

# Husky™ 3250 Air-Operated Diaphragm Pump

3A7662C

EN

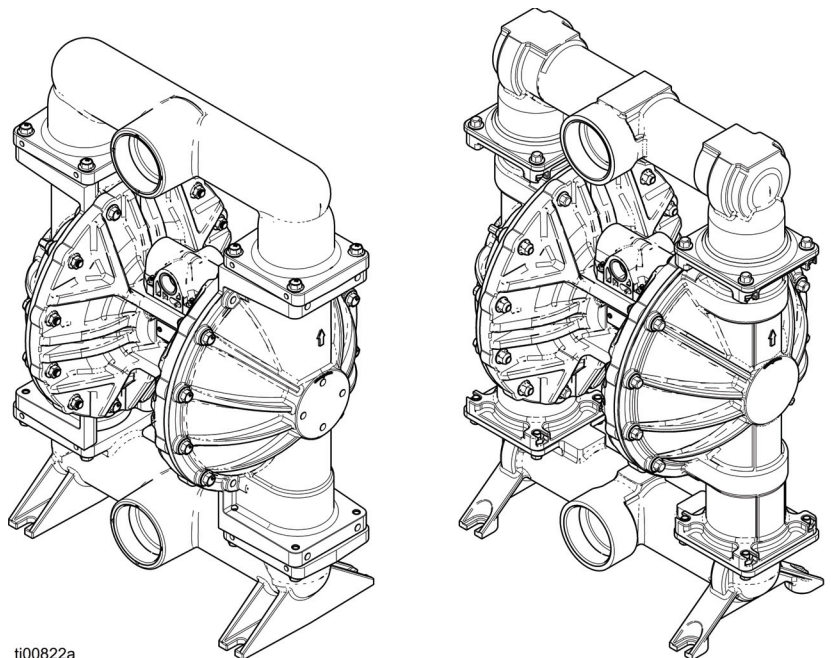
*SST and aluminum pumps for fluid transfer applications, including high viscosity materials. For professional use only.*

**Not approved for use in European explosive atmosphere locations.**



## Important Safety Instructions

Read all warnings and instructions in this manual and in any related manual before using the equipment. Save these instructions.



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# Related Manuals

Manual Number	Title
3A7661	Husky 3250 Air-Operated Diaphragm Pump, Operation

# Safety Symbols

The following safety symbols appear throughout this manual and on warning labels. Read the table below to understand what each symbol means.

Symbol	Meaning
	Burn Hazard
	Cleaning Solvent Hazard
	Crush Hazard
	Equipment Misuse Hazard
	Fire and Explosion Hazard
	Pressurized Equipment Hazard
	Skin Injection Hazard
	Splash Hazard
	Toxic Fluid or Fumes Hazard

Symbol	Meaning
	Eliminate Ignition Sources
	Follow Pressure Relief Procedure
	Ground Equipment
	Ventilate Work Area
	Wear Personal Protective Equipment













### Safety Alert Symbol







This symbol indicates: Attention! Become Alert! Look for this symbol throughout the manual to indicate important safety messages.

# Warnings

The following warnings apply throughout this manual. Read, understand, and follow the warnings before using this equipment. Failure to follow these warnings can result in serious injury.

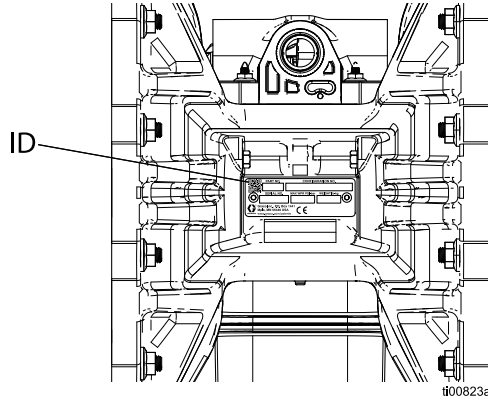
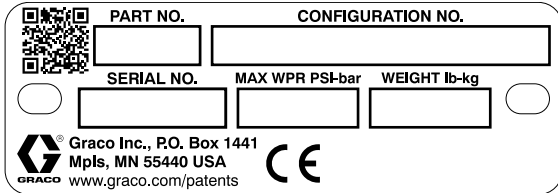
 <h2 style="margin: 0;">WARNING</h2>	
	<p><b>FIRE AND EXPLOSION HAZARD</b></p> <p>Flammable fumes, such as solvent and paint fumes, in <b>work area</b> can ignite or explode. Paint or solvent flowing through the equipment can cause static sparking. To help prevent fire and explosion:</p> <ul style="list-style-type: none"> <li>• Use equipment only in well-ventilated area.</li> <li>• Eliminate all ignition sources, such as pilot lights, cigarettes, portable electric lamps, and plastic drop cloths (potential static sparking).</li> <li>• Ground all equipment in the work area. See <b>Grounding</b> instructions in the Operation manual. See <a href="#">Related Manuals, page 2</a>.</li> <li>• Keep work area free of debris, including solvent, rags and gasoline.</li> <li>• Do not plug or unplug power cords, or turn power or light switches on or off when flammable fumes are present.</li> <li>• Use only grounded lines.</li> <li>• <b>Stop operation immediately</b> if static sparking occurs or you feel a shock. Do not use equipment until you identify and correct the problem.</li> <li>• Keep a working fire extinguisher in the work area.</li> <li>• Route exhaust away from all ignition sources. If diaphragm ruptures, fluid may be exhausted with air.</li> </ul>
	<p><b>PRESSURIZED EQUIPMENT HAZARD</b></p> <p>Fluid from the equipment, leaks, or ruptured components can splash in the eyes or on skin and cause serious injury.</p> <ul style="list-style-type: none"> <li>• Follow the <b>Pressure Relief Procedure</b> when you stop spraying/dispensing and before cleaning, checking, or servicing equipment.</li> <li>• Tighten all fluid connections before operating the equipment.</li> <li>• Check lines, tubes, and couplings daily. Replace worn or damaged parts immediately.</li> </ul>

 <h1 style="margin: 0;">WARNING</h1>	
 	<p><b>EQUIPMENT MISUSE HAZARD</b></p> <p>Misuse can cause death or serious injury.</p> <ul style="list-style-type: none"> <li>• Do not operate the unit when fatigued or under the influence of drugs or alcohol.</li> <li>• Do not exceed the maximum working pressure or temperature rating of the lowest rated system component. See <b>Technical Specifications</b> in all equipment manuals.</li> <li>• Use fluids and solvents that are compatible with equipment wetted parts. See <b>Technical Specifications</b> in all equipment manuals. Read fluid and solvent manufacturer's warnings. For complete information about your material, request Safety Data Sheets (SDSs) from distributor or retailer.</li> <li>• Do not leave the work area while equipment is energized or under pressure.</li> <li>• Turn off all equipment and follow the <b>Pressure Relief Procedure</b> when equipment is not in use.</li> <li>• Check equipment daily. Repair or replace worn or damaged parts immediately with genuine manufacturer's replacement parts only.</li> <li>• Do not alter or modify equipment. Alterations or modifications may void agency approvals and create safety hazards.</li> <li>• Make sure all equipment is rated and approved for the environment in which you are using it.</li> <li>• Use equipment only for its intended purpose. Call your distributor for information.</li> <li>• Route lines and cables away from traffic areas, sharp edges, moving parts, and hot surfaces.</li> <li>• Do not kink or over bend lines or use lines to pull equipment.</li> <li>• Keep children and animals away from work area.</li> <li>• Comply with all applicable safety regulations.</li> </ul>
  	<p><b>THERMAL EXPANSION HAZARD</b></p> <p>Fluids subjected to heat in confined spaces, including lines, can create a rapid rise in pressure due to the thermal expansion. Over-pressurization can result in equipment rupture and serious injury.</p> <ul style="list-style-type: none"> <li>• Open a valve to relieve the fluid expansion during heating.</li> <li>• Replace lines proactively at regular intervals based on your operating conditions.</li> </ul>
	<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>• Do not use chlorine bleach.</li> <li>• Many other fluids may contain chemicals that can react with aluminum. Contact your material supplier for compatibility.</li> </ul>

 <h1 style="margin: 0;">WARNING</h1>	
 	<p><b>PLASTIC PARTS CLEANING SOLVENT HAZARD</b></p> <p>Many cleaning solvents can degrade plastic parts and cause them to fail, which could cause serious injury or property damage.</p> <ul style="list-style-type: none"> <li>• Use only compatible solvents to clean plastic structural or pressure-containing parts.</li> <li>• See <b>Technical Specifications</b> in all equipment manuals for materials of construction. Consult the solvent manufacturer for information and recommendations about compatibility.</li> </ul>
	<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 Safety Data Sheets (SDSs) 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 into the 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>Wear appropriate protective equipment when in the work area to help prevent serious injury, including eye injury, hearing loss, inhalation of toxic fumes, and burns. Protective equipment includes but is not limited to:</p> <ul style="list-style-type: none"> <li>• Protective eyewear, and hearing protection.</li> <li>• Respirators, protective clothing, and gloves as recommended by the fluid and solvent manufacturer.</li> </ul>

# Configuration Number Matrix

For the Configuration Number of your pump, see the identification plate (ID) on top of the center section. Use the following tables to determine the pump components.



