Instructions – Parts List

Parts

ALUMINUM, STAINLESS, AND DUCTILE IRON

Husky ™ 2150 Air–Operated Diaphragm Pumps

308368W

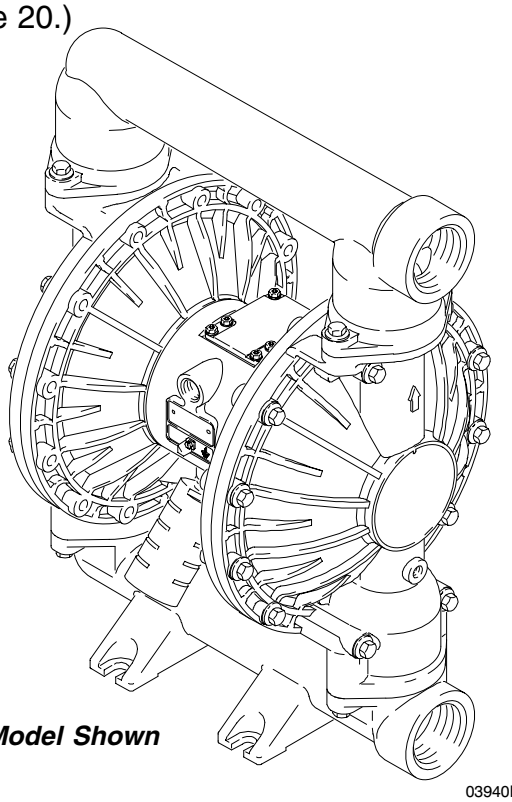
120 psi (0.8 MPa, 8 bar) Maximum Fluid Working Pressure
120 psi (0.8 MPa, 8 bar) Maximum Air Input Pressure

***Model No. DF3___**	**Aluminum Pumps**
***Model No. DFH___**	**Aluminum Extended Pump**
***Model No. DF4___**	**Stainless Steel Pumps**
***Model No. DF6___**	**Ductile Iron Pumps**
***Model No. DFC___**	**Aluminum BSPT Pumps**
***Model No. DFD___**	**Stainless Steel BSPT Pumps**
***Model No. DFF___**	**Ductile Iron BSPT Pumps**
***Model No. DFJ___**	**Aluminum BSPT Extended Pump**
Model No. 232503	**Private-Label Aluminum 2150 Pump** (See page 20.)

***NOTE:** Refer to the Pump Matrix on page 20 to determine the Model No. of your pump.

US and Foreign Patents Pending

Read warnings and instructions.
See page 2 for table of contents.



Aluminum Model Shown

03940B

PROVEN QUALITY. LEADING TECHNOLOGY.

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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.

⚠ 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 operating the equipment.
- Never alter or modify any part of this equipment; doing so could cause it to malfunction. Use only genuine Graco parts and accessories.
- 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 28.
- Do not exceed the maximum working pressure of the lowest rated component in your system. This equipment has a **120 psi (0.8 MPa, 8 bar) maximum working pressure at 120 psi (0.8 MPa, 8 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 28. Always read the manufacturer's literature before using 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 9 before moving or lifting the pump. The pump is very heavy. If it must be moved, have two people lift the pump by grasping the outlet manifold securely.

⚠ WARNING



HAZARDOUS FLUIDS

Improper handling of hazardous fluids or inhaling toxic vapors can cause extremely serious injury, even death, due to splashing in the eyes, ingestion, or bodily contamination. Observe all the following precautions when handling known 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 8.



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. Refer to **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 the problem has been identified and corrected.
- 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 8.
- 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.



HALOGENATED HYDROCARBON HAZARD

Never use 1,1,1–trichloroethane, methylene chloride, other halogenated hydrocarbon solvents or fluids containing such solvents in Aluminum Pumps. Such use could result in a serious chemical reaction, with the possibility of explosion, which could cause death, serious injury and/or substantial property damage.

Consult your fluid suppliers to ensure that the fluids used are compatible with aluminum parts.

Installation

General Information

- The Typical Installation shown in Fig. 2 is only a guide for selecting and installing system components. Contact your Graco distributor or Graco Technical Assistance (see back page) for assistance in planning a system to suit your needs.
- Always use Genuine Graco Parts and Accessories.
- Reference numbers and letters in parentheses refer to the callouts in the figures and the parts lists on pages 22 to 23.

⚠ WARNING

HAZARDOUS FLUIDS
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 Warning** on page 9 before moving or lifting the pump.

- The pump is very heavy. If it must be moved, have two people lift the pump by grasping the outlet manifold (103) securely. See Fig. 3 on page 7.

Tightening Screws Before First Use

After you unpack the pump, and before you use it for the first time, check and retorque external fasteners. Retorque the fluid cover screws first, then the manifold screws. This keeps the manifolds from interfering with tightening the fluid covers. See the **Service** section for torque specifications.

After the first day of operation, check and retorque the fasteners again. Although the recommended frequency for retorquing fasteners varies with pump usage, a general guideline is to retorque fasteners every two months.

Grounding

⚠ WARNING

FIRE AND EXPLOSION HAZARD
This pump must be grounded. Before operating the pump, ground the system as explained below. Also, read the section **FIRE AND EXPLOSION HAZARD,** on page 3.

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. ***Ground all of this equipment:***

- *Pump*: Connect a ground wire and clamp as shown in Fig. 1. Loosen the grounding screw (W). Insert one end of a 12 ga (1.5 mm^2) minimum ground wire (Y) behind the grounding screw and tighten the screw securely. Connect the clamp end of the ground wire to a true earth ground. Order Part No. 222011 Ground Wire and Clamp.

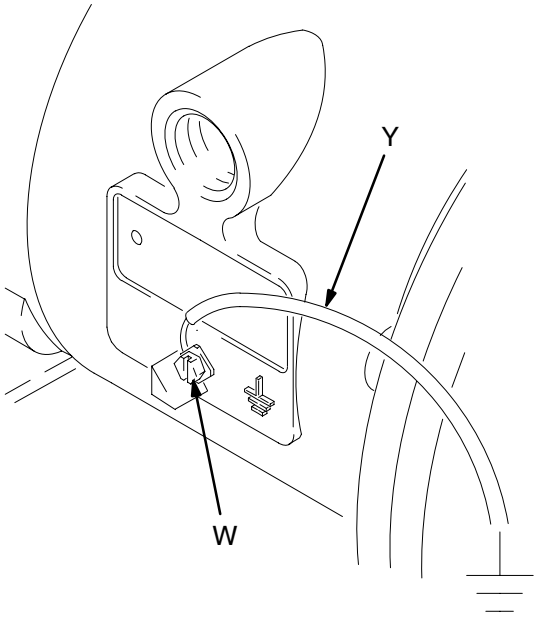


Fig. 1 02646B

- *Air and fluid hoses*: Use only grounded hoses with a maximum of 500 ft (150 m) combined hose length to ensure grounding continuity.
- *Air compressor*: Follow the manufacturer's recommendations.
- *All solvent pails used when flushing:* Follow the local code. Use only metal pails, which are conductive. Do not place the pail on a non-conductive surface, such as paper or cardboard, which interrupts the grounding continuity.
- *Fluid supply container:* Follow the local code.

Installation

Mountings

⚠ CAUTION

The pump exhaust air may contain contaminants. Ventilate to a remote area if the contaminants could affect your fluid supply. See **Air Exhaust Ventilation** on page 8.

- Be sure the mounting surface 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 bolted directly to the mounting surface.
- For ease of operation and service, mount the pump so the air valve cover (2), air inlet, and fluid inlet and outlet ports are easily accessible.
- Rubber Foot Mounting Kit 236452 is available to reduce noise and vibration during operation.

Air Line

⚠ WARNING

A bleed-type master air valve (B) is required in your system to relieve air trapped between this valve and the pump. Trapped air can cause the pump to cycle unexpectedly, which could result in serious injury, including splashing in the eyes or on the skin, injury from moving parts, or contamination from hazardous fluids. See Fig. 2.

1. Install the air line accessories as shown in Fig. 2. Mount these accessories on the wall or on a bracket. Be sure the air line supplying the accessories is grounded.
   a. Install an air regulator (C) and gauge to control the fluid pressure. The fluid outlet pressure will be the same as the setting of the air regulator.
   b. Locate one bleed-type master air valve (B) close to the pump and use it to relieve trapped air. See the **WARNING** above. Locate the other master air valve (E) upstream from all air line accessories and use it to isolate them during cleaning and repair.
   c. The air line filter (F) removes harmful dirt and moisture from the compressed air supply.
2. Install a grounded, flexible air hose (A) between the accessories and the 1/2 npt(f) pump air inlet (N). See Fig. 2. Use a minimum 1/2” (13 mm) ID air hose. Screw an air line quick disconnect coupler (D) onto the end of the air hose (A), and screw the mating fitting into the pump air inlet snugly. Do not connect the coupler (D) to the fitting until you are ready to operate the pump.

Installation of Remote Pilot Air Lines

1. Refer to Parts Drawings. Connect air line to pump as in preceding steps.
2. Connect 1/4 in. O.D. tubing to push type connectors (14) on air motor of pump.

NOTE: by replacing the push type connectors, other sizes or types of fittings may be used. The new fittings will require 1/8 in. npt threads.

3. Connect remaining ends of tubes to external air signal, such as Graco’s Cycleflo (P/N 195264) or Cycleflo II (P/N195265) controllers.

Fluid Suction Line

1. **Use grounded fluid hoses (G).** The pump fluid inlet (R) is 2” npt(f). Screw the fluid fitting into the pump inlet securely.
2. If the fluid inlet pressure to the pump is more than 25% of the outlet working pressure, the ball check valves will not close fast enough, resulting in inefficient pump operation.
3. At inlet fluid pressures greater than 15 psi (0.1 MPa, 1 bar), diaphragm life will be shortened.
4. See the **Technical Data** on page 28 for maximum suction lift (wet and dry).

Installation

Fluid Outlet Line

⚠ WARNING

A fluid drain valve (J) is required to relieve pressure in the hose if it is plugged. The drain valve reduces the risk of serious injury, including splashing in the eyes or on the skin, or contamination from hazardous fluids when relieving pressure. Install the valve close to the pump fluid outlet. See Fig. 2.

1. **Use grounded fluid hoses (L).** The pump fluid outlet (S) is 2" npt(f). Screw the fluid fitting into the pump outlet securely.
2. Install a fluid drain valve (J) near the fluid outlet. See the **WARNING** above.
3. Install a shutoff valve (K) in the fluid outlet line.

Retorquing with PTFE ® Seals or Diaphragms

If your pump has PTFE ® seals in the manifolds or if it has PTFE ® diaphragms, retorque the manifold bolts (106) and fluid cover bolts (106 & 112) according to the torque notes in Fig. 3 on page 7.

