



Part# 1007495-01  
1/13/2016

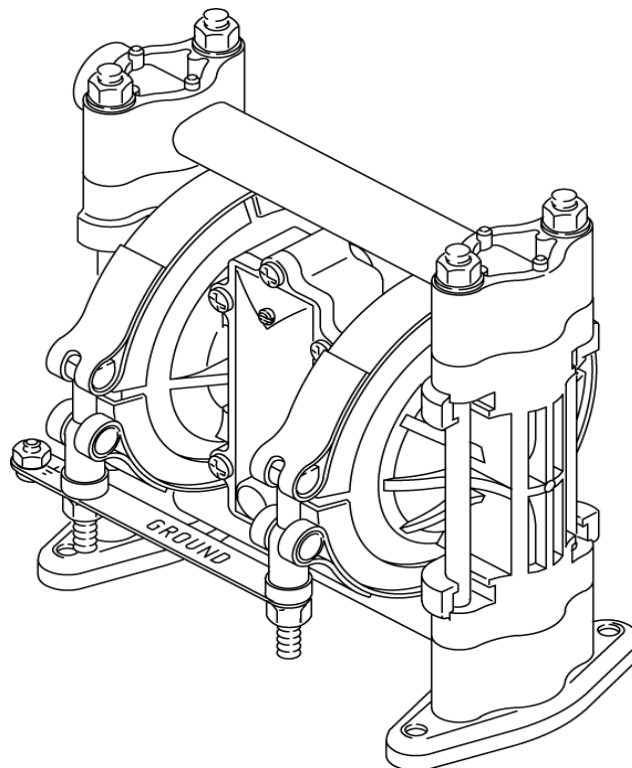
## 338-KIT-01

### OWNERS MANUAL



This manual contains important information concerning the installation and operation of the gun washers listed above. **Read manual thoroughly and keep for future reference.**

INSTRUCTIONS



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## Replacement Kit Information

### Parts bag contents

Ref #	Description	Qty.	Unit
401	Diaphragm	2	ea.
108	O-Ring	8	ea.
201	Seat	4	ea.
301	Ball	4	ea.
202	Ball Guide	4	ea.
	Lubricant Tube	1	ea.
1007495	Installation Manual	1	ea.

# Ball Check Valves

## Replacing Ball Check Valves

Tools Required:            Torque Wrench  
                                   1/2" (13mm) Socket Wrench  
                                   O-Ring Pick

- 1) **Relieve the pressure.** Disconnect all hoses. Remove the pump from its mounting.
- 2) Using a 1/2" socket wrench, remove the nuts (106) holding the top manifold (102) to the covers (101). Lift the manifold off the pump. See Fig. 1.
- 3) Remove the outer o-ring (108), ball guide (202), ball (301), seat (201), and inner o-ring (108) from each of the covers.
- 4) Turn the pump over. Pull the tie rods (104) out of the pump, leaving the four nuts (106) on the rods. Remove the feet (107) and lower manifold (102).
- 5) Remove the outer o-ring (108), seat (201), ball (301), ball guide (202), and inner o-ring (108) from each of the covers (101).
- 6) Clean all parts and inspect for wear or damage. Replace parts as needed.
- 7) Reassemble the intake ball checks in the bottom of the pump, following all notes in Fig. 1. Be sure the ball checks are assembled exactly as shown.
- 8) Set the lower manifold (102) and feet (107) in place on the bottom of the pump.
- 9) Insert the long threads of each rod (104) through the feet and lower manifold. Push the rods up through the covers (101) until the nut (106) on the end of the rods bottoms on the foot. Make sure the rods are pushed all the way through. Turn the pump upright (the rods are a slight interference fit and will hold the pump parts securely in place).
- 10) Reassemble the outlet ball checks in the top of the pump, following all notes in Fig. 1. Be sure the ball checks are assembled exactly as shown. To avoid leaks, run your finger over the o-rings (108) to ensure that they are properly seated.
- 11) Install the top manifold (102) and four nuts (106). Torque to 50 to 60 in-lb (5.6 to 6.8 Nm). **Do not over-torque.** See **Torque Sequence**, page 6.

