

# 3/8" SPECIALTY PERFORMANCE MAINTENANCE MANUAL

## BEFORE YOU BEGIN

Flush and neutralize the pump to be certain all corrosive or hazardous materials are removed prior to any maintenance. This procedure should always be followed when performing maintenance, transporting used pumps or returning pumps for factory service.

## VALVE AND O-RING MAINTENANCE

1. Remove the nuts (3) and washers (4) from the bolts (23) in manifolds. Remove the manifolds (20), (11). Two of the four max pass valves and back-ups (13, 14) are located inside of the bottom of the outer chambers (16). Gently remove and inspect for excessive wear, pitting or other signs of degradation. Inspect manifold o-ring (12) as well and replace if necessary.
2. The other two max-pass valves are located inside of the bottom of the discharge manifold (20). Repeat the procedure for inspection of discharge valves, back-ups and o-rings. (Some pumps such as those built with PTFE have ball valves in place of the max pass valves. Repeat the procedure—inspect valve seat (28), balls (29), ball cage (27) and o-ring (12)).
3. When re-assembling the max-pass pump, the sleeve (15) should be assembled into the valve cavity first, followed by the max-pass valve (13), the valve back-up (14) and finally the o-ring (12). For pumps with balls valves, the cage (27) should be assembled into the valve cavity first, followed by the ball (29), valve seat (28), and finally the o-ring (12). Lightly tighten all external fasteners when assembling, torquing them to their requirements after pump is completely assembled.

**NOTE: When using pumps built with PTFE o-rings, always replace with new PTFE o-rings, since the original o-rings may not reseal the pump.**

## DIAPHRAGM MAINTENANCE

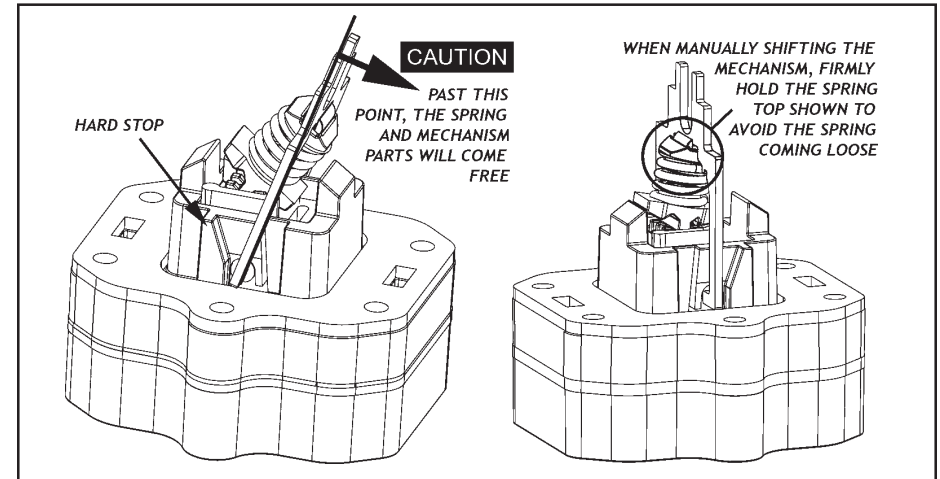
4. To inspect diaphragms, remove the nuts (7) from the carriage bolts (8) on the band clamps (16) surrounding the outer pump chambers (16). If replacement is necessary due to abrasion or rupture, unscrew the outer diaphragm plates (17). Only models that have PTFE elastomers will have both a PTFE overlay (18) that faces the outer pump chamber and an o-ring (25) on the air side of pump. (NOTE: Pumps that do not contain PTFE will not have o-ring (25) – they are built with diaphragms (19) only.)
5. To inspect the diaphragm rod's lip seals, remove diaphragm rod and carefully pick out the lip seals from inside the intermediate (22). Replace if necessary. Be sure to reinsert the lip seals with open cup facing the inside of the pump. Make sure that the rod guide is facing the air valve assembly and slide the diaphragm rod back into intermediate.
6. Take one diaphragm and with the curved side of the inner diaphragm plate facing the diaphragm, assemble onto the outer diaphragm plate stud. Screw the assembly into the end of the diaphragm rod. Repeat for the other side. Torque the outer diaphragm plates to requirements.
7. Position outer diaphragm chambers onto the intermediate, making sure that the witness line of the intermediate matches with the parting line of the chamber.
8. When positioning band clamps, use soapy water or a compatible lubricating spray on the inside of the band clamps to aid assembly. Tap with a mallet on the outside of the

clamp to help position it while tightening the fasteners. The band clamp fasteners are stainless steel. To prevent galling, apply an anti-seize compound to the thread. Tighten to final torque requirements.

