Repair/Parts

VERDERAIR VA 25 (HE) Air-Operated Diaphragm Pump

859.0089
Rev. ZAE
EN

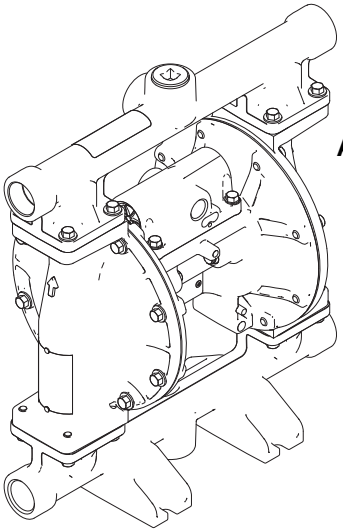
1-inch pump with modular air valve for fluid transfer applications. For professional use only.

See page 3 for model information, including approvals.

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

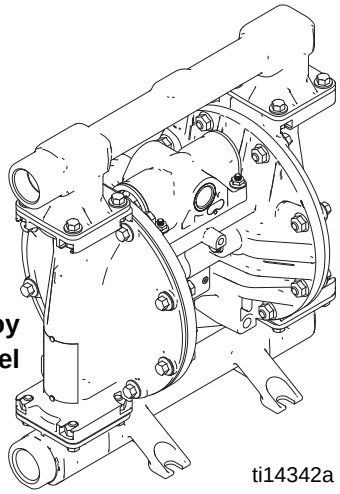
Important Safety Instructions
Read all warnings and instructions in this manual.
Save these instructions.

Aluminum



ti13946a

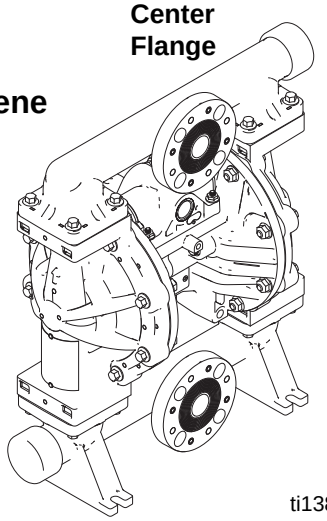
Hastelloy
Stainless Steel



ti14342a

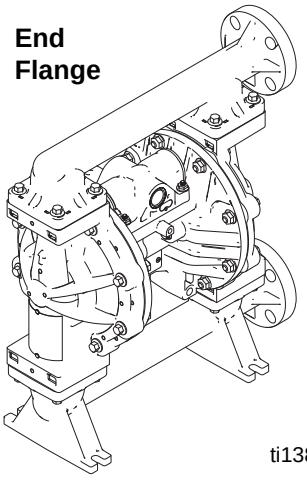
Polypropylene
Conductive Polypropylene
PVDF

Center Flange



ti13843a

End Flange



ti13844a

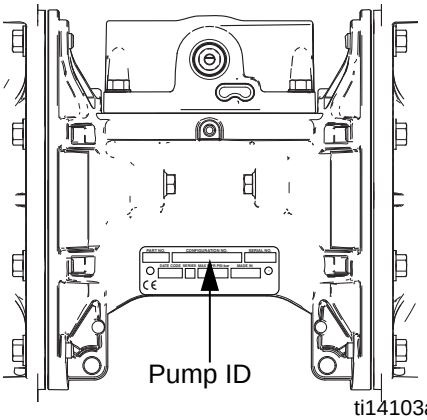
Contents

Related Manuals

Manual	Description
859.0088	***VERDERAIR*** *VA 25* (HE) Air-Operated Diaphragm Pump, Operation
859.0101	Torque Instructions (Manifolds and Fluid Covers)

Pump Matrix

Check the identification plate (ID) for the 17-digit Configuration Number of your pump. Use the following matrix to define the components of your pump.



ti14103a

Sample Configuration Number: VA25(HE)AA-SSBNBNTB00

VA25 (HE)	A	A	SS	BN	BN	TB	00
Pump Model	Fluid Section	Air Section	Seats	Balls	Diaphragms	Connections	Options

NOTE: Some combinations are not possible. Please check with your local supplier or on www.verderair.com.

Pump Model	Fluid Section Material		Air Section Material		Check Valve Material		Check Valve Balls	
VA25 (HE)	A	Aluminum★◆	A	Aluminum	AC	Acetal	AC	Acetal
	C	Conductive Polypropyl-ene★◆	C	Conductive Polypropylene	AL	Aluminum	BN	Buna-N
	H	Hastelloy★◆	P	Polypropylene	BN	Buna-N	GE	Geolast
	K	PVDF			GE	Geolast®	HY	TPE
	P	Polypropylene			HY	TPE	NE	Polychloroprene Standard
	S	Stainless Steel★◆			KY	PVDF	NW	Polychloroprene Weighted
					PP	Polypropylene	SP	Santoprene
					SP	Santoprene®	SS	316 Stainless Steel
					SS	316 Stainless Steel	TF	PTFE
					VT	FKM Fluoroelastomer	VT	FKM Fluoroelastomer

★ and ◆: *See **ATEX Certifications**, page* 4.

Diaphragm		Connections		Options		Certification	
BN	Buna-N	FC	Center Flange, DIN/ANSI	00	Standard	31	EN 10204 type 3.1
GE	Geolast	FE	End Flange, DIN/ANSI	RE	Remote		
HY	TPE	TB	Threaded BSP	SS	Stroke Sensor ✖◆		
NO	Polychloroprene Overmolded	TN	Threaded NPT	UL	UL-Listed		
SP	Santoprene						
TF	PTFE/EPDM Two-Piece						
TO	PTFE/EPDM Overmolded						
VT	FKM Fluoroelastomer						

✖ and ◆: *See **ATEX Certifications**, page* 4.

ATEX Certifications

★ *All VA25(HE)AA, VA25(HE)CC, VA25(HE)HC, VA25(HE)SA, and VA25(HE)SC pumps are certified:*

II 2 GD
Ex h IIC 66°C...135°C Gb
Ex h IIIC T135°C Db

ATEX T-code rating is dependent on the temperature of the fluid being pumped. Fluid temperature is limited by the materials of the pump interior wetted parts. See **Technical Data** on page 30 for the maximum fluid operating temperature for your specific pump model.

◆ *VA25(HE)AA, VA25(HE)CC, VA25(HE)HC, VA25(HE)SA, and VA25(HE)SC pumps with Stroke Sensor are certified:*

II 2(1) G
Ex h [ia Ga] IIA T3 Gb X

✖*Stroke Sensor is certified:*

Intertek
9902471
Class I, Div. 1, Group D T3A

2575 **II 1 G**
Ex ia IIA T3 Ga
ITS13ATEX27862X

Warnings

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

⚠ WARNING

FIRE AND EXPLOSION HAZARD

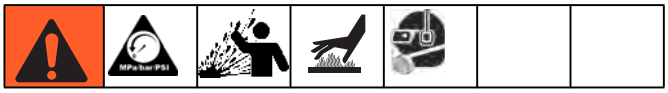
Flammable fumes, such as solvent and paint fumes, in **work area** can ignite or explode. To help prevent fire and explosion:

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

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

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

Troubleshooting



Problem	Cause	Solution
Pump cycles but will not prime.	Pump is running too fast, causing cavitation before prime.	Lower air inlet pressure.
	Check valve ball severely worn or wedged in seat or manifold.	Replace ball and seat. See page 11.
	Seat severely worn.	Replace ball and seat. See page 11.
	Outlet or inlet clogged.	Unclog.
	Inlet or outlet valve closed.	Open.
	Inlet fittings or manifolds loose.	Tighten.
	Manifold o-rings damaged.	Replace o-rings. See page 11.
Pump cycles at stall or fails to hold pressure at stall.	Worn check valve balls, seats, or o-rings.	Replace. See page 25.
Pump will not cycle, or cycles once and stops.	Air valve is stuck or dirty.	Disassemble and clean air valve. See page 8. Use filtered air.
	Check valve ball severely worn and wedged in seat or manifold.	Replace ball and seat. See page 11.
	Pilot valve worn, damaged, or plugged.	Replace pilot valve. See page 12.
	Air valve gasket damaged.	Replace gasket. See page 7.
	Check valve ball is wedged into seat due to overpressurization.	Install pressure relief kit. See **Accessories**, page 29.
	Dispensing valve clogged.	Relieve pressure and clear valve.
	Air tubing is plugged (remote air control models).	Clear tube.
Pump operates erratically.	Clogged suction line.	Inspect; clear.
	Sticky or leaking check valve balls.	Clean or replace. See page 11.
	Diaphragm (and backup) ruptured.	Replace. See page 12.
	Restricted exhaust.	Remove restriction.
	Pilot valves damaged or worn.	Replace pilot valves. See page 12.
	Air valve damaged.	Replace air valve. See page 7.
	Air valve gasket damaged.	Replace air valve gasket. See page 7.
	Air supply erratic.	Repair air supply.
	Exhaust muffler icing.	Use drier air supply.

Problem	Cause	Solution
Air bubbles in fluid.	Suction line is loose.	Tighten.
	Diaphragm (and backup) ruptured.	Replace. See page 12.
	Loose manifolds, damaged seats or manifold o-rings.	Tighten manifold bolts or replace seats or o-rings. See page 11.
	Diaphragm shaft bolt o-ring damaged.	Replace o-ring.
	Pump cavitation.	Reduce pump speed or suction lift.
	Loose diaphragm shaft bolt.	Tighten.
Exhaust air contains fluid being pumped.	Diaphragm (and backup) ruptured.	Replace. See page 12.
	Loose diaphragm shaft bolt.	Tighten or replace. See page 12.
	Diaphragm shaft bolt o-ring damaged.	Replace o-ring. See page 12.
Moisture in exhaust air.	High inlet air humidity.	Use drier air supply.
Pump exhausts excessive air at stall.	Worn air valve cup or plate.	Replace cup and plate. See page 8.
	Damaged air valve gasket.	Replace gasket. See page 7.
	Damaged pilot valve.	Replace pilot valves. See page 12.
	Worn shaft seals or bearings.	Replace shaft seals or bearings. See page 12.
	Air tubing is damaged or loose (remote air control models).	Replace tubing or secure connection.
	Remote air pressure is higher than pump air pressure (remote air control models).	Regulate remote pilot air pressure to be equal to or less than main air.
Pump leaks air externally.	Air valve or fluid cover screws loose.	Tighten.
	Diaphragm damaged.	Replace diaphragm. See page 12.
	Air valve gasket damaged.	Replace gasket. See page 7.
	Remote air pressure is higher than pump air pressure (remote air control models).	Regulate remote pilot air pressure to be equal to or less than main air.
Pump leaks fluid externally from joints.	Loose manifold screws or fluid cover screws.	Tighten manifold screws or fluid cover screws. See page 15.
	Manifold o-rings worn out.	Replace o-rings. See page 11.
Pump leaks fluid externally through manifold or fluid cover.	Excessive pump speed or inlet starvation.	Replace manifold and reduce pump speed or improve pump feed.

