

P.025

Original™ Series **PLASTIC** Pumps

EOM

Engineering
Operation &
Maintenance



Simplify your process



PROFLO®
PROGRESSIVE PUMP TECHNOLOGY

WILDEN®
A **DOVER** COMPANY

CE

WIL-10090-E-03
REPLACES WIL-10090-E-02

TABLE OF CONTENTS

SECTION 1	CAUTIONS	1
SECTION 2	PUMP DESIGNATION SYSTEM	2
SECTION 3	HOW IT WORKS (PUMP & AIR SYSTEMS)	3
SECTION 4	DIMENSIONAL DRAWING	4
SECTION 5	PERFORMANCE CURVES	
	A. P.025 PLASTIC Rubber-Fitted	5
	P.025 PLASTIC TPE-Fitted	5
	P.025 PLASTIC PTFE-Fitted	6
	B. Suction Lift Curves	6
SECTION 6	SUGGESTED INSTALLATION	7
	Suggested Operation and Maintenance	8
	Troubleshooting	9
SECTION 7	PUMP DISASSEMBLY	10
	Air Valve/Cleaning & Inspection	13
	Reassembly	15
SECTION 8	EXPLODED VIEW & PARTS LISTING	
	P.025 PLASTIC Rubber/TPE-Fitted	16
	P.025 PLASTIC PTFE-Fitted	18
SECTION 9	ELASTOMER OPTIONS	20

CAUTIONS—READ FIRST!**TEMPERATURE LIMITS:**

Polypropylene	0°C to 79°C	+32°F to 175°F
PVDF	-12°C to 107°C	+10°F to 225°F
Buna-N	-12.2°C to 82.2°C	+10°F to +180°F
Viton®	-40°C to 176.7°C	-40°F to +350°F
Wil-Flex™	-40°C to 107.2°C	-40°F to +225°F
PTFE	+4.4°C to 104.4°C	+40°F to +220°F



CAUTION: When choosing pump materials, be sure to check the temperature limits for all wetted components. Example: Viton® has a maximum limit of 176.7°C (350°F) but polypropylene has a maximum limit of only 79°C (175°F).



CAUTION: Maximum temperature limits are based upon mechanical stress only. Certain chemicals will significantly reduce maximum safe operating temperatures. Consult engineering guide for chemical compatibility and temperature limits.



CAUTION: Always wear safety glasses when operating pump. If diaphragm rupture occurs, material being pumped may be forced out air exhaust.



WARNING: Prevention of static sparking — If static sparking occurs, fire or explosion could result. Pump, valves, and containers must be properly grounded when handling flammable fluids and whenever discharge of static electricity is a hazard.



CAUTION: Do not exceed 8.6 bar (125 psig) air supply pressure.



CAUTION: Before any maintenance or repair is attempted, the compressed air line to the pump should be disconnected and all air pressure allowed to bleed from pump. Disconnect all intake, discharge and air lines. Drain the pump by turning it upside down and allowing any fluid to flow into a suitable container.



CAUTION: Blow out air line for 10 to 20 seconds before attaching to pump to make sure all pipe line debris is clear. Use an in-line air filter. **A 5µ (micron) air filter is recommended.**



NOTE: Tighten clamp bands and retainers prior to installation. Fittings may loosen during transportation.



NOTE: When installing PTFE diaphragms, it is important to tighten outer pistons simultaneously (turning in opposite directions) to ensure tight fit.



NOTE: Before starting disassembly, mark a line from each liquid chamber to its corresponding air chamber. This line will assist in proper alignment during reassembly.



CAUTION: Verify the chemical compatibility of the process and cleaning fluid to the pump's component materials in the Chemical Resistance Guide. (see E4).



NOTE: Plastic series pumps are made of virgin plastic and are not UV stabilized. Direct sunlight for prolonged periods can cause deterioration of plastics.



CAUTION: The P025 pump is not submersible.

WILDEN PUMP DESIGNATION SYSTEM

**P.025 ORIGINAL™
PLASTIC**

6 mm (1/4") Pump
Maximum Flow Rate:
18.2 lpm (4.8 gpm)

LEGEND

P.025 / XXXXX / XXX / XX / XXX / XXXX

MODEL

WETTED PARTS & OUTER PISTON

CENTER SECTION

AIR VALVE

DIAPHRAGMS

VALVE BALLS

VALVE SEAT

O-RINGS

SPECIALTY

CODE
(if applicable)

MATERIAL CODES

WETTED PARTS & OUTER PISTON

KK = PVDF / PVDF
 KZ = PVDF / NO PISTON
 PP = POLYPROPYLENE /
 POLYPROPYLENE
 PZ = POLYPROPYLENE /
 NO PISTON

CENTER SECTION

LL = ACETAL
 PP = POLYPROPYLENE

AIR VALVE

L = ACETAL
 P = POLYPROPYLENE

DIAPHRAGMS

BNS = BUNA-N (Red Dot)
 TNL = PTFE W/ NEOPRENE
 BACK-UP O-RING,
 IPD (White)
 WFS = WIL-FLEX™ [Santoprene®
 (Orange Dot)]

VALVE BALL

TF = PTFE (White)

VALVE SEAT

K = PVDF
 P = POLYPROPYLENE

VALVE SEAT O-RING

BN = BUNA-N (Red Dot)
 TV = PTFE ENCAP. VITON®
 WF = WIL-FLEX™ [Santoprene®]

SPECIALTY CODES

0502 PFA coated hardware
 0512 Adapter block, no muffler, Pro-Flo®,
 center section

Viton® is a registered trademark of Dupont Dow Elastomers.

The Wilden diaphragm pump is an air-operated, positive displacement, self-priming pump. These drawings show flow pattern through the pump upon its initial stroke. It is assumed the pump has no fluid in it prior to its initial stroke.

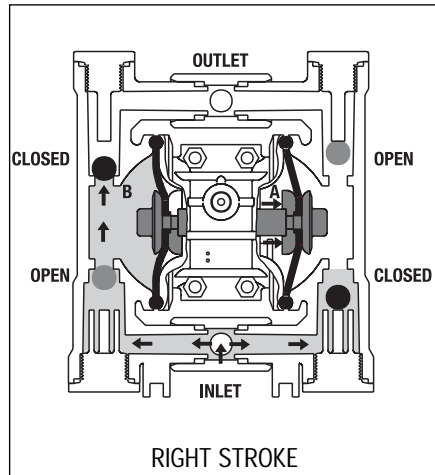


FIGURE 1 The air valve directs pressurized air to the back side of diaphragm A. The compressed air is applied directly to the liquid column separated by elastomeric diaphragms. The diaphragm acts as a separation membrane between the compressed air and liquid, balancing the load and removing mechanical stress from the diaphragm. The compressed air moves the diaphragm away from the center block of the pump. The opposite diaphragm is pulled in by the shaft connected to the pressurized diaphragm. Diaphragm B is on its suction stroke; air behind the diaphragm has been forced out to the atmosphere through the exhaust port of the pump. The movement of diaphragm B toward the center block of the pump creates a vacuum within chamber B. Atmospheric pressure forces fluid into the inlet manifold forcing the inlet valve ball off its seat. Liquid is free to move past the inlet valve ball and fill the liquid chamber (see shaded area).

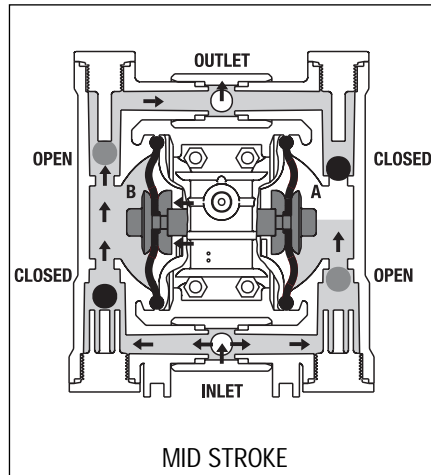


FIGURE 2 When the pressurized diaphragm, diaphragm A, reaches the limit of its discharge stroke, the air valve redirects pressurized air to the back side of diaphragm B. The pressurized air forces diaphragm B away from the center block while pulling diaphragm A to the center block. Diaphragm B is now on its discharge stroke. Diaphragm B forces the inlet valve ball onto its seat due to the hydraulic forces developed in the liquid chamber and manifold of the pump. These same hydraulic forces lift the discharge valve ball off its seat, while the opposite discharge valve ball is forced onto its seat, forcing fluid to flow through the pump discharge. The movement of diaphragm A toward the center block of the pump creates a vacuum within liquid chamber A. Atmospheric pressure forces fluid into the inlet manifold of the pump. The inlet valve ball is forced off its seat allowing the fluid being pumped to fill the liquid chamber.

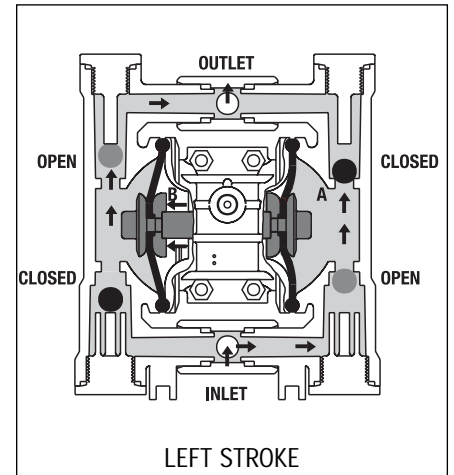


FIGURE 3 At completion of the stroke, the air valve again redirects air to the back side of diaphragm A, which starts diaphragm B on its exhaust stroke. As the pump reaches its original starting point, each diaphragm has gone through one exhaust and one discharge stroke. This constitutes one complete pumping cycle. The pump may take several cycles to completely prime depending on the conditions of the application.

