

# Techni-flow<sup>®</sup> 200

332523C

**Air-Operated Diaphragm Pumps**

EN

***25 mm (1 inch) pump with modular air valve for fluid transfer applications.  
For professional use only.***

***See page 3 for model information, including approvals.***

*125 psi (0.86 MPa, 8.6 bar) Maximum Fluid Working Pressure*

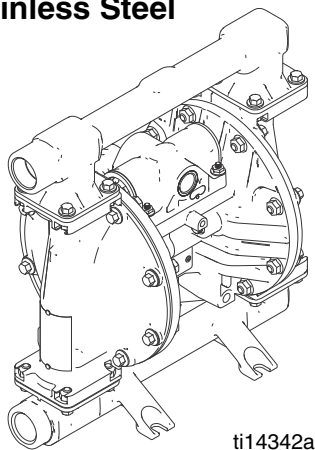
*125 psi (0.86 MPa, 8.6 bar) Maximum Air Input Pressure*



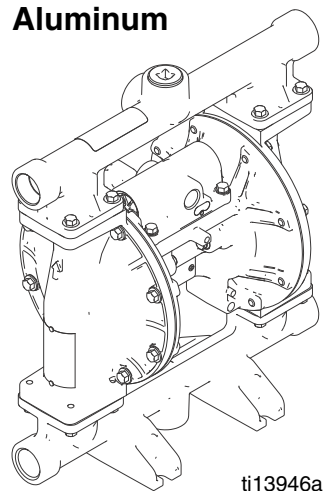
### **Important Safety Instructions**

Read all warnings and instructions in this manual. Save these instructions.

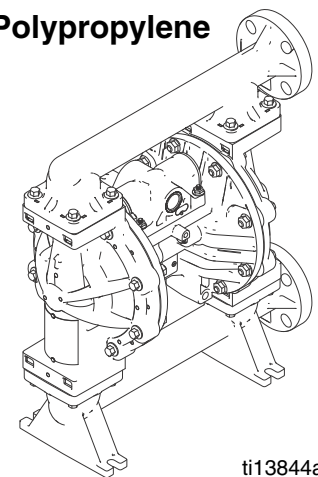
**Stainless Steel**



**Aluminum**



**Polypropylene**



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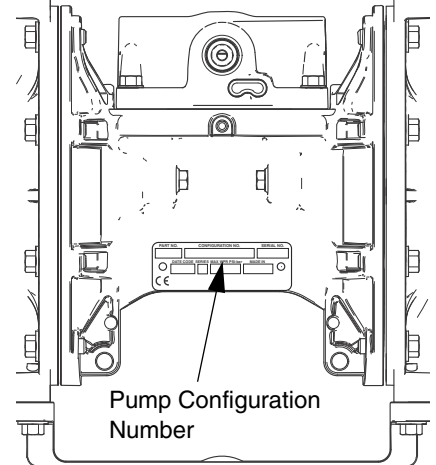
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# Configuration Number Matrix

Check the identification plate (ID) for the 20-digit Configuration Number of your pump. Use the following matrix to define the components of your pump.

## Sample Configuration Number

<b>TF200A</b>	<b>A01A</b>	<b>A2</b>	<b>GE</b>	<b>GE</b>	<b>GE</b>	<b>PT</b>
Pump Model	Center Section and Air Valve	Fluid Covers and Manifolds	Seats	Balls	Diaphragms	Manifold O-Rings



Pump 25 mm (1 inch) ports, 50 gpm)	Center Section and Air Valve Material		Fluid Covers and Manifolds	
<b>TF200A</b> ★ Aluminum	<b>A01A</b>	Aluminum	<b>A2</b>	Aluminum, standard ports, metric
<b>TF200P</b> Polypropylene	<b>P01A</b>	Polypropylene	<b>F2</b>	PVDF, end flange
<b>TF200S</b> ★ Stainless Steel			<b>P2</b>	Polypropylene, end flange
			<b>S2</b>	Stainless steel, standard ports, metric
★ All aluminum pumps and stainless steel pumps with aluminum centers are certified:				

Check Valve Seats		Check Valve Balls		Diaphragm		Manifold O-Rings	
<b>GE</b>	Geolast®	<b>GE</b>	Geolast	<b>GE</b>	Geolast	<b>PT</b>	PTFE
<b>PP</b>	Polypropylene	<b>PT</b>	PTFE	<b>PT</b>	PTFE/EPDM Two-Piece		
<b>PV</b>	PVDF	<b>SP</b>	Santoprene	<b>SP</b>	Santoprene		
<b>SS</b>	316 Stainless Steel						

# Warnings

The following warnings are for the setup, use, grounding, maintenance, and repair of this equipment. The exclamation point symbol alerts you to a general warning and the hazard symbol refers to procedure-specific risk. When these symbols appear in the body of this manual or on labels, refer back to these warnings. Additional, product-specific warnings may be found throughout the body of this manual where applicable.

## WARNING



### FIRE AND EXPLOSION HAZARD

Flammable fumes, such as solvent and paint fumes, in **work area** can ignite or explode. To help prevent fire and explosion:

- Use equipment only in well ventilated area.
- Eliminate all ignition sources; such as pilot lights, cigarettes, portable electric lamps, and plastic drop cloths (potential static arc).
- Keep work area free of debris, including solvent, rags and gasoline.
- Do not plug or unplug power cords, or turn power or light switches on or off when flammable fumes are present.
- Ground all equipment in the work area. See **Grounding** instructions.
- Use only grounded hoses.
- Hold gun firmly to side of grounded pail when triggering into pail.
- If there is static sparking or you feel a shock, **stop operation immediately**. Do not use equipment until you identify and correct the problem.
- Keep a working fire extinguisher in the work area.



Static charge may build up on plastic parts during cleaning and could discharge and ignite flammable materials and gases. To help prevent fire and explosion:

- Clean plastic parts in a well ventilated area.
- Do not clean with a dry cloth.
- Do not operate electrostatic guns in equipment work area.



# WARNING



## EQUIPMENT MISUSE HAZARD

Misuse can cause death or serious injury.

- Do not operate the unit when fatigued or under the influence of drugs or alcohol.
- Do not exceed the maximum working pressure or temperature rating of the lowest rated system component. See **Technical Data** in all equipment manuals.
- Use fluids and solvents that are compatible with equipment wetted parts. See **Technical Data** in all equipment manuals. Read fluid and solvent manufacturer's warnings. For complete information about your material, request MSDS from distributor or retailer.
- Do not leave the work area while equipment is energized or under pressure. Turn off all equipment and follow the **Pressure Relief Procedure** in this manual when equipment is not in use.
- Check equipment daily. Repair or replace worn or damaged parts immediately with genuine manufacturer's replacement parts only.
- Do not alter or modify equipment.
- Use equipment only for its intended purpose. Call your distributor for information.
- Route hoses and cables away from traffic areas, sharp edges, moving parts, and hot surfaces.
- Do not kink or over bend hoses or use hoses to pull equipment.
- Keep children and animals away from work area.
- Comply with all applicable safety regulations.



## PRESSURIZED EQUIPMENT HAZARD

Fluid from the gun/dispense valve, leaks, or ruptured components can splash in the eyes or on skin and cause serious injury.

- Follow **Pressure Relief Procedure** in this manual, when you stop spraying and before cleaning, checking, or servicing equipment.
- Tighten all fluid connections before operating the equipment.
- Check hoses, tubes, and couplings daily. Replace worn or damaged parts immediately.









## THERMAL EXPANSION HAZARD

Fluids subjected to heat in confined spaces, including hoses, can create a rapid rise in pressure due to the thermal expansion. Over-pressurization can result in equipment rupture and serious injury.

- Open a valve to relieve the fluid expansion during heating.
- Replace hoses proactively at regular intervals based on your operating conditions.


**WARNING**

	<p><b>PRESSURIZED ALUMINUM PARTS HAZARD</b></p> <p>Use of fluids that are incompatible with aluminum in pressurized equipment can cause serious chemical reaction and equipment rupture. Failure to follow this warning can result in death, serious injury, or property damage.</p> <ul style="list-style-type: none"> <li>• Do not use 1,1,1-trichloroethane, methylene chloride, other halogenated hydrocarbon solvents or fluids containing such solvents.</li> <li>• Many other fluids may contain chemicals that can react with aluminum. Contact your material supplier for compatibility.</li> </ul>
	<p><b>PLASTIC PARTS CLEANING SOLVENT HAZARD</b></p> <p>Use only compatible water-based solvents to clean plastic structural or pressure-containing parts. Many solvents can degrade plastic parts and cause them to fail, which could cause serious injury or property damage. See <b>Technical Data</b> in this and all other equipment instruction manuals. Read fluid and solvent manufacturer's warnings.</p>
 	<p><b>TOXIC FLUID OR FUMES HAZARD</b></p> <p>Toxic fluids or fumes can cause serious injury or death if splashed in the eyes or on skin, inhaled, or swallowed.</p> <ul style="list-style-type: none"> <li>• Read MSDS's to know the specific hazards of the fluids you are using.</li> <li>• Route exhaust away from work area. If diaphragm ruptures, fluid may be exhausted with air.</li> <li>• Store hazardous fluid in approved containers, and dispose of it according to applicable guidelines.</li> </ul>
	<p><b>BURN HAZARD</b></p> <p>Equipment surfaces and fluid that's heated can become very hot during operation. To avoid severe burns:</p> <ul style="list-style-type: none"> <li>• Do not touch hot fluid or equipment.</li> </ul>
	<p><b>PERSONAL PROTECTIVE EQUIPMENT</b></p> <p>You must wear appropriate protective equipment when operating, servicing, or when in the operating area of the equipment to help protect you from serious injury, including eye injury, inhalation of toxic fumes, burns, and hearing loss. This equipment includes but is not limited to:</p> <ul style="list-style-type: none"> <li>• Clothing and respirator as recommended by the fluid and solvent manufacturer</li> <li>• Protective eyewear, gloves, and hearing protection</li> </ul>

## Installation

The Typical Installation shown in FIG. 3 is only a guide for selecting and installing system components. Contact your Techni-flow distributor for assistance in planning a system to suit your needs.

## Tighten Fasteners Before Setup

Before using the pump for the first time, check and retorquer all external fasteners. Follow **Torque Instructions**, page 16.

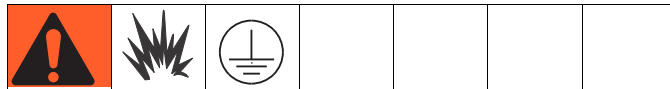
## Mounting



- The pump exhaust air may contain contaminants. Ventilate to a remote area. See **Air Exhaust Ventilation** on page 9.
- Never move or lift a pump under pressure. If dropped, the fluid section may rupture. Always follow the **Pressure Relief Procedure** on page 14 before moving or lifting the pump.

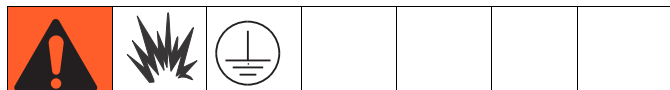
1. For wall mounting, order Kit 24C637.
2. Be sure the mounting surface can support the weight of the pump, hoses, and accessories, as well as the stress caused during operation.
3. For all mountings, be sure the pump is bolted directly to the mounting surface.
4. For ease of operation and service, mount the pump so air valve, air inlet, fluid inlet and fluid outlet ports are easily accessible.
5. Rubber Foot Mounting Kit 236452 is available to reduce noise and vibration during operation.

## Grounding



The equipment must be grounded. Grounding reduces the risk of static and electric shock by providing an escape wire for the electrical current due to static build up or in the event of a short circuit.

**Pump:** See FIG. 1. Loosen the grounding screw (GS). Insert one end of a 12 ga. minimum ground wire (R) behind the grounding screw and tighten the screw securely. Connect the clamp end of the ground wire to a true earth ground. A ground wire and clamp, Part 238909, is available.



**Polypropylene:** Only aluminum and stainless steel pumps have a ground screw. Standard polypropylene pumps are **not** conductive. **Never** use a non-conductive polypropylene pump with non-conductive flammable fluids. Follow your local fire codes. When pumping conductive flammable fluids, **always** ground the entire fluid system as described.

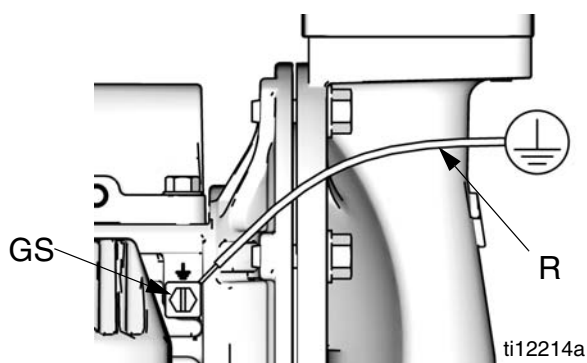


FIG. 1. Grounding screw and wire

**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 manufacturer's recommendations.

**Fluid supply container:** Follow local code.

**Solvent pails used when flushing:** Follow local code. Use only conductive metal pails, placed on a grounded surface. Do not place the pail on a nonconductive surface, such as paper or cardboard, which interrupts grounding continuity.

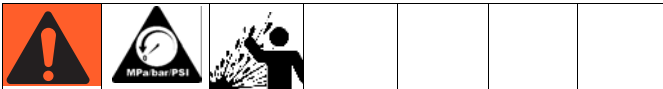
Check your system electrical continuity after the initial installation, and then set up a regular schedule for checking continuity to be sure proper grounding is maintained.

3. Locate another master air valve (E) upstream from all air line accessories and use it to isolate them during cleaning and repair.
4. An air line filter (F) removes harmful dirt and moisture from the compressed air supply.
5. Install a grounded, flexible air hose (A) between the accessories and the 1/2 npt(f) pump air inlet (D). Use a minimum 3/8 in. (10 mm) ID air hose.

## Air Line

See FIG. 3, page 11.

1. Install an air regulator (C) and gauge to control the fluid pressure. The fluid stall pressure will be the same as the setting of the air regulator.
2. Locate a bleed-type master air valve (B) close to the pump and use it to relieve trapped air. Be sure the valve is easily accessible from the pump and located downstream from the regulator.



Trapped air can cause the pump to cycle unexpectedly, which could result in serious injury from splashing.



