</sup>)**. **Make sure that all hydraulic equipment used with this pump are rated at 10,000 PSI operating pressure.**

### 1-2. Hydraulic Connections

**Never disconnect or connect any pressurized hydraulic hoses or fittings.** Shift, or open all hydraulic controls several times to assure that the system has been depressurized. If the system includes a gauge, double check the gauge to assure pressure has been released.

When making connections with quick disconnect couplings, **make sure the couplings are fully engaged.** Threaded connections such as fittings, gauges, etc. must be securely tightened and leak free.

CAUTION: Loose or improperly threaded fittings can be potentially dangerous if pressurized, however, severe over tightening can cause premature thread failure. Fittings need to be tightened secure & leak free. Never hold or stand directly in line with any hydraulic connections while pressurizing. Never grab, touch or in any way come in contact with a hydraulic pressure leak. Escaping oil can penetrate the skin and a serious injury can result.

**\*Do not subject the hose to potential hazard such as sharp surfaces, extreme heat or heavy impact. Do not allow the hose to kink & twist. Inspect each hose for wear before it is used.**

### 1-3. Electrical Power for Solenoid valves (normally 12 or 24 volts)

1. CHECK FOR PROPER ELECTRICAL SUPPLY BEFORE CONNECTING.

2. DO NOT OPERATE IN AN EXPLOSIVE ATMOSPHERE OR IN THE PRESENCE OF CONDUCTIVE LIQUIDS.

a. Do not use a power or extension cord that is damaged or has exposed wiring.

b. Solenoids come equipped with a three prong grounding type plug to fit the proper grounded type electrical outlet. Do not use a two prong ungrounded extension cord as the pump's motor must be grounded.

### 1-4. Jacking Safely

**You must know the weight** of what you intend to lift and choose a ram with at least 10% more capacity.

The ram should be placed on a **solid foundation** so that the **base of the ram is fully supported.** The load must be **centered on the ram, or equally distributed on multiple rams.** **Off center loading can result in the ram slipping out and loss of the load.**

**Never crawl or place any part of your body under any load at any time.** Insert **blocking or cribbing under the load as you lift.** Hydraulic rams are meant for lifting only and should not be used to support the load for any period of time.

You should obtain and be familiar with the American National Standards Institute rules that apply to hydraulic rams and jacks (ANSI B30.1).

## **INSTRUCTIONS BEFORE USE**

**Read carefully.** Most malfunctions in new equipment are the result of improper operation and/or improper set-up assembly.

Preparation: Remove pump from shipping container -- but do not remove any plugs or valves until the unit is ready to be fully assembled to prevent dirt or foreign matter from contaminating system.

Inspection: Visually inspect all components for shipping damage. If any damage is found, notify carrier immediately.

### 2-1. Electrical Connections: Solenoid valves only.

Air Connections for AIR POWER PUMPS: Use only clean, dry, well lubricated air.

#### Gasoline Motor Oil and Fuel:

1. Above 32 degrees Fahrenheit use S.A.E. 10 W 30 (Motor only )
2. Below 32 degrees Fahrenheit use S.A.E. 5 W 20 (Motor only )
3. Oil sump capacity - -About 1.3 pints or check dip stick
4. Use clean, unleaded automotive gasoline ( without alcohol )

### 2-2. Hydraulic Connections:

Check hydraulic **oil level** to prevent possible pump burnout. Open the red plastic fill plug located on reservoir plate. Oil level should be **approximately 2" from top of reservoir plate -- with cylinders retracted** and motor off. Add Simplex oil as necessary. **Do not mix different grades of oil, or types of oil.**

Make sure all desired gauge, valve, hose and quick coupler **connections are tight and secure** before operating (See Section 1.2). The pumps pressure ports are 3/8 NPTF and are located just below the control valve. (See Section 3-1).

The use of a **pressure gauge** is strongly recommended for normal operation of these pumps and **required when the external adjustable relief valve pressures are changed.** Mounted on a gauge adapter between the pump and cylinder, the gauge permits the operator to monitor loads on cylinders.

**Do not exceed rated capacity of equipment** connected to pump. Where shock loading or unsteady loads may cause overloading of cylinders, the operator must use larger capacity cylinders to provide additional operating margin.

### 2-3. Starting instructions ( Gasoline Motor )

- Hydraulic control valve in neutral ( center position ):
- Throttle to choke position ( extreme right ):
- Grasp STARTER HANDLE and pull rope out slowly to engagement:
- Pull rope with a rapid, continuous full stroke and let rewind slowly, and do not allow to snap back.
- Move the control lever to "HIGH SPEED" position then to "RUN" as the engine warms.

## **OPERATING INSTRUCTIONS AT A GLANCE**

### **Before Operating Pump:**

1. If your pump is equipped with a SIMPLEX SOLENOID be sure the electrical connection is grounded. Check that your power supply agrees with the requirements of the solenoid.
2. Use only cylinders, hoses and equipment rated at 10,000 PSI.
3. Make sure all hose and fitting connections are tight and secure. Hoses cannot be kinked or twisted.
4. Oil level should be 1 to 2" from the top of the reservoir plate, with cylinders retracted and motor off.
5. Never operate the pump with the directional control valve in advance or retract at 10,000 PSI without ram movement for more than 1 minute. Leaving the valve in the advance or retract position without the rams piston rod moving will overheat the oil.

### **After Completing the Job:**

1. Before disconnecting hoses, fittings, etc., first be sure the ram is retracted & unloaded, then unplug the power cord and shift the hydraulic controls several times to release system pressure.
2. Store the pump in a clean, dry area.

### **Periodic Maintenance:**

1. Completely change the hydraulic oil and clean the oil filter screen and magnet (located in the reservoir) twice a year. (Use Simplex oil only, Model # AO1, 1 gallon). Change the oil more frequently when used in extremely dusty areas or when the oil has been overheated. Using oil other than Simplex Brand voids the pumps warranty.
2. Contact an AUTHORIZED SIMPLEX SERVICE CENTER if there are any problems with the equipment.

## OPERATION

### 3-1. Control Valves:

#### a. 2-Way Valve for Single Acting Rams

To Advance.....turn lever to the right  
& start motor.

To Hold.....turn motor off.

To Retract.....turn lever to the left.

#### b. 3-Way Valve for Single Acting Rams

To Advance.....push lever to right.

For Neutral/Hold...place lever in middle.

To Retract.....push lever to left.

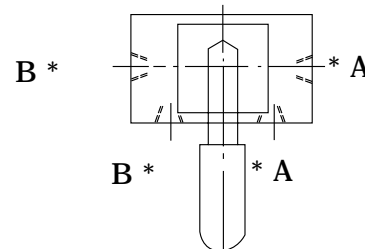
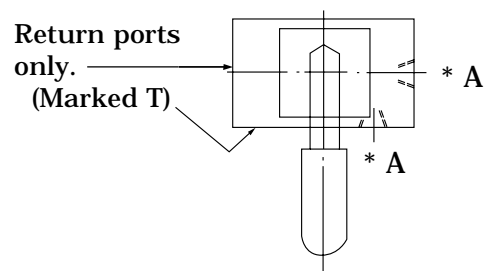
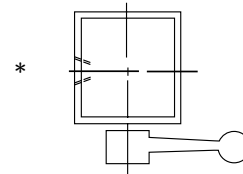
#### c. 4-Way Valve for Double Acting Rams

Pushing lever to right directs pump output  
to right-hand port.

Pushing lever to left directs pump output to  
left-hand port.

Center position is neutral/hold. Pump  
output is directed back to tank.

\* Useable 3/8 NPTF port



3-2.. Before starting pump, **place valve in Neutral/Hold position** (as described above) to prevent accidental lifting or moving of load. Start the pump and let the pump idle for a few minutes.

3-3. **Bleeding the Hydraulic System**--air can be removed from the system by fully advancing and retracting the hydraulic cylinder several times with the pump elevated so its reservoir is higher than the cylinder. Single-acting cylinder should be inverted, and double-acting on their side with the coupling fitting up. When the trapped air is removed from the hydraulic circuit, the cylinder will advance and retract smoothly. Sluggish cylinder action is usually the first sign of air in the system.

3-4. Move lever to Advance position (as described above) to activate ram or cylinder. To hold load, place lever into Neutral/Hold. Move lever to Retract position (as described above) to release load.

3-5. Never operate the pump at 10,000 PSI without ram movement for more than 1 minute without shifting the control valve to neutral. **Leaving the valve in the advance or retract position without the piston rod moving will overheat the oil.**

## MAINTENANCE

WARNING: THE ELECTRICAL POWER CORD MUST BE DISCONNECTED FROM ELECTRICAL OUTLETS BEFORE PERFORMING MAINTENANCE OR REPAIR PROCEDURES.

- 4-1. Maintain Oil Level -- check hydraulic oil level every 30 hours of operation. Add Simplex oil (Model # AO1 -- 1 gallon) when necessary. Oil level should be no more than 2" from top of reservoir plate -- with cylinders retracted and motor off.

Completely change oil at least twice a year. The following conditions require more frequent oil changes:

- a. Rigorous duty, where oil temperature may reach 140 F.
- b. High humidity environment and extreme changes in temperature that can result in condensation inside the reservoir.
- c. Dirty or dusty environments that may contaminate the oil.

- 4-2. Clean Oil Filter Screen Once a Year

- a. Loosen and remove reservoir plate bolts. Lift pump unit off the reservoir, being careful not to damage the gasket.
- b. Unscrew screen from bottom of pump unit and clean with nonflammable solvent.
- c. Blow dry and reassemble.

- 4-3. Keep areas around pump unobstructed to provide good air flow around the motor and pump. Keep the motor and pump as clean as possible.

- 4-4. Adjusting the External Relief Valve:

- a. Install gauge and gauge adapter between pump and cylinder.
- b. Remove cover to expose adjusting screw. Place valve lever in Neutral/Hold position and start motor. Move lever to direct pump output to pressure port (Advance).
- c. Insert allen wrench into adjusting screw in the hole on the lower left side of valve.
- d. Turn adjusting screw clockwise to increase, or counter clockwise to decrease pressure .  
(Do not exceed 10,000 PSI.)
- e. Check valve setting by shifting the valve to advance and retract cylinder several times. Maximum gauge reading should remain constant.