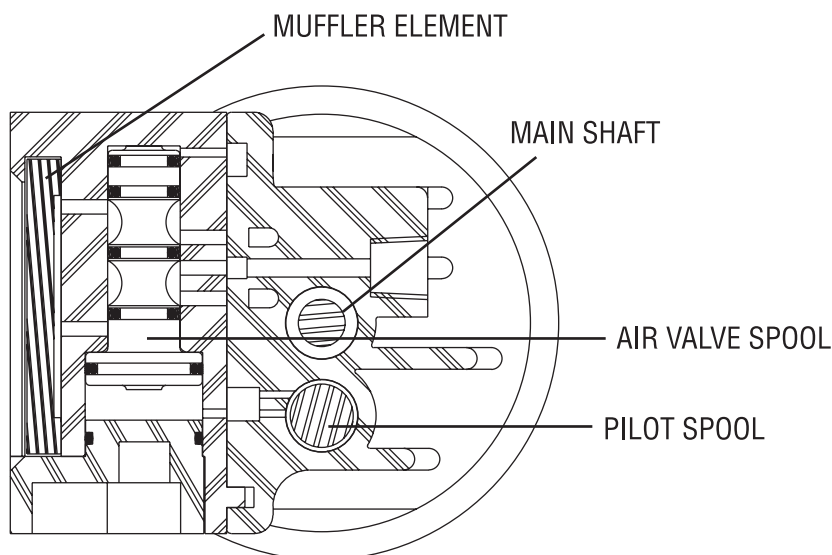
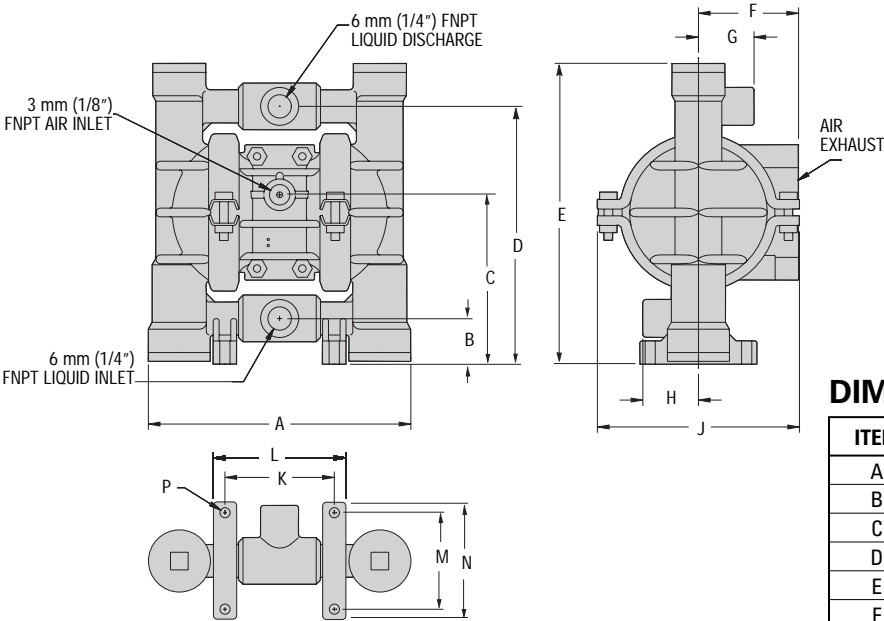


Figure 1 The Pro-Flo® patented air distribution system incorporates three moving parts: the air valve spool, the pilot spool, and the main shaft/diaphragm assembly. The heart of the system is the air valve spool and air valve. As shown in Figure 1, this valve design incorporates an unbalanced spool. The smaller end of the spool is pressurized continuously, while the large end is alternately pressurized and exhausted to move the spool. The spool directs pressurized air to one chamber while exhausting the other. The air causes the main shaft/diaphragm assembly to shift to one side — discharging liquid on one side and pulling liquid in on the other side. When the shaft reaches the end of its stroke, it actuates the pilot spool, which pressurizes and exhausts the large end of the air valve spool. The pump then changes direction and the same process occurs in the opposite direction, thus reciprocating the pump.

DIMENSIONAL DRAWINGS



DIMENSIONS

ITEM	METRIC (mm)	STANDARD (inch)
A	145	5.7
B	25	1.0
C	94	3.7
D	140	5.5
E	163	6.4
F	56	2.2
G	30	1.2
H	30	1.2
J	114	4.5
K	61	2.4
L	74	2.9
M	53	2.1
N	64	2.5
P	Ø13	Ø.5

PERFORMANCE

P.025 PLASTIC RUBBER-FITTED

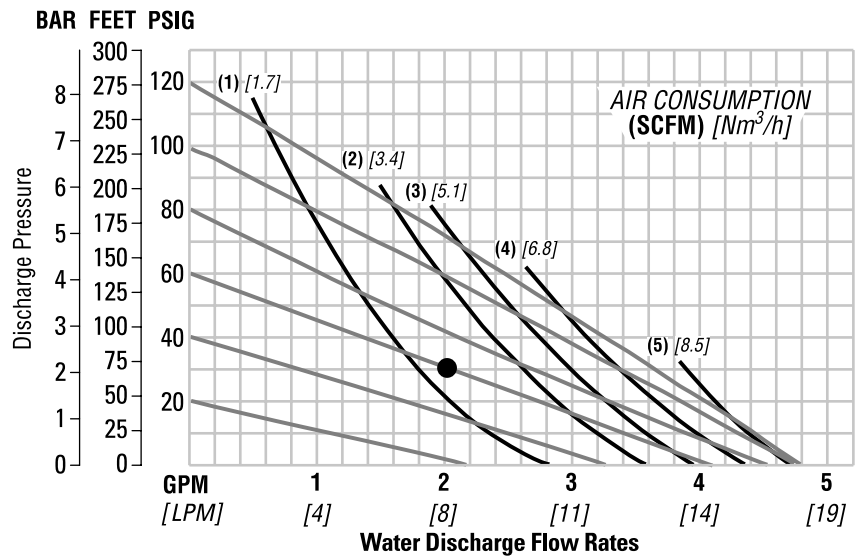
Height.....	163 mm (6.4")
Width.....	145 mm (5.7")
Depth	115 mm (4.5")
Est. Ship Weight.....	Polypropylene 1.4 kg (3 lbs)
	PVDF 1.4 kg (3 lbs)
Air Inlet.....	3 mm (1/8")
Inlet.....	6 mm (1/4")
Outlet	6 mm (1/4")
Suction Lift	2.74 m Dry (9')
	9.45 m Wet (31')

Displacement per
Stroke0.02 l (0.004 gal.)¹
Max. Flow Rate.....18.1 lpm (4.8 gpm)
Max. Size Solids 0.4 mm (1/64")

¹Displacement per stroke was calculated at 4.8 bar (70 psig) air inlet pressure against a 2 bar (30 psig) head pressure.

Example: To pump 7.6 lpm (2 gpm) against a discharge pressure head of 2 bar (30 psig) requires 4.1 bar (60 psig) and 2.0 Nm³/h (1.2 scfm) air consumption. (See dot on chart.)

Caution: Do not exceed 8.6 bar (125 psig) air supply pressure.



Flow rates indicated on chart were determined by pumping water.

For optimum life and performance, pumps should be specified so that daily operation parameters will fall in the center of the pump performance curve.

P.025 PLASTIC TPE-FITTED

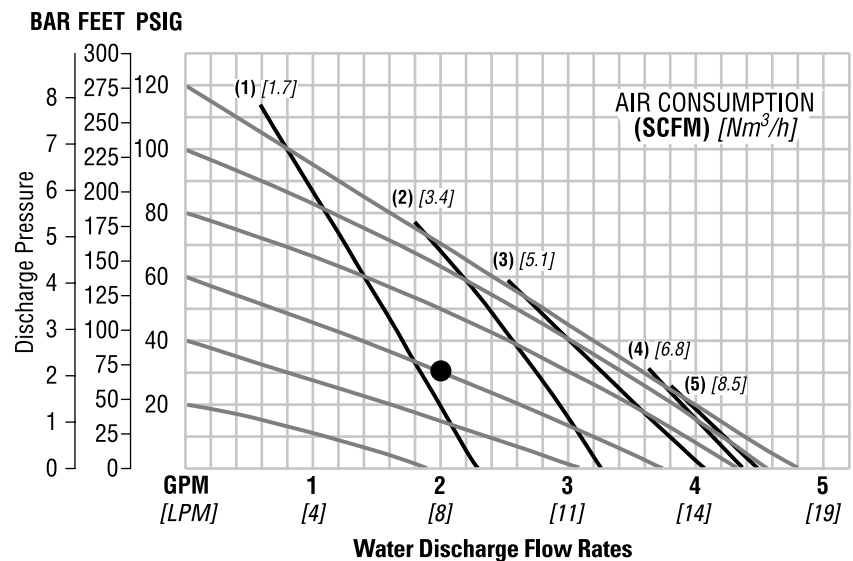
Height.....	163 mm (6.4")
Width.....	145 mm (5.7")
Depth	115 mm (4.5")
Est. Ship Weight.....	Polypropylene 1.4 kg (3 lbs)
	PVDF 1.4 kg (3 lbs)
Air Inlet.....	3 mm (1/8")
Inlet	6 mm (1/4")
Outlet	6 mm (1/4")
Suction Lift	3.05 m Dry (10')
	8.84 m Wet (29')

Displacement per
Stroke 0.02 l gal. (0.005)¹
Max. Flow Rate.....18.1 lpm (4.8 gpm)
Max. Size Solids 0.4 mm (1/64")

¹Displacement per stroke was calculated at 4.8 bar (70 psig) air inlet pressure against a 2 bar (30 psig) head pressure.