## Air Exhaust Ventilation

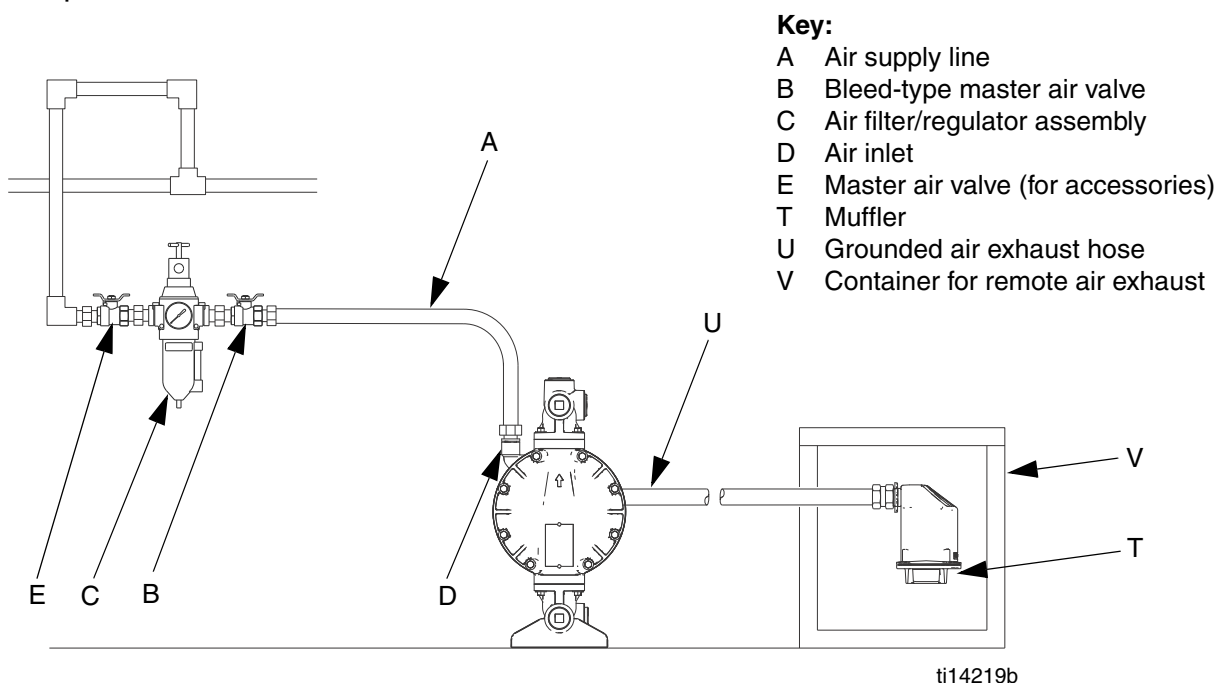


The air exhaust port is 3/4 npt(f). Do not restrict the air exhaust port. Excessive exhaust restriction can cause erratic pump operation.

### To provide a remote exhaust:

1. Remove the muffler (T) from the pump air exhaust port.

2. Install a grounded air exhaust hose (U) and connect the muffler (T) 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.
3. Place a container at the end of the air exhaust line to catch fluid in case a diaphragm ruptures. If the diaphragm ruptures, the fluid being pumped will exhaust with the air.



**FIG. 2. Vent exhaust air**

## Fluid Supply Line

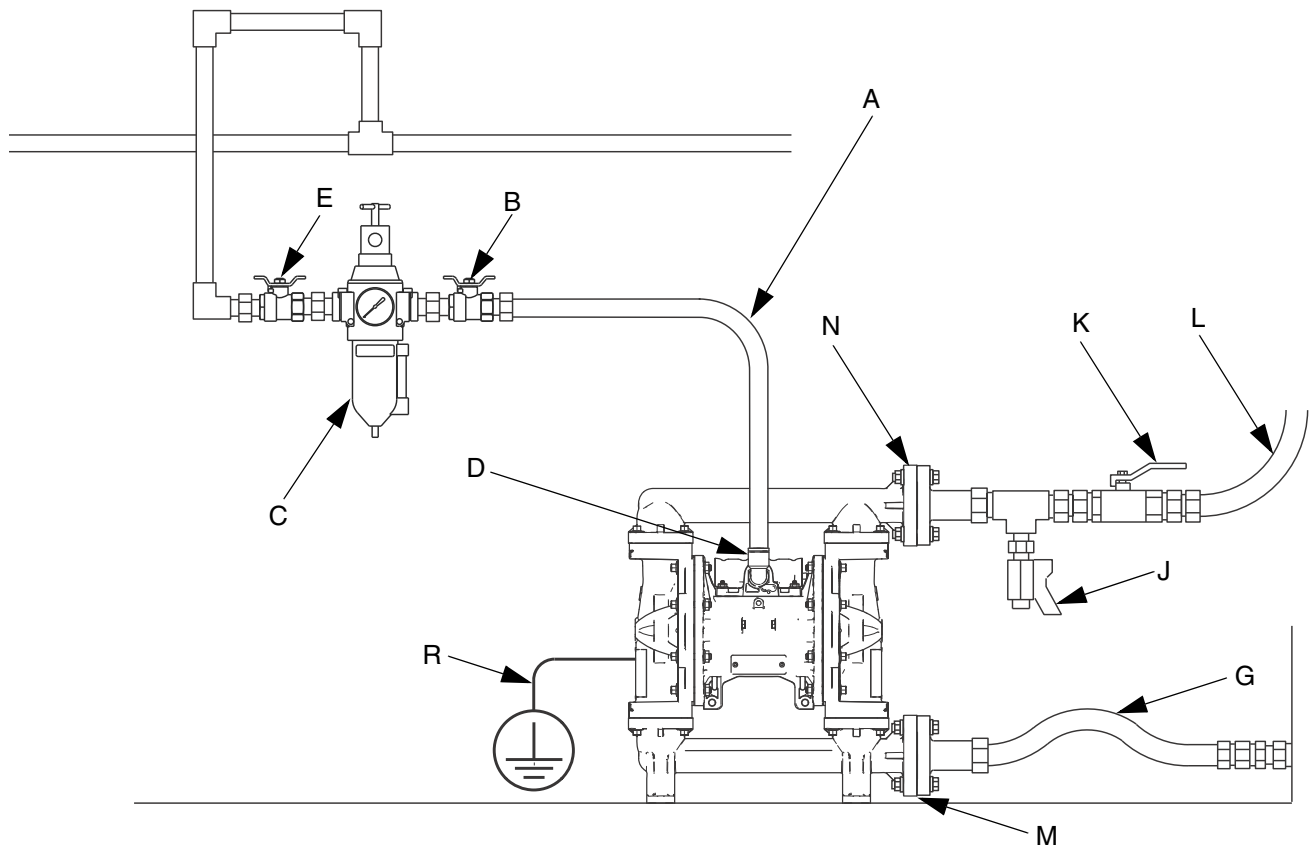
See FIG. 3, page 11.

1. Use grounded, flexible fluid supply lines (G). See **Grounding**, page 7.
2. If the inlet fluid 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. Excessive inlet fluid pressure also will shorten diaphragm life. Approximately 3 - 5 psi (0.02- 0.03 MPa, 0.21-0.34 bar) should be adequate for most materials.
3. For maximum suction lift (wet and dry), see **Technical Data**, page 42. For best results, always install the pump as close as possible to the material source.

## Fluid Outlet Line

See FIG. 3, page 11.

1. Use grounded, flexible fluid hoses (L). See **Grounding**, page 7.
2. Install a fluid drain valve (J) near the fluid outlet.
3. Install a shutoff valve (K) in the fluid outlet line.



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**FIG. 3. Typical floor-mount installation (polypropylene pump shown)**

**Key:**

- |  |   |
|--|---|
| <p>A Air supply line</p> <p>B Bleed-type master air valve (required for pump)</p> <p>C Air filter/regulator assembly</p> <p>D Air inlet</p> <p>E Master air valve (for accessories)</p> <p>G Grounded, flexible fluid supply line</p> <p>J Fluid drain valve (required)</p> <p>K Fluid shutoff valve</p> <p>L Grounded, flexible fluid outlet line</p> <p>M Fluid inlet (Aluminum, not pictured, four ports; Polypropylene, see FIG. 3; stainless steel, not pictured, one port)</p> | <p>N Fluid outlet (Aluminum, not pictured, four ports; Polypropylene, see FIG. 3; Stainless steel, not pictured, one port)</p> <p>R Ground wire (required for aluminum and stainless steel pumps; see page 7 for installation instructions)</p> |
|--|---|

## Fluid Inlet and Outlet Ports

**NOTE:** Remove and reverse the manifold(s) to change the orientation of inlet or outlet port(s). Follow **Torque Instructions** on page 16.

### Aluminum

The fluid inlet and outlet manifolds each have four 25 mm (1 in.) bspt threaded ports. Close off the unused ports, using the supplied plugs.

### Polypropylene

The fluid inlet and outlet manifolds each have a 25 mm (1 in.) raised face ANSI/DIN flange (FIG. 3, M, N) in an end location. Connect 25 mm (1 in.) standard flanged plastic pipe to the pump. See FIG. 4.

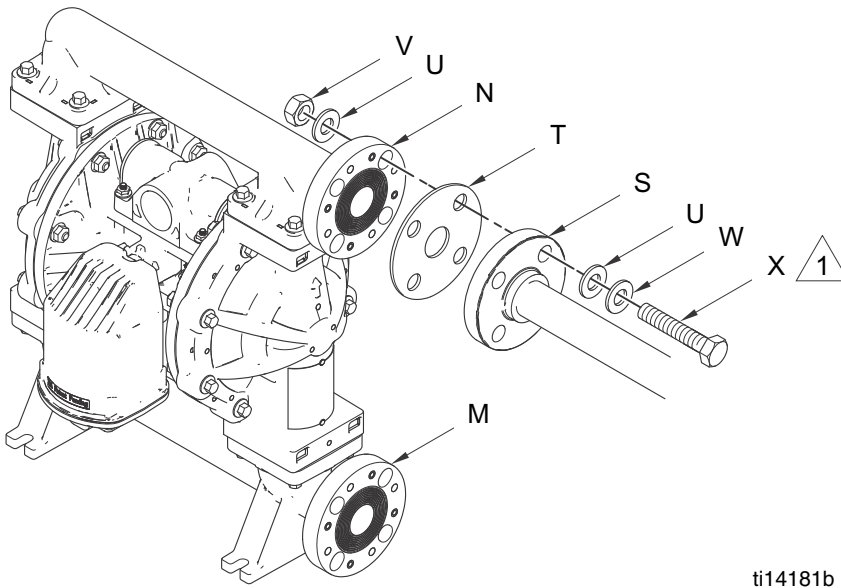
Standard pipe flange kits are available in polypropylene (239005), stainless steel (239008), and PVDF (239009). These kits include:

- the pipe flange
- a PTFE gasket
- four 1/2 in. bolts, spring lock washers, flat washers and nuts.

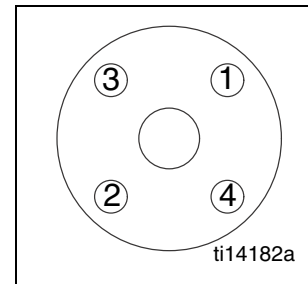
Be sure to lubricate the threads of the bolts and torque to 10-15 ft-lb (14-20 N•m). Follow the bolt tightening sequence and **do not over-torque.**

### Stainless Steel

The fluid inlet and outlet manifolds each have one 25 mm (1 in.) bspt threaded port.




### Bolt tightening sequence



#### Key:

- M 25 mm (1 in.) fluid inlet flange
- N 25 mm (1 in.) fluid outlet flange
- S 25 mm (1 in.) standard pipe flange
- T PTFE gasket
- U Flat washer
- V Nut
- W Lock washer
- X Bolt

 Torque to 10-15 ft-lb (14-20 N•m). Do not over-torque.

**FIG. 4. Flange connections (polypropylene pumps only)**

## Fluid Pressure Relief Valve

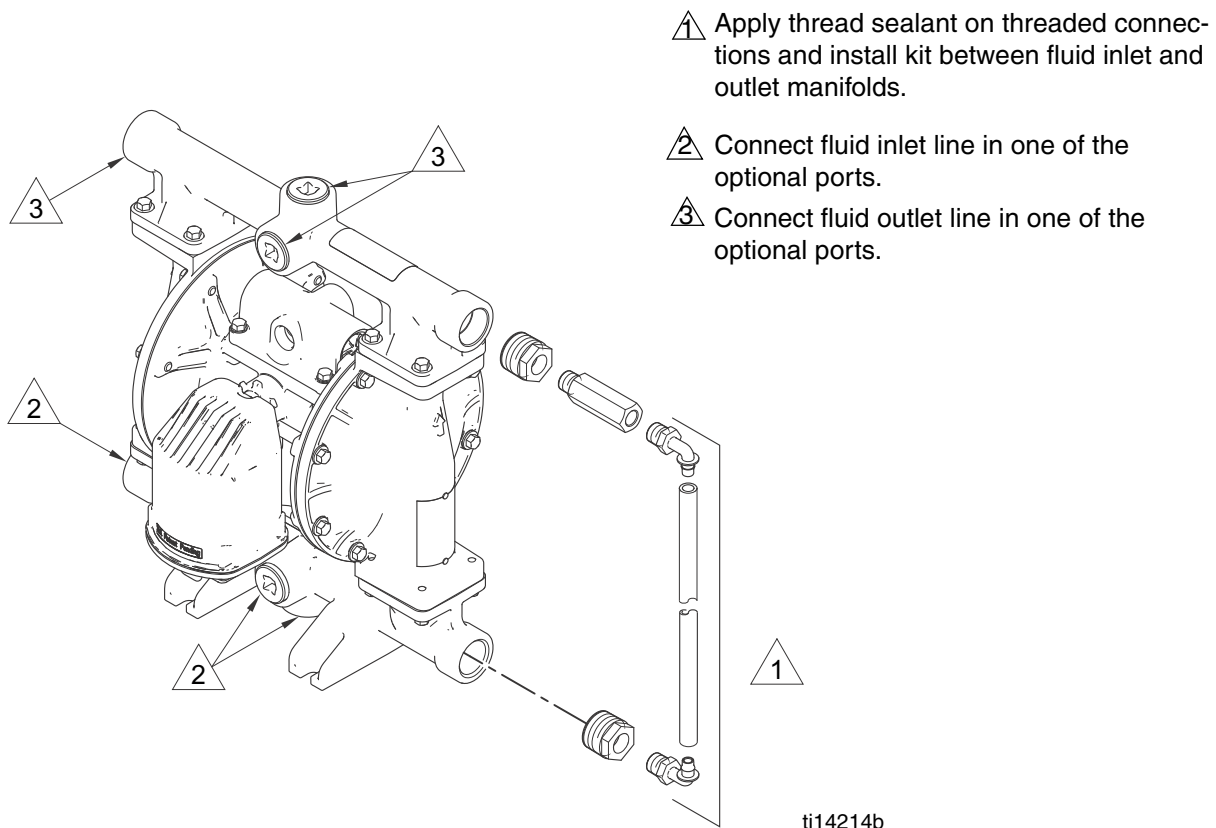


Some systems may require installation of a pressure relief valve at the pump outlet to prevent overpressurization and rupture of the pump or hose.