FLOOR-MOUNT TYPICAL INSTALLATION

KEY

A Air supply hose
B Bleed-type master air valve (required for pump)
C Air regulator
D Air line quick disconnect
E Master air valve (for accessories)
F Air line filter
G Fluid suction hose
H Fluid supply
J Fluid drain valve (required)
K Fluid shutoff valve
L Fluid hose
N 1/2 npt(f) air inlet port
R 2 npt(f) fluid inlet port
S 2 npt(f) fluid outlet port
Y Ground wire (required; see page 4 for installation instructions)

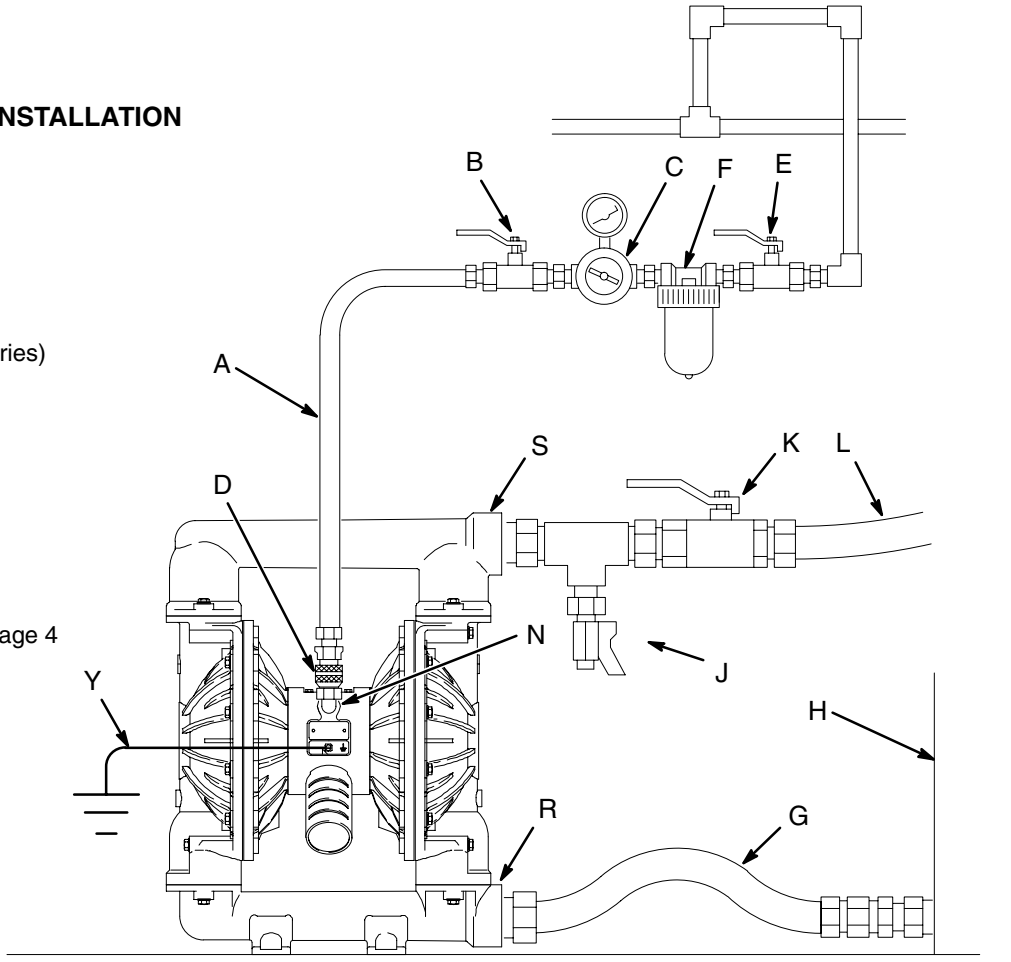


Fig. 2

Installation

Changing the Orientation of the Fluid Inlet and Outlet Ports

The pump is shipped with the fluid inlet (R) and outlet (S) ports facing the same direction. See Fig. 3. To change the orientation of the inlet and/or outlet port:

1. Remove the screws (106) holding the inlet (102) and/or outlet (103) manifold to the covers (101).

2. Reverse the manifold and reattach. Install the screws and torque to 120 to 150 in-lb (14 to 17 N.m).

KEY

N	1/2 npt(f) air inlet port	101	Covers
P	Muffler. Air exhaust port is 3/4 npt(f).	102	Fluid inlet manifold
		103	Fluid outlet manifold
R	2 npt(f) fluid inlet port	106	Manifold and cover screws
S	2 npt(f) fluid outlet port	112	Cover screws (top and bottom)

△1 Apply medium-strength (blue) Loctite® or equivalent to the threads. Torque to 120 to 150 in-lb (14 to 17 N.m).

△2 Apply medium-strength (blue) Loctite® or equivalent to the threads. Torque to 190 to 220 in-lb (22 to 25 N.m).

Aluminum Model Shown

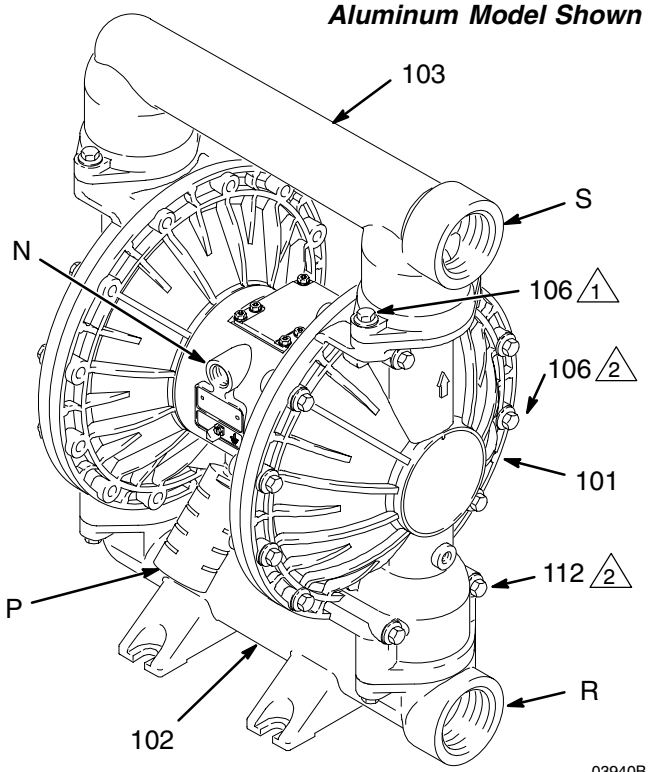


Fig. 3

Fluid Pressure Relief Valve

⚠ 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. 4.

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 Husky 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.

KEY

R 2 npt(f) fluid inlet port
S 2 npt(f) fluid outlet port
V Pressure relief valve
Part No. 110134 (aluminum)
Part No. 112119 (stainless steel)

△1 Install valve between fluid inlet and outlet ports.

△2 Connect fluid inlet line here.

△3 Connect fluid outlet line here.

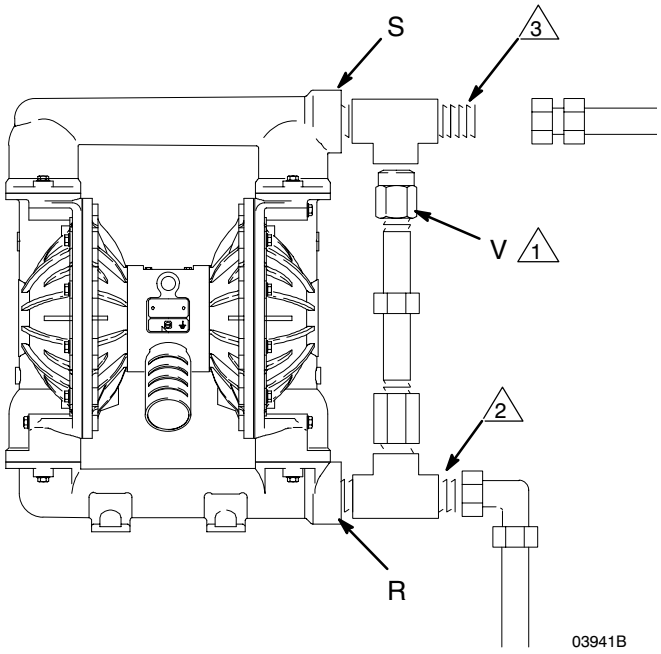


Fig. 4

Installation

Air Exhaust Ventilation

⚠ WARNING

FIRE AND EXPLOSION HAZARD; HAZARDOUS FLUIDS
Be sure to read and follow the warnings and precautions regarding **HAZARDOUS FLUIDS,** and **FIRE OR EXPLOSION HAZARD** on page 3, before operating this pump.

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

Diaphragm failure will cause the fluid being pumped to exhaust with the air. Place an appropriate container at the end of the air exhaust line to catch the fluid. See Fig. 5.

The air exhaust port is 3/4 npt(f). Do not restrict the air exhaust port. Excessive exhaust restriction can cause erratic pump operation.

To provide a remote exhaust:

1. Remove the muffler (P) from the pump air exhaust port.
2. Install a grounded air exhaust hose (T) and connect the muffler (P) to the other end of the hose. The minimum size for the air exhaust hose is 3/4 in. (19 mm) ID. If a hose longer than 15 ft (4.57 m) is required, use a larger diameter hose. Avoid sharp bends or kinks in the hose. See Fig. 5.
3. Place a container (U) at the end of the air exhaust line to catch fluid in case a diaphragm ruptures.

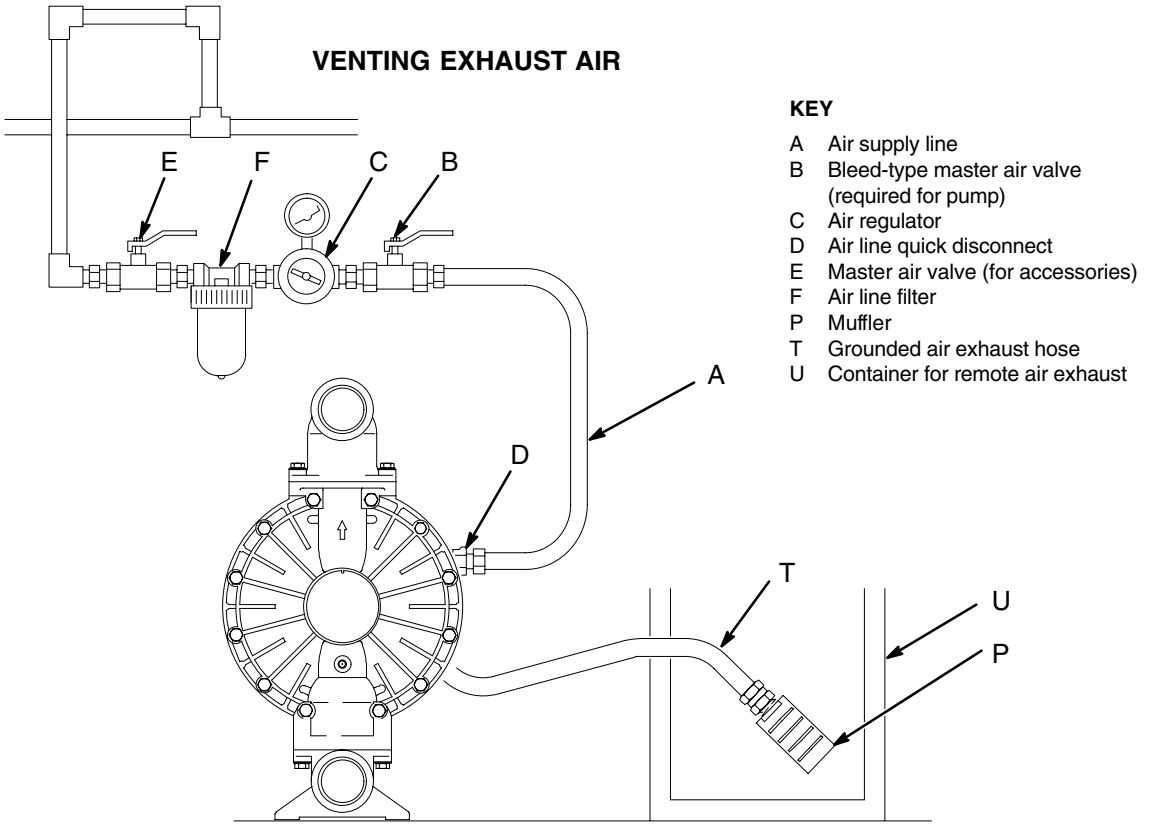


Fig. 5

Operation

Flush the Pump Before First Use

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

Starting and Adjusting the Pump

⚠ WARNING



HAZARDOUS FLUIDS
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 Warning** at right before moving or lifting the pump.

1. Be sure the pump is properly grounded. Refer to **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 securely.
3. Place the suction tube (if used) in the fluid to be pumped.

NOTE: If the fluid inlet pressure to the pump is more than 25% of the outlet working pressure, the ball check valves will not close fast enough, resulting in inefficient pump operation.

4. Place the end of the fluid hose (L) into an appropriate container.
5. Close the fluid drain valve (J). See Fig. 2.
6. With the pump air regulator (C) closed, open all bleed-type master air valves (B, E).
7. If the fluid hose has a dispensing device, hold it open while continuing with the following step.
8. Slowly open the air regulator (C) until the pump starts to cycle. Allow the pump to cycle slowly until all air is pushed out of the lines and the pump is primed.

