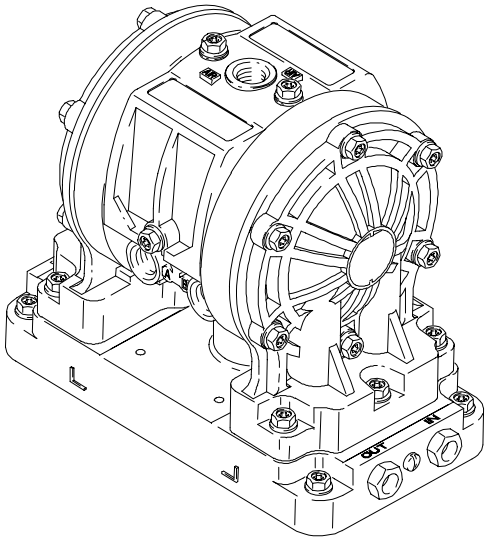
795–08690
GM 12–00

# Graymills

# Air Operated Double Diaphragm Pumps 1/4” Model

## Operations and Maintenance Instructions



**WARNING/CAUTIONS**
**Read all these SAFETY INSTRUCTIONS BEFORE installing or using this equipment. Keep this manual handy for reference/training.**

## Contents



**Graymills Corporation** 3705 N. Lincoln Avenue Chicago, Illinois 60613
773/248–6825 FAX 773/477–8673 www.graymills.com

# Symbols

### Warning Symbol

**⚠ WARNING**

This symbol alerts you to the possibility of serious injury or death if you do not follow the instructions.

### Caution Symbol

**⚠ CAUTION**

This symbol alerts you to the possibility of damage to or destruction of equipment if you do not follow the instructions.

### Safety Alert Symbol

**⚠ SAFETY ALERT**

The safety Alert Symbol means ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!

## ⚠ WARNING


### EQUIPMENT MISUSE HAZARD

Any misuse of the equipment or accessories, such as overpressurizing, modifying parts, using incompatible chemicals and fluids, or using worn or damaged parts, can cause them to rupture and result in splashing in the eyes or on the skin, other serious injury, or fire, explosion or property damage.

- This equipment is for professional use only. Observe all warnings. Read and understand all instruction manuals, warning labels, and tags before you operate this equipment. If you are not sure, or if you have questions about installation or operation, call Graymills Corporation.
- Never alter or modify any part of this equipment; doing so could cause it to malfunction.
- Check all equipment regularly and repair or replace worn or damaged parts immediately.
- Never exceed the recommended working pressure or the maximum air inlet pressure stated on your pump or in the **Technical Data** on page 5.
- Do not exceed the maximum working pressure of the lowest rated component in your system. This equipment has a **100 psi (0.7 MPa, 7 bar) maximum working pressure at 100 psi (0.7 MPa, 7 bar, ) maximum incoming air pressure.**
- Be sure that all fluids and solvents used are chemically compatible with the wetted parts shown in the **Technical Data** on page 5. Always read the manufacturer's literature before you use fluid or solvent in the pump.
- Never move or lift a pump under pressure. If dropped, the fluid section may rupture. Always follow the **Pressure Relief Procedure** on page 7 before you move or lift the pump.

### FIRE AND EXPLOSION HAZARD

Static electricity is created by the flow of fluid through the pump and hose. If the equipment is not properly grounded, sparking may occur. Sparks can ignite fumes from solvents and the fluid being pumped, dust particles, and other flammable substances, whether you are pumping indoors or outdoors, and can cause a fire or explosion and serious injury and property damage.

- To reduce the risk of static sparking, ground the pump and all other equipment used or located in the work area. Check your local electrical code for detailed grounding instructions for your area and type of equipment. See **Grounding** on page 4.
- If you experience any static sparking or even a slight shock while using this equipment, **stop pumping immediately.** Check the entire system for proper grounding. Do not use the system again until you have identified and corrected the problem.
- Pipe and dispose of the exhaust air safely, away from all sources of ignition. If the diaphragm fails, the fluid is exhausted along with the air. See **Air Exhaust Ventilation** on page 4.
- Do not smoke in the work area. Do not operate the equipment near a source of ignition or an open flame, such as a pilot light.

# ⚠ WARNING

## HAZARDOUS FLUIDS

Improper handling of hazardous fluids or inhaling toxic vapors can cause extremely serious injury or death from splashing in the eyes, ingestion, or bodily contamination. Observe all the following precautions when you handle hazardous or potentially hazardous fluids.

- Know what fluid you are pumping and its specific hazards. Take precautions to avoid a toxic fluid spill.
- Always wear appropriate clothing and equipment, such as eye protection and breathing apparatus, to protect yourself.
- Store hazardous fluid in an appropriate, approved container. Dispose of it according to all Local, State, and Federal guidelines for hazardous fluids.
- Secure the fluid outlet hose tightly into the receiving container to prevent it from coming loose and improperly draining the fluid.
- Pipe and dispose of the exhaust air safely, away from people, animals, and food handling areas. If the diaphragm fails, the fluid is exhausted along with the air. See **Air Exhaust Ventilation** on page 4.
- Use static wire hoses when pumping flammables.
- Keep containers closed when not in use.