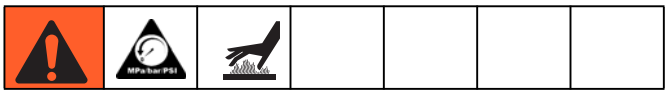
Repair

Pressure Relief Procedure

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

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

Repair or Replace Air Valve



Replace Complete Air Valve

1. Stop the pump. Relieve the pressure. See **Pressure Relief Procedure** in previous section.
2. Disconnect the air line to the motor.
3. **For motors with reed switch:** Remove screw to disconnect the reed switch assembly from the air valve.

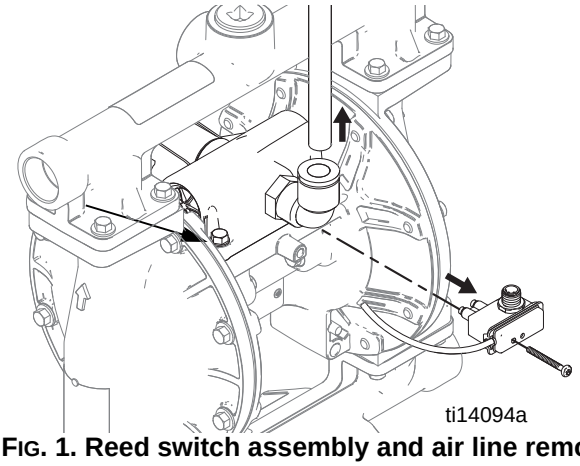


FIG. 1. Reed switch assembly and air line removal

4. Remove screws (109, metal pumps) or nuts (112, plastic pumps). Remove the air valve and gasket (108).
5. To repair the air valve, go to **Disassemble the Air Valve,** step 1, in next section. To install a replacement air valve, continue with Step 6.
6. Align the new air valve gasket (108) on the center housing, then attach the air valve. See **Torque Instructions,** page 15.
7. **For motors with reed switch:** Use screw to attach the reed switch assembly to the new air valve. Reconnect cable.
8. Reconnect the air line to the motor.

Replace Seals or Rebuild Air Valve

NOTE: Repair kits are available. See page 24 to order the correct kit(s) for your pump. Air Valve Seal Kit parts are marked with a †. Air Valve Repair Kit parts are marked with a ◆. Air Valve End Cap Kit parts are marked with a ✠.

Disassemble the Air Valve

1. Perform steps 1-5 under **Replace Complete Air Valve,** page 7.
2. See FIG. 3. Use a Torx screwdriver (T8 for aluminum centers, T9 for plastic centers) to remove two screws (209). Remove the valve plate (205), cup assembly (212-214), spring (211), and detent assembly (203).
3. Pull the cup (213) off of the base (212). Remove the o-ring (214) from the cup.
4. See FIG. 3. Remove the retaining ring (210) from each end of the air valve. Use the piston (202) to push the end caps (207, 217) out of the ends. Remove end cap o-rings (206).
5. Remove the u-cup seals (208) from each end of the piston (202), then remove the piston. Remove the detent cam (204) from the air valve housing (201).

Reassemble the Air Valve

NOTE: Apply lithium-based grease whenever instructed to grease. Order Verder part number 819.0184.

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

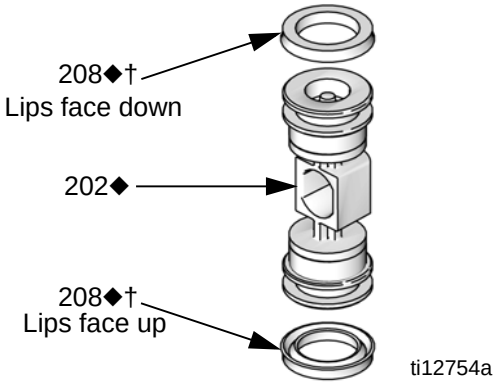


FIG. 2. Air valve u-cup installation

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

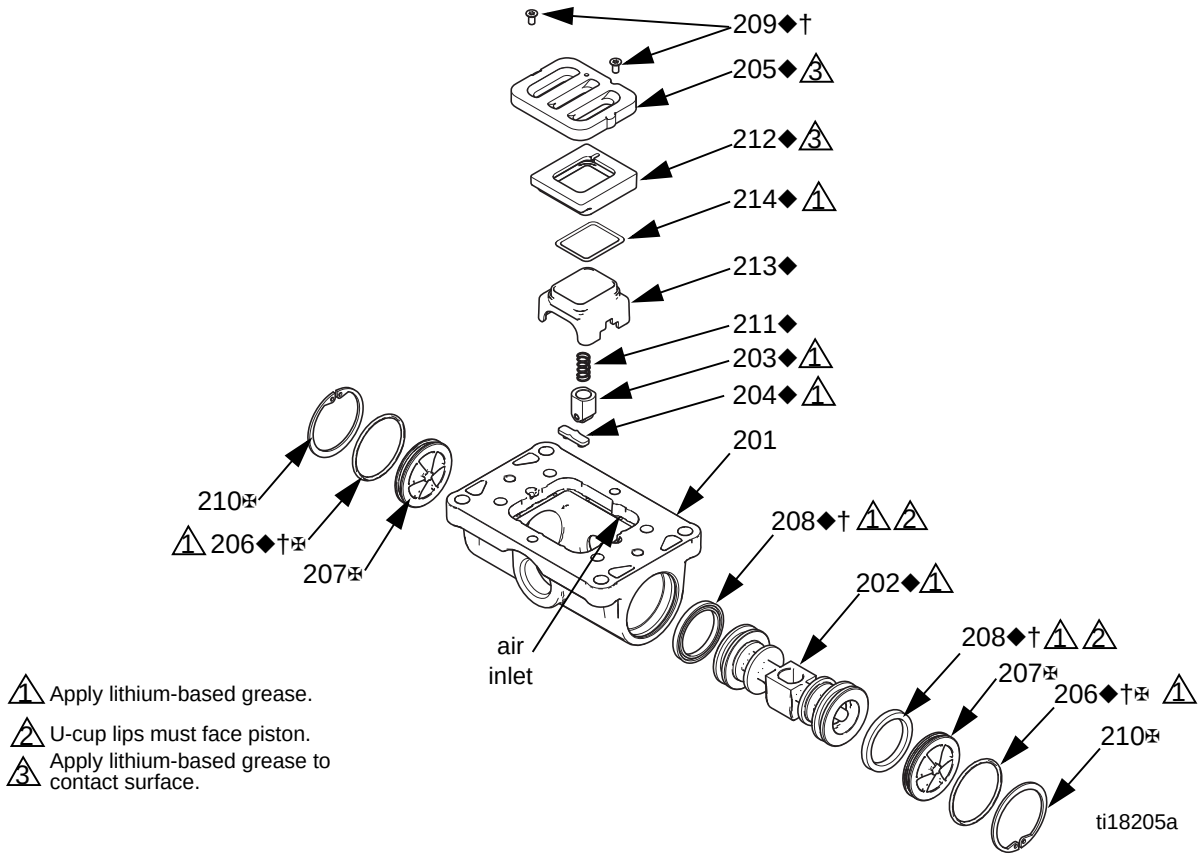


FIG. 3. Air valve assembly

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

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

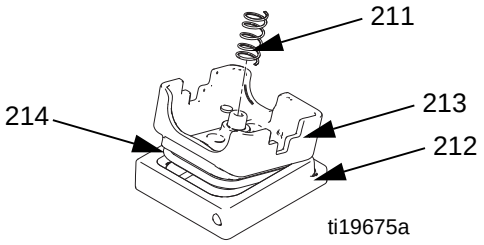


FIG. 4. Cup assembly

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

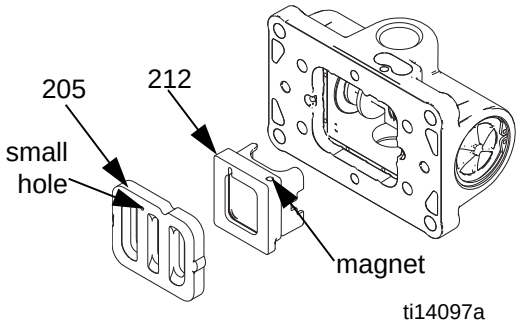


FIG. 5. Air valve cup and plate installation

Check Valve Repair

NOTE: Kits are available for new check valve balls and seats in a range of materials. See page 25 to order kits in the material(s) desired. An o-ring kit and fastener kits also are available.

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

Disassembly

1. Follow the **Pressure Relief Procedure** on page 7. Disconnect all hoses.
2. Remove the pump from its mounting.
3. Use a 10 mm socket wrench to remove the outlet manifold fasteners (6). See FIG. 6.

NOTE: For plastic pumps (VA25(HE)CC, VA25(HE)PP, and VA25(HE)KP), use hand tools only until thread-locking adhesive patch releases.

4. Remove the o-rings (12, *not used on some models),* seats (10), and balls (11).
5. Turn the pump over and remove the inlet manifold. Remove the o-rings (12, *not used on some models),* seats (10), and balls (11).

Reassembly

1. Clean all parts and inspect for wear or damage. Replace parts as needed.
2. Reassemble in the reverse order, following all notes in FIG. 6. Be sure the ball checks (10-12) and manifolds (4, 5) are assembled **exactly** as shown. The arrows (A) on the fluid covers **must** point toward the outlet manifold (4).

1 Torque to 90 in-lb (10.2 N•m). See **Torque Instructions**, page 15.

2 Arrow (A) must point toward outlet manifold.

3 Not used on some models.

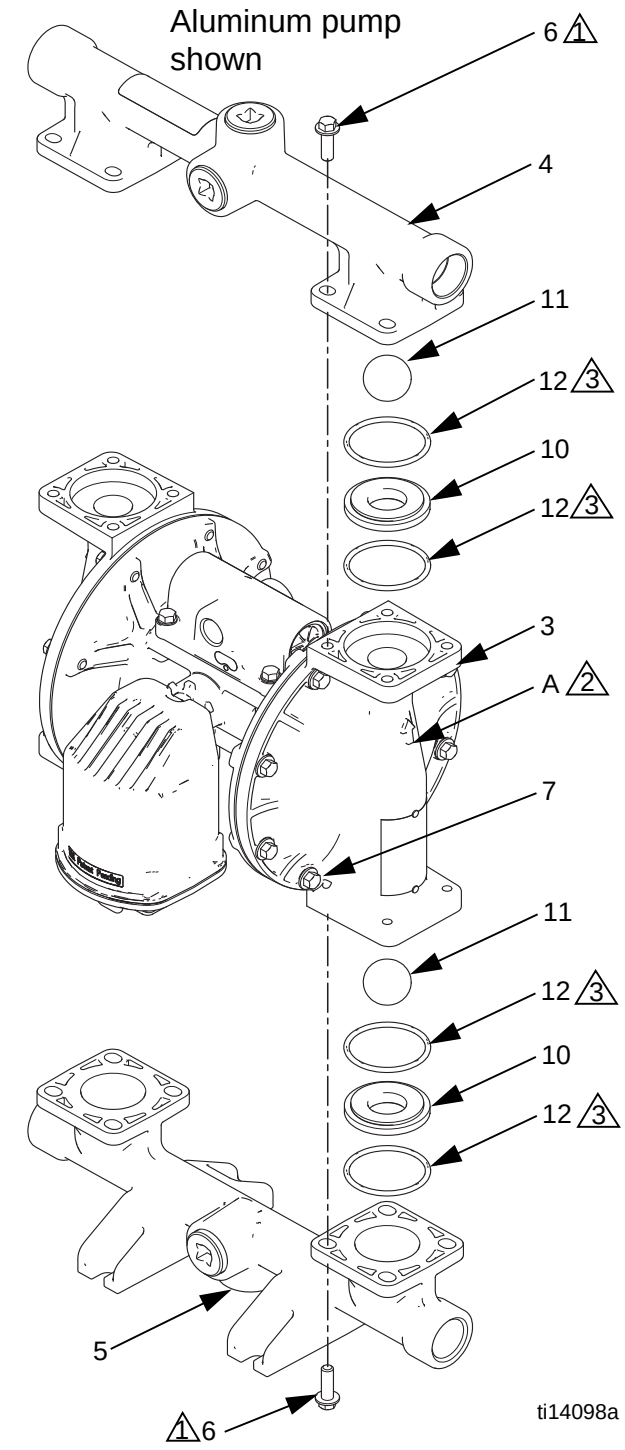
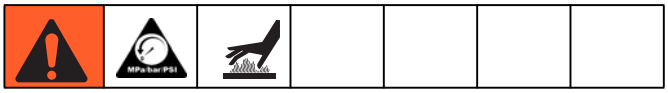