   If you are flushing, run the pump long enough to thoroughly clean the pump and hoses. Close the air regulator. Remove the suction tube from the solvent and place it in the fluid to be pumped.

Operation of Remote Piloted Pumps

1. Fig. 2 and Parts Drawings. Follow preceding steps 1 through 7 of **Starting and Adjusting Pump**.
2. Open air regulator (C).

⚠ WARNING

The pump may cycle once before the external signal is applied. Injury is possible. If pump cycles, wait until end before proceeding.

3. Pump will operate when air pressure is alternately applied and relieved to push type connectors (14).

NOTE: Leaving air pressure applied to the air motor for extended periods when the pump is not running may shorten the diaphragm life. Using a 3-way solenoid valve to automatically relieve the pressure on the air motor when the metering cycle is complete prevents this from occurring.

Pump Shutdown

At the end of the work shift and before checking, adjusting, cleaning or repairing the system, follow the **Pressure Relief Procedure** below.

Pressure Relief Procedure

⚠ WARNING

To reduce the risk of serious injury, including splashing fluid in the eyes or on the skin, follow this procedure when this manual instructs you to relieve pressure, when you shut off the pump, and before checking, adjusting, cleaning, moving, or repairing any system equipment.

1. Shut off the air to the pump.
2. Open the dispensing valve, if used.
3. Open the fluid drain valve to relieve all fluid pressure, having a container ready to catch the drainage.

Maintenance

Lubrication

The air valve is designed to operate unlubricated, however if 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. Oil is exhausted through the muffler, which could contaminate your fluid supply or other equipment. Excessive lubrication can also cause the pump to malfunction.

Flushing and Storage

Flush the pump often enough to prevent the fluid you are pumping from drying or freezing in the pump and damaging it. Always flush the pump and follow the **Pressure Relief Procedure Warning** on page 9 before storing it for any length of time. Use a compatible solvent.

Tightening Threaded Connections

Before each use, check all hoses for wear or damage, and replace as necessary. Check to be sure all threaded connections are tight and leak-free. Check and retorque all threaded connections at least every two months. Retorque the fluid cover screws first, followed by the manifold screws.

The recommended frequency for retorquing of fasteners varies with pump usage; a general guideline is to retorque fasteners every two months.

Preventive Maintenance Schedule

Establish a preventive maintenance schedule, based on the pump's service history. This is especially important for prevention of spills or leakage due to diaphragm failure.

Troubleshooting

⚠ WARNING

To reduce the risk of serious injury, including splashing fluid in the eyes or on the skin, follow the **Pressure Relief Procedure** on page 9 when this manual instructs you to relieve pressure, when you shut off the pump, and before checking, adjusting, cleaning, moving, or repairing any system equipment.

NOTE: Check all possible problems and causes before disassembling the pump.

PROBLEM	CAUSE	SOLUTION
Pump cycles at stall or fails to hold pressure at stall.	Worn check valve balls (301), seats (201) or o-rings (202).	Replace. See page 14.
Pump will not cycle, or cycles once and stops.	Air valve is stuck or dirty.	Disassemble and clean air valve. See pages 12 to 13. Use filtered air.
	Check valve ball (301) severely worn and wedged in seat (201) or manifold (102 or 103).	Replace ball and seat. See page 14.
	Check valve ball (301) is wedged into seat (201), due to overpressurization.	Install Pressure Relief Valve (see page 7).
	Dispensing valve clogged.	Relieve pressure and clear valve.
Pump operates erratically.	Clogged suction line.	Inspect; clear.
	Sticky or leaking check valve balls (301).	Clean or replace. See page 14.
	Diaphragm ruptured.	Replace. See pages 15 to 17.
	Restricted exhaust.	Remove restriction.
Air bubbles in fluid.	Suction line is loose.	Tighten.
	Diaphragm ruptured.	Replace. See pages 15 to 17.
	Loose inlet manifold (102), damaged seal between manifold and seat (201), or damaged o-rings (202).	Tighten manifold bolts (106) or replace seats (201) or o-rings (202). See page 14.
	Loose diaphragm shaft bolt (107).	Tighten or replace. See pages 15 to 17.
	Damaged o-ring (108).	Replace. See pages 15 to 17.
Fluid in exhaust air.	Diaphragm ruptured.	Replace. See pages 15 to 17.
	Loose diaphragm shaft bolt (107).	Tighten or replace. See pages 15 to 17.
	Damaged o-ring (108).	Replace. See pages 15 to 17.
Pump exhausts excessive air at stall.	Worn air valve block (7), o-ring (6), plate (8), pilot block (18), u-cups (10), or pilot pin o-rings (17).	Repair or replace. See pages 12 to 13.
	Worn shaft seals (402).	Replace. See pages 15 to 17.
Pump leaks air externally.	Air valve cover (2) or air valve cover screws (3) are loose.	Tighten screws. See page 13.
	Air valve gasket (4) or air cover gasket (22) is damaged.	Inspect; replace. See pages 12 to 13, 18 to 19.
	Air cover screws (3) are loose.	Tighten screws. See pages 18 to 19.
Pump leaks fluid externally from ball check valves.	Loose manifolds (102, 103), damaged seal between manifold and seat (201), or damaged o-rings (202).	Tighten manifold bolts (106) or replace seats (201) or o-rings (202). See page 14.

Service

Repairing the Air Valve

Tools Required

- Torque wrench
- Torx (T20) screwdriver or 7 mm (9/32”) socket wrench
- Needle-nose pliers
- O-ring pick
- Lithium base grease

NOTE: Air Valve Repair Kit 236273 is available. Refer to page 22. Parts included in the kit are marked with a symbol, for example (4†). Use all the parts in the kit for the best results.

Disassembly

1. Follow the **Pressure Relief Procedure Warning** on page 9.

2. With a Torx (T20) screwdriver or 7 mm (9/32”) socket wrench, remove the six screws (3), air valve cover (2), and gasket (4). See Fig. 6.

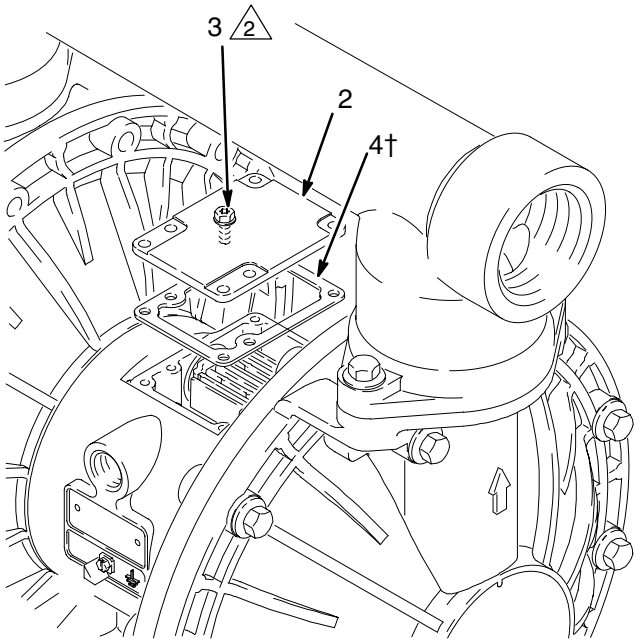
3. Move the valve carriage (5) to the center position and pull it out of the cavity. Remove the valve block (7) and o-ring (6) from the carriage. Using a needle-nose pliers, pull the pilot block (18) straight up and out of the cavity. See Fig. 7.

4. Pull the two actuator pistons (11) out of the bearings (12). Remove the u-cup packings (10) from the pistons. Pull the pilot pins (16) out of the bearings (15). Remove the o-rings (17) from the pilot pins. See Fig. 8.

5. Inspect the valve plate (8) in place. If damaged, use a Torx (T20) screwdriver or 7 mm (9/32”) socket wrench to remove the three screws (3). Remove the valve plate (8) and seal (9). See Fig. 9.

6. Inspect the bearings (12, 15) in place. See Fig. 8. The bearings are tapered and, if damaged, must be removed from the outside. This requires disassembly of the fluid section. See page 18.

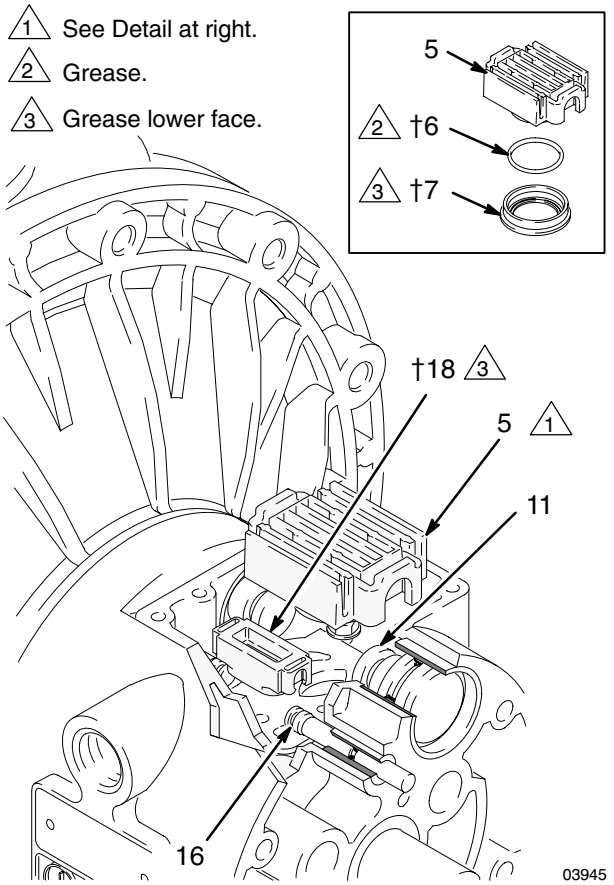
7. Clean all parts and inspect for wear or damage. Replace as needed. Reassemble as explained on page 13.



△2 Torque to 50 to 60 in–lb (5.6 to 6.8 N.m).

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Fig. 6



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Fig. 7

△1 Insert narrow end first.
△2 Grease.
△3 Install with lips facing narrow end of piston (11).
△4 Insert wide end first.

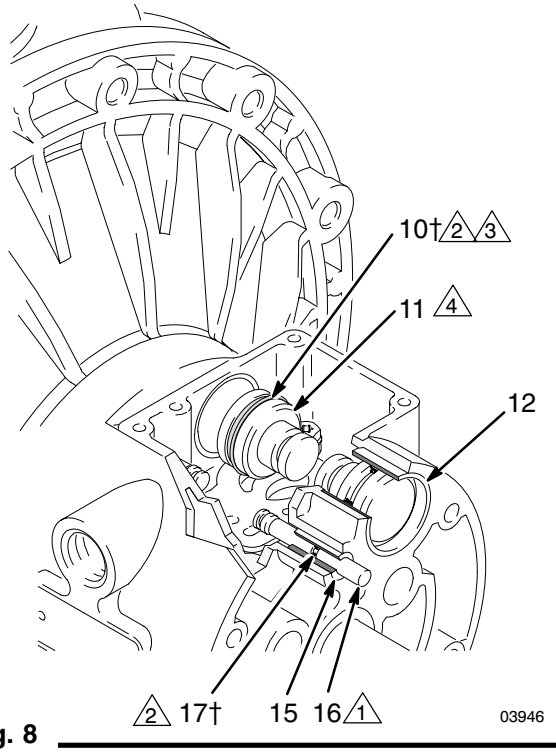


Fig. 8

△1 Rounded side must face down.
△2 Tighten screws until they bottom out on the housing.

