

# Displacement Pump

309577ZAC

EN

***For use with Reactor<sup>®</sup> air and electric proportioners. For professional use only.***

*3500 psi (24.5 MPa, 245 bar) Maximum Working Pressure*

See page 2 for model information.



## **Important Safety Instructions**

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



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# Model Numbers

Part, Series	Effective Area of Displacement
<b>Component A (ISO) Pumps with wet-cup flush feature</b>	
246830, Series A	0.396 in. <sup>2</sup> (2.55 cm <sup>2</sup> )
246831, Series B	0.552 in. <sup>2</sup> (3.56 cm <sup>2</sup> )
246832, Series A	0.743 in. <sup>2</sup> (4.79 cm <sup>2</sup> )
24Y175, Series A	0.396 in. <sup>2</sup> (2.55 cm <sup>2</sup> )
25P857, Series A	0.396 in. <sup>2</sup> (2.55 cm <sup>2</sup> )
25P858, Series A	0.552 in. <sup>2</sup> (3.56 cm <sup>2</sup> )
25P944, Series A	0.743 in. <sup>2</sup> (4.79 cm <sup>2</sup> )
<b>Component B (Resin) Pumps</b>	
245970, Series A	0.396 in. <sup>2</sup> (2.55 cm <sup>2</sup> )
245971, Series B	0.552 in. <sup>2</sup> (3.56 cm <sup>2</sup> )
245972, Series A	0.743 in. <sup>2</sup> (4.79 cm <sup>2</sup> )
24Y174, Series A	0.396 in. <sup>2</sup> (2.55 cm <sup>2</sup> )
18D010, Series A	0.396 in. <sup>2</sup> (2.55 cm <sup>2</sup> )



# Related Manuals

The following manuals are available for the Reactor. Refer to these manuals for detailed equipment information.






<b>Reactor Electric Proportioner</b>	
Manual in English	Description
309551 or 312065	Reactor Electric Proportioner, Operation Manual
3A8500	Reactor 3, Operation Manual
309574 or 312066	Reactor Electric Proportioner, Repair-Parts Manual
309911	Reactor Pump Wet-Cup Flush Kits

# 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.

 <h2 style="margin: 0;">WARNING</h2>	
    	<p><b>SKIN INJECTION HAZARD</b></p> <p>High-pressure fluid from dispensing device, hose leaks, or ruptured components will pierce skin. This may look like just a cut, but it is a serious injury that can result in amputation. Get immediate surgical treatment.</p> <ul style="list-style-type: none"> <li>• Engage trigger lock when not dispensing.</li> <li>• Do not point dispensing device at anyone or at any part of the body.</li> <li>• Do not put your hand over the fluid outlet.</li> <li>• Do not stop or deflect leaks with your hand, body, glove, or rag.</li> <li>• Follow the <b>Pressure Relief Procedure</b> when you stop dispensing and before cleaning, checking, or servicing equipment.</li> <li>• Tighten all fluid connections before operating the equipment.</li> <li>• Check hoses and couplings daily. Replace worn or damaged parts immediately.</li> </ul>
   	<p><b>FIRE AND EXPLOSION HAZARD</b></p> <p>Flammable fumes, such as solvent and paint fumes, in <b>work area</b> can ignite or explode. Paint or solvent flowing through the equipment can cause static sparking. To help prevent fire and explosion:</p> <ul style="list-style-type: none"> <li>• Use equipment only in well ventilated area.</li> <li>• Eliminate all ignition sources; such as pilot lights, cigarettes, portable electric lamps, and plastic drop cloths (potential static sparking).</li> <li>• Ground all equipment in the work area. See <b>Grounding</b> instructions in related manuals.</li> <li>• Never spray or flush solvent at high pressure.</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>• Hold gun firmly to side of grounded pail when triggering into pail. Do not use pail liners unless they are anti-static or conductive.</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>

# **WARNING**

 	<p><b>EQUIPMENT MISUSE HAZARD</b></p> <p>Misuse can cause death or serious injury.</p> <ul style="list-style-type: none"> <li>• Do not operate the unit when fatigued or under the influence of drugs or alcohol.</li> <li>• Do not exceed the maximum working pressure or temperature rating of the lowest rated system component. See <b>Technical Specifications</b> in all equipment manuals.</li> <li>• Use fluids and solvents that are compatible with equipment wetted parts. See <b>Technical Specifications</b> in all equipment manuals. Read fluid and solvent manufacturer’s warnings. For complete information about your material, request Safety Data Sheet (SDS) from distributor or retailer.</li> <li>• Do not leave the work area while equipment is energized or under pressure.</li> <li>• Turn off all equipment and follow the <b>Pressure Relief Procedure</b> when equipment is not in use.</li> <li>• Check equipment daily. Repair or replace worn or damaged parts immediately with genuine manufacturer’s replacement parts only.</li> <li>• Do not alter or modify equipment. Alterations or modifications may void agency approvals and create safety hazards.</li> <li>• Make sure all equipment is rated and approved for the environment in which you are using it.</li> <li>• Use equipment only for its intended purpose. Call your distributor for information.</li> <li>• Route 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>MOVING PARTS HAZARD</b></p> <p>Moving parts can pinch, cut, or amputate fingers and other body parts.</p> <ul style="list-style-type: none"> <li>• Keep clear of moving parts.</li> <li>• Do not operate equipment with protective guards or covers removed.</li> <li>• Pressurized equipment can start without warning. Before checking, moving, or servicing equipment, follow the <b>Pressure Relief Procedure</b> and disconnect all power sources.</li> </ul>
	<p><b>BURN HAZARD</b></p> <p>Equipment surfaces and fluid that is 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>