Thermal expansion of fluid in the outlet line can cause overpressurization. Thermal expansion 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 also can occur if the Techni-flow pump is 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.






FIG. 5 shows Fluid Pressure Relief Kit 238428 for aluminum pumps. Use Fluid Pressure Relief Kit 112119, not shown, for polypropylene pumps.



**FIG. 5. Fluid pressure relief kit (aluminum model shown)**

# Operation

## Pressure Relief Procedure

						
<p>Trapped air can cause the pump to cycle unexpectedly, which could result in serious injury from splashing.</p>						

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

## Flush the Pump Before First Use

The pump was tested in water. If water could contaminate the fluid you are pumping, flush the pump thoroughly with a compatible solvent. See **Flushing and Storage**, page 15.

## Tighten Fasteners Before Setup

Before using the pump for the first time, check and retorque all external fasteners. Follow **Torque Instructions**, page 16. After the first day of operation, retorque the fasteners.

## Starting and Adjusting the Pump

1. Be sure the pump is properly grounded. Refer to **Grounding** on page 7.
2. Check fittings to be sure they are tight. Use a compatible liquid thread sealant on male threads. Tighten fluid inlet and outlet fittings securely.
3. Place the suction tube (if used) in fluid to be pumped.

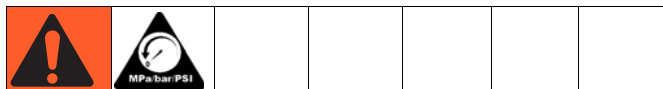
**NOTE:** If fluid inlet pressure to the pump is more than 25% of outlet working pressure, the ball check valves will not close fast enough, resulting in inefficient pump operation.

4. Place the end of the fluid hose into an appropriate container.
5. Close the fluid drain valve.
6. Back out the air regulator knob, and open all bleed-type master air valves.
7. If the fluid hose has a dispensing device, hold it open.
8. Slowly increase air pressure with the air regulator just 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.

**NOTE:** Use lowest possible air pressure to prime, just enough to cycle the pump. If the pump does not prime as expected, turn air pressure **DOWN**.

9. If you are flushing, run the pump long enough to thoroughly clean the pump and hoses.
10. Close the dispensing valve, if used.
11. Close the bleed-type master air valve.

## Pump Shutdown



At the end of the work shift and before you check, adjust, clean or repair the system, follow **Pressure Relief Procedure**, page 14.

## Maintenance

### Maintenance Schedule

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

### Lubrication

The pump is lubricated at the factory. It is designed to require no further lubrication for the life of the pump. There is no need to add an inline lubricator under normal operating conditions.

### Tighten 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 fasteners. Tighten or retorque as necessary. Although pump use varies, a general guideline is to retorque fasteners every two months. See **Torque Instructions**, page 16.

## Flushing and Storage



- Flush before fluid can dry in the equipment, at the end of the day, before storing, and before repairing equipment.
- Flush at the lowest pressure possible. Check connectors for leaks and tighten as necessary.
- Flush with a fluid that is compatible with the fluid being dispensed and the equipment wetted parts.

Flush the pump often enough to prevent the fluid you are pumping from drying or freezing in the pump and damaging it. Use a compatible solvent.

Always flush the pump and relieve the pressure before storing it for any length of time.

## Torque Instructions

**NOTE:** Fluid cover and manifold fasteners have a thread-locking adhesive patch applied to the threads. If this patch is excessively worn, the fasteners may loosen during operation. Replace screws with new ones or apply medium-strength (blue) Loctite or equivalent to the threads.

If fluid cover or manifold fasteners have been loosened, it is important to torque them using the following procedure to improve sealing.

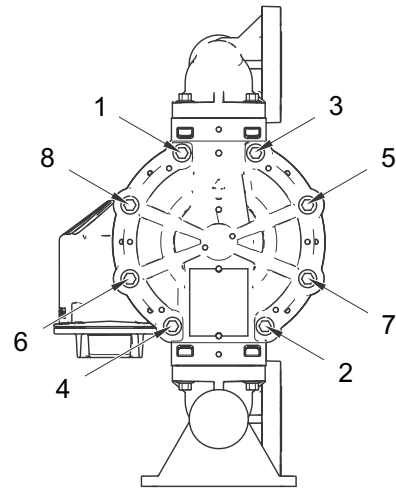
**NOTE:** Always completely torque fluid covers before torquing manifolds.

Start all fluid cover screws a few turns. Then turn down each screw just until head contacts cover. Then turn each screw by 1/2 turn or less working in a crisscross pattern to specified torque. Repeat for manifolds.

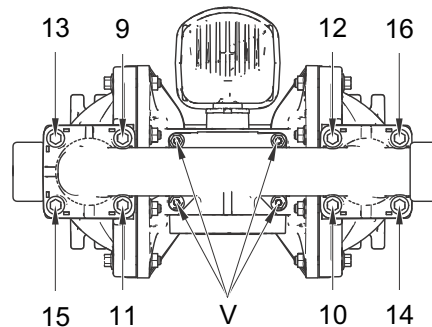
**Fluid cover and manifold fasteners:**  
100 in-lb (11.3 N•m)

Retorque the air valve fasteners (V) in a crisscross pattern to specified torque.

**Plastic center sections:** 55 in-lb (6.2 N•m)  
**Metal center sections:** 80 in-lb (9.0 N•m)



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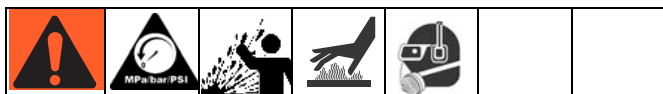


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**FIG. 6. Torque sequence**



# Troubleshooting

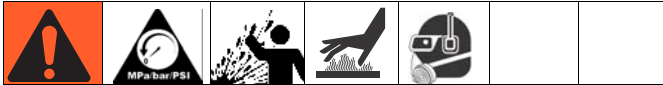


Problem	Cause	Solution
Pump cycles but will not prime.	Pump is running too fast, causing cavitation before prime.	Lower air inlet pressure.
	Check valve ball severely worn or wedged in seat or manifold.	Replace ball and seat. See page 22.
	Seat severely worn.	Replace ball and seat. See page 22.
	Outlet or inlet clogged.	Unclog.
	Inlet or outlet valve closed.	Open.
	Inlet fittings or manifolds loose.	Tighten.
	Manifold o-rings damaged.	Replace o-rings. See page 22.
Pump cycles at stall or fails to hold pressure at stall.	Worn check valve balls, seats, or o-rings.	Replace. See page 34.
Pump will not cycle, or cycles once and stops.	Air valve is stuck or dirty.	Disassemble and clean air valve. See page 19. Use filtered air.
	Check valve ball severely worn and wedged in seat or manifold.	Replace ball and seat. See page 22.
	Pilot valve worn, damaged, or plugged.	Replace pilot valve. See page 23.
	Air valve gasket damaged.	Replace gasket. See page 19.
	Check valve ball is wedged into seat due to overpressurization.	Install pressure relief kit. See <b>Accessories</b> , page 37.
	Dispensing valve clogged.	Relieve pressure and clear valve.
Pump operates erratically.	Clogged suction line.	Inspect; clear.
	Sticky or leaking check valve balls.	Clean or replace. See page 22.
	Diaphragm (and backup) ruptured.	Replace. See page 23.
	Restricted exhaust.	Remove restriction.
	Pilot valves damaged or worn.	Replace pilot valves. See page 23.
	Air valve damaged.	Replace air valve. See page 19.
	Air valve gasket damaged.	Replace air valve gasket. See page 19.
	Air supply erratic.	Repair air supply.
Exhaust muffler icing.	Use drier air supply or use low ice muffler (Part No. 102656).	

<b>Problem</b>	<b>Cause</b>	<b>Solution</b>
Air bubbles in fluid.	Suction line is loose.	Tighten.
	Diaphragm (and backup) ruptured.	Replace. See page 23.
	Loose manifolds, damaged seats or manifold o-rings.	Tighten manifold bolts or replace seats or o-rings. See page 22.
	Diaphragm shaft bolt o-ring damaged.	Replace o-ring.
	Pump cavitation.	Reduce pump speed or suction lift.
	Loose diaphragm shaft bolt.	Tighten.
Exhaust air contains fluid being pumped.	Diaphragm (and backup) ruptured.	Replace. See page 23.
	Loose diaphragm shaft bolt.	Tighten or replace. See page 23.
	Diaphragm shaft bolt o-ring damaged.	Replace o-ring. See page 23.
Moisture in exhaust air.	High inlet air humidity.	Use drier air supply.
Pump exhausts excessive air at stall.	Worn air valve cup or plate.	Replace cup and plate. See page 19.
	Damaged air valve gasket.	Replace gasket. See page 19.
	Damaged pilot valve.	Replace pilot valves. See page 23.
	Worn shaft seals or bearings.	Replace shaft seals or bearings. See page 23.
Pump leaks air externally.	Air valve or fluid cover screws loose.	Tighten.
	Diaphragm damaged.	Replace diaphragm. See page 23.
	Air valve gasket damaged.	Replace gasket. See page 19.
Pump leaks fluid externally from joints.	Loose manifold screws or fluid cover screws.	Tighten manifold screws or fluid cover screws. See page 22.
	Manifold o-rings worn out.	Replace o-rings. See page 22.
Pump leaks fluid externally through manifold or fluid cover.	Excessive pump speed or inlet starvation.	Replace manifold and reduce pump speed or improve pump feed.

# Repair

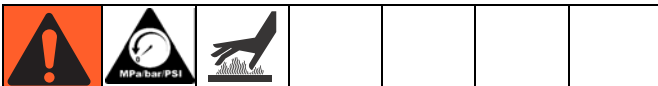
## Pressure Relief Procedure



This equipment stays pressurized until pressure is manually relieved. To help prevent serious injury from pressurized fluid, accidental spray, or splashing fluid, follow the **Pressure Relief Procedure** when you stop spraying and before cleaning, checking, or servicing the equipment.

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

## Repair or Replace Air Valve



### Replace Complete Air Valve

1. Stop the pump. Relieve the pressure. See **Pressure Relief Procedure** in previous section.
2. Disconnect the air line to the motor.
3. Remove screws (109, metal pumps) or nuts (112, plastic pumps). Remove the air valve and gasket (108).
4. To repair the air valve, go to **Disassemble the Air Valve**, step 1, in next section. To install a replacement air valve, continue with step 7.
5. Align the new air valve gasket (108) on the center housing, then attach the air valve. See **Torque Instructions**, page 16.
6. Reconnect the air line to the motor.

### Replace Seals or Rebuild Air Valve

**NOTE:** Repair kits are available. See page 31 to order the correct kit(s) for your pump. Air Valve Seal Kit parts are marked with a †. Air Valve Repair Kit parts are marked with a ◆. Air Valve End Cap Kit parts are marked with a ✕.

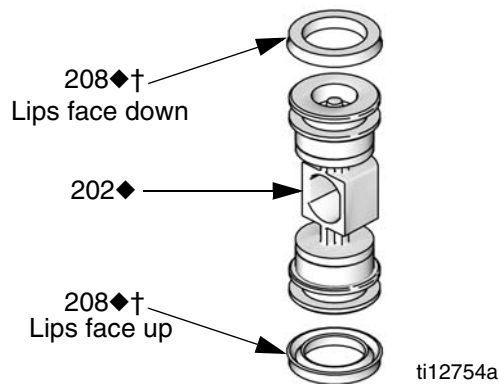
#### Disassemble the Air Valve

1. Perform steps 1-3 under **Replace Complete Air Valve**, page 19.
2. See FIG. 8. Use a Torx screwdriver (T8 for aluminum centers, T9 for plastic centers) to remove two screws (209). Remove the valve plate (205), cup assembly (212-214), spring (211), and detent assembly (203).
3. Pull the cup (213) off of the base (212). Remove the o-ring (214) from the cup.
4. See FIG. 8. Remove the retaining ring (210) from each end of the air valve. Use the piston (202) to push the end caps (207, 217) out of the ends. Remove end cap o-rings (206).
5. Remove the u-cup seals (208) from each end of the piston (202), then remove the piston. Remove the detent cam (204) from the air valve housing (201).

### Reassemble the Air Valve

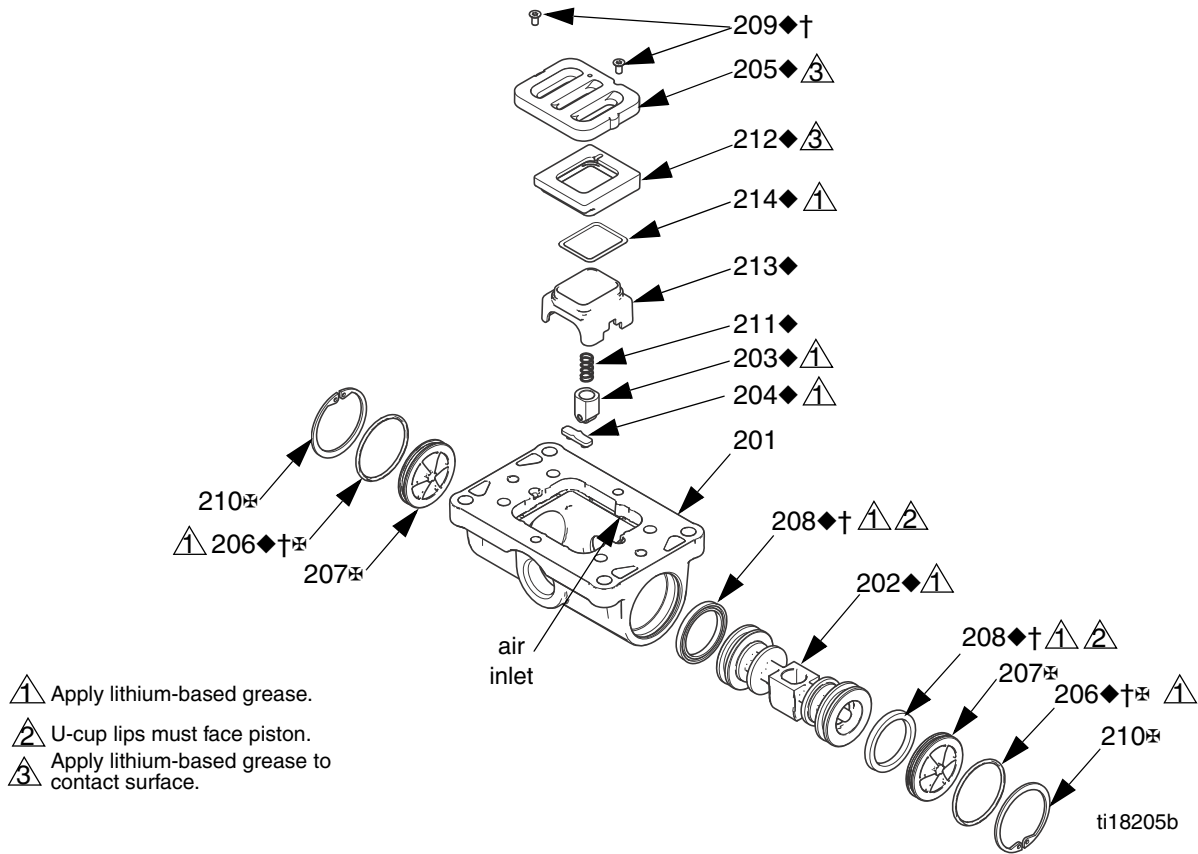
**NOTE:** Apply lithium-based grease whenever instructed to grease.

