

## Husky™ 3300e Electric-Operated Diaphragm Pump

3A7037L  
EN

3-Inch pumps with electric drive for fluid transfer applications.  
Not approved for use in explosive atmospheres or hazardous locations unless otherwise stated. For professional use only.

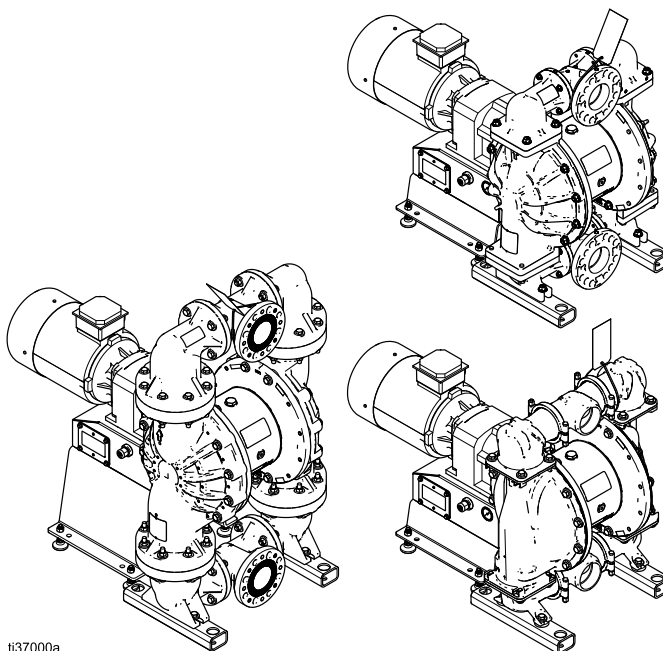


### Important Safety Instructions

Read all warnings and instructions in this manual and in your Husky 3300e Operation manual. **Save these instructions.**

*Maximum working pressure: 80 psi  
(0.55 MPa, 5.5 bar)*

*See page 7 for approvals.*



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## Related Manuals










Manual Number	Title
3A7036	Husky™ 3300e Electric-Operated Diaphragm Pump, Operation

# 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 symbols refer to procedure-specific risks. When these symbols appear in the body of this manual or on warning labels, refer back to these Warnings. Product-specific hazard symbols and warnings not covered in this section may appear throughout the body of this manual where applicable.

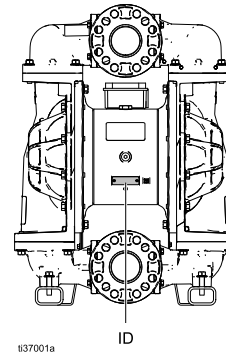
 <b>DANGER</b>	
	<p><b>SEVERE ELECTRIC SHOCK HAZARD</b></p> <p>This equipment can be powered by more than 240 V. Contact with this voltage will cause death or serious injury.</p> <ul style="list-style-type: none"> <li>• Turn off and disconnect power at main switch before disconnecting any cables and before servicing equipment.</li> <li>• This equipment must be grounded. Connect only to grounded power source.</li> <li>• All electrical wiring must be done by a qualified electrician and comply with all local codes and regulations.</li> </ul>
 <b>WARNING</b>	
    	<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 arc).</li> <li>• Ground all equipment in the work area. See <b>Grounding</b> instructions.</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 hoses.</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> </ul> <p>Static charge may build up on plastic parts during cleaning and could discharge and ignite flammable vapors. To help prevent fire and explosion:</p> <ul style="list-style-type: none"> <li>• Clean plastic parts only in well ventilated area.</li> <li>• Do not clean with a dry cloth.</li> <li>• Do not operate electrostatic guns in equipment work area.</li> </ul>

 <h1>WARNING</h1>	
  	<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 hoses, tubes, and couplings daily. Replace worn or damaged parts immediately.</li> </ul>
 	<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 Data</b> in all equipment manuals.</li> <li>• Use fluids and solvents that are compatible with equipment wetted parts. See <b>Technical Data</b> in all equipment manuals. Read fluid and solvent manufacturer's warnings. For complete information about your material, request Safety Data Sheet (SDS) from distributor or retailer.</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 hoses and cables away from traffic areas, sharp edges, moving parts, and hot surfaces.</li> <li>• Do not kink or over bend hoses or use hoses 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>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>WARNING</h1>	
  	<b>THERMAL EXPANSION HAZARD</b> <p>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.</p> <ul style="list-style-type: none"> <li>• Open a valve to relieve the fluid expansion during heating.</li> <li>• Replace hoses proactively at regular intervals based on your operating conditions.</li> </ul>
 	<b>PLASTIC PARTS CLEANING SOLVENT HAZARD</b> <p>Many 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 water-based solvents to clean plastic structural or pressure-containing parts.</li> <li>• See <b>Technical Data</b> in this and all other equipment instruction manuals. Read fluid and solvent manufacturer's Safety Data Sheet (SDS) and recommendations.</li> </ul>
	<b>TOXIC FLUID OR FUMES HAZARD</b> <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 Sheet (SDS) to know the specific hazards of the fluids you are using.</li> <li>• Store hazardous fluid in approved containers, and dispose of it according to applicable guidelines.</li> </ul>
	<b>BURN HAZARD</b> <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>
	<b>PERSONAL PROTECTIVE EQUIPMENT</b> <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. This 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

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



Sample Configuration Number: **3300A-EA04AA1TPTPTP- -**






<b>3300</b>	<b>A</b>	<b>E</b>	<b>A</b>	<b>04</b>	<b>A</b>	<b>A1</b>	<b>TP</b>	<b>TP</b>	<b>TP</b>	<b>- -</b>
Pump Model	Wetted Section Material	Drive	Center Section Material	Gear Box and Compressor	Motor	Fluid Covers and Manifolds	Seats	Balls	Diaphragms	Manifold O-Rings

**NOTE:** Some combinations are not possible. Please refer to [Ordering Information, page 8](#).

Pump	Wetted Section Material		Drive Type		Center Section Material		Gearbox and Compressor		Motor	
<b>3300</b>	<b>A</b>	Aluminum	<b>E</b>	Electric	<b>A</b>	Aluminum	<b>94</b>	No Gearbox or Compressor	<b>A</b>	Standard Induction Motor
	<b>P</b>	Polypropylene					<b>04</b>	High Speed Gear Ratio	<b>C</b>	ATEX Induction Motor
	<b>S</b>	Stainless Steel					<b>06</b>	High Speed Gear Ratio/240V Compressor	<b>D</b>	Flameproof Induction Motor
									<b>G</b>	No Motor

Fluid Covers and Manifolds		Seat Material		Ball Material		Diaphragm Material		Manifold/Seat O-Rings	
<b>A1</b>	Aluminum, center flange, npt	<b>AC</b>	Acetal	<b>AC</b>	Acetal	<b>GE</b>	Geolast	--	Model does not use o-rings*
<b>A2</b>	Aluminum, center flange, bspt	<b>AL</b>	Aluminum	<b>CR</b>	Polychloroprene	<b>PT</b>	PTFE/EPDM 2-Piece	<b>BN</b>	Buna-N
<b>P1</b>	Polypropylene, center flange	<b>FK</b>	FKM Fluoroelastomer*	<b>CW</b>	Polychloroprene Weighted	<b>SP</b>	Santoprene	<b>FK</b>	FKM Fluoroelastomer
<b>S1</b>	Stainless steel, npt	<b>GE</b>	Geolast	<b>FK</b>	FKM Fluoroelastomer	<b>TP</b>	TPE	<b>PT</b>	PTFE
<b>S2</b>	Stainless steel, bspt	<b>PP</b>	Polypropylene	<b>GE</b>	Geolast				
<b>S51</b>	Stainless steel, center flange	<b>SP</b>	Santoprene	<b>PT</b>	PTFE				
		<b>SS</b>	316 Stainless Steel	<b>SP</b>	Santoprene				
		<b>TP</b>	TPE*	<b>TP</b>	TPE				

\* Models with FKM, or TPE seats do not have manifold/seat o-rings.

Approvals	
<p>◆ Aluminum and stainless steel pumps with motor code <b>C</b> are certified to:</p>	 II 2 G Ex h d IIB T4 Gb
<p>✦ Aluminum and stainless steel pumps with motor code <b>G</b> are certified to:</p>	 II 2 G Ex h IIB T4 Gb
<p>★ Motors coded <b>D</b> are certified to:</p>	 <b>UL LISTED</b> Class I, Div 1, Group D, T3B Class II, Div 1, Group F & G, T3B 
<p>All Models (except gearbox and compressor code 05 or motor code <b>D</b>) are marked:</p>	

## Ordering Information

### To Find Your Nearest Distributor

1. Visit [www.graco.com](http://www.graco.com).
2. Click on **Where to Buy** and use the **Distributor Locator**.

### To Specify the Configuration of a New Pump

Please call your distributor.

OR

Use the **Online Diaphragm Pump Selector Tool** at [www.graco.com](http://www.graco.com). Search for **Selector**.

### To Order Replacement Parts

Please call your distributor.



# Troubleshooting



- Follow the [Pressure Relief Procedure, page 11](#), before checking or servicing the equipment.
- Check all possible problems and causes before disassembly.

Problem	Cause	Solution
Pump cycles but will not prime and/or pump.	Pump is running too fast, causing cavitation before prime.	Slow down the controller (VFD)
	Center section has no air pressure, or air pressure is too low.	Apply air pressure to center section per your application requirements.
	Check valve ball is severely worn or wedged in seat or manifold.	Replace the ball and seat.
	The pump has insufficient suction pressure.	Increase the suction pressure. See the Operation manual.
	Seat is severely worn.	Replace the ball and seat.
	Outlet or inlet is restricted.	Remove the restriction.
	Inlet fittings or manifolds are loose.	Tighten.
	Manifold o-rings are damaged.	Replace o-rings.
The center section is excessively hot.	The drive shaft is broken.	Replace.
Pump fails to hold fluid pressure at stall.	Check valve balls, seats, or o-rings are worn.	Replace.
	Manifold screws or fluid cover screws are loose.	Tighten.
	Diaphragm shaft bolt is loose	Tighten.
Pump will not cycle.	Motor or controller is wired improperly.	Wire per manual.
	The leak detector (if installed) has tripped.	Check diaphragm for rupture or incorrect installation. Repair or replace.
The motor is operating, but the pump will not cycle.	The jaw coupling between the motor and gearbox is not connected properly.	Check the connection.
Pump flow rate is erratic.	Suction line is clogged.	Inspect; clear.
	Check balls are sticky or leaking .	Clean or replace.
	Diaphragm (or backup) ruptured.	Replace.
Pump makes unusual noises.	Pump is operating near or at stall pressure.	Adjust air pressure or slow the pump speed.