Example: To pump 7.6 lpm (2 gpm) against a discharge pressure head of 2 bar (30 psig) requires 4.1 bar (60 psig) and 2.0 Nm³/h (1.2 scfm) air consumption. (See dot on chart.)

Caution: Do not exceed 8.6 bar (125 psig) air supply pressure.



Flow rates indicated on chart were determined by pumping water.

For optimum life and performance, pumps should be specified so that daily operation parameters will fall in the center of the pump performance curve.

P.025 PLASTIC PTFE-FITTED

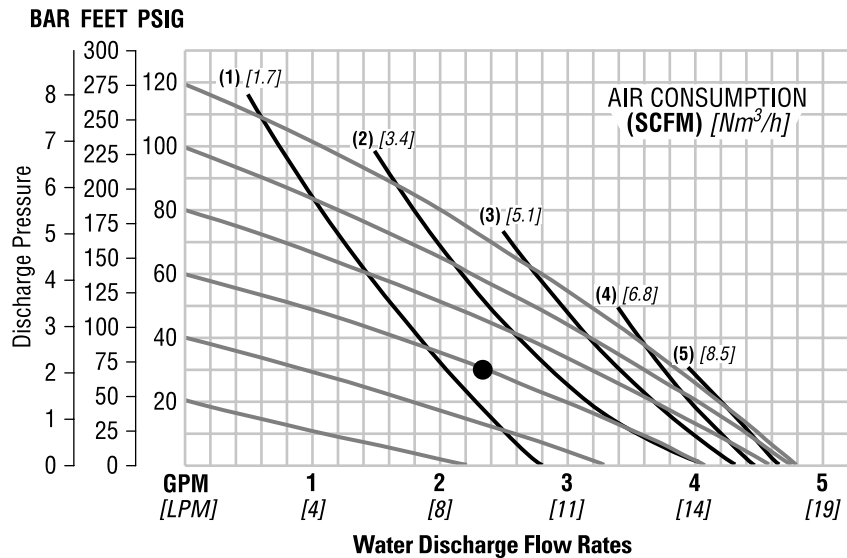
Height.....163 mm (6.4")
Width.....145 mm (5.7")
Depth115 mm (4.5")
Est. Ship Weight.....Polypropylene 1.4 kg (3 lbs)
PVDF 1.4 kg (3 lbs)
Air Inlet..... 3 mm (1/8")
Inlet..... 6 mm (1/4")
Outlet 6 mm (1/4")
Suction Lift 2.44 m Dry (8')
8.84 m Wet (29')

Displacement per
Stroke 0.02 l (0.005 gal.)¹
Max. Flow Rate.....18.1 lpm (4.8 gpm)
Max. Size Solids 0.4 mm (1/64")

¹Displacement per stroke was calculated at 4.8 bar (70 psig) air inlet pressure against a 2 bar (30 psig) head pressure.

Example: To pump 8.7 lpm (2.3 gpm) against a discharge pressure head of 2 bar (30 psig) requires 4.1 bar (60 psig) and 2.4 Nm³/h (1.4 scfm) air consumption. (See dot on chart.)

Caution: Do not exceed 8.6 bar (125 psig) air supply pressure.

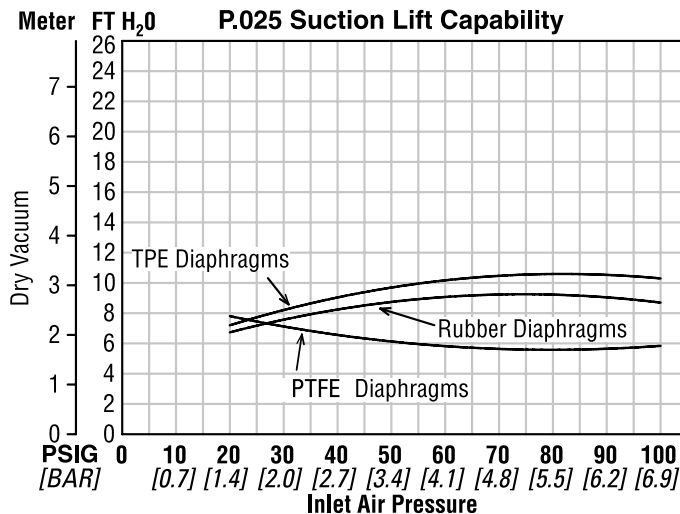


Flow rates indicated on chart were determined by pumping water.

For optimum life and performance, pumps should be specified so that daily operation parameters will fall in the center of the pump performance curve.

Section 5B SUCTION LIFT CURVE

P.025 PLASTIC



Suction lift curves are calibrated for pumps operating at 1,000' (305 m) above sea level. This chart is meant to be a guide only. There are many variables which can affect your pump's operating characteristics. The number of intake

and discharge elbows, viscosity of pumping fluid, elevation (atmospheric pressure) and pipe friction loss all affect the amount of suction lift your pump will attain.

SUGGESTED INSTALLATION

The Pro-Flo® model P025 has a 6 mm (1/4") inlet and 6 mm (1/4") outlet and is designed for flows to 18.7 lpm (4.8 gpm). The P025 Plastic pump is manufactured with wetted parts of pure, unpigmented PVDF or polypropylene. The center section of the P025 Plastic is constructed of virgin Acetal or polypropylene. A variety of diaphragms and o-rings are available to satisfy temperature, chemical compatibility, abrasion and flex concerns.

The suction pipe size should be at least 6 mm (1/4") diameter or larger if highly viscous material is being pumped. The suction hose must be non-collapsible, reinforced type as the P025 is capable of pulling a high vacuum. Discharge piping should be at least 6 mm (1/4"); larger diameter can be used to reduce friction losses. It is critical that all fittings and connections are airtight or a reduction or loss of pump suction capability will result.

INSTALLATION: Months of careful planning, study, and selection efforts can result in unsatisfactory pump performance if installation details are left to chance.

Premature failure and long term dissatisfaction can be avoided if reasonable care is exercised throughout the installation process.

LOCATION: Noise, safety, and other logistical factors usually dictate that "utility" equipment be situated away from the production floor. Multiple installations with conflicting requirements can result in congestion of utility areas, leaving few choices for siting of additional pumps.

Within the framework of these and other existing conditions, every pump should be located in such a way that four key factors are balanced against each other to maximum advantage.

1. **ACCESS:** First of all, the location should be accessible. If it's easy to reach the pump, maintenance personnel will have an easier time carrying out routine inspections and adjustments. Should major repairs become necessary, ease of access can play a key role in speeding the repair process and reducing total downtime.

2. **AIR SUPPLY:** Every pump location should have an air line large enough to supply the volume of air necessary to achieve the desired pumping rate (see pump performance chart). Use air pressure up to a maximum of 8.6 bar (125 psig) depending on pumping requirements.

Sound levels are reduced below OSHA specifications using the standard Wilden muffler element.

3. **ELEVATION:** Selecting a site that is well within the pump's dynamic lift capability will assure that loss-of-prime troubles will be eliminated. In addition, pump efficiency can be adversely affected if proper attention is not given to site location.

4. **PIPING:** Final determination of the pump site should not be made until the piping problems of each possible location have been evaluated. The impact of current and future installations should be considered ahead of time to make sure that inadvertent restrictions are not created for any remaining sites.

The best choice possible will be a site involving the shortest and straightest hook-up of suction and discharge piping. Unnecessary elbows, bends, and fittings should be avoided. Pipe sizes should be selected so as to keep friction losses within practical limits. All piping should be supported independently of the pump. In addition, the piping should be aligned so as to avoid placing stresses on the pump fittings.

Flexible hose can be installed to aid in absorbing the forces created by the natural reciprocating action of the pump. If the pump is to be bolted down to a solid location, a mounting pad placed between the pump and the foundation will assist in minimizing pump vibration. Flexible connections between the pump and rigid piping will also assist in minimizing pump vibration. If quick-closing valves are installed at any point in the discharge system, or if pulsation within a system becomes a problem, a Wilden SD1/2 Equalizer® surge dampener should be installed to protect the pump, piping and gauges from surges and water hammer.

When pumps are installed in applications involving flooded suction or suction head pressures, a gate valve should be installed in the suction line to permit closing of the line for pump service.

The P025 cannot be used in submersible applications.

If the pump is to be used in a self-priming application, be sure that all connections are airtight and that the suction lift is within the model's ability. Note: Materials of construction and elastomer material have an effect on suction lift parameters. Please consult Wilden distributors for specifics.

Pumps in service with a positive suction head are most efficient when inlet pressure is limited to 0.4–0.7 bar (7–10 psig). Premature diaphragm failure may occur if positive suction is 0.7 bar (10 psig) and higher.