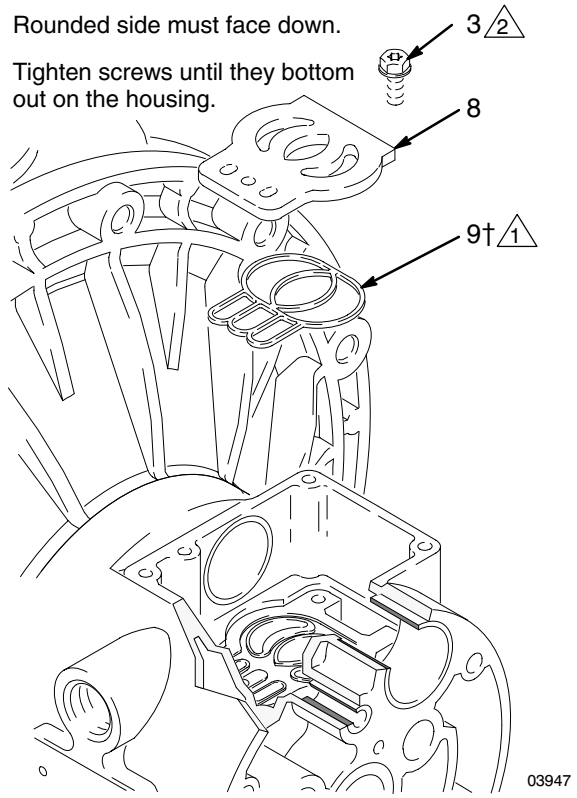


Fig. 9

Reassembly

1. *If you removed the bearings (12, 15),* install new ones as explained on page 18. Reassemble the fluid section.

2. Install the valve plate seal (9†) into the groove at the bottom of the valve cavity. The rounded side of the seal ***must face down*** into the groove. See Fig. 9.

3. Install the valve plate (8) in the cavity. The plate is reversible, so either side can face up. Install the three screws (3), using a Torx (T20) screwdriver or 7 mm (9/32") socket wrench. Tighten until the screws bottom out on the housing. See Fig. 9.

4. Install an o-ring (17†) on each pilot pin (16). Grease the pins and o-rings. Insert the pins into the bearings (15), ***narrow*** end first. See Fig. 8.

5. Install a u-cup packing (10†) on each actuator piston (11), so the lips of the packings face the ***narrow*** end of the pistons. See Fig. 8.

6. Lubricate the u-cup packings (10†) and actuator pistons (11). Insert the actuator pistons in the bearings (12), ***wide*** end first. Leave the narrow end of the pistons exposed. See Fig. 8.

7. Grease the lower face of the pilot block (18†) and install so its tabs snap into the grooves on the ends of the pilot pins (16). See Fig. 7.

8. Grease the o-ring (6†) and install it in the valve block (7†). Push the block onto the valve carriage (5). Grease the lower face of the valve block. See Fig. 7.

9. Install the valve carriage (5) so its tabs slip into the grooves on the narrow end of the actuator pistons (11). See Fig. 7.

10. Align the valve gasket (4†) and cover (2) with the six holes in the center housing (1). Secure with six screws (3), using a Torx (T20) screwdriver or 7 mm (9/32") socket wrench. Torque to 50 to 60 in-lb (5.6 to 6.8 N.m). See Fig. 6.

Service

Ball Check Valve Repair

Tools Required

- Torque wrench
- 10 mm socket wrench
- O-ring pick

Disassembly

NOTE: A Fluid Section Repair Kit is available. Refer to page 21 to order the correct kit for your pump. Parts included in the kit are marked with an asterisk, for example (201*). Use all the parts in the kit for the best results.

NOTE: To ensure proper seating of the balls (301), always replace the seats (201) when replacing the balls.

NOTE: (Extension Version) To ensure proper sealing of extension (115), always replace o–rings (116) when replacing the balls.

1. Follow the **Pressure Relief Procedure Warning** on page 9. Disconnect all hoses.
2. Remove the pump from its mounting.
3. Using a 10 mm socket wrench, remove the four bolts (106) holding the outlet manifold (103) to the fluid covers (101). See Fig. 10.
4. Remove the seats (201), balls (301), and o-rings (202) from the manifold.

NOTE: Some models do not use o-rings (202).

5. Turn the pump over and remove the inlet manifold (102). Remove the seats (201), balls (301), and o-rings (202) from the fluid covers (101).

Reassembly

1. Clean all parts and inspect for wear or damage. Replace parts as needed.
2. Reassemble in the reverse order, following all notes in Fig. 10. Be sure the ball checks are assembled **exactly** as shown. The arrows (A) on the fluid covers (101) **must** point toward the outlet manifold (103).

1 Apply medium-strength (blue) Loctite® or equivalent to the threads. Torque to 120 to 150 in-lb (14 to 17 N.m).

2 Arrow (A) must point toward outlet manifold (103).

3 Not used on some models.

4 Beveled seating surface must face ball (301).

5 Used on stainless steel model only.

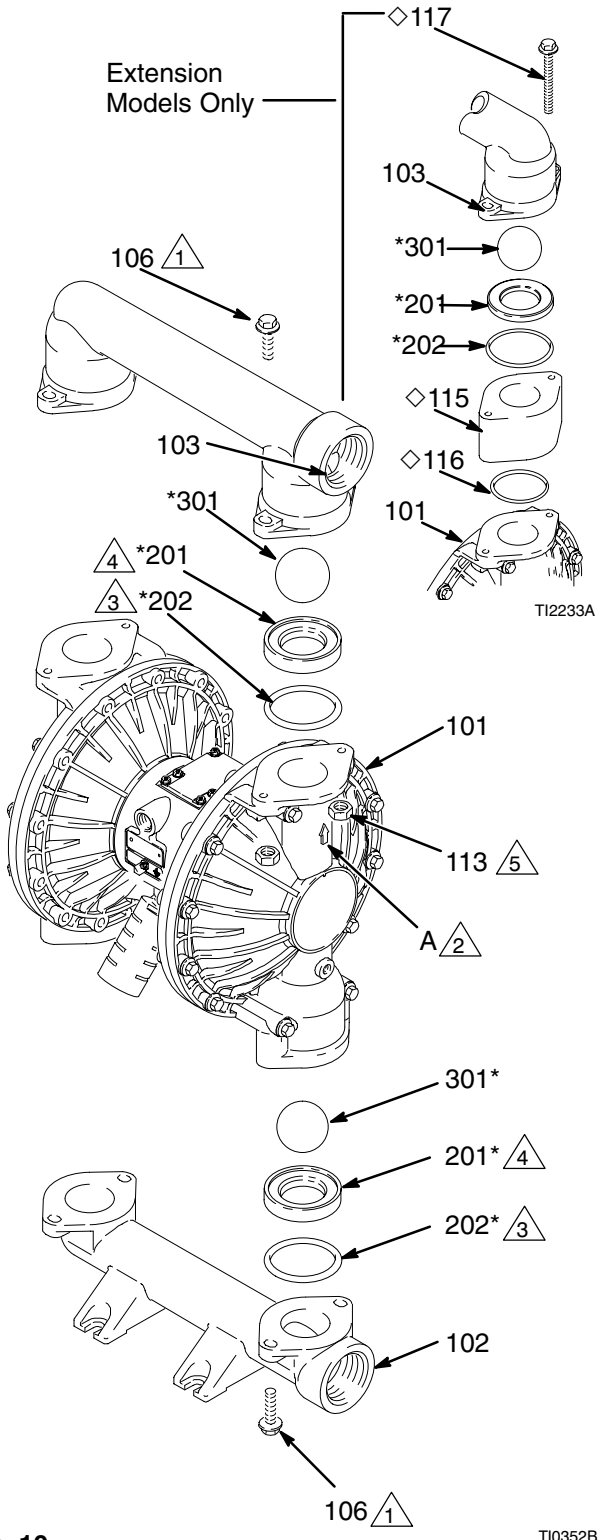


Fig. 10

Service

Diaphragm Repair

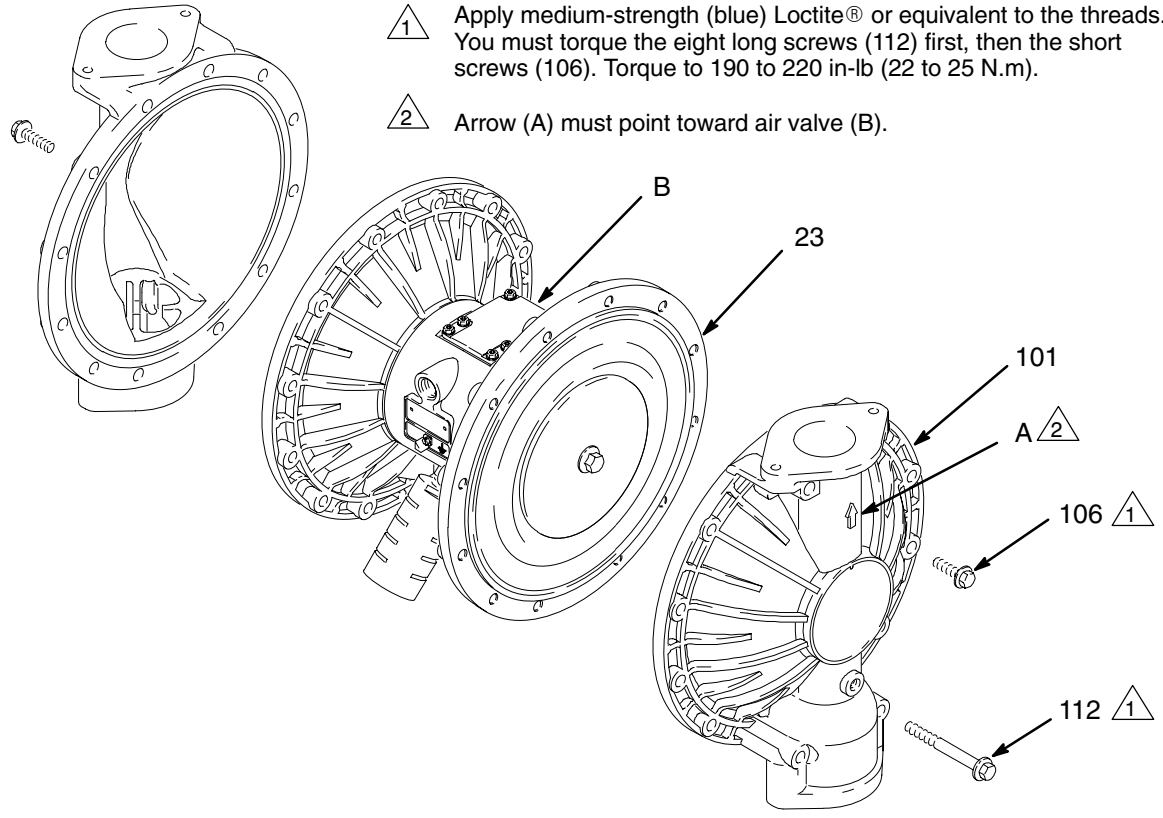
Tools Required

- Torque wrench
- 10 mm socket wrench
- 13 mm socket wrench
- 15 mm socket wrench (aluminum models) or 1” socket wrench (stainless steel models)
- 19 mm socket wrench
- O-ring pick
- Lithium-base grease

Disassembly

NOTE: A Fluid Section Repair Kit is available. Refer to page 21 to order the correct kit for your pump. Parts included in the kit are marked with an asterisk, for example (401*). Use all the parts in the kit for the best results.

1. Follow the **Pressure Relief Procedure Warning** on page 9.
2. Remove the manifolds and disassemble the ball check valves as explained on page 14.
3. Using 10 and 13 mm socket wrenches, remove the screws (106 and 112) holding the fluid covers (101) to the air covers (23). Pull the fluid covers (101) off the pump. See Fig. 11.



03949B

Fig. 11

4. Loosen but do not remove the diaphragm shaft bolts (107), using a 15 mm socket wrench (1” on stainless steel models) on both bolts.

5. Unscrew one bolt from the diaphragm shaft (24) and remove the o-ring (108), fluid side diaphragm plate (105), PTFE® diaphragm (403, *used on* PTFE® *Models only)*, diaphragm (401), and air side diaphragm plate (104). See Fig. 12.