# WARNING



## TOXIC FLUID OR FUMES HAZARD

Toxic fluids or fumes can cause serious injury or death if splashed in the eyes or on skin, inhaled or swallowed.

- Read Safety Data Sheet (SDS) for handling instructions and to know the specific hazards of the fluids you are using, including the effects of long-term exposure.
- When spraying, servicing equipment, or when in the work area, always keep work area well ventilated and always wear appropriate personal protective equipment. See **Personal Protective Equipment** warnings in this manual.
- Store hazardous fluid in approved containers, and dispose of it according to applicable guidelines.



## PERSONAL PROTECTIVE EQUIPMENT

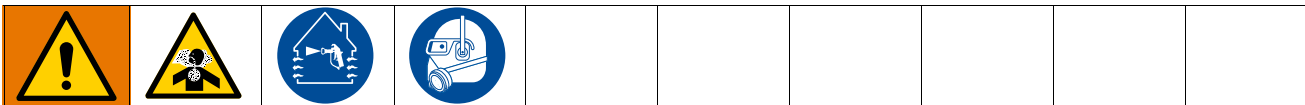
Always wear appropriate personal protective equipment and cover all skin when spraying, servicing equipment, or when in the work area. Protective equipment helps prevent serious injury, including long-term exposure; inhalation of toxic fumes, mists or vapors; allergic reaction; burns; eye injury and hearing loss. This protective equipment includes but is not limited to:

- A properly fitting respirator, which may include a supplied-air respirator, chemically impermeable gloves, protective clothing and foot coverings as recommended by the fluid manufacturer and local regulatory authority.
- Protective eyewear and hearing protection.

# Important Isocyanate (ISO) Information



Isocyanates (ISO) are catalysts used in two component materials.

## Isocyanate Conditions



Spraying or dispensing fluids that contain isocyanates creates potentially harmful mists, vapors, and atomized particulates.

- Read and understand the fluid manufacturer’s warnings and Safety Data Sheet (SDS) to know specific hazards and precautions related to isocyanates.
- Use of isocyanates involves potentially hazardous procedures. Do not spray with this equipment unless you are trained, qualified, and have read and understood the information in this manual and in the fluid manufacturer’s application instructions and SDS.
- Use of incorrectly maintained or mis-adjusted equipment may result in improperly cured material, which could cause off gassing and offensive odors. Equipment must be carefully maintained and adjusted according to instructions in the manual.
- To prevent inhalation of isocyanate mists, vapors and atomized particulates, everyone in the work area must wear appropriate respiratory protection. Always wear a properly fitting respirator, which may include a supplied-air respirator. Ventilate the work area according to instructions in the fluid manufacturer’s SDS.
- Avoid all skin contact with isocyanates. Everyone in the work area must wear chemically impermeable gloves, protective clothing and foot coverings as recommended by the fluid manufacturer and local regulatory authority. Follow all fluid manufacturer recommendations, including those regarding handling of contaminated clothing. After spraying, wash hands and face before eating or drinking.
- Hazard from exposure to isocyanates continues after spraying. Anyone without appropriate personal protective equipment must stay out of the work area during application and after application for the time period specified by the fluid manufacturer. Generally this time period is at least 24 hours.
- Warn others who may enter work area of hazard from exposure to isocyanates. Follow the recommendations of the fluid manufacturer and local regulatory authority. Posting a placard such as the following outside the work area is recommended:

 <b>WARNING</b>	
	<b>TOXIC FUMES HAZARD</b>
DO NOT ENTER DURING SPRAY FOAM APPLICATION OR FOR ___ HOURS AFTER APPLICATION IS COMPLETE	
<b>DO NOT ENTER UNTIL:</b>	
DATE: _____	
TIME: _____	

## Keep Components A and B Separate



Cross-contamination can result in cured material in fluid lines which could cause serious injury or damage equipment. To prevent cross-contamination:

- Never interchange component A and component B wetted parts.
- Never use solvent on one side if it has been contaminated from the other side.

## Moisture Sensitivity of Isocyanates

Exposure to moisture (such as humidity) will cause ISO to partially cure, forming small, hard, abrasive crystal that become suspended in the fluid. Eventually a film will form on the surface and the ISO will begin to gel, increasing in viscosity.

### NOTICE

Partially cured ISO will reduce performance and the life of all wetted parts.