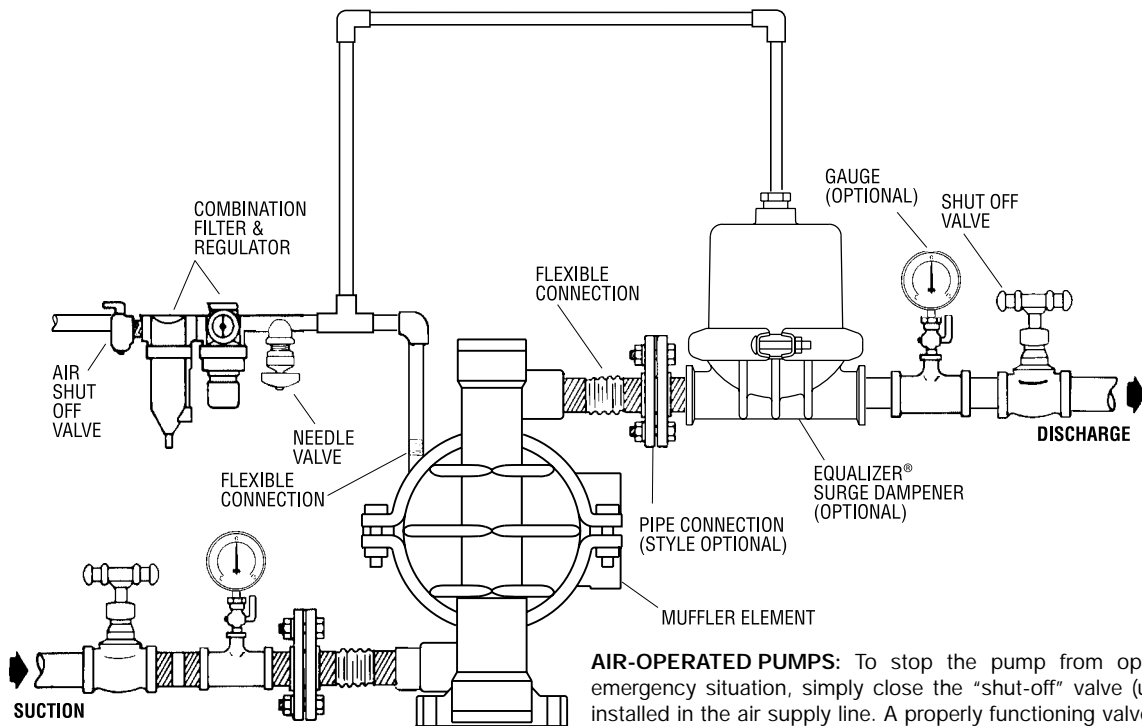
THE MODEL P025 WILL PASS 0.4 MM (1/64") SOLIDS. WHENEVER THE POSSIBILITY EXISTS THAT LARGER SOLID OBJECTS MAY BE SUCKED INTO THE PUMP, A STRAINER SHOULD BE USED ON THE SUCTION LINE.

CAUTION: DO NOT EXCEED 8.6 BAR (125 PSIG) AIR SUPPLY PRESSURE.

BLOW OUT AIR LINE FOR 10 TO 20 SECONDS BEFORE ATTACHING TO PUMP TO MAKE SURE ALL PIPE LINE DEBRIS IS CLEAR.

The Pro-Flo® pump is not submersible.

SUGGESTED INSTALLATION



AIR-OPERATED PUMPS: To stop the pump from operating in an emergency situation, simply close the “shut-off” valve (user supplied) installed in the air supply line. A properly functioning valve will stop the air supply to the pump, therefore stopping output. This shut-off valve should be located far enough away from the pumping equipment such that it can be reached safely in an emergency situation.

NOTE: In the event of a power failure, the shutoff valve should be closed, if the restarting of the pump is not desirable once power is regained.

SUGGESTED OPERATION & MAINTENANCE

For best results, the pumps should use an air filter and regulator. The use of an air filter before the pump will insure that the majority of any pipeline contaminants will be eliminated. The P.025 is permanently lubricated, and does not require in-line lubrication. Additional lubrication will not damage the pump, however if the pump is heavily lubricated by an external source, the pump's internal lubrication may be washed away. If the pump is then moved to a non-lubricated location, it may need to be disassembled and re-lubricated as described in the ASSEMBLY/DISASSEMBLY INSTRUCTIONS.

Pump discharge rate can be controlled by limiting the volume and/or pressure of the air supply to the pump (preferred method). A regulator is used to regulate air pressure. A needle valve is used to regulate air volume. Pump discharge rate can also be controlled by throttling the pump discharge by installing a valve in the discharge line of the pump. This is useful when the need exists to control the pump from a remote location. When the pump discharge pressure equals or exceeds the air

supply pressure, the pump will stop; no bypass or pressure relief valve is needed, and pump damage will not occur. When operation is controlled by a solenoid valve in the air line, two-way or three-way valves may be used. Pumping volume can be set by counting the number of strokes per minute.

INSPECTIONS: Periodic inspections have been found to offer the best means for preventing unscheduled pump downtime. Personnel familiar with the pump's construction and service should be informed of any abnormalities that are detected during operation.

RECORDS: When service is required, a record should be made of all necessary repairs and replacements. Over a period of time, such records can become a valuable tool for predicting and preventing future maintenance problems and unscheduled downtime. In addition, accurate records make it possible to identify pumps that are poorly suited to their applications.

Pump will not run or runs slowly.

1. Ensure that the air inlet pressure is at least 5 psig above startup pressure and that the differential pressure (the difference between inlet and discharge pressures) is not less than 10 psig.
2. Check air inlet filter for debris (see recommended installation).
3. Check for extreme air leakage which would indicate worn out seals/bores.
4. Disassemble pump and check for obstructions in the air passageways or objects which would obstruct the movement of internal parts.
5. Check for sticking ball check valves. If material being pumped is not compatible with pump elastomers, swelling may occur. Replace ball check valves and seals with proper elastomers. Also, as the check valve balls wear out, they become smaller and can become stuck in the seats. In this case, replace balls and seats.

Pump runs but little or no product flows.

1. Check for pump cavitation; slow pump speed down to match thickness of material being pumped.
2. Verify that vacuum required to lift liquid is not greater than the vapor pressure of the material being pumped (cavitation).
3. Check for sticking ball check valves. If material being pumped is not compatible with pump elastomers, swelling may occur. Replace ball check valves and seals with proper elastomers. Also, as the check valve balls wear out, they become smaller and can become stuck in the seats. In this case, replace balls and seats.
4. Ensure that all suction connections are tight, especially lower valve ball retainers.

Pump air valve freezes.

1. Check for excessive moisture in compressed air. Either install a dryer or hot air generator for compressed air. Alternatively, a coalescing filter may be used to remove the water from the compressed air in some applications.

Air bubbles in pump discharge.

1. Check for ruptured diaphragm.
2. Check tightness of outer pistons.
3. Check tightness of clamp bands and integrity of o-rings and seals, especially at intake manifold.
4. Ensure pipe connections are airtight.

Product comes out air exhaust.

1. Check for diaphragm rupture.
2. Check tightness of pistons to shaft.

Pump rattles.

1. Create false discharge head or suction lift.

CAUTION: Before any maintenance or repair is attempted, the compressed air line to the pump should be disconnected and all air pressure allowed to bleed from pump. Disconnect all intake, discharge, and air lines. Drain the pump by turning it upside down and allowing any fluid to flow into a suitable container. Wetted flushing of parts may be required prior to handling.

The Wilden model P.025 (Figure 1) is an air-operated, double-diaphragm pump with all wetted parts of polypropylene or PVDF. The single-piece center section, consisting of center block and air chambers, is molded from Acetal or polypropylene. All fasteners and hardware are stainless steel. The air valve is manufactured of Acetal or polypropylene. All o-rings used in the pump are of special materials and should only be replaced with factory-supplied parts.

To expedite parts ordering, please find an exploded view of the P.025 model at the back of this manual.

PLEASE read all directions before starting disassembly.

TOOLS REQUIRED:

5/32" Hex Key (Allen wrench)
 7/16" Wrench or Socket (Qty. 2)
 5/16" Wrench
 3/8" Wrench
 1/4" Socket Drive
 O-ring Pick
 3/16" Rod or Equivalent

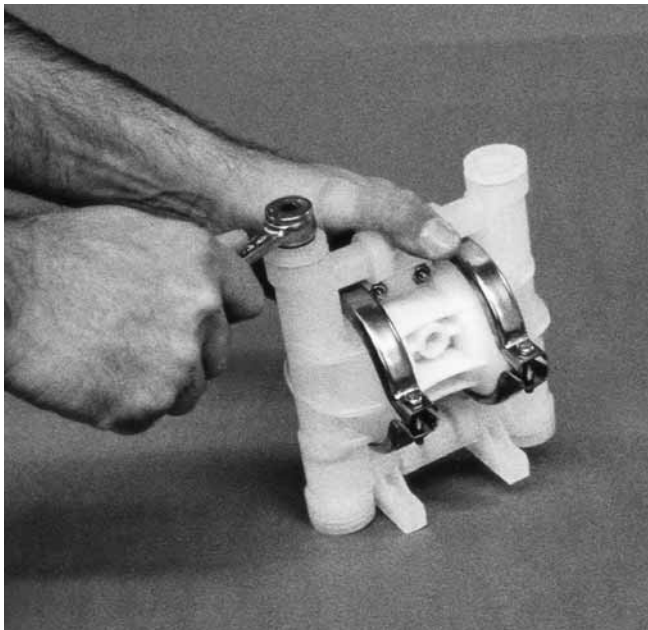


Figure 1

DISASSEMBLY:

Step 1.