## Troubleshooting

Problem	Cause	Solution
Air consumption is higher than expected.	A fitting is loose.	Tighten. Inspect thread sealant.
	Loose or damaged o-rings or shaft seal.	Replace.
	Diaphragm (or backup) ruptured.	Replace.
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.
	Loose diaphragm shaft bolt.	Tighten.
Pump leaks fluid externally from joints.	Loose manifold screws or fluid cover screws.	Tighten.
	Manifold o-rings worn out.	Replace o-rings.
The controller faults or shuts down.	A GFCI has tripped.	Remove the controller from the GFCI circuit.
	Supply power is poor.	Determine and fix the source of the power problem.
	Operational parameters are exceeded.	See performance chart; ensure pump is operating within the continuous duty range.
Excessive motor regeneration fault from VFD	Inlet check clogged/improperly installed	Remove debris/install properly
	Broken diaphragm bolt	Replace bolt
<b>NOTE:</b> For problems with a Variable Frequency Device (VFD), see your VFD manual.		

# Repair

## Pressure Relief Procedure



Follow the Pressure Relief Procedure whenever you see this symbol.

<p>This equipment stays pressurized until pressure is relieved manually. To help prevent serious injury from pressurized fluid, such as splashing in the eyes or on skin, follow the Pressure Relief Procedure when you stop pumping and before you clean, check, or service the equipment.</p>				

1. Remove power to the system.
2. Open the fluid drain valve to relieve fluid pressure. Have a container ready to catch the drainage.
3. Shut off the master air valve.
4. Turn down center section regulator to zero to relieve air pressure in center section.

## Check Valve Repair



**NOTE:** Kits are available for new check valve balls and seats in a range of materials. 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

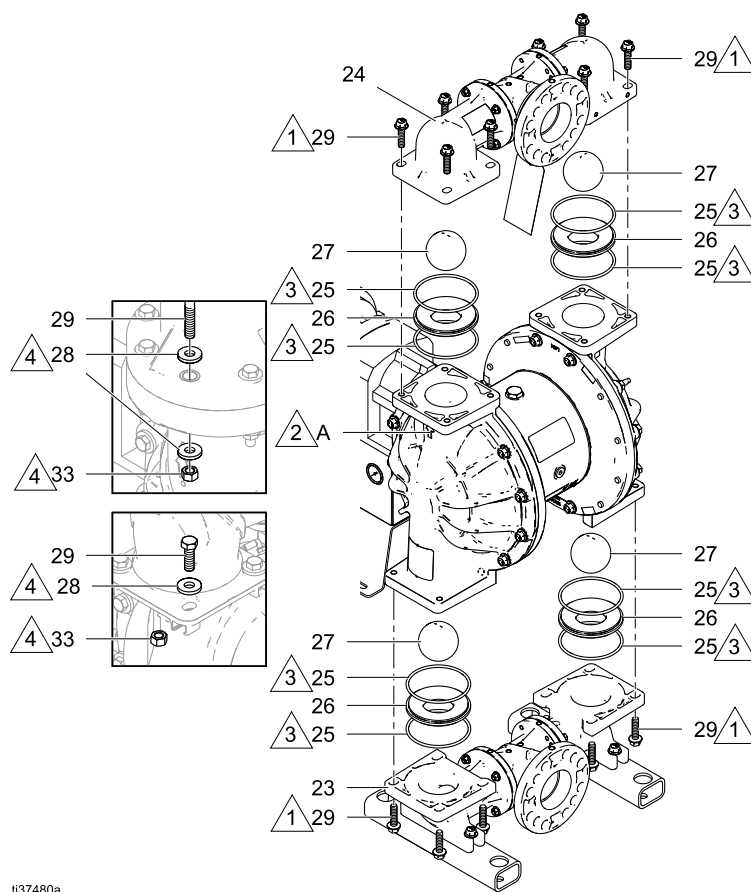
1. Follow the [Pressure Relief Procedure, page 11](#). Remove power to the motor. Disconnect all hoses.
2. **NOTE for plastic pumps:** Use hand tools until thread-locking adhesive patch releases.
3. Remove the manifold fasteners (29) and nuts (33; used only on stainless steel and plastic models), and washers (28; used only on stainless steel and plastic models), then remove the outlet manifold (24).
4. Remove the seats (26), balls (27), and o-rings (25) if present.  
**NOTE:** Some models do not use o-rings (25).
5. Repeat for the inlet manifold (23), o-rings (25) if present, seats (26), and balls (27).

To continue disassembly, see [Disassemble the Standard Diaphragms, page 13](#).





## Reassemble the Check Valve

1. Clean all parts and inspect for wear or damage. Replace parts as needed.
2. Reassemble in the reverse order, following all notes in the illustration. Put the inlet manifold on first. Be sure the ball checks and manifolds are assembled **exactly** as shown. The arrows (A) on the fluid covers (2) **must** point toward the outlet manifold (24).

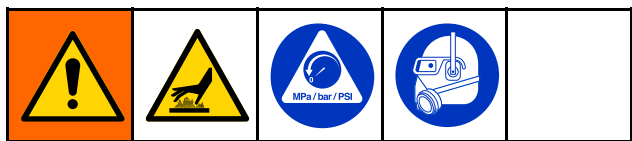
**Check valve assembly, aluminum model shown**



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-  Apply medium-strength (blue) thread locker. Torque to the value specified for your pump. See [Torque Instructions, page 21](#).
-  Arrow (A) must point toward outlet manifold
-  Not used on some models.
-  Plastic and stainless steel models include nuts (33) and washers (28).

## Standard Diaphragm Replacement

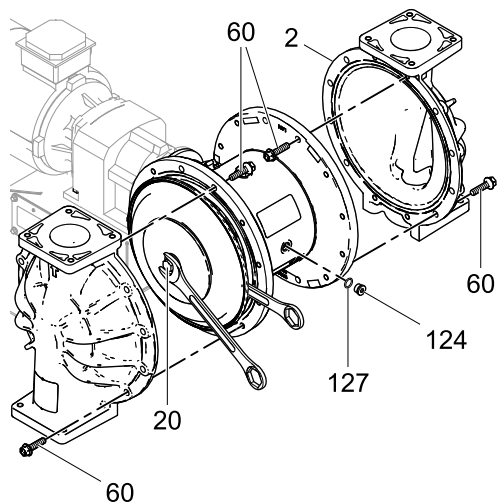


### Disassemble the Standard Diaphragms

**NOTE:** Diaphragm kits are available in a range of materials and styles. See Parts section.

1. Follow the [Pressure Relief Procedure, page 11](#). Remove power to the motor. Disconnect all hoses.
2. Remove the manifolds and disassemble the ball check valves as explained in [Check Valve Repair, page 11](#).
3. Remove the bolts (60) from the fluid covers, then pull the fluid covers off of the pump.
4. To remove the diaphragms, the piston must be moved fully to one side. If the pump is not attached to the gearbox, turn the shaft by hand to move the piston. If the pump is still attached to the gearbox, loosen the screws and remove the fan cover. Turn the fan by hand to rotate the shaft to shift the piston to one side.
5. Hold a 28 mm wrench on the wrench flats of the exposed piston shaft. Use another wrench on the shaft bolt (20) to remove it. Then remove all parts of the diaphragm assembly.

6. Rotate the drive shaft to move the piston fully to the other side. See instructions in step 4. Repeat step 5.
7. To continue with disassembly, see [Disassemble the Center Section, page 15](#).



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## Reassemble the Standard Diaphragms

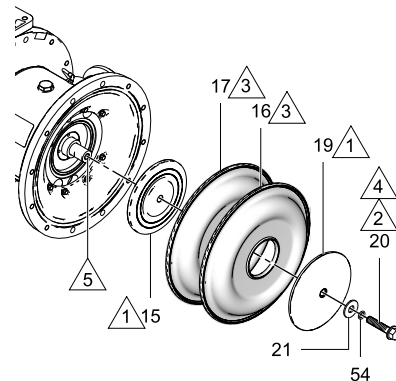
### NOTICE

After reassembly, allow the thread locker to cure for 12 hours, or per manufacturer's instructions, prior to operating the pump. Damage to the pump will occur if the diaphragm shaft bolt loosens.

**TIP:** If you are also repairing or servicing the center section (drive shaft, piston, etc.), see [Center Section Repair, page 15](#), before you put the diaphragms back on.

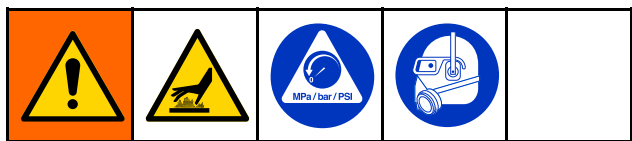
1. Clean all parts and inspect for wear or damage. Replace parts as needed. Be sure the center section is clean and dry.
2. Thoroughly clean or replace the diaphragm bolt (20). Install the o-ring (54, metal pump only) and washer (21, metal pump only).
3. Assemble the fluid side plate (19), the diaphragm (16), the backup diaphragm (17), and the air side diaphragm plate (15) on the bolt exactly as shown.
4. Clean the female threads of the piston shaft with a wire brush dipped in solvent to remove any residual thread locker. Apply thread-locking primer and allow it to dry.
5. Apply medium-strength (blue) thread locker to the threads of the bolt.
6. Hold a 28 mm wrench on the wrench flats of the piston shaft. Screw the bolt onto the shaft and torque to 150 ft-lb (203 N•m).
7. Rotate the drive shaft to move the piston fully to one side. See instructions in step 4 of [Disassemble the Standard Diaphragms, page 13](#).
8. Repeat to install the other diaphragm assembly.
9. Attach the fluid covers. The arrow on each fluid cover must point toward the outlet manifold. Apply medium-strength (blue) thread locker to the bolt threads. See [Torque Instructions, page 21](#), to tighten.
10. Reassemble the check valves and manifolds. See [Reassemble the Check Valve, page 11](#).
11. Restore motor cooling fan cover and pin (131) to their original locations.

1. Rounded side faces diaphragm.
2. Apply medium-strength (blue) thread locker to the threads.
3. AIR SIDE markings on diaphragm must face the center housing.
4. Torque to 150 ft-lb (203 N•m) at 100 rpm maximum.
5. Apply primer to the female threads. Allow to dry.