9. Position the manifolds, making sure of their orientation in relation to the air valve for your application. Also, make sure that the manifold o-rings do not shift from their grooves during reassembly. Tighten all external fasteners to final torque requirements after the pump is completely assembled.

## AIR VALVE ASSEMBLY INSPECTION

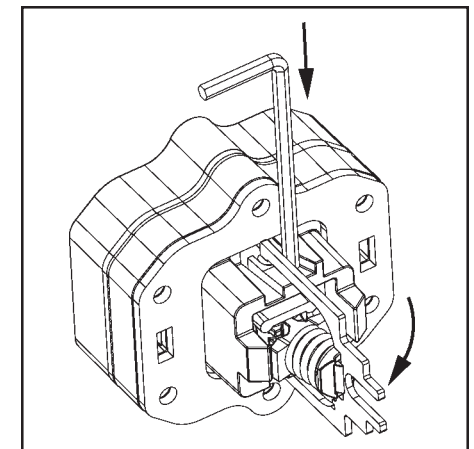
**CAUTION: Only one side of the mechanism has a hard-stop. Shifting the mechanism past its operating position can cause the spring to pop free and internal components to come loose. Use caution when shifting the mechanism manually.**



10. If there has been a diaphragm rupture and fluid has entered the air side of the pump, the complete air system should be inspected. Remove the air valve assembly (2) by unscrewing the six long hex-head air valve assembly screws (9).
11. Clean or replace the air valve assembly if there is excessive wear, dirt build-up or chemical attack. Inspect for proper shifting of the spring mechanism by manually pushing the metal spring retainer from one side to the other.

12. To reinstall the air valve, first shift the spring mechanism to the side with the hard-stop. Next, prop the spring retainer into a more neutral position by inserting a 7/64" or 3mm hex key as shown between the hard-stop and the spring retainer.

13. With the rod guide (1) positioned such that the opened end is facing the air valve assembly opening, slide the air valve assembly in place so that the forks slide into the rod guide. Once the fork of the spring retainer is in the rod guide, pull the hex key free and push the air valve assembly fully into place. Finally, reinsert and tighten the air valve assembly screws to the torque listed on the specs sheet.



(Over)

## FASTENER TORQUE REQUIREMENTS

**NOTE: When reassembling, loosely tighten all external fasteners adjusting and aligning. Then gradually, in an alternating fashion, tighten to the torque requirements listed below.**

AIR VALVE ASSEMBLY SCREWS 12 in-lbs (1,35 NM)  
 BAND CLAMPS 13.3 ft-lbs (18,8 NM)  
 MANIFOLD BOLTS, 10 in-lbs (1,13 NM)  
 OUTER DIAPHRAGM PLATES, 40 in-lbs (4,5 NM)

U.S. Patent Number 5232352

## SPECIFICATIONS

### CAPACITY:

Adjustable 0-9 GPM (34,0 LPM)

### MAXIMUM TEMP:

PVDF models – 200°F (93°C)  
 Other models – 150°F (66°C)

### MAXIMUM AIR PRESSURE:

120 psi (8,2 bar)

### MINIMUM AIR PRESSURE:

20 psi (1,3 bar)

### DRY LIFT:

Models with PTFE balls –  
 10 feet (3 meters)  
 Models with Max-Pass™ valves –  
 17 feet (5,2 meters)

### WEIGHT:

PVDF models – 5 pounds (2,3 kg)  
 Other models – 3.8 pounds (1,7 kg)

### MAXIMUM SOLIDS:

Models with Max-Pass™ valves – 1/4"  
 (6,4 mm)  
 Other models – 1/16" (3,2 mm)