Sample Configuration Number: **3250S-PP01AS1PPPTPSPT**

<b>3250</b>	<b>S</b>	<b>P</b>	<b>P01A</b>	<b>S1</b>	<b>PP</b>	<b>PT</b>	<b>PS</b>	<b>PT</b>
Pump Size	Fluid Section Material	Drive Type	Center Section and Air Valve	Fluid Covers and Manifolds	Seats	Balls	Diaphragms	Manifold and Seat Seals

Pump	Fluid Section Material		Drive Type		Center Section and Air Valve Material		For Use With	Fluid Covers and Manifolds	
	<b>3250</b>	<b>A</b>	Aluminum	<b>P</b>	Pneumatic	<b>P01A</b>		Polypropylene	Standard Diaphragms
<b>A2</b>							Aluminum, Center Port, 3-11 BSPT		
<b>S</b>		Stainless steel			<b>P01G</b>	Polypropylene	Overmolded Diaphragms	<b>S1</b>	SST, Center Port, 3-8 NPT
								<b>S2</b>	SST, Center Port, 3-11 BSPT







Configuration Number Matrix

Seat Material		Ball Material		Diaphragm Material		Manifold and Seat Seal Material	
<b>PP</b> ■	Polypropylene	<b>FK</b>	FKM	<b>FK</b>	FKM	<b>PT</b> ■	PTFE
<b>SP</b> ■	Santoprene	<b>PT</b> ■	PTFE	<b>PO</b> ■	PTFE/EPDM Overmolded		
<b>SS</b> ■	Stainless Steel	<b>SP</b> ■	Santoprene	<b>PS</b> ■	PTFE/Santoprene 2-Piece		
<b>AC</b>	Acetal	<b>AC</b>	Acetal	<b>SP</b> ■	Santoprene		
<b>AL</b>	Aluminum	<b>BN</b>	Buna	<b>BN</b>	Buna		
<b>BN</b>	Buna	<b>CR</b>	Polychloroprene	<b>CO</b>	Polychloroprene, Overmold		
<b>FK</b>	FKM	<b>CW</b>	Polychloroprene, Weighted	<b>CR</b>	Polychloroprene		
<b>GE</b>	Geolast	<b>GE</b>	Geolast	<b>GE</b>	Geolast		
<b>TP</b>	TPE	<b>TP</b>	TPE	<b>TP</b>	TPE		

■ These materials are FDA-Compliant and meet the United States Code of Federal Regulations (CFR) Title 21, Section 177 or are of a corrosion resistant grade Stainless Steel. **NOTE:** Rubber and Rubber-like materials comply with CFR Title 21, Section 177, Part 177.2600; Plastic materials comply with CFR Title 21, Section 177, Parts 177.2600, 177.1520, 177.1550.



# Troubleshooting

					
<p>Follow <a href="#">Pressure Relief Procedure, page 11</a>, before checking or repairing the equipment. NOTE: Check all possible problems and causes before disassembling the equipment.</p>					

Problem	Cause	Solution
Pump cycles but will not prime.	Pump is running too fast, causing cavitation before prime.	Reduce air inlet pressure.
	Check valve ball severely worn or wedged in seat or manifold.	Replace ball and seat.
	Seat severely worn.	Replace ball and seat.
	Outlet or inlet clogged.	Unclog.
	Inlet or outlet valve closed.	Open.
	Inlet fittings or manifolds loose.	Tighten.
	Manifold o-rings damaged.	Replace o-rings.
Pump cycles at stall or fails to hold pressure at stall.	Worn check valve balls, seats, or o-rings.	Replace.
Pump will not cycle, or cycles once and stops.	Air valve is stuck or dirty.	Disassemble and clean air valve. Use filtered air.
	Check valve ball severely worn and wedged in seat or manifold.	Replace ball and seat.
	Pilot valve worn, damaged, or plugged.	Replace pilot valve.
	Air valve gasket damaged.	Replace gasket.
	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..
	Diaphragm (or backup) ruptured.	Replace.
	Restricted exhaust.	Remove restriction.
	Pilot valves damaged or worn.	Replace pilot valves.
	Air valve damaged.	Replace air valve.
	Air valve gasket damaged.	Replace air valve gasket.
	Air supply erratic.	Repair air supply.
Exhaust muffler icing.	Use drier air supply.	

Troubleshooting

<b>Problem</b>	<b>Cause</b>	<b>Solution</b>
Air bubbles in fluid.	Suction line is loose.	Tighten.
	Diaphragm (or backup) ruptured.	Replace.
	Loose manifolds, damaged seats or o-rings.	Tighten manifold bolts or replace seats or o-rings.
	Pump cavitation.	Reduce pump speed or suction lift.
	Loose diaphragm shaft bolt.	Tighten.
Exhaust air contains fluid being pumped.	Diaphragm (or backup) ruptured.	Replace.
	Loose diaphragm shaft bolt.	Tighten or replace.
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.
	Damaged air valve gasket.	Replace gasket.
	Damaged pilot valve.	Replace pilot valves.
	Worn shaft seals or bearings.	Replace shaft seals or bearings.
Pump leaks air externally.	Air valve or fluid cover screws loose.	Tighten.
	Diaphragm damaged.	Replace diaphragm.
	Air valve gasket damaged.	Replace gasket.
Pump leaks fluid externally from joints.	Loose manifold screws or fluid cover screws.	Tighten manifold screws or fluid cover screws.
	Manifold o-rings worn out.	Replace o-rings. Alternate materials are available. See <a href="#">Manifold Seals</a> on page 33.

# Repair

## Pressure Relief Procedure



Follow the Pressure Relief Procedure whenever you see this symbol.

<p>This equipment stays pressurized until pressure is manually relieved. To help prevent serious injury from pressurized fluid, such as splashing fluid, follow the <b>Pressure Relief Procedure</b> when you stop dispensing and before cleaning, checking, or servicing the equipment.</p>					

See Fig. 1, [Typical Installation](#), page 12, for location of referenced parts.

1. Close the bleed-type master air valve (B) to shut off the air to the equipment.
2. Open outbound fluid valve to relieve fluid pressure from the equipment.
  - a. For simple transfer applications, open either the fluid shutoff valve (G) or the fluid drain valve (F).
  - b. For circulating applications, ensure that the fluid shutoff valve (G) is closed and open the fluid drain valve (F).

Repair

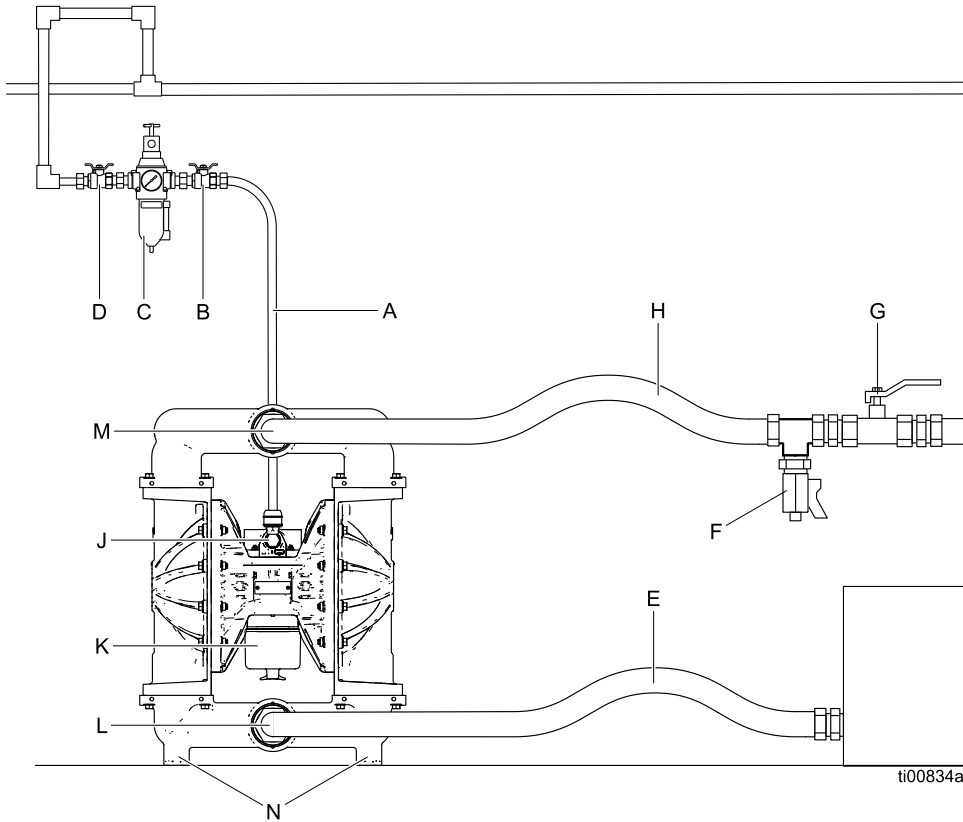


Figure 1 Typical Installation

**Accessories/Components Not Supplied**

- A Air supply line
- B Bleed-type master air valve (may be required for your pump)
- C Air filter/regulator assembly
- D Master air valve (to isolate the filter/regulator for service)
- E Conductive flexible fluid supply line
- F Fluid drain valve (may be required for your pump)
- G Fluid shutoff valve
- H Conductive, flexible fluid outlet line