# ⚠ SAFETY PRECAUTIONS


## CAUTION

- Verify the chemical compatibility of the pump wetted parts and the substance being pumped, flushed or recirculated. Chemical compatibility may change with temperature and concentration of the chemical(s) within the substance being pumped, flushed or recirculated.
- The pump should not be used for the structural support of the piping system. Be certain system components are properly supported to prevent stress on the pump parts.
- Do not allow pump to operate dry for long periods of time; this may cause unnecessary wear or damage to the pump.
- Maximum temperature limits are based upon mechanical stress only. Certain chemicals will significantly reduce maximum safe operating temperatures. Consult Graymills for chemical compatibility and temperature limits.

United States Government safety standards have been adopted under the Occupational Safety and Health Act. You should consult these standards—particularly the General Standards, Part 1910, and the Construction Standards, Part 1926.

# Installation

## Tightening Threaded Fasteners Before First Use

After unpacking the pump, and before using it for the first time, check and retorque all external fasteners. See the **Service** section for torque specifications. After the first day of operation, retorque the fasteners again. Although pump use varies, a general guideline is to retorque fasteners every two months.

Use a compatible thread sealant on all male threads. Tighten all connections firmly to avoid air or fluid leaks.

### ⚠ CAUTION

To avoid pump damage, do not overtighten the fittings to the pump.

## Grounding

### ⚠ WARNING

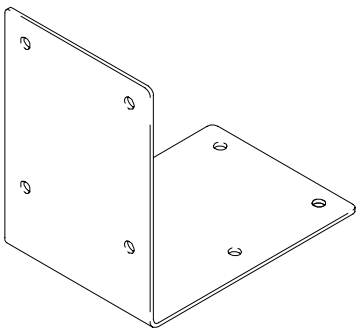
**FIRE AND EXPLOSION HAZARD**

This pump must be grounded when using flammables. Before you operate the pump, ground the system as explained below. Also read the section **FIRE AND EXPLOSION HAZARD** on page 2.

*The polypropylene pumps* are ***not*** conductive. When you pump conductive flammable fluids, ***always*** ground the fluid system. ***Never*** use a polypropylene pump with non-conductive flammable fluids as specified by your local fire protection code. Consult your fluid supplier to determine the conductivity or resistivity of your fluid.

To reduce the risk of static sparking, ground the pump and all other equipment used or located in the pumping area. Check your local electrical code for detailed grounding instructions for your area and type of equipment.

**Note:** This pump is shipped with an optional 90° mounting bracket. In applications where priming is problematic use this bracket to mount the pump horizontally to improve performance.



## Air Exhaust Ventilation

### ⚠ WARNING

**TOXIC FLUID HAZARD**

Read the **USING HAZARDOUS FLUIDS** and **FIRE AND EXPLOSION HAZARD** sections on page 2 before you operate this pump with flammable liquids.

Be sure the system is properly ventilated for your type of installation. You must vent the exhaust to a safe place, away from people, sources of ignition, animals or food handling areas when pumping flammable or hazardous fluids.

If the diaphragm ruptures, the fluid being pumped is exhausted with the air. Place a container at the end of the air exhaust line to catch fluid in case the diaphragm ruptures, and disconnect the pump.

## Mountings

### ⚠ CAUTION

The pump exhaust air may contain contaminants. If needed, ventilate to a remote area to reduce possible fluid contamination. See **Air Exhaust Ventilation** on page2 and above.

- Be sure the mounting can support the weight of the pump, hoses, and accessories, as well as the stress caused during operation.
- For all mountings, be sure the pump is secured with screws and nuts.

### ⚠ WARNING

To reduce the risk of serious injury, splashing in the eyes or on the skin, and toxic fluid spills, **never** move or lift a pump under pressure. If dropped, the fluid section may rupture. Always follow the **Pressure Relief Procedure** on page 7 before you move or lift the pump.

## Air Lines

**⚠ WARNING**

**Bleed-Type Master Air Valve and Fluid Drain Valve**

A bleed-type master air valve and a fluid drain valve are required on your system.

The bleed-type master air valve relieves air trapped between itself and the pump. Trapped air can cause the pump to cycle unexpectedly, which could result in serious bodily injury, including splashing in the eyes, injury from moving parts, or contamination from hazardous fluids.

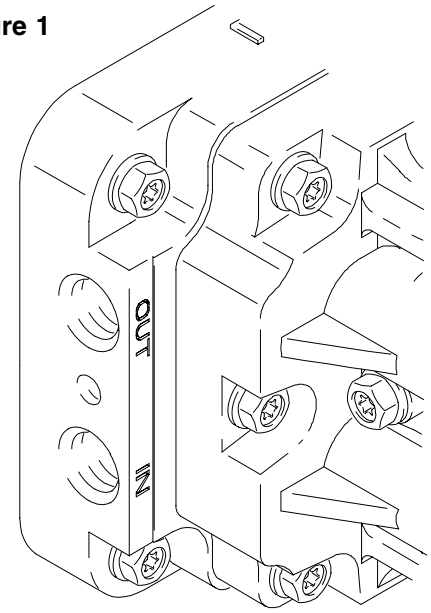
The fluid drain valve reduces the risk of serious bodily injury, including splashing in the eyes or on the skin, or contamination from hazardous fluids. Install the fluid drain valve close to the pump's fluid outlet to relieve pressure in the hose if the hose becomes plugged.