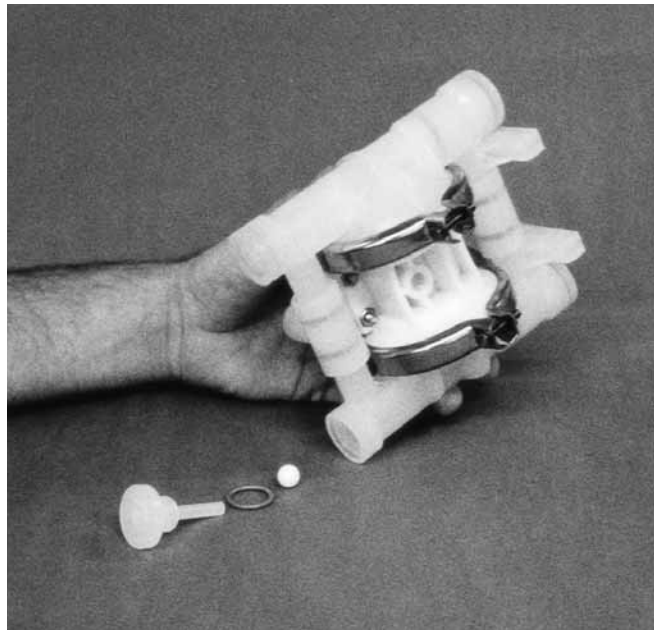
Before actual disassembly is started, turn pump upside down and drain all liquid trapped in the pump into a suitable container. Be sure to use proper caution if liquid is corrosive or toxic.



Step 2.

Figure 2

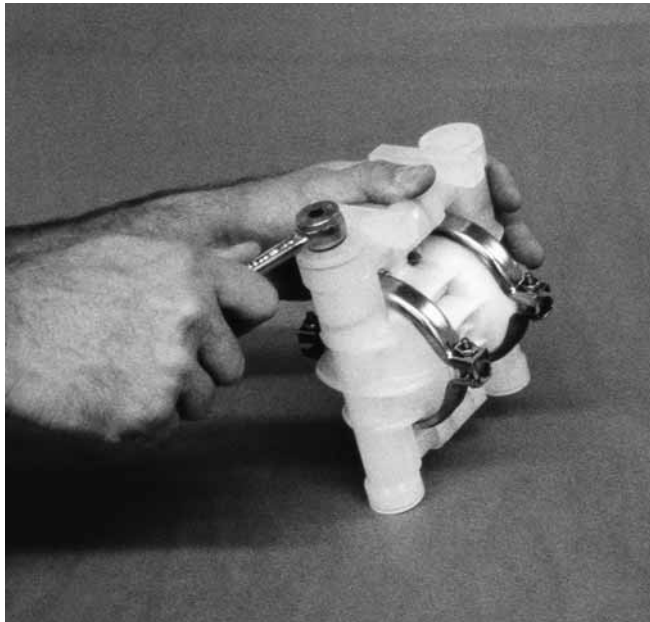
Remove top retainer with 1/4" socket wrench.



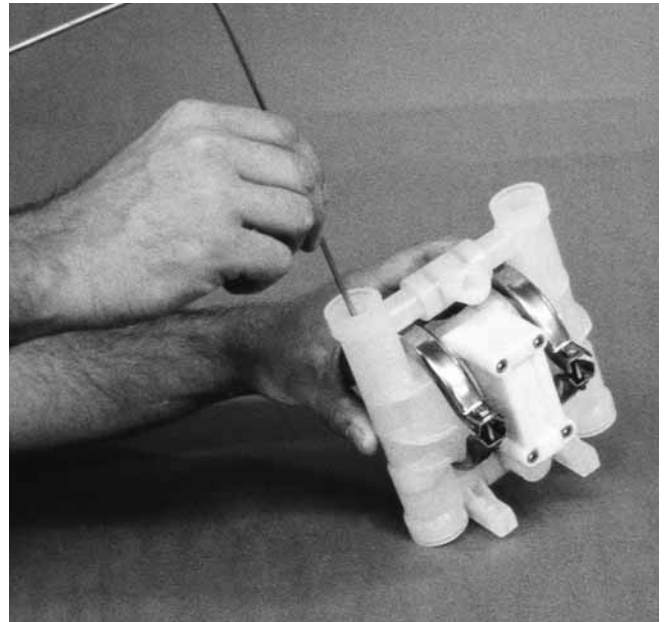
Step 3.

Figure 3

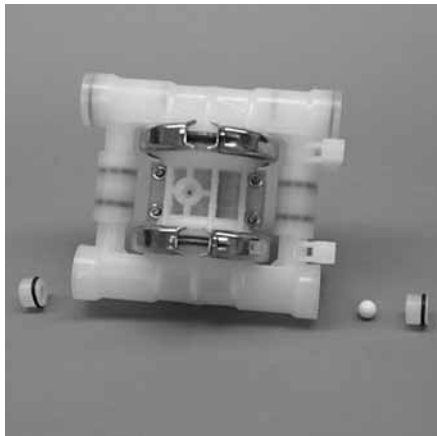
Inspect the ball retainer, retainer o-ring, and valve ball. If swelling, cracking or other damage is apparent, these parts must be replaced with genuine Wilden parts.



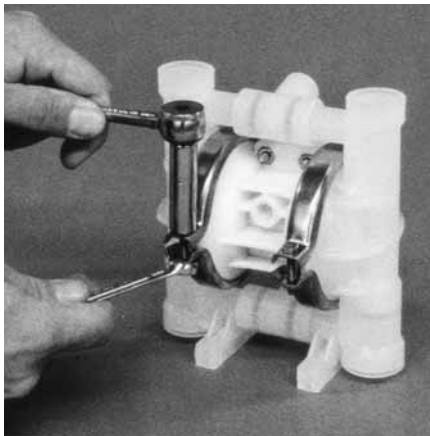
Step 4. *Figure 4*
Turn pump upside down and loosen bottom retainer.



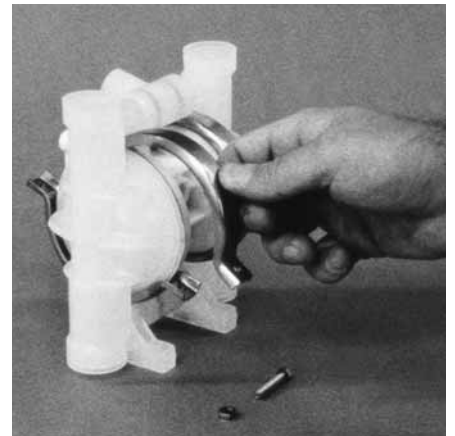
Step 5. *Figure 5*
To remove valve seats, use approximately 3/16" rod or equivalent and push seats out from top to bottom.



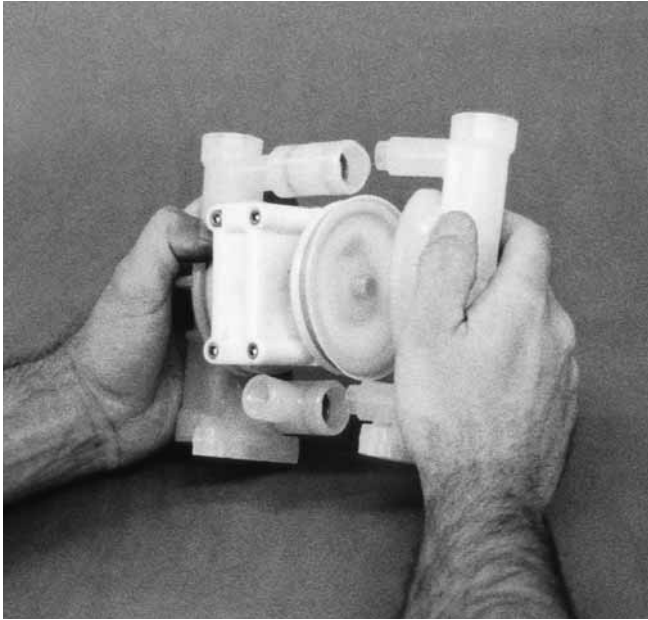
Step 6. *Figure 6*
Inspect ball and seats for abrasion. Inspect seat o-rings and bottom retainer o-rings for swelling, cracking, or other damage. These parts should be replaced if damage is observed.



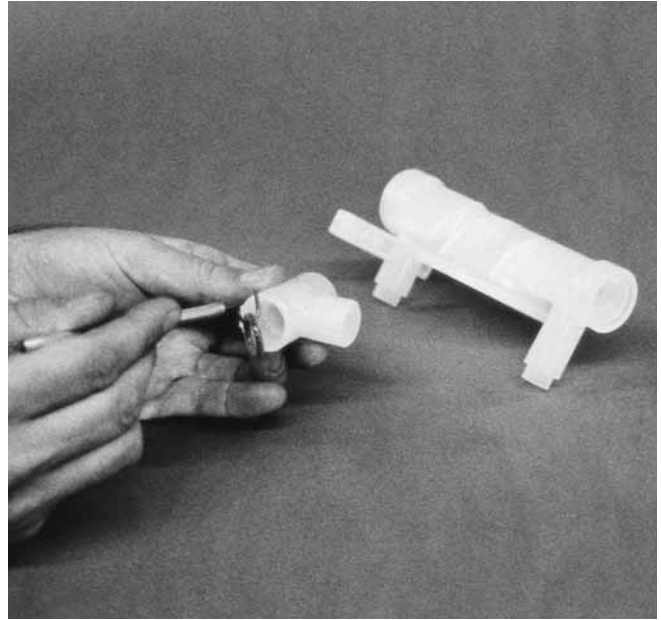
Step 7. *Figure 7*
Loosen clamp band with 5/16" socket and 3/8" wrench. Remove screw and nut.