FIG. 6. Ball check valve assembly

Diaphragms and Center Section



Disassembly

NOTE: Diaphragm kits are available in a range of materials and styles. See page 26 to order the correct diaphragms for your pump. A Center Rebuild Kit also is available. See page 22. Parts included in the Center Rebuild Kit are marked with an *. For best results, use all kit parts.

1. Follow the **Pressure Relief Procedure** on page 7.

2. Remove the manifolds and disassemble the ball check valves as explained on page 11.

3. **Overmolded Diaphragms**

   a. Orient the pump so one of the fluid covers faces up. Use a 10 mm socket wrench to remove the fluid cover screws (7), then pull the fluid cover (3) up off the pump.

   b. The exposed diaphragm (15) will screw off by hand from the diaphragm shaft (104). The diaphragm shaft bolt will remain attached to the diaphragm. Remove the air side diaphragm plate (14).

   c. Turn the pump over and remove the other fluid cover. Pull the diaphragm and shaft up through the center housing.

   d. Grasp the diaphragm firmly and use a wrench on the flats of the shaft to remove. Also remove the air side diaphragm plate (14). Continue with Step 5.

4. **All Other Diaphragms**

   a. Orient the pump so one of the fluid covers faces up. Use a 10 mm socket wrench to remove the fluid cover screws (7), then pull the fluid cover up off the pump. Turn the pump over and remove the other fluid cover.

   b. **Plastic Pumps:** Use a 1-1/4 socket or box end wrench on the hex of a fluid side diaphragm plate to remove. Then remove all parts of the diaphragm assembly. See FIG. 7.
   Metal Pumps: Remove the bolt (304) from one side of the diaphragm shaft, then remove all parts of that diaphragm assembly. See FIG. 7.

   c. Follow the same procedure to disassemble the other diaphragm assembly.

5. Inspect the diaphragm shaft (104) for wear or scratches. If it is damaged, inspect the bearings (105) in place. If they are damaged, use a bearing puller to remove them.

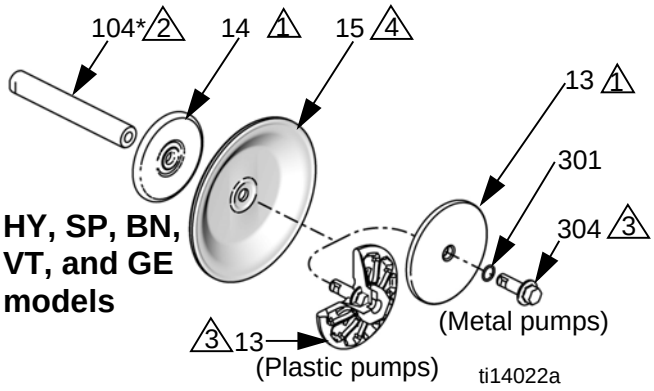
NOTE: Do not remove undamaged bearings.

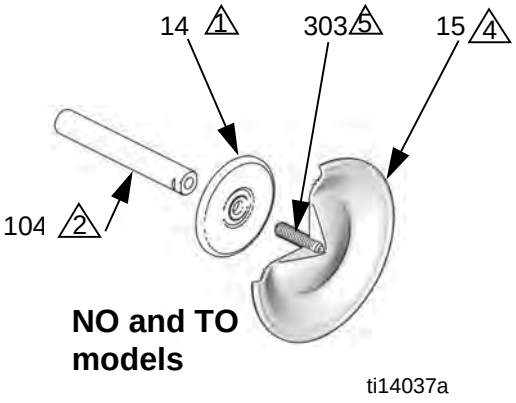
6. Use an o-ring pick to remove the u-cup packings (106) from the center housing. Bearings (105) can remain in place.

7. Use a socket wrench to remove the pilot valves (101).

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 (102), then remove o-rings (103). If stripped, use two screwdrivers to screw out the cartridge.

NOTE: Do not remove undamaged pilot valve cartridges.





1 Rounded side faces diaphragm.

2 Apply lithium-based grease.

3 Torque to 20-25 ft-lb (27-34 N•m) at 100 rpm maximum.

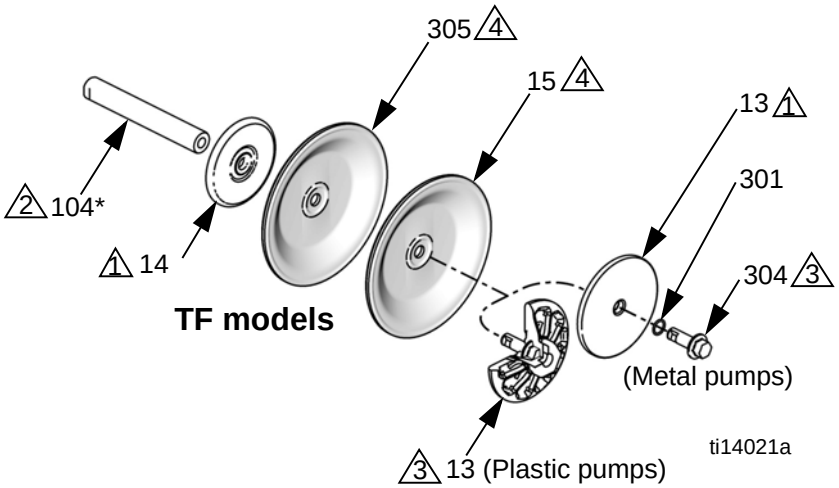
4 AIR SIDE markings on diaphragm must face center housing.

5 If screw comes loose or is replaced, apply permanent (red) Loctite® or equivalent to diaphragm side threads. Apply primer and medium-strength (blue) Loctite® or equivalent to shaft side threads.

6 Lips must face out of housing.

7 Cartridges (102) must be installed in housing before pilot valves (101) or inserts (113, for remote air controls)..

8 Torque to 20-25 in.-lb (2.3-2.8 N•m).



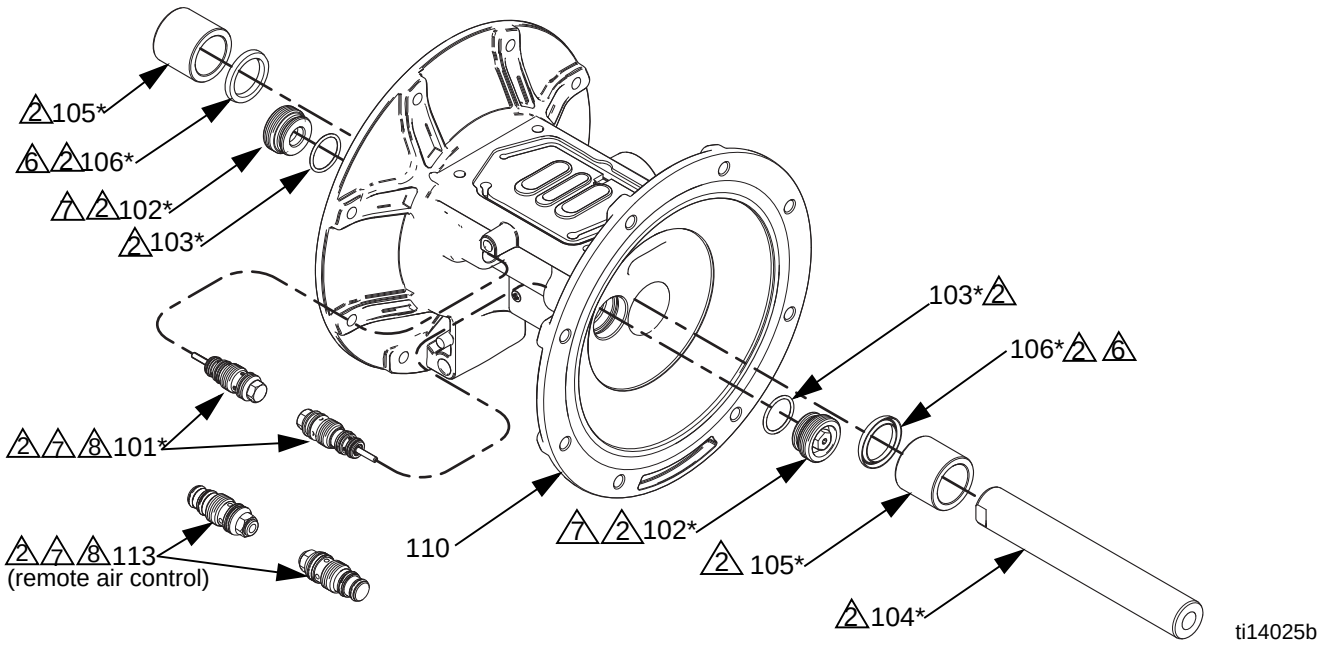


FIG. 7. Assemble diaphragms and center section

Reassembly

Follow all notes in FIG. 7. These notes contain **important** information.

NOTE: Apply lithium-based grease whenever instructed to grease. Order Verder part number 819.0184.

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

2. If removed, grease and install the new pilot valve cartridges (102) and o-rings (103). Screw in until seated.

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

3. Grease and install the pilot valves (101). Torque to 20-25 in.-lb (2.3-2.8 N•m). Do not over-torque.

4. Grease and install the diaphragm shaft u-cup packings (106) so the lips face **out** of the housing.

5. If removed, insert the new bearings (105) into the center housing. Use a press or a block and rubber mallet to press-fit the bearing so it is flush with the surface of the center housing.