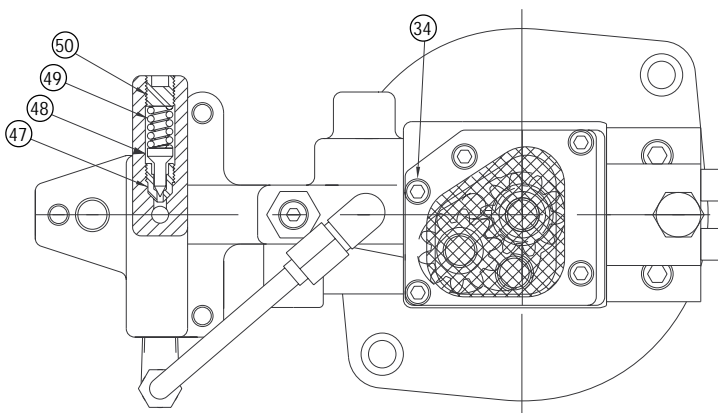
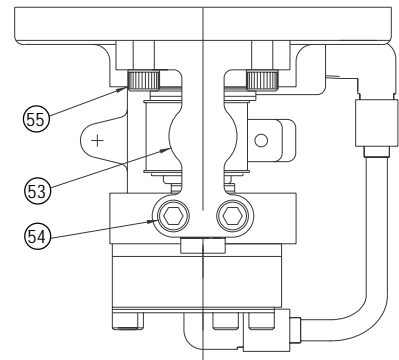
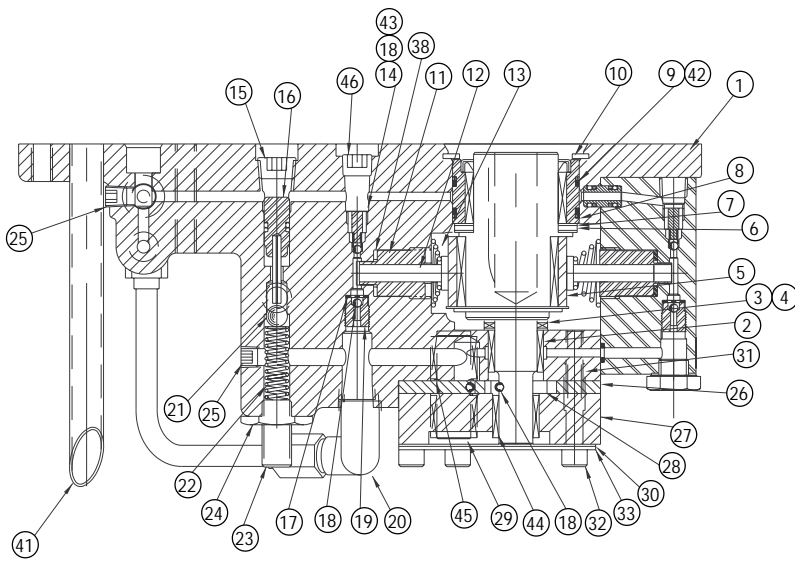
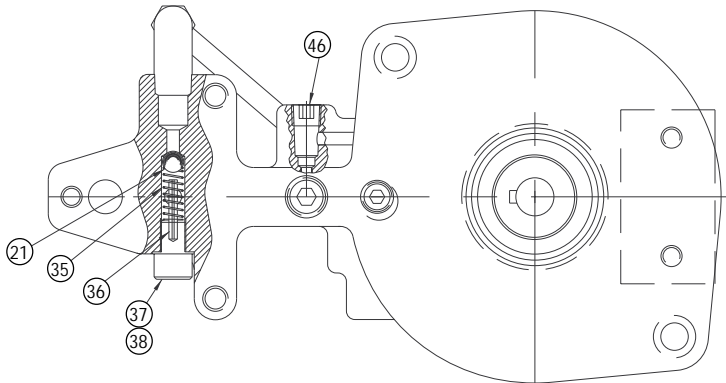
- 4-5. Flushing the Pump. If you suspect your pump has been contaminated or discover sludge or other deposits on internal components, you should thoroughly flush the pump.
- a. Remove the old oil from the reservoir, then thoroughly clean the reservoir and refill with a clean, nonflammable flushing oil.
  - b. Reassemble the pump and motor to the reservoir.
  - c. Now run the pump in no load condition for 1 or 2 minutes maximum.
  - d. Unplug the pump and remove the motor and pump assembly again. Now drain the flushing oil and reclean the inside of the reservoir. (Make sure flushing fluid is also drained from pump assembly). Refill the reservoir with Simplex hydraulic oil and reassemble the pump.

## TROUBLESHOOTING

If the procedures listed below do not remedy the problem -- the pump will require service and should be taken to an authorized Simplex service center for repair

| <u>Problem</u>                  | <u>Cause -- Solution</u>  |
|---------------------------------|---|
| Sporadic Cylinder Action        | <ol style="list-style-type: none"><li>1. Air in the hydraulic system. See Sec. 3-3 for correct bleeding procedure.</li><li>2. Check reservoir oil level.</li></ol>  |
| Motor Will Not Start            | Check manufacturer's operating instructions.  |
| Noisy Operation                 | <ol style="list-style-type: none"><li>1. Air in system. (See Sec. 3-3 for bleeding procedure).</li><li>2. Be sure the oil reservoir is filled to normal level.</li><li>3. Check all points where air might leak into system.</li></ol>  |
| Pump Oil is Over Heating        | <ol style="list-style-type: none"><li>1. Oil viscosity too high. Replace with Simplex #9.</li><li>2. Check for high pressure leakage on upper pressure plate. (Leaking at plug).</li><li>3. Oil level is low. Fill reservoir to normal level, or refit the pump with larger reservoir.</li><li>4. (See Section 3-5)</li></ol>   |
| Pump Runs but Will Not Pump Oil | <ol style="list-style-type: none"><li>1. Pump is not primed. Run pump a few minutes tipping from side to side.</li><li>2. Check to make sure that externally adjustable relief valve set properly. Check internal relief valve.</li><li>3. Damaged O-Rings. Take to nearest Simplex service center for repair.</li><li>4. Defective control valve. (Troubleshoot separately).</li></ol> |

**18948**  
**PUMP ASSEMBLIES 40 SERIES GAS PUMP**

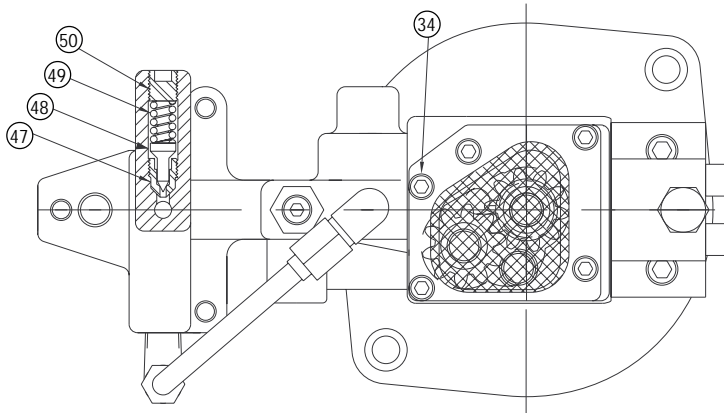
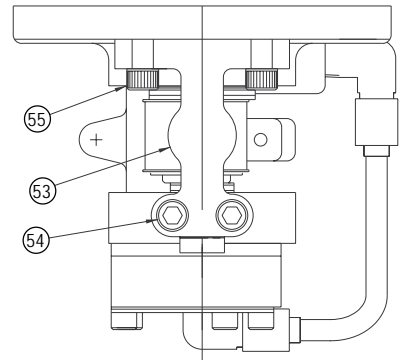
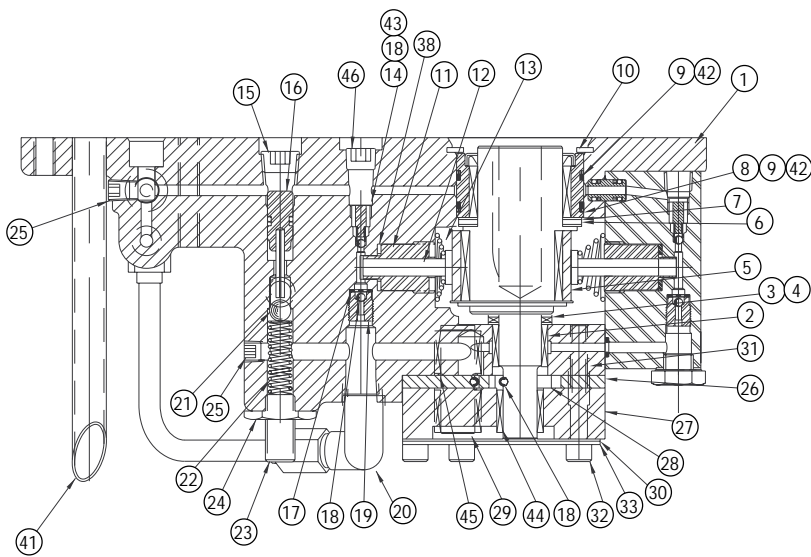
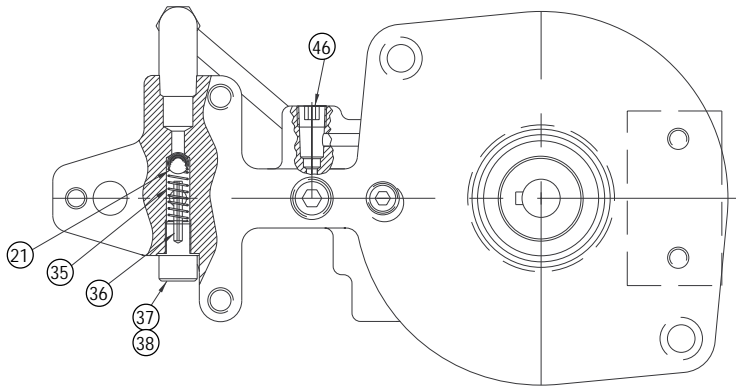