- Always use a sealed container with a desiccant dryer in the vent, or a nitrogen atmosphere. **Never** store ISO in an open container.
- Keep the ISO pump wet cup or reservoir (if installed) filled with appropriate lubricant. The lubricant creates a barrier between the ISO and the atmosphere.
- Use only moisture-proof hoses compatible with ISO.
- Never use reclaimed solvents, which may contain moisture. Always keep solvent containers closed when not in use.
- Always lubricate threaded parts with an appropriate lubricant when reassembling.

**NOTE:** The amount of film formation and rate of crystallization varies depending on the blend of ISO, the humidity, and the temperature.

## Foam Resins with 245 fa Blowing Agents

Some foam blowing agents will froth at temperatures above 90°F (33°C) when not under pressure, especially if agitated. To reduce frothing, minimize preheating in a circulation system.

## Changing Materials

### NOTICE

Changing the material types used in your equipment requires special attention to avoid equipment damage and downtime.

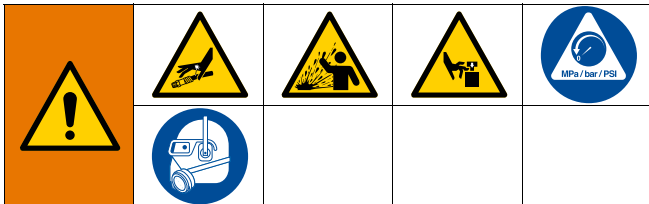
- When changing materials, flush the equipment multiple times to ensure it is thoroughly clean.
- Always clean the fluid inlet strainers after flushing.
- Check with your material manufacturer for chemical compatibility.
- When changing between epoxies and urethanes or polyureas, disassemble and clean all fluid components and change hoses. Epoxies often have amines on the B (hardener) side. Polyureas often have amines on the B (resin) side.

# Repair

## Pressure Relief Procedure

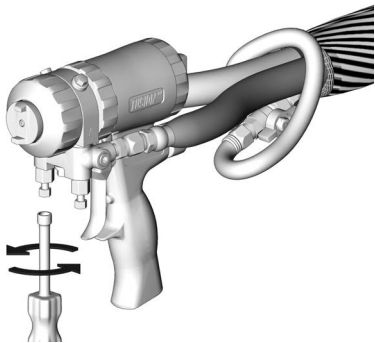


Follow the Pressure Relief Procedure whenever you see this symbol.



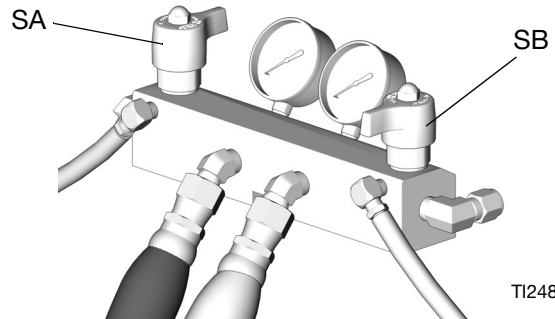
This equipment stays pressurized until pressure is manually relieved. To help prevent serious injury from pressurized fluid, such as skin injection, splashing fluid and moving parts, follow the Pressure Relief Procedure when you stop spraying and before cleaning, checking, or servicing the equipment.

1. Relieve pressure in gun and perform gun shutdown procedure. See gun manual.
2. Close gun fluid manifold valves A and B.






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3. Shut off feed pumps and agitator, if used.
4. Turn PRESSURE RELIEF/SPRAY valves (ASA, SB) to PRESSURE RELIEF. Route fluid to waste containers or supply tanks. Ensure that gauges drop to 0.



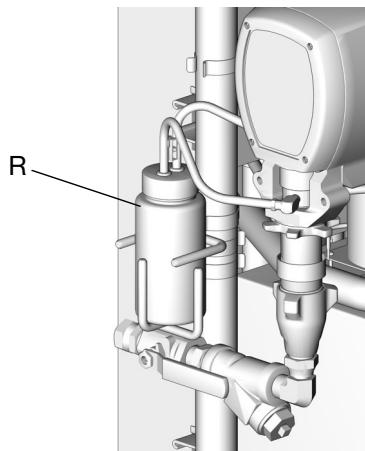
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## Fill the Wet-Cups

				
<p>Pump rod and connecting rod move during operation. Moving parts can cause serious injury such as pinching or amputation. Keep hands and fingers away from wet-cup during operation.</p>				
<p>Turn main power OFF  before filling wet cup.</p>				

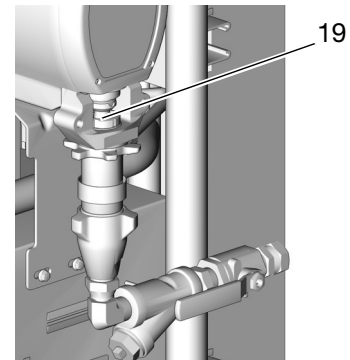
1. **Component A (ISO) Pump:** Keep reservoir (R) 3/4 filled with Graco Throat Seal Liquid (TSL), Part No. 206995. Wet-cup piston (28) circulates TSL through packing nut/wet-cup (19), to carry away isocyanate film on displacement rod.