6. Pull the other diaphragm assembly and the diaphragm shaft (24) out of the center housing (1). Hold the shaft flats with a 19 mm socket wrench, and remove the bolt (107) from the shaft. Disassemble the remaining diaphragm assembly.

7. Inspect the diaphragm shaft (24) for wear or scratches. If it is damaged, inspect the bearings (19) in place. If the bearings are damaged, refer to page 18.

8. Reach into the center housing (1) with an o-ring pick and hook the u-cup packings (402), then pull them out of the housing. This can be done with the bearings (19) in place.

9. Clean all parts and inspect for wear or damage. Replace parts as needed.

Reassembly

1. Install the shaft u-cup packings (402*) so the lips face ***out*** of the housing (1). Lubricate the packings. See Fig. 12.

2. Install the diaphragm assembly on one end of the shaft (24) as follows:

   a. Install the o-ring (108*) on the shaft bolt (107).

   b. Install the fluid side diaphragm plate (105) on the bolt so the rounded side faces in, toward the diaphragm (401).

   c. *On* PTFE® *Models only,* install the PTFE® diaphragm (403*). Make certain the side marked AIR SIDE faces the center housing (1).

   d. Install the diaphragm (401*) on the bolt. Make certain the side marked AIR SIDE faces the center housing (1).

   e. Install the air side diaphragm plate (104) so the recessed side faces the diaphragm (401).

   f. Apply medium-strength (blue) Loctite® or equivalent to the bolt (107) threads. Screw the bolt into the shaft (24) hand tight.

3. Grease the length and ends of the diaphragm shaft (24), and slide it through the housing (1).

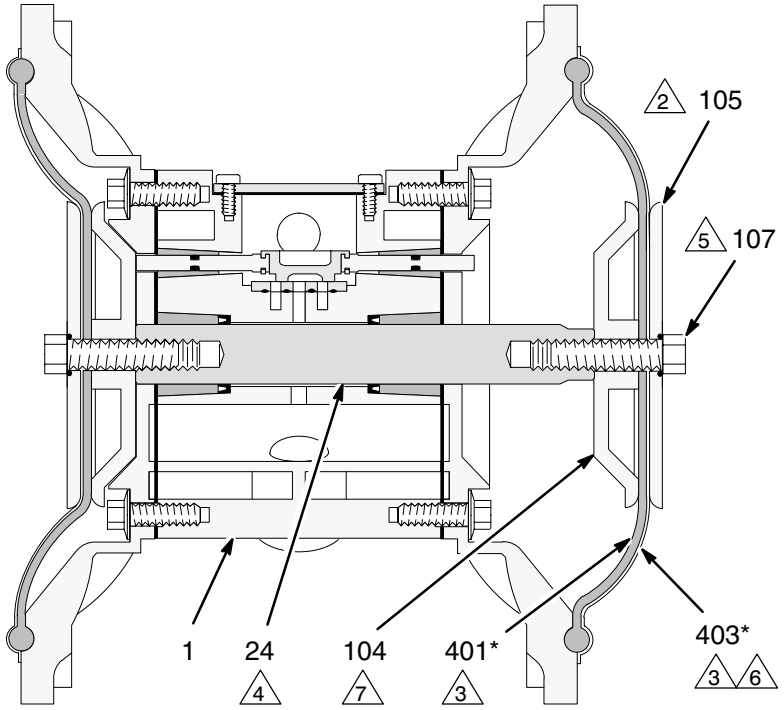
4. Assemble the other diaphragm assembly to the shaft as explained in step 2.

5. Hold one shaft bolt (107) with a wrench and torque the other bolt to 20 to 25 ft-lb (27 to 34 N.m) at 100 rpm maximum.

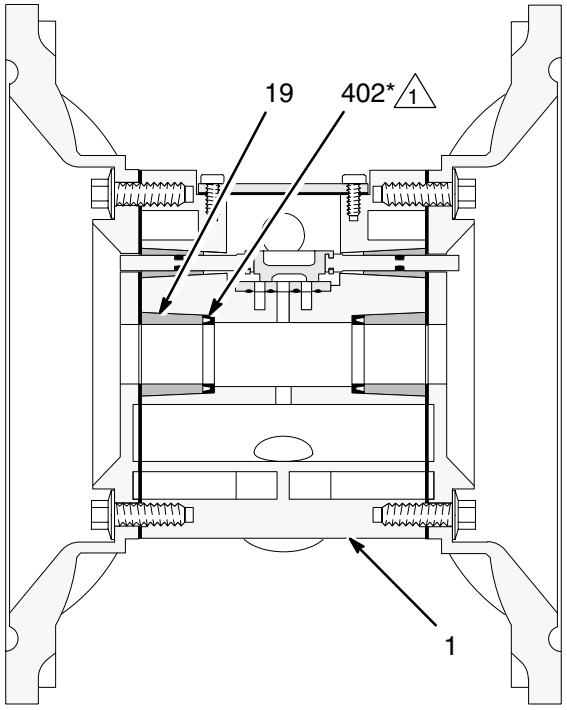
6. Align the fluid covers (101) and the center housing (1) so the arrows (A) on the covers face the same direction as the air valve (B). Secure the covers with the screws (106 and 112), handtight. Install the longer screws (112) in the top and bottom holes of the covers. See Fig. 11.

7. First, torque the longer screws (112) oppositely and evenly to 190 to 220 in-lb (22 to 25 N.m), using a 13 mm socket wrench. Then torque the shorter screws (106), using a 10 mm socket wrench.

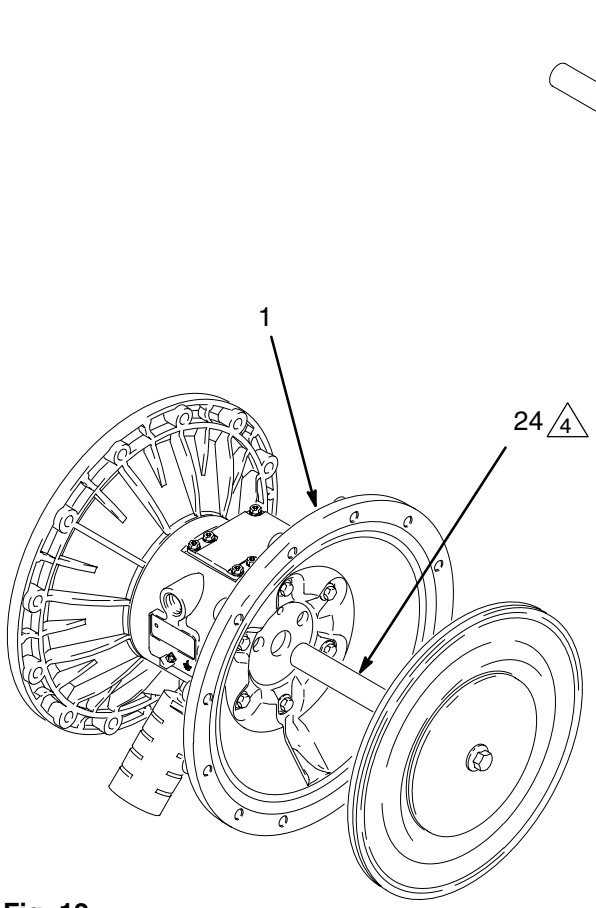
8. Reassemble the ball check valves and manifolds as explained on page 14.

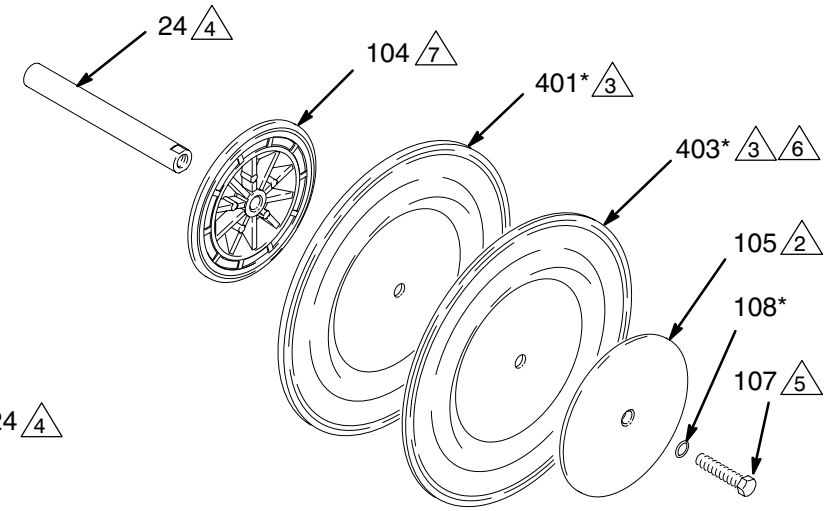


Cutaway View, with Diaphragms in Place



Cutaway View, with Diaphragms Removed





1. Lips face out of housing (1).
2. Rounded side faces diaphragm (401).
3. Air Side must face center housing (1).
4. Grease.
5. Apply medium-strength (blue) Loctite® or equivalent. Torque to 20 to 25 ft-lb (27 to 34 N.m) at 100 rpm maximum.
6. Used on Models with PTFE ® diaphragms only.
7. Recessed side faces diaphragm (401).

03950B

Fig. 12

Service

Bearing and Air Gasket Removal

Tools Required

- Torque wrench
- 10 mm socket wrench
- Bearing puller
- O-ring pick
- Press, or block and mallet

Disassembly

NOTE: Do not remove undamaged bearings.

1. Follow the **Pressure Relief Procedure Warning** on page 9.
2. Remove the manifolds and disassemble the ball check valves as explained on page 14.
3. Remove the fluid covers and diaphragm assemblies as explained on page 15.

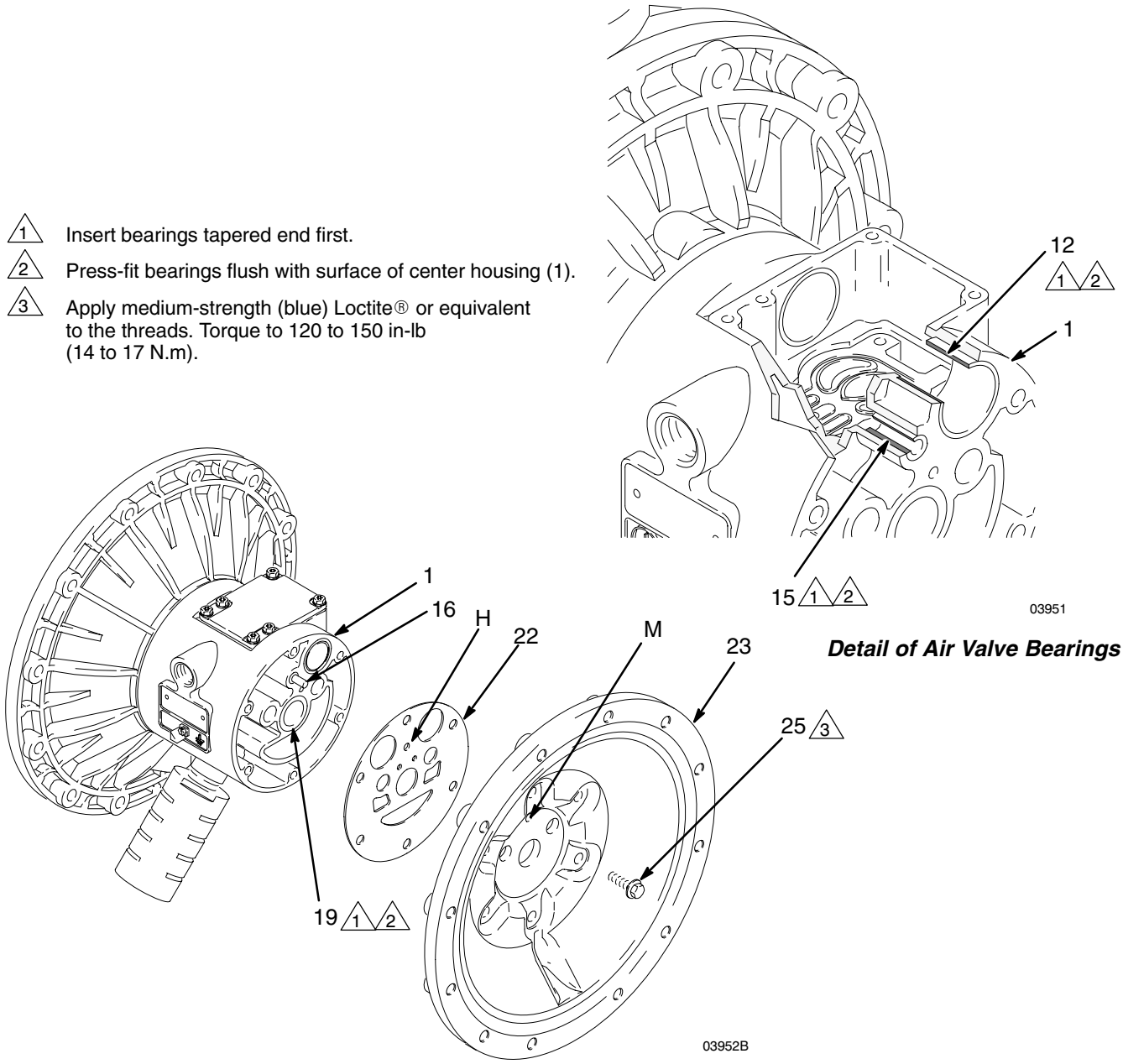
NOTE: If you are removing only the diaphragm shaft bearing (19), skip step 4.