**18948**  
**PUMP ASSEMBLIES 40 SERIES GAS PUMP**

| ITEM | PART NO. | QTY. | DISCRIPTION              | ITEM | PART NO. | QTY. | DISCRIPTION         |
|------|----------|------|--------------------------|------|----------|------|---------------------|
| 1    | 68507    | 1    | 2 Piston Pump Body       | 45   | 68892    | 1    | Retaining Ring      |
| 2    | 68360    | 1    | Roller Bearing           | 46   | 81093    | 2    | Plpe Plug           |
| 3    | 66033    | 1    | Thrust Bearing           | 47   | 68004    | 1    | Ext. Relief Seat    |
| 4    | 66474    | 2    | Race Bearing             | 48   | 68003    | 1    | Ext. Relief Cone    |
| 5    | 68906    | 1    | Ecc. Shaft Assm.         | 49   | 66085    | 1    | Valve Relief Spring |
| 6    | 66106    | 1    | Thrust Bearing           | 50   | 66083    | 1    | Adjust Screw        |
| 7    | 66108    | 1    | Race Bearing             | 53   | 68502    | 1    | Piston Block Assm.  |
| 8    | 68829    | 1    | Adaptor Shaft Assm.      | 54   | 82892    | 2    | SHCS 5/16-24 X 2    |
| 9    | 56020322 | 2    | O-Ring                   | 55   | 82687    | 2    | Screw               |
| 10   | 68978    | 1    | Retaining Ring           |      |          |      |                     |
| 11   | 68945    | 1    | Adaptor Piston .225 Dia. |      |          |      |                     |
| 12   | 67868    | 1    | Piston .225 Dia          |      |          |      |                     |
| 13   | 68340    | 1    | Piston Spring            |      |          |      |                     |
| 14   | 68810    | 1    | Ball Stop                |      |          |      |                     |
| 15   | 93950    | 1    | 1/4 Socket Pipe Plug     |      |          |      |                     |
| 16   | 68535    | 1    | Piston Unloading Assm.   |      |          |      |                     |
| 17   | 66043    | 1    | Ball Retainer            |      |          |      |                     |
| 18   | 90906    | 5    | 803C-7D Ball Bearing     |      |          |      |                     |
| 19   | 66046    | 1    | Intake Seat              |      |          |      |                     |
| 20   | 68851    | 1    | Tube Assm.               |      |          |      |                     |
| 21   | 91701    | 2    | R102-10B Ball Bearing    |      |          |      |                     |
| 22   | 68981    | 1    | Spring                   |      |          |      |                     |
| 23   | 68242    | 1    | Set Screw                |      |          |      |                     |
| 24   | 68920    | 1    | Nut-Hex Jam              |      |          |      |                     |
| 25   | 97641    | 2    | Soc Pipe Plug Steel      |      |          |      |                     |
| 26   | 68848    | 1    | Center Plate .11         |      |          |      |                     |
| 27   | 68849    | 1    | Bottom Plate             |      |          |      |                     |
| 28   | 68883    | 2    | Gear Pump                |      |          |      |                     |
| 29   | 68850    | 1    | Shaft-Idler              |      |          |      |                     |
| 30   | 68921    | 1    | Screen                   |      |          |      |                     |
| 31   | 68894    | 2    | Guide Tube               |      |          |      |                     |
| 32   | 68255    | 4    | Screw                    |      |          |      |                     |
| 33   | 68927    | 1    | Plate-Screen Mount       |      |          |      |                     |
| 34   | 89148    | 1    | Screw                    |      |          |      |                     |
| 35   | 68225    | 1    | Spring                   |      |          |      |                     |
| 36   | 81332    | 1    | Roll Pin 1/8 x 15/16     |      |          |      |                     |
| 37   | 68226    | 1    | Ball Stop Screw          |      |          |      |                     |
| 38   | 85726    | 2    | Gasket                   |      |          |      |                     |
| 41   | 68569    | 1    | Return Tube              |      |          |      |                     |
| 42   | 69513    | 2    | Backup Washer            |      |          |      |                     |
| 43   | 66042    | 1    | Spring                   |      |          |      |                     |
| 44   | 68891    | 3    | Bearing                  |      |          |      |                     |

**18721  
PUMP ASSEMBLIES FOR 40 SERIES AIR PUMP**



- (56)
- (57)
- (58)

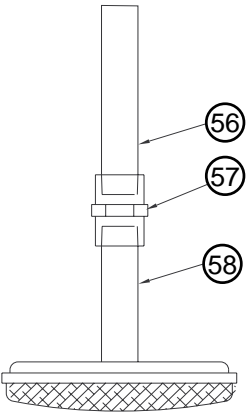
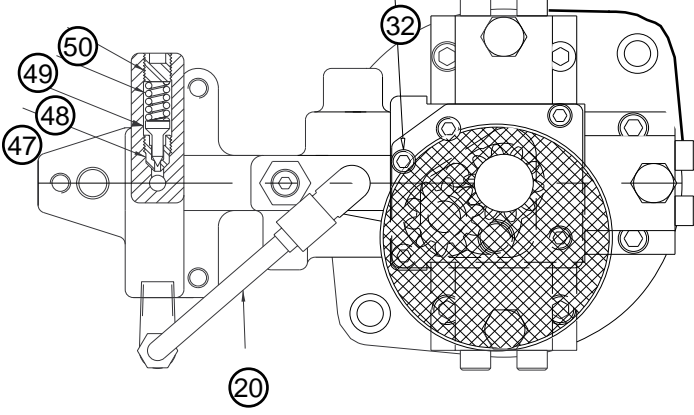
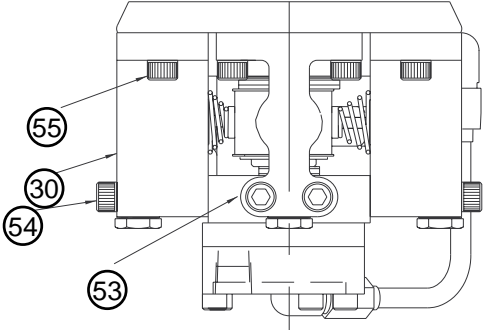
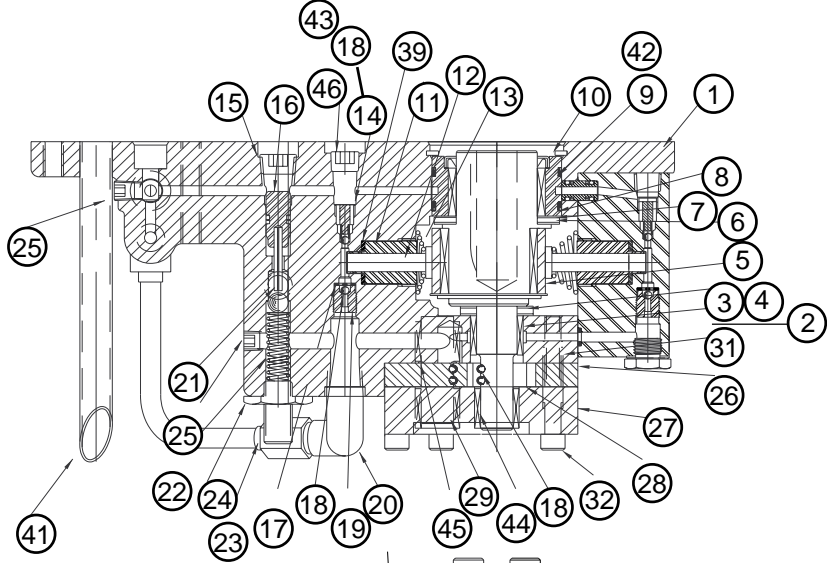
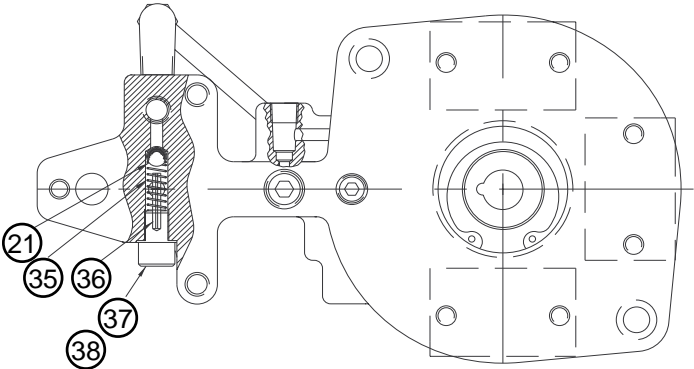
For 5 & 10 Gallon Reservoir.

**18721**  
**PUMP ASSEMBLIES FOR 40 SERIES AIR PUMP**

| ITEM | PART NO. | QTY. | DISCRIPTION              | ITEM | PART NO. | QTY. | DISCRIPTION         |
|------|----------|------|--------------------------|------|----------|------|---------------------|
| 1    | 68507    | 1    | 2 Piston Pump Body       | 45   | 68892    | 1    | Retaining Ring      |
| 2    | 68360    | 1    | Roller Bearing           | 46   | 81093    | 2    | Plpe Plug           |
| 3    | 66033    | 1    | Thrust Bearing           | 47   | 68004    | 1    | Ext. Relief Seat    |
| 4    | 66474    | 2    | Race Bearing             | 48   | 68003    | 1    | Ext. Relief Cone    |
| 5    | 69082    | 1    | Ecc. Shaft Assm.         | 49   | 66085    | 1    | Valve Relief Spring |
| 6    | 66106    | 1    | Thrust Bearing           | 50   | 66083    | 1    | Adjust Screw        |
| 7    | 66108    | 1    | Race Bearing             | 53   | 68832    | 1    | Piston Block Assm.  |
| 8    | 68829    | 1    | Adaptor Shaft Assm.      | 54   | 82892    | 2    | SHCS 5/16-24 X 2    |
| 9    | 56020322 | 2    | O-Ring                   | 55   | 82687    | 2    | Screw               |
| 10   | 68978    | 1    | Retaining Ring           | *56  | 88058    | 1    | Tube                |
| 11   | 68915    | 1    | Adaptor Piston .210 Dia. | *57  | 80240    | 1    | Coupling            |
| 12   | 68830    | 1    | Piston .210 Dia          | *58  | 68884    | 1    | Screen & Tube       |
| 13   | 68340    | 1    | Piston Spring            |      |          |      |                     |
| 14   | 68810    | 1    | Ball Stop                |      |          |      |                     |
| 15   | 93950    | 1    | 1/4 Socket Pipe Plug     |      |          |      |                     |
| 16   | 68535    | 1    | Piston Unloading Assm.   |      |          |      |                     |
| 17   | 66043    | 1    | Ball Retainer            |      |          |      |                     |
| 18   | 90906    | 5    | 803C-7D Ball Bearing     |      |          |      |                     |
| 19   | 66046    | 1    | Intake Seat              |      |          |      |                     |
| 20   | 68851    | 1    | Tube Assm.               |      |          |      |                     |
| 21   | 91701    | 2    | R102-10B Ball Bearing    |      |          |      |                     |
| 22   | 68981    | 1    | Spring                   |      |          |      |                     |
| 23   | 68242    | 1    | Set Screw                |      |          |      |                     |
| 24   | 68920    | 1    | Nut-Hex Jam              |      |          |      |                     |
| 25   | 97641    | 2    | Soc Pipe Plug Steel      |      |          |      |                     |
| 26   | 68848    | 1    | Center Plate .11         |      |          |      |                     |
| 27   | 68849    | 1    | Bottom Plate             |      |          |      |                     |
| 28   | 68883    | 2    | Gear Pump                |      |          |      |                     |
| 29   | 68850    | 1    | Shaft-Idler              |      |          |      |                     |
| 30   | 68921    | 1    | Screen                   |      |          |      |                     |
| 31   | 68894    | 2    | Guide Tube               |      |          |      |                     |
| 32   | 68255    | 4    | Screw                    |      |          |      |                     |
| 33   | 68927    | 1    | Plate-Screen Mount       |      |          |      |                     |
| 34   | 89148    | 1    | Screw                    |      |          |      |                     |
| 35   | 68225    | 1    | Spring                   |      |          |      |                     |
| 36   | 81332    | 1    | Roll Pin 1/8 x 15/16     |      |          |      |                     |
| 37   | 68226    | 1    | Ball Stop Screw          |      |          |      |                     |
| 38   | 85726    | 2    | Gasket                   |      |          |      |                     |
| 41   | 68569    | 1    | Return Tube              |      |          |      |                     |
| 42   | 69513    | 2    | Backup Washer            |      |          |      |                     |
| 43   | 66042    | 1    | Spring                   |      |          |      |                     |
| 44   | 68891    | 3    | Bearing                  |      |          |      |                     |

\* For 5 & 10 Gallon Reservoir Only.