After some time TSL will thicken and darken, and must be replaced. Thick, dirty TSL will not pump through lines and will harden in wet-cup. Check condition of TSL every week, minimum, and change when needed.



TI3765a-2

2. **Component B (Resin) Pump:** Check felt washers (21) in packing nut/wet-cup (19) daily. Keep saturated with Graco Throat Seal Liquid (TSL), Part No. 206995, to prevent material from hardening on displacement rod. Replace felt washers when worn or contaminated with hardened material.



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## Tools Needed

- Vise with flat jaws
- 12 in. adjustable, open end wrench (2)
- Non-sparking hammer, 20 oz maximum
- Small screwdriver
- Throat Seal Liquid (TSL), Graco Part No. 206995
- ISO Pump Oil, Graco Part No. 217374
- Pick or long small screwdriver
- Snap-ring pliers
- 1/2 in. (13 mm) diameter plastic rod
- 7/8 in. deep-well socket (246830 and 245970 only)
- 1/2 in. (13 mm) x 2.5 in. (64 mm) bolt with washers and nut
- Channel locks
- Dropcloth and rags

## Repair Kits

A repair kit is available for your pump. Kit parts are marked with an asterisk, for example (3\*). See **Repair Kits**, page 9. Kit must be purchased separately. For best results, use all parts in the kit.

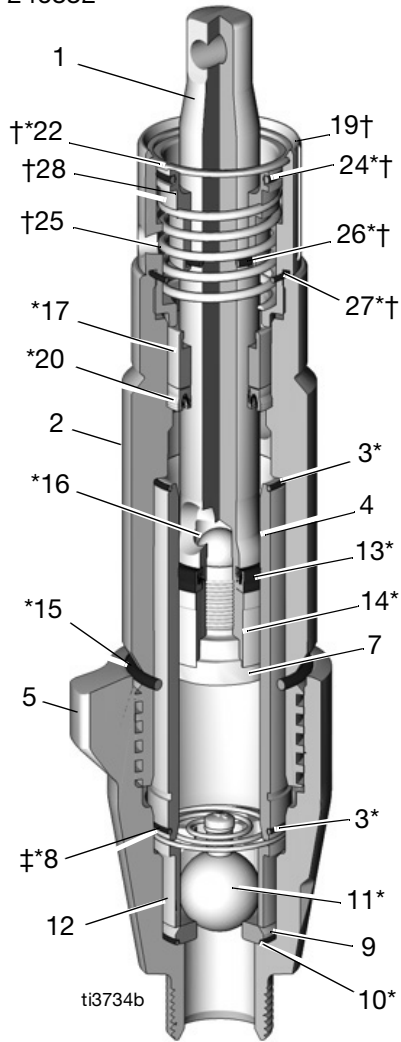
## Clean and Inspect Parts

1. Clean and inspect all parts. Intake and piston ball seats, sleeve, and displacement rod must not be worn, scratched, or damaged.
2. Remove and clean sleeve when repacking pump.