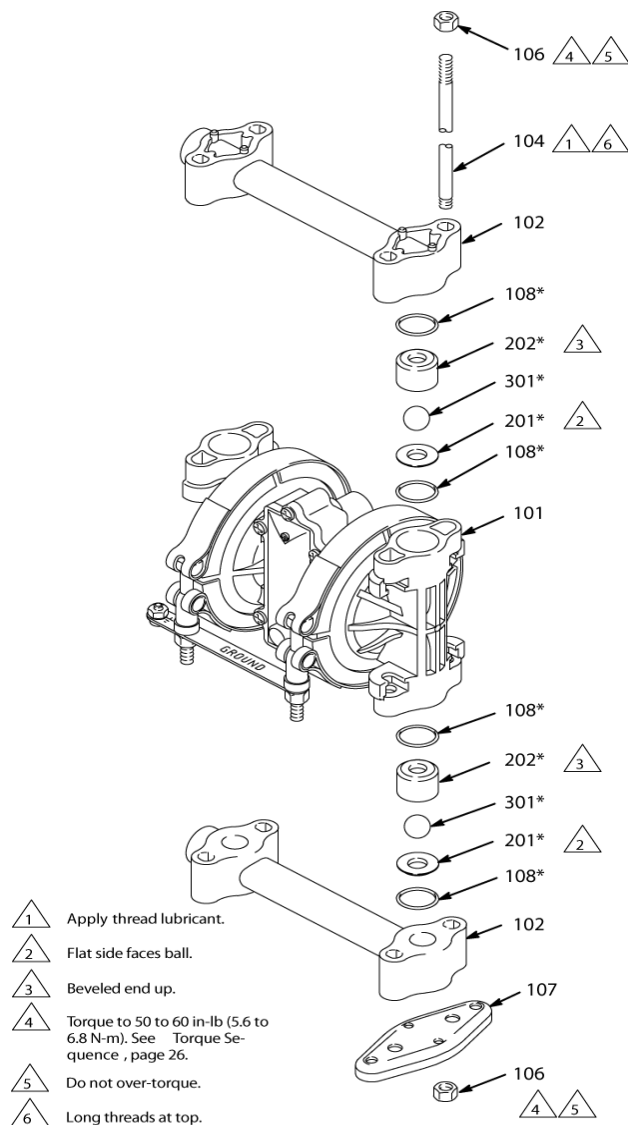


fig.1

# Diaphragm

## Replacing Diaphragm

Tools Required:

- Torque Wrench
- Qty. (1) 7/16" (11mm) Socket Wrench
- Qty. (2) 1/2" (13mm) Socket Wrench
- O-Ring Pick
- Phillips Screwdriver
- 13/32" EZY-OUT Bearing Extractor
- Rubber Mallet
- Vise with soft jaws

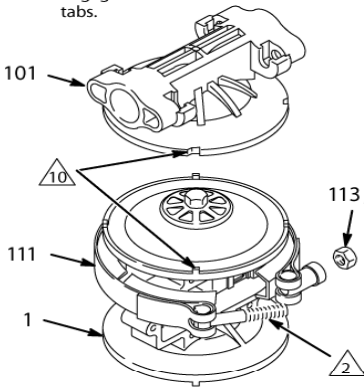
### Disassembly

- 1) **Relieve the pressure.** Disconnect all hoses. Remove the pump from its mounting.
- 2) Remove the air valve from the pump.
- 3) Remove the manifolds (102) and disassemble the ball check valves as explained on page 3. Always replace the o-rings (108) with new ones.
- 4) Using a 7/16" socket wrench, remove the clamp nuts (113) and the grounding strip (112). Loosen the clamps (111) and slip them over the housing (1). Pull the covers (101) off the pump, then remove the clamps from the housing. See the Detail in Fig. 2.
- 5) Using a 1/2" socket wrench on both outer diaphragm plates (103), unscrew one plate from the diaphragm shaft (23). Remove one diaphragm (401), inner diaphragm plate (118), and o-ring (404). Pull the opposite diaphragm assembly and the diaphragm shaft out of the pump housing (1). See Fig. 2. Clamp the shaft in a vise with soft jaws and unscrew the outer plate (103), then disassemble the remaining diaphragm assembly.
- 6) Inspect the diaphragm shaft (23) for wear or scratches. If it is damaged, check the bearings (31) also. Replace parts as needed. To remove the bearings, place a 13/32 EZY-OUT in a vise. Position the pump housing (1) over the EZY-OUT (see Fig. 2). Turn the housing in the direction shown by the arrows to remove the bearing.
- 7) Hook the shaft seals (30) with an o-ring pick and pull them out of the housing (1).
- 8) Clean all parts and inspect for wear or damage. Replace parts as needed.