### AIR SUPPLY:

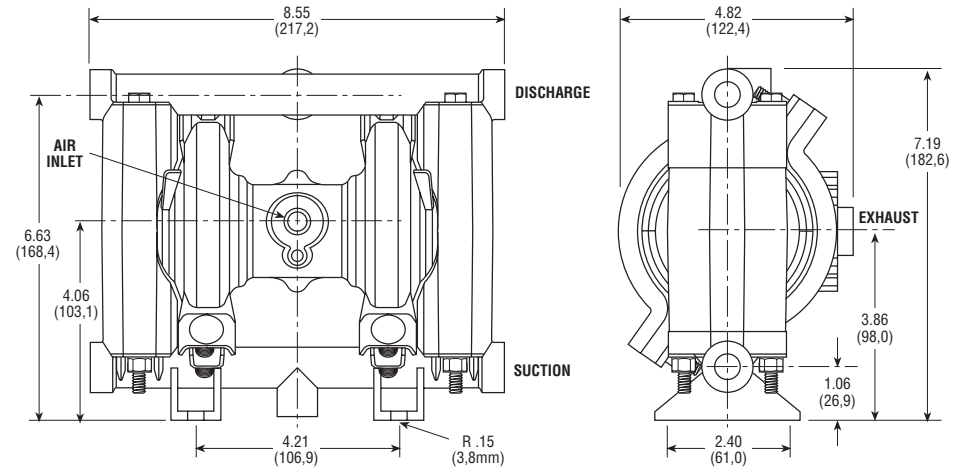
Inlet – 1/4" NPS Female  
 (BSP or NPT compatible)  
 Outlet – 3/8" NPS Female  
 (BSP or NPT compatible)

### FLUID INLET/DISCHARGE:

3/8" NPS Female  
 (BSP or NPT compatible)

## DIMENSIONS

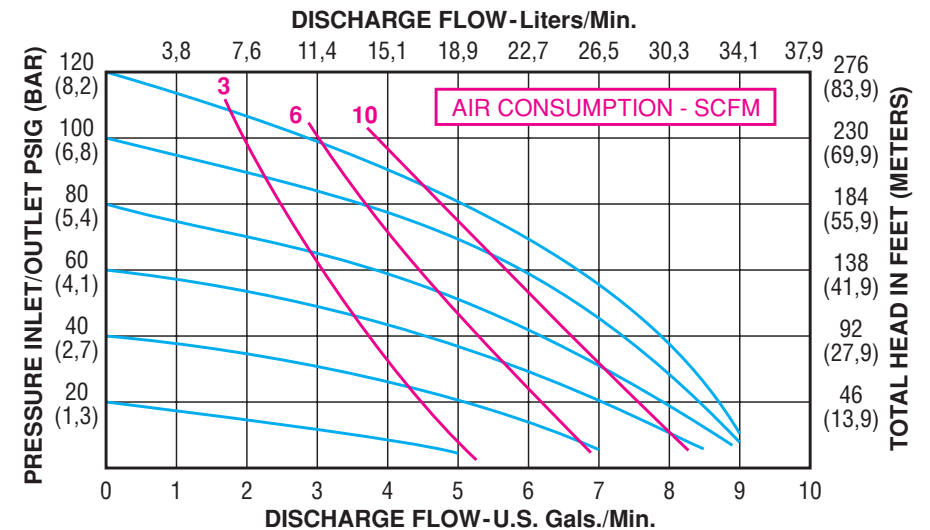
Dimensions in inches and (mm)



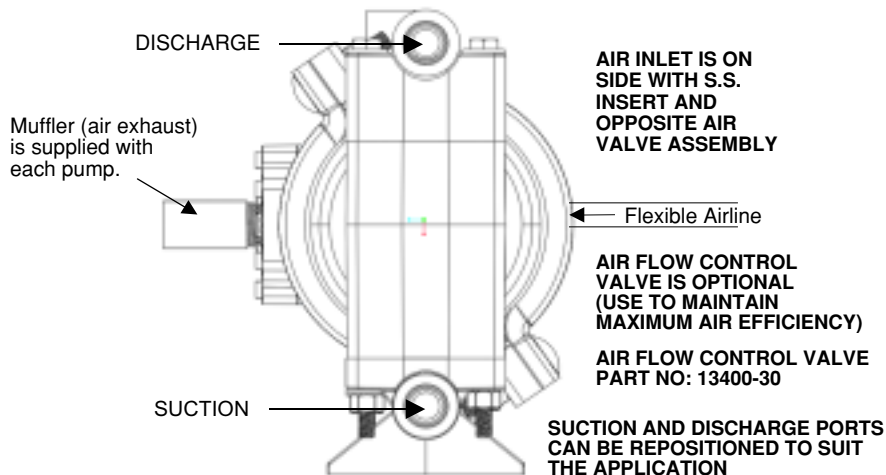
**NOTE: AIR INLET IS ON THE SIDE WITH STAINLESS STEEL INSERT. THE AIR VALVE ASSEMBLY IS ON THE OPPOSITE SIDE OF THE PUMP.**

## PERFORMANCE CURVE

(Based on water-flooded suction)