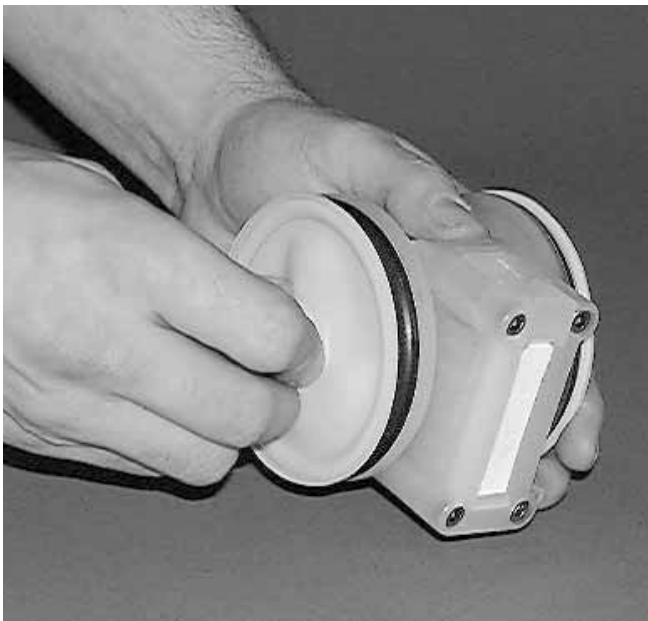
Step 8. *Figure 8*
Rotate clamp band as shown and remove by sliding the clamp band up.



Step 9. *Figure 9*
Remove liquid chambers by pulling chamber away from center section and inlet-discharge T-sections.



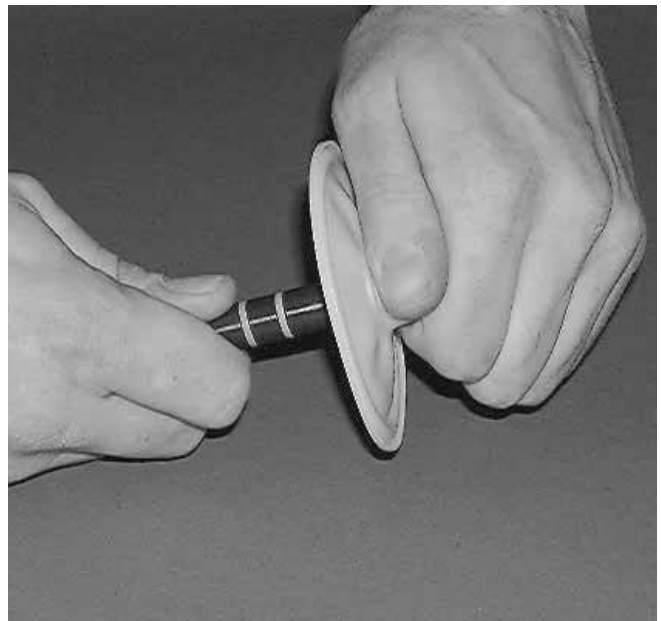
Step 10. *Figure 10*
Remove T-section from liquid chamber. Remove T-section o-rings from T-section with an o-ring pick. Care should be utilized to not damage o-ring. Inspect and replace as necessary.



Step 11. *Figure 11*
Loosen outer piston, with 7/16" wrench and 7/16" socket and twist off outer piston. Remove diaphragm and inner piston.

NOTE: PTFE-fitted pumps employ a PTFE diaphragm with an integral outer piston. Turn diaphragm counterclockwise to loosen.

NOTE: PTFE-fitted pumps utilize a neoprene back-up o-ring. Rubber- or TPE-fitted pumps do not.



Step 12. *Figure 12*
Pull the remaining diaphragm which is attached to the shaft through the center section. Hold diaphragm and remove outer piston with 7/16" wrench for rubber/TPE fitted pumps (not shown). Inspection of diaphragms, inner pistons, disc spring, outer pistons and shaft is now possible.

AIR VALVE/CLEANING & INSPECTION

AIR VALVE DISASSEMBLY:

CAUTION: Before any maintenance or repair is attempted, the compressed air line to the pump should be disconnected and all air pressure allowed to bleed from the pump. Disconnect all intake, discharge, and air lines. Drain the pump by turning it upside down and allowing any fluid to flow into a suitable container. Be aware of hazardous effects of contact with your process fluid.

The Wilden Plastic P.025 utilizes a revolutionary Pro-Flo® air distribution system. A 3 mm (1/8") air inlet connects the air supply to the center section. Proprietary composite seals reduce the coefficient of friction and allow the P.025 to run lube-free. Constructed of Acetal or polypropylene, the Pro-Flo® air distribution system is designed to perform in on/off, non-freezing, non-stalling, tough duty applications.

TOOLS REQUIRED:

5/32" Hex Head Wrench
O-ring Pick



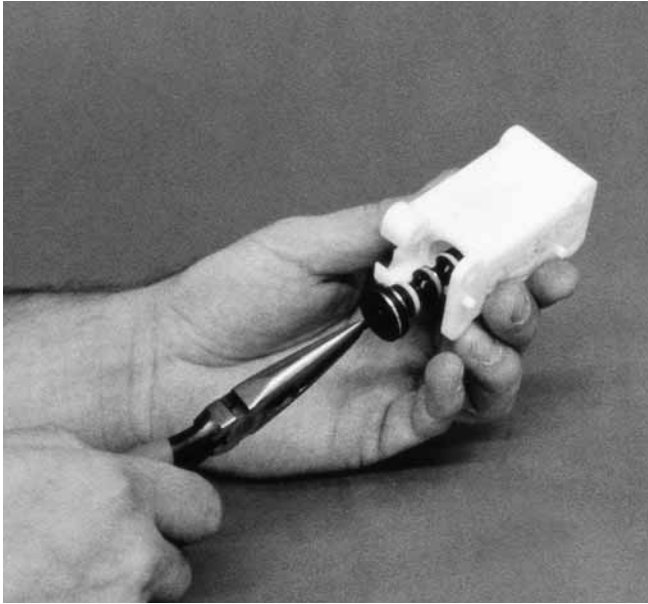
Step 1. *Figure 1*
Remove air valve screws from center section with a 5/32" hex key (Allen wrench).



Step 2. *Figure 2*
Take care while removing air valve not to damage gasket.
NOTE: Air valve has molded-in alignment pins for proper positioning during assembly.

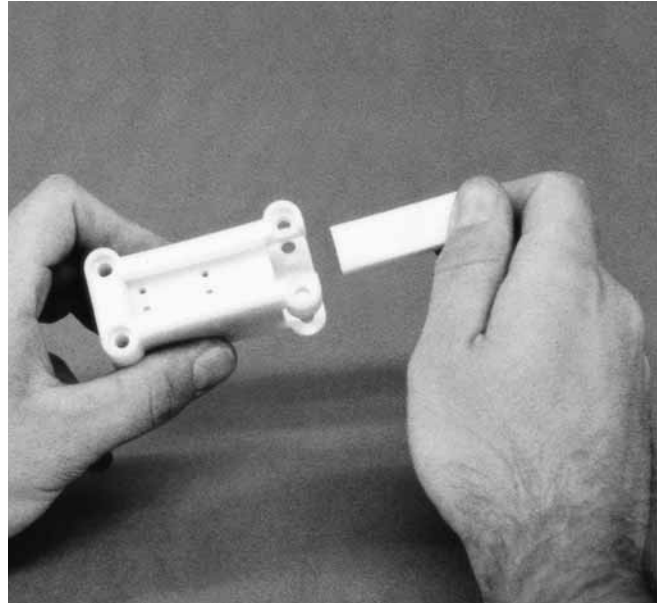


Step 3. *Figure 3*
Remove air valve end cap by simply pulling it away from air valve body (no tools required). Inspect o-ring and replace as needed with genuine Wilden parts.



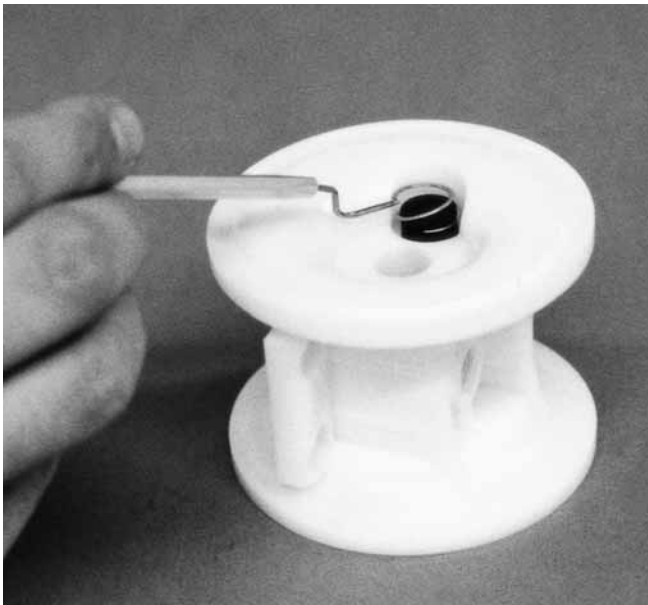
Step 4. *Figure 4*

The air valve spool can now be removed. A 4-40 UNC (Unified National Coarse thread) screw can be screwed into the threaded hole located in the center of the spool. Grip the screw with pliers and remove. If a 4-40 UNC screw is not available, the spool can be tapped out against a wood block or blown out with compressed air. Upon reassembly, lubricate air valve with NLGI grade 2 white EP bearing grease or equivalent.



Step 5. *Figure 5*

Remove the porous polyethylene muffler element by sliding it toward the end cap opening. The element can be cleaned by soaking it in a cleaning solution (no solvents). If the muffler restricts the air exhaust, replace muffler element.



Step 6. *Figure 6*

Remove pilot spool retaining ring with an o-ring pick.