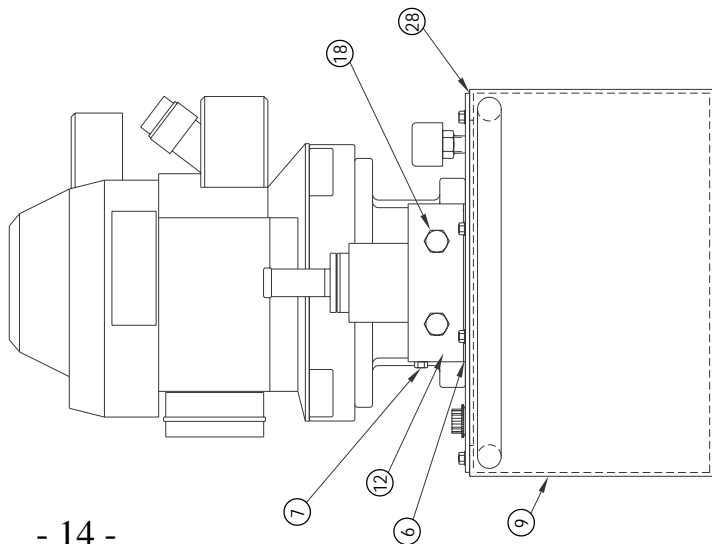
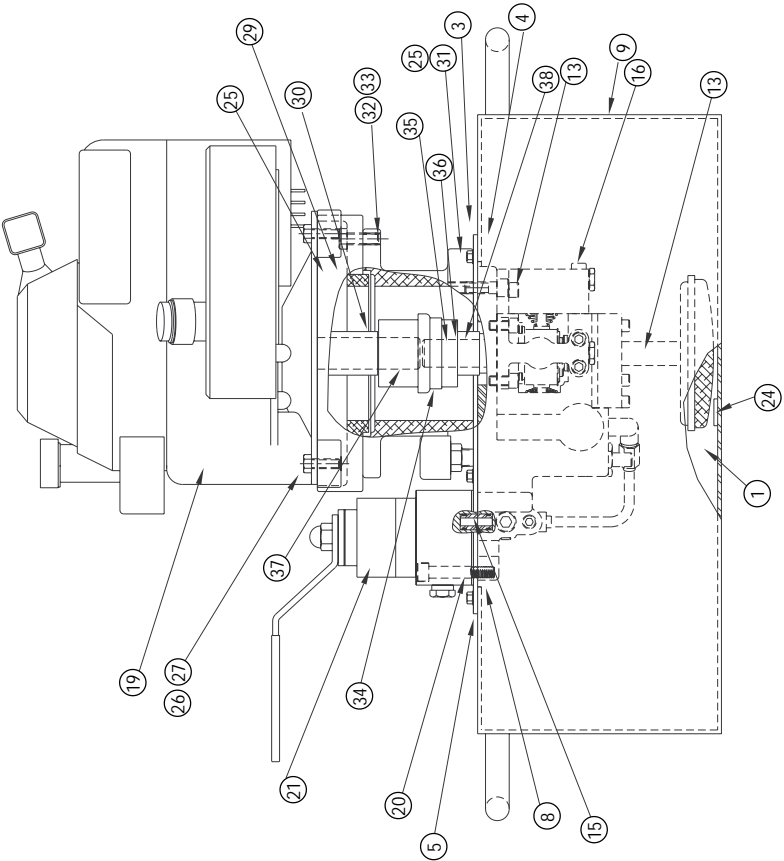
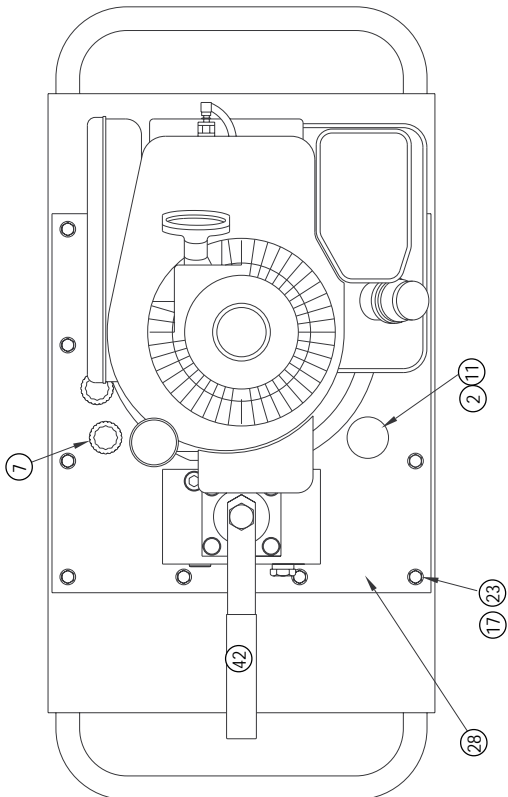
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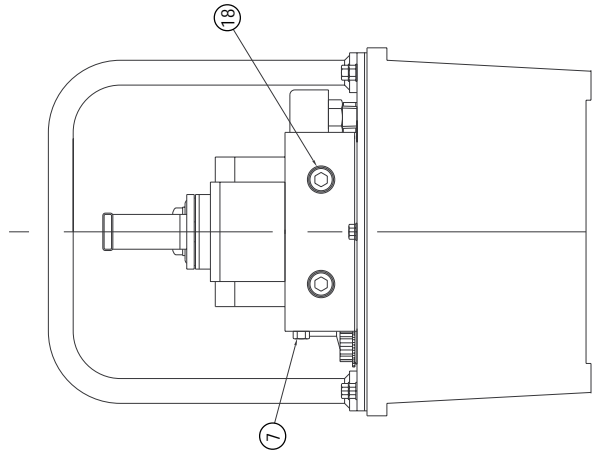
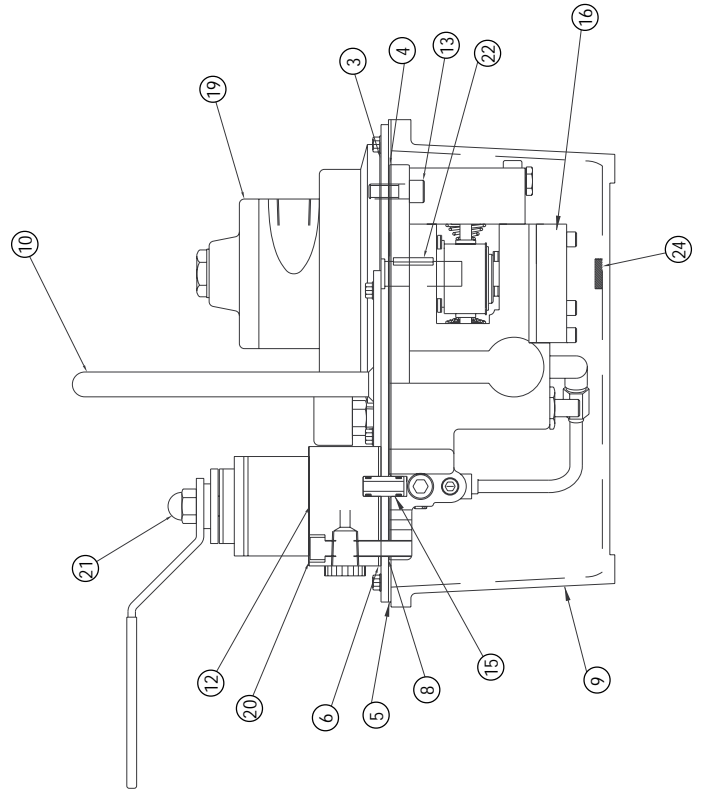
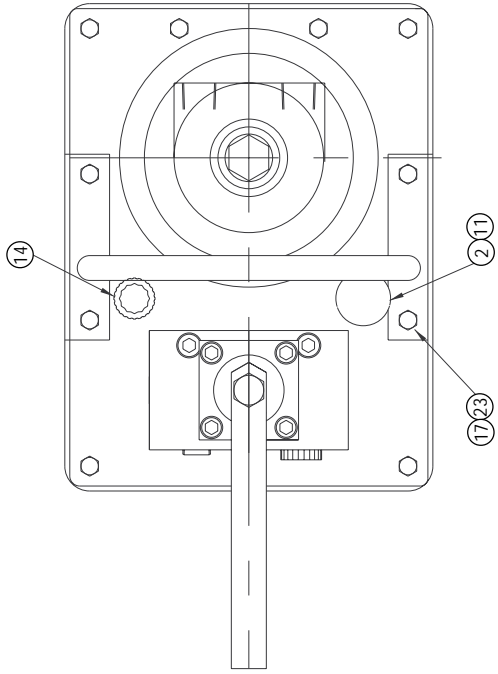
**# 69296**  
**8 HP Gasoline Motor**

| <b>Item #</b> | <b>Part #</b> | <b>Description</b>     | <b>Quantity</b> |
|---------------|---------------|------------------------|-----------------|
| 1             | 68529         | 4Piston Pump Body      | 1               |
| 2             | 68360         | Roller Bearing         | 1               |
| 3             | 66033         | Bearing                | 1               |
| 4             | 66474         | Bearing Race           | 2               |
| 5             | 68906         | Eccentric Asm.         | 1               |
| 6             | 66106         | Thrust Bearing         | 1               |
| 7             | 66108         | Bearing Race           | 2               |
| 8             | 68829         | Adapter Shaft Asm.     | 1               |
| 9             | 56020322      | O-Ring                 | 2               |
| 10            | 68978         | Retaining Ring         | 1               |
| 11            | 68915         | .210 Piston Adapter    | 1               |
| 12            | 68830         | Piston .210            | 1               |
| 13            | 68340         | Piston Spring          | 1               |
| 14            | 68810         | Ball Stop              | 1               |
| 15            | 93950         | Pipe Plug              | 1               |
| 16            | 68535         | Piston Unloading Asm.  | 1               |
| 17            | 66043         | Ball Retainer          | 1               |
| 18            | 90906         | Ball                   | 9               |
| 19            | 66046         | Intake Seat            | 1               |
| 20            | 68851         | Tube Asm.              | 1               |
| 21            | 91701         | Ball                   | 2               |
| 22            | 68981         | Unloading Valve Spring | 1               |
| 23            | 68242         | Set Screw              | 1               |
| 24            | 68920         | Hex Jam Nut            | 1               |
| 25            | 97641         | Socket Pipe Plug       | 2               |
| 26            | 68855         | Center Plate           | 1               |
| 27            | 68849         | Bottom Plate           | 1               |
| 28            | 68896         | Gear (Pump)            | 2               |
| 29            | 68850         | Idler Shaft            | 1               |
| 30            | 68898         | Piston Block Asm.      | 2               |
| 31            | 68922         | Guide Tube             | 2               |
| 32            | 68255         | Screw                  | 4               |
| 35            | 68225         | Spring                 | 1               |
| 36            | 81332         | Roll Pin               | 1               |
| 37            | 68226         | Ball Stop Screw        | 1               |
| 38            | 95726         | Gasket                 | 2               |
| 41            | 68569         | Return Tube            | 1               |
| 42            | 69513         | Back Up Washer         | 2               |
| 43            | 66042         | Spring                 | 1               |
| 44            | 68891         | Bearing                | 3               |
| 45            | 68892         | Retaining Ring         | 1               |
| 46            | 81093         | Pipe Plug              | 2               |
| 47            | 68004         | Seat - Relief          | 1               |
| 48            | 68003         | Cone - Relief          | 1               |
| 49            | 66085         | Spring - Relief        | 1               |
| 50            | 66083         | Adj. Screw             | 1               |
| 53            | 68832         | Piston Block Asm.      | 1               |
| 54            | 69392         | S.H. Cap Screw         | 6               |
| 55            | 82687         | S.H. Cap Screw         | 6               |
| 56            | 88058         | Tube / nipple          | 1               |
| 57            | 80240         | coupling               | 1               |
| 58            | 68884         | screen and tube        | 1               |