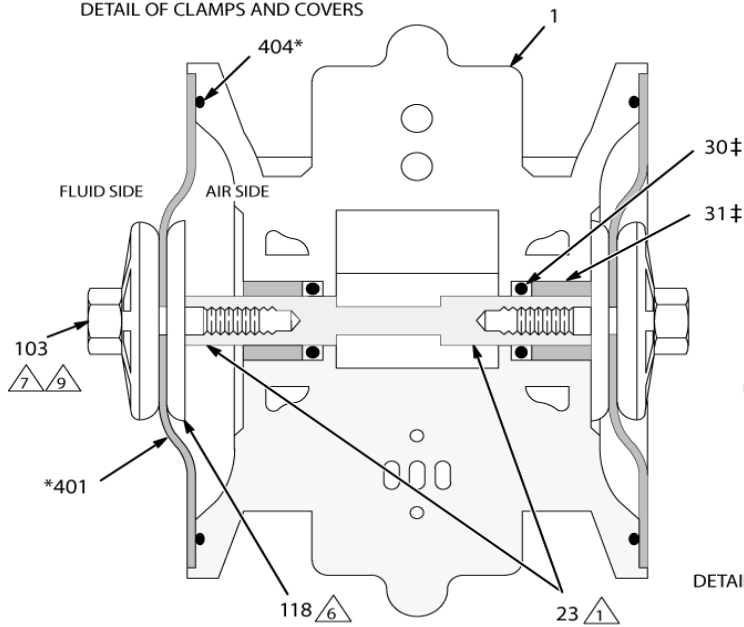
### Reassembly

- 1) Install the shaft seals (30) in the housing (1). Using a rubber mallet, carefully drive the bearings (31) flush into the housing so the holes face out. See Fig. 2.
- 2) Grease the diaphragm shaft (23) and slide it into the housing (1). Install the o-rings (404) in the grooves of the housing.
- 3) Assemble the inner diaphragm plates (118), diaphragms (401), and outer diaphragm plates (103) as shown in Fig. 2. Apply medium-strength (blue) Loctite® or equivalent to the threads of the fluidside plates (103), and torque the plates to 75 to 85 in-lb (8.5 to 9.6 Nm) at 100 rpm maximum using a 1/2" socket wrench. Do not over-torque. These parts must be assembled correctly.
- 4) When installing the covers (101), slip the clamps (111) over the housing (1) before positioning the covers. See the Detail in Fig. 2. Engage the notches in the covers with the locator tabs on the housing, then position the clamps over both parts. The clamp bolts should be on the air valve side of the housing, and pointing down toward the bottom of the pump. Install the grounding strip on the bolts. Apply thread lubricant to the bolts, then install the clamp nuts (113). Using a 7/16" socket wrench, torque the nuts to 50 to 60 in-lb (5.6 to 6.8 Nm). See **Torque Sequence**, page 6.
- 5) Reassemble the ball check valves and manifolds as explained on page 3. Always install new o-rings (108), and make sure they are properly seated.
- 6) Reinstall the air valve, using the six mounting screws (15). See Fig. 2.