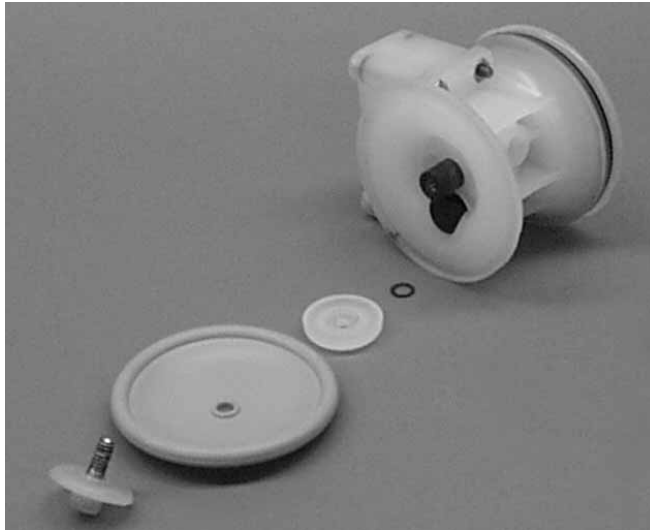
Step 7. *Figure 7*

Push pilot spool through center section and remove. Inspect seals for integrity and spool for damage. Replace pilot spool assembly if necessary. Upon reassembly of spool, apply a film of NLGI grade 2 white EP bearing grease or equivalent.

Upon performing applicable maintenance to the air distribution system, the pump can now be reassembled. Please refer to the disassembly instructions for photos and parts placement. To reassemble pump, follow the disassembly instructions in reverse order. The air distribution system needs to be

assembled first, then the diaphragms, and finally the wetted parts. Please find applicable torque specifications in this section.

When o-rings have been replaced, all P.025s require a break-in period of 2–3 minutes at air pressure above 60 psig.



Rubber/TPE diaphragm configuration

Figure 1

There are two types of diaphragm configurations available for the P.025: 1) Rubber or TPE diaphragm, and 2) PTFE primary diaphragm with back-up o-ring. Observe the “This Side Out” marking on the convex side of the diaphragm. Install the disc spring, inner piston, diaphragm, back-up o-ring (PTFE-fitted models only). **NOTE:** PTFE-fitted pumps employ an integral piston diaphragm. Add a small amount of Loctite 242 to the bore of the main shaft. Set up time is 20 minutes. Tighten outer piston to torque value found below.



PTFE diaphragm configuration

Figure 2

Lubricate the main shaft assembly with NLGI grade 2 white EP bearing grease or equivalent and insert through main shaft bore in center section. Assemble the other side and torque to proper value as listed below. Please review the photos above for proper alignment.

TORQUE SPECIFICATIONS FOR MODEL P.025 PUMPS

Description of Part	Maximum Torque
Air Valve	2.3 N•m (20 in-lbs)
Outer Piston, Rubber and TPE Diaphragms	5.6 N•m (50 in-lbs)
Clamp Band	2.3 N•m (20 in-lbs)
Top and Bottom Retainer, Poly	5.1 N•m (45 in-lbs)
Top and Bottom Retainer, PVDF	5.1 N•m (45 in-lbs)
Top and Bottom Retainer	5.1 N•m (45 in-lbs)

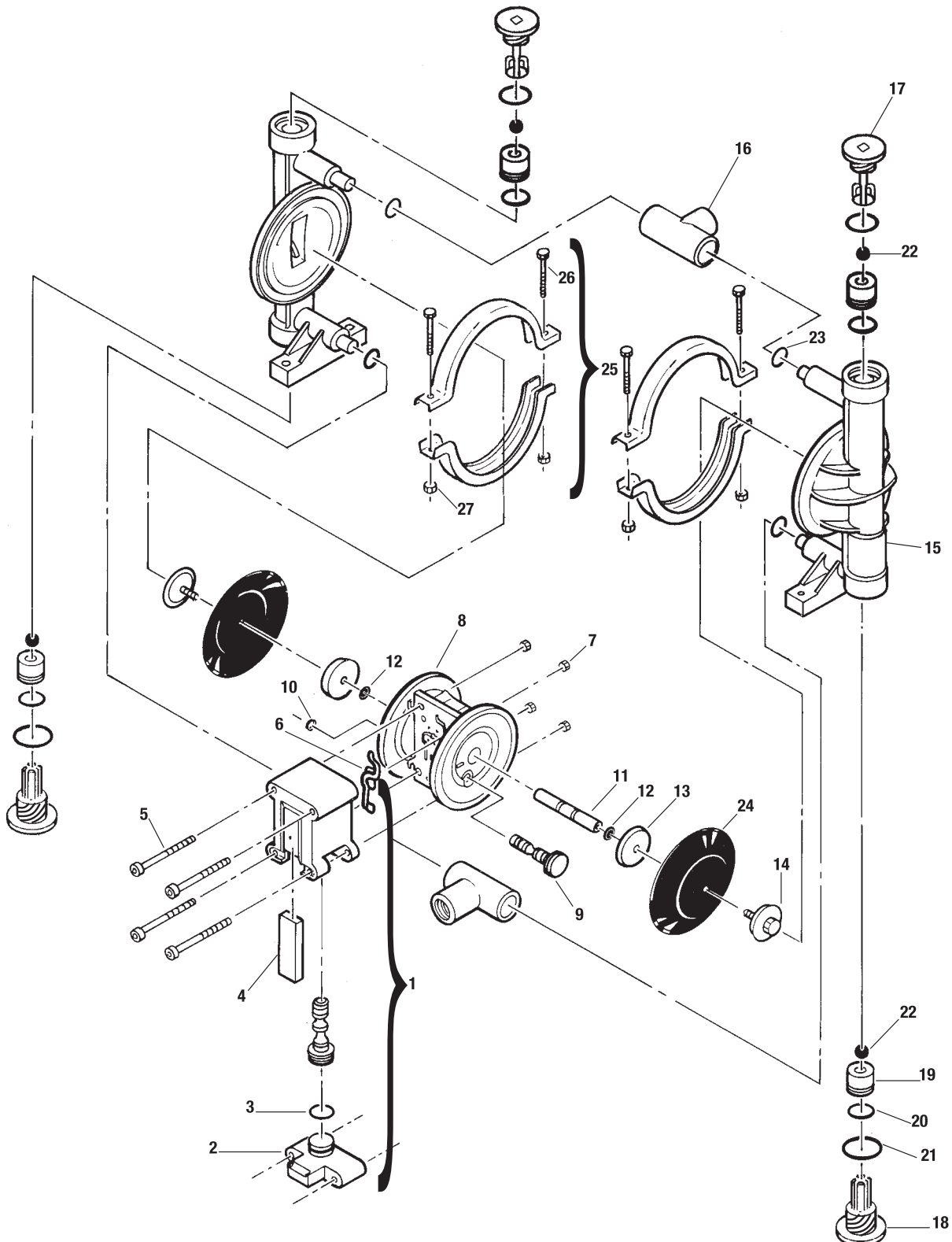
- Apply a small amount of Loctite 242 to the steel bore of the shaft from the diaphragm assembly.

EXPLODED VIEW & PARTS LISTING

P.025 PLASTIC

RUBBER/TPE-FITTED

EXPLODED VIEW



EXPLODED VIEW & PARTS LISTING

P.025 PLASTIC

RUBBER/TPE-FITTED

PARTS LISTING

Item #	Description	Qty. per Pump	P.025/PPPPP P/N	P.025/KKPPP P/N
1	Pro-Flo® Air Valve Assembly ¹	1	00-2000-20-700	02-2000-20-700
2	Pro-Flo® Air Valve End Cap	1	00-2300-20-700	00-2300-20-700
3	End Cap O-Ring (-017)	1	00-2390-52-700	00-2390-52-700
4	Muffler Element	1	00-3240-26-700	00-3240-26-700
5	Air Valve Bolt	4	00-6000-03-700	00-6000-03-700
6	Air Valve Gasket	1	00-2600-52-700	00-2600-52-700
7	Air Valve Nut	4	01-6400-03	01-6400-03
8	Pro-Flo® Center Section	1	00-3150-20-700	00-3150-20-700
9	Pilot Spool Assembly	1	00-3850-99-700	00-3850-99-700
10	Pilot Spool Retaining Ring	1	00-2650-03-700	00-2650-03-700
11	Shaft	1	00-3800-99-700	00-3800-99-700
12	Disc Spring	2	00-6800-08	00-6800-08
13	Inner Piston for Rubber/TPE	2	00-3700-20-700	00-3700-20-700
14	Outer Piston	2	00-4570-20	00-4570-21
15	Liquid Chamber	2	00-5001-20	00-5001-21
16	Manifold Tee-Section	2	00-5160-20	00-5160-21
17	Top Retainer	2	00-5411-20	00-5411-21
18	Bottom Retainer	2	00-5420-20	00-5420-21
19	Valve Seat	4	00-1130-20	00-1130-21
20	Valve Seat O-Ring*	4	*	*
21	Combo Retainer O-Ring*	4	*	*
22	Valve Ball	4	00-1080-55	00-1080-55
23	Tee Section O-Ring*	4	*	*
24	Diaphragm*	2	*	*
25	Clamp Band Assembly	2	00-7300-03	00-7300-03
26	– Clamp Band Bolt	4	01-6100-03	01-6100-03
27	– Clamp Band Nut	4	01-6400-03	01-6400-03

*Refer to Elastomer Options in Section 10.

¹Air Valve Assembly includes items 2, 3, and 4.