6. **Overmolded Diaphragms:**

    a. Clamp the shaft flats in a vise.

    b. If diaphragm setscrew comes loose or is replaced, apply permanent (red) Loctite® or equivalent to diaphragm side threads. Screw into diaphragm until tight.

    c. Assemble the air side plate (14) onto the diaphragm. The rounded side of the plate must face the diaphragm.

    d. Apply medium-strength (blue) Loctite or equivalent 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 (104). Slide the shaft into the housing.

    f. Reattach the first fluid cover (3). See **Torque Instructions,** page 15.

    g. Repeat Steps b and c for the other diaphragm assembly. Go to Step 7.

All Other Diaphragms - Metal Pumps:

a. Install the o-ring (301) on the shaft bolt (304).

b. Assemble the fluid side plate (13), the diaphragm (15), the backup diaphragm (305, if present), and the air side diaphragm plate (14) on the bolt exactly as shown in FIG. 7.

c. Apply medium-strength (blue) Loctite or equivalent to the bolt (304) threads. Screw the bolt into the shaft hand tight.

d. Grease the shaft u-cups (106) and the length and ends of the diaphragm shaft (104). Slide the shaft into the housing.

e. Repeat Steps a-c for the other diaphragm assembly.

f. Hold one shaft bolt with a wrench and torque the other bolt to 20-25 ft-lb (27-34 N•m) at 100 rpm maximum. Do not over-torque.

g. Reattach the first fluid cover (3). See **Torque Instructions,** page 15. Go to Step 7.

All Other Diaphragms - Plastic Pumps:

a. Assemble the diaphragm (15), the backup diaphragm (305, if present), and the air side diaphragm plate (14) on the fluid side plate (13) exactly as shown in FIG. 7.

b. Apply medium-strength (blue) Loctite or equivalent to the threads of the screw on the fluid side plate. Screw the assembly into the shaft hand-tight.

c. Grease the shaft u-cups (106) and the length and ends of the diaphragm shaft (104). Slide the shaft into the housing.

d. Repeat for the other diaphragm assembly

e. Hold one of the plates with a wrench, and torque the other plate to 20-25 ft-lb (27-34 N•m) at 100 rpm maximum. Do not over-torque.

f. Reattach the first fluid cover (3). See **Torque Instructions,** page 15.

7. To ensure proper seating and extend diaphragm life, attach the second fluid cover with air pressure on the pump.

   a. See FIG. 8. Place the supplied tool (302) where the air valve gasket (108) normally goes. Arrows (A) must face toward the fluid cover that is already attached.

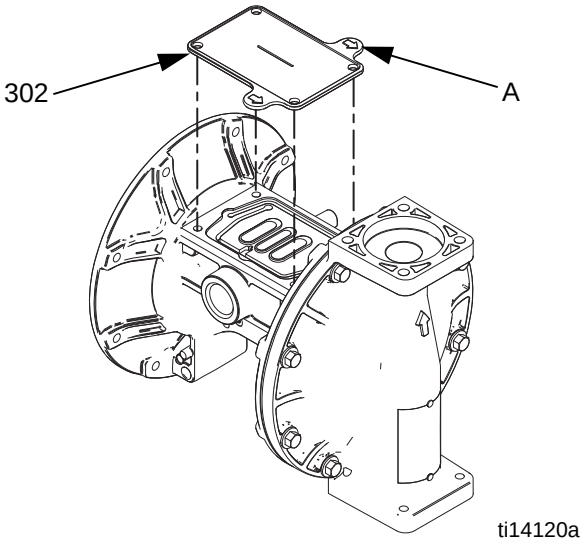


FIG. 8. Fluid cover tool

   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 15.

   e. Remove the air valve and the tool (302), replace the gasket (108), and reattach the air valve. See **Torque Instructions,** page 15.

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.

8. Reassemble the ball check valves and manifolds as explained on page 11.

Torque Instructions

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

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

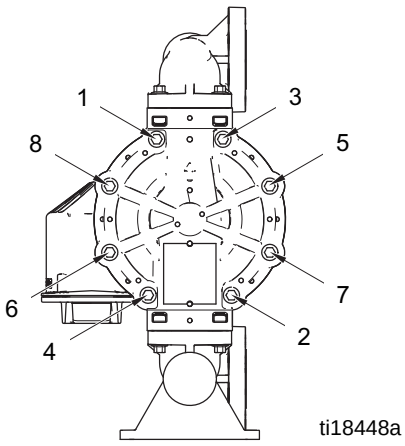
NOTE: Always completely torque fluid covers before torquing manifolds.

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

Fluid cover and manifold fasteners:
90 in-lb (10.2 N•m)

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

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



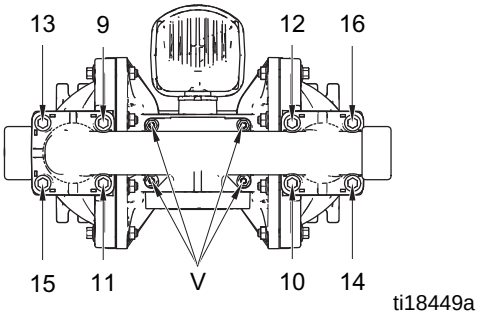
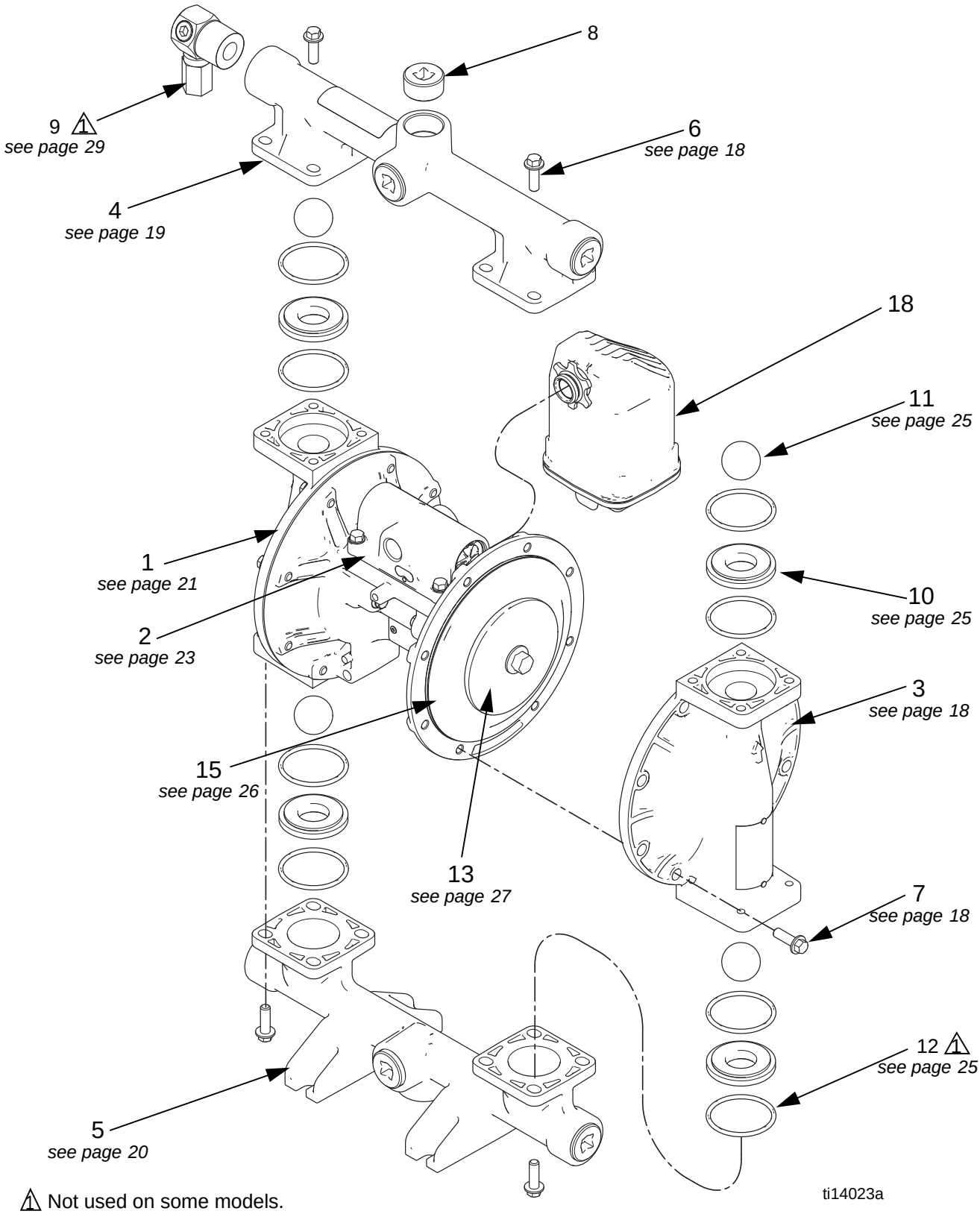


FIG. 9. Torque sequence

Parts



⚠1 Not used on some models.