**System Components**

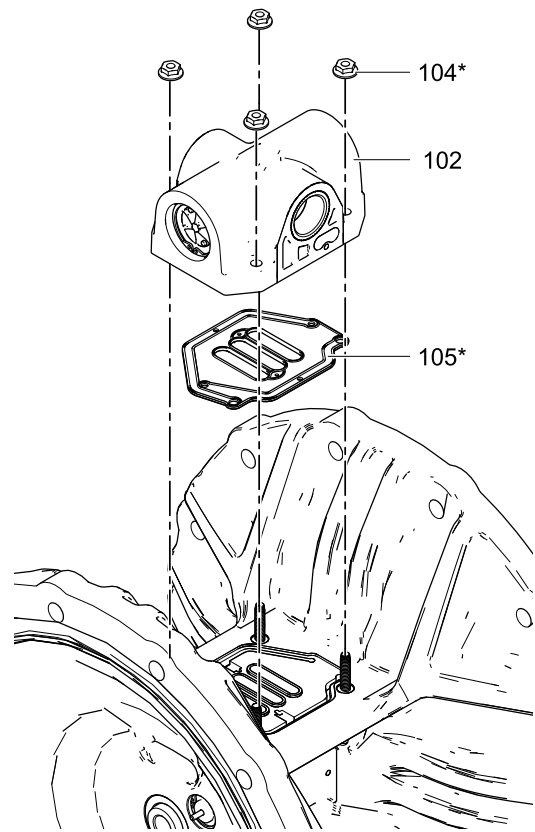
- J Air inlet port (not visible)
- K Air exhaust port and muffler
- L Fluid inlet port
- M Fluid outlet port
- N Mounting feet

## Replace Complete Air Valve

Follow these instructions to install the Air Valve Replacement Kit. See page 27.



1. Follow the [Pressure Relief Procedure](#), page 11.
2. Disconnect the air line to the equipment.
3. Remove nuts (104). Remove the air valve (102) and gasket (105).
4. Align the new air valve gasket (105\*) on the center housing, then attach the new air valve. See [Torque Instructions](#), page 21.
5. Reconnect the air line to the equipment.



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## Replace Seals or Rebuild Air Valve

Follow these instructions to service the air valve with one of the available repair kits. 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 ‡.



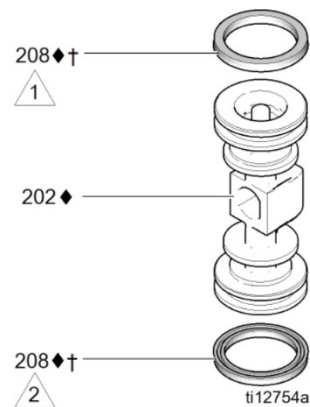
### Disassemble the Air Valve

1. Follow steps 1–3 under [Replace Complete Air Valve, page 13](#).
2. Use a T10 star screwdriver to remove two screws (209). Remove the valve plate (205) and cup assembly (212–204), 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. Remove the retaining ring (210) from each end of the air valve. Use the piston (202) to push the end cap (207) out of one end. Remove the u-cup seal (208) from the piston. Pull the piston out of the end and remove the other u-cup seal (208). Remove the other end cap (207) and the end cap o-rings (206).
5. Remove the detent cam (204) from the air valve housing (201).

### Reassemble the Air Valve

**NOTE:** Apply lithium-based grease when instructed to grease. Order Graco PN 111920.

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.



△1 Lips face **down**.

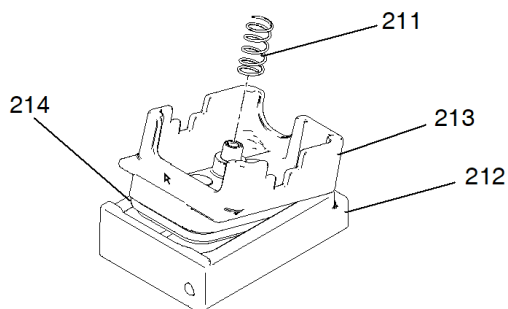
△2 Lips face **up**.

4. Grease both ends of the piston (202♦) and the housing bore. Install the piston in the housing (201), with the flat side toward the cup (213♦). 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.

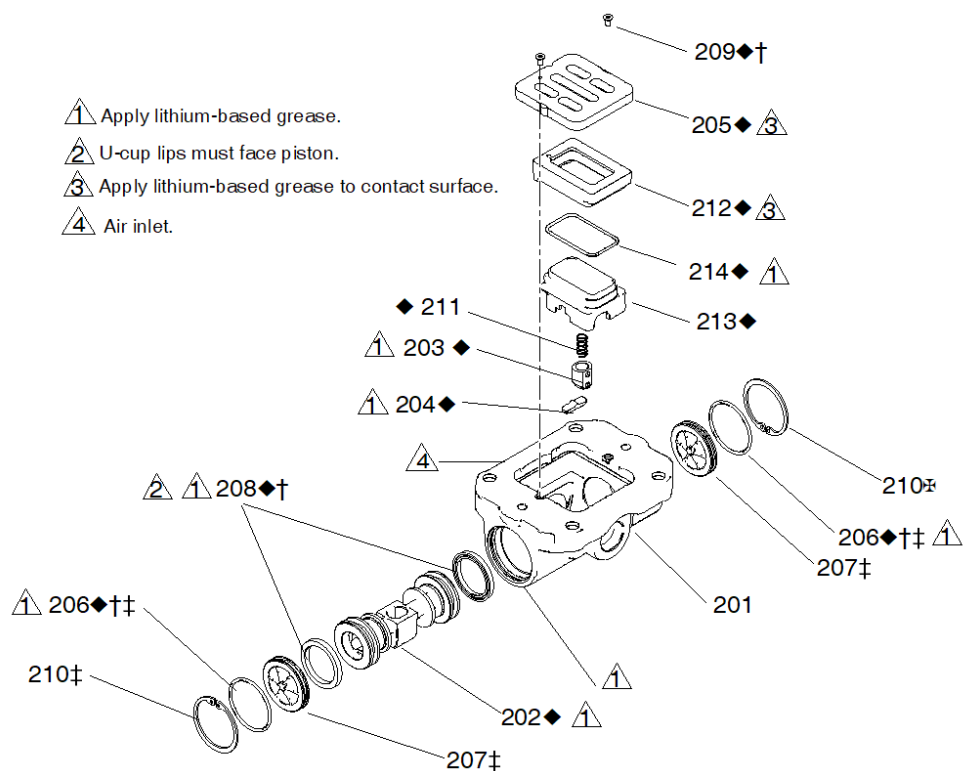
7. Grease and install the detent assembly (203) into the piston.
8. Install the o-ring (214♦) on the cup (213♦). Apply a light film of grease to the outside surface of the o-ring and the inside mating surface of the base (212♦).

9. 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.

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. Align the magnet in the base with the air inlet and install the cup assembly.






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## Check Valve Repair

				
To avoid severe burns, do not touch hot fluid or hot equipment.				

					
The equipment is heavy (see <a href="#">Technical Specifications, page 35</a> for specific weights). If the equipment must be moved, follow the <a href="#">Pressure Relief Procedure, page 11</a> , and have two people lift the equipment by grasping the outlet manifold securely, or use appropriate lifting equipment to lift by the outlet manifold. Never have one person move or lift the equipment.					

**NOTE:** Kits are available for new check valve balls and seats in a range of materials. See [Seats and Check Balls](#) on page 29 to order kits in the material(s) desired. O-ring 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 every time the manifold is removed.

### Disassemble the Check Valve

- Follow the [Pressure Relief Procedure, page 11](#). Disconnect all hoses.
 

**NOTE:** The pump is heavy. Always use two people or a lift to move it.
- Remove the pump from its mounting.
- NOTE:** Use hand tools until thread-locking adhesive patch releases. Use a 17 mm (11/16 in) socket wrench to remove the manifold fasteners (5) and Belleville Washers (36) if present, then remove the manifold (3).
- Remove the o-rings (9), seats (7), and balls (8).
- Turn the pump over and remove the inlet manifold (4).
- Remove the o-rings (9), seats (7), and balls (8).

### Reassemble the Check Valve

- Clean all parts and inspect for wear or damage. Replace parts as needed.
- Reassemble in the reverse order, following all notes in the illustration. Put the inlet manifold on first. Be sure the ball checks (7-9) and manifolds (3, 4) are assembled **exactly** as shown. The ball

must seat on the chamfered side of the seat. The arrows (A) on the fluid covers (2) **must** point toward the outlet manifold (3).