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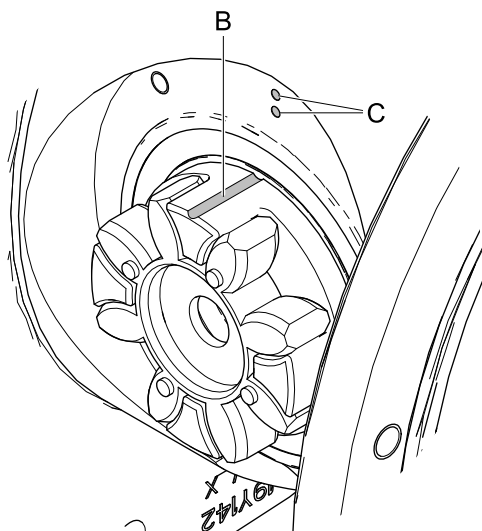
## Center Section Repair



### Disassemble the Center Section

See the illustrations in [Center Section](#), page 28.

1. Follow the [Pressure Relief Procedure](#), page 11. Remove power to the motor. Disconnect all hoses.
2. Remove the manifolds and check valve parts as directed in [Disassemble the Check Valve](#), page 11.
3. Remove the fluid covers and diaphragms as directed in [Disassemble the Standard Diaphragms](#), page 13.  
**TIP:** Clamp the gear box bracket (6 or 8) to the bench. Leave the pump connected to the motor.
4. Use a 10 mm hex wrench to remove 4 bolts (3). Pull the pump off the alignment housing (110).  
**TIP:** It may be necessary to tap the pump with a rubber mallet to disengage the coupler.
5. Use a 5/16 hex wrench to remove the plug (124). Use a 30 mm socket wrench to remove the bearing bolt (114) and the o-ring (113) from the top.
6. Turn the shaft so the groove on the shaft (B) is at the top, in line with the alignment markings (C).



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7. Use a 3/4-16 bolt to push out the drive shaft assembly (109). You can also use the bearing bolt (114), but remove the bearing (112) first. Be sure that the groove on the drive shaft remains aligned with the markings in the center section.

**NOTE:** Remove the bolt after the drive shaft is freed.

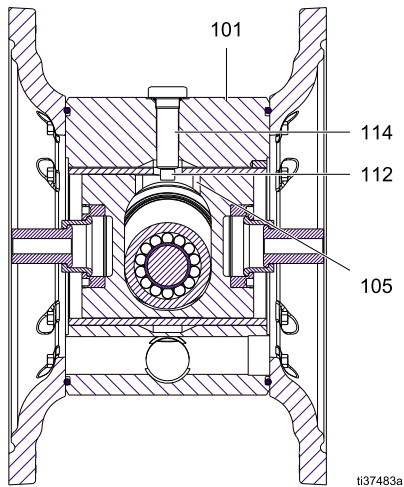
### NOTICE

Proper alignment is essential. Do not apply more than about 10 ft-lb (14 N•m) of torque. Excessive torque could damage the housing thread. If you encounter resistance, check alignment or contact your distributor.

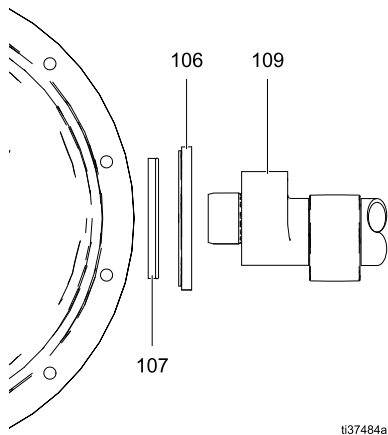
8. The shaft coupler (115) might come out with the drive shaft assembly. If not, remove from gearbox (118).
9. Remove the seal cartridge (106), the o-ring (108) and the radial seal (107) from the drive shaft assembly.
10. Slide the piston assembly (105) out of the center.
11. Only remove the alignment housing (110) if needed. Use a 10 mm hex wrench to remove 4 bolts (111). Pull the alignment housing off the gearbox (118).
12. Leave the gearbox coupler (118a) attached to the gearbox shaft (118) unless it is damaged. If you need to remove it, a bearing puller must be used.

## Reassemble the Center Section

1. Clean and dry the center housing (101), the center of the piston (105) and the drive shaft (109).
2. Inspect the piston and center section bearings for excessive wear and replace if needed. Install the piston in the center section with the slot on the top, in line with the alignment markings in the center section.
3. Install the o-ring (113) and apply medium-strength (blue) thread locker to the bearing bolt (114) and screw into the center section. Be sure that the bearing (112) is in the slot on the piston, as shown. Be sure that the piston moves freely. Torque the bolt (114) to 15–25 ft-lb (20–34 N•m).



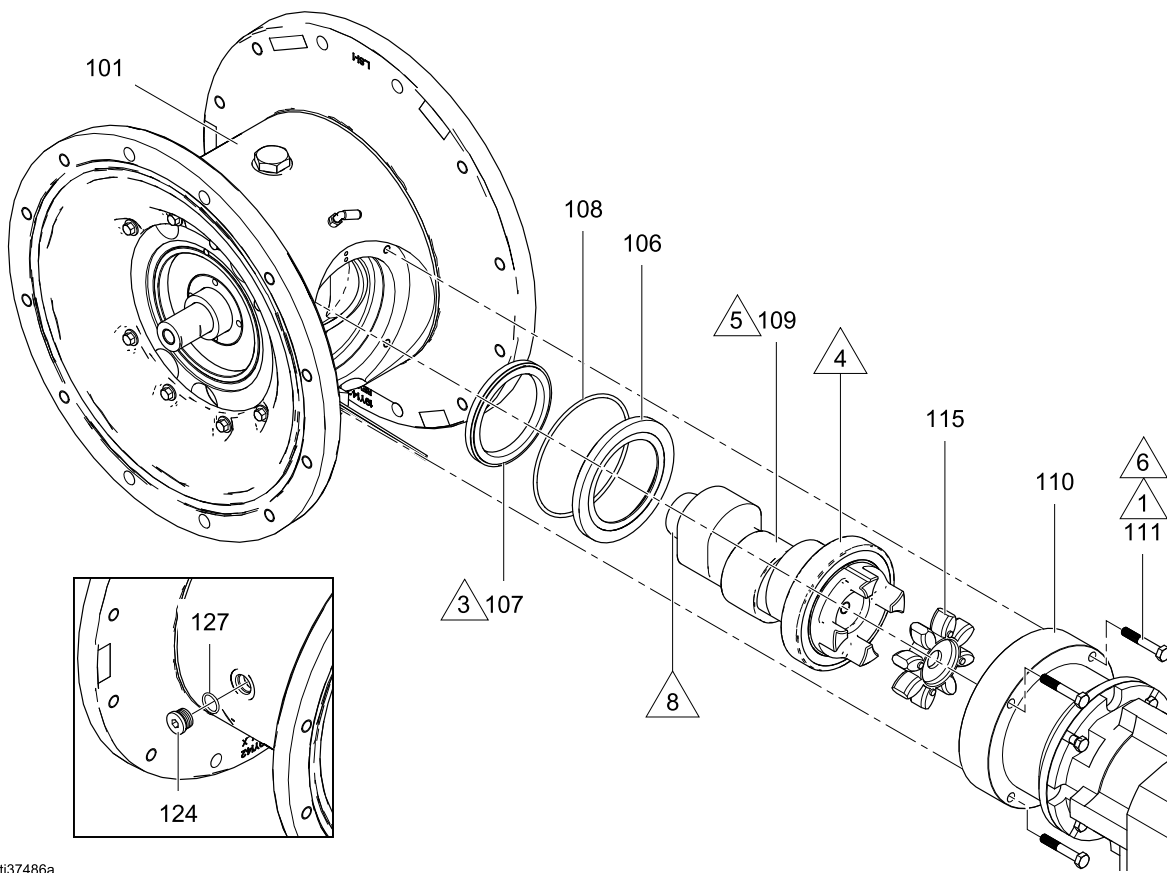
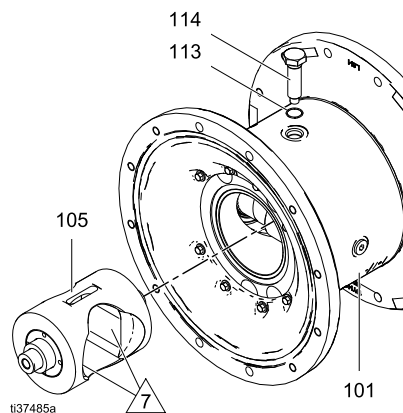
4. Be sure the sealing surface of the drive shaft (109) is clean. Install the seal cartridge (106) and the radial seal (107) on the drive shaft. The lips on the radial seal (107) must face **IN** toward the center. Inspect seal lip for damage. Replace if necessary.



5. Install o-ring (108) to the center housing (101).
6. Apply anti-seize lubricant on the mating edges of the drive shaft, as shown in the illustration on page 17.
7. Apply Loctite® Primer 7471 and Retaining Compound 641 to the bearing bore and outer race. Assemble immediately. Allow to cure for a minimum of 12 hours before running the pump.
8. Center the piston in the housing and install the drive shaft assembly (109) into the center housing (101) with the groove facing up.
9. Inspect the shaft coupler (115) for wear and replace if needed. Install on the drive shaft.
10. If removed, install the alignment housing to the center section. Apply medium-strength (blue) thread locker and install the housing screws (111). Torque to 130–160 in-lb (15–18 N•m).
11. If removed, install the gearbox coupler (4) on the gearbox shaft. Use an M12 x 30 bolt and a large washer inserted into the hole in the shaft to press the coupler into position. The coupler is in proper position when it is flush with the end of the shaft.
12. Be sure the gearbox coupler (4) is aligned properly. Turn by hand if needed. Connect the pump to the gearbox assembly, engaging the couplers.
13. Apply medium-strength (blue) thread locker and install the gearbox screws (3). Torque to 130–160 in-lb (15–18 N•m).
14. Be sure o-ring (127) is on the plug (124). Install the plug and torque to 15–25 ft-lb (20–34 N•m).
15. See [Reassemble the Standard Diaphragms, page 14](#), and [Reassemble the Check Valve, page 11](#).