4. Disassemble the air valve as explained on page 12.
5. Using a 10 mm socket wrench, remove the screws (25) holding the air covers (23) to the center housing (1). See Fig. 13.
6. Remove the air cover gaskets (22). Always replace the gaskets with new ones.
7. Use a bearing puller to remove the diaphragm shaft bearings (19), air valve bearings (12) or pilot pin bearings (15). Do not remove undamaged bearings.
8. If you removed the diaphragm shaft bearings (19), reach into the center housing (1) with an o-ring pick and hook the u-cup packings (402), then pull them out of the housing. Inspect the packings. See Fig. 12.

Reassembly

1. If removed, install the shaft u-cup packings (402*) so the lips face ***out*** of the housing (1).
2. The bearings (19, 12, and 15) are tapered and can only be installed one way. Insert the bearings into the center housing (1), ***tapered end first***. Using a press or a block and rubber mallet, press-fit the bearing so it is flush with the surface of the center housing.
3. Reassemble the air valve as explained on page 13.
4. Align the new air cover gasket (22) so the pilot pin (16) protruding from the center housing (1) fits through the proper hole (H) in the gasket.
5. Align the air cover (23) so the pilot pin (16) fits in the middle hole (M) of the three small holes near the center of the cover. Install the screws (25), handtight. See Fig. 13. Using a 10 mm socket wrench, torque the screws oppositely and evenly to 120 to 150 in-lb (14 to 17 N.m).
6. Install the diaphragm assemblies and fluid covers as explained on page 15.
7. Reassemble the ball check valves and manifolds as explained on page 14.

1. Insert bearings tapered end first.
2. Press-fit bearings flush with surface of center housing (1).
3. Apply medium-strength (blue) Loctite® or equivalent to the threads. Torque to 120 to 150 in-lb (14 to 17 N.m).



Detail of Air Valve Bearings

Fig. 13

Pump Matrix

Husky 2150 Aluminum, Stainless Steel, and Ductile Iron Pumps, Series A

Your Model No. is marked on the pump's serial plate. To determine the Model No. of your pump from the following matrix, select the six digits which describe your pump, working from left to right. The first digit is always **D**, designating Husky diaphragm pumps. The remaining five digits define the materials of construction.

For example, a pump with an aluminum air motor and fluid section, polypropylene seats, PTFE® balls, and PTFE® diaphragms is Model No. **D F 3 9 1 1.** To order replacement parts, refer to the part lists on pages 22 and 23. *The digits in the matrix **do not** correspond to the ref. nos. in the parts drawing and lists on pages 22 and 23.*

Diaphragm Pump	Air Motor	Fluid Section	–	Seats	Balls	Diaphragms
232503*	aluminum	aluminum	–	Hytrel®	acetal	Hytrel®
D (for all pumps)	F (standard)	1 (not used)	–	1 (not used)	1 (PTFE®)	1 (PTFE®)
	F (remote)	2 (not used)	–	2 (not used)	2 (acetal)	2 (not used)
		3 (aluminum)	–	3 (316 sst)	3 (not used)	3 (not used)
		4 (sst)	–	4 (17–4 PH sst)	4 (440C sst)	4 (not used)
		5 (not used)	–	5 (Hytrel®)	5 (Hytrel®)	5 (Hytrel®)
		6 (ductile iron)	–	6 (Santoprene®)	6 (Santoprene®)	6 (Santoprene®)
		C (aluminum BSPT)	–	7 (not used)	7 (not used)	7 (not used)
		D (sst BSPT)	–	8 (Viton®)	8 (Viton®)	8 (Viton®)
		F (ductile iron BSPT)	–	9 (Polypropylene)		
		–	–	G (Geolast®)	G (Geolast®)	G (Geolast®)
		H (aluminum extended)	–			
		J (aluminum BSPT extended)	–			

* 232503, Aluminum 2150 Pump, Series A

Model No. 232503 is a private-label aluminum 2150 pump. Other than the label, it is the same as Model No. DF3525.

Repair Kit Matrix

For Husky 2150 Aluminum and Stainless Steel Pumps, Series A

Repair Kits may be ordered separately. To repair the air valve, order **Part No. 236273** (see page 22). Parts included in the Air Valve Repair Kit are marked with a symbol in the parts list, for example (4†).

To repair the seats, balls, and diaphragms, select the six digits which describe your pump from the following matrix, working from left to right. The first digit is always **D**, and the second digit is always **0** (zero). The remaining four digits define the materials of construction. Parts included in the kit are marked with an asterisk in the parts list, for example (201*).

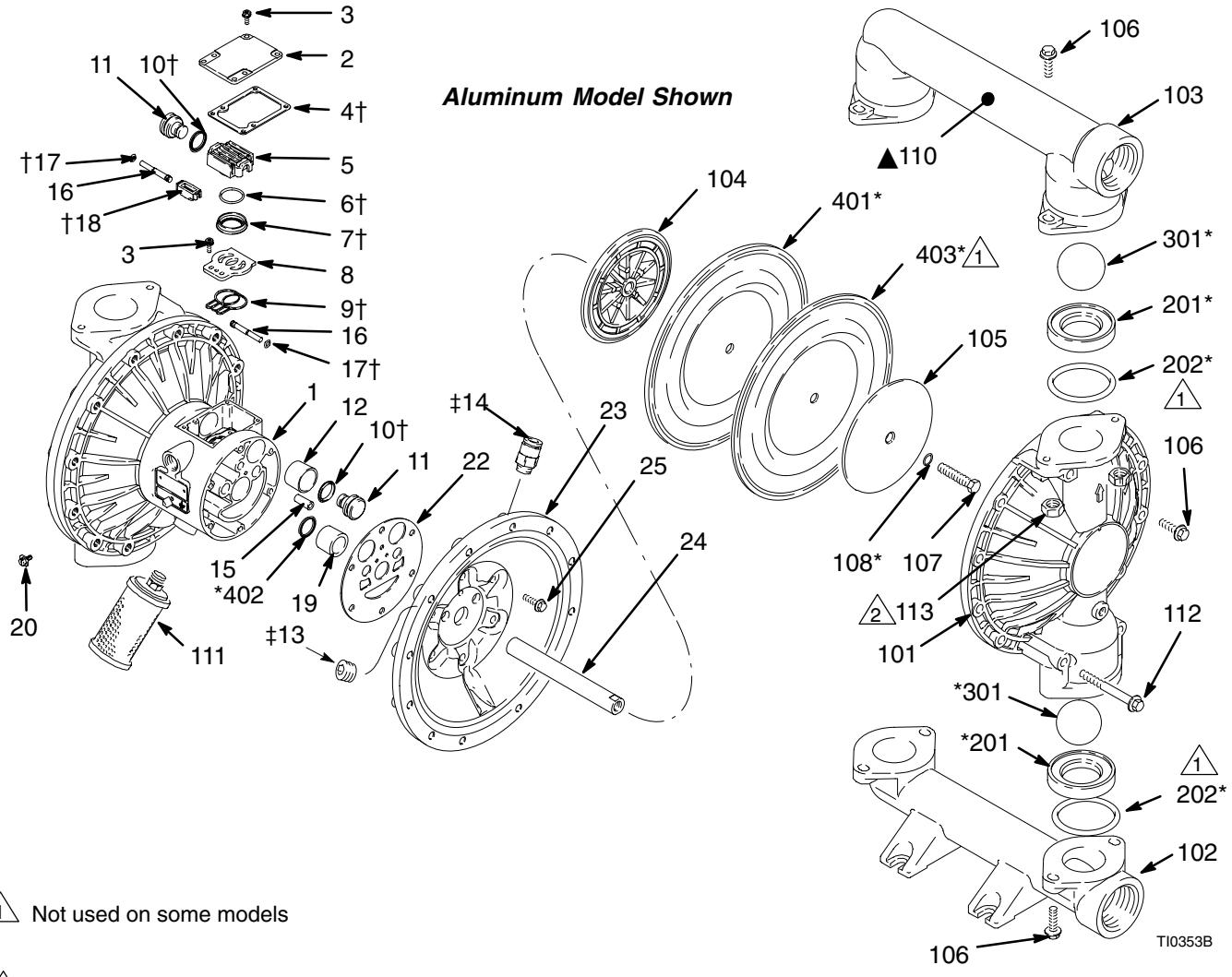
For example, if your pump has polypropylene seats, PTFE® balls, and PTFE® diaphragms, you need to order Repair Kit **D 0 F 9 1 1.** *The digits in the matrix **do not** correspond to the ref. nos. in the parts drawing and lists on pages 22 and 23.*

Diaphragm Pump	Null	Shaft O-Ring	–	Seats	Balls	Diaphragms
D (for all pumps)	0 (for all pumps)	F (PTFE®)	–	0 (null)	0 (null)	0 (null)
			–	1 (not used)	1 (PTFE®)	1 (PTFE®)
			–	2 (not used)	2 (acetal)	2 (not used)
			–	3 (316 sst)	3 (not used)	3 (not used)
			–	4 (17–4 PH sst)	4 (440C sst)	4 (not used)
			–	5 (Hytrel®)	5 (Hytrel®)	5 (Hytrel®)
			–	6 (Santoprene®)	6 (Santoprene®)	6 (Santoprene®)
			–	7 (not used)	7 (not used)	7 (not used)
			–	8 (Viton®)	8 (Viton®)	8 (Viton®)
			–	9 (Polypropylene)		
			–	G (Geolast®)	G (Geolast®)	G (Geolast®)

Extension Conversion Kit

To convert an existing 2150 Aluminum pump to an extended version, use conversion kit 234019.