1. Use all parts in the repair kits. Clean other parts and inspect for damage. Replace as needed.
2. Grease the detent cam (204) and install into housing (201).
3. Grease the u-cups (208) and install on the piston with lips facing toward the center of the piston.



**FIG. 7. Air valve u-cup installation**

4. Grease both ends of the piston (202) and install it in the housing (201), with the flat side toward the cup (212). Be careful not to tear u-cups (208) when sliding piston into housing.
5. Grease new o-rings (206) and install on the end caps (207). Install the end caps into the housing.
6. Install a retaining ring (210) on each end to hold end caps in place.

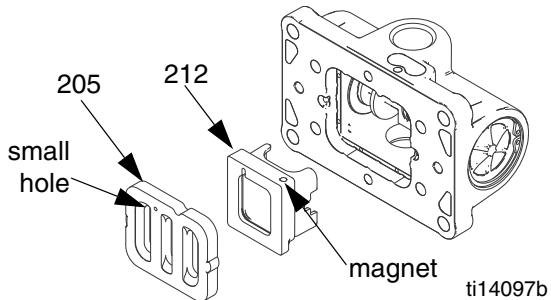


**FIG. 8. Air valve assembly**

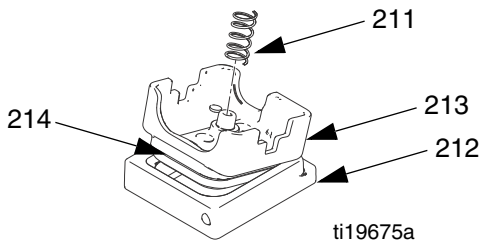
7. Grease and install the detent assembly (203) into the piston. Install the o-ring (214) on the cup (213). Apply a light film of grease to the outside surface of the o-ring and the inside mating surface of the base (212).

Orient the end of the base that has a magnet toward the end of the cup that has the larger cutout. Engage the opposite end of the parts. Leave the end with the magnet free. Tilt the base toward the cup and fully engage the parts, using care so that the o-ring remains in place. Install the spring (211) onto the protrusion on the cup. Align the magnet in the base with the air inlet and install the cup assembly.

8. Grease the cup side and install the valve plate (205). Align the small hole in the plate with the air inlet. Tighten the screws (209) to hold it in place.



**FIG. 10. Air valve cup and plate installation**



**FIG. 9**

## Check Valve Repair



**NOTE:** Kits are available for new check valve balls and seats in a range of materials. See page 34 to order kits in the material(s) desired. An o-ring kit and fastener kits also are available.

**NOTE:** To ensure proper seating of the check balls, always replace the seats when replacing the balls. Also replace the o-rings.

### Disassembly

1. Follow the **Pressure Relief Procedure** on page 19. Disconnect all hoses.
2. Remove the pump from its mounting.

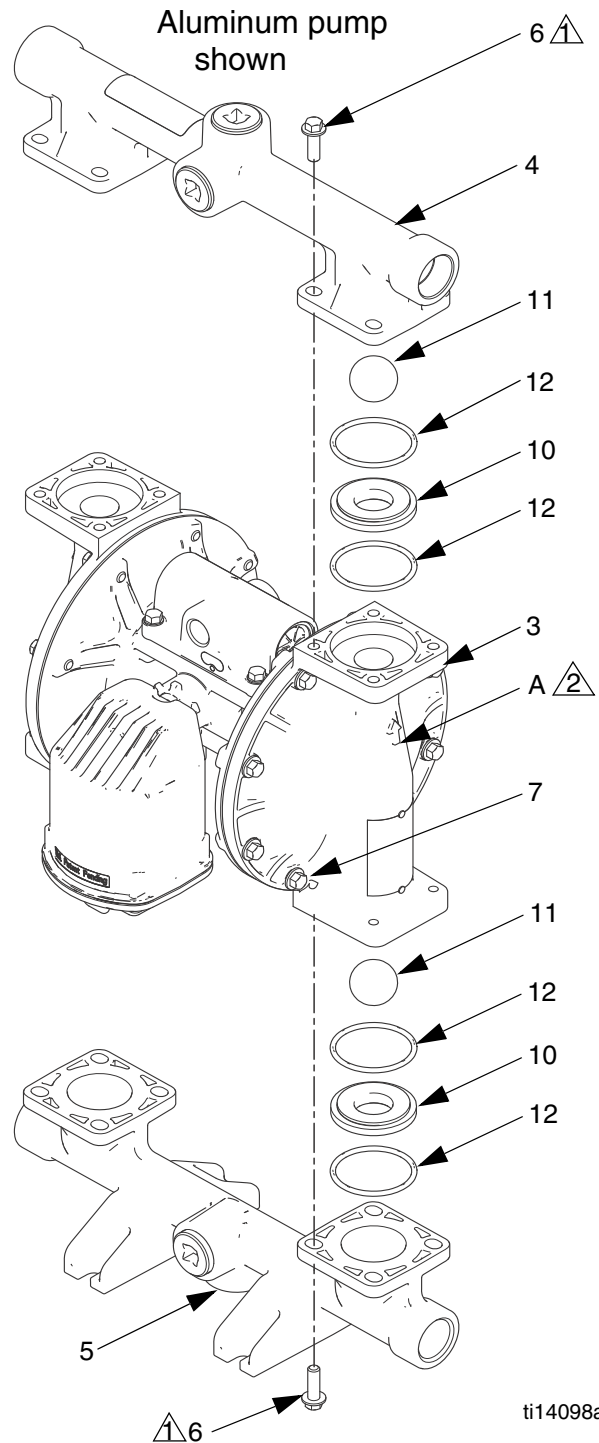
**NOTE:** For polypropylene pumps, use hand tools only until thread-locking adhesive patch releases.

3. Use a 10 mm socket wrench to remove the outlet manifold fasteners (6). See FIG. 11.
4. Remove the o-rings (12), seats (10), and balls (11).
5. Turn the pump over and remove the inlet manifold. Remove the o-rings (12), seats (10), and balls (11).

### 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. 11. Be sure the ball checks (10-12) and manifolds (4, 5) are assembled **exactly** as shown. The arrows (A) on the fluid covers **must** point toward the outlet manifold (4).

1. Torque to 100 in-lb (11.3 N•m). See **Torque Instructions**, page 16.
2. Arrow (A) must point toward outlet manifold.



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**FIG. 11. Ball check valve assembly**

## Diaphragms and Center Section



### Disassembly

**NOTE:** Diaphragm kits are available in a range of materials and styles. See page 35 to order the correct diaphragms for your pump. A Center Rebuild Kit also is available. See page 29. Parts included in the Center Rebuild Kit are marked with an \*. For best results, use all kit parts.

1. Follow the **Pressure Relief Procedure** on page 19.
2. Remove the manifolds and disassemble the ball check valves as explained on page 22.
3. Orient the pump so one of the fluid covers faces up. Use a 10 mm socket wrench to remove the fluid cover screws (7), then pull the fluid cover up off the pump. Turn the pump over and remove the other fluid cover.
4. **Polypropylene Pumps:** Use a 1-1/4 socket or box end wrench on the hex of a fluid side diaphragm plate to remove. Then remove all parts of the diaphragm assembly. See FIG. 13.  
**Metal Pumps:** Remove the bolt (304) from one side of the diaphragm shaft, then remove all parts of that diaphragm assembly. See FIG. 13.
5. Follow the same procedure to disassemble the other diaphragm assembly.
6. Inspect the diaphragm shaft (104) for wear or scratches. If it is damaged, inspect the bearings (105) in place. If they are damaged, use a bearing puller to remove them.

**NOTE: Do not remove undamaged bearings.**

7. Use an o-ring pick to remove the u-cup packings (106) from the center housing. Bearings (105) can remain in place.
8. If necessary, use a socket wrench to remove the pilot valves (101) or pilot inserts (113, remote air control models).

9. Remove the pilot valve cartridges only if necessary due to a known or suspected problem. **After removing pilot valves**, use a hex to remove the cartridges (102), then remove cartridge o-rings (103). If stripped, use two screwdrivers to screw out the cartridge.

**NOTE: Do not remove undamaged pilot valve cartridges.**

### Reassembly

Follow all notes in FIG. 13. These notes contain **important** information.

**NOTE:** Apply lithium-based grease whenever instructed to grease.

1. Clean all parts and inspect for wear or damage. Replace parts as needed.
2. If removed, grease and install the new pilot valve cartridges (102) and cartridge o-rings (103). Screw in until seated.

**NOTE:** Cartridges (102) *must* be installed before pilot valves (101).

3. Grease and install the pilot valves (101). Torque to 20-25 in.-lb (2.3-2.8 N•m). Do not over-torque.
4. Grease and install the diaphragm shaft u-cup packings (106) so the lips face **out** of the housing.
5. If removed, insert the new bearings (105) into the center housing. Use a press or a block and rubber mallet to press-fit the bearing so it is flush with the surface of the center housing.

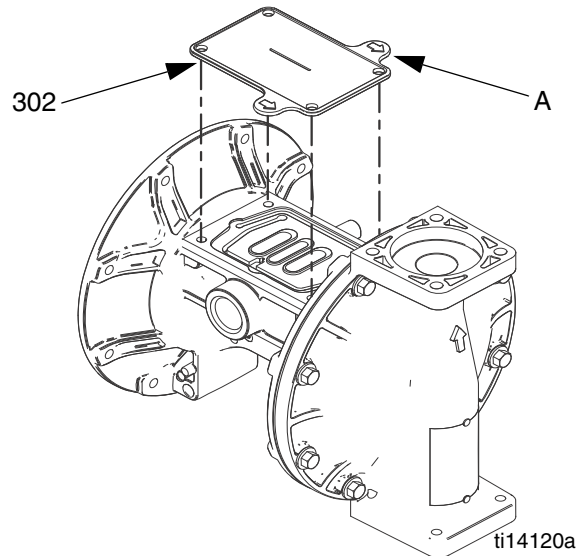
**Metal Pumps:**

- a. Install the o-ring (301) on the shaft bolt (304).
- b. Assemble the fluid side plate (13), the diaphragm (15), the backup diaphragm (305, if present), and the air side diaphragm plate (14) on the bolt exactly as shown in FIG. 13.
- c. Apply medium-strength (blue) Loctite or equivalent to the bolt (304) threads. Screw the bolt into the shaft hand tight.
- d. Grease the shaft u-cups (106) and the length and ends of the diaphragm shaft (104). Slide the shaft into the housing.
- e. Repeat Steps a-c for the other diaphragm assembly.
- f. Hold one shaft bolt with a wrench and torque the other bolt to 20-25 ft-lb (27-34 N•m) at 100 rpm maximum. Do not over-torque.
- g. Reattach the first fluid cover (3). See **Torque Instructions**, page 16. Go to Step 7.

**Plastic Pumps:**

- a. Assemble the diaphragm (15), the backup diaphragm (305, if present), and the air side diaphragm plate (14) on the fluid side plate (13) exactly as shown in FIG. 13.
- b. Apply medium-strength (blue) Loctite or equivalent to the threads of the screw on the fluid side plate. Screw the assembly into the shaft hand-tight.
- c. Grease the shaft u-cups (106) and the length and ends of the diaphragm shaft (104). Slide the shaft into the housing.
- d. Repeat for the other diaphragm assembly
- e. Hold one of the plates with a wrench, and torque the other plate to 20-25 ft-lb (27-34 N•m) at 100 rpm maximum. Do not over-torque.
- f. Reattach the first fluid cover (3). See **Torque Instructions**, page 16.

6. To ensure proper seating and extend diaphragm life, attach the second fluid cover with air pressure on the pump.
  - a. See FIG. 12. Place the supplied tool (302) where the air valve gasket (108) normally goes. Arrows (A) must face toward the fluid cover that is already attached.



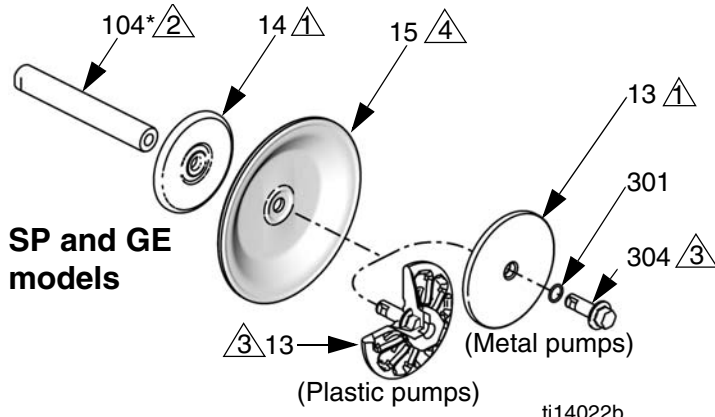
**FIG. 12. Fluid cover tool**

- b. Reattach the air valve.
- c. Supply a minimum of 20 psi (0.14 MPa, 1.4 bar) air pressure to the air valve. Shop air may be used. The diaphragm will shift so the second fluid cover will seat properly. Keep air pressure on until the second fluid cover is attached.
- d. Attach the second fluid cover (3). See **Torque Instructions**, page 16.
- e. Remove the air valve and the tool (302), replace the gasket (108), and reattach the air valve. See **Torque Instructions**, page 16.