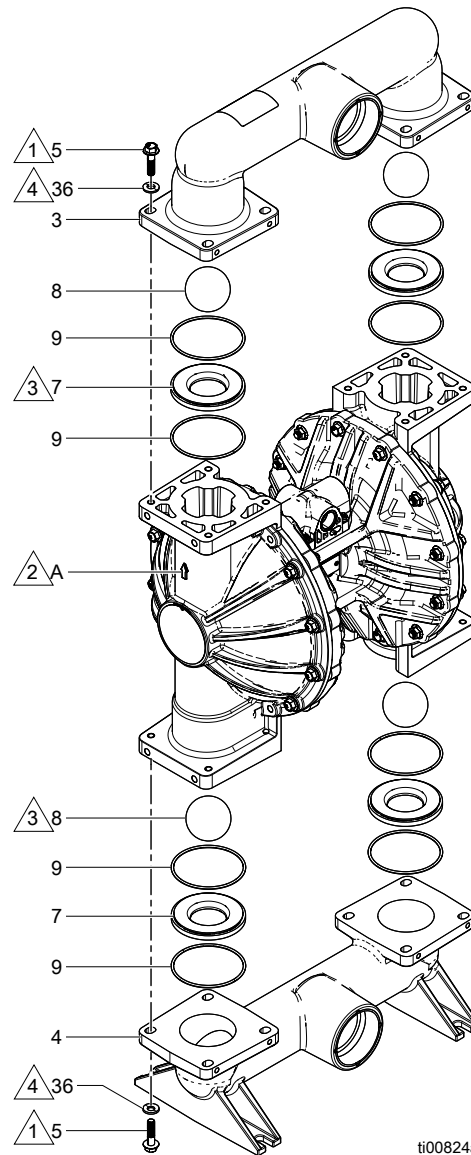




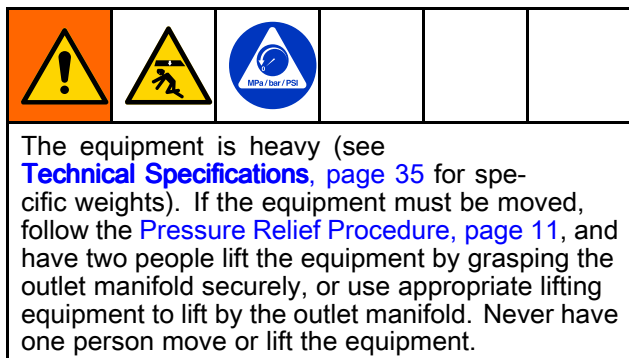


Figure 2 Check valve assembly

-  Torque to 305 to 335 in-lb (34 to 38 N·m). Follow torque sequence. See [Torque Instructions, page 21](#).
-  Arrow (A) must point toward outlet manifold
-  The chamfered side of the seat must face the ball.
-  Install Belleville Washers dome side against the bolt head. Required in Aluminum pumps only.



## Diaphragm and Center Section Repair



**NOTE:** Diaphragm kits are available in a range of materials and styles. See [Diaphragms](#) on page 30. A Center Rebuild Kit also is available. See [Center Section](#), page 24. Parts included in the Center Rebuild Kit are marked with an \*. For best results, use all kit parts.

### Disassemble the Diaphragm and Center Section

1. Follow the [Pressure Relief Procedure](#), page 11.
2. Remove the manifolds and disassemble the ball check valves. Follow [Check Valve Repair](#), page 16.

**NOTE:** You may wish to remove the inner fluid cover bolts (5) as you remove each manifold, for convenience.

### 3. Overmolded Diaphragms (PO and CO models)

- a. Orient the pump so one of the fluid covers (2) faces up. Use a 17 mm socket wrench to remove the fluid cover bolts (5, 6), then pull the fluid cover up off the pump.
- b. The exposed diaphragm (12) will screw off by hand. The shaft will either release and come off with this diaphragm, or remain attached to the other diaphragm. If the diaphragm shaft bolt (14) remains attached to the shaft (108), remove it. Remove the air side diaphragm plate (11) and washer (17).
- c. Turn the pump over and remove the other fluid cover. Remove the diaphragm (and the shaft, if necessary).
- d. If the shaft is still attached to either diaphragm, grasp the diaphragm firmly and use a wrench on the flats of the shaft to remove. Also remove the air side diaphragm plate (11) and washer (17). Continue with Step 5.

### 4. All Other Diaphragms

- a. Orient the pump so one of the fluid covers faces up. Use a 17 mm socket wrench to remove the fluid cover screws (5, 6), then pull the fluid cover (2) up off the pump. Turn the pump over and remove the other fluid cover.
  - b. Hold the hex of one fluid side diaphragm plate (15) with a 1-1/2 socket or box end wrench. Use another wrench (same size) on the hex of the other plate to remove. Then remove all parts of each diaphragm assembly.
5. Inspect the diaphragm shaft (108) for wear or scratches. If it is damaged, inspect the bearings (107) in place. If they are damaged, use a bearing puller to remove them.

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

6. Use an o-ring pick to remove the u-cup packings (106) from the center housing. Bearings (107) can remain in place.
7. If necessary, use a socket wrench to remove the pilot valves (111).
8. 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 (109), then remove cartridge o-rings (110). If stripped, use two screwdrivers to screw out the cartridge.

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

## Reassemble the Diaphragm and Center Section

Follow all notes in the illustration. 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 (109), cartridge o-rings (110), and retaining rings (113).

**NOTE:** Cartridges (109) *must* be installed before pilot valves (111).

3. Grease and install the pilot valves (111). Torque to 20-25 in.-lb (2-3 N•m), at 110 rpm. 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 (107) into the center housing. Use a press or a block and rubber mallet to press-fit the bearing so it is flat with the surface of the center housing.

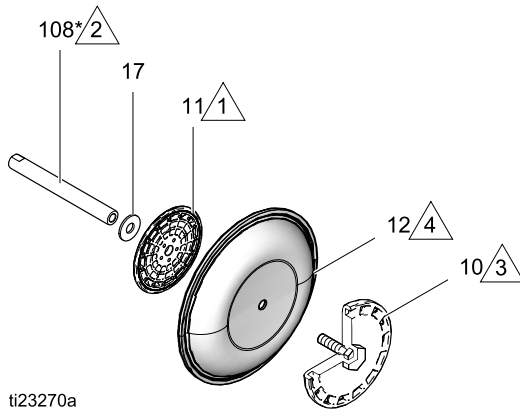
### 6. Overmolded Diaphragms (PO and CO)

- a. Clamp the shaft flats in a vise.
- b. If diaphragm setscrew comes loose or is replaced, apply permanent (red) thread locker to diaphragm side threads. Screw into diaphragm until tight.
- c. Assemble the air side plate (11) and washer (17) onto the diaphragm. The rounded side of the plate must face the diaphragm.
- d. Apply primer and medium-strength (blue) thread locker to the threads of the diaphragm assembly. Screw the assembly into the shaft as tight as possible by hand.
- e. Grease the shaft u-cups (106\*) and the length and ends of the diaphragm shaft (108\*). Slide the shaft into the housing.
- f. Reattach one fluid cover (3). Arrow (A) must point toward the air valve. See [Torque Instructions, page 21](#).
- g. Repeat Steps b-d for the other diaphragm assembly and install on the exposed end of the shaft.
- h. Tighten by hand as much as possible. Go to Step 8.

### 7. All Other Diaphragms

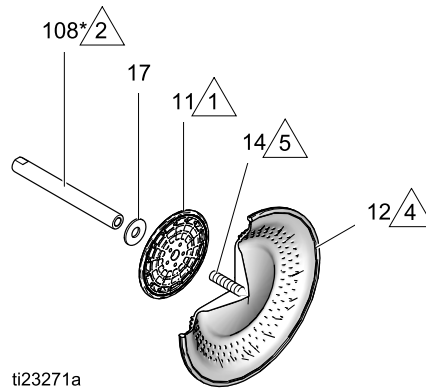
- a. Assemble the diaphragm (12), the backup diaphragm (13, if present), the air side diaphragm plate (11), and the washer (17) on the fluid side plate (10) exactly as shown.
- b. Apply primer and medium-strength (blue) thread locker to the threads of the screw on the fluid side plate. Screw the assembly into the shaft hand-tight.
- c. Grease the shaft u-cups (106\*) and the length and ends of the diaphragm shaft (108\*). Slide the shaft into the housing.
- d. Repeat for the other diaphragm assembly and install on the exposed end of the shaft.
- e. Hold one of the plates with a wrench, and torque the other plate to 100-105 ft-lb (136–142 N•m) at 100 rpm maximum. Do not over-torque.
- f. Reattach one fluid cover (3). Arrow (A) must point toward the air valve. See [Torque Instructions, page 21](#).