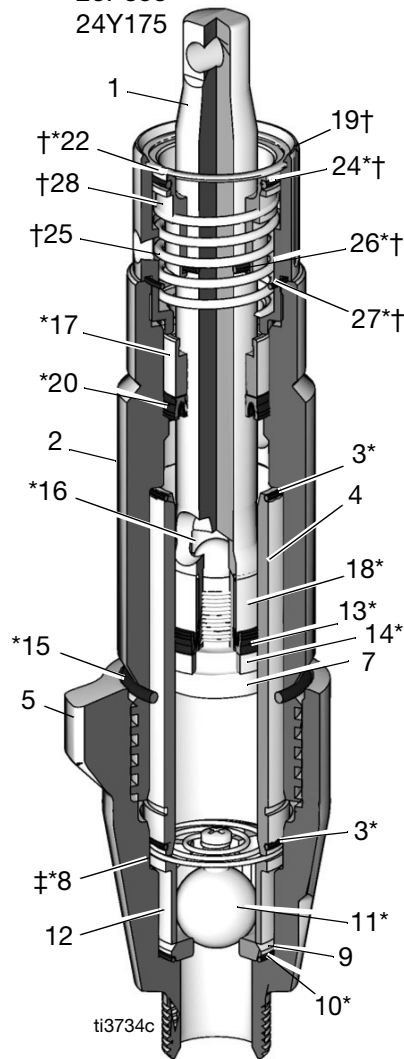
# Cutaway Views

## Component A (ISO) Pump

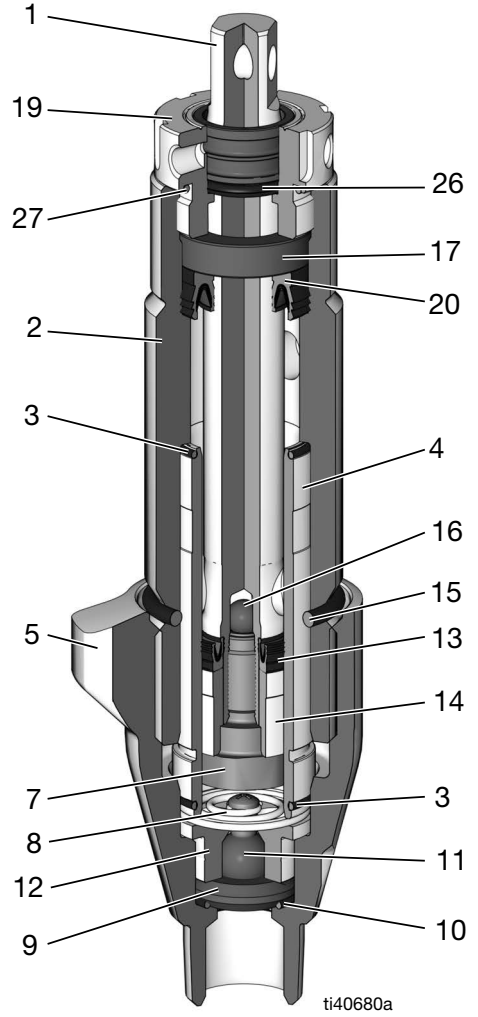
246830  
246832



246831  
25P858  
24Y175

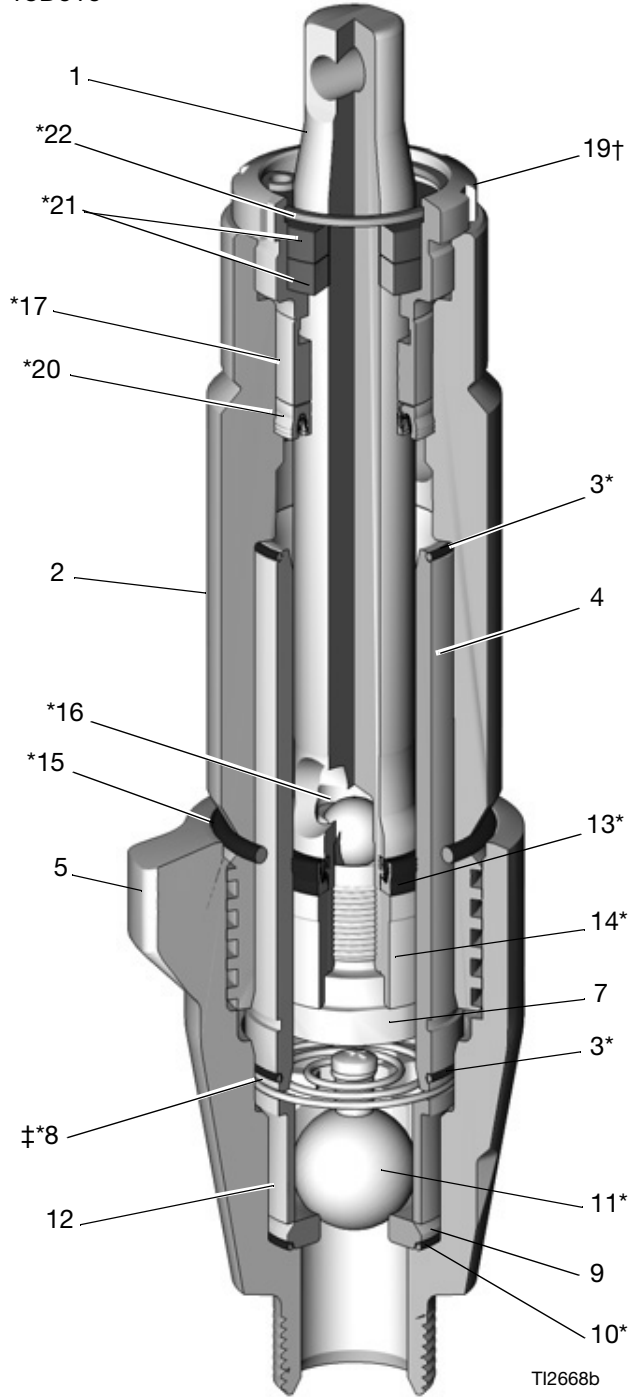


25P857  
25P944

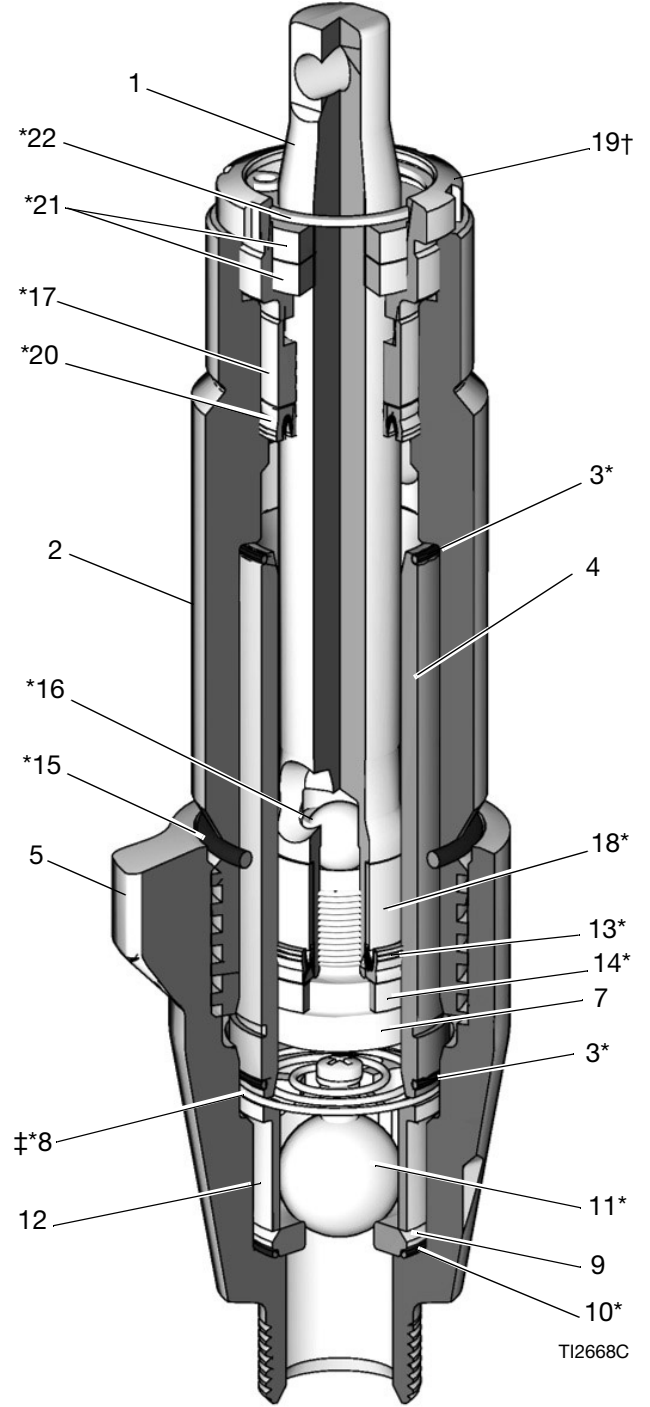


### Component B (Resin) Pump



245970  
245972  
18D010





245971  
24Y174



## Disassemble the Pump

				
<p>Pump rod and connecting rod move during operation. Moving parts can cause serious injury such as pinching or amputation. Keep hands and fingers away from connecting rod during operation.</p>				

1. Shut off **A**, **B**, and **Q** heat zones.
2. Flush the pumps. See your Reactor manual.
3. Relieve the pressure. Follow the **Pressure Relief Procedure**, page 8.