Parts/Kits Quick Reference

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

Ref.	Part/Kit	Description	Qty.
1		Center Section; *see page 21*	1
	859.0400	Aluminum	
	859.0402	Conductive Polypropylene	
	859.0401	Polypropylene	
2	Varies	Air Valve; *see page 23*	1
3		Fluid Cover Kits; *see page 18*	2
	859.0032	Aluminum	
	859.0071	Conductive Polypropylene	
	859.0712	Hastelloy	
	859.0070	Polypropylene	
	859.0072	PVDF	
	859.0081	Stainless Steel	
4		Outlet Manifold Kits; *see page 19*	1
	859.0028	Aluminum, npt	
	859.0029	Aluminum, bspt	
	859.0059	Conductive Poly, center flange	
	859.0062	Conductive Poly, end flange	
	859.0713	Hastelloy, npt	
	859.0058	Polypropylene, center flange	
	859.0061	Polypropylene, end flange	
	859.0060	PVDF, center flange	
	859.0063	PVDF, end flange	
	859.0077	Stainless Steel, npt	
	859.0078	Stainless Steel, bspt	
5		Inlet Manifold Kits; *see page 20*	1
	859.0030	Aluminum, npt	
	859.0031	Aluminum, bspt	
	859.0065	Conductive Poly, center flange	
	859.0068	Conductive Poly, end flange	
	859.0714	Hastelloy, npt	
	859.0064	Polypropylene, center flange	
	859.0067	Polypropylene, end flange	
	859.0066	PVDF, center flange	
	859.0069	PVDF, end flange	
	859.0079	Stainless Steel, npt	
	859.0080	Stainless Steel, bspt	
6		Manifold Fasteners; 8-pack, *see page 18*	16
	859.0033	Aluminum	
	859.0076	Conductive Polypropylene, Polypropylene, and PVDF	
	859.0084	Stainless Steel and Hastelloy	
7		Fluid Cover Fasteners; 8-pack, *see page 18*	16
	859.0033	Aluminum	
	859.0075	Conductive Polypropylene, Polypropylene, and PVDF	
	859.0083	Stainless Steel and hastelloy, aluminum center	
	859.0076	Stainless Steel and hastelloy, plastic center	
8		Plug, 1 in.; 6-pack, for aluminum pumps	6
	859.0105	npt	
	859.0106	bspt	
9	859.0102	Pressure Relief Valve; fuel dispense model only, *see page 18*	1
10		Seats; 4-pack, includes 8 o-rings where needed, *see page 25*	4
	859.0009	Acetal	
	859.0010	Aluminum	
	859.0011	Buna-N	
	859.0017	FKM Fluoroelastomer	
	859.0012	Geolast	
	859.0014	Polypropylene	
	859.0087	PVDF	
	859.0015	Santoprene	
	859.0016	Stainless Steel (metal pumps)	
	859.0753	Stainless Steel (plastic pumps)	
	859.0013	TPE	
11		Check Balls; 4-pack, includes 8 o-rings, *see page 25*	4
	859.0018	Acetal	
	859.0019	Buna-N	
	859.0022	Polychloroprene	
	859.0023	Polychloroprene with SST core	
	859.0027	FKM Fluoroelastomer	
	859.0020	Geolast	
	859.0024	PTFE	
	859.0025	Santoprene	
	859.0026	Stainless Steel	
	859.0021	TPE	
12	859.0034	Manifold O-Ring (not used on some models); ptfe, 8-pack, *see page 25*	8
13		Fluid Side Diaphragm Plate; included in Air and Fluid Plate Kits, *see page 27*	2
	859.0055	Aluminum	
	859.0056	Conductive Polypropylene	
	859.0715	Hastelloy	
	859.0056	Polypropylene	
	859.0057	PVDF	
	859.0082	Stainless Steel	
14	-----	Air Side Diaphragm Plate (not visible); included in Air and Fluid Plate Kits, *see Part 13 or page 27*	2
15		Diaphragm Kits; *see page 26*	2
	859.0001	Buna-N Standard	
	859.0008	FKM Fluoroelastomer Standard	
	859.0002	Geolast Standard	
	859.0007	Santoprene Standard	
	859.0003	TPE Standard	
	859.0004	Polychloroprene Overmolded	
	859.0005	PTFE Overmolded	
	859.0006	PTFE/EPDM Two-Piece	
18	859.0238	Muffler; 3/4 npt, polypropylene	1
19		Screw, ground, M5 x 0.8; not shown	1
	819.0220	Pumps with aluminum air valve	
	819.0221	Pumps with conductive poly air valve	
20▲	819.4313	Label, warning (not shown)	1

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

Fluid Section

Sample Configuration Number							
Pump Size	**Fluid Section**	**Air Section**	**Seats**	**Balls**	**Diaphragms**	**Connections**	**Options**
VA25(HE)	**A**	**A**	**SS**	**BN**	**BN**	**TB**	**00**

Manifold Fasteners (6)

Fluid Cover and Manifold Material		Kit	Description	Qty.
A	Aluminum	859.0033	BOLT, hex head, steel, M8 x 25,	8
C **P** **K**	Cond. Poly Polypropylene PVDF	859.0076	BOLT, flange head, M8 x 32, stainless steel, includes nuts	8
S **H**	Stainless steel Hastelloy	859.0084	BOLT, hex head, M8 x 20, stainless steel, includes nuts	8

Fluid Cover Fasteners (7)

Fluid Cover and Manifold Material		Kit	Description	Qty.
A	Aluminum	859.0033	BOLT, hex head, steel, M8 x 25	8
C	Cond. Poly	859.0075	BOLT, flange head, M8 x 45, stainless steel, includes nuts	8
P	Polypropylene			
K	PVDF			
S or H aluminum air section	Stainless steel or Hastelloy	859.0083	BOLT, flange head, M8 x 25, stainless steel	8
S or H plastic air section	Stainless steel or Hastelloy	859.0076	BOLT, flange head, M8 x 32, stainless steel, includes nuts	8

Fluid Covers

Kits include:

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

Fluid Cover and Manifold Material		Fluid Cover Kit
A	Aluminum	859.0032
C	Conductive Polypropylene	859.0071
H	Hastelloy	859.0712
K	PVDF	859.0072
P	Polypropylene	859.0070
S	Stainless Steel	859.0081

Kit 859.0102, Fluid Pressure Relief Valve

Fuel Dispense Model only

Kit includes:

- 1 valve, 3/8 nptf (9)

NOTE: See page 25 for manifold o-rings (12).

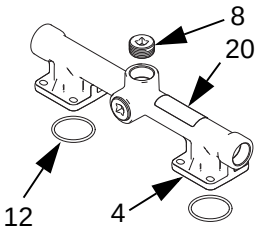
Sample Configuration Number							
Pump Size	**Fluid Section**	**Air Section**	**Seats**	**Balls**	**Diaphragms**	**Connections**	**Options**
VA25(HE)	**A**	**A**	**SS**	**BN**	**BN**	**TB**	**00**

Outlet Manifolds

Aluminum

Kits include:

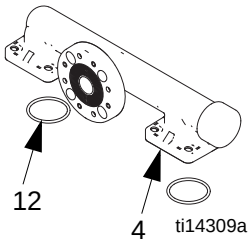
- 1 outlet manifold (4)
- 3 pipe plugs (8)
- 4 o-rings, ptfe (12)
- 1 warning label (20▲)



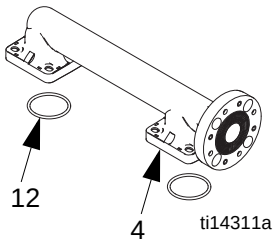
ti14307a

Fluid Cover and Manifold Material		Connections	Outlet Manifold Kit
A	Aluminum	**TN**, npt	859.0028
A	Aluminum	**TB**, bspt	859.0029

Plastic



ti14309a



ti14311a

Kits include:

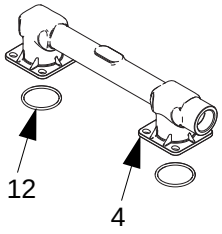
- 1 outlet manifold (4)
- 4 o-rings, ptfe (12)
- 1 warning label (20▲)

Fluid Cover and Manifold Material		Porting	Outlet Manifold Kit
C	Conductive Polypropylene	**FC**, Center flange	859.0059
C	Conductive Polypropylene	**FE**, End flange	859.0062
P	Polypropylene	**FC**, Center flange	859.0058
P	Polypropylene	**FE**, End flange	859.0061
K	PVDF	**FC**, Center flange	859.0060
K	PVDF	**FE**, End flange	859.0063

Hastelloy and Stainless Steel

Kits include:

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



ti14313a

Fluid Cover and Manifold Material		Connections	Outlet Manifold Kit
H	Hastelloy	**TN**, npt	859.0713
S	Stainless Steel	**TN**, npt	859.0077
S	Stainless Steel	**TB**, bspt	859.0078

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

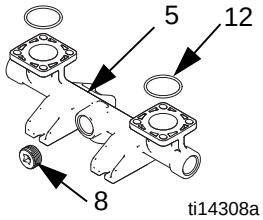
Sample Configuration Number							
Pump Size	**Fluid Section**	**Air Section**	**Seats**	**Balls**	**Diaphragms**	**Connections**	**Options**
VA25(HE)	**A**	**A**	**SS**	**BN**	**BN**	**TB**	**00**

Inlet Manifolds

Aluminum

Kits include:

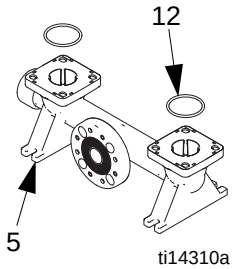
- 1 inlet manifold (5)
- 3 pipe plugs (8)
- 4 o-rings, ptfe (12)



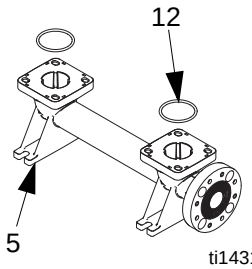
ti14308a

Fluid Cover and Manifold Material		Porting	Inlet Manifold Kit
A	Aluminum	**TN**, npt	859.0030
A	Aluminum	**TB**, bspt	859.0031

Plastic



ti14310a



ti14312a

Kits include:

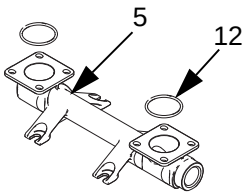
- 1 inlet manifold (5)
- 4 o-rings, ptfe (12)

Fluid Cover and Manifold Material		Porting	Inlet Manifold Kit
C	Conductive Polypropyl-ene	**FC**, Center flange	859.0065
C	Conductive Polypropyl-ene	**FE**, End flange	859.0068
P	Polypropyl-ene	**FC**, Center flange	859.0064
P	Polypropyl-ene	**FE**, End flange	859.0067
K	PVDF	**FC**, Center flange	859.0066
K	PVDF	**FE**, End flange	859.0069

Hastelloy and Stainless Steel

Kits include:

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



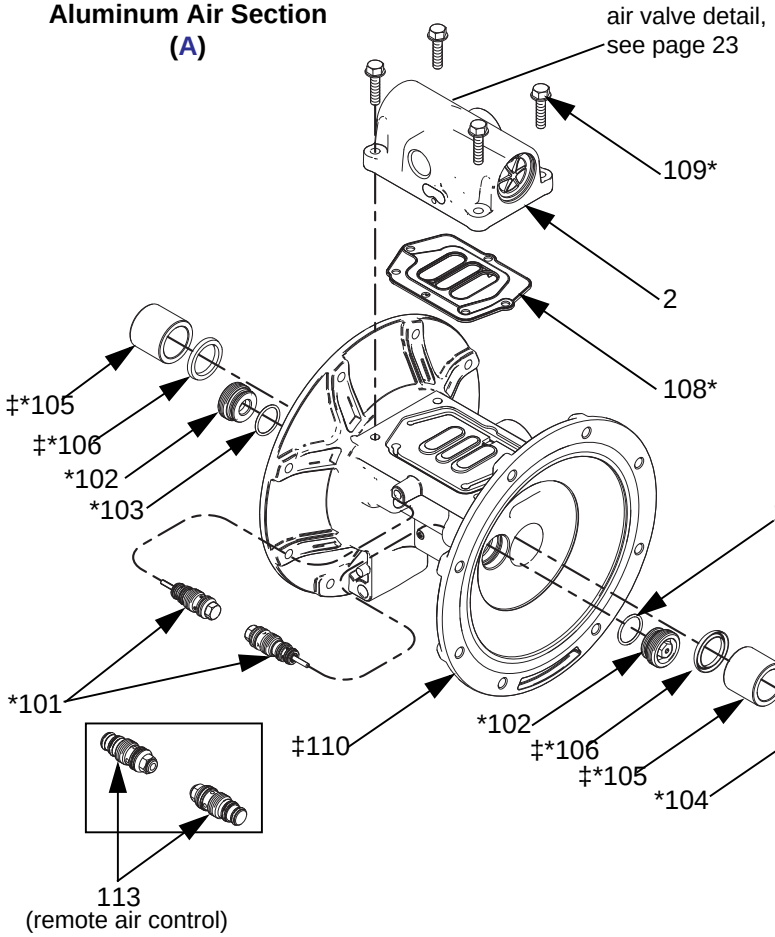
ti14314a

Fluid Cover and Manifold Material		Porting	Inlet Manifold Kit
H	Hastelloy	**TN**, npt	859.0714
S	Stainless Steel	**TN**, npt	859.0079
S	Stainless Steel	**TB**, bspt	859.0080