Parts



1 Not used on some models

2 Used on stainless steel model only

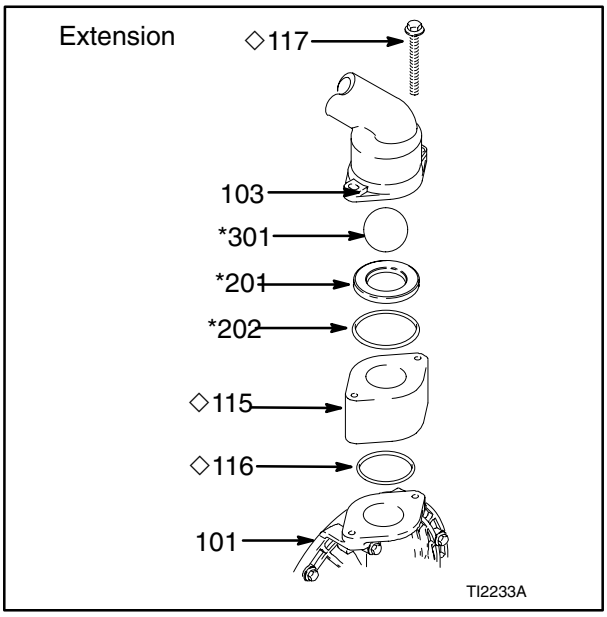
* *These parts are included in the Pump Repair Kit, which may be purchased separately. Refer to the Repair Kit Matrix on page 21 to determine the correct kit for your pump.*

† *These parts are included in Air Valve Repair Kit 236273, which may be purchased separately.*

▲ *Replacement Danger and Warning labels, tags and cards are available at no cost.*

‡ *These parts are unique to remote piloted air motor, DG _ _ _ _*

◇ *These parts are used on extension version only. Ref. No. 106 is qty. 20 on extension version.*



Parts

Air Motor Parts List (Matrix Column 2)

Digit	Ref. No.	Part No.	Description	Qty
F	1 1‡	188838 195921	HOUSING, center; alum. HOUSING, center;remote	1 1
	2	188854	COVER, air valve; alum.	1
	3	116344	SCREW, mach, hex flange hd; M5x0.8;12 mm (0.47 in.)	9
	4†	188618	GASKET, cover; foam	1
	5	188855	CARRIAGE; aluminum	1
	6†	108730	O-RING; nitrile	1
	7†	188616	BLOCK, air valve; acetal	1
	8	188615	PLATE, air valve; sst	1
	9†	188617	SEAL, valve plate;buna-N	1
	10†	112181	PACKING, u-cup; nitrile	2
	11	188612	PISTON, actuator; acetal	2
	12	188613	BEARING, piston; acetal	2
	13‡	104765	PLUG, pipe; headless	2
	14‡	115671	FITTING, connector; male	2
	15	188611	BEARING, pin; acetal	2
	16	188610	PIN, pilot; stainless steel	2
	17†	157628	O-RING; buna-N	2
	18†	188614	BLOCK, pilot; acetal	1
	19	188609	BEARING, shaft; acetal	2
	20	116343	SCREW, grounding	1
	22	188603	GASKET, air cover; foam	2
	23 23†	189300 195919	COVER, air; aluminum COVER, air; 2150 remote	2 2
	24	189304	SHAFT, diaphragm; sst	1
	25	115643	SCREW; M8x .25; 25 mm	12

Fluid Section Parts List (Matrix Column 3)

Digit	Ref. No.	Part No.	Description	Qty
3	101	15A612	COVER, fluid; aluminum	2
	102	189302	MANIFOLD, inlet; aluminum	1
	103	15A613	MANIFOLD, outlet; aluminum	1
	104	189298	PLATE, air side; aluminum	2
	105	189820	PLATE, fluid side; carbon steel	2
	106	115644	SCREW; M10 x 1.18; 30 mm	24 or 20◇
	107	189410	BOLT; M12 x 1.75; 55 mm (2.17 in.); 316 stainless steel	2
	108*	104319	O-RING;PTFE ®	2
	110 ▲	188970	LABEL, warning	1
	111	102656	MUFFLER	1
	112	115645	SCREW; M10 x 1.50; 90 mm (3.54 in.); carbon steel	8
	115 ◇	15B131	EXTENSION, 2150	2
	116 ◇	106260	PACKING, o–ring:PTFE M10x1.5;90mm	2
	117 ◇	112417	SCREW, mach, hex	4

Fluid Section Parts List (Matrix Column 3)

Digit	Ref. No.	Part No.	Description	Qty
4	101	194279	COVER, fluid; 316 stainless steel	2
	102	194280	MANIFOLD, inlet; 316 stainless steel	1
	103	194281	MANIFOLD, outlet; 316 stainless steel	1
	104	189298	PLATE, air side; aluminum	2
	105	189299	PLATE, fluid side; 316 stainless steel	2
	106	112416	SCREW; M10 x 1.38; 35 mm	24
	107	189410	BOLT; M12 x 1.75; 55 mm (2.17 in.); 316 stainless steel	2
	108*	104319	O-RING;PTFE ®	2
	110 ▲	188621	LABEL, warning	1
	111	102656	MUFFLER	1
	112	112543	SCREW; M10 x 1.50; 110 mm (4.33 in.); stainless steel	8
	113	114862	NUT; M10	8
6	101	191541	COVER, fluid; ductile iron	2
	102	191542	MANIFOLD, inlet; ductile iron	1
	103	191543	MANIFOLD, outlet; ductile iron	1
	104	189298	PLATE, air side; aluminum	2
	105	189820	PLATE, fluid side; carbon steel	2
	106	112416	SCREW; M10 x 1.38; 35 mm	24
	107	189410	BOLT; M12 x 1.75; 55 mm (2.17 in.); 316 stainless steel	2
	108*	104319	O-RING;PTFE ®	2
	110 ▲	188621	LABEL, warning	1
	111	102656	MUFFLER	1
	112	112543	SCREW; M10 x 1.50; 110 mm (4.33 in.); stainless steel	8

Digit	Ref. No.	Part No.	Description	Qty
C	101	15A612	COVER, fluid; aluminum	2
	102	192086	MANIFOLD, inlet; aluminum; BSPT	1
	103	15A614	MANIFOLD, outlet; aluminum; BSPT	1
	104	189298	PLATE, air side; aluminum	2
	105	189820	PLATE, fluid side; carbon steel	2
	106	115644	SCREW; M10 x 1.18; 30 mm	24
	107	189410	BOLT; M12 x 1.75; 55 mm (2.17 in.); 316 stainless steel	2
	108*	104319	O-RING;PTFE ®	2
	110 ▲	188970	LABEL, warning	1
	111	102656	MUFFLER	1
	112	115645	SCREW; M10 x 1.50; 90 mm (3.54 in.); carbon steel	8
D	101	194279	COVER, fluid; 316 stainless steel	2
	102	195576	MANIFOLD, inlet; 316 stainless steel; BSPT	1
	103	195577	MANIFOLD, outlet; 316 stainless steel; BSPT	1
	104	189298	PLATE, air side; aluminum	2
	105	189299	PLATE, fluid side; 316 stainless steel	2
	106	112416	SCREW; M10 x 1.38; 35 mm	24
	107	189410	BOLT; M12 x 1.75; 55 mm (2.17 in.); 316 stainless steel	2
	108*	104319	O-RING;PTFE ®	2
	110 ▲	188621	LABEL, warning	1
	111	102656	MUFFLER	1
	112	112543	SCREW; M10 x 1.50; 110 mm (4.33 in.); stainless steel	8
	113	114862	NUT; M10	8

Parts

Fluid Section Parts List (Matrix Column 3) continued

F	101	191541	COVER, fluid; ductile iron	2
	102	192088	MANIFOLD, inlet; ductile iron; BSPT	1
	103	192089	MANIFOLD, outlet; ductile iron; BSPT	1
	104	189298	PLATE, air side; aluminum	2
	105	189820	PLATE, fluid side; carbon steel	2
	106	112416	SCREW; M10 x 1.38; 35 mm	24

Seat Parts List (Matrix Column 4)

Digit	Ref. No.	Part No.	Description	Qty
3	201*	189288	SEAT; 316 stainless steel	4
	202*	112358	O-RING;PTFE®	4
4	201*	189289	SEAT; 174 stainless steel	4
	202*	112358	O-RING;PTFE®	4
5	201*	189292	SEAT; Hytrel®	4
	202	None	Not Used	0
6	201*	189290	SEAT; Santoprene®	4
	202*	112358	O-RING;PTFE®	4
9	201*	189291	SEAT; polypropylene	4
	202*	112358	O-RING;PTFE®	4
G	201*	194215	SEAT; Geolast®	4
	202*	112358	O-RING;PTFE®	4

Ball Parts List (Matrix Column 5)

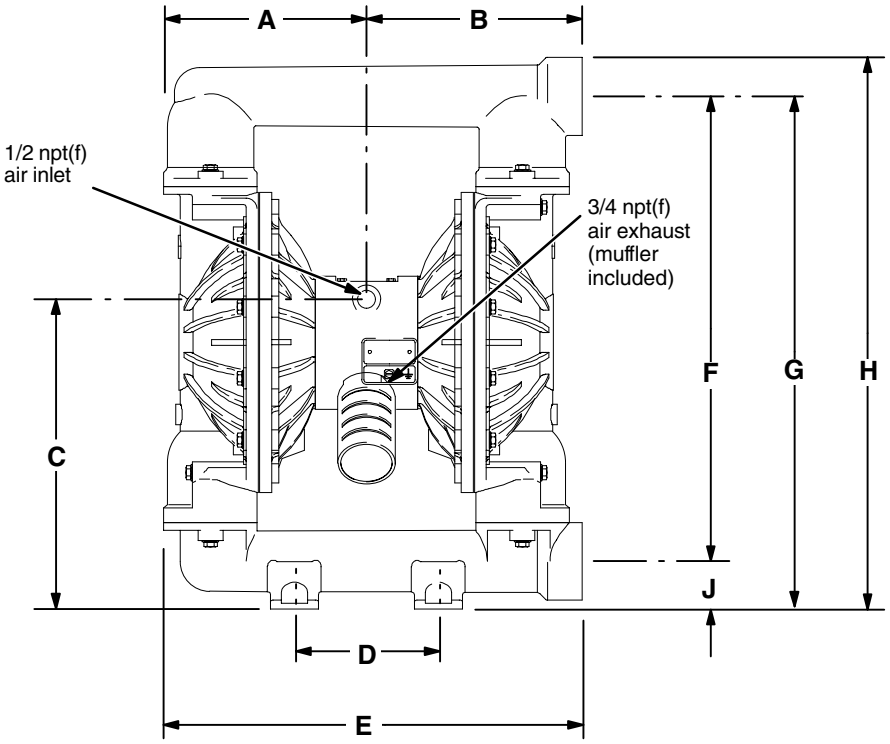
Digit	Ref. No.	Part No.	Description	Qty
1	301*	112359	BALL;PTFE®	4
2	301*	112363	BALL; acetal	4
4	301*	112360	BALL; 440C SS	4
5	301*	112745	BALL; Hytrel®	4
6	301*	112361	BALL; Santoprene®	4
8	301*	112362	BALL; Viton®	4
G	301*	114753	BALL; Geolast®	4

Diaphragm Parts List (Matrix Column 6)

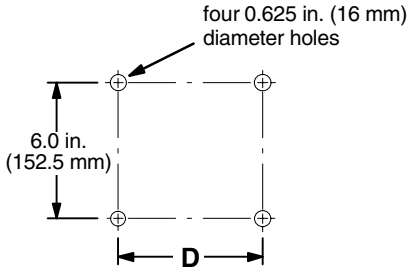
Digit	Ref. No.	Part No.	Description	Qty
1	401*	189296	DIAPHRAGM, backup; Santoprene®	2
	402*	112181	PACKING, u-cup; nitrile	2
	403*	189294	DIAPHRAGM;PTFE®	2
5	401*	189295	DIAPHRAGM; Hytrel®	2
	402*	112181	PACKING, u-cup; nitrile	2
6	401*	189296	DIAPHRAGM;Santo-prene®	2
	402*	112181	PACKING, u-cup; nitrile	2
8	401*	189297	DIAPHRAGM; Viton®	2
	402*	112181	PACKING, u-cup; nitrile	2
	107	189410	BOLT; M12 x 1.75; 55 mm (2.17 in.); 316 stainless steel	2
	108*	104319	O-RING;PTFE®	2
	110 ▲	188621	LABEL, warning	1
	111	102656	MUFFLER	1
	112	112543	SCREW; M10 x 1.50; 110 mm (4.33 in.); stainless steel	8
G	401*	194216	DIAPHRAGM; Geolast®	2
	402*	112181	PACKING, u-cup; nitrile	2