- 1 Apply medium-strength (blue) thread locker to threads.
- 2 Torque to 15–25 ft-lb (20–34 N•m).
- 3 Lips must face **IN** toward the center.
- 4 Apply Loctite® Primer 7471 and Retaining Compound 641 to the bearing bore and outer race. Assemble immediately. Allow to cure for a minimum of 12 hours before running the pump.
- 5 Install the drive shaft assembly with the groove facing up.
- 6 Tighten screws in a crisscross pattern, 5 turns at a time, to engage the coupler evenly. Torque to 130–160 in-lb (15–18 N•m).
- 7 Apply lubricant to inner mating surface.
- 8 Apply anti-seize lubricant liberally on this radial surface of the drive shaft assembly.



## Disconnect the Motor and Gearbox

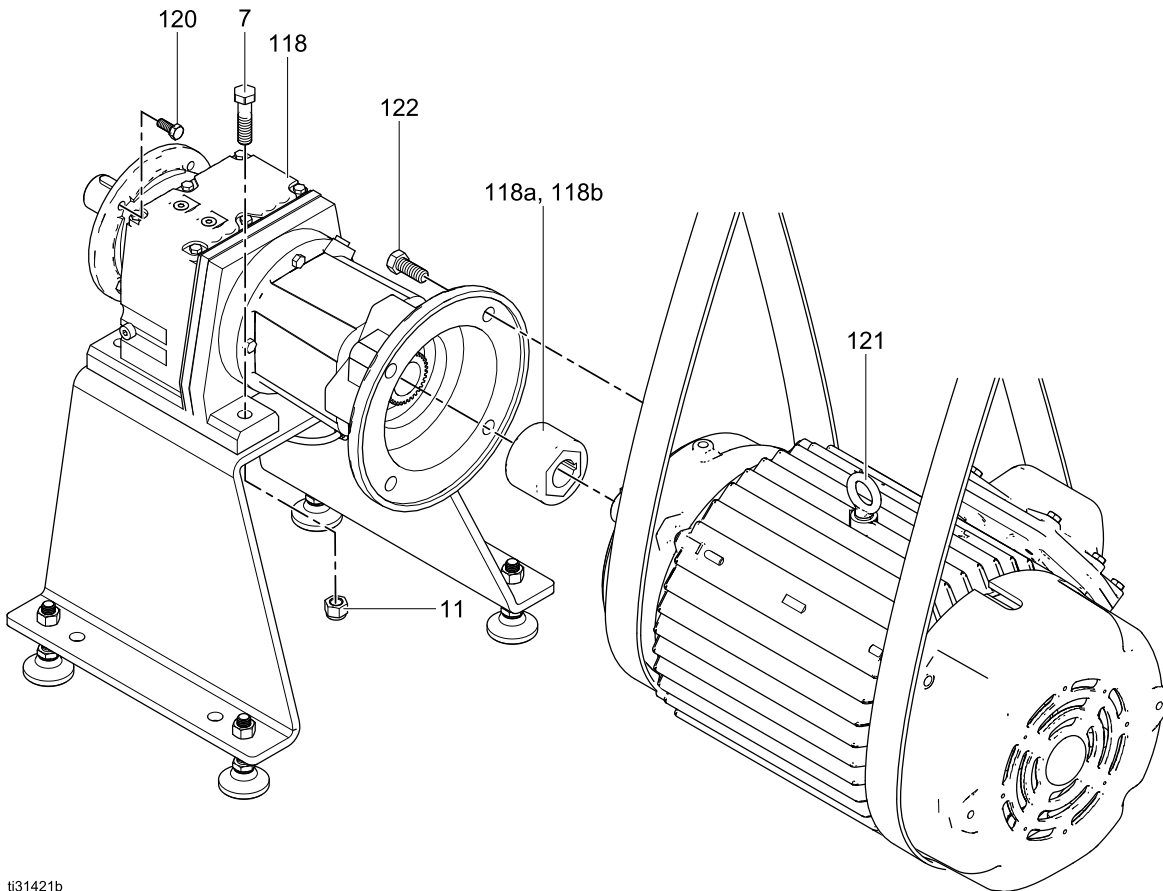
**NOTE:** Normally, the motor remains connected to the gearbox. Disconnect the motor only if you suspect that the motor or gearbox must be replaced.

**TIP:** Clamp the gearbox bracket to the bench.

Start at step 1 for ATEX or Flameproof motors. Standard AC motors (04A, 05A, or 06A) are of one piece with the gearbox, so begin with step 3.

**NOTE:** Use a hoist and sling to remove motor weight from the gearbox during removal.

1. Use a 3/4 in. socket wrench to remove 4 screws (122).
2. Pull the motor (121) straight off of the gearbox (118).
3. Use a 3/4 in. socket wrench to remove 4 bolts (7) and nuts (11, if present). Lift the gear box off of the bracket. **NOTE:** If you have an AC motor with gearbox, lift the whole unit off of the bracket.



ti31421b

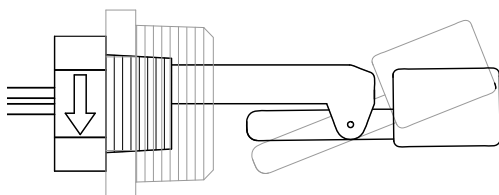
## Leak Sensor Repair

The leak sensor can be replaced or re-positioned. When properly positioned, the two arrows imprinted on two of the flat surfaces of the leak sensor hex head are vertical and pointing down.

### Leak Sensor Testing

Testing the continuity of the leak sensor is possible to ensure proper operation. If continuity testing indicates that the leak sensor is not functional, a replacement kit, 25B435, can be ordered separately.

1. Follow the [Pressure Relief Procedure, page 11](#). Remove power to the motor and VFD.
2. To test the leak sensor without removing from the pump:
  - a. Note the connection locations of the leak sensor wires within the VFD or other monitoring device, then disconnect the leak sensor wires.
  - b. Use an ohmmeter attached to the leak sensor leads to test the conductivity of the leak sensor. Continuity is affirmed by a reading of 0-5 ohms.
  - c. Loosen the leak sensor bushing 1/2 turn (leak sensor arrows point up).
  - d. Use an ohmmeter attached to the leak sensor leads to test the conductivity of the leak sensor. An open circuit should be indicated.






ti33058a

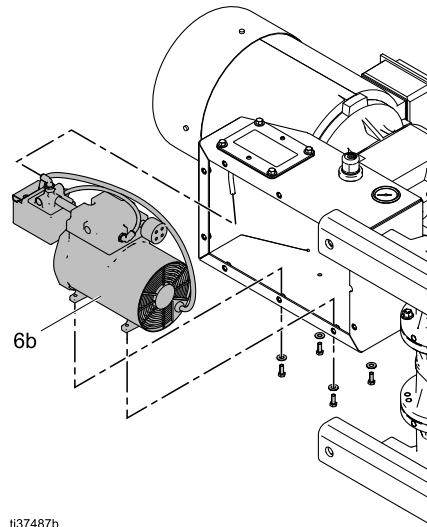
Normal operation position shown by dark float. Lighter float line indicates the open circuit position.

- e. If the continuity test result indicates that the leak sensor is not functioning properly, proceed to step 3. Otherwise, tighten the bushing to its original position so that the arrows on the leak sensor point down. Attach the removed leak sensor wires to the point where they were disconnected from the VFD or other monitoring device.
  - f. Apply air pressure to the pump and use a soapy solution around the bushing to ensure an air tight seal. If air bubbles appear, it will be necessary to return to the steps above for air pressure relief and removing the bushing from the pump. Apply new thread sealer on the bushing and install in the pump so that the leak sensor is properly positioned. Repeat this step to test for air leakage around the bushing.
3. Remove and replace the leak sensor at the pump:
  - a. Note the connection locations of the leak sensor wires within the VFD or other monitoring device, then disconnect the leak sensor wires.
  - b. Remove the leak sensor and bushing from the pump center section.
  - c. Apply thread tape or paste to the bushing threads and screw finger tight into the pump.
  - d. To ensure a watertight seal, apply Loctite® 425 Assure™ threadlocker supplied with the leak sensor kit to the leak sensor threads and screw the leak sensor into the bushing.
  - e. Verify that the leak sensor was properly oriented in the pump so that the arrows imprinted on the leak sensor hex head are vertical positioned with the arrows pointing down. It may be necessary to further tighten both the bushing and leak sensor to achieve proper positioning.
  - f. Use an ohmmeter attached to the leak sensor leads to test the conductivity of the leak sensor. Continuity is affirmed by a reading of 0-5 ohms. Attach the leak sensor wires to the VFD or other monitoring device.
  - g. Apply air pressure to the pump and use a soapy solution around the bushing to ensure an air tight seal. If air bubbles appear, it will be necessary to return to the steps above for air pressure relief and removing the bushing from the pump. Apply new thread sealer on the bushing and install in the pump so that the leak sensor is properly positioned. Repeat this step to test for air leakage around the bushing.

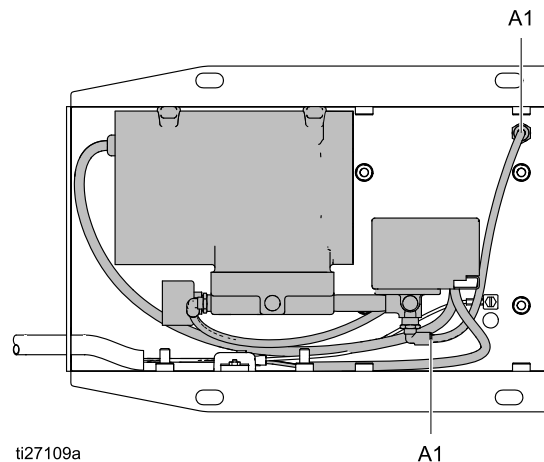
## Replace the Compressor

				
<p>To avoid injury from fire, explosion, or electric shock, all electrical wiring must be done by a qualified electrician and comply with all local codes and regulations.</p>				

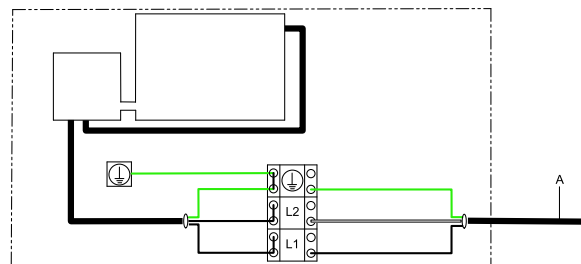
1. Follow the [Pressure Relief Procedure](#), page 11.
2. Remove electrical power to the pump.
3. Remove the 8 bolts holding the pump to the mounting surface.
4. Tip the pump on its side to provide access to the compressor box.
5. Remove riser bracket (8).
6. Remove the air line (A1) from the compressor. Disconnect the compressor wires at the terminal block (L1, L2, and ground). Remove the four bolts, and carefully pull the compressor out of the box.
7. Use the four bolts to install the new compressor (6b). Connect the air line from A1 to A1, as shown.
8. Connect the wires from the new compressor to the terminal block, as shown.
9. Replace riser bracket.
10. Return the pump to its mounting location. Secure it with the 8 bolts.
11. Return power to the pump.



ti37487b



ti27109a



# 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 screws with new ones or apply medium-strength (blue) thread locker to the threads.