## Typical Installation

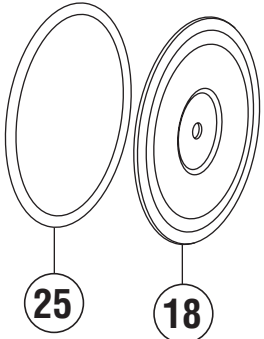


**DO NOT USE AIR LINE LUBRICATION**

# 3/8" MODEL

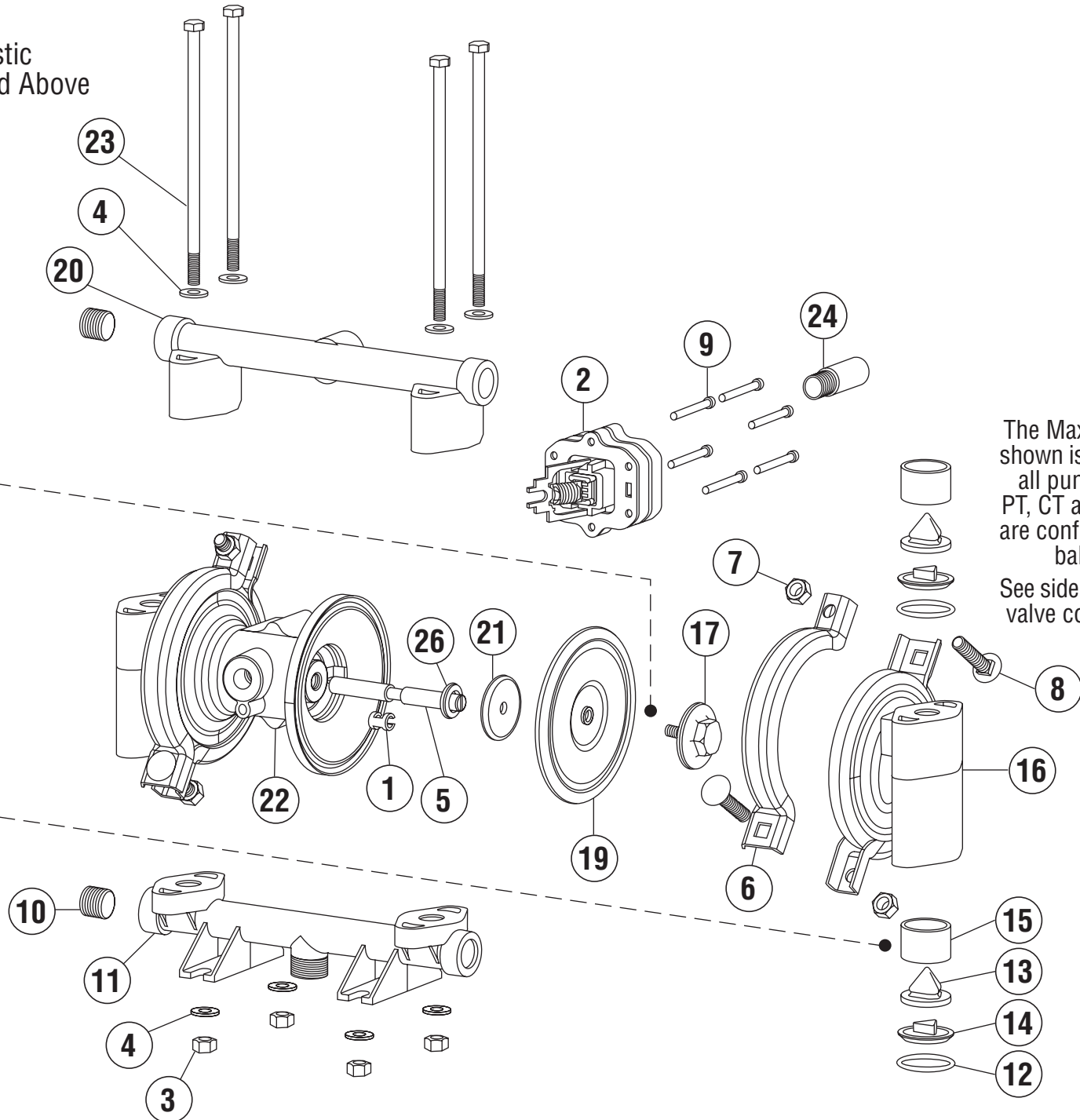
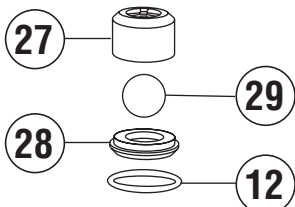
Specialty Performance Plastic  
Serial Numbers 128600 and Above

Diaphragm  
configuration for  
PT, CT and  
KT pumps.



PTFE Diaphragm  
requires O-ring.