1. Mount the air line accessories on the wall or on a bracket. Be sure the air line supplying the accessories is grounded.
   a. The pump speed can be controlled in one of two ways: To control it on the air side, install an air regulator (Order Graymills Part No. FRL–2). To control it on the fluid side, install a fluid valve near the outlet.
   b. Install a bleed-type master air valve downstream from the air regulator, and use it to relieve trapped air. See the **Bleed-Type Master Air Valve and Fluid Drain Valve** warning on page 5. Locate another bleed-type master air valve upstream from all air line accessories, and use it to isolate the accessories during cleaning and repair.
   c. The air line filter removes harmful dirt and moisture from the compressed air supply.
2. Install a flexible air hose between the accessories and the pump air inlet. Screw the air line fitting into the air inlet.
3. Do not restrict the exhaust port. Excessive exhaust restriction can cause erratic pump operation.

## Fluid Lines

Fig. 1. On each end of the fluid manifold are a fluid IN port and a fluid OUT port. **NOTE: Make sure the fluid OUT port on the fluid manifold is mounted up, Fig. 1.** This will assure proper pump priming. **Fluid-in** and **fluid-out** lines can be connected on the same end, or opposite ends of the manifold. Plug ports that are not used (plugs provided).

**Figure 1**




**TECHNICAL DATA**

| | |
|---|---|
| Maximum fluid working pressure | 100 psi (0.7 MPa, 7 bar) |
| Maximum / minimum air pressure | 100 psi / 20 psi (0.7 MPa, 7 bar)/(0.14 MPa, 1.4 bar) |
| Maximum fluid flow | 5.0 gpm (18.9 lpm) |
| Maximum pump speed | 320 (dry) cycles per minute<br>250 (wet) cycles per minute |
| Volume per stroke* | 0.006 gal (23cc) |
| Volume per cycle* | 0.012 gal (46 cc) |
| Maximum suction lift dry | 8 to 10 ft (25 to 3 m) |
| Maximum size pumpable solids | 0.06 in. (1.5mm) |
| Maximum operating temperature | 180° F (82° C) |
| Maximum air consumption | 9.0 scfm, (0.252 m 3 / min.) |
| Air inlet size** | 1/4 npt (f) 1/4 bsp (f) |
| Fluid inlet size** | 1/4 npt(f) / 1/4 bsp(f) |
| Fluid outlet size** | 1/4 npt(f) / 1/4bsp (f) |
| Air exhaust port size** | 1/4 npt (f) / 1/4 bsp (f) |
| Weight (Polypropylene pump) | 2.0 lb (0.9 kg) |

Wetted parts (housing, diaphragms, check valves) Glass–filled polypropylene, Teflon, polypropylene.

Sound power level (pressure) (per ANSI STD S12.1)

| | |
|---|---|
| at 100 psi (0.7 MPa, 7 bar) | 75.5 dBa |
| at 70 psi (0.49 MPa, 4.9 bar) | 72.0 dBa |
| at 40 psi (0.28 MPa, 2.8 bar) | 68.2 dBa |

Sound power level (intensity) (per ANSI STD S12.1)

| | |
|---|---|
| at 100 psi (0.7 MPa, 7 bar) | 84.5 dBa |
| at 70 psi (0.49 MPa, 4.9 bar) | 81.1 dBa |
| at 40 psi (0.28 MPa, 2.8 bar) | 76.6 dBa |

* Volume per cycle may vary based on suction condition, discharge head, air pressure, and fluid.

** Hybrid thread allows for either 1/4 npt or 1/4 bsp fitting.

Teflon is a registered trademark of the DuPont Company.

## Typical Installation

The installations shown in Fig. 2 are only a guide to help select and install a pump; they are not actual system designs.

Typical installation includes (not supplied by Graymills):

- For solenoid operation: a four-way, 5-port, 3-position solenoid valve with 1/4-in. ports, or two 3–position 3–way valves. Mac series 44 (4–way), or series 35 (3–way). Either way, air pressure should be released if not cycling.
- PLC or timer. Consult your local industrial controls distributor.