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

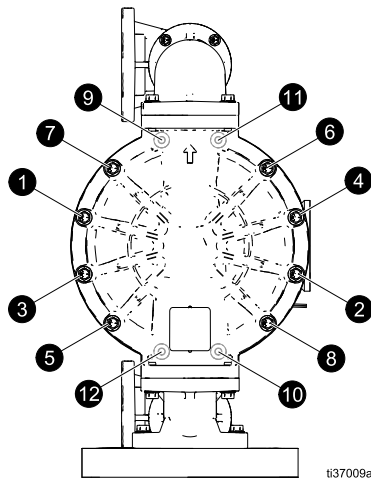
1. Start all fluid cover screws a few turns. Then, turn down each screw just until head contacts cover.
2. Turn each screw by 1/2 turn or less working in a crisscross pattern to specified torque.
3. Repeat for manifolds.

## Torque sequence

### Aluminum Pumps

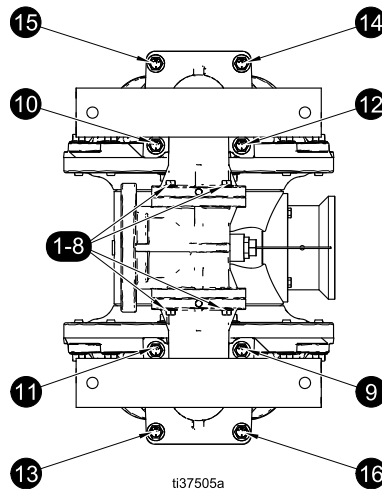
Torque bolts to 55-60 ft-lb (74.6–81.3 N•m)

#### 1. Left/Right Fluid Covers



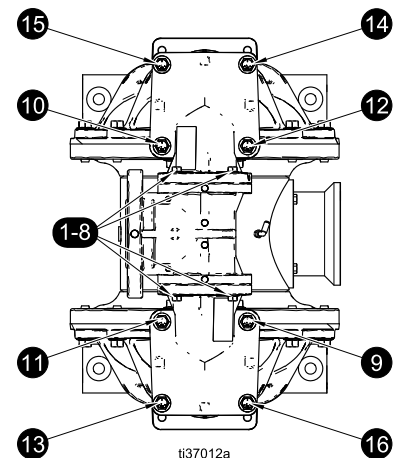
SIDE VIEW

#### 2. Inlet Manifold



BOTTOM VIEW

#### 3. Outlet Manifold

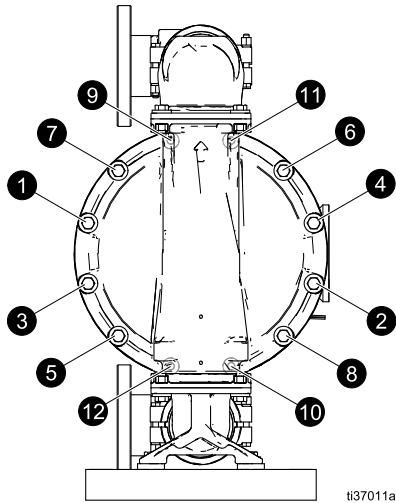


TOP VIEW

## Stainless Steel Pumps

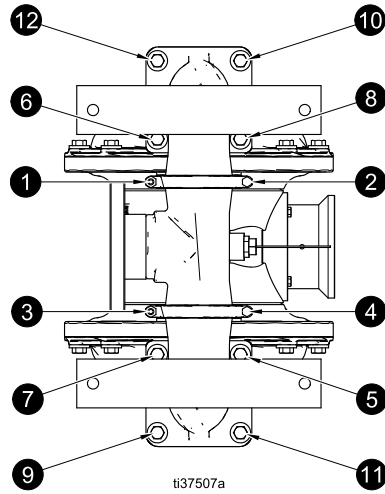
Torque bolts to 40-45 ft-lb (54.2–61.2 N•m)

### 1. Left/Right Fluid Covers



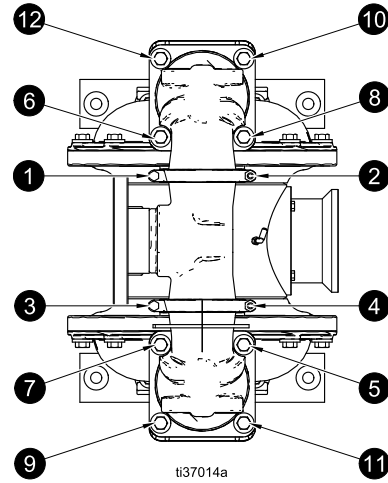
SIDE VIEW

### 2. Inlet Manifold



BOTTOM VIEW

### 3. Outlet Manifold

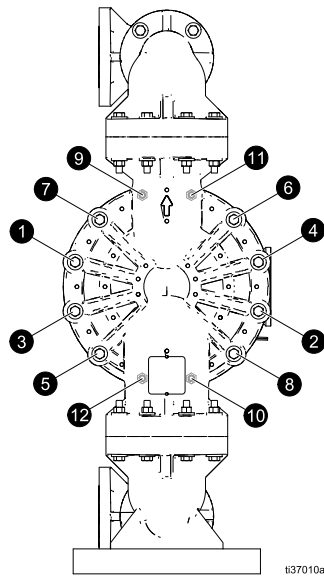


TOP VIEW

## Plastic Pumps

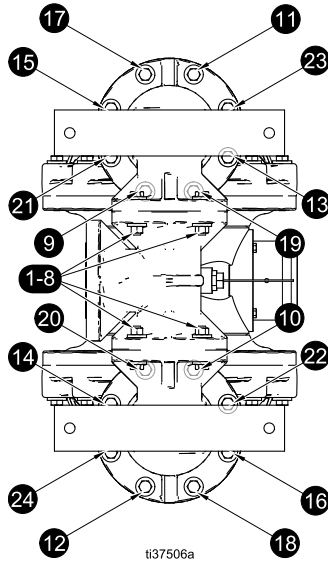
Torque bolts to 40-45 ft-lb (54.2–61.2 N•m)