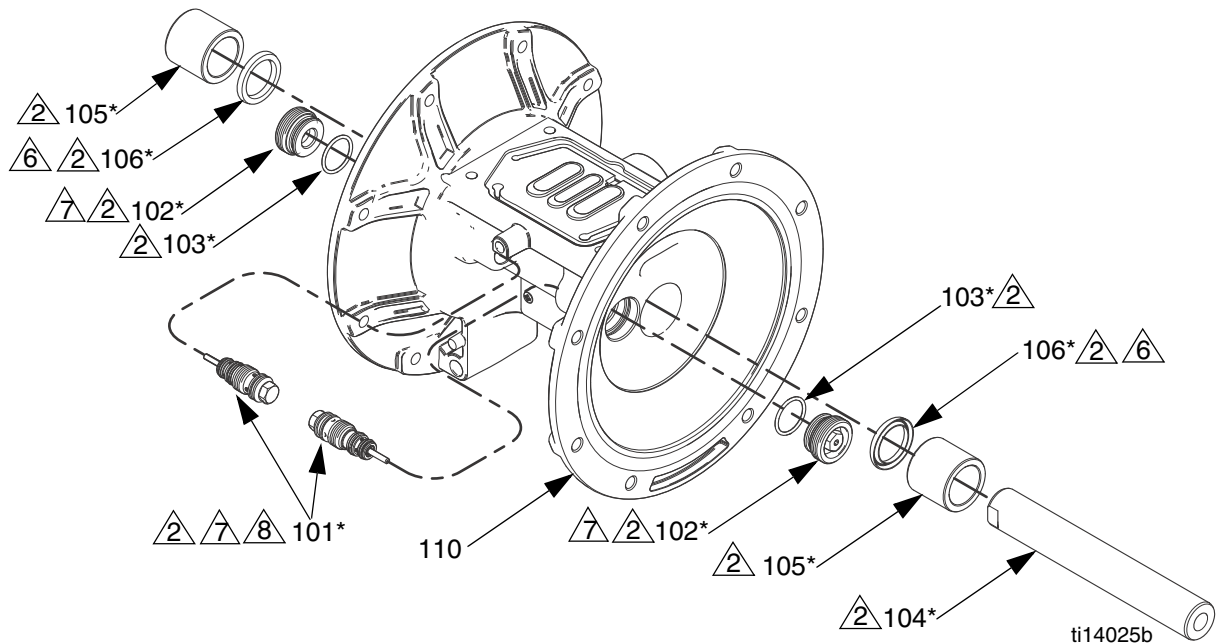
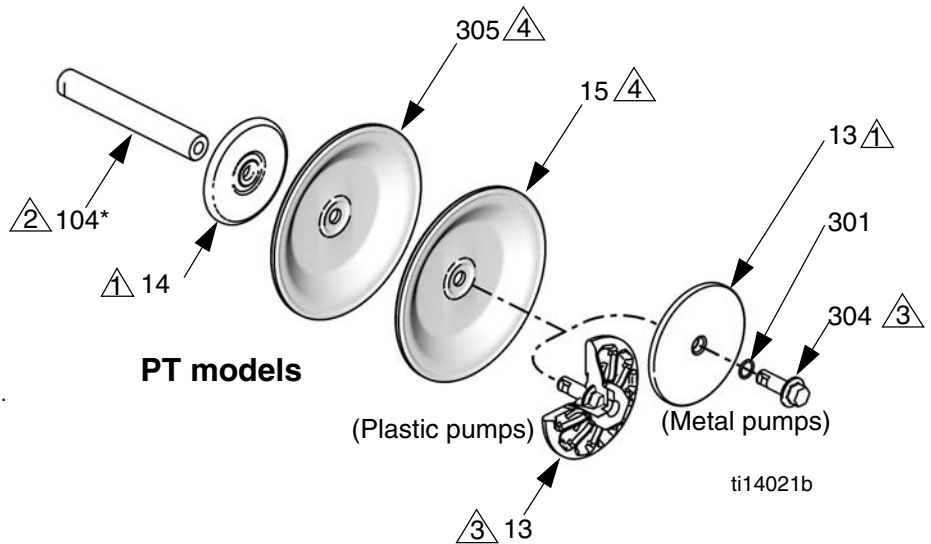
**NOTE:** If you are replacing the diaphragms but not the air valve, you must remove the air valve and gasket, put the tool in place of the gasket, and put the air valve back on to get the air pressure needed for proper installation of the second fluid cover. Remember to remove the tool and replace the gasket when finished.

7. Reassemble the ball check valves and manifolds as explained on page 22.



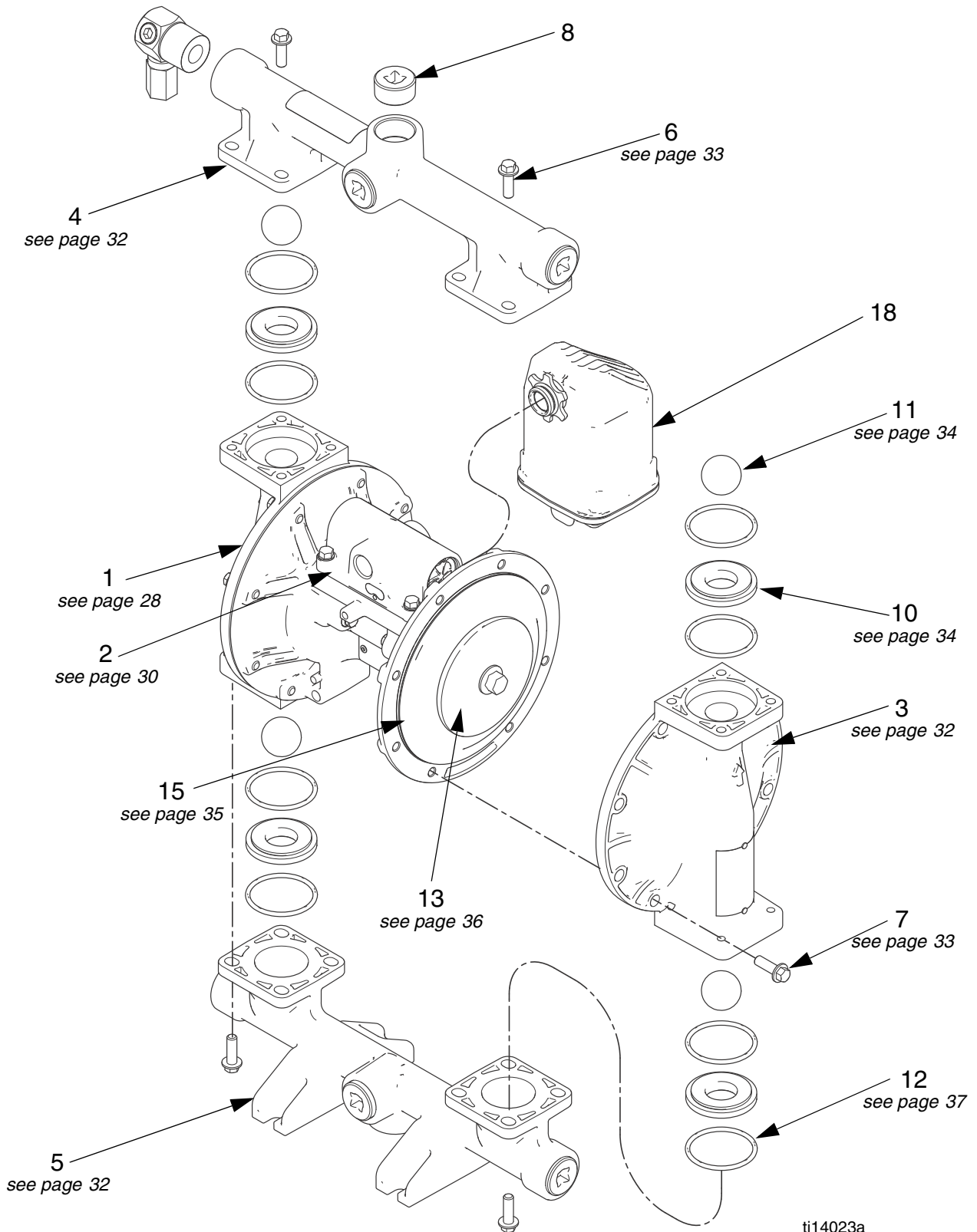


- ① Rounded side faces diaphragm.
- ② Apply lithium-based grease.
- ③ Torque to 20-25 ft-lb (27-34 N•m) at 100 rpm maximum.
- ④ AIR SIDE markings on diaphragm must face center housing.
- ⑥ Lips must face out of housing.
- ⑦ Cartridges (102) must be installed before pilot valves (101) or inserts (113, for remote air controls).
- ⑧ Torque to 20-25 in.-lb (2.3-2.8 N•m).



**FIG. 13. Assemble diaphragms and center section**

# Parts



ti14023a

## Parts/Kits Quick Reference

Use this table as a quick reference for parts/kits. See pages indicated in table for full description of kit contents.

Ref.	Part/Kit	Description	Qty.
1	-----	Center Section; not sold separately, <i>see page 28</i> Aluminum Polypropylene	1
2	24B766 24B773	Air Valve; <i>see page 30</i> Aluminum Polypropylene	1
3	24B653 24C050 24C052 24C061	Fluid Cover Kits; <i>see page 32</i> Aluminum Polypropylene PVDF Stainless Steel	2
4	24B650 24C041 24C043 24C058	Outlet Manifold Kits; <i>see pages 32-33</i> Aluminum, bspt Polypropylene, end flange PVDF, end flange Stainless Steel, bspt	1
5	24B652 24C047 24C049 24C060	Inlet Manifold Kits; <i>see page 32-33</i> Aluminum, bspt Polypropylene, end flange PVDF, end flange Stainless Steel, bspt	1
6	24B654 24C064	Manifold Fasteners; 8-pack, <i>see page 33</i> Aluminum Stainless Steel	16
7	24B654 24C055 24C063	Fluid Cover Fasteners; 8-pack, <i>see page 33</i> Aluminum Polypropylene and PVDF Stainless Steel, aluminum center	16
8	24C617	Plug; 6-pack, aluminum pumps only	6
10	24B633 24B635 24C721 24B637	Seats; 4-pack, includes 8 o-rings where needed, <i>see page 34</i> Geolast Polypropylene PVDF Stainless Steel	4
11	24B641 24B645 24B646	Check Balls; 4-pack, includes 8 o-rings, <i>see page 34</i> Geolast PTFE Santoprene	4
12	24B655	Manifold O-Ring; ptfe, 8-pack, <i>see page 37</i>	8
13	24C035 24C036 24C037 24C062	Fluid Side Diaphragm Plate; included in Air and Fluid Plate Kits, <i>see page 36</i> Aluminum Polypropylene PVDF Stainless Steel	2
14	-----	Air Side Diaphragm Plate (not visible); included in Air and Fluid Plate Kits, <i>see Part 13 or page 36</i>	2

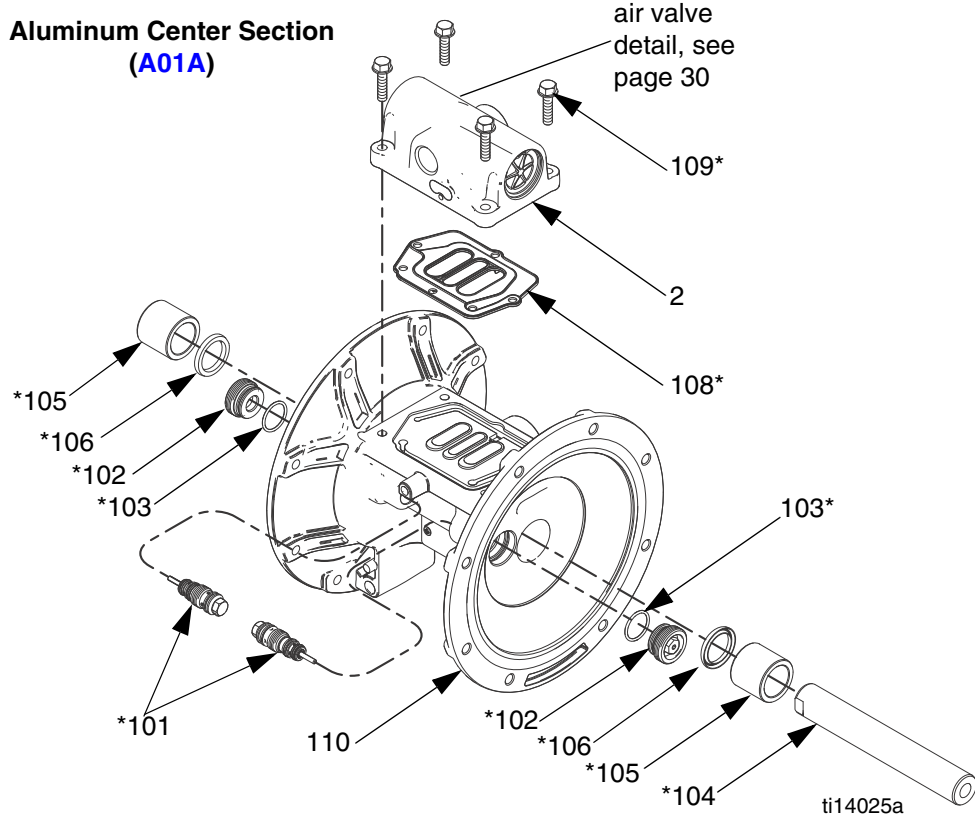
Ref.	Part/Kit	Description	Qty.
15	24B623 24B628 24B627	Diaphragm Kits; <i>see page 35</i> Geolast Standard Santoprene Standard PTFE/EPDM Two-Piece	2
18	24D642	Muffler; 3/4 npt, polypropylene	1
19	116343	Screw, ground, M5 x 0.8; not shown Pumps with aluminum air valve	1
20▲	16F991	Label, warning (not shown)	1

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

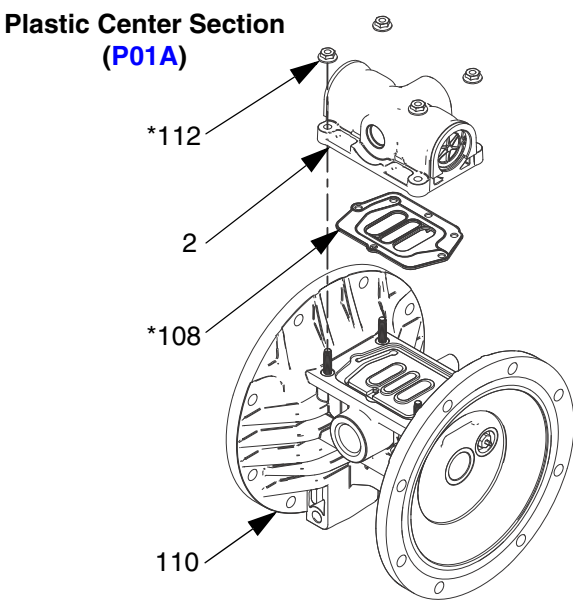
# Center Section

Pump Size and Material	Center Section	Fluid Covers and Manifolds	Seats	Check Balls	Diaphragm	Manifold O-Rings
TF200A	<b>A01A</b>	A2	GE	GE	GE	PT