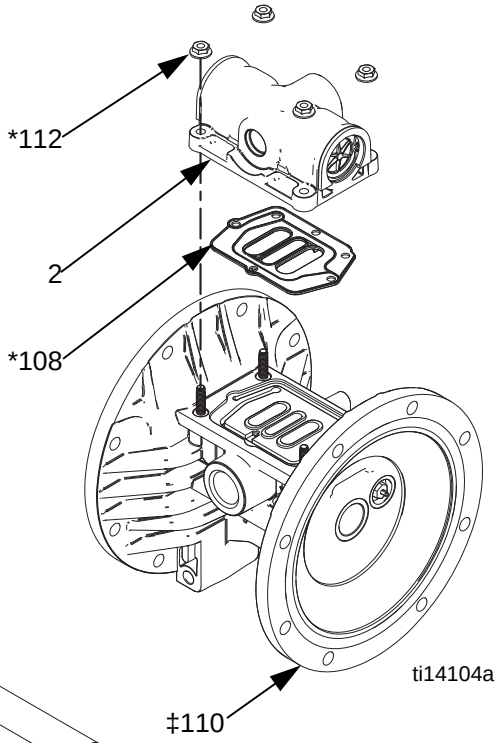
Air Section

Sample Configuration Number							
Pump Size	**Fluid Section**	**Air Section**	**Seats**	**Balls**	**Diaphragms**	**Connections**	**Options**
VA25(HE)	**A**	**A**	**SS**	**BN**	**BN**	**TB**	**00**

Aluminum Air Section (A)



Plastic Air Section (C and P)



Ref.	Description	Qty.
101*	VALVE, pilot	2
102*	CARTRIDGES, pilot valve receiver	2
103*	O-RING, receiver cartridge	2
104*	SHAFT, center	1
105*‡	BEARING, center shaft	2
106*‡	U-CUP, center shaft	2
108*	GASKET, air valve	1

Ref.	Description	Qty.
109*	SCREW, M6 x 25, stainless steel, (for aluminum center section models, **A**)	4
110‡	HOUSING, center	1
112*	NUTS (for plastic center section models, **C** and **P**)	4
113	INSERT, remote pilot (for remote air control models)	2

** Included in Center Section Rebuild Kit 859.0000.*

‡ Included in Center Housing Kits.

Sample Configuration Number							
Pump Size	**Fluid Section**	**Air Section**	**Seats**	**Balls**	**Diaphragms**	**Connections**	**Options**
VA25(HE)	**A**	**A**	**SS**	**BN**	**BN**	**TB**	**00**

Kit 859.0000, Center Section Rebuild (*)
All Models

Kit includes:
- 2 pilot valves (101)
- 2 pilot cartridges (102)
- 2 cartridge o-rings, buna-N (103)
- 1 center shaft (104)
- 2 center shaft bearings (105)
- 2 center shaft u-cups (106)
- 1 air valve gasket (108)
- 4 bolts, M6 x 25, for **A** fluid sections (109)
- 4 nuts, for **P** and **C** fluid sections (112)
- 8 o-rings, PTFE (12)

Kit 859.0116, Pilot Valves
All models

Kit includes:
- 2 pilot valve assemblies (101)

Pilot Valves w/Cartridges

Pilot Valve Assembly Kits	
All models	859.0036
Optional FKM Seals	859.0450

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

NOTE: RE (remote) models also require insert kit, shown below.

Kit 859.0112, Remote Pilot Inserts
(RE, Remote Air Control**)**

Kit includes:
- 2 remote pilot inserts (113)

Kit 859.0035, Center Shaft Kit
All models

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

Kit 859.0037, Center Shaft Bearing Kit
All models

Kit includes:
- 2 center shaft bearings (105)
- 2 center shaft u-cups (106)

The center housing (110) is not sold separately.

Ground Screw Kits

Center Section Material		**Ground Screw (19)**
A	Aluminum	819.0220
C	Conductive Polypropylene	819.0221
P	Polypropylene	None

** Included in Center Section Rebuild Kit 859.0000.*

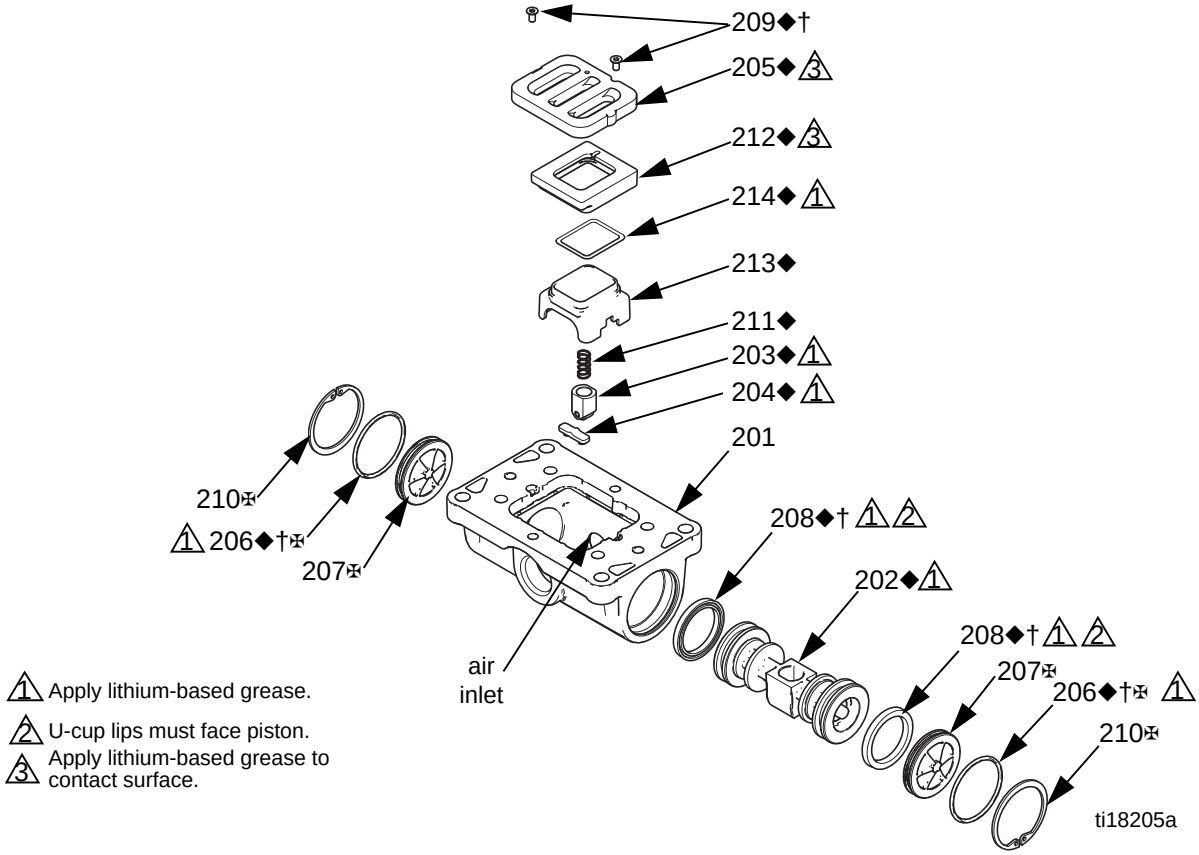
Center Housing Kits (‡)

Aluminum	859.0400
Conductive Polypropylene	859.0402
Polypropylene	859.0401

Kit includes:
- 2 center shaft bearings (105)
- 2 center shaft u-cups (106)
- 1 center housing (110)

Sample Configuration Number							
Pump Size	**Fluid Section**	**Air Section**	**Seats**	**Balls**	**Diaphragms**	**Connections**	**Options**
VA25(HE)	**A**	**A**	**SS**	**BN**	**BN**	**TB**	**00**

Air Valve and Data Monitoring



Ref.	Description	Qty.
201	HOUSING, not sold separately	1
202◆	PISTON	1
203◆	DETENT PISTON ASSEMBLY	1
204◆	CAM, detent	1
205◆	PLATE, air valve	1
206◆†✠	O-RING	2
207✠	CAP, end	2
208◆†	U-CUP	2
209◆†	SCREW	2
210✠	RETAINING RING	2
211◆	DETENT SPRING	1
212◆	BASE, cup	1
213◆	CUP	1
214◆	O-RING, cup	1
220	REED SWITCH ASSEMBLY (for **SS** models, includes fastener, not shown)	1

◆*Parts included in Air Valve Repair Kit 859.0040.*
† Parts included in Air Valve Seals Kit 859.0041.

✠ *Parts included in Air Valve End Cap Kit. See page 24.*

Air Valve Repair Kits (◆)	
00, SS, or **UL** (standard air valve)	859.0040
RE (remote air valve)	859.0113

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 (209, for metal pumps)
- 2 screws, #4, longer (209, for plastic pumps)
- 1 detent spring (211)
- 1 air cup base (212)
- 1 air cup (213)
- 1 air cup o-ring (214)
- 1 air valve gasket (108)

Sample Configuration Number							
Pump Size	**Fluid Section**	**Air Section**	**Seats**	**Balls**	**Diaphragms**	**Connections**	**Options**
VA25(HE)	**A**	**A**	**SS**	**BN**	**BN**	**TB**	**00**

Air Valve Seals (†)

All Models

Kit includes:

- 2 end cap o-rings (206)
- 2 piston u-cups (208)
- 2 screws, M3, shorter (209, for metal pumps)
- 2 screws, #4, longer (209, for plastic pumps)
- 1 air valve gasket (108)
- 1 solenoid release button o-ring (219)

Air Valve Seal Kits	
All models	859.0041
Optional VT Seals	859.0452

Air Valve End Cap Kits (✠)

Kits include:

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

Center Section Material		**Air Valve End Cap Kit**
A	Aluminum	859.0103
C	Conductive Polypropylene	859.0073
P	Polypropylene	859.0073

Remote Air Control Conversion Kits		
A	Aluminum	859.0108
C	Conductive Polypropylene	859.0118
P	Polypropylene	859.0109

Kits include:

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

Complete Air Valve Replacement Kits

Aluminum

Kits include:

- 1 air valve assembly with restrictor (2)
- 1 air valve gasket (108)
- 4 screws (109)

Air Section Material		**Options**	**Air Valve Replacement Kit**
A	Aluminum	**00, SS,** or **UL** (standard air valve)	859.0038
A	Aluminum	**RE** (remote air valve)	859.0110

Conductive Polypropylene and Polypropylene

Kits include:

- 1 air valve assembly (2)
- 1 air valve gasket (108)
- 4 nuts (112)

Air Section Material		**Options**	**Air Valve Replacement Kit**
C	Conductive Polypropylene	**00, SS,** or **UL** (standard air valve)	859.0042
C		**RE** (remote air valve)	859.0119
P	Polypropylene	**00, SS,** or **UL** (standard air valve)	859.0044
P		**RE** (remote air valve)	859.0111

Stroke Sensor Kit

Kit includes:

- reed switch module (220)
- mounting screw

Air Valve Material	**Stroke Sensor Kit**
Aluminum	859.0052
Conductive Polypropylene or Polypropylene	859.0051

Sample Configuration Number							
Pump Size	**Fluid Section**	**Air Section**	**Seats**	**Balls**	**Diaphragms**	**Connections**	**Options**
VA25(HE)	**A**	**A**	**SS**	**BN**	**BN**	**TB**	**00**

Seats

NOTE: Some kits may not be available for your model. See the configurator tool at www.verderair.com or speak with your distributor.