### 1. Left/Right Fluid Covers



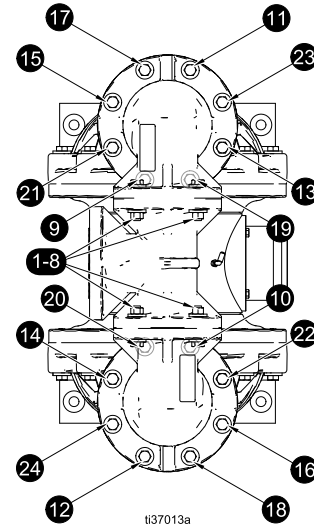
SIDE VIEW

### 2. Inlet Manifold



BOTTOM VIEW

### 3. Outlet Manifold

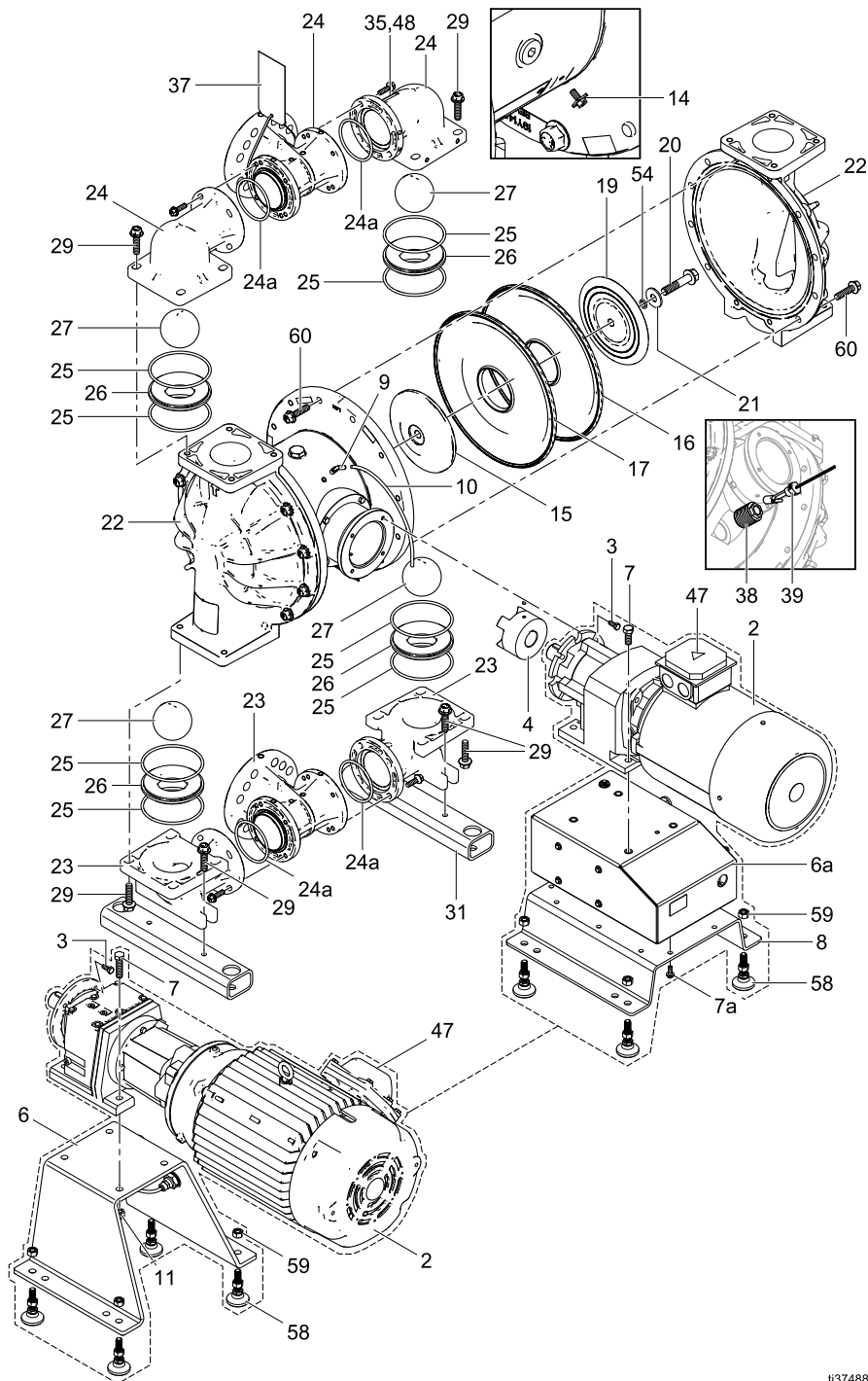


TOP VIEW



# Parts

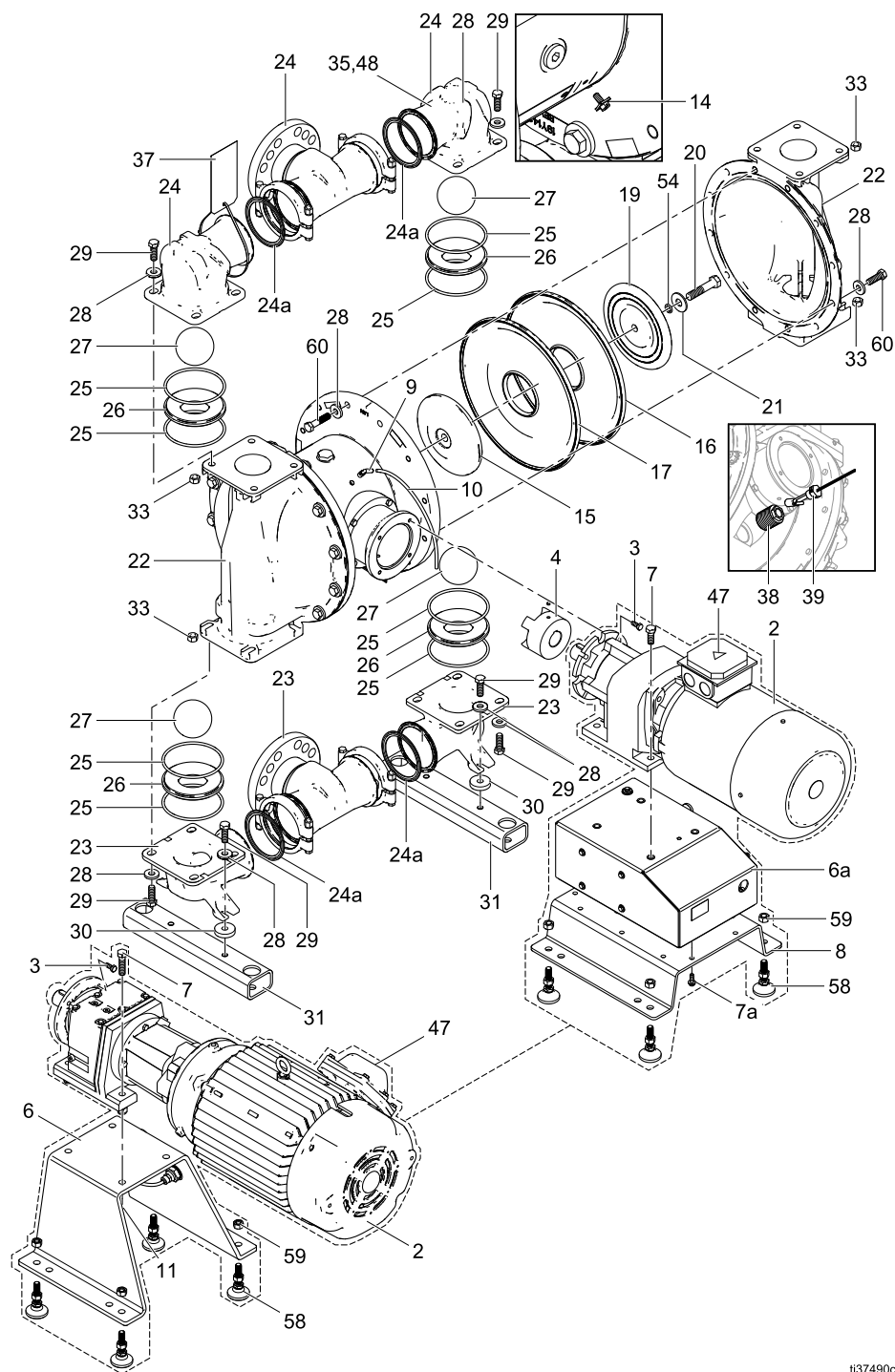
Aluminum pump shown



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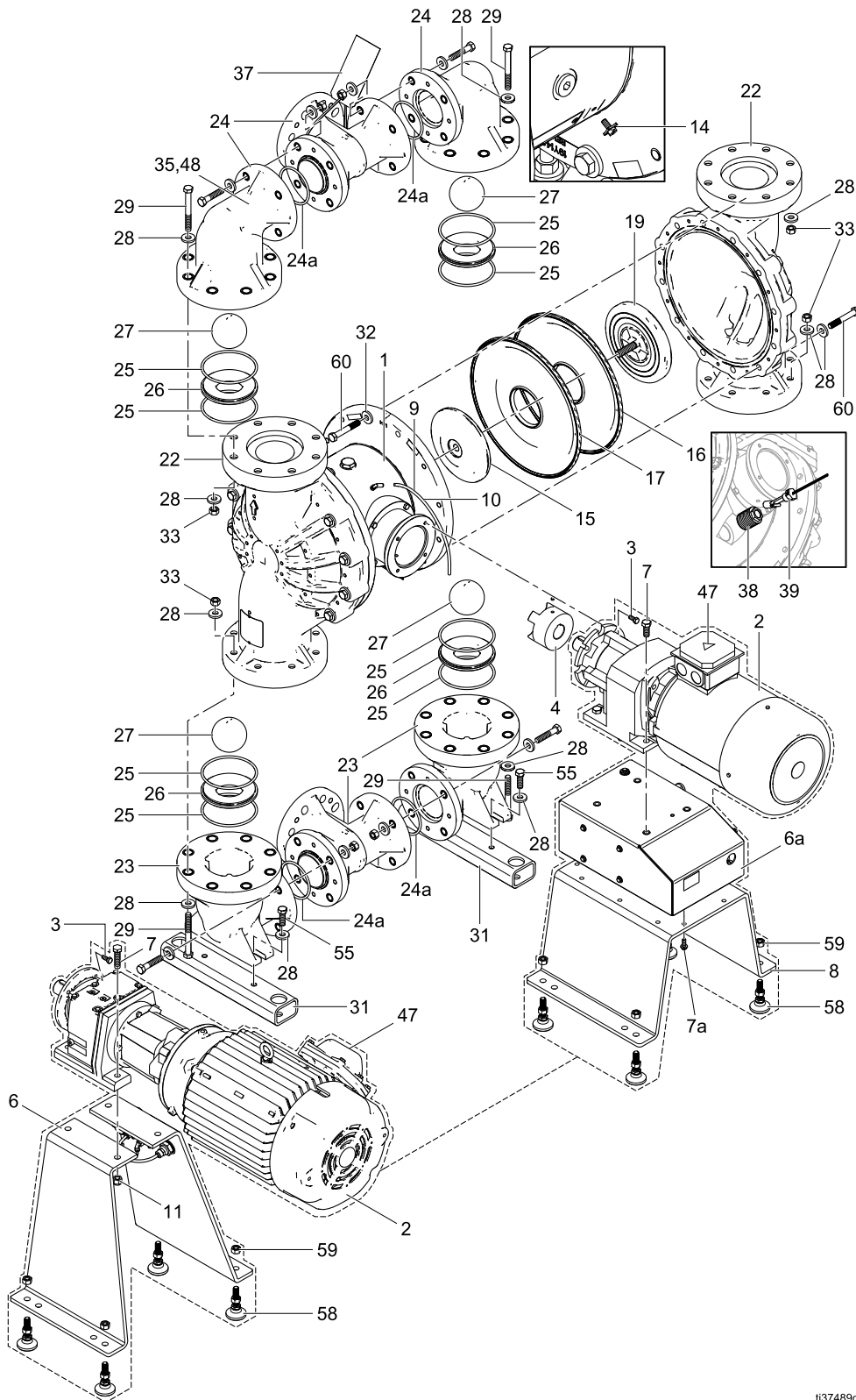
Stainless steel pump shown



ti37490c

## Parts

Plastic pump shown



ti37489c

## 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	— — —	MODULE, drive; <i>See Center Section</i>	1
2	25B403 25B404 25B407	GEARMOTOR assembly Standard gearmotor (04A, 06A) ATEX motor (04C) Flameproof motor (04D)	
3	— — —	SCREW, cap, hex head; <i>included with Ref. 110</i>	4
4	17S683	COUPLER, jaw	1
6	20A783 20A784	AIR CONTROL, kit, no compressor metal pumps poly pump	1
6a	25B431 25B432	COMPRESSOR, assembly; <i>includes Ref. 6b</i> 120 Volt 240 Volt	1
6b	24Y544 24Y545	COMPRESSOR, <i>not shown; included with Ref. 6a</i> 120 Volt 240 Volt	1
7	100096	SCREW, cap, hex head, 1/2–13 x 2; <i>included with Ref. 6 and 6a</i>	4
7a	15Y149	BOLT, M8 x 1.25, 20mm; <i>included with Ref. 6a and 8</i>	10
8	20A786 20A787	BRACKET, riser; <i>used for models with a compressor</i> for aluminum or stainless steel fluid section for poly fluid section	1
9	20A788	FITTING, elbow	1
10	054172	TUBE, 1/4 O.D. x 1.2 ft; <i>included with Ref. 9</i>	1
11	EQ1475	NUT; <i>included with Ref. 6</i>	4
14	116343	SCREW, ground	1
15	2005717	PLATE, air side	2
16	— — —	DIAPHRAGM, kit; <i>See Diaphragms</i>	1 kit
17	— — —	DIAPHRAGM, backup; <i>included with Ref. 16</i>	2
19	24K906 24K908 24K907	PLATE, fluid side; Aluminum fluid section; <i>includes Ref. 20, 21, 54</i> Stainless steel fluid section; <i>includes Ref. 20, 21, 54</i> Poly; <i>includes Ref. 20</i>	2
20	— — —	BOLT, shaft; <i>included with Ref. 19, if applicable</i>	2
21	— — —	WASHER; <i>included with Ref. 19, if applicable</i>	2
22	— — —	COVER, fluid; <i>See Fluid Covers and Manifolds</i>	2
23	— — —	MANIFOLD, inlet; <i>See Fluid Covers and Manifolds</i>	1