4. Press . The motor will run until the pumps are at the bottom of their strokes, then shut off.
5. Turn the main power OFF . Disconnect the power supply.

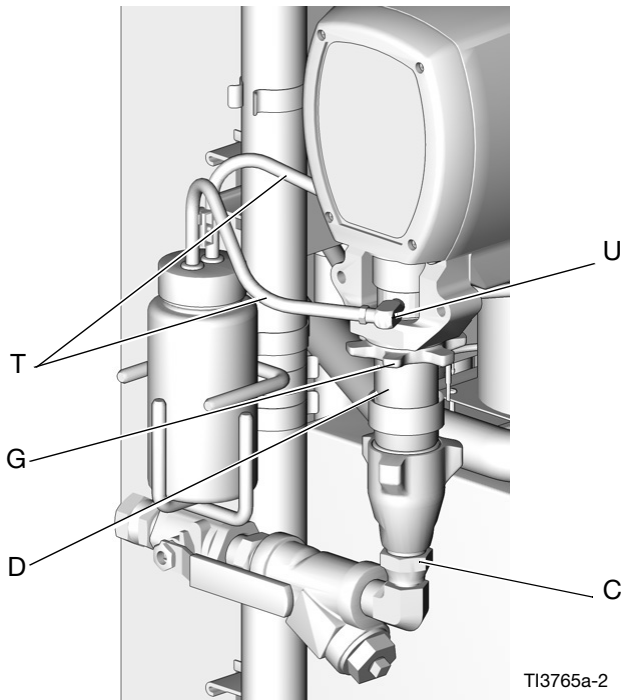
**NOTE:** Steps 6-8 apply to pump A. See FIG. 1. To disconnect pump B, go to steps 9 and 10. Use dropcloth or rags to protect Reactor and surrounding area from spills.

6. Disconnect the fluid inlet (C) and outlet (D). Also disconnect the steel outlet tube from the heater inlet.
7. Disconnect the tubes (T). Remove the tube fittings (U) from the wet-cup.
8. Loosen the star-shaped locknut (G) by hitting firmly with a non-sparking hammer. Unscrew the pump far enough to expose the retaining pin under the plastic finger guard. Push the retaining spring up. Push the pin out. Continue unscrewing the pump.