# GASOLINE POWER PUMPS



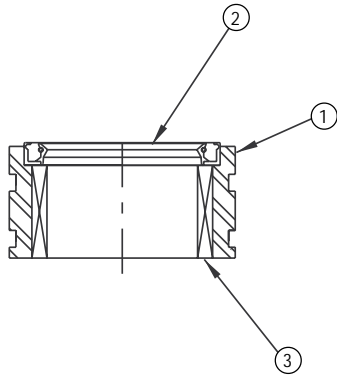
# 40 SERIES AIR POWER PUMPS





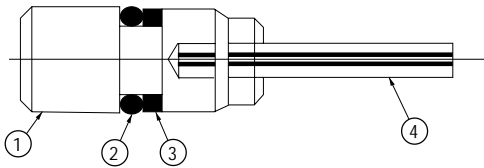


# PGM & PAM POWER PUMPS



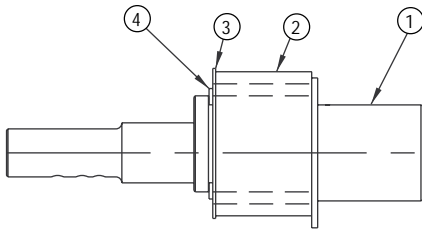
**Assembly #68829**

| Item | Part No. | Description   | Qty. |
|------|----------|---------------|------|
| 1    | 68219    | Adapter-Shaft | 1    |
| 2    | 66030    | Bearing       | 1    |
| 3    | 68901    | Seal          | 1    |



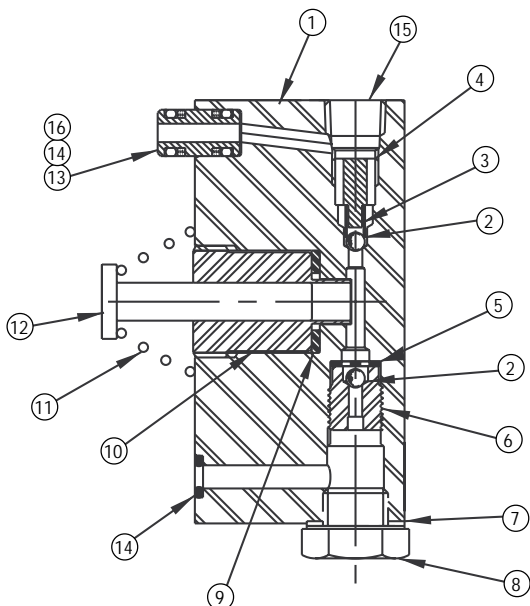
**Assembly #68535**

| Item | Part No. | Description  | Qty. |
|------|----------|--------------|------|
| 1    | 68209    | Piston       | 1    |
| 2    | 5602010  | O-Ring       | 1    |
| 3    | 68145    | Back-Up Ring | 1    |
| 4    | 93837    | Roll Pin     | 1    |



**Assembly #69082 - AIR  
Assembly #68906 - GAS**

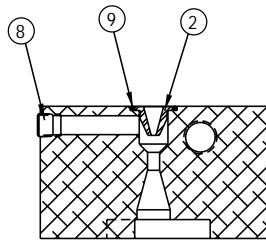
| Item | Part No. | Description           | Qty. |
|------|----------|-----------------------|------|
| 1    | 68859    | Shaft Ecc. - AIR      | 1    |
| 1    | 68907    | Shaft Ecc. - GAS      | 1    |
| 2    | 69081    | Ecc. Bearing Assembly | 1    |
| 3    | 66108    | Race Bearing          | 1    |
| 4    | 67863    | Retaining Ring        | 1    |



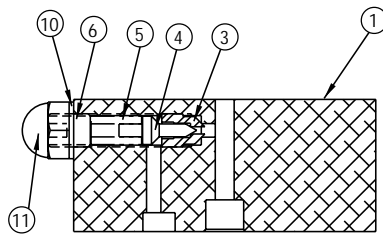
**Assembly #68832 & #68502**

| Item | Part No. | Part No. | Description       | Qty. |
|------|----------|----------|-------------------|------|
|      | 68832    | 68502    |                   |      |
| 1    | 68501    | 68501    | Piston Block      | 1    |
| 2    | 90906    | 90906    | Ball St 803C-7D   | 2    |
| 3    | 66042    | 66042    | Spring            | 1    |
| 4    | 68810    | 68810    | Ball Stop         | 1    |
| 5    | 66043    | 66043    | Ball Retainer     | 1    |
| 6    | 66046    | 66046    | Intake Seat       | 1    |
| 7    | 86269    | 86269    | Gasket            | 1    |
| 8    | 68825    | 68825    | Screw             | 1    |
| 9    | 85727    | 85727    | Gasket            | 1    |
| 10   | 68915    | 68945    | Adapter           | 1    |
| 11   | 68340    | 68340    | Spring Piston     | 1    |
| 12   | 68830    | 67868    | Piston (Pump)     | 1    |
| 13   | 68970    | 68970    | Adapter Assembly  | 1    |
| 14   | 5602008  | 5602008  | O-Ring            | 3    |
| 15   | 93949    | 93949    | SOC Pipe Plug 1/8 | 1    |
| 16   | 56080087 | 56080087 | Back-Up Ring      | 2    |

# 3 WAY & 4 WAY VALVE MANIFOLD



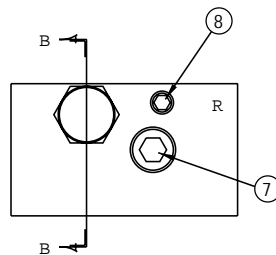
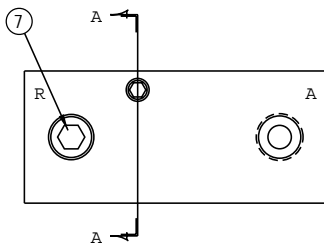
SECTION A-A



SECTION B-B

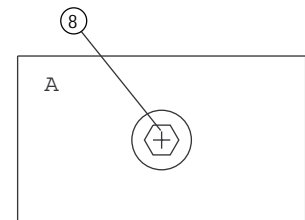
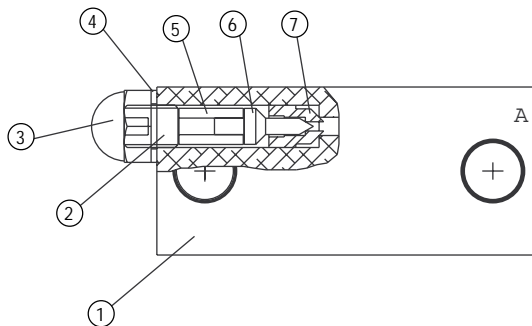
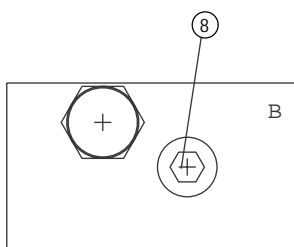
**Assembly #69570 3 Way Manifold**

| Item | Part No. | Description          | Qty. |
|------|----------|----------------------|------|
|      | 69570    |                      |      |
| 1    | 69569    | Ret. Valve Manifold  | 1    |
| 2    | 68197    | Nozzle-Valve         | 1    |
| 3    | 68004    | Seat-Ext. Relief     | 1    |
| 4    | 68003    | Cone-Ext. Relief     | 1    |
| 5    | 66085    | Spring Rel. Valve    | 1    |
| 6    | 69104    | Adjusting Screw      | 1    |
| 7    | 84084    | Flush SOC 3/8-18 PTF | 3    |
| 8    | 97641    | 1/16 SOC Pipe Plug   | 2    |
| 9    | 5602014  | O-Ring               | 1    |
| 10   | 69124    | Washer 7/16 Nylon    | 1    |
| 11   | 69105    | Acorn Nut            | 1    |

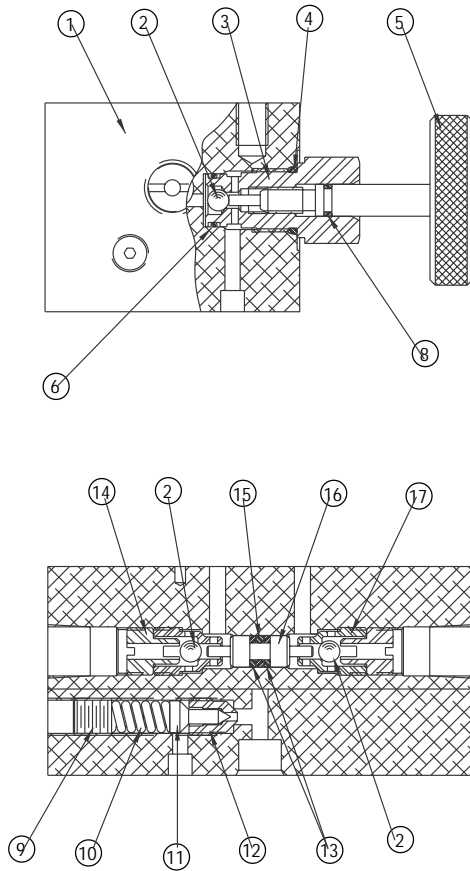


**Assembly #69100 4 Way Manifold**

| Item | Part No. | Description           | Qty. |
|------|----------|-----------------------|------|
|      | 69100    |                       |      |
| 1    | 69099    | 4 Way Valve Manifold  | 1    |
| 2    | 69104    | Adjusting Screw       | 1    |
| 3    | 69105    | Acorn Nut             | 1    |
| 4    | 69124    | Washer 7/16 Nylon     | 1    |
| 5    | 66085    | Spring Rel. Valve     | 1    |
| 6    | 68003    | Cone - Ext. Relief    | 1    |
| 7    | 68004    | Seat - Ext. Relief    | 1    |
| 8    | 84084    | Flush SOC 3/8-18 NPTF | 2    |