Sample Configuration Number



Ref.	Description	Qty.
101*	VALVE, pilot	2
102*	CARTRIDGES, pilot valve receiver	2
103*	O-RING, receiver cartridge	2
104*	SHAFT, center	1
105*	BEARING, center shaft	2
106*	U-CUP, center shaft	2
108*	GASKET, air valve	1
109*	SCREW, M6 x 25, stainless steel, (for aluminum center section models, <b>A01A</b> )	4
110	HOUSING, center, not sold separately	1
112*	NUTS (for plastic center section models, <b>P01A</b> )	4



\* Included in Center Section Rebuild Kit 24B621

ti14104a

**Center Section Rebuild Kits (\*)**

<b>A01A and P01A</b>	24B621
----------------------	--------

Kits include:

- 2 pilot valves (101)
- 2 pilot cartridges (102)
- 2 cartridge o-rings, buna-N (103)
- 1 center shaft (104)
- 2 center shaft bearings (105)
- 2 center shaft u-cups (106)
- 1 air valve gasket (108)
- 4 bolts, M6 x 25, for **A01A** pumps (109)
- 4 nuts, for **P01A** pumps (112)
- 8 o-rings, PTFE (12)

**Pilot Valve Assembly Kits**

<b>A01A and P01A</b>	24B657
----------------------	--------

Kits include:

- 2 pilot valve assemblies (101)
- 2 pilot valve receiver cartridges (102)
- 2 receiver cartridge o-rings (103)

**Center Shaft Kits**

<b>A01A and P01A</b>	24B656
----------------------	--------

Kit includes:

- 1 center shaft (104)
- 2 center shaft bearings (105)
- 2 center shaft u-cups (106)

**Center Shaft Bearing Kits**

<b>A01A and P01A</b>	24B658
----------------------	--------

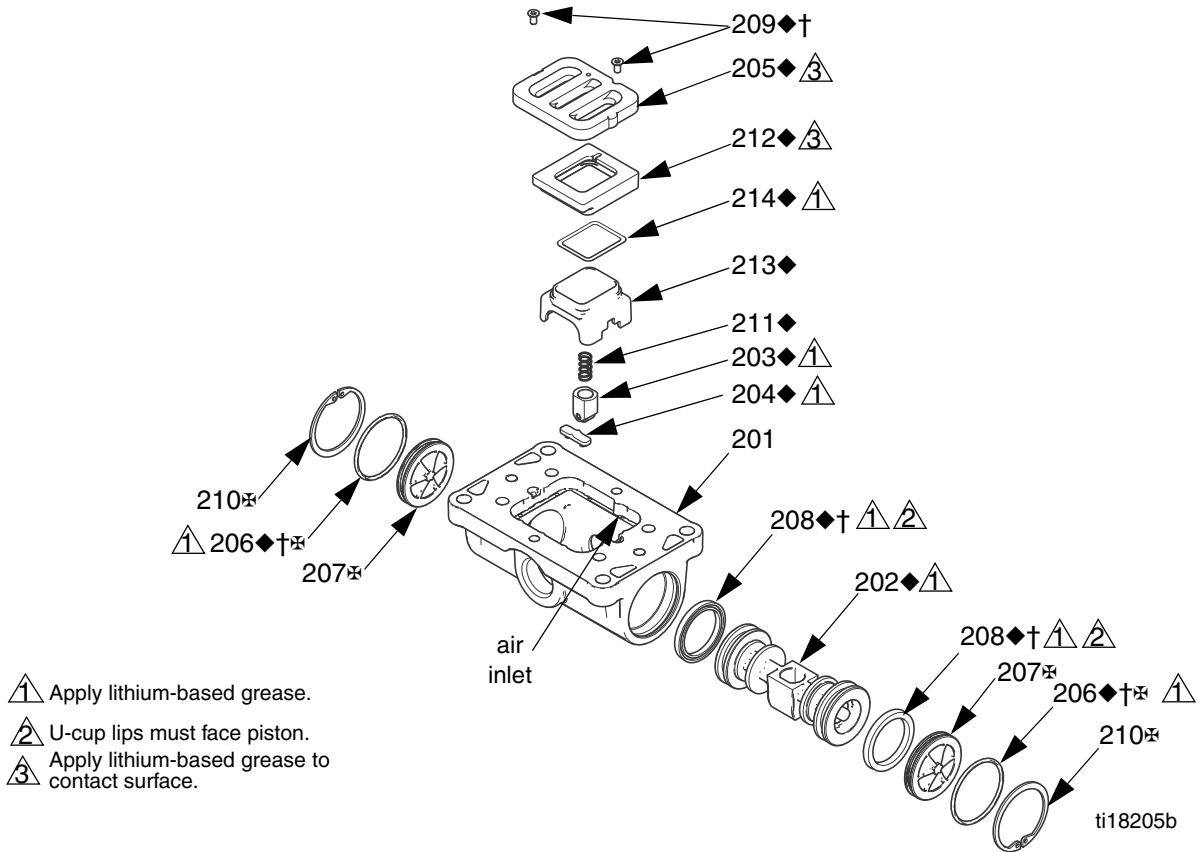
Kit includes:

- 2 center shaft bearings (105)
- 2 center shaft u-cups (106)

*The center housing (110) is not sold separately.***Ground Screws (Ref. 19)**

<b>Ground Screw Kits</b>	
<b>A01A</b>	116343
<b>P01A</b>	None

# Air Valve and Data Monitoring



Ref.	Description	Qty.
201	HOUSING, not sold separately	1
202◆	PISTON	1
203◆	DETENT PISTON ASSEMBLY	1
204◆	CAM, detent	1
205◆	PLATE, air valve	1
206◆†‡	O-RING	2
207‡	CAP, end	2
208◆†	U-CUP	2
209◆†	SCREW	2
210◆‡	RETAINING RING	2
211◆	DETENT SPRING	1
212◆	BASE, cup	1
213◆	CUP	1
214◆	O-RING, cup	1

Air Valve Seal Kits (†)	
<b>A01A and P01A</b>	24B769

Kit includes:

- 2 end cap o-rings (206)
- 2 piston u-cups (208)
- 2 screws, M3, shorter (209, for metal pumps)
- 2 screws, #4, longer (209, for plastic pumps)
- 1 solenoid release button o-ring (not used)
- 1 air valve gasket (108)

◆ Parts included in Air Valve Repair Kit. See page 31.

† Parts included in Air Valve Seals Kit. See page 30.

‡ Parts included in Air Valve End Cap Kit. See page 31.

**Air Valve Repair Kits (◆)**

<b>A01A</b> and <b>P01A</b>	24B768
-----------------------------	--------

Kits include:

- 1 air valve piston (202)
- 1 detent piston assembly (203)
- 1 detent cam (204)
- 1 air valve plate (205)
- 2 end cap o-rings (206)
- 2 piston u-cups (208)
- 2 screws, M3, shorter (209, for metal pumps)
- 2 screws, #4, longer (209, for plastic pumps)
- 1 detent spring (211)
- 1 air cup base (212)
- 1 air cup (213)
- 1 air cup o-ring (214)
- 1 solenoid release button o-ring (not used)
- 1 air valve gasket (108)

**Air Valve End Cap Kits (⊕)**

<b>A01A</b>	24A361
<b>P01A</b>	24C053

Kits include:

- 2 end caps (207)
- 2 retaining rings (210)
- 2 o-rings (206)

**Air Valve Replacement Kits**

<b>A01A</b>	24B766
<b>P01A</b>	24B773

Kits include:

- 1 air valve assembly (2)
- 1 air valve gasket (108)
- 4 screws (109; models with aluminum centers)
- OR**
- 4 nuts (112; models with plastic centers)

# Fluid Covers and Manifolds

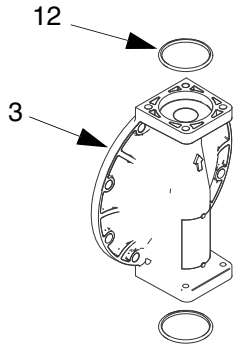
Pump Size and Material	Air Valve and Center Section	Fluid Covers and Manifolds	Seats	Check Balls	Diaphragm	Manifold O-Rings
TF200A	A01A	<b>A2</b>	GE	GE	GE	PT

*Sample Configuration Number*

Fluid Cover Kits	
<b>A2</b>	24B653
<b>P2</b>	24C050
<b>F2</b>	24C052
<b>S2</b>	24C061

Kits include:

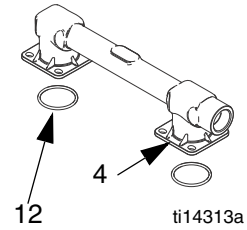
- 1 fluid cover (3)
- 4 o-rings, ptfе (12)



Stainless Steel Outlet Manifold Kits	
<b>S2</b>	24C058

Kits include:

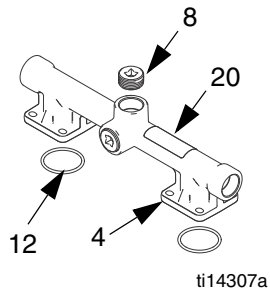
- 1 outlet manifold (4)
- 4 o-rings, ptfе (12)
- 1 warning label (20▲)



Aluminum Outlet Manifold Kits	
<b>A2</b>	24B650

Kits include:

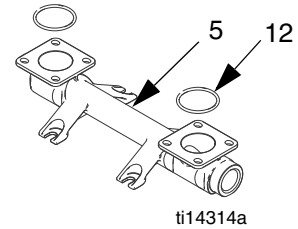
- 1 outlet manifold (4)
- 3 pipe plugs (8)
- 4 o-rings, ptfе (12)
- 1 warning label (20▲)



Stainless Steel Inlet Manifold Kits	
<b>S2</b>	24C060

Kits include:

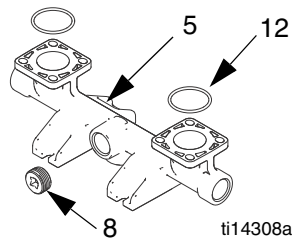
- 1 inlet manifold (5)
- 4 o-rings, ptfе (12)



Aluminum Inlet Manifold Kits	
<b>A2</b>	24B652

Kits include:

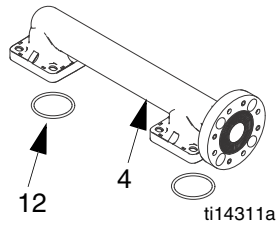
- 1 inlet manifold (5)
- 3 pipe plugs (8)
- 4 o-rings, ptfе (12)





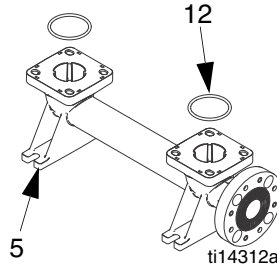
Plastic Outlet Manifold Kits	
<b>P2</b>	24C041
<b>F2</b>	24C043

- Kits include:
- 1 outlet manifold (4)
  - 4 o-rings, ptfе (12)
  - 1 warning label (20▲)



Plastic Inlet Manifold Kits	
<b>P2</b>	24C047
<b>F2</b>	24C049

- Kits include:
- 1 inlet manifold (5)
  - 4 o-rings, ptfе (12)



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

**Manifold Fasteners (Ref. 9)**

Manifold Fastener Kits	Fastener Description	Qty.
<b>A2</b>	24B654 BOLT, hex head, steel, M8 x 25	8
<b>P2, F2</b>	24C056 BOLT, flange head, M8 x 32, stainless steel, includes nuts	8
<b>S2,</b>	24C064 BOLT, hex head, M8 x 20, stainless steel, includes nuts	8

**Fluid Cover Fasteners (Ref. 7)**

Fluid Cover Fastener Kits	Description	Qty.
<b>A2</b>	24B654 BOLT, hex head, steel, M8 x 25	8
<b>P2, F2</b>	24C055 BOLT, flange head, M8 x 45, stainless steel, includes nuts	8
<b>S2</b>	24C063 BOLT, flange head, M8 x 25, stainless steel	8

## Seats and Check Balls

Pump Size and Material	Air Valve and Center Section	Fluid Covers and Manifolds	Seats	Check Balls	Diaphragm	Manifold O-Rings
TF200A	A01A	A2	<b>GE</b>	<b>GE</b>	GE	PT

*Sample Configuration Number*

Seat Kits	
<b>GE</b>	24B633
<b>PP</b>	24B635
<b>PV</b>	24C721
<b>SS</b>	24B637

Kits include:

- 4 seats (10), material indicated in table
- 8 o-rings (12), PTFE

Check Ball Kits	
<b>GE</b>	24B641
<b>PT</b>	24B645
<b>SP</b>	24B646

Kits Include:

- 4 balls (11), material indicated in table
- 8 o-rings (12), PTFE

# Diaphragms

Pump Size and Material	Air Valve and Center Section	Fluid Covers and Manifolds	Seats	Check Balls	Diaphragm	Manifold O-Rings
TF200A	A01A	A2	GE	GE	<b>GE</b>	PT

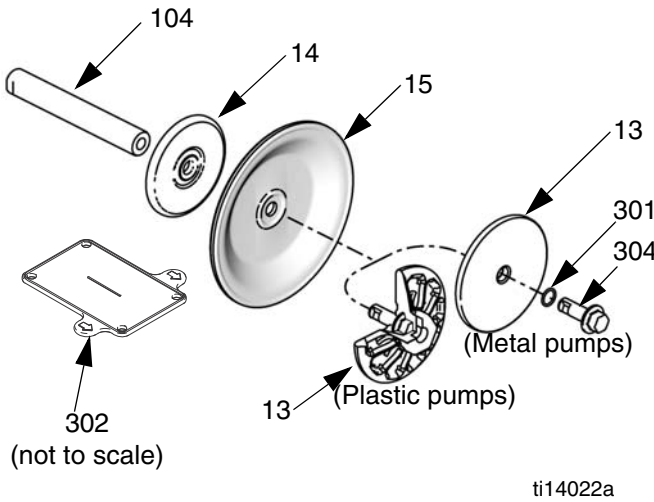
**Sample Configuration Number**

Standard Diaphragm Kits	
<b>GE</b>	24B623
<b>SP</b>	24B628

Kits include:

- 8 o-rings, ptfе (12)
- 2 diaphragms (15, material indicated in table)
- 2 o-rings for the bolt (301, used only on metal pumps)
- 1 diaphragm install tool (302)

**NOTE:** Fluid plates (13, 14) and diaphragm shaft bolts (304) are sold separately. See page 36. The shaft (104) is part of Kit 24B621, the Center Section Rebuild Kit.