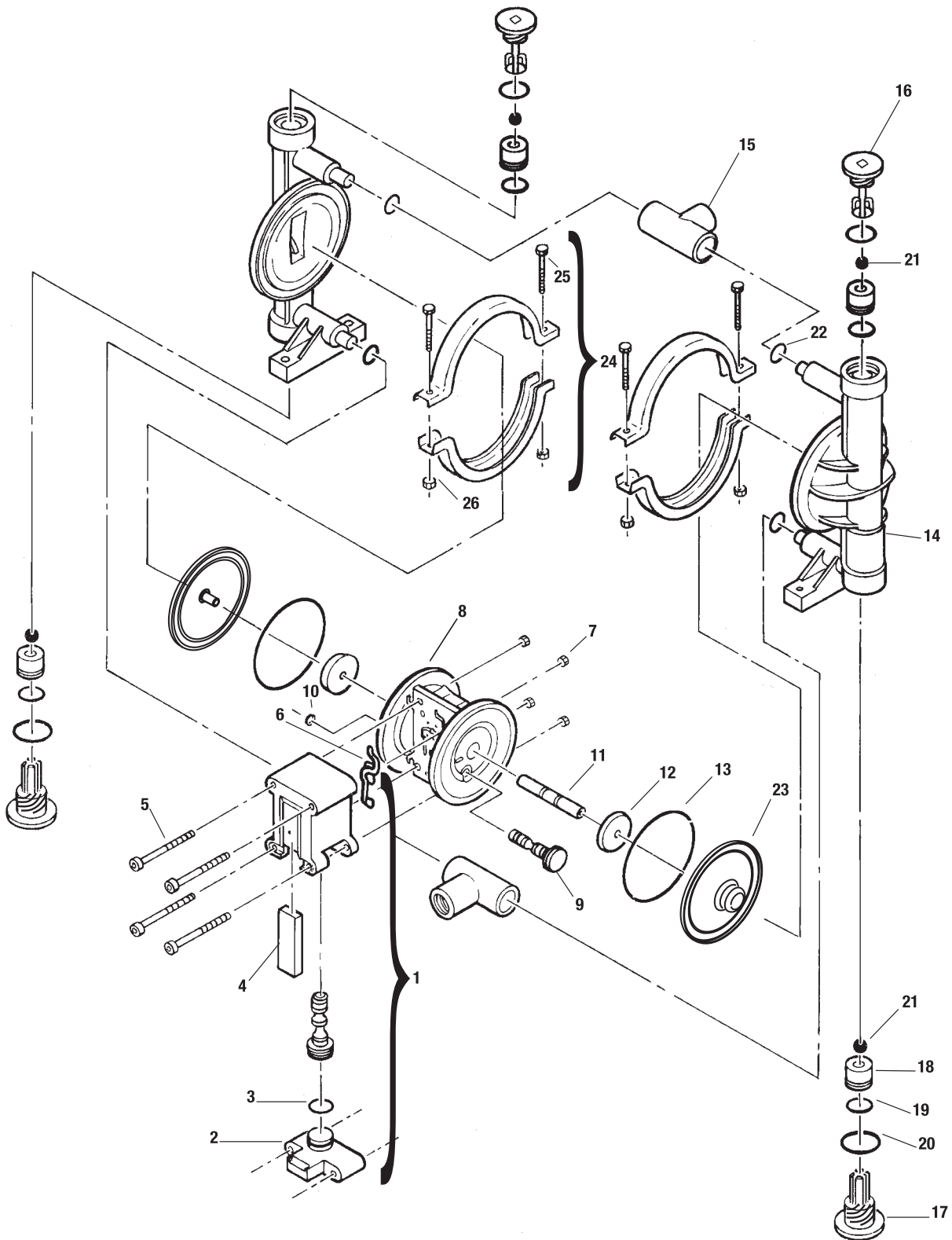
All boldface items are primary wear parts.

EXPLODED VIEW & PARTS LISTING

P.025 PLASTIC

PTFE-FITTED

EXPLODED VIEW



EXPLODED VIEW & PARTS LISTING

P.025 PLASTIC

PTFE-FITTED

PARTS LISTING

P.025 PTFE-Fitted

Item #	Description	Qty. per Pump	P.025/PZPPP/0502 P/N	P.025/KZPPP/0502 P/N
1	Pro-Flo® Air Valve Assembly ¹	1	00-2000-20-700	00-2000-20-700
2	Pro-Flo® Air Valve End Cap	1	00-2300-20-700	00-2300-20-700
3	End Cap O-Ring (-017)	1	00-2390-52-700	00-2390-52-700
4	Muffler Element	1	00-3240-26-700	00-3240-26-700
5	Air Valve Bolt	4	00-6000-05-700	00-6000-05-700
6	Air Valve Gasket	1	00-2600-52-700	00-2600-52-700
7	Air Valve Nut	4	01-6400-05	01-6400-05
8	Pro-Flo® Center Section	1	00-3150-20-700	00-3150-20-700
9	Pilot Spool Assembly	1	00-3850-99-700	00-3850-99-700
10	Pilot Spool Retaining Ring	1	00-2650-03-700	00-2650-03-700
11	Shaft	1	00-3800-99-700	00-3800-99-700
12	Inner Piston for PTFE Fitted	2	00-3750-20-700	00-3750-20-700
13	Back-Up O-Ring* ^{2,3}	2	00-1070-51	*
14	Liquid Chamber	2	00-5001-20	00-5001-21
15	Manifold Tee-Section	2	00-5160-20	00-5160-21
16	Top Retainer	2	00-5411-20	00-5411-21
17	Bottom Retainer	2	00-5420-20	00-5420-21
18	Valve Seat	4	00-1130-20	00-1130-21
19	Valve Seat O-Ring*	4	*	*
20	Combo Retainer O-Ring*	4	*	*
21	Valve Ball*	4	00-1080-55	00-1080-55
22	Tee Section O-Ring*	4	*	*
23	Diaphragm	2	00-1030-55	00-1030-55
24	Clamp Band Assembly	2	00-7300-05	00-7300-05
25	– Clamp Band Bolt	4	01-6100-05	01-6100-05
26	– Clamp Band Nut	4	01-6400-05	01-6400-05

*Refer to Elastomer Options in Section 10.

¹Air Valve Assembly includes items 2, 3, and 4.

²Part used only on PTFE-fitted pumps.

³Neoprene back-up o-ring standard (P/N 00-1070-51).

All boldface items are primary wear parts.

ELASTOMER OPTIONS

P.025 Plastic

Material	Valve Seat O-Ring	Combo Retainer O-Ring	Diaphragm	Back-Up Diaphragm O-Ring	Valve Ball	Tee Section O-Ring
Wil-Flex™	00-1200-58	00-1260-58	00-1010-58	00-1070-58	00-1080-58	00-1300-58
Buna-N	00-1200-52	00-1260-52	00-1010-52	—	00-1080-52	00-1300-52
Viton®	—	—	—	—	00-1080-53	—
PTFE	—	—	00-1030-55	—	00-1080-55	—
Stainless Steel	—	—	—	—	00-1080-03	—
PTFE-Encapsulated Viton®	00-1200-60 ¹	00-1260-601	—	—	—	00-1300-60 ¹
Fluoro-Seal™	—	—	—	—	—	00-1300-34 ¹
Neoprene	—	—	—	00-1070-51	—	—

¹For PVDF pumps only.

WARRANTY

Each and every product manufactured by Wilden Pump and Engineering, LLC is built to meet the highest standards of quality. Every pump is functionally tested to insure integrity of operation.

Wilden Pump and Engineering, LLC warrants that pumps, accessories and parts manufactured or supplied by it to be free from defects in material and workmanship for a period of five (5) years from date of installation or six (6) years from date of manufacture, whichever comes first. Failure due to normal wear, misapplication, or abuse is, of course, excluded from this warranty.

Since the use of Wilden pumps and parts is beyond our control, we cannot guarantee the suitability of any pump or part for a particular application and Wilden Pump and Engineering, LLC shall not be liable for any consequential damage or expense arising from the use or misuse of its products on any application. Responsibility is limited solely to replacement or repair of defective Wilden pumps and parts.

All decisions as to the cause of failure are the sole determination of Wilden Pump and Engineering, LLC.

Prior approval must be obtained from Wilden for return of any items for warranty consideration and must be accompanied by the appropriate MSDS for the product(s) involved. A Return Goods Tag, obtained from an authorized Wilden distributor, must be included with the items which must be shipped freight prepaid.

The foregoing warranty is exclusive and in lieu of all other warranties expressed or implied (whether written or oral) including all implied warranties of merchantability and fitness for any particular purpose. No distributor or other person is authorized to assume any liability or obligation for Wilden Pump and Engineering, LLC other than expressly provided herein.

PLEASE PRINT OR TYPE AND FAX TO WILDEN

PUMP INFORMATION

Item # _____

Serial # _____

Company Where Purchased _____

YOUR INFORMATION

Company Name _____

Industry _____

Name _____

Title _____

Street Address _____

City _____

State _____

Postal Code _____

Country _____

Telephone _____

Fax _____

E-mail _____

Web Address _____

Number of pumps in facility? _____ Number of Wilden pumps? _____

Types of pumps in facility (check all that apply): ☐ Diaphragm ☐ Centrifugal ☐ Gear ☐ Submersible ☐ Lobe☐ Other _____

Media being pumped? _____

How did you hear of Wilden Pump? ☐ Trade Journal ☐ Trade Show ☐ Internet/E-mail ☐ Distributor☐ Other _____**ONCE COMPLETE, FAX TO (909) 783-3440**

NOTE: WARRANTY VOID IF PAGE IS NOT FAXED TO WILDEN

WILDEN PUMP & ENGINEERING, LLC