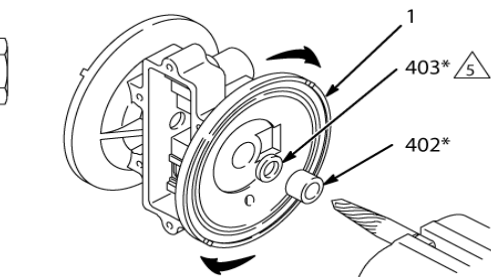
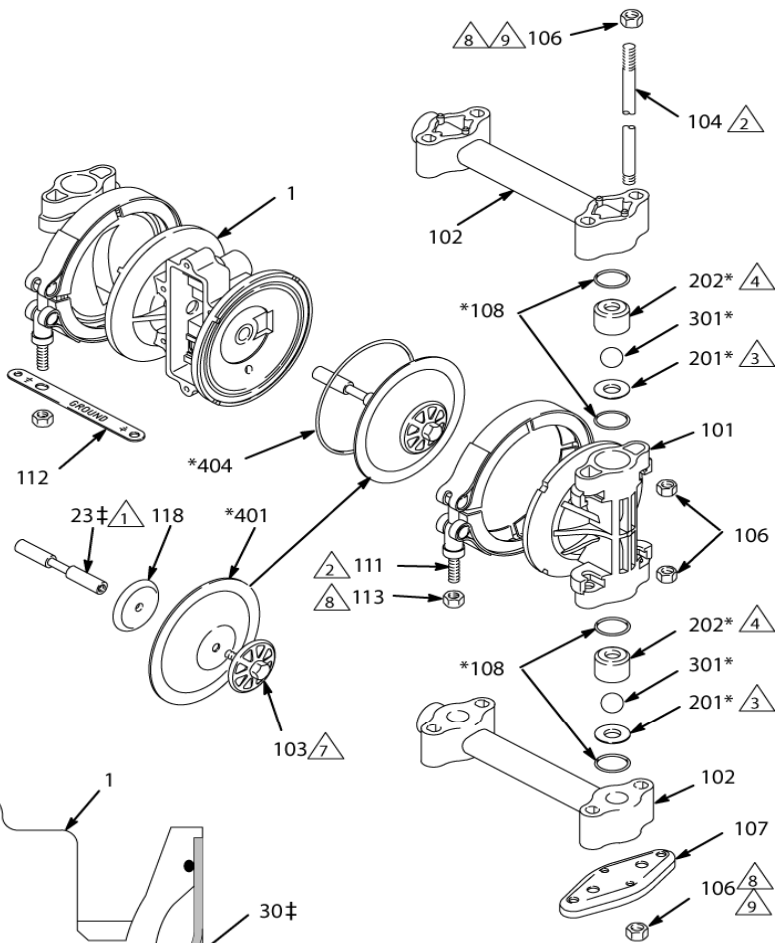
- ▲1 Grease shaft.
- ▲2 Apply thread lubricant.
- ▲3 Flat side faces ball.
- ▲4 Beveled end up.
- ▲6 Round side must face toward diaphragm.
- ▲7 Apply medium-strength (blue) Loctite ® or equivalent. Torque to 75 to 85 in-lb (8.5 to 9.6 N-m) at 100 rpm maximum using a 1/2-in. socket wrench.
- ▲8 Torque to 50 to 60 in-lb (5.6 to 6.8 N \*m). See Torque Sequence , page 26.
- ▲9 Do not over-torque.
- ▲10 Notches must engage tabs.



DETAIL OF CLAMPS AND COVERS



CUTAWAY VIEW OF DIAPHRAGM ASSEMBLIES IN PUMP HOUSING



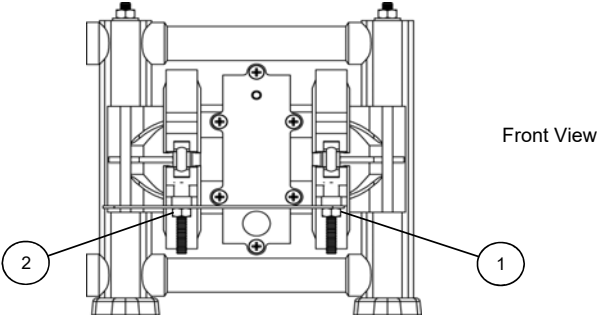
13/32 IN. EZY-OUT  
DETAIL OF BEARING REMOVAL USING EZY-OUT

fig.2

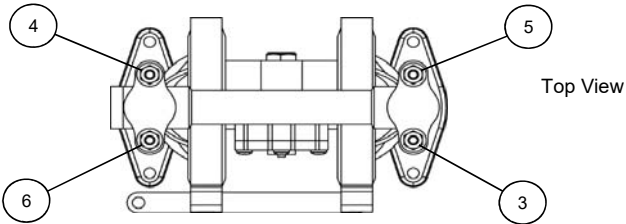
# Torque Sequence

Always follow torque sequence when instructed to torque fasteners.

- 1) Left/Right Fluid Covers  
Torque bolts to 50–60 in-lb (5.6–6.8 Nm)



- 2) Outlet Manifold  
Torque bolts to 50–60 in-lb (5.6–6.8 Nm)



- 3) Inlet Manifold  
Torque bolts to 50–60 in-lb (5.6–6.8 Nm)