**⚠ CAUTION**

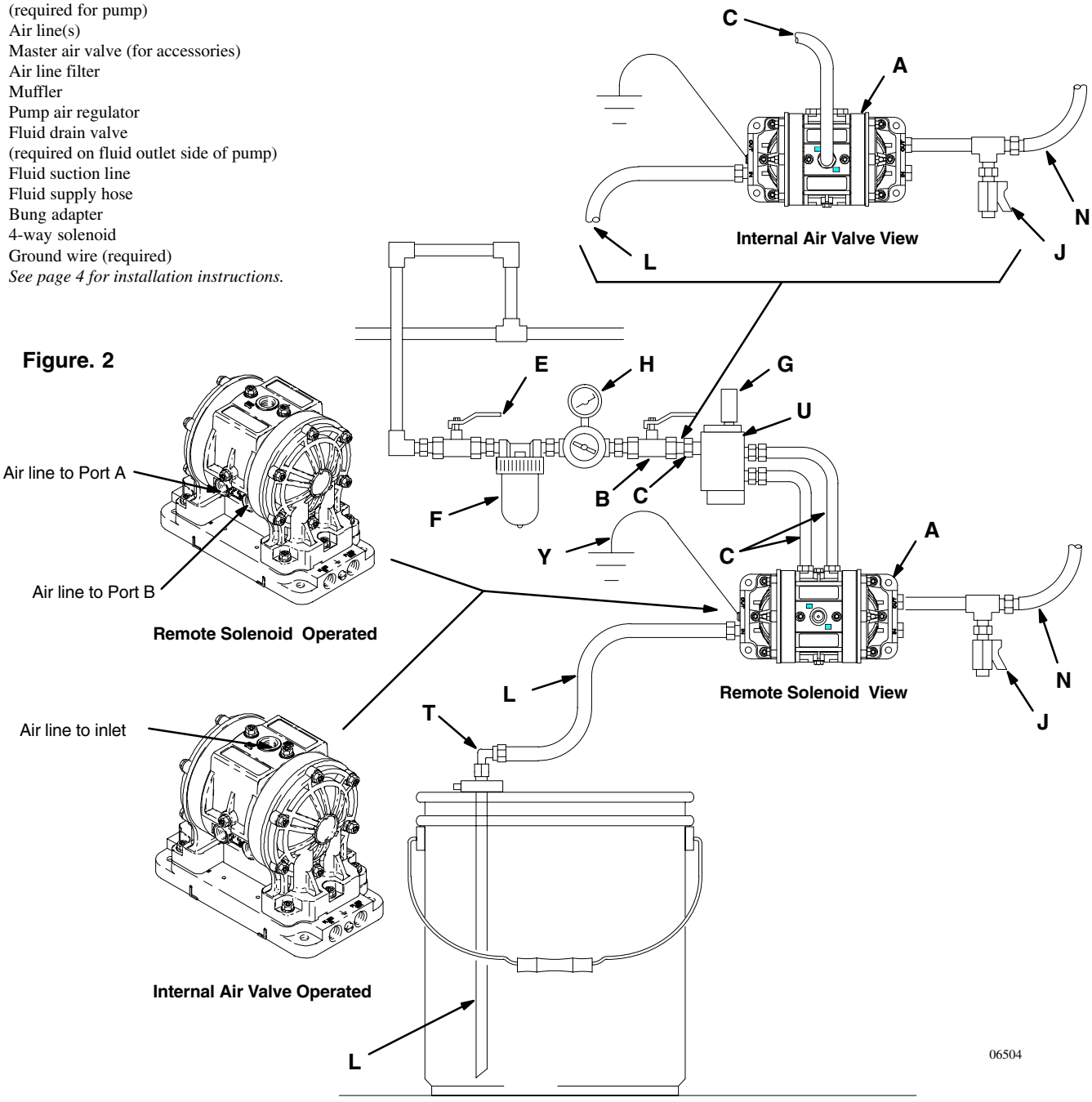
For solenoid operation, the pump must exhaust through the solenoid. Failure to exhaust through solenoid could cause the diaphragms to fail.

**KEY**

A 1/4" DDP pump
B Bleed-type master air valve (required for pump)
C Air line(s)
E Master air valve (for accessories)
F Air line filter
G Muffler
H Pump air regulator
J Fluid drain valve (required on fluid outlet side of pump)
L Fluid suction line
N Fluid supply hose
T Bung adapter
U 4-way solenoid
Y Ground wire (required)

*See page 4 for installation instructions.*

**Figure. 2**



# Operation

## Pressure Relief Procedure

**⚠ WARNING**

To reduce the risk of serious injury, including splashing fluid in the eyes or on the skin, follow this procedure whenever you are instructed to relieve pressure, when you shut off the pump, and before you check, adjust, clean, move, or repair any system equipment.

**⚠ CAUTION**

Some systems may require installation of a pressure relief valve at the pump outlet to prevent overpressurization and rupture of the pump or hose. See Fig. NO TAG.

Thermal expansion of fluid in the outlet line can cause overpressurization. This can occur when using long fluid lines exposed to sunlight or ambient heat, or when pumping from a cool to a warm area (for example, from an underground tank).

Overpressurization can also occur if the pump is being used to feed fluid to a piston pump, and the intake valve of the piston pump does not close, causing fluid to back up in the outlet line.

1. Shut off air and reserve air to the pump.
2. Open the dispensing valve if the system has one.
3. Open the fluid drain valve to relieve all system pressure, and have a container ready to catch the drainage.