Ref.	Part/Kit	Description	Qty.
24	— — —	MANIFOLD, outlet; <i>See Fluid Covers and Manifolds</i>	1
24a	— — —	O-RING, manifold center; <i>See Manifold Seals</i>	4
25	— — —	O-RING, manifold, (not used on some models); <i>See Manifold Seals</i>  Used with the following seats: Geolast seats Polypropylene seats PVDF seats Santoprene seats 316 SST seats	8
26	— — —	SEAT; <i>See Seats and Check Balls</i>	4
27	— — —	BALLS, <i>See Seats and Check Balls</i>	4
28	16F161	WASHER	100
29	— — —	FASTENERS; manifold to fluid cover	
	24K956	Aluminum fluid section	44
	24K883	Polypropylene fluid section	32
	24K896	Stainless Steel fluid section	36
30	19Y209	SPACER	4
31	— — —	BRACKET, mounting, foot	2
	24K973	Aluminum fluid section	
	24K972	Stainless Steel fluid section	
		Polypropylene fluid section	
33	16F160	NUT, hex; <i>included with Ref. 29</i>	32
35▲	188621	LABEL, safety	1
37▲	16F337	LABEL, retorque	1
38	17X547	BUSHING; <i>included with Ref. 39</i>	1
39	25B435	SENSOR, leak, float	1
47▲	19Y336	LABEL, warning, high voltage	1
48▲	198382	LABEL, warning, multilingual	1
54	— — —	O-RING, for diaphragm shaft bolt; <i>included with Ref. 19, if applicable</i>	2
57	19Y236	BOLT, hex, 2.25 lg	8
58	20A797	FOOT, leveling	4
59	100321	NUT, 1/2–13; <i>included with Ref. 58</i>	4
60	— — —	BOLT, fluid cover; <i>See Fluid Covers and Manifolds</i>	24
	24K872	Aluminum fluid section	
	24K875	Stainless Steel fluid section	
	24K877	Polypropylene fluid section	

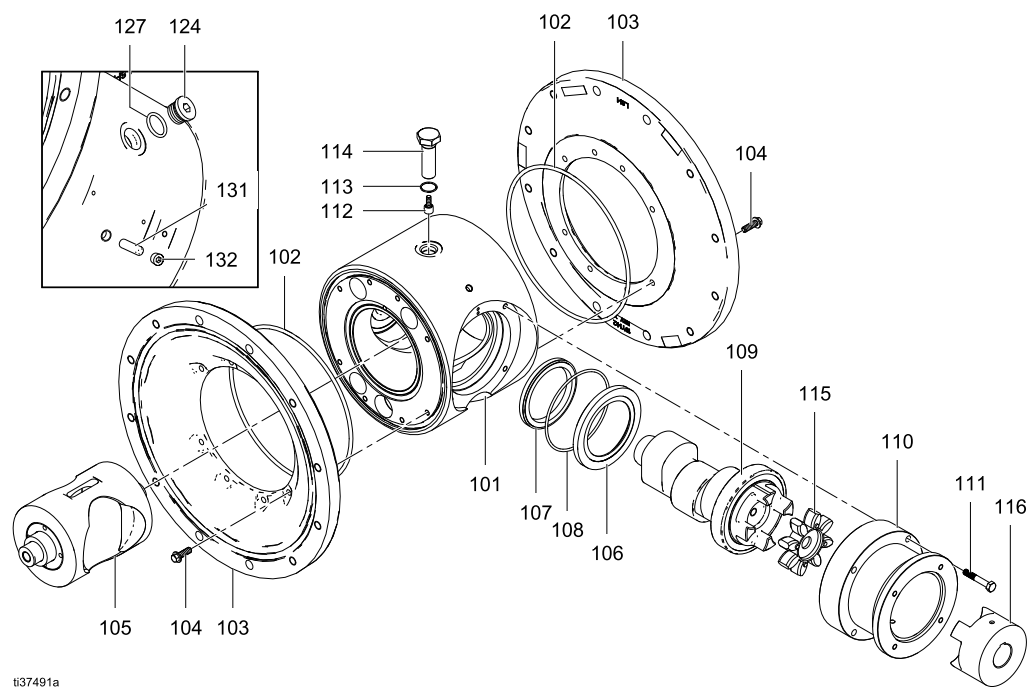
— — — *Not sold separately.*

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

Center Section

Sample Configuration Number

Pump Model	Wetted Section Material	Drive	Center Section Material	Gear Box and Motor	Motor	Fluid Covers and Manifolds	Seats	Balls	Diaphragms	Manifold O-Rings
3300	A	E	A	04	A	A1	TP	TP	TP	- -



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Ref	Part	Description	Qty
101	25B415	HOUSING, center, assembly	1
102	17N208	O-RING, air cover; <i>included with ref 103</i>	2
103	25R625	AIR COVER	2
104	115643	BOLT, air cover; <i>included with ref 103</i>	16
105	25T868	PISTON, assembly	1
106†	— — —	CARTRIDGE, seal	1
107†	— — —	SEAL, radial	1
108†	— — —	O-RING, Size 153, Buna-N	1
109	25B414	SHAFT, drive, assembly; <i>includes o-ring (Ref. 108), cartridge (Ref. 106) and seal (Ref. 107)</i>	1
110	25B417	HOUSING, alignment, assembly; <i>includes screws (Ref. 3 and 111)</i> Aluminum (Axx)	1
111	— — —	SCREW, socket head, M8 x 50 mm; <i>included with Ref. 110</i>	4
112	— — —	BEARING, cam follower. <i>included with Ref. 114</i>	1
113	— — —	O-RING, Size 019, Fluoroelastomer; <i>included with Ref. 114</i>	1
114	25B419	BOLT, bearing; <i>includes Refs. 112 and 113</i> for aluminum center housing	1

Ref	Part	Description	Qty
115	25B413	COUPLER, shaft	1
116	17S683	COUPLER, gearbox; <i>includes mounting hardware</i>	1
118	17Y810 17N756	GEARBOX IEC 132 for use with motor C NEMA 213/215 TC for use with motor D	1
118a	— — —	COUPLER; <i>included with Ref 118</i>	1
118b	— — —	KEY; <i>included with Ref 118</i>	1
120	100424	SCREW, cap, hex head, M8 x 20 mm	4
121	25B403 25B407 25B404	MOTOR gearmotor for use with motor A motor, flameproof for use with motor D motor, ATEX for use with motor C	1
124	24Y534	PLUG, front access <i>includes ref 127</i>	1
127	— — —	O-RING <i>included with Ref 124</i>	1
131	— — —	PIN, stop, 5/16 x 1-1/4 in.	1
132	— — —	PLUG; 1/8-27 npt	1


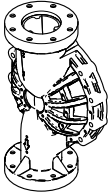

— — — *Not sold separately.*

† *Included in Shaft Seal Repair Kit 25B420.*

## Fluid Covers and Manifolds

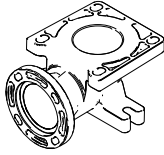
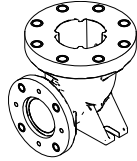
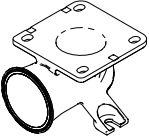
Sample Configuration Number

Pump Model	Wetted Section Material	Drive	Center Section Material	Gear Box and Motor	Motor	Fluid Covers and Manifolds	Seats	Balls	Diaphragms	Manifold O-Rings
3300	A	E	A	04	A	A1	TP	TP	TP	- -

Fluid Cover Kits					
A1, A2	24K871	P1	24K873	S1, S2, S51	24K876
					

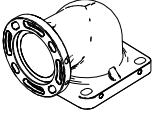
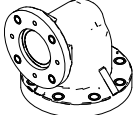
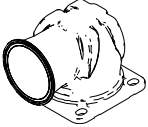
Kits include:

- 1 fluid cover (22)

Inlet Manifold Elbow Kits					
A1, A2	24K886	P1	24K889	S1, S2, S51	24K893
					

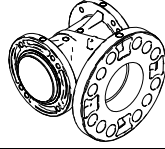
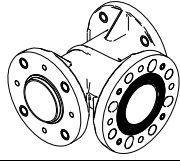

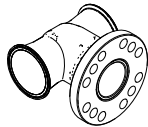
Kits include:

- 1 inlet manifold elbow

Outlet Manifold Elbow Kits					
A1, A2	24K885	P1	24K888	S1, S2, S51	24K892
					

Kits include:

- 1 outlet manifold elbow

Manifold Center Kits		
A1	24K884	
A2	24K970	
P1	24K890	
S1	24K894	
S2	24K969	
S51	17N199	

Kits include:

- 1 manifold center (23, 24)

## Sample Configuration Number

Pump Model	Wetted Section Material	Drive	Center Section Material	Gear Box and Motor	Motor	Fluid Covers and Manifolds	Seats	Balls	Diaphragms	Manifold O-Rings
3300	A	E	A	04	A	A1	TP	TP	TP	- -

Manifold Center Fastener Kits	
A1, A2	24K887
P1	24K895
S1, S2, S51	24K891

Aluminum kit includes:

- 8 bolts, hex head with flange base, 3/8-16 x 1.25 in., zinc-plated carbon steel

Polypropylene kit includes:

- 8 bolts, hex head, 1/2-13 x 2.5 in., stainless steel
- 16 washers
- 8 nuts

Stainless steel kit includes:

- 2 clamps, 4 in., tri-clamp
- 2 gaskets, 4 in., PTFE

Manifold to Fluid Cover Fastener Kits	
A1, A2	24K956
P1	24K896
S1, S2, S51	24K883

Aluminum kit includes:

- 8 bolts (29) , hex head with flange base, 1/2-13 x 1.25 in., zinc-plated carbon steel

Polypropylene kit includes:

- 16 bolts (29), hex head, 1/2-13 x 4 in., stainless steel
- 32 washers (28), 1/2 in., stainless steel
- 16 nuts (33), 1/2 in., stainless steel

Stainless steel kit includes:

- 8 bolts (29), hex head, 1/2-13 x 1.5 in., stainless steel
- 8 washers (28), 1/2 in., stainless steel
- 8 nuts (33), 1/2 in., stainless steel

Fluid Cover to Air Cover Fastener Kits	
A1, A2	24K872
P1	24K875
S1, S2, S51	24K877

Aluminum kit includes:

- 12 bolts (60), hex head with flange, 1/2-13 x 2 in., zinc-coated carbon steel

Polypropylene kit includes:

- 8 bolts (60), hex head, 1/2-13 x 3.25 in., stainless steel
- 4 bolts (60), hex head, 1/2-13 x 2.25 in., stainless steel
- 12 washers (28), stainless steel

Stainless steel kit includes:

- 8 bolts (60), hex head, 1/2-13 x 1.5 in., stainless steel
- 4 bolts (60), hex head, 1/2-13 x 2.25 in., stainless steel
- 12 washers (28), stainless steel

## Seats and Check Balls

*Sample Configuration Number*

Pump Model	Wetted Section Material	Drive	Center Section Material	Gear Box and Motor	Motor	Fluid Covers and Manifolds	Seats	Balls	Diaphragms	Manifold O-Rings
3300	A	E	A	04	A	A1	TP	TP	TP	- -

Seat Kits	
AC	24K928*
AL	24K929*
FK	24K936
GE	24K931*
PP	24K933*
SP	24K934*
SS	24K935*
TP	24K932

Kits include:

- 4 seats, material indicated in table.
- 8 Buna o-rings, when required\*

\* Other o-ring materials available on page 34.