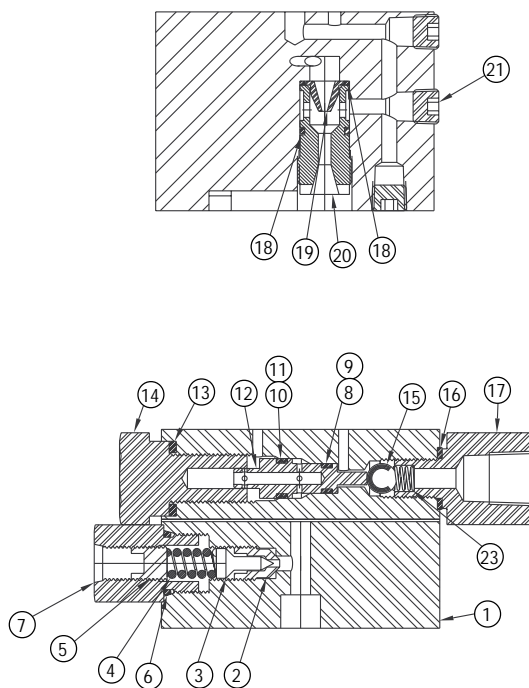


# 3 WAY & 4 WAY LOCKING VALVE MANIFOLD



**Assembly #68581 4 Way Lock Valve Manifold**

| Item | Part No. | Description          | Qty. |
|------|----------|----------------------|------|
| 1    | 68591    | Valve Body           | 1    |
| 2    | 92549    | Ball - 1/4           | 3    |
| 3    | 68637    | Release Gland        | 1    |
| 4    | 5602113  | O-Ring 2-113         | 1    |
| 5    | 89435    | Release Screw Assm.  | 1    |
| 6    | 56021115 | O-Ring 2-111         | 1    |
| 8    | 5602010  | O-Ring 2-010         | 1    |
| 9    | 66083    | Adjusting Screw      | 1    |
| 10   | 66085    | Relief Valve Spring  | 1    |
| 11   | 68003    | Relief Valve Cone    | 1    |
| 12   | 68004    | Relief Valve Seat    | 1    |
| 13   | 5608106  | Back-Up Washer 8-106 | 2    |
| 14   | 68589    | Ball retainer        | 2    |
| 15   | 5602106  | O-Ring 2-106         | 1    |
| 16   | 68636    | Spool                | 1    |
| 17   | 68590    | Ball Seat            | 2    |

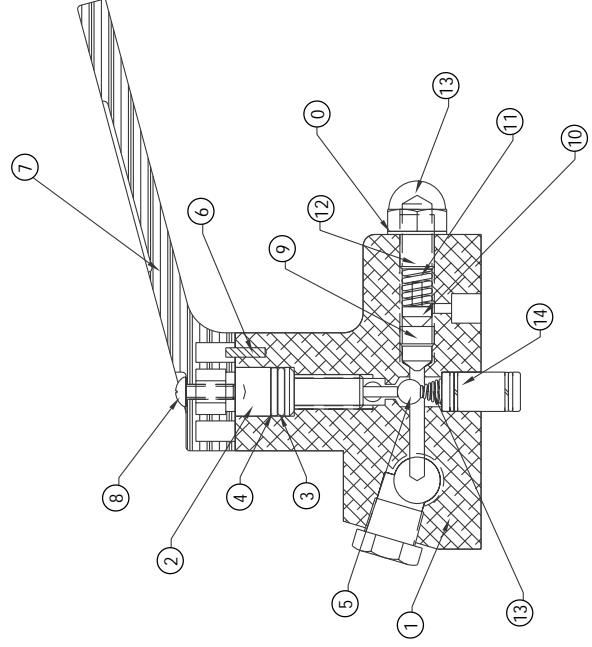
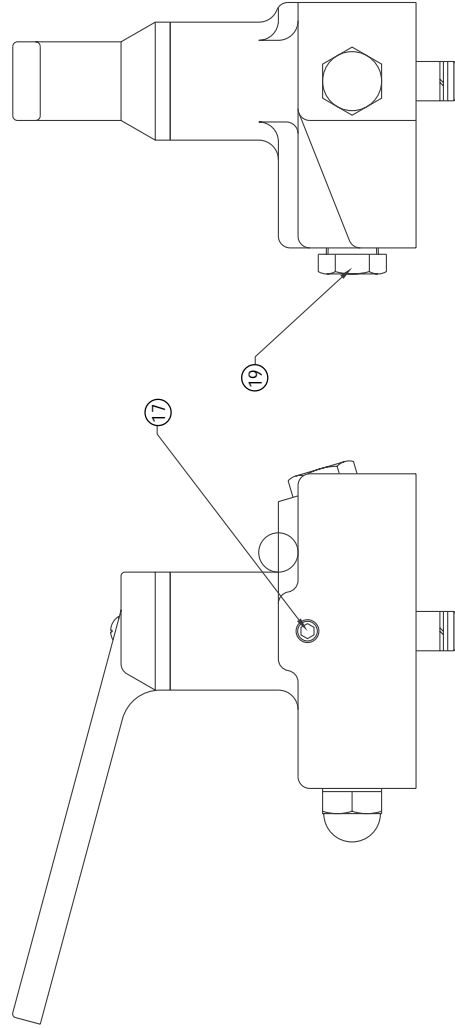
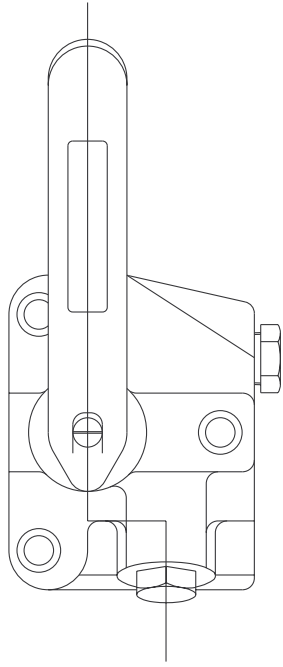


**Assembly #69077 3 Way Lock Valve Manifold**

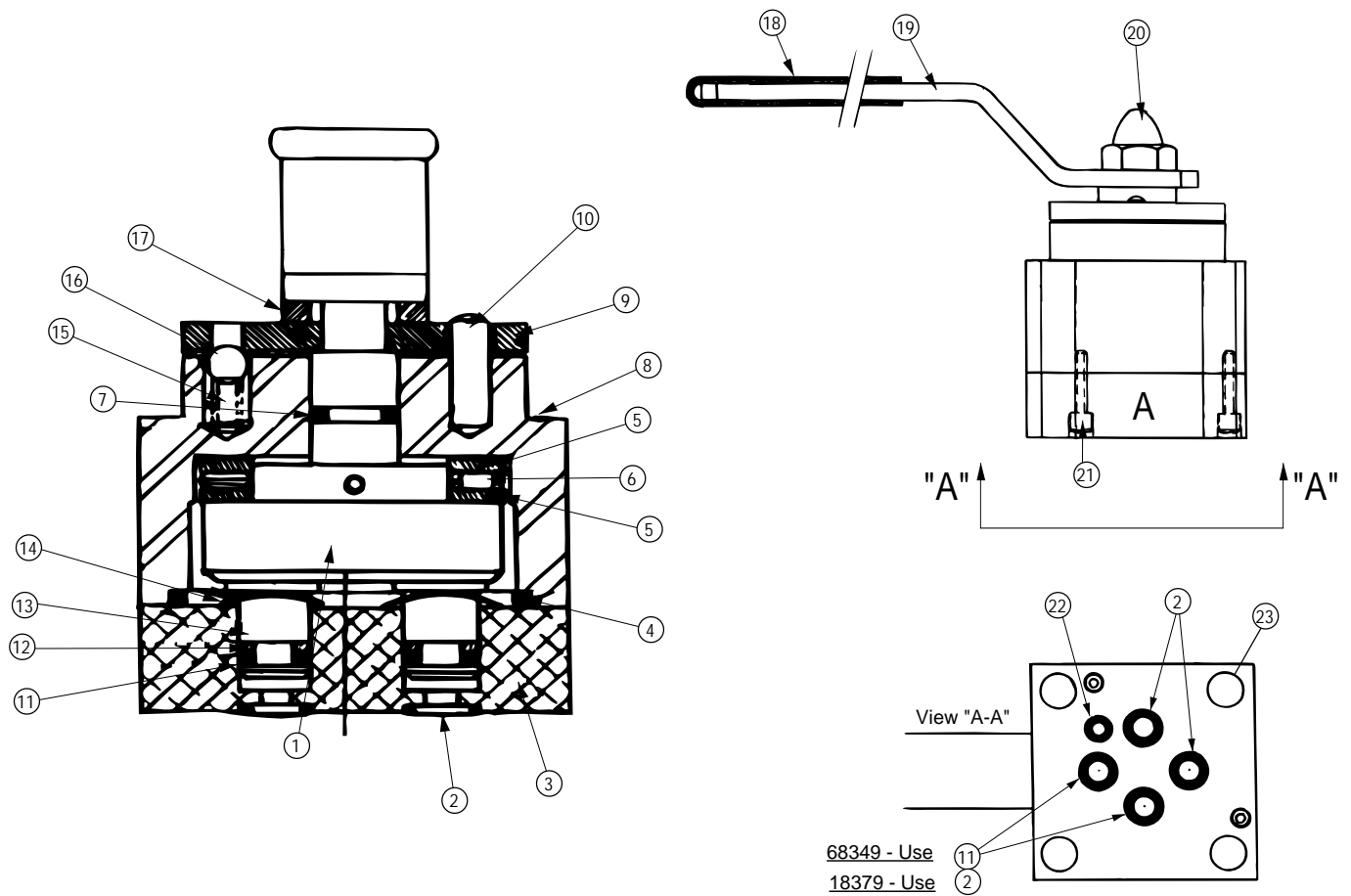
| Item | Part No. | Description           | Qty. |
|------|----------|-----------------------|------|
| 1    | 69112    | Valve Body Lock Valve | 1    |
| 2    | 68004    | Seat-External Relief  | 1    |
| 3    | 68003    | Cone-External Relief  | 1    |
| 4    | 66085    | Spring Release Valve  | 1    |
| 5    | 66083    | Adjustable Screw      | 1    |
| 6    | 5603908  | O-Ring                | 1    |
| 7    | 69113    | Retainer              | 1    |
| 8    | 5602010  | O-Ring                | 1    |
| 9    | 68145    | Back-Up Washer        | 1    |
| 10   | 5602012  | O-Ring                | 1    |
| 11   | 65881    | Back-Up Ring          | 1    |
| 12   | 68189    | Pilot-Spool           | 1    |
| 13   | 68183    | Gasket-Plug           | 1    |
| 14   | 68184    | Plug-Spool            | 1    |
| 15   | 92550    | 3HJ-23C Ball Bearing  | 1    |
| 16   | 68080    | Gasket Washer         | 1    |
| 17   | 68187    | Port Adapter          | 1    |
| 18   | 5602014  | O-Ring                | 2    |
| 19   | 68197    | Nozzle-Valve          | 1    |
| 20   | 69114    | Diffuser              | 1    |
| 21   | 81093    | Pipe Plug             | 3    |
| 22   | 97641    | Plug (Not Shown)      | 1    |
| 23   | 68188    | Compression Spring    | 1    |
| 24   | 5602008  | O-Ring                | 1    |