## Flushing the Pump Before First Use

The pump was tested in water. If water could contaminate the fluid you are pumping, flush it thoroughly with a compatible solvent. Follow the procedure in **Starting and Adjusting the Pump.**

## Starting and Adjusting the Pump

**⚠ WARNING**

To reduce the risk of serious injury, splashing in the eyes or on the skin, and toxic fluid spills, **never** move or lift a pump under pressure. If the pump is dropped, the fluid section could rupture. Always follow the **Pressure Relief Procedure** above before you move or lift the pump.

1. Be sure the pump is properly grounded. Read and follow the instructions in **Grounding** on page 4.
2. Check all fittings to be sure they are tight. Be sure to use a compatible liquid thread sealant on all male threads. Tighten the fluid inlet and outlet fittings and plugs securely. Retorque all fasteners before start-up.
3. Place the suction tube (if used) in the fluid to be pumped.
4. Place the end of the outlet hose into an appropriate container.
5. Close the fluid drain valve.
6. With the air regulator closed, open all bleed-type master air valves.
7. If the outlet hose has a dispensing device, hold it open while continuing with step 8.
8. **Slowly** open the air regulator until the pump starts to cycle. Allow the pump to cycle until all air is pushed out of the lines and the pump is primed.

   **NOTE: To prime a remote solenoid-operated air valve**, operate the pump at a minimum 60 cpm rate until the pump is fully primed.

## Pump Shutdown

At the end of the work shift, and before you check, adjust, clean, or repair the system, **relieve air and fluid pressure**.

**⚠ WARNING**

To reduce the risk of serious injury whenever you are instructed to relieve pressure, always follow the **Pressure Relief Procedure** on page 7.

# Maintenance

## Lubrication

The air valve is lubricated at the factory and designed to operate without additional lubrication.

If added lubrication is desired, every 500 hours of operation (or monthly), remove the hose from the pump air inlet and add two drops of machine oil to the air inlet.

**⚠ CAUTION**

Do not over-lubricate the pump. Excess oil is exhausted through the muffler, which could contaminate your fluid supply or other equipment.

## Tightening Threaded Connections

Before each use, check all hoses for wear or damage, and replace as necessary. Be sure all threaded connections are tight and free of leaks.

Check fasteners. Tighten or retorque as necessary. Although pump use varies, a general guideline is to retorque fasteners every two months. See the **Service** section for torque specifications.

## Flushing and Storage

Flush the pump to prevent the fluid from drying or freezing in the pump and damaging it. Always flush the pump and **relieve the pressure** before storing for any length of time. Use a compatible solvent.

**⚠ WARNING**

To reduce the risk of serious injury whenever you are instructed to relieve pressure, always follow the **Pressure Relief Procedure** on page 7.

*If you are flushing*, run the pump long enough to thoroughly clean the pump and hoses, close the air regulator, and remove the suction hose from the solvent and place it in the fluid to be pumped.

*If you are shutting down the pump*, remove the suction hose from the fluid container, run the pump until the fluid is forced out of the system, and shut off the air supply immediately.

# Troubleshooting

**Relieve the pressure** before you check or service the equipment.

Check all possible problems and causes before you disassemble the pump.

Numbers referenced are in Figures 3, 4, and 5.

**⚠ WARNING**

To reduce the risk of serious injury whenever you are instructed to relieve pressure, always follow the **Pressure Relief Procedure** on page 7.

## Internal Air Valve-Operated and Remote Solenoid-Operated Pumps

| PROBLEM | CAUSE | SOLUTION |
|---|---|---|
| The pump cycles at stall, or it fails to hold pressure at stall. | The check valves (20) or o-rings (21) are leaking. | Replace the check valves and/or o-rings. See page 11. |
| | The check valves (20) are worn. | Replace the check valves. See page 11. |
| | Debris is stuck between the a check valve (20) and the seat. | Clean the check valve/seat area. See page 11. |
| The pump operates erratically. | The suction line is clogged. | Inspect and clear the line. |
| | The check valves (20) are sticking or leaking. | Replace the check valves, or clean and check the valve/seat area. See page 11. |
| | A diaphragm (30) is ruptured. | Contact Graymills. |
| There are air bubbles in the fluid. | The suction line is loose. | Tighten the suction line. |
| | A diaphragm (30) is ruptured. | Contact Graymills. |
| | The manifold (52) is loose, or the o-rings (21) are damaged. | Tighten the manifold screws (58). Replace the o-rings (21). See page 11. |
| | The fluid covers (51) are loose. | Tighten the fluid cover screws (58). See page11. |
| There is fluid in the exhaust air. | A diaphragm (30) is ruptured. | Contact Graymills. |
| | A diaphragm plate (50) is loose. | Tighten the diaphragm plate. See page10. |
| The pump exhausts air near the fluid covers. | The fluid covers (51) are loose, or the o-rings (57) are damaged. | Tighten the fluid cover screws (58), or replace the o-rings. See page11. |
| The pump exhausts air near the air valve. | The air valve cover screws (14) are loose. | Tighten the screws. See page 10. |
| | The top (5) and/or side (6) air valve o-rings are damaged. | Replace these o-rings. |
| The pump leaks fluid from the check valves. | The o-rings (21) are leaking, or the screws (58) are loose. | Replace these o-rings, and tighten the screws. See page 11. |