Ball valve  
configuration  
for PT, CT and  
KT  
pumps.



The Max-Pass Valve  
shown is standard for  
all pumps-except  
PT, CT and KT which  
are configured with a  
ball valve.

See side panel for ball  
valve configuration.

**3/8" Specialty Performance - Plastic**

**JANUARY 2008**

ITEM	DESCRIPTION	QTY PER PUMP	MODELS	PART NO.	MATERIAL
1	Rod Guide	1	All	12807-31	Acetal
2	Air Valve Assembly	1	All	40380-54	Various
3	Hex Nut (1/4" x 20)	4	All	12600-26	SS
4	Flat Washer	8	All	12300-26	SS
5	Diaphragm Rod	1	All	10316-26	SS
6	Clamp (Complete with Fastners)	2	All	12913-26	SS
7	Hex Nut (5/16" - 18)	4	All	12601-26	SS
8	Carriage Bolt (5/16" x 1-1/2")	4	All	12509-26	SS
9	#8 x 1-3/4 Phillips Pan	6	All	12548-26	SS
10	Pipe Plug, 3/8" NPT	2	PB, PT, PE, PV CB, CT, CV KT, KE, KV	12206-40 12206-42 12206-56	Polypro Nylon PVDF
11	Suction Manifold	1	PB, PT, PE, PV CB, CT, CV KT, KE, KV	10570-40 10570-46 10570-56	Polypro Cond. Nylon PVDF
12	O-ring, Check Valve	4	PB, CB, PT, CT, KT PE, KE PV, CV, KV	11938-11 11938-17 11938-15 11938-82	Nitrile PTFE EPDM Viton
13	Max-Pass Valve	4	PB, CB, PE, KE PV, CV, KV	10915-11 10915-15 10915-82	Nitrile EPDM Viton
14	Max-Pass Valve Backup	4	PB, PE, PV CB, CV KE, KV	10916-40 10916-46 10916-56	Polypro Cond. Nylon PVDF
15	Max-Pass Sleeve	4	PB, PE, PV CB, CV KE, KV	10917-40 10917-42 10917-56	Polypro Nylon PVDF
16	Outer Chamber	2	PB, PT, PE, PV CB, CT, CV KT, KE, KV	10701-40 10701-46 10701-56	Polypro Cond. Nylon PVDF
17	Outer Diaphragm Plate	2	PB, PT, PE, PV CB, CT, CV KT, KE, KV	11201-40 11201-46 11201-56	Polypro Cond. Nylon PVDF

ITEM	DESCRIPTION	QTY PER PUMP	MODELS	PART NO.	MATERIAL
18	Diaphragm	2	PT, CT, KT PV, CV, KV	11401-59	PTFE
19	Diaphragm	2	PB, CB, KB PE, KE	10601-19 10601-23	Geolast Santoprene
20	Discharge Manifold	1	PB, PT, PE, PV CB, CT, CV KT, KE, KV	10571-40 10571-46 10571-56	Polypro Cond. Nylon PVDF
21	Inner Diaphragm Plate	2	All	11101-25	PS
22	Intermediate	1	All	11503-60	Polypro
23	Cap Screw	4	All	12515-26	SS
24	Muffler	1	All	13008-00	Special
25	O-ring, Diaphragm	2	PT, CT, KT PV, CV, KV	11942-11	Nitrile
26	Lip Seal	2	All	12005-76	Nitrile
27	Ball Cage Check balls are standard in PT, KT and CT Pumps optional for other pumps	4	PT CT KT	10914-40 10914-46 10914-56	Polypro Cond. Nylon PVDF
28	Valve Seat Check balls are standard in PT, KT and CT Pumps optional for other pumps	4	PT CT KT	10913-40 10913-26 10913-56	Polypro SS PVDF
29	Ball Check balls are standard in PT, KT and CT Pumps optional for other pumps	4	PT, CT, KT	11000-45	PTFE

**REPAIR KITS - WET END**  
 Models CT, KT & PT include items 12, 18, 25, 28 & 29  
 Models PV, CV & KV include items 12, 13, 14, 19 & 25  
 Models PB, BC, PE & KE include items 12, 13, 14 & 19  
 To order a wet end repair kit, add "KIT" to the pump model. e.g. PB-038 KIT

- NOTES:
1. SS = Stainless Steel, PS = Plated Steel
  2. Stock models (except PT, KT and CT models) are built with Max-Pass Valves and use items 13, 14, and 15.
  3. PT, KT and CT pumps are not built with Max-Pass valves. These pumps have a stock Check Ball configuration