**GE, TP, SP, BN, CR, and FK Models**



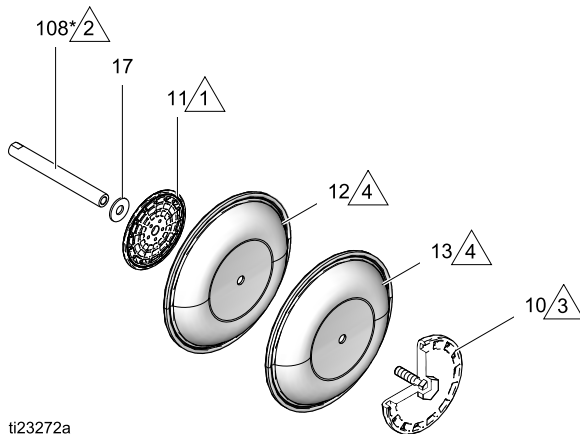
ti23270a

**PO and CO Models**



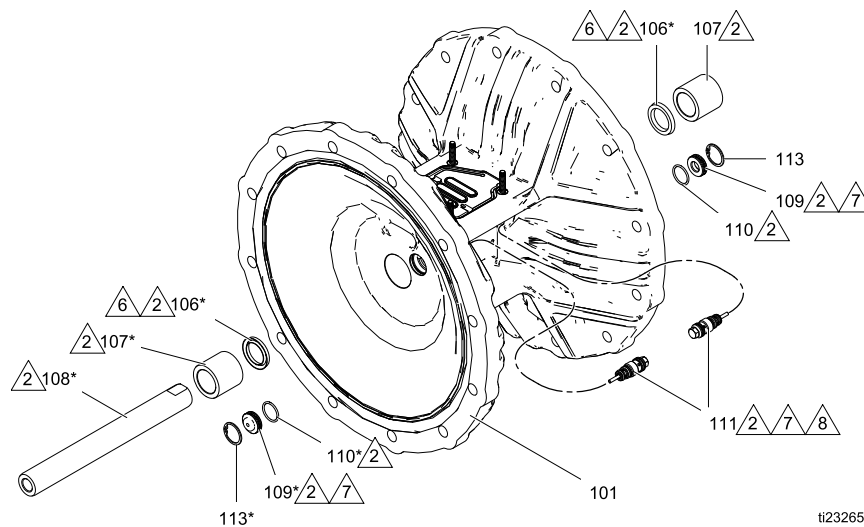
ti23271a

**PS Models**



ti23272a

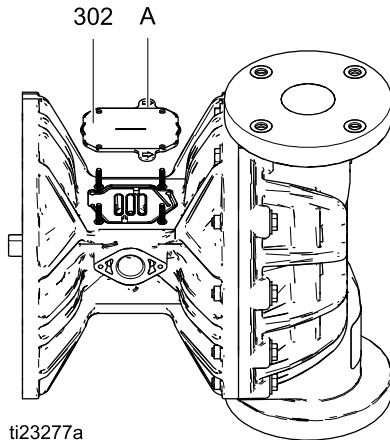
- △ 1 Rounded side faces diaphragm
- △ 2 Apply lithium based grease.
- △ 3 Apply primer and medium-strength (blue) thread locker. Torque to 100-105 ft-lb (136-142 N•m).
- △ 4 AIR SIDE markings on diaphragm must face center housing.
- △ 5 If screw comes loose or is replaced, apply permanent (red) thread locker to diaphragm side threads. Apply primer and medium-strength (blue) thread locker to shaft side threads.
- △ 6 Lips must face out of housing.
- △ 7 Cartridges (109) must be installed before pilot valves (111).
- △ 8 Torque to 20-25 in.-lb (2-3 N•m).



ti23265a

## Repair

8. To ensure proper seating and extend diaphragm life, apply air pressure to the pump prior to attaching the second fluid cover.
  - a. Place the supplied tool (302) where the air valve gasket (105) normally goes. Arrows (A) must face toward the fluid cover that is already attached.



ti23277a  
Figure 3 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 21](#).
- e. Remove the air valve and the tool (302), replace the gasket (105), and reattach the air valve. See [Torque Instructions, page 21](#).

**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.

- f. Reassemble the ball check valves and manifolds as explained in [Check Valve Repair, page 16](#).

# Torque Instructions

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

**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 fasteners with new ones or apply medium-strength thread sealant to the threads.

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

1. Start all fluid cover fasteners a few turns. Then, turn down each fastener just until head contacts cover.
2. Turn each fastener by 1/2 turn or less working in a crisscross pattern to specified torque.

**Fluid cover fasteners:** 190 to 220 in-lb (21 to 25 Nm)

3. Repeat for manifolds.

**Manifold fasteners:** 305 to 335 in-lb (34 to 38 Nm)

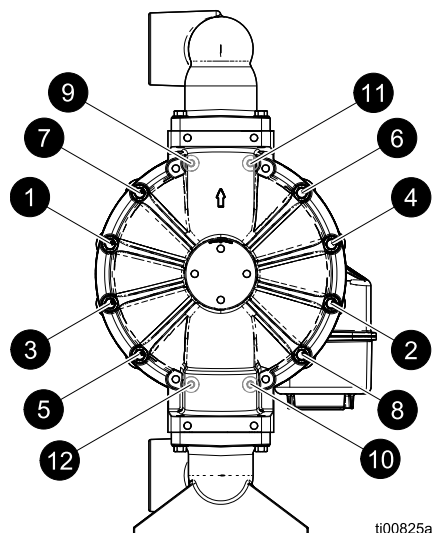
4. Retorque the air valve fasteners in a crisscross pattern to the specified torque.

**Air valve fasteners:** 45 to 55 in-lb (5 to 6 Nm)

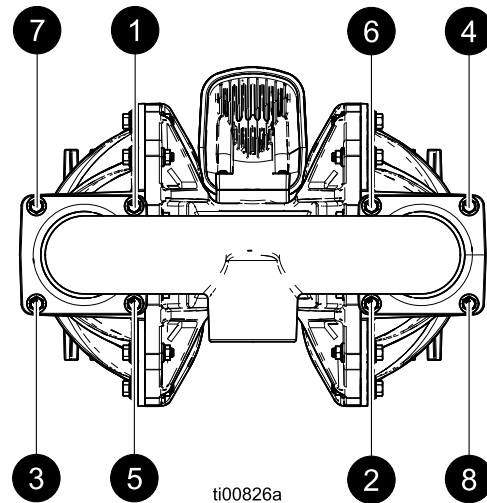
5. Retorque the pilot valves to the specified torque. **Do not over torque.**

**Pilot valves:** 20 to 25 in-lb (2 to 3 Nm)

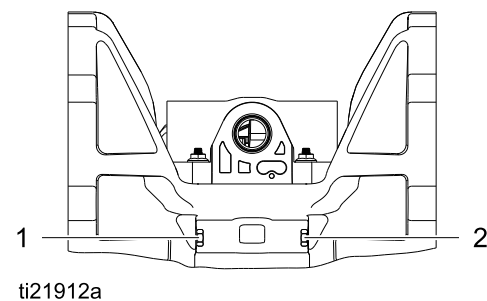
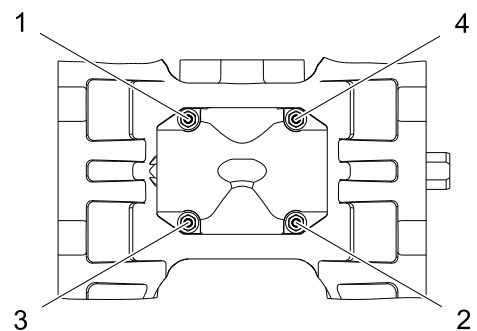
## Fluid Cover fasteners



## Inlet and Outlet Manifold fasteners



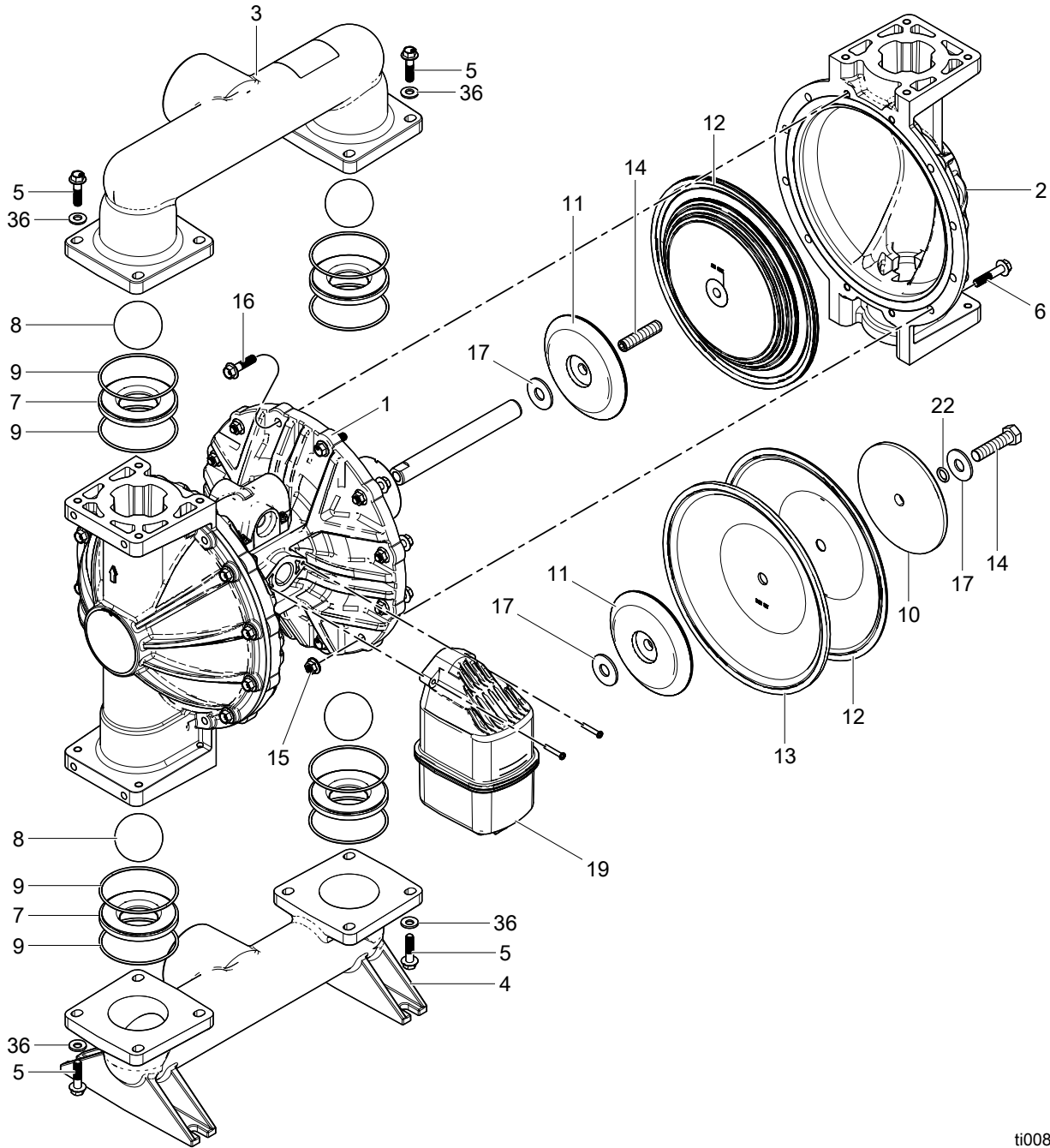
## Air Valve fasteners and Pilot Valves



## NOTICE

To avoid pump damage, do not over-torque the fasteners on the equipment.