## Internal Air Valve-Operated Pumps Only

| PROBLEM | CAUSE | SOLUTION |
|---|---|---|
| The pump will not cycle, or it cycles once and stops. | The air valve is stuck or dirty. Not enough air pressure supplied. | Disassemble and clean or repair the air valve. See page 10. Use filtered air. |
| | Not enough air pressure supplied | Increase air pressure supply. Do not exceed maximum input pressure. |

## Remote Solenoid-Operated Pumps Only

| PROBLEM | CAUSE | SOLUTION |
|---|---|---|
| The pump will not prime or loses prime. | The cycle rate is too low. | Increase cycle rate to 60 cpm. |
| | The check valves (20) are not sealing. | Inspect the check valves, and replace them if worn or damaged. See page 11. |
| | Fluid manifold not mounted with OUT port up. | Re-mount fluid manifold so OUT port is up. |
| The pump leaks air or does not operate. | Air is supplied to Port A and Port B at the same time. | Replace both diaphragms (30). Contact Graymills. Check your installation. |
| | Solenoid exhaust is plugged. | Ensure that exhaust (G on page 6) is free of obstructions. |

# Service

## Service Kits

Service Kits may be ordered separately.

To repair the air valve, order Part No. 784–90609. Parts included in the Air Valve Service Kit are marked with an asterisk in Fig. 3, for example (3*).

For fluid section repair parts, see the **Service Kit** 784–90610. Parts included in the Fluid Section Service Kit are marked with a dagger in Figs. 4 and 5, for example (9‡).

## Servicing the Air Valve

Use Service Kit Part No. 784–90609. Service the air valve as follows. See Fig. 3.

1. **Relieve the fluid pressure**, and disconnect air line from the pump.

**⚠ WARNING**

To reduce the risk of serious injury whenever you are instructed to relieve pressure, always follow the **Pressure Relief Procedure** on page 7.

2. Remove the four screws (14) that hold the valve cover (7) on the center housing (1).

3. Remove the valve block (4*) and valve carriage (2), and replace the u-cups (3*). Replace the valve carriage and valve block. When you replace the valve carriage, position it all the way to one side or the other.

   **NOTE:** The valve block shown in Fig. 3 is for pumps with an air-operated air motor. If your pump has a solenoid-operated air motor, this step does not pertain. Items 2, 3, 4*, 16, and 17 are not required.

4. Clean any parts that are dirty.

5. Replace the valve cover (7), replace the screws (14), and torque the screws to 40 in-lb (4.5 N.m).

6. Reconnect the pump.

## Replacing Diaphragms

Contact Graymills for information.

**Figure 3**

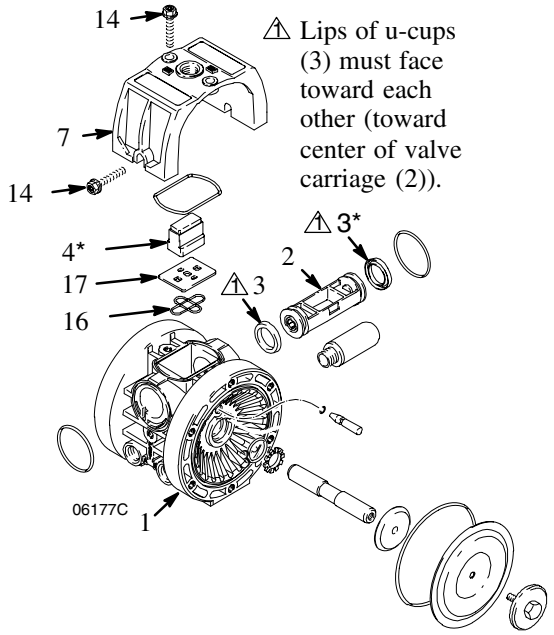
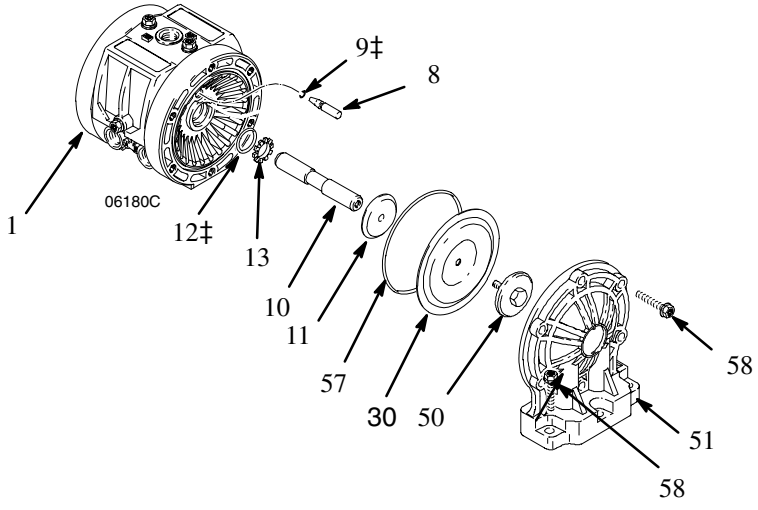



**Figure 4**



## Replacing Check Valves

Use Service Kit Part No. 784–90610. Replace each pair of check valves as follows. See Fig. 5.