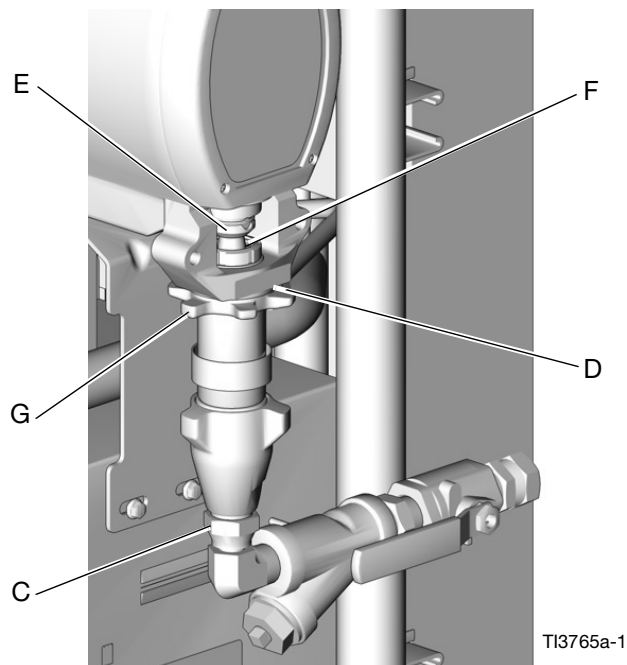
**NOTE:** Steps 9 and 10 apply to the pump B. See FIG. 2. Use a dropcloth or rags to protect the Reactor and surrounding area from spills.

9. Disconnect the fluid inlet (C) and outlet (D). Also disconnect the steel outlet tube from the heater inlet.

10. Push the retaining spring (E) up. Push the pin (F) out. Loosen the star-shaped locknut (G) by hitting firmly with a non-sparking hammer. Unscrew the pump.



**FIG. 1 Disconnect Pump A**

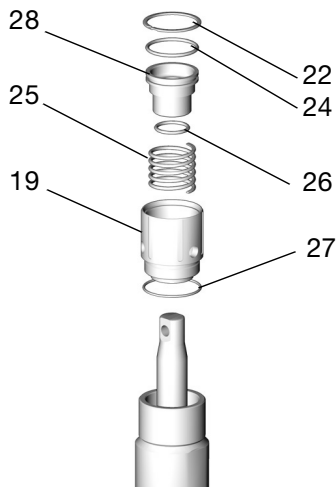


**FIG. 2 Disconnect Pump B**

11. Remove the packing wet-cup as follows:

**a. Component A (ISO) Pumps:**

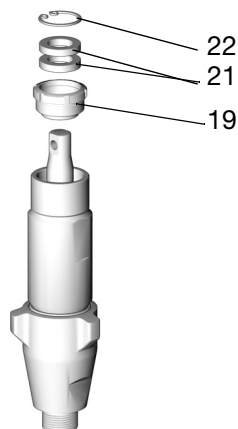
- Remove the packing wet-cup assembly.
- Compress the piston (28) into the wet-cup (19), using a 1/2 in. (13 mm) x 2.5 in. (64 mm) bolt with washers and nut.
- Remove the retaining ring (22).
- Remove the bolt, washers, and nut.
- Remove the piston (28), spring (25), and o-rings (24, 26, 27).



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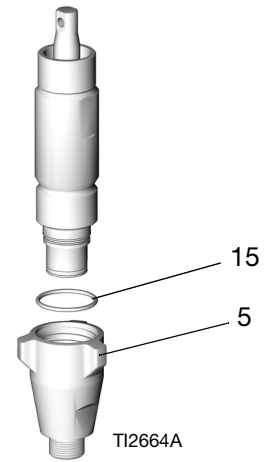
**b. Component B (Resin) Pumps:**

Unscrew the packing nut (19). Remove the retaining ring (22) and felt washers (21).



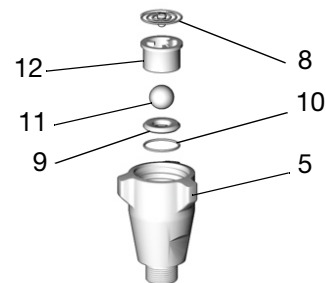
TI2662A

12. Loosen the intake valve housing (5) with a non-sparking hammer, then unscrew. Remove the o-ring (15).



TI2664A

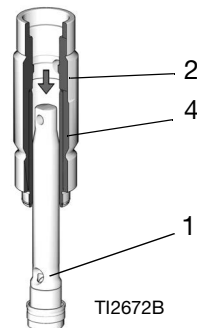
13. Disassemble the intake valve. Be sure to remove the o-ring (10).



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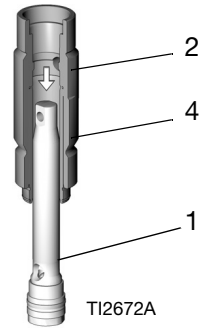
**NOTE:** The spring (8) is on Models 246832, 245972, 18D010, 25P857, 25P858, and 25P944 only.

14. Tap the rod (1) with a non-sparking hammer to drive it out of the cylinder (2).



TI2672B

Typical configuration

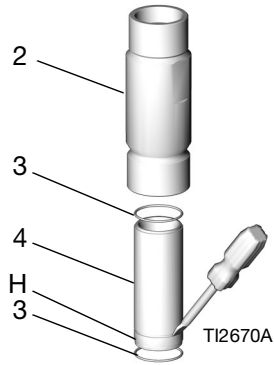


TI2672A

246831, 245971, 24Y175, and 24Y174 only

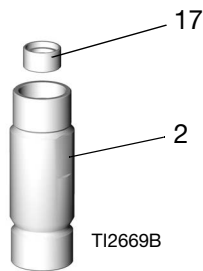
**NOTE:** The sleeve (4) may come out with the rod.