# Parts



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## Parts/Kits Quick Reference

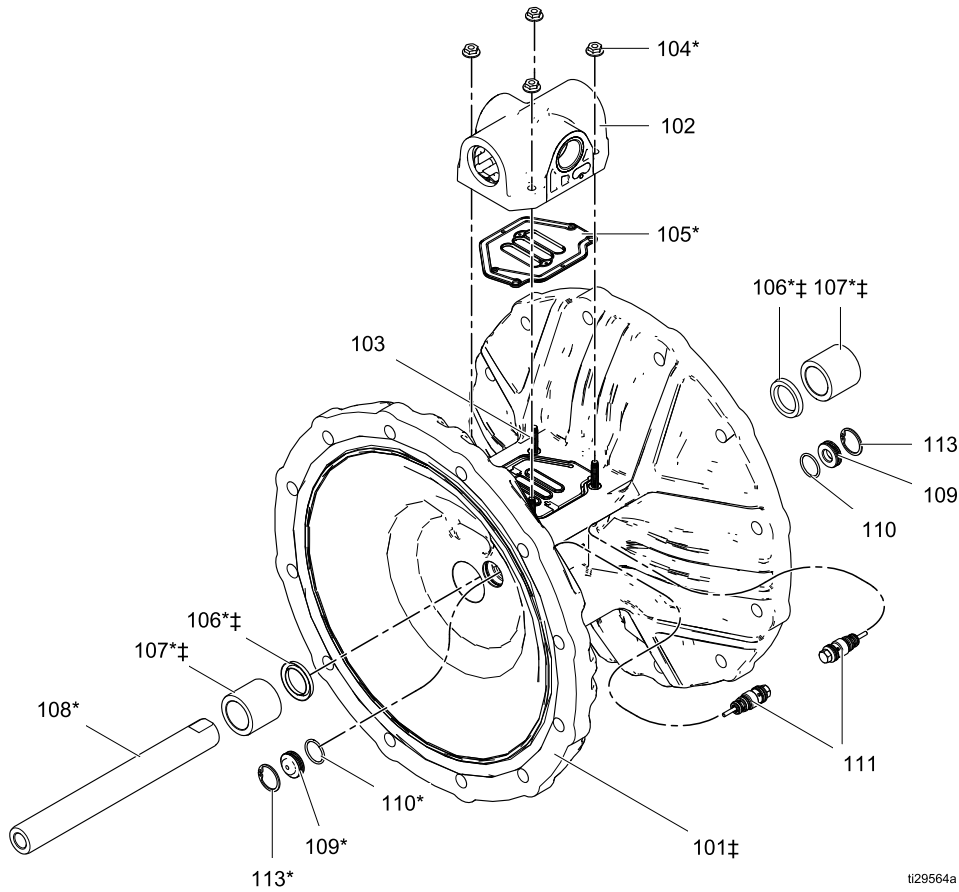
Use this table as a quick reference for parts/kits. Go to the pages indicated in the table for a full description of kit contents.

Ref.	Part/Kit	Description	Qty.
1	24X349	Center Section Kit; Polypropylene	1
102	2001885	Air Valve; see page 26.	1
2		Fluid Cover Kits; see page 28.	2
	2001886	SST	
	2001887	Aluminum	
3		Outlet Manifold Kits	1
		SST, center port	
		Aluminum, center port	
4		Inlet Manifold Kits	1
		SST, center port	
		Aluminum, center port	
5		Manifold Fastener Kit; see page 28.	2
	2001899	SST	
	2001900	Aluminum	
6		Fluid Cover Fastener Kit; see page 28.	2
	2001901	SST	
	2001902	Aluminum	
7		Seats; 4-pack; see page 29.	1
8		BALLS, valve, check; 4-pack; see page 29.	1
9	24V236	O-RING, seat; 8-pack; see page 33.	1

Ref.	Part/Kit	Description	Qty.
10		Fluid Side Diaphragm Plate; see page 31.	2
	2001909	SST	
	2001910	Aluminum	
11	2001911	Air Side Diaphragm Plate; includes washer (Ref. 17); see page 31.	2
12		Diaphragm Kits; see page 30.	1
13	-----	DIAPHRAGM, backup, Santoprene; included with Ref. 12	1
14	-----	SCREW; included with Ref. 10 or Ref. 12 PO.	
15	-----	NUT, included with Ref. 6	16
16	-----	SCREW; included with Ref. 6	8
17	-----	WASHER, included with Ref. 10, Ref. 11	1
18	188621▲	LABEL, warning	1
19	24P932	Muffler; includes o-ring and mounting hardware	1
20	2000779▲	TAG, torque instructions	1
21	198382▲	LABEL, warning, multilingual	1
22	-----	O-RING; included with Ref. 10	2
23	-----	NUT; included with Ref. 5	
		SST	16
		Aluminum	0
36	2007429	WASHER, Belleville, CS, M10, 16-pack	1

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

## Center Section



Ref	Description	Qty	Ref	Description	Qty
101‡	HOUSING, center, not sold separately	1	108*	SHAFT, center	1
102	VALVE, air, <i>see page 27</i>	1	109*	CARTRIDGE, pilot receiver	2
103	SCREW, hi-lo stud	4	110*	O-RING, Buna-N	2
104*	NUT, hex, flange, serrated	4	111*	VALVE, pilot, assembly	2
105*	GASKET, air valve	1	112*	LUBRICANT	1
106*‡	U-CUP, center shaft	2	113*	RING, retaining	2
107*‡	BEARING, shaft	2			

\* Included in Center Section Rebuild Kit.

‡ Included in Center Housing Kit.



**Sample Configuration Number: 3250S-PP01AS1PPPTPSPT**

Pump Size	Fluid Section Material	Drive Type	Center Section and Air Valve	Fluid Covers and Manifolds	Seats	Balls	Diaphragms	Manifold and Seat Seals
3250	S	P	<b>P01A</b>	S1	PP	PT	PS	PT

<b>Center Section Rebuild Kit (*)</b>	
P01A with 2-Piece diaphragms (PS) or standard diaphragms (GE, TP, SP, FK, BN)	24V226
P01G with overmolded diaphragms (PO, CO)	24V227

Kits include:

- 1 center shaft (108)
- 4 hex nuts, serrated (104)
- 2 center shaft bearings (107)
- 2 center shaft u-cups (106)
- 1 air valve gasket (105)
- 8 seat o-rings (9)
- 2 pilot valves (111)
- 2 pilot valve receiver cartridges (109)
- 2 retaining rings (113)
- 2 receiver cartridge o-rings (110)
- 1 grease packet (112)

<b>Pilot Valve Assembly Kit</b>	
All models	24V823

Kit includes:

- 2 pilot valves (111)
- 2 pilot valve receiver cartridges (109)
- 2 receiver cartridge o-rings (110)
- 1 grease packet (112)
- 2 retaining rings (113)

<b>Center Shaft Kit (*)</b>	
P01A with 2-Piece diaphragms (PS) or standard diaphragms (GE, TP, SP, FK, BN)	24V228
P01G with overmolded diaphragms (PO, CO)	24V229

Kits include:

- 2 center shaft u-cups (106)
- 1 center shaft (108)
- 2 center shaft bearings (107)
- 1 grease packet (112)

<b>Center Shaft Bearing Kit</b>	
All models	24V230

Kit includes:

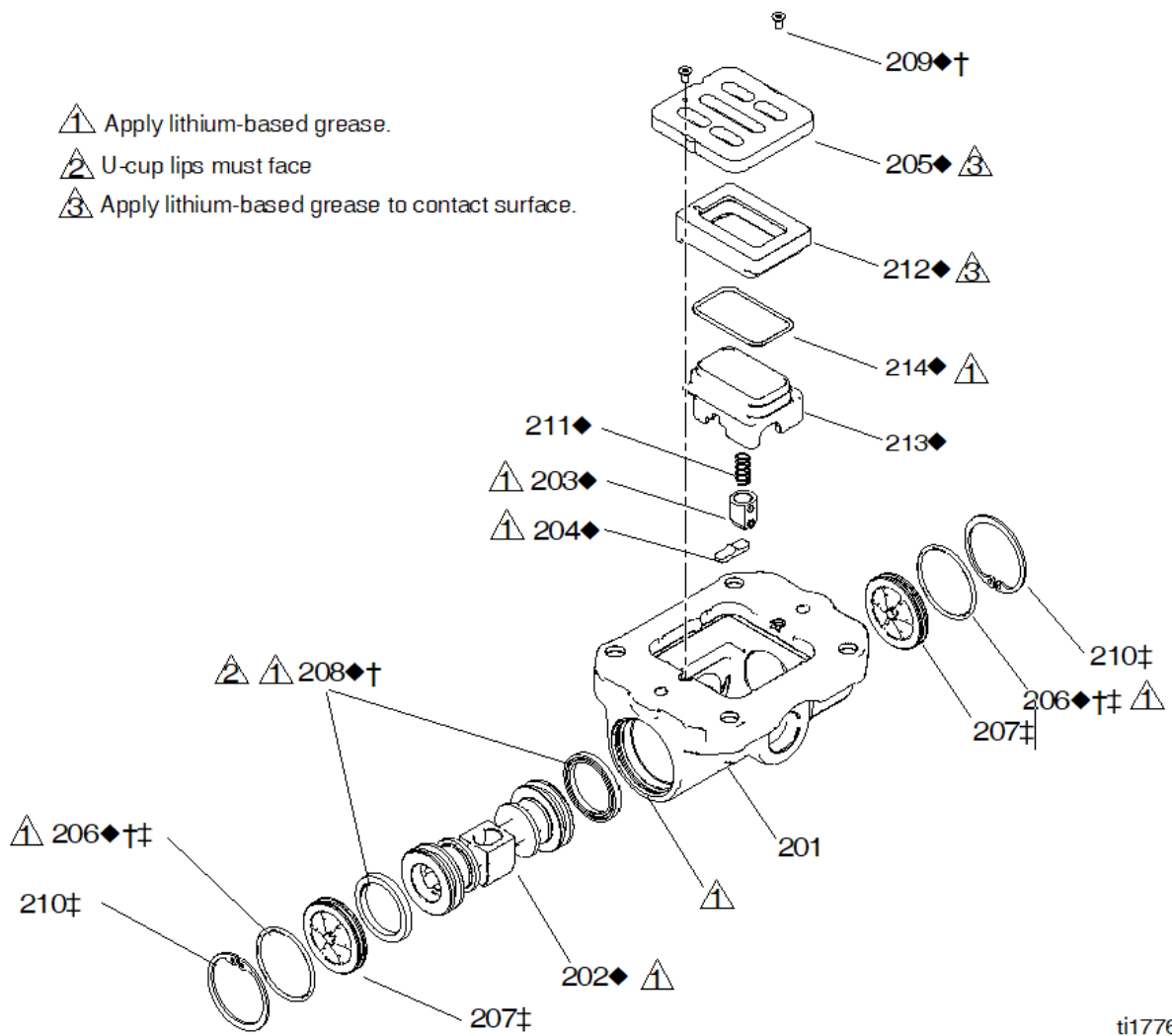
- 2 center shaft u-cups (106)
- 2 center shaft bearings (107)
- 1 grease packet (112)

<b>Center Housing Kit (‡)</b>	
All models	24X349

Kit includes:

- 2 center shaft u-cups (106)
- 2 center shaft bearings (107)
- 1 center housing(101)

## Air Valve



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Ref	Description	Qty	Ref	Description	Qty
201	HOUSING, not sold separately	1	208♦†	U-CUP	2
202♦	PISTON	1	209♦†	SCREW, #4, thread forming	2
203♦	DETENT PISTON ASSEMBLY	1	210‡	RETAINING RING	2
204♦	CAM, detent	1	211♦	DETENT SPRING	1
205♦	PLATE, air valve	1	212♦	BASE, cup	1
206♦†‡	O-RING	2	213♦	CUP	1
207‡	CAP, end	2	214♦	O-RING, cup	1

♦ Parts included in Air Valve Repair Kit.

† Parts included in Air Valve Seals Kit.

‡ Parts included in Air Valve End Cap Kit.

**Sample Configuration Number: 3250S-PP01AS1PPPTPSPT**

Pump Size	Fluid Section Material	Drive Type	Center Section and Air Valve	Fluid Covers and Manifolds	Seats	Balls	Diaphragms	Manifold and Seat Seals
3250	S	P	<b>P01A</b>	S1	PP	PT	PS	PT

† Air Valve Seals Kit	
All models	24K859

Kit includes:

- 2 end cap o-rings (206)
- 2 piston u-cups (208)
- 2 screws, M3, shorter
- 2 screws, #4, longer (209)
- 1 air valve gasket (105)
- 1 grease packet (112)
- 1 solenoid release button o-ring (not shown), used only with optional DataTrak kit.

◆ Air Valve Repair Kit	
All models	24K860

Kit includes:

- 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
- 2 screws, #4, longer (209)
- 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 shown), used only with optional DataTrak kit.
- 1 air valve gasket (105)
- 1 grease packet (112)

Air Valve Replacement Kit	
All models	2001885

Kit includes:

- 1 air valve assembly (102)
- 1 air valve gasket (105)
- 4 hex nuts (104)

‡ Air Valve End Cap Kit	
All models	24C053

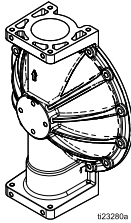
Kit includes:

- 2 end caps (207)
- 2 retaining rings (210)
- 2 o-rings (206)
- 1 grease packet (112)

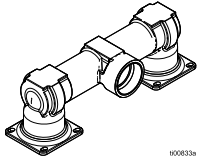
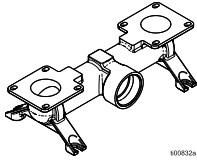
## Fluid Covers and Manifolds

Sample Configuration Number: 3250S-PP01AS1PPPTPSPT

Pump Size	Fluid Section Material	Drive Type	Center Section and Air Valve	Fluid Covers and Manifolds	Seats	Balls	Diaphragms	Manifold and Seat Seals
3250	S	P	P01A	<b>S1</b>	PP	PT	PS	PT

Fluid Cover Kit			
SST		Aluminum	
S1, S2	2001886	A1, A2	2001888
			

Kits include 1 fluid cover (2).  
Aluminum model shown.

Center Manifold Kit		
	Outlet (3)	Inlet (4)
S1	2001889	2001891
S2	2001921	2001923
A1	2001890	2001892
A2	2001922	2001924
		

Kits include 1 manifold.  
Aluminum models shown.

Fluid Cover Fastener Kit	
S1, S2	2001901
A1, A2	2001902

Kit includes:

- 8 bolts (6), hex head, M10 x 1.5 x 50 mm (2.0 in)
- 4 bolts (5), hex head, M10 x 1.5 x 35–40 mm (1.4–1.6 in.)
- 8 nuts (15), hex, flange, M10

Manifold Fastener Kit	
S1, S2	2001899
A1, A2	2001900

Kit includes:

- 8 bolts (5), hex head, M10 x 1.5
- 8 nuts (23), hex, M10; used only with S1, S2

## Seats and Check Balls

Sample Configuration Number: **3250S-PP01AS1PPPTPSPT**

Pump Size	Fluid Section Material	Drive Type	Center Section and Air Valve	Fluid Covers and Manifolds	Seats	Balls	Diaphragms	Manifold and Seat Seals
3250	S	P	P01A	S1	PP	PT	PS	PT

Seat Kit	
PP	24V248
SS	24V250
SP	24V249
PV	24V247
AC	2001893
AL	2001894
BN	2001895
FK	2001896
GE	2001897
TP	2001898

Kits include:

- 4 seats (7), material indicated in table.

**NOTE:** O-rings are also sold separately. See Manifold Seals, page 33.

Ball Kit	
FK	24V253
PT	24V251
SP	24V252
AC	2001903
BN	2001904
CR	2001905
CW	2001906
GE	2001907
TP	2001908

Kits include:

- 4 balls (8), material indicated in table.

**NOTE:** O-rings are sold separately. See Manifold Seals, page 33.

## Diaphragms

Sample Configuration Number: 3250S-PP01AS1PPPTPSPT

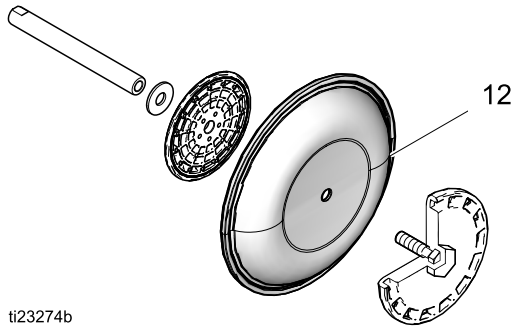
Pump Size	Fluid Section Material	Drive Type	Center Section and Air Valve	Fluid Covers and Manifolds	Seats	Balls	Diaphragms	Manifold and Seat Seals
3250	S	P	P01A	S1	PP	PT	<b>PS</b>	PT

Standard Diaphragm Kit	
SP	24V242
FK	24V243
BN	2001912
CR	2001913
GE	2001915
TP	2001916

Kits include:

- 2 diaphragms (12), material indicated in table
- 1 packet anaerobic adhesive

**NOTE:** Fluid and Air plates are sold separately. The shaft is part of the Center Section Rebuild Kit (24V226) or the Center Shaft Kit (24V228). See [Center Section](#), page 24.

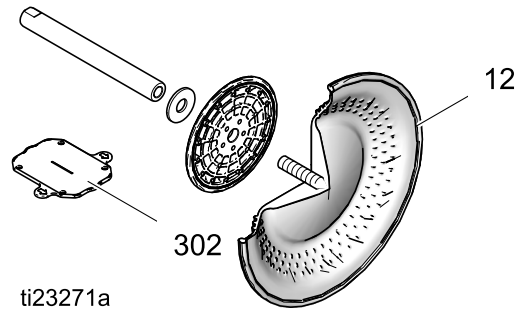


Overmolded Diaphragm Kit	
PO	24V241
CO	2001914

Kits include:

- 2 overmolded diaphragms (12), material indicated in table.
- 2 diaphragm set screws, stainless steel (14)
- 1 diaphragm install tool (302)
- 1 packet anaerobic adhesive

**NOTE:** Air plates are sold separately. The shaft is part of the Center Section Rebuild Kit (24V227) or the Center Shaft Kit (24V229). See [Center Section](#), page 24.