1. **Relieve the pressure**, and disconnect the air line from the pump.

**⚠ WARNING**

To reduce the risk of serious injury whenever you are instructed to relieve pressure, always follow the **Pressure Relief Procedure** on page 7.

2. Remove the eight screws (58) that hold the fluid cover/center housing assembly on the manifold (52), and lift the manifold covers/center housing assembly off of the manifold (52).

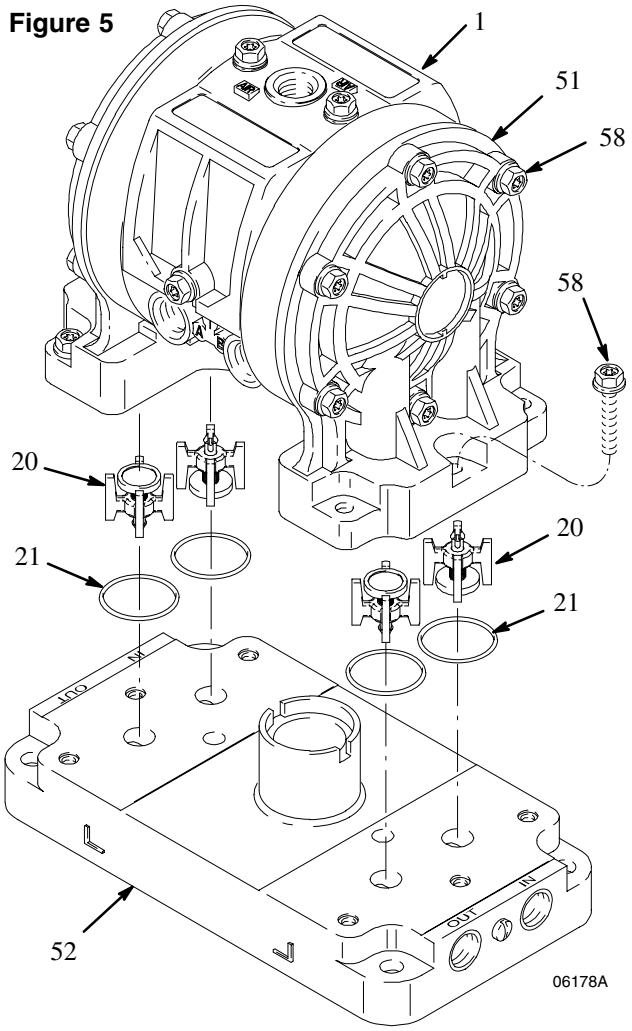
3. Remove and replace the check valves (20), **being careful to orient each check valve exactly like the one it is replacing.** Make sure the check valve/seat area is clean.

4. Remove and replace the sealing o-rings (21). Once compressed, o-rings may not be reused. Make sure the check valve/seat area is clean.

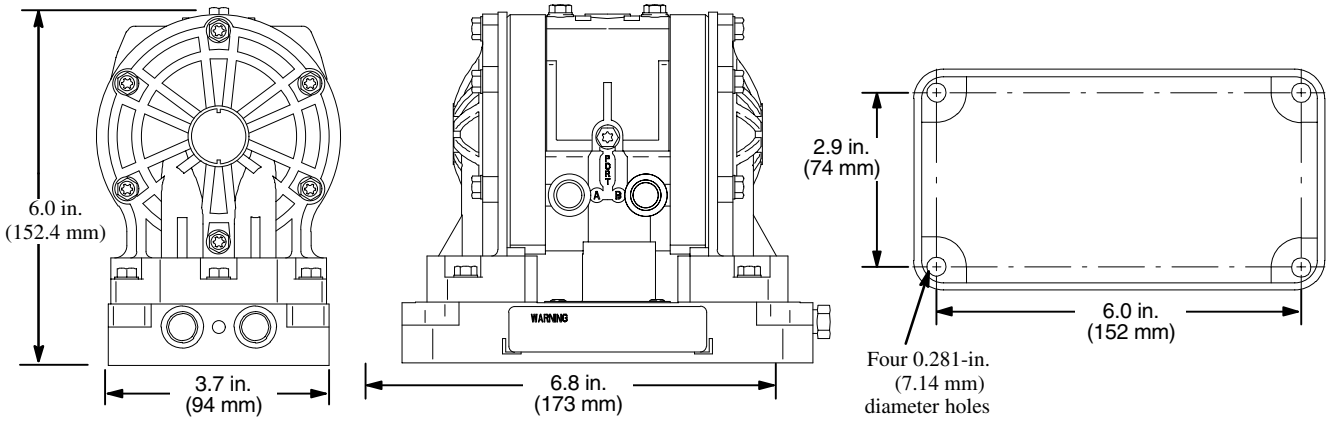
5. Replace the manifold covers/center housing assembly on the manifold (52), replace the screws (58) that fasten the manifold covers/center housing assembly to the manifold, and torque the screws to 40 in-lb (4.5 N.m).