Dimensions

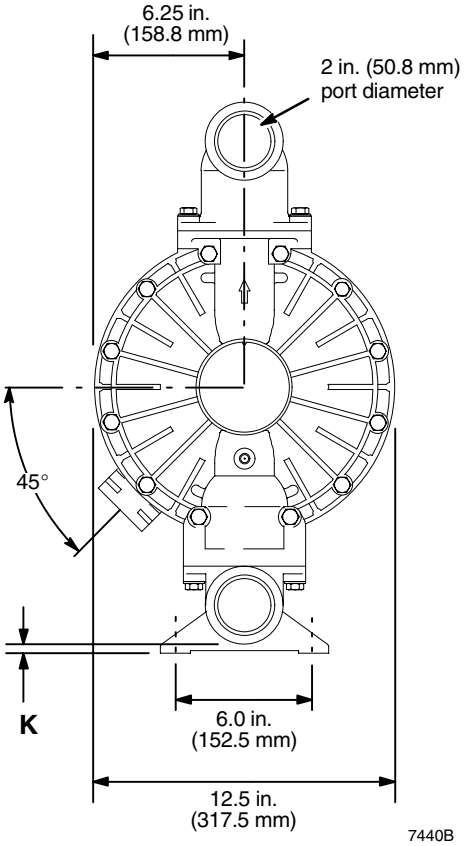
FRONT VIEW



PUMP MOUNTING HOLE PATTERN



SIDE VIEW



7440B

Dimensions

Dimension	Aluminum Pumps	Aluminum Extension Pumps*	Ductile Iron Pumps	Stainless Steel Pumps
A	8.39 in. (213.1 mm)	8.39 in. (213.1 mm)	8.39 in. (213.1 mm)	8.73 in. (222.7 mm)
B	9.06 in. (230.1 mm)	9.06 in. (230.1 mm)	9.06 in. (230.1 mm)	9.41 in. (239.0 mm)
C	12.3 in. (312.4 mm)	12.92 in. (328.2mm)	12.3 in. (312.4 mm)	15.5 in. (393.7 mm)
D	6.0 in. (152.4 mm)	6.0 in. (152.4 mm)	6.0 in. (152.4 mm)	6.5 in. (165.1 mm)
E	17.45 in. (443.2 mm)	17.45 in. (443.2 mm)	17.45 in. (443.2 mm)	18.07 in. (458.9 mm)
F	19.9 in. (505.5 mm)	22.88 in. (579.1 mm)	19.37 in. (492.0 mm)	22.27 in. (565.7 mm)
G	21.9 in. (556.3 mm)	24.88 in. (631.9 mm)	21.37 in. (542.8 mm)	24.64 in. (625.8 mm)
H	23.53 in. (597.7 mm)	26.51 in. (673.3 mm)	23.0 in. (584.2 mm)	26.3 in. (668.0 mm)
J	2.0 in. (50.8 mm)	20 in. (50.8 mm)	2.0 in. (50.8 mm)	2.37 in. (60.2 mm)
K	0.38 in. (9.7 mm)	0.38 in. (9.7 mm)	0.38 in. (9.7 mm)	0.95 in. (24.1 mm)

***Aluminum extended pump matches the inlet to outlet dimensions of Wilden and Aro aluminum pumps. This will help for ease of installation during upgrades.

Technical Data

Maximum fluid working pressure	120 psi (0.8 MPa, 8 bar)
Air pressure operating range	20 to 120 psi (0.14 to 0.8 MPa, 1.4 to 8 bar,)
Maximum air consumption	175 scfm
Air consumption at 70 psi (0.48 MPa, 4.8 bar)/60 gpm	60 scfm (see chart)
Maximum free-flow delivery	150 gpm (568 l/min)
Maximum pump speed	145 cpm
Gallons (Liters) per cycle	1.03 (3.90)
Maximum suction lift	18 ft (5.48 m) wet or dry
Maximum size pumpable solids	1/4 in. (6.3 mm)
* Maximum noise level at 100 psi (0.7 MPa, 7 bar) 50 cpm	90 dBa
* Sound power level	103 dBa
* Noise level at 70 psi (0.48 MPa, 4.8 bar) and 50 cpm	85 dBa
Maximum operating temperature	150° F (65.5° C); 200° F (93.3° C) for models with PTFE ® diaphragms
Air inlet size	1/2 npt(f)
Fluid inlet size	2” npt(f)
Fluid outlet size	2” npt(f)
Wetted parts	Vary by Model. See pages 20 to 23
Non-wetted external parts	aluminum, 302 stainless steel, polyester (labels)
Weight	
Aluminum pumps	58 lb (26.3 kg)
Stainless steel pumps	111 lb (50.3 kg)
Ductile Iron pumps	130 lb (59.0 kg)

PTFE®, *Viton®, and Hytrel®*

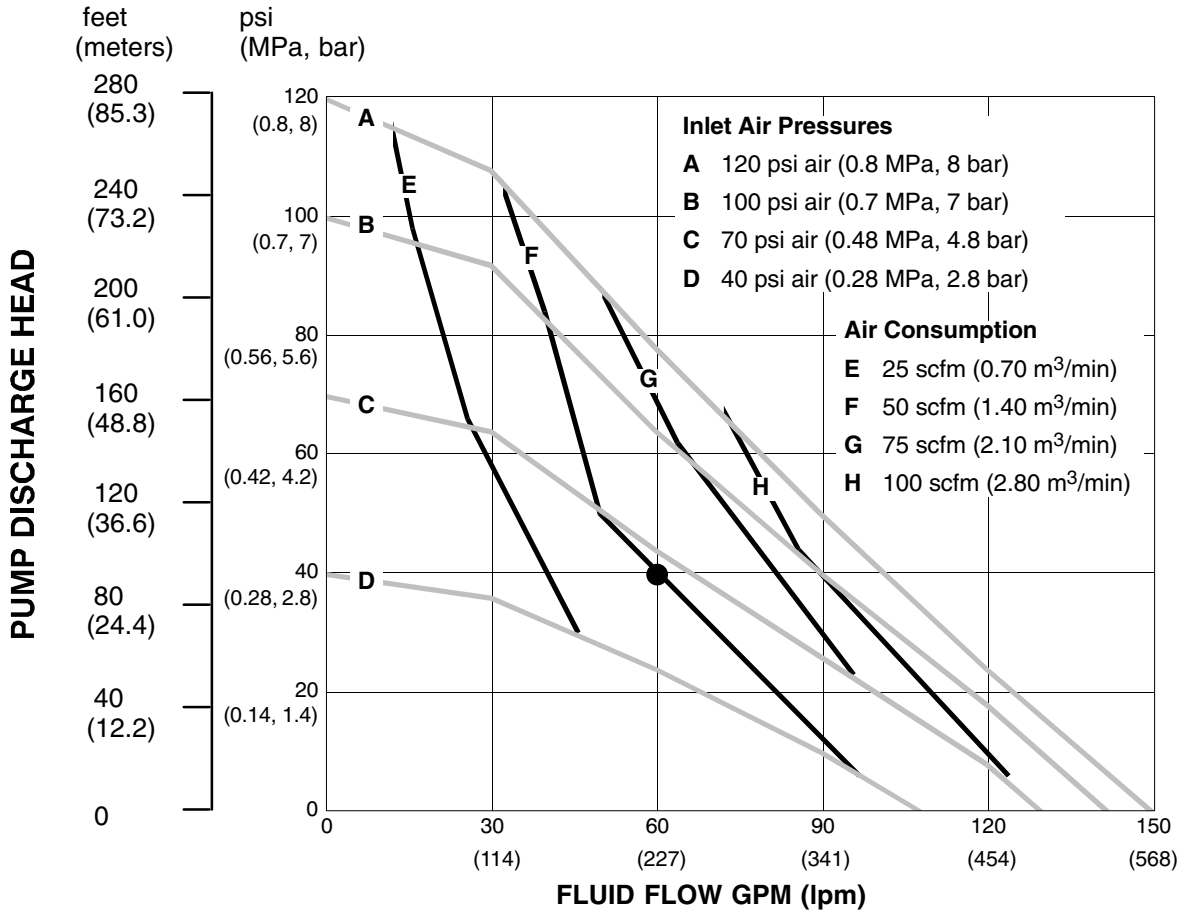
Geolast® and Santoprene® are registered trademarks of the Monsanto Co.

Loctite® is a registered trademark of the Loctite Corporation.

* *Noise levels measured with the pump mounted on the floor, using Rubber Foot Kit 236452. Sound power measured per ISO Standard 9216.*

Performance Chart

Example of Finding Pump Air Consumption and Air Pressure at a Specific Fluid Delivery and Discharge Head:
To supply 60 gpm (227 liters) fluid flow (horizontal scale) at 40 psi (0.28 MPa, 2.8 bar) discharge head pressure (vertical scale) requires approximately 60 scfm (1.68 m^3/min) air consumption at 70 psi (0.49 MPa, 4.9 bar) inlet air pressure.



TEST CONDITIONS
Pump tested in water with PTFE ® diaphragm and inlet submerged.

KEY
FLUID PRESSURE AND FLOW
SCFM AIR CONSUMPTION

Graco Warranties

Graco Standard Husky Pump Warranty

Graco warrants all equipment manufactured by Graco and bearing its name to be free from defects in material and workmanship on the date of sale by an authorized Graco distributor to the original purchaser for use. With the exception of any special, extended, or limited warranty published by Graco, Graco will, for a period of five years from the date of sale, repair or replace any part of the equipment determined by Graco to be defective. This warranty applies only when the equipment is installed, operated and maintained in accordance with Graco's written recommendations.

This warranty does not cover, and Graco shall not be liable for general wear and tear, or any malfunction, damage or wear caused by faulty installation, misapplication, abrasion, corrosion, inadequate or improper maintenance, negligence, accident, tampering, or substitution of non-Graco component parts. Nor shall Graco be liable for malfunction, damage or wear caused by the incompatibility of Graco equipment with structures, accessories, equipment or materials not supplied by Graco, or the improper design, manufacture, installation, operation or maintenance of structures, accessories, equipment or materials not supplied by Graco.

This warranty is conditioned upon the prepaid return of the equipment claimed to be defective to an authorized Graco distributor for verification of the claimed defect. If the claimed defect is verified, Graco will repair or replace free of charge any defective parts. The equipment will be returned to the original purchaser transportation prepaid. If inspection of the equipment does not disclose any defect in material or workmanship, repairs will be made at a reasonable charge, which charges may include the costs of parts, labor, and transportation.

THIS WARRANTY IS EXCLUSIVE, AND IS IN LIEU OF ANY OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO WARRANTY OF MERCHANTABILITY OR WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.

Graco's sole obligation and buyer's sole remedy for any breach of warranty shall be as set forth above. The buyer agrees that no other remedy (including, but not limited to, incidental or consequential damages for lost profits, lost sales, injury to person or property, or any other incidental or consequential loss) shall be available. Any action for breach of warranty must be brought within six years of the date of sale.

Graco makes no warranty, and disclaims all implied warranties of merchantability and fitness for a particular purpose in connection with accessories, equipment, materials or components sold but not manufactured by Graco. These items sold, but not manufactured by Graco (such as electric motors, switches, hose, etc.), are subject to the warranty, if any, of their manufacturer. Graco will provide purchaser with reasonable assistance in making any claim for breach of these warranties.

In no event will Graco be liable for indirect, incidental, special or consequential damages resulting from Graco supplying equipment hereunder, or the furnishing, performance, or use of any products or other goods sold hereto, whether due to a breach of contract, breach of warranty, the negligence of Graco, or otherwise.

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Extended Product Warranty

Graco warrants all Husky 205, 307, 515, 716, 1040, 1590, 2150, and 3275 air valve center sections to be free from defects in material and workmanship for a period of fifteen years from date installed in service by the original purchaser. Normal wear of items such as packings or seals are not considered to be defects in material and workmanship.

Five years	Graco will provide parts and labor.
Six to Fifteen years	Graco will replace defective parts only.

Graco Information

TO PLACE AN ORDER, contact your Graco distributor, or call one of the following numbers to identify the distributor closest to you:

1–800–367–4023 Toll Free
612–623–6921
612–378–3505 Fax

All written and visual data contained in this document reflect the latest product information available at the time of publication. Graco reserves the right to make changes at any time without notice.

Sales Offices: Minneapolis, Detroit
International Offices: Belgium, Korea, Hong Kong, Japan

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