Kits include:

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

Seat Material		**Kit**
AC	Acetal	859.0009
AL	Aluminum	859.0010
BN	Buna-N (o-rings not used)	859.0011
GE	Geolast	859.0012
HY	TPE (o-rings not used)	859.0013
KY	PVDF	859.0087
PP	Polypropylene	859.0014
SP	Santoprene	859.0015
SS	Stainless steel (metal pumps)	859.0016
	Stainless steel (plastic pumps)	859.0753
VT	FKM Fluoroelastomer (o-rings not used)	859.0017

O-Ring Kits

Kit Includes:

- 8 o-rings, PTFE (12)

Seat Material	**Kit**	**Qty.**
AC, AL, GE, KY, PP, SP, SS	859.0034	8
BN, HY, VT	Model includes no seat o-rings	0

Check Balls

NOTE: Some kits may not be available for your model. See the configurator tool at www.verderair.com or speak with your distributor.

Kits Include:

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

Check Ball Material		**Kit**
AC	Acetal	859.0018
BN	Buna-N	859.0019
GE	Geolast®	859.0020
HY	TPE	859.0021
NE	Polychloroprene	859.0022
NW	Polychloroprene with stainless steel core	859.0023
SP	Santoprene®	859.0025
SS	Stainless Steel	859.0026
TF	PTFE	859.0024
VT	FKM Fluoroelastomer	859.0027

Diaphragms

Sample Configuration Number							
Pump Size	**Fluid Section**	**Air Section**	**Seats**	**Balls**	**Diaphragms**	**Connections**	**Options**
VA25(HE)	**A**	**A**	**SS**	**BN**	**BN**	**TB**	**00**

NOTE: Some kits may not be available for your model. See the configurator tool at www.verderair.com or speak with your distributor.

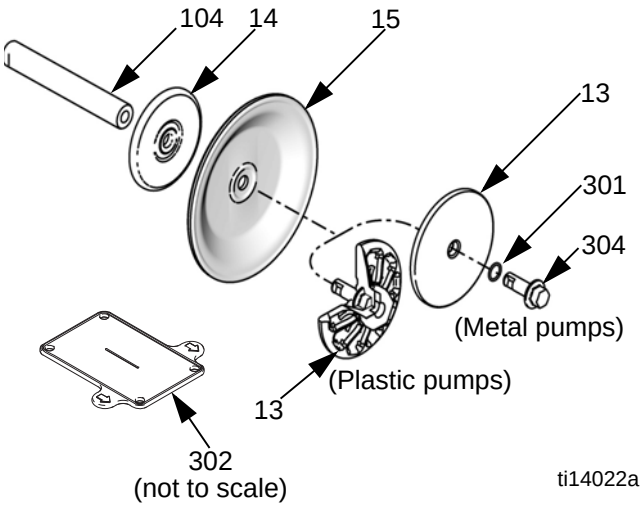
Standard Diaphragms

Kits include:

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

NOTE: Fluid plates (13, 14) and diaphragm shaft bolts (304) are sold separately. See page **27.** The shaft (104) is part of Kit 859.0000, the Center Section Rebuild Kit.

Diaphragm Material		**Kit**
BN	Buna-N	859.0001
VT	FKM Fluoroelastomer	859.0008
GE	Geolast	859.0002
SP	Santoprene	859.0007
HY	TPE	859.0003



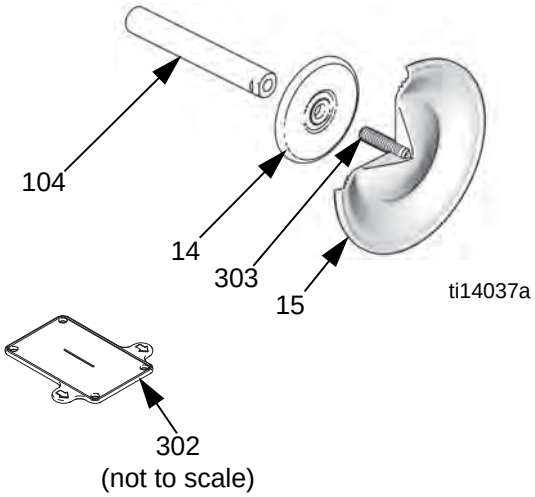
Overmolded Diaphragms

Kits include:

- 8 o-rings, ptfe (12)
- 2 overmolded diaphragms (15, material indicated in table)
- 2 diaphragm set screws, stainless steel (303)
- 1 diaphragm install tool (302)

NOTE: Fluid plates (13, 14) and diaphragm shaft bolts (304) are sold separately. See page **27.** The shaft (104) is part of Kit 859.0000, the Center Section Rebuild Kit.

Diaphragm Material		**Kit**
NO	Polychloroprene	859.0004
TO	PTFE	859.0005



Diaphragms (continued)

Sample Configuration Number							
Pump Size	**Fluid Section**	**Air Section**	**Seats**	**Balls**	**Diaphragms**	**Connections**	**Options**
VA25(HE)	**A**	**A**	**SS**	**BN**	**BN**	**TB**	**00**

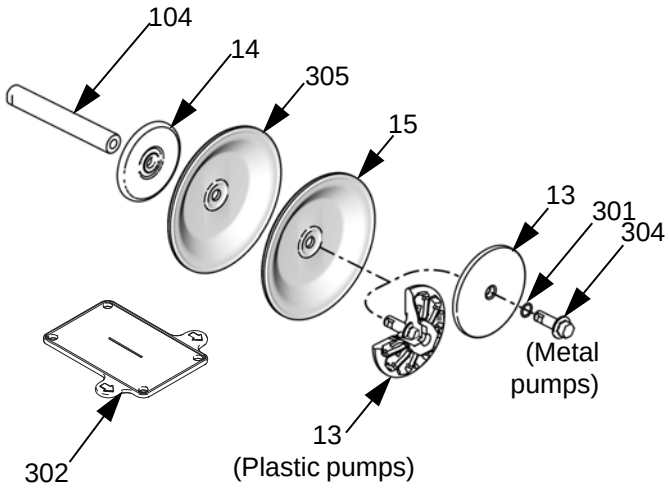
Two-Piece Diaphragms

Kits include:

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

Diaphragm Material		**Kit**
TF	PTFE and EPDM	859.0006
TS	PTFE and Santoprene	859.0414

NOTE: Fluid plates (13, 14) and diaphragm shaft bolts (304) are sold separately. See page **27.** The shaft (104) is part of Kit 859.0000, the Center Section Rebuild Kit.



Air and Fluid Plates

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

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

Kits for **polypropylene, conductive polypropylene,** and **PVDF** pumps include:

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

Pump Material	**Air and Fluid Plate Kit**
Aluminum	859.0055
Conductive Polypropylene	859.0056
Hastelloy	859.0715
Polypropylene	859.0056
PVDF	859.0057
Stainless Steel	859.0082

Diaphragm Shaft Bolt (Metal Pumps)

Kit 859.0085 includes:

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

Seat, Check Ball, and Diaphragm Kits

Sample Configuration Number							
Pump Size	**Fluid Section**	**Air Section**	**Seats**	**Balls**	**Diaphragms**	**Connections**	**Options**
VA25(HE)	**A**	**A**	**SS**	**BN**	**BN**	**TB**	**00**

Part No.	Pump Material	Seats	Balls	Diaphragms	O-Rings
859.0131	M/P	PP	TF	TF	TF
859.0132	M/P	PP	TF	TO	TF
859.0133	M/P	PP	BN	BN	TF
859.0134	M/P	PP	SP	SP	TF
859.0135	M/P	PP	VT	VT	TF
859.0139	M/P	HY	AC	HY	TF
859.0140	M/P	KY	TF	TF	TF
859.0141	M/P	KY	TF	TO	TF
859.0142	M/P	GE	GE	GE	TF
859.0143	M/P	AL	BN	BN	TF
859.0144	M/P	AL	GE	GE	TF
859.0145	M/P	AL	SP	SP	TF
859.0146	M/P	AL	TF	TO	TF
859.0147	M/P	AL	TF	TF	TF
859.0148	M/P	SP	SP	SP	TF
859.0149	M/P	VT	VT	VT	TF
859.0136	M	SS	BN	BN	TF
859.0754	P	SS	BN	BN	TF
859.0137	M	SS	TF	TF	TF
859.0755	P	SS	TF	TF	TF
859.0138	M	SS	TF	TO	TF
859.0756	P	SS	TF	TO	TF
859.0251	M	SS	SP	SP	TF
859.0757	P	SS	SP	SP	TF
859.0416	M	SS	NW	BN	TF
859.0758	P	SS	NW	BN	TF
859.0417	M	SS	NW	NO	TF
859.0759	P	SS	NW	NO	TF
859.0418	M	SS	SS	TF	TF
859.0760	P	SS	SS	TF	TF
859.0590	M	SS	GE	GE	TF
859.0593	M	SS	SS	BN	TF
859.0582	M	SS	SS	TF	TF
859.0591	M	SS	SS	TO	TF
859.0584	M	SS	VT	VT	TF
859.0581	M/P	AC	BN	BN	TF
859.0588	M/P	AC	TF	TF	TF
859.0580	M/P	BN	BN	BN	TF

Part No.	Pump Material	Seats	Balls	Diaphragms	O-Rings
859.0415	M/P	GE	GE	BN	TF
859.0587	M/P	KY	SP	SP	TF
859.0586	M/P	KY	TF	SP	TF
859.0589	M/P	PP	GE	GE	TF
859.0594	M/P	PP	VT	TF	TF
859.0579	P	SS	SS	BN	TF
859.0585	P	SS	SS	TF	TF

Accessories

Fluid Pressure Relief Kit 819.6479
(for aluminum pumps)
Includes pipe bushings, hose adapter, relief valve, and tubing.

Fluid Pressure Relief Kit 819.0159
(for plastic pumps)
Includes fluid pressure relief valve.

Wall Mount Kit 859.0107
Includes bracket, 4 dampeners, 8 washers, and 8 lock nuts.

Wall Bracket Dampener Kit 859.0124
Includes 4 dampeners.

Rubber Foot Mounting Kit 819.4333
Includes washers, nuts, and rubber feet.

Grounding Wire Assembly Kit 819.0157
Includes ground wire and clamp.