6. Reconnect the pump.

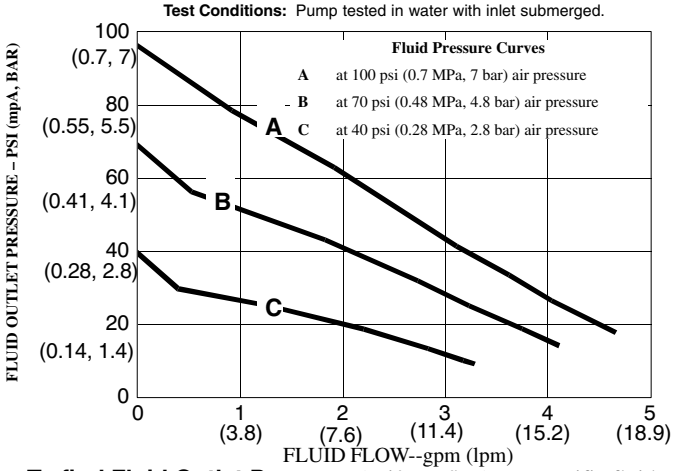
**Figure 5**



# Dimensions and Mounting Hole Layout

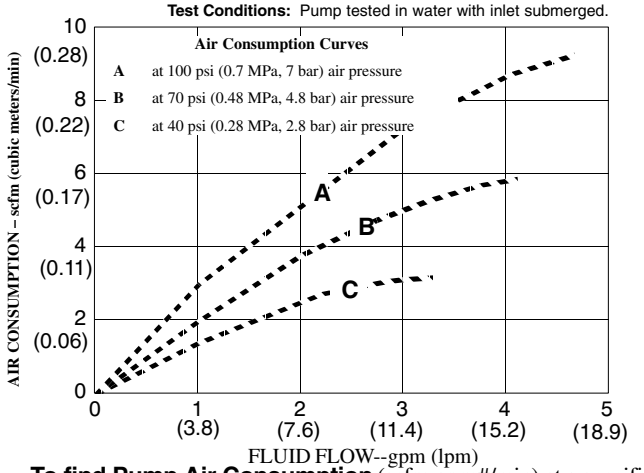



# PERFORMANCE CHARTS




**To find Fluid Outlet Pressure** (psi/MPa/bar) at a specific fluid flow (gpm/lpm) and operating air pressure (psi/MPa/bar):

1. Locate fluid flow rate along bottom of chart.
2. Follow vertical line up to intersection with selected fluid outlet pressure curve.
3. Follow left to scale to read fluid outlet pressure.




**To find Pump Air Consumption** (scfm or m#/min) at a specific fluid flow (gpm/lpm) and air pressure (psi/MPa/bar):

1. Locate fluid flow rate along bottom of chart.
2. Read vertical line up to intersection with selected air consumption curve.
3. Follow left to scale to read air consumption.

## WARRANTY

**Graymills Corporation** warrants that the equipment manufactured and delivered, when properly installed and maintained , shall be free from defects in workmanship and will function as quoted in the published specification. **Graymills** does not warrant process performance, nor assume any liability for equipment selection, adaptation, or installation.

Warranty does not apply to damages or defects caused by shipping, operator carelessness, mis–use, improper application or installation, abnormal use, use of add–on parts or equipment which damages or impairs the proper function of the unit and modifications made to the unit. Warranty does not apply to expendable parts needing replacement periodically due to normal wear and tear.

A new Warranty period shall not be established for repaired or replaced materials or products. Such items shall remain under Warranty for only the remainder of the Warranty period of the original materials or product.

THE FOREGOING WARRANTIES ARE IN LIEU OF ALL OTHER WARRANTIES, WHETHER ORAL, WRITTEN, EXPRESSED, IMPLIED OR STATUTORY. **GRAYMILLS CORPORATION** MAKES NO OTHER WARRANTY OF ANY KIND EXPRESS OR IMPLIED. ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE WHICH EXCEED THE A FORESTATED OBLIGATION ARE HEREBY DISCLAIMED BY **GRAYMILLS CORPORATION** AND EXCLUDED FROM THIS SALE. **Graymills** warranty obligations and Buyer remedies (except to title) are solely and exclusively stated herein. In no case will **Graymills** be liable for consequential damages, loss of production, or any other loss incurred due to interruption of service.

**Graymills**' obligation under this Warranty shall be limited to:

a) Repairing or replacing (at **Graymills** sole discretion) any non–conforming or defective component within one year from the date of shipment from **Graymills**.

b) Repairing or replacing (at **Graymills** sole discretion), components supplied by, but not manufactured by **Graymills**, to the extent of the warranty given by the original manufacturer.

Buyer must give **Graymills** prompt notice of any defect or failure.

If you believe that you have a Warranty claim, contact **Graymills** at (773)248–6825. Any return material must have an RMA number on the outside of the package and must be shipped prepaid or shipment will be refused. **Graymills** will promptly examine the material and determine if it is defective and within the Warranty period.