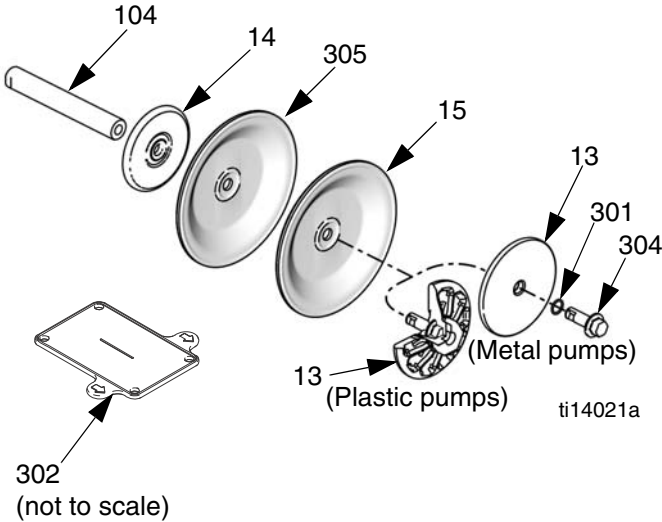


Two-Piece Diaphragm Kits	
<b>PT</b>	24B627

Kits include:

- 8 o-rings (12), PTFE
- 2 diaphragms (15), PTFE
- 2 backup diaphragms (305, EPDM)
- 2 o-rings for the bolt (301, used only on metal pumps)
- 1 diaphragm install tool (302)

**NOTE:** Fluid plates (13, 14) and diaphragm shaft bolts (304) are sold separately. See page 36. The shaft (104) is part of Kit 24B621, the Center Section Rebuild Kit.



## Diaphragms (continued)

Pump Size and Material	Air Valve and Center Section	Fluid Covers and Manifolds	Seats	Check Balls	Diaphragms	Manifold O-Rings
TF200A	A01A	A2	GE	GE	<b>GE</b>	PT

### Sample Configuration Number

Air and Fluid Plate Kits	
<b>TF200A</b>	24C035
<b>TF200P</b>	24C036
<b>TF200S</b>	24C062

Kits for **aluminum and stainless steel** pumps include:

- air side diaphragm plate (14)
- fluid side diaphragm plate (13)
- o-ring (301)
- bolt (304)

Kits for **polypropylene** pumps include:

- air side diaphragm plate (14)
- fluid side diaphragm plate (13, includes bolt)

## Diaphragm Shaft Bolt (Metal Pumps)

Kit 24C099 includes:

- 1 bolt, stainless steel, M12 x 35 (304)
- 1 o-ring (301)

## Manifold O-Rings

Pump Size and Material	Air Valve and Center Section	Fluid Covers and Manifolds	Seats	Check Balls	Diaphragm	Manifold O-Rings
TF200A	A01A	A2	GE	GE	GE	<b>PT</b>

### Sample Configuration Number

O-Ring Kit	Qty.
<b>PT</b> 24B655	8

Kit Includes:

- 8 o-rings, PTFE (12)

## Accessories

### Fluid Pressure Relief Kit 238428 (for aluminum pumps)

Includes pipe bushings, hose adapter, relief valve, and tubing.

### Fluid Pressure Relief Kit 112119 (for plastic pumps)

Includes fluid pressure relief valve.

### Wall Mount Kit 24C637

Includes bracket, 4 dampeners, 8 washers, and 8 lock nuts.

### Wall Bracket Dampener Kit 24E769

Includes 4 dampeners.

### Rubber Foot Mounting Kit 236452

Includes washers, nuts, and rubber feet.

### Grounding Wire Assembly Kit 238909

Includes ground wire and clamp.

### Air Controls Kit 246946

Includes 1/4 npt air filter/regulator with 40 micron element and air pressure gauge.

### Air Controls Kit 246947

Includes 1/2 npt air filter/regulator with 40 micron element and air pressure gauge.

### Standard Pipe Flange Kits

**239005 - Polypropylene**

**239008 - Stainless steel**

**239009 - PVDF**

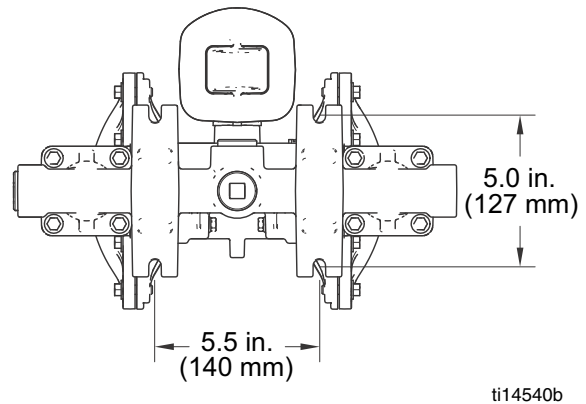
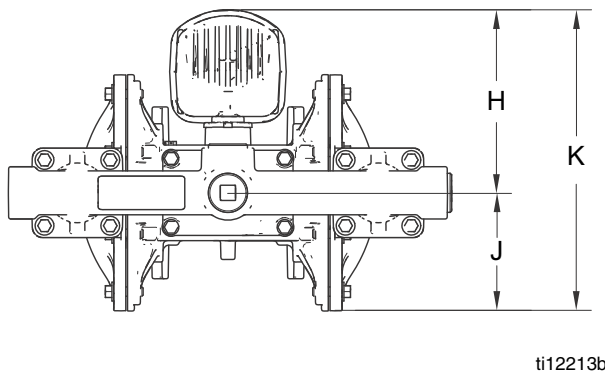
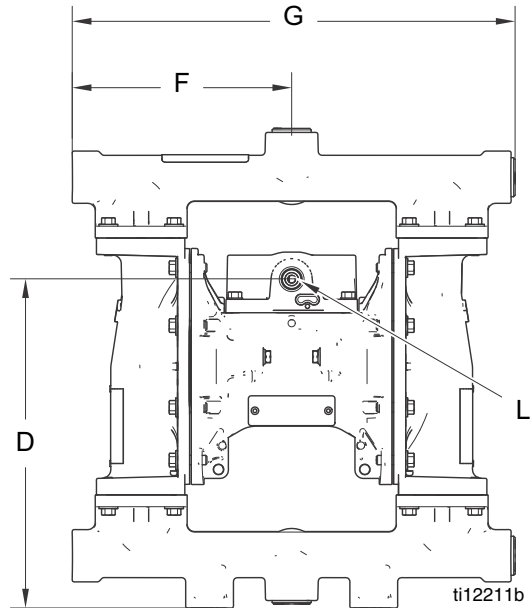
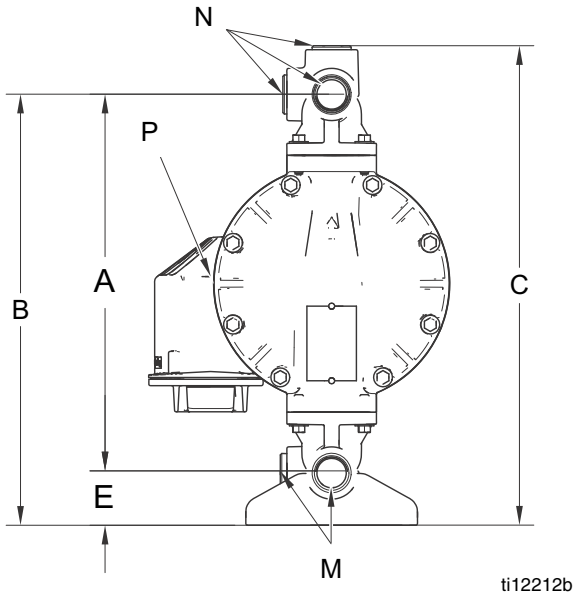
Each kit includes the pipe flange, a PTFE gasket, bolts, spring lock washers, flat washers and nuts.

### Optional Muffler

Part No. 102656, 3/4 npt, aluminum.

# Dimensions and Mounting

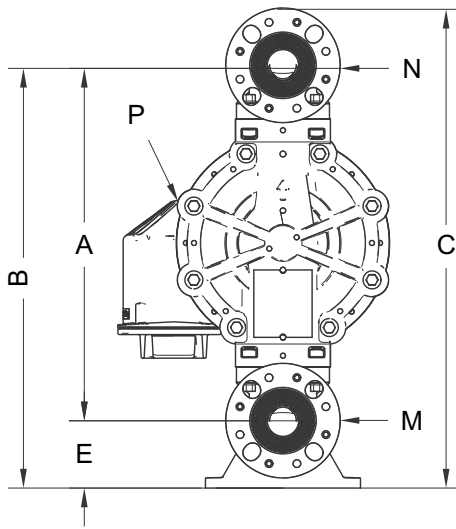
## Aluminum



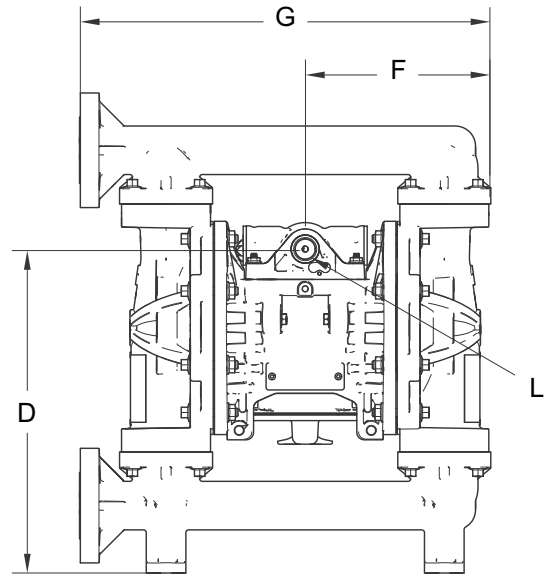
- A** ..... 12.7 in. (323 mm)
- B** ..... 14.4 in. (366 mm)
- C** ..... 15.9 in. (404 mm)
- D** ..... 10.9 in. (277 mm)
- E**..... 1.8 in. (46 mm)
- F**..... 7.3 in. (185 mm)
- G** ..... 14.7 in. (373 mm)
- H** ..... 6.2 in. (158 mm)

- J** ..... 3.9 in. (99 mm)
- K**..... 10.2 in. (258 mm)
- L** ..... 1/2 npt(f) air inlet
- M** .... 25 mm (1 in.) bspt fluid inlet ports (4)
- N**..... 25 mm (1 in.) bspt fluid outlet ports (4)
- P**..... 3/4 npt(f) air exhaust port

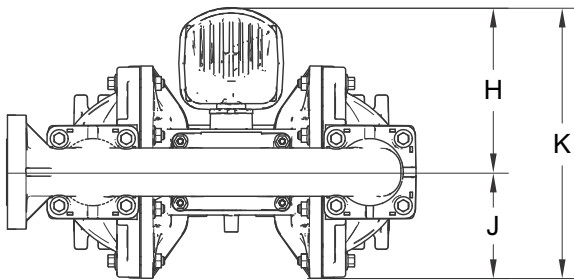
# Polypropylene



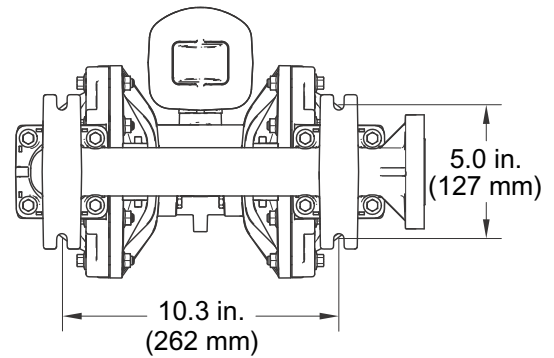
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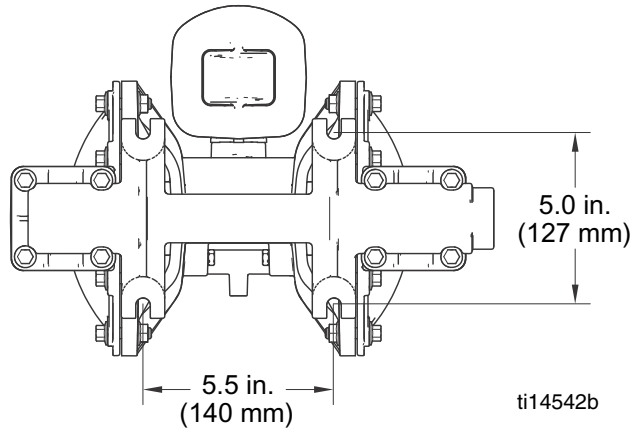
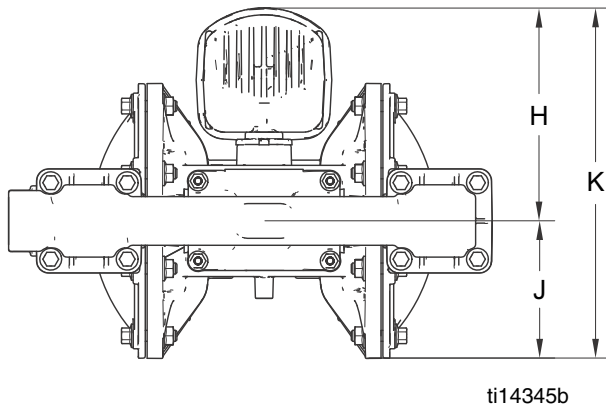
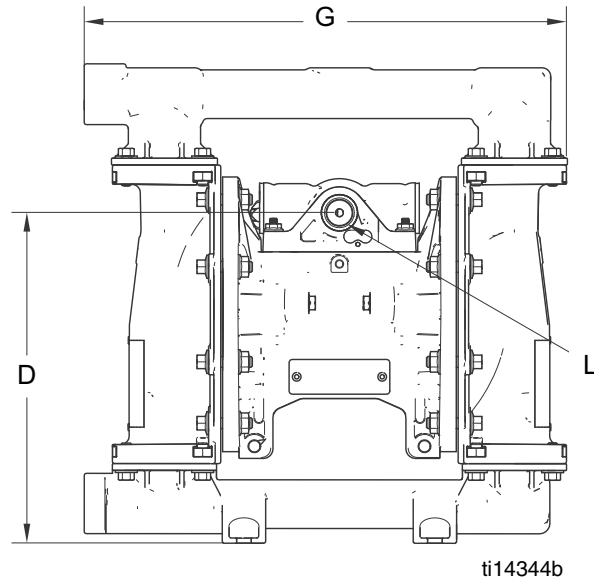
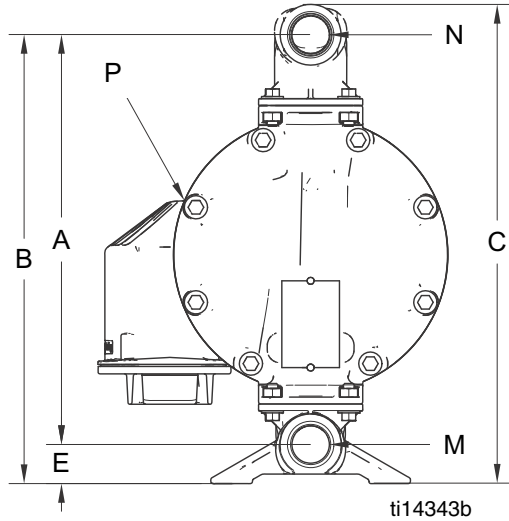


ti14541b

- A** ..... 13.2 in. (335 mm)
- B** ..... 15.7 in. (399 mm)
- C** ..... 17.8 in. (452 mm)
- D** ..... 12.0 in. (305 mm)
- E** ..... 2.5 in. (63.5 mm)
- F** ..... 8.0 in. (203 mm)
- G** ..... 15.2 in. (386 mm)
- H** ..... 6.2 in. (158 mm)