Standard Pipe Flange Kits
819.6885 - Polypropylene
819.6886 - Stainless steel
819.6887 - PVDF
Each kit includes the pipe flange, a PTFE gasket, bolts, spring lock washers, flat washers and nuts.

Optional Muffler
Part No. 819.7000, 3/4 npt, aluminum

Technical Data

Maximum fluid working pressure	125 psi (0.86 MPa, 8.6 bar)
Air pressure operating range	20-125 psi (0.14-0.86 MPa, 1.4-8.6 bar)
Fluid displacement per cycle	0.17 gal. (0.64 liters)
Air consumption at 70 psi (0.48 MPa, 4.8 bar), 20 gpm (76 lpm)	25 scfm
Maximum values with water as media under submerged inlet conditions at ambient temperature:	
Maximum air consumption	67 scfm
Maximum free-flow delivery	50 gpm (189 lpm)
Maximum pump speed	280 cpm
Maximum suction lift	16 ft (4.9 m) dry, 29 ft (8.8 m) wet
Flooded volume	0.375 gal. (1.42 liters)
Maximum size pumpable solids	1/8 in. (3.2 mm)
Recommended cycle rate for continuous use	93 - 140 cpm
Recommended cycle rate for circulation systems	20 cpm
Sound Power*	
at 70 psi (0.48 MPa, 4.8 bar) and 50 cpm	78 dBa
at 100 psi (0.7 MPa, 7.0 bar) and full flow	90 dBa
Sound Pressure**	
at 70 psi (0.48 MPa, 4.8 bar) and 50 cpm	84 dBa
at 100 psi (0.7 MPa, 7.0 bar) and full flow	96 dBa
Operating temperature range	see page 31
Air inlet size	1/2 npt(f)
Fluid inlet size	
Aluminum (VA25(HE)AA)	1 in. npt(f) or 1 in. bspt
Plastic (VA25(HE)PP, VA25(HE)CC, and VA25(HE)KP)	1 in. raised face ANSI/DIN flange
Hastelloy (VA25(HE)HC) and Stainless Steel (VA25(HE)SA, VA25(HE)SC, and VA25(HE)SP)	1 in. npt(f) or 1 in. bspt
Fluid outlet size	
Aluminum (VA25(HE)AA)	1 in. npt(f) or 1 in. bspt
Plastic (VA25(HE)PP, VA25(HE)CC, and VA25(HE)KP)	1 in. raised face ANSI/DIN flange
Hastelloy (VA25(HE)HC) and Stainless Steel (VA25(HE)SA, VA25(HE)SC, and VA25(HE)SP)	1 in. npt(f) or 1 in. bspt
Weight	
Aluminum (VA25(HE)AA)	23 lb. (10.5 kg)
Hastelloy (VA25(HE)HC)	41 lb. (18.6 kg)
Polypropylene and Conductive Polypropylene (VA25(HE)PP and VA25(HE)CC)	18 lb. (8.2 kg)
PVDF(VA25(HE)KP)	26 lb (11.8 kg)
Stainless Steel	
with conductive polypropylene center (VA25(HE)SC)	36.3 lb. (16.5 kg)
with polypropylene center (VA25(HE)SP)	37.3 lb. (16.9 kg)
with aluminum center (VA25(HE)SA)	41.4 lb. (18.8 kg)
Wetted parts include material(s) chosen for seat, ball, and diaphragm options, **plus** the pump's material of construction	
VA25(HE)AA	Aluminum
VA25(HE)HC	Hastelloy
VA25(HE)PP and VA25(HE)CC	Polypropylene
VA25(HE)KP	PVDF
VA25(HE)SA, VA25(HE)SC, and VA25(HE)SP	Stainless Steel

Non-wetted external parts

Aluminum (VA25(HE)AA)	aluminum, coated carbon steel
Hastelloy (VA25(HE)HC)	hastelloy, stainless steel, polypropylene or aluminum (if used in center section)
Plastic (VA25(HE)PP, VA25(HE)CC, and VA25(HE)KP)	stainless steel, polypropylene
Stainless Steel (VA25(HE)SA, VA25(HE)SC, and VA25(HE)SP)	stainless steel, polypropylene or aluminum (if used in center section)

** Sound power measured per ISO-9614-2.*
*** Sound pressure was tested 3.28 ft (1 m) from equipment.*

Operating Temperature Range

NOTICE

Temperature limits are based on mechanical stress only. Certain chemicals will further limit the maximum operating temperature range. Stay within the temperature range of the most-restricted wetted component. Operating at a 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, Hastelloy, 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 (VT)*	-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 overmolded diaphragm (NO) or Polychloroprene check balls (NE or NW)	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 overmolded diaphragm (TO)	40° to 180°F	4° to 82°C	40° to 150°F	4° to 66°C	40° to 180°F	4.0° to 82°C
PTFE check balls or two-piece PTFE/EPDM diaphragm (TF)	40° to 220°F	4° to 104°C	40° to 150°F	4° to 66°C	40° to 220°F	4° to 104°C
PVDF (KY)	10° to 225°F	-12° to 107°C	32° to 150°F	0° to 66°C	10° to 225°F	-12° to 107°C
Santoprene® (SP)	-40° to 180°F	-40° to 82°C	32° to 150°F	0° to 66°C	10° to 180°F	-12° to 82°C
TPE (HY)	-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 operating temperature in aluminum or stainless steel pumps is 320°F (160°C).*

Notes

Customer Services/Guarantee

CUSTOMER SERVICES

If you require spare parts, please contact your local distributor, providing the following details:

- Pump Model
- Type
- Serial Number, and
- Date of First Order.

GUARANTEE

All VERDER pumps are warranted to the original user against defects in workmanship or materials under normal use (rental use excluded) for two years after purchase date. This warranty does not cover failure of parts or components due to normal wear, damage or failure which in the judgement of VERDER arises from misuse.

Parts determined by VERDER to be defective in material or workmanship will be repaired or replaced.

LIMITATION OF LIABILITY

To the extent allowable under applicable law, VERDER’s liability for consequential damages is expressly disclaimed. VERDER’s liability in all events is limited and shall not exceed the purchase price.

WARRANTY DISCLAIMER

VERDER has made an effort to illustrate and describe the products in the enclosed brochure accurately; however, such illustrations and descriptions are for the sole purpose of identification and do not express or imply a warranty that the products are merchantable, or fit for a particular purpose, or that the products will necessarily conform to the illustration or descriptions.

PRODUCT SUITABILITY

Many regions, states and localities have codes and regulations governing the sale, construction, installation and/or use of products for certain purposes, which may vary from those in neighboring areas. While VERDER attempts to assure that its products comply with such codes, it cannot guarantee compliance, and cannot be responsible for how the product is installed or used. Before purchasing and using a product, please review the product application as well as the national and local codes and regulations, and be sure that product, installation, and use complies with them.

Original instructions. This manual contains English.
Revision ZAE, January 2020

Austria
Verder Austria
Eitnergasse 21/Top 8
A-1230 Wien
AUSTRIA
Tel: +43 1 86 51 074 0
Fax: +43 1 86 51 076
e-mail: office@verder.at

Belgium
Verder nv
Kontichsesteenweg 17
B–2630 Aartselaar
BELGIUM
Tel: +32 3 877 11 12
Fax: +32 3 877 05 75
e-mail: info@verder.be

China
Verder Shanghai Instruments and Equipment Co., Ltd
Building 8 Fuhai Business Park No. 299
Bisheng Road, Zhangjiang Hiteck Park
Shanghai 201204
CHINA
Tel: +86 21 33932950
Fax: +86 21 33932955
e-mail: info@verder.cn

Bulgaria
Verder Bulgaria Ltd
Vitosh department,
Manastriski Livadi Zapad district,
110 Bulgaria Blvd., 2-nd Floor, apt. 15-16,
1618 - Sofia
BULGARIA
Tel: 0878407370
Fax: 02 9584085
email: office@verder.bg

Czech Republic
Verder s.r.o.
Vodnanská 651/6 (vchod Chlumecka 15)
198 00 Praha 9-Kyje
CZECH REPUBLIC
Tel: +420 261 225 386-7
Web: http://www.verder.cz
e-mail: info@verder.cz

France
Verder France
8 Allée Rosa Luxembourg
Immeulde Arizona
95610 Eragny sur Oise
FRANCE
Tel: +33 173 43 98 41
Fax: +33 134 64 44 50
e-mail: info@verder.fr

Germany
Verder Deutschland GmbH
Retsch-Allee 1-5
42781 Haan
GERMANY
Tel: 02104/2333-200
Fax: 02104/2333-299
e-mail: info@verder.de

Hungary
Verder Hongary Kft
Budafoke ut 187 - 189
HU-1117 Budapest
HUNGARY
Tel: 0036 1 3651140
Fax: 0036 1 3725232
e-mail: info@verder.hu

India
Verder India Pumps Pvt Ltd.
Plot No-3B, D-1 Block,
MIDC Chinchwad,
Pune - 411019
INDIA
e-mail:
Sales@verder.co.in
www.verder.co.in

Italy
Verder Italia
Via Maestri Del lavoro, 5
02100 Vazia, Rieti
ITALY
Tel: +39 07 46 229064
e-mail: info@verder.it

The Netherlands
Verder BV
Leningradweg 5
NL 9723 TP Groningen
THE NETHERLANDS
Tel: +31 50 549 59 00
Fax: +31 50 549 59 01
e-mail: info@verder.nl

Poland
Verder Polska
ul.Porcelanowa 23
PL–40 036 Katowice
POLAND
Tel: +48 32 78 15 032
Fax: +48 32 78 15 034
e-mail: verder@verder.pl

Romania
Verder România
Drumul Balta Doamnei
no 57-61
Sector 3
CP 72-117
032624 Bucuresti
ROMANIA
Tel: +40 21 335 45 92
Fax: +40 21 337 33 92
e-mail: office@verder.ro

Slovak Republik
Verder Slovakia s.r.o.
Silacska 1
SK-831 02 Bratislava
SLOVAK REPUBLIK
Tel: +421 2 4463 07 88
Fax: +421 2 4445 65 78
e-mail: info@verder.sk

South Africa
Verder SA
197 Flaming Rock Avenue
Northlands Business Park
Newmarket Street
ZA Northriding
SOUTH AFRICA
Tel: +27 11 704 7500
Fax: +27 11 704 7515
e-mail: info@verder.co.za

Switzerland
Verder Deutschland GmbH
Sales Switzerland
Retsch-Allee 1–5
D-42781 Haan
GERMANY
Tel: +41 (0)61 331 33 13
Fax: +41 (0)61 331 63 22
e-mail: info@verder.ch

United Kingdom
Verder UK Ltd.
Unit 3 California Drive
Castleford, WF10 5QH
UNITED KINGDOM
Tel: +44 (0) 1924 221 001
Fax: +44 (0) 1132 465 649
e-mail: info@verder.co.uk

United States of America
Verder Inc.
312 Corporate Parkway
Suite 101
Macon, GA 31210
USA
Tel: +1 877 783 7337
Fax: +1 478 476 9867
e-mail: sales@verder-us.com