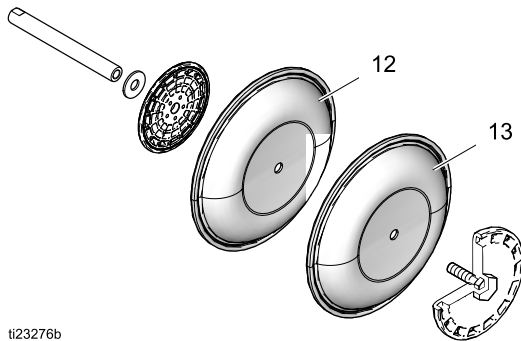


Two-Piece Diaphragm Kit	
PS	24V244

Kits include:

- 2 diaphragms (12), PTFE
- 2 backup diaphragms (13), Santoprene
- 1 packet anaerobic adhesive

**NOTE:** Fluid and Air plates are sold separately. The shaft is part of the Center Section Rebuild Kit (24V226) or the Center Shaft Kit (24V228). See [Center Section](#), page 24.



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Fluid Plate Kit	
S1, S2	2001909
A1, A2	2001910

Kits include:

- 1 fluid side diaphragm plate (10)
- 1 packet anaerobic adhesive
- 1 washer (17)
- 1 o-ring (22)
- 1 bolt (14)

Air Plate Kit	
All models	2001911

Kits include:

- 1 air side plate (11)
- 1 washer (17)

## Seats, Check Balls, and Diaphragm Kits

Sample Configuration Number: 3250S-PP01AS1PPPTPSPT

Pump Size	Fluid Section Material	Drive Type	Center Section and Air Valve	Fluid Covers and Manifolds	Seats	Balls	Diaphragms	Manifold and Seat Seals
3250	S	P	P01A	S1	PP	PT	PS	PT

Seat, Ball, Diaphragm, Seal Materials	Part Number
AC,AC,TP,PT	2001925
AL,PT,PS,PT	2001926
BN,BN,BN,--	2001927
BN,CW,BN,--	2001928
FK,FK,FK,--	2001929
GE,GE,GE,PT	2001930
GE,GE,PS,PT	2001931
GE,GE,CR,PT	2001932
GE,CW,CR,PT	2001933
GE,TP,BN,PT	2001934
SP,CR,CR,PT	2001935
SP,CW,CR,PT	2001936
SP,PT,PO,PT	2001937
SP,PT,PS,PT	2001938
SP,PT,SP,PT	2001939
SS,AC,PS,PT	2001940

Seat, Ball, Diaphragm, Seal Materials	Part Number
SS,BN,BN,PT	2001941
SS,CW,CO,PT	2001942
SS,FK,FK,PT	2001943
SS,GE,GE,PT	2001944
SS,GE,PS,PT	2001945
SS,PT,FK,PT	2001946
SS,PT,PO,PT	2001947
SS,PT,PS,PT	2001948
SS,PT,SP,PT	2001949
SS,SP,SP,PT	2001950
TP,AC,TP,--	2001951
PP,PT,PS,PT	25A867
PP,SP,SP,PT	25A868
PP,PT,PO,PT	25A869
SP,SP,SP,PT	25A870



## Manifold Seals

Sample Configuration Number: **3250S-PP01AS1PPPTPSPT**

Pump Size	Fluid Section Material	Drive Type	Center Section and Air Valve	Fluid Covers and Manifolds	Seats	Balls	Diaphragms	Manifold and Seat Seals
3250	S	P	P01A	S1	PP	PT	PS	<b>PT</b>

Standard Manifold O-Ring Kit		
All models	PTFE	24V236

Optional Manifold O-Ring Kit	
PTFE-Encapsulated FKM	24V978
FX75	24W463

Kits include:

- 8 o-rings (9), material shown in tables

## **Accessories**

### **Muffler 111897**

Legacy or remote exhaust muffler option.

**NOTE: See DataTrak Manual 313840 for:**

- Pulse Count Conversion Kits 24B794 and 24B795
- DataTrak Conversion Kits 24K861 and 24K862
- All other data monitoring parts, including reed switches and solenoids.

# Technical Specifications

<b>Husky 3250 Diaphragm Pump</b>		
	<b>US</b>	<b>Metric</b>
Maximum fluid working pressure	125 psi	0.86 MPa, 8.6 bar
Air pressure operating range	20 to 125 psi	0.14 to 0.86 MPa, 1.4 to 8.6 bar
Air inlet size	3/4 in. npt(f)	
Air exhaust size	1 in. npt(f)	
Fluid inlet and outlet size (NPT or BSPT)	3 in.	80 cm
Maximum suction lift (reduced if balls don't seat well due to damaged balls or seats, lightweight balls, or extreme speed of cycling)	Wet: 31 ft Dry: 16 ft	Wet: 9.4 m Dry: 4.9 m
Maximum size pumpable solids	3/8 in.	9.5 mm
Minimum ambient air temperature for operation and storage. <b>NOTE:</b> Exposure to extreme low temperatures may result in damage to plastic parts.	32° F	0° C
<b>Air consumption</b>		
Standard diaphragms	90 scfm at 70 psi; 100 gpm	2.5 m <sup>3</sup> /min at 0.48 MPa, 4.8 bar, 379 lpm
Overmolded diaphragms	85 scfm at 70 psi, 100 gpm	2.4 m <sup>3</sup> /min at 0.48 MPa, 4.8 bar, 379 lpm
<b>Maximum air consumption</b>		
Standard diaphragms	280 scfm	7.9 m <sup>3</sup> /min
Overmolded diaphragms	255 scfm	7.2 m <sup>3</sup> /min
<b>Noise (dBa)</b> Sound power measured per ISO-9614-2. Sound pressure was tested 3.28 ft (1 m) from equipment.		
Sound Power	99.1 at 50 psi and 50 cpm 106.1 at 125 psi and full flow	99.1 at 3.4 bar and 50 cpm 106.1 at 8.6 bar and full flow
Sound Pressure	91.5 at 50 psi and 50 cpm 98.2 at 125 psi and full flow	91.5 at 3.4 bar and 50 cpm 98.2 at 8.6 bar and full flow
<b>Fluid flow per cycle</b>		
Standard diaphragms	2.2 gallons	8.3 liters
Overmolded diaphragms	1.9 gallons	7.2 liters
<b>Maximum free-flow delivery</b>		
Standard diaphragms	245 gpm	927 lpm
Overmolded diaphragms	240 gpm	908 lpm

Maximum pump speed		
Standard diaphragms	112 cycles per minute	
Overmolded diaphragms	128 cycles per minute	
Weight		
Stainless steel	190.0 lb	86.2 kg
Aluminum	95.0 lb	43.1 kg
Wetted Parts		
Wetted parts include material(s) chosen for seat, ball, and diaphragm options, <b>plus the pump's material of construction: stainless steel or aluminum.</b>		
Non-wetted external parts	Stainless steel pumps: stainless steel, polypropylene Aluminum pumps: zinc plated CS, polypropylene	

### Fluid Temperature Range

Diaphragm/Ball/Seat Material	Fluid Temperature Range	
	Aluminum or Stainless Steel Pumps	
AC	-20° to 180°F	-29° to 82°C
BN	10° to 180°F	-12° to 82°C
FK	-40° to 275°F	-40° to 135°C
GE	-40° to 180°F	-40° to 82°C
CO, CR, or CW	14° to 176°F	-10° to 80°C
PP	32° to 175°F	0° to 79°C
PO or PS	-40° to 180°F	-40° to 82°C
PT	-40° to 220°F	-40° to 104°C
PV	10° to 225°F	-12° to 107°C
SP	-40° to 180°F	-40° to 82°C
TP	-20° to 150°F	-29° to 66°C

## California Proposition 65

#### CALIFORNIA RESIDENTS

 **WARNING:** Cancer and reproductive harm — [www.P65warnings.ca.gov](http://www.P65warnings.ca.gov).

# Notes


# Graco Standard Husky Pump Warranty

Graco warrants all equipment referenced in this document which is manufactured by Graco 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 Graco, Graco will, for a period of twelve months 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 two (2) 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.

## FOR GRACO CANADA CUSTOMERS

The Parties acknowledge that they have required that the present document, as well as all documents, notices and legal proceedings entered into, given or instituted pursuant hereto or relating directly or indirectly hereto, be drawn up in English. Les parties reconnaissent avoir convenu que la rédaction du présent document sera en Anglais, ainsi que tous documents, avis et procédures judiciaires exécutés, donnés ou intentés, à la suite de ou en rapport, directement ou indirectement, avec les procédures concernées.

## Graco Information

For the latest information about Graco products, visit [www.graco.com](http://www.graco.com).  
For patent information, see [www.graco.com/patents](http://www.graco.com/patents).

**To place an order**, contact your Graco Distributor or call to identify the nearest distributor.

**Phone:** 612-623-6921 **or Toll Free:** 1-800-328-0211 **Fax:** 612-378-3505

All written and visual data contained in this document reflects the latest product information available at the time of publication.

Graco reserves the right to make changes at any time without notice.  
Original Instructions. This manual contains English. MM 3A7662

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