# 69094 2 WAY VALVE

| Item | Part No. | Description           | Qty. |
|------|----------|-----------------------|------|
| 1    | 69092    | 2 Way Valve Block     | 1    |
| 2    | 69095    | Valve Stem            | 1    |
| 3    | 5602111  | O-Ring                | 1    |
| 4    | 5608111  | Back-Up Washer 8-111  | 1    |
| 5    | 91701    | Ball 5/16 R102        | 1    |
| 6    | 93835    | Pin Roll 1/8 x 1/2 LG | 1    |
| 7    | 69091    | Valve Handle          | 1    |
| 8    | 85961    | Screw                 | 1    |
| 9    | 68004    | Seat-External Relief  | 1    |
| 10   | 68003    | Cone-External Relief  | 1    |
| 11   | 66085    | Spring Relief Valve   | 1    |
| 12   | 69104    | Adjusting Screw       | 1    |
| 13   | 5623007  | Spring                | 1    |
| 14   | 68963    | Adapter Assembly      | 1    |
| 17   | 40049    | 1/16 Pipe Plug Flush  | 1    |
| 18   | 69105    | Acorn Nut             | 1    |
| 19   | 87145    | Hex St. Pipe Plug     | 2    |
| 20   | 69124    | Washer 7/16 Nylon     | 1    |

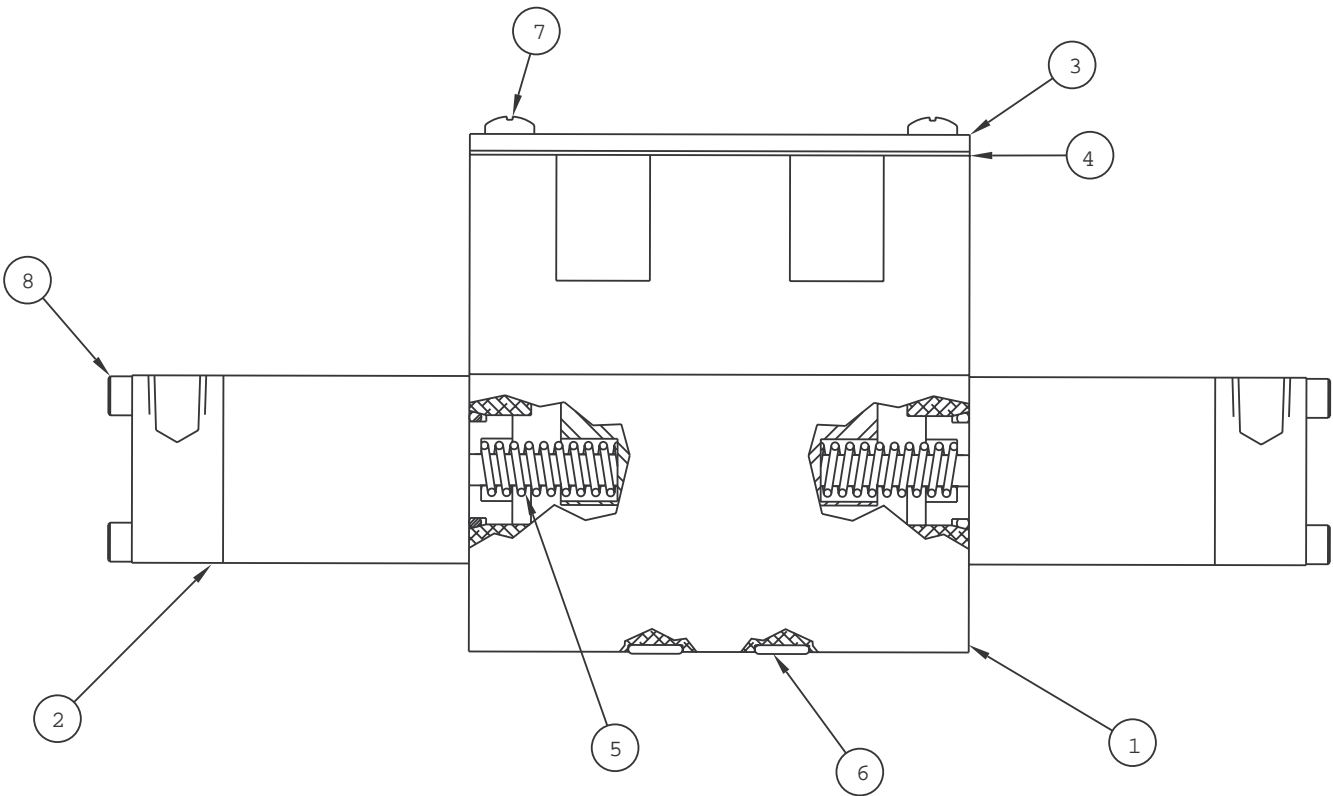


# 18379 VALVE ASSEMBLY 68349 RETRACTOR VALVE ASSEMBLY



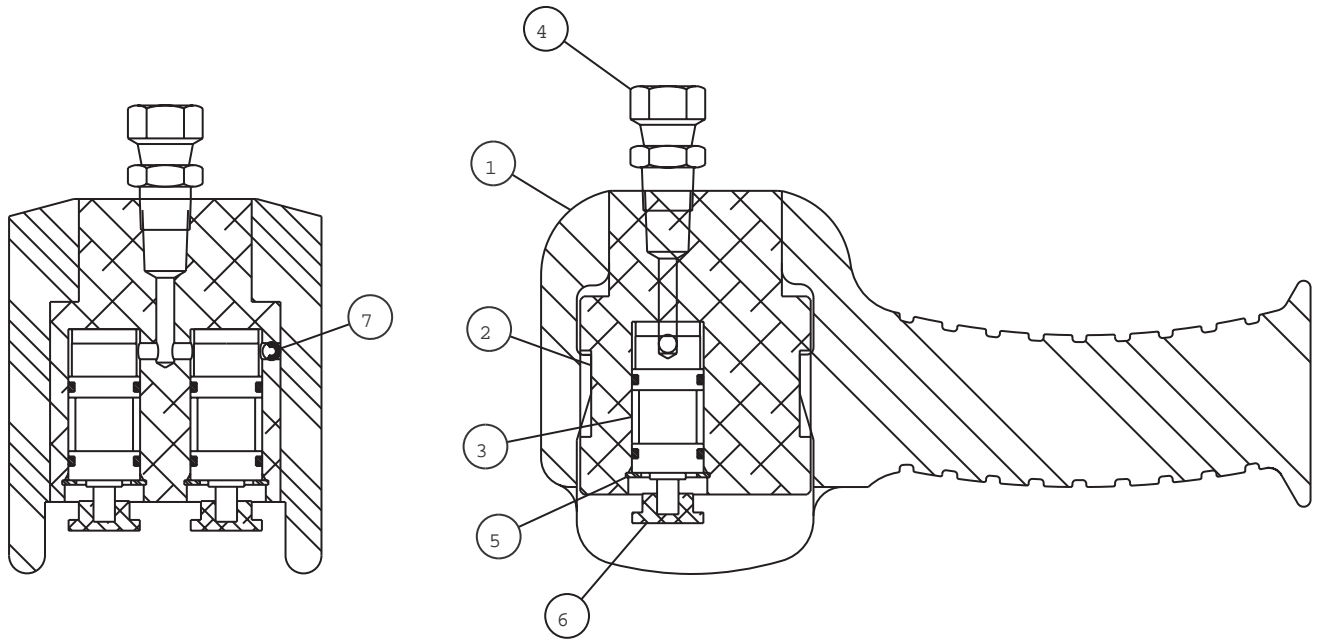
| ITEM | PART NO. | QTY.<br>18379 | QTY.<br>68349 | DESCRIPTION        |
|------|----------|---------------|---------------|--------------------|
| 1    | 68160    | 1             | 1             | Rotor Assembly     |
| 2    | 56020112 | 4             | 2             | O-Ring             |
| 3    | 68180    | 1             | 1             | Subplate-Valve.    |
| 4    | 5602225  | 1             | 1             | O-Ring             |
| 5    | 68026    | 2             | 2             | Thrust Washer      |
| 6    | 68155    | 1             | 1             | Thrust Bearing     |
| 7    | 5602012  | 1             | 1             | O-Ring             |
| 8    | 68035    | 1             | 1             | Upper Valve Blk.   |
| 9    | 68024    | 1             | 1             | Detent & Stop Plt. |
| 10   | 93804    | 1             | 1             | Driv-Lok Pin       |
| 11   | 5602011  | 3             | 6             | O-Ring             |
| 12   | 65882    | 3             | 4             | Back-up Washer     |
| 13   | 68181    | 3             | 4             | Shear Seal         |
| 14   | 68028    | 3             | 4             | Spring Washer      |
| 15   | 68025    | 1             | 1             | Detent Spring      |
| 16   | 92549    | 1             | 1             | Ball .250 Dia.     |
| 17   | 68032    | 1             | 1             | Washer-Handle      |
| 18   | 68157    | 1             | 1             | Flat Grip          |
| 19   | 68033    | 1             | 1             | Handle             |
| 20   | 68034    | 1             | 1             | Acorn Nut 1/2-20   |
| 21   | 85317    | 2             | 2             | Soc. Hd. Capscrew  |
| 22   | 5602008  | 1             | 1             | O-Ring             |
| 23   | 93598    | 4             | 4             | Valve Mounting     |