Ball Kits	
AC	24K937
CR	24K941
CW	24K942
FK	24K945
GE	24K939
PT	24K943
SP	24K944
TP	24K940

Kits include:

- 4 balls, material indicated in table.



## Diaphragms

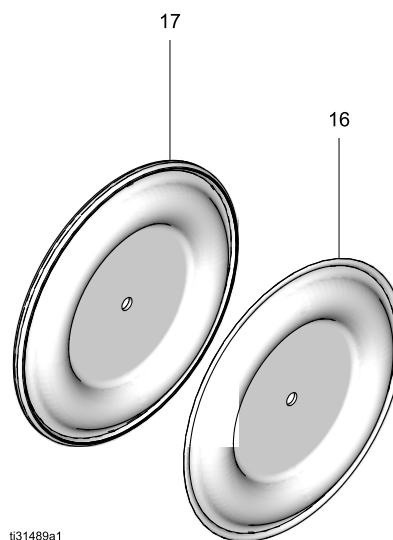
*Sample Configuration Number*

Pump Model	Wetted Section Material	Drive	Center Section Material	Gear Box and Motor	Motor	Fluid Covers and Manifolds	Seats	Balls	Diaphragms	Manifold O-Rings
3300	A	E	A	04	A	A1	TP	TP	TP	--

Bolt-Through Diaphragm Kits	
GE	25R077
PT	25R076
SP	25R078
TP	25R079

Kits include:

- 2 diaphragms (16)
- 2 diaphragm backers (17)
- 1 packet anaerobic adhesive



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## Manifold Seals

*Sample Configuration Number*

Pump Model	Wetted Section Material	Drive	Center Section Material	Gear Box and Motor	Motor	Fluid Covers and Manifolds	Seats	Balls	Diaphragms	Manifold O-Rings
3300	A	E	A	04	A	A1	PT	PT	PT	<b>PT</b>

Manifold Center O-Ring Kits		
	<b>A1, A2, P1</b> Pumps	<b>S1, S2, S51</b> Pumps
<b>BN</b>	24K880	— — —
<b>FK</b>	24K881	— — —
<b>PT</b>	24K879	24K882

**A1, A2, P1** kits include:

- 4 o-rings (24a)
- 1 packet of grease

**S1, S2, S51** kits include:

- 4 o-rings (24a)

O-Ring Kits	
<b>BN</b>	24K909
<b>FK</b>	24K926
<b>PT</b>	24K927

Kits include:

- 8 o-rings (25); not used on models with Buna-N, FKM, or TPE seats.

## Kits and Accessories

### Center Section Repair Tool Kit 25B434

Includes tools needed to remove the bearing from the center section.

### Bearing Puller Kit 17J718

Includes an interchangeable bearing puller set.


### Leveling Feet Kit 20A797

Includes 4 leveling feet (58) and 8 nuts (59).

# Technical Data

Husky Electric Double Diaphragm Pump		
	US	Metric
Maximum fluid working pressure	80 psi	0.55 MPa, 5.5 bar
Air pressure operating range	20 to 80 psi	0.14 to 0.55 MPa, 1.4 to 5.5 bar
Air inlet size	3/8 in. npt(f)	
Air Consumption		
120V Compressor	< 0.8 cfm	< 22.1 lpm
240V Compressor	< 0.7 cfm	< 19.5 lpm
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: 4.8 m
Maximum size pumpable solids	1/2 in.	12.7 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
Fluid displacement per cycle (free-flow)	1.2 gallons	4.45 liters
Maximum free-flow delivery (90 Hz)	220 gpm	830 lpm
Maximum pump speed (90 Hz)	220 cpm	
Fluid Inlet and Outlet Size		
Polypropylene	3 in. ANSI/DIN flange	
Aluminum, Stainless Steel	3 in npt(f) or 3 in bspt	
Electric Motor		
AC, Standard CE (04A, 06A)		
Power	7.5 HP	5.5 kW
Number of Motor Poles	4-Pole	
Speed	1800 rpm (60 Hz) or 1500 rpm (50 Hz)	
Constant Torque	6:1	
Gear Ratio	11.25	
Voltage	3-phase 230V / 3-Phase 460V	
Maximum Amperage Load	19.5 A (230V) / 9.75 A (460V)	
IP Rating	IP55	
AC, ATEX (04C)		
Power	7.5 HP	5.5 kW
Number of Motor Poles	4-Pole	
Speed	1800 rpm (60 Hz) or 1500 rpm (50 Hz)	
Constant Torque	6:1	
Gear Ratio	11.88	
Voltage	3-phase 240V / 3-Phase 460V	
IP Rating	IP56	
AC, Explosionproof (04D)		
Power	7.5 Hp	5.5 kW
Number of Motor Poles	4-Pole	

## Technical Data

Speed	1800 rpm (60 Hz) or 1500 rpm (50 Hz)
Constant Torque	6:1
Gear Ratio	11.88
Voltage	3-phase 230V / 3-Phase 460V
IP Rating	IP54
Leak Sensor	
Contact Ratings:	
State	Normally closed
Voltage	240V Max (AC/DC)
Current	0.28 A max at 120 VAC 0.14 A max at 240 VAC 0.28 A max at 24 VDC 0.07 A max at 120 VDC
Power	30 W max
Ambient Temperature	-20° to 40°C (-4° to 104°F)
Ex Ratings:	
Classification: "simple apparatus" in accordance with UL/EN/IEC 60079-11, clause 5.7	
Class I, Group D, Class II, Group F&G, Temp Code T4	
 II 2 G Ex ib IIC T4	
Parameters	$U_i = 24 \text{ V}$ $I_i = 280 \text{ mA}$ $P_i = 1.3 \text{ W}$ $C_i = 13.2 \text{ pF}$ $L_i = 4.98 \text{ } \mu\text{H}$
Noise Data	
Sound Power (measured per ISO-9614-2)	
at 90 psi fluid pressure and 80 cpm	84 dBa
at 60 psi fluid pressure and 160 cpm (full flow)	92 dBa
Sound Pressure [tested 3.28 ft (1 m) from equipment]	
at 90 psi fluid pressure and 80 cpm	74 dBa
at 60 psi fluid pressure and 160 cpm (full flow)	82 dBa
Wetted Parts	
Wetted parts include material(s) chosen for seat, ball, and diaphragm options, <b>plus the pump's material of construction: Aluminum, Polypropylene, or Stainless Steel</b>	
Non-wetted parts	
Non-wetted parts include aluminum, PTFE, stainless steel, polypropylene	

Component/Model	U.S.	Metric
Compressor	28 lb	13 kg

### Variable Frequency Drives

Model	Hp/kW	Input Voltage Range	Nominal Output Voltage †
25B448	7.5/5.5	170–264 Vac, 3 phase	208–240 Vac, 3 phase
25B449	7.5/5.5	340–528 Vac, 3 phase	400–480 Vac, 3 phase

† Output voltage is dependent on input voltage.

## Weights

Pump Material		Motor/Gearbox							
Fluid Section	Center Section	Standard AC		ATEX AC		Flame-proof AC		No Gear-motor	
		04A		04C		04D		94G	
		lb	kg	lb	kg	lb	kg	lb	kg
Aluminum	Aluminum	280	127	396	179	437	198	138	62
Polypropylene	Aluminum	483	219	387	175	428	194	129	58
Stainless Steel	Aluminum	547	248	458	208	499	226	200	90

## Fluid Temperature Range

### NOTICE

Temperature limits are based on mechanical stress only. Certain chemicals will further limit the fluid 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 Cast Iron, or Stainless Steel Pumps		Polypropylene or Conductive Polypropylene Pumps		PVDF Pumps	
	Fahrenheit	Celsius	Fahrenheit	Celsius	Fahrenheit	Celsius
Acetal (AC)	10° to 180°F	-12° to 82°C	32° to 150°F	0° to 66°C	10° to 180°F	-12° to 82°C
Buna-N (BN)	10° to 180°F	-12° to 82°C	32° to 150°F	0° to 66°C	10° to 180°F	-12° to 82°C
FKM Fluoroelastomer (FK)*	-40° to 275°F	-40° to 135°C	32° to 150°F	0° to 66°C	10° to 225°F	-12° to 107°C
Geolast® (GE)	-40° to 150°F	-40° to 66°C	32° to 150°F	0° to 66°C	10° to 150°F	-12° to 66°C
Polychloroprene check balls (CR or CW)	0° to 180°F	-18° to 82°C	32° to 150°F	0° to 66°C	10° to 180°F	-12° to 82°C
Polypropylene (PP)	32° to 150°F	0° to 66°C	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	40° to 220°F	4° to 104°C
Santoprene® check balls (SP)	-40° to 180°F	-40° to 82°C	32° to 150°F	0° to 66°C	10° to 225°F	-12° to 107°C
TPE (TP)	-20° to 150°F	-29° to 66°C	32° to 150°F	0° to 66°C	10° to 150°F	-12° to 66°C

\* The maximum temperature listed is based on the ATEX standard for T4 temperature classification. If you are operating in a non-explosive environment, FKM fluoroelastomer's maximum fluid temperature in aluminum or stainless steel pumps is 320°F (160°C).

# California Proposition 65

## CALIFORNIA RESIDENTS

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

# 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.

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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 3A7037

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