- J** ..... 3.9 in. (99 mm)
- K** ..... 10.2 in. (258 mm)
- L** ..... 1/2 npt(f) air inlet
- M** ..... 25 mm (1 in.) ANSI/DIN flange
- N** ..... 25 mm (1 in.) ANSI/DIN flange
- P** ..... 3/4 npt(f) air exhaust port

## Stainless Steel



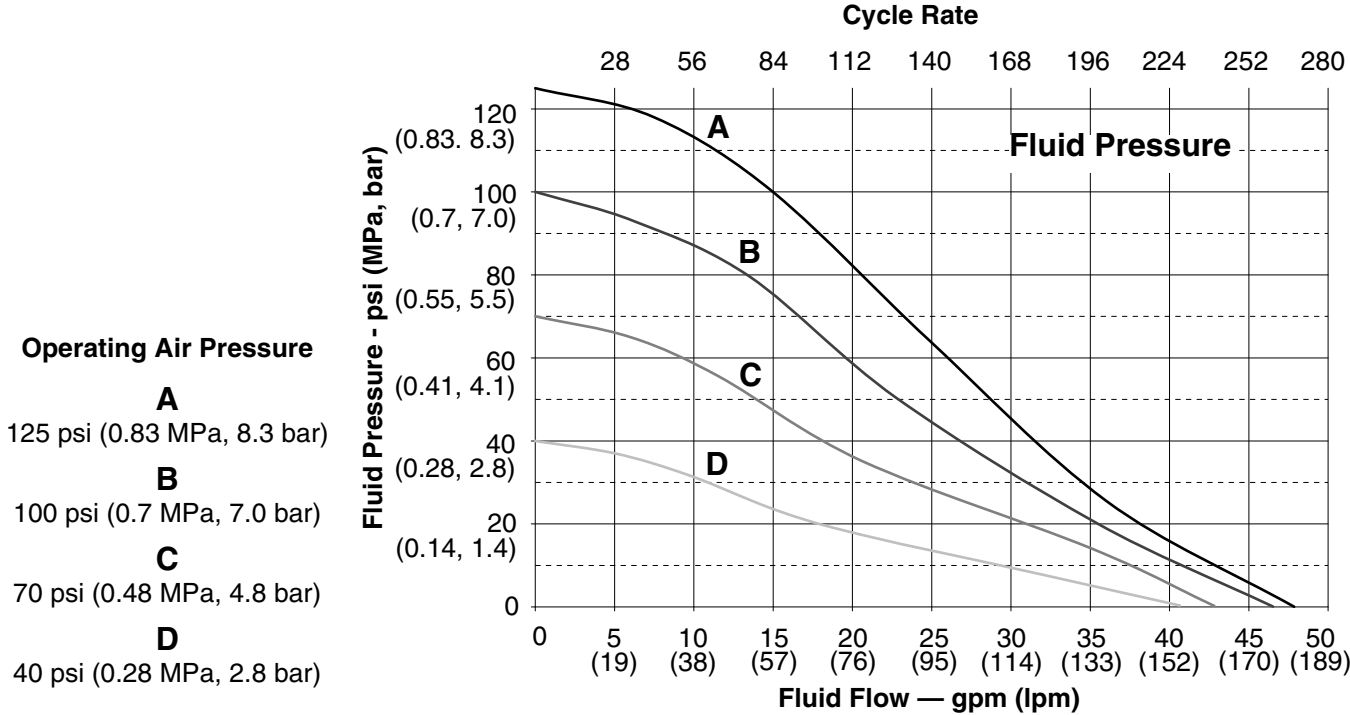
- A** ..... 11.8 in. (300 mm)
- B** ..... 12.9 in. (328 mm)
- C** ..... 13.7 in. (348 mm)
- D** ..... 9.5 in. (241 mm)
- E** ..... 1.1 in. (28 mm)
- G** ..... 13.9 in. (353 mm)
- H** ..... 6.2 in. (158 mm)
- J** ..... 4.0 in. (102 mm)
- K** ..... 10.2 in. (258 mm)

- L** ..... 1/2 npt(f) air inlet
- M** .... 25 mm (1 in.) bspt fluid inlet ports (4)
- N** ..... 25 mm (1 in.) bspt fluid outlet ports (4)
- P** ..... 3/4 npt(f) air exhaust port



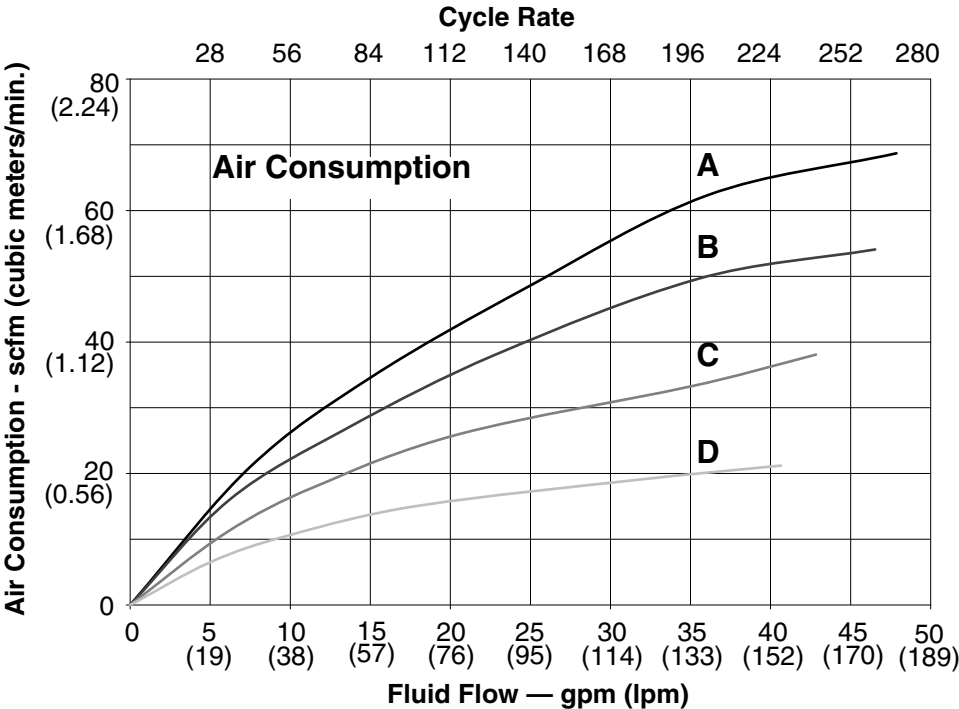
# Performance Charts

**Test Conditions:** Pump tested in water with inlet submerged.



**How to Read the Charts**

1. Locate fluid flow rate along bottom of chart.
2. Follow vertical line up to intersection with selected operating air pressure curve.
3. Follow left to scale to read **fluid outlet pressure** (top chart) or **air consumption** (bottom chart).



# Technical Data

Maximum fluid working pressure . . . . .	125 psi (0.86 MPa, 8.6 bar)
Air pressure operating range . . . . .	20-125 psi (0.14-0.86 MPa, 1.4-8.6 bar)
Fluid displacement per cycle . . . . .	0.17 gal. (0.64 liters)
Air consumption at 70 psi (0.48 MPa, 4.8 bar), 20 gpm (76 lpm) . . . . .	25 scfm
Maximum values with water as media under submerged inlet conditions at ambient temperature:	
Maximum air consumption . . . . .	67 scfm
Maximum free-flow delivery . . . . .	50 gpm (189 lpm)
Maximum pump speed. . . . .	280 cpm
Maximum suction lift (varies widely based on ball/seat selection and wear, operating speed, material properties, and other variables) . . . . .	16 ft (4.9 m) dry, 29 ft (8.8 m) wet
Maximum size pumpable solids . . . . .	1/8 in. (3.2 mm)
Recommended cycle rate for continuous use . . . . .	93 - 140 cpm
Recommended cycle rate for circulation systems . . . . .	20 cpm
Sound Power*	
at 70 psi (0.48 MPa, 4.8 bar) and 50 cpm . . . . .	78 dBa
at 100 psi (0.7 MPa, 7.0 bar) and full flow . . . . .	90 dBa
Sound Pressure**	
at 70 psi (0.48 MPa, 4.8 bar) and 50 cpm . . . . .	84 dBa
at 100 psi (0.7 MPa, 7.0 bar) and full flow . . . . .	96 dBa
Fluid temperature range. . . . .	see page 43
Air inlet size . . . . .	1/2 npt(f)
Fluid inlet size	
Aluminum (TF200A) or Stainless Steel (TF200S) . . . . .	25 mm (1 in.) bspt
Polypropylene (TF200P) . . . . .	25 mm (1 in.) raised face ANSI/DIN flange
Fluid outlet size	
Aluminum (TF200A) or Stainless Steel (TF200S) . . . . .	25 mm (1 in.) bspt
Polypropylene (TF200P) . . . . .	25 mm (1 in.) raised face ANSI/DIN flange
Weight	
Aluminum (TF200A) . . . . .	23 lb. (10.5 kg)
Polypropylene (TF200P) . . . . .	18 lb. (8.2 kg)
Stainless Steel (TF200S) . . . . .	41.4 lb. (18.8 kg)
Wetted parts include material(s) chosen for seat, ball, and diaphragm options, <b>plus</b> the pump's material of construction	
TF200A . . . . .	Aluminum
TF200P . . . . .	Polypropylene
TF200S . . . . .	Stainless Steel

Non-wetted external parts

Aluminum (TF200A) . . . . .	aluminum, coated carbon steel
Plastic (TF200P) . . . . .	stainless steel, polypropylene
Stainless Steel (TF200S) . . . . .	stainless steel, polypropylene or aluminum (if used in center section)

Reference Information

Maximum Storage Time (varies with conditions) . . . . .	2 years
Maximum Lifetime (varies with operating conditions and maintenance) . . . . .	10 years
Power Efficiency Factor (varies based on pump configuration, operating parameters, and material) . . . . .	1.61 gal. air consumed/1 gal. fluid pumped at 70 psi (1.61 liter air consumed/1 liter fluid pumped at 4.8 bar)

\* Sound power measured per ISO-9614-2.

\*\* Sound pressure was tested 3.28 ft (1 m) from equipment.

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### Fluid Temperature Range

**NOTICE**

Temperature limits are based on mechanical stress only. Certain chemicals will further limit the fluid operating temperature range. Stay within the temperature range of the most-restricted wetted component. Operating at a fluid temperature that is too high or too low for the components of your pump may cause equipment damage.

Diaphragm/Ball/Seat Material	Fluid Temperature Range			
	Aluminum or Stainless Steel Pumps		Polypropylene Pumps	
	Fahrenheit	Celsius	Fahrenheit	Celsius
Geolast® (GE)	-40° to 150°F	-40° to 66°C	32° to 150°F	0° to 66°C
Polypropylene (PP)	32° to 150°F	0° to 66°C	32° to 150°F	0° to 66°C
PTFE check balls or two-piece PTFE/EPDM diaphragm (PT)	40° to 220°F	4° to 104°C	40° to 150°F	4° to 66°C
PVDF (PV)	10° to 225°F	-12° to 107°C	32° to 150°F	0° to 66°C
Santoprene® (SP)	-40° to 180°F	-40° to 82°C	32° to 150°F	0° to 66°C

# Techni-flow Standard Warranty

Techni-flow warrants all equipment referenced in this document which is manufactured by Techni-flow and bearing its name to be free from defects in material and workmanship on the date of sale to the original purchaser for use. With the exception of any special, extended, or limited warranty published by Techni-flow, Techni-flow will, for a period of twelve months from the date of sale, repair or replace any part of the equipment determined by Techni-flow to be defective. This warranty applies only when the equipment is installed, operated and maintained in accordance with Techni-flow's written recommendations.

This warranty does not cover, and Techni-flow 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-Techni-flow component parts. Nor shall Techni-flow be liable for malfunction, damage or wear caused by the incompatibility of Techni-flow equipment with structures, accessories, equipment or materials not supplied by Techni-flow, or the improper design, manufacture, installation, operation or maintenance of structures, accessories, equipment or materials not supplied by Techni-flow.

This warranty is conditioned upon the prepaid return of the equipment claimed to be defective to an authorized Techni-flow distributor for verification of the claimed defect. If the claimed defect is verified, Techni-flow 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.**

Techni-flow'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 two (2) years of the date of sale.

**TECHNI-FLOW 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 TECHNI-FLOW.** These items sold, but not manufactured by Techni-flow (such as electric motors, switches, hose, etc.), are subject to the warranty, if any, of their manufacturer. Techni-flow will provide purchaser with reasonable assistance in making any claim for breach of these warranties.

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Techni-flow reserves the right to make changes at any time without notice.*

Original instructions. This manual contains English. MM 332523

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<http://pompe-techni-flow.com>  
Revision C, August 2013