# 43022 VALVE AIR TORQUE OC



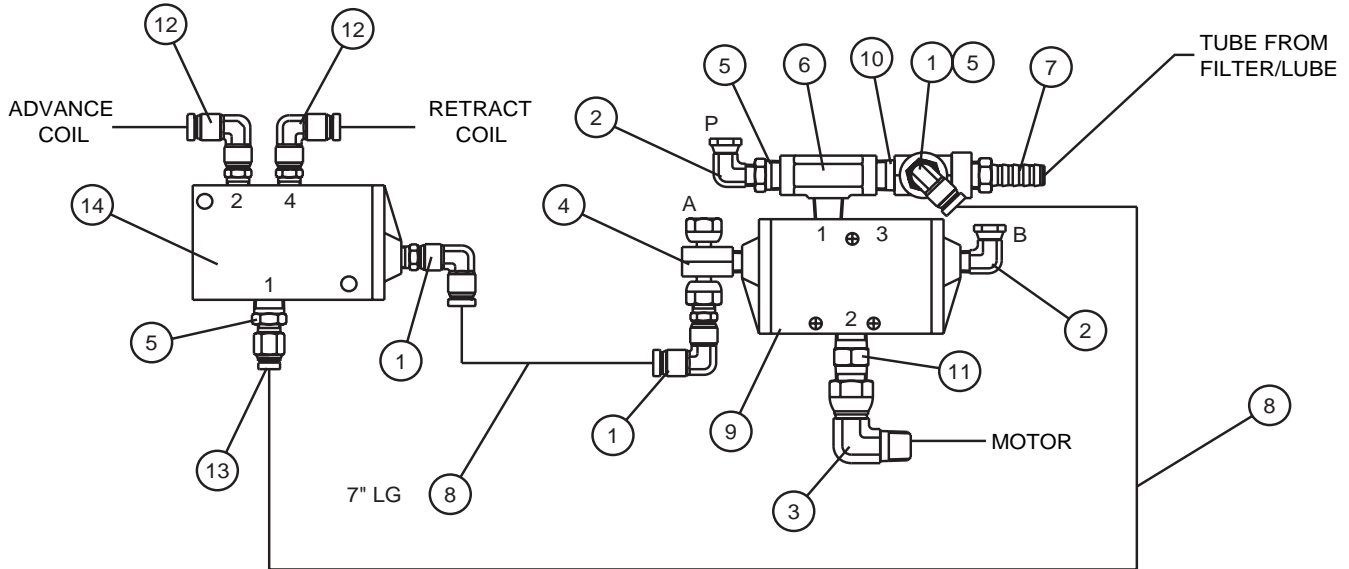
| ITEM | PART NO. | DESCRIPTION  | QTY |
|------|----------|--------------|-----|
| 1    | 68725    | VALVE ASSY.  | 1   |
| 2    | 41954    | AIR CYL ASSY | 2   |
| 3    | 68388    | COVER        | 1   |
| 4    | 68389    | GASKET       | 1   |
| 5    | 68711    | SPRING       | 2   |
| 6    | 56020112 | O'RING       | 4   |
| 7    | 43358    | SCREW        | 4   |
| 8    | 43359    | SCREW        | 8   |

# 41950 MOTOR PENDANT AIR ASSEMBLY



| ITEM | PART NO. | DESCRIPTION       | QTY |
|------|----------|-------------------|-----|
| 1    | 41968    | BODY-PENDANT      | 1   |
| 2    | 41969    | BLOCK-AIR PENDANT | 1   |
| 3    | 41963    | CARTRIDGE-AIR     | 2   |
| 4    | 41964    | SWIVEL FITTING    | 3   |
| 5    | 68808    | RETAINING RING    | 2   |
| 6    | 41970    | CARTRIDGE-CAP     | 2   |
| 7    | 6069613  | SAFETY VAL BALL   | 3   |

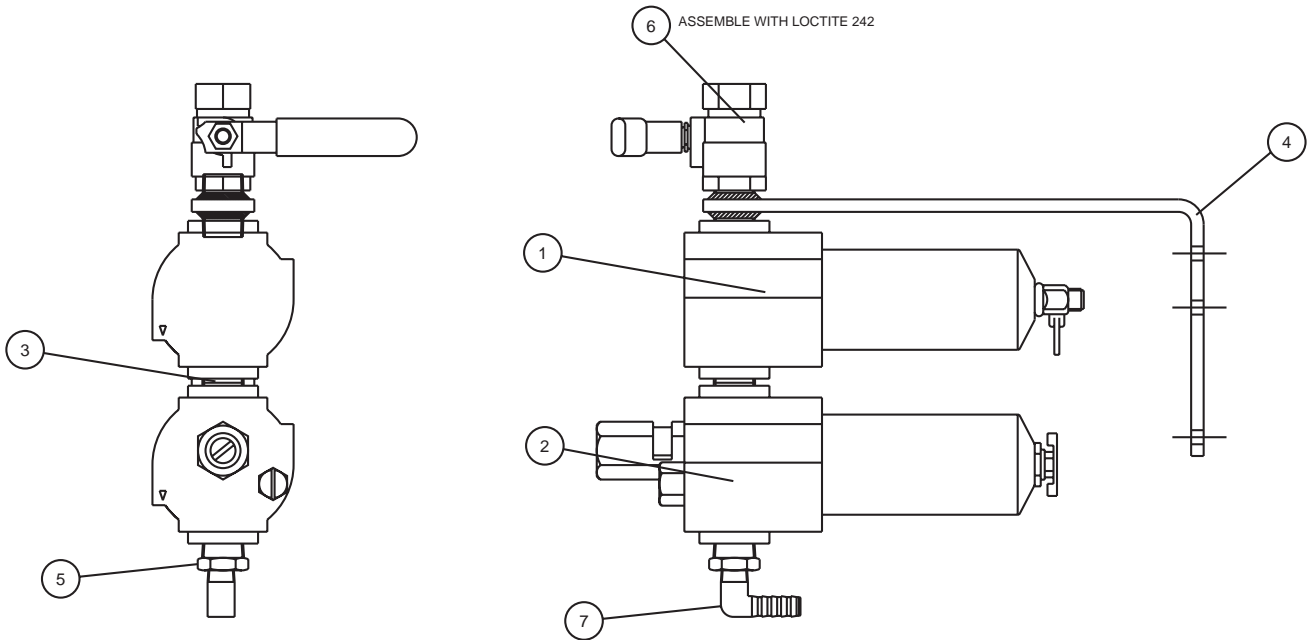
# AIR VALVE ASSEMBLY



| ITEM | PART NO. | DESCRIPTION         | QTY |
|------|----------|---------------------|-----|
| 1    | 69362    | SWIVEL NUT ELBOW    | 5   |
| 2    | 42380    | SWIVEL ADP 1/8 90   | 2   |
| 3    | 86872    | SWIVEL ELBOW 1/4    | 1   |
| 4    | 42968    | SWIVEL TEE 1/8      | 1   |
| 5    | 42667    | REDUCER             | 3   |
| 6    | 42668    | BRANCH TEE          | 1   |
| 7    | 69547    | HOSE BARB           | 1   |
| 8    | 69361    | NYLON TUBING        | 2   |
| 9    | 43514    | AIR VALVE 3W / 2POS | 1   |
| 10   | 69852    | MALE RUN TEE        | 1   |
| 11   | 4100067  | NIPPLE              | 1   |
| 12   | 68794    | MALE ELBOW TUBE     | 2   |
| 13   | 68797    | MALE CONNECT TUBE   | 1   |
| 14   | 43515    | AIR VALVE 4W / 2POS | 1   |

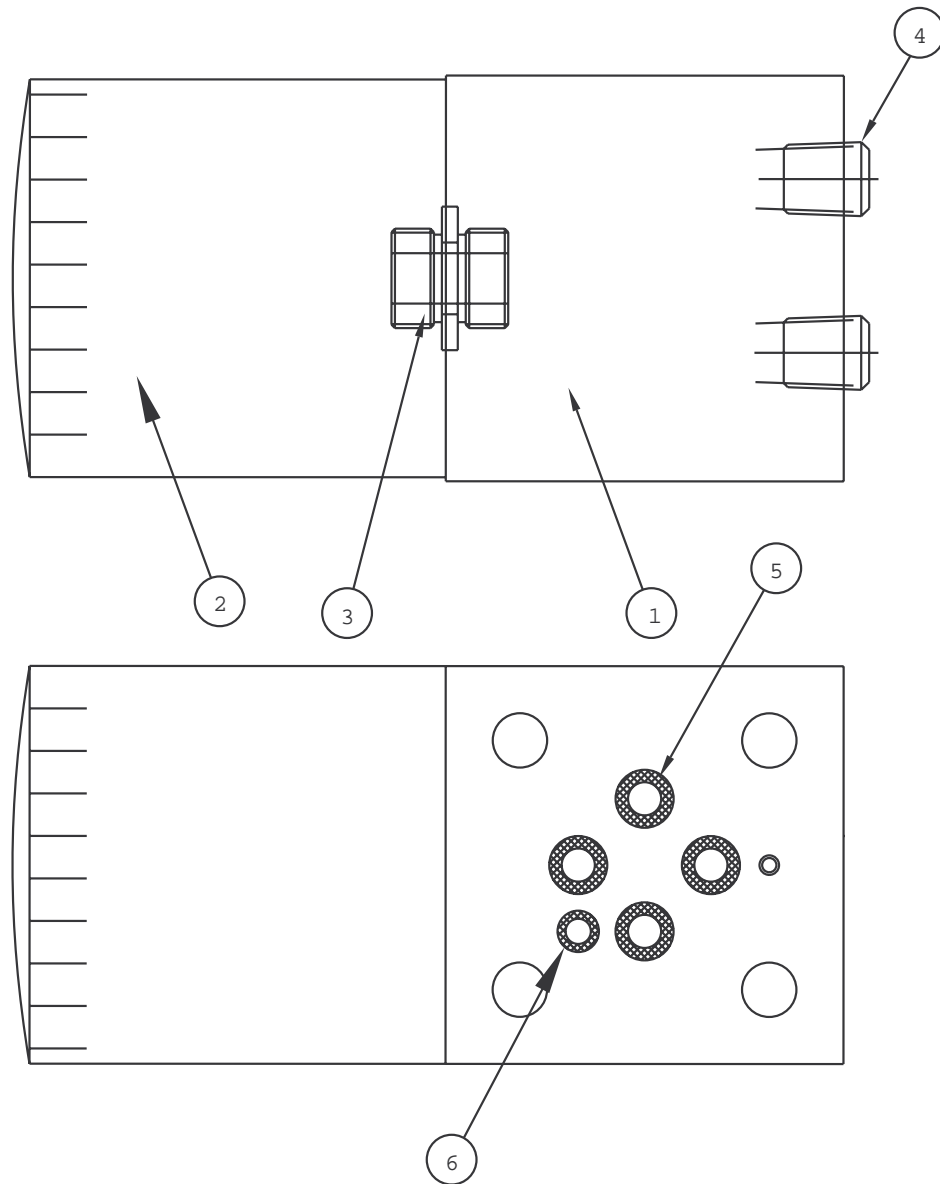


# 68790 FILTER / LUBE ASSEMBLY



| ITEM | PART NO. | DESCRIPTION     | QTY |
|------|----------|-----------------|-----|
| 1    | 86241    | AIR FILTER      | 1   |
| 2    | 86242    | AIR LUBRICATOR  | 1   |
| 3    | 87320    | PIPE NIPPLE     | 1   |
| 4    | 68791    | BRACKET WELD'M  | 1   |
| 5    | 69936    | REDUCER         | 1   |
| 6    | 85851    | AIR VALVE       | 1   |
| 7    | 68798    | HOSE BARB ELBOW | 1   |

# 69470 FILTER BLOCK ASSEMBLY



| ITEM | PART NO. | DESCRIPTION    | QTY |
|------|----------|----------------|-----|
| 1    | 69546    | FILTER BLOCK   | 1   |
| 2    | 69670    | OIL FILTER     | 1   |
| 3    | 69144    | ADAPTER-FILTER | 1   |
| 4    | 93950    | PIPE PLUG 1/4  | 2   |
| 5    | 56020112 | O'RING         | 4   |
| 6    | 5602008  | O'RING         | 1   |