15. Using a screwdriver in the groove (H), remove the sleeve (4) from the cylinder (2), or pull it off of the rod. Remove the o-rings (3).

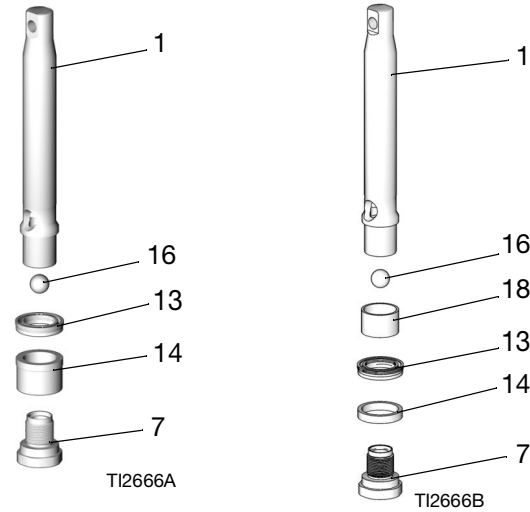


**NOTE:** Be sure the top o-ring (3) comes out.

16. Remove the bushing (17).



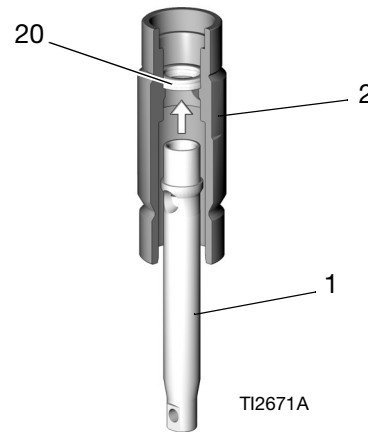
17. Unscrew the piston (7) from the rod (1). Remove the ball (16), u-cup (13), and bushing (14).



Typical configuration

246831, 245971, 24Y175,  
and 24Y174 only

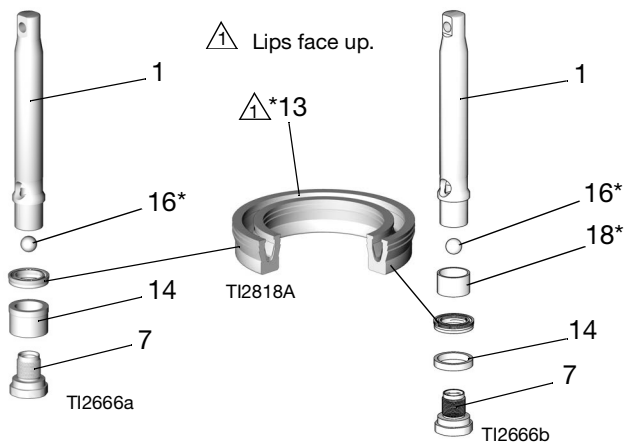
18. Insert the piston end of the rod (1) into the cylinder (2) and push the u-cup (20) out.



# Reassemble the Pump

**NOTE:** Coat all non-thread sealed parts with ISO Pump Oil before reassembly, to ease future disassembly.

1. Install the ball (16\*) in the rod (1). Center the u-cup (13\*) on the rod (1). The lips of the u-cup must face up. Use the piston (7) to evenly push the u-cup onto the rod, then remove the piston. Slide the bushing (14\*) onto the rod (1). The wide end of the bushing must face up, toward the u-cup.



Typical configuration

246831, 245971, 24Y174, and 24Y175 only

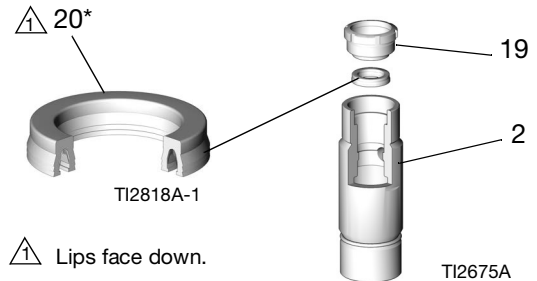
**NOTE:** Sealing the patch on the piston threads is good for four repackings. Use thread sealant on the piston threads after four repackings. Be sure none gets on the ball.

2. Install the piston (7). Be careful not to damage the sealing edges of the u-cup. Torque as specified below.

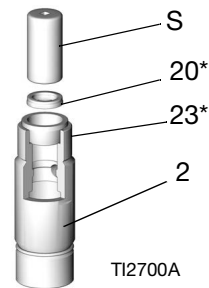
Model	Torque ft-lb (N•m)
246830, 245970, 18D010, and 25P857	24-30 (32-40)
246831, 245971, 25P858, and 24Y174	47-53 (63-71)
246832, 25P944, and 245972	95-105 (129-143)

3. Install the throat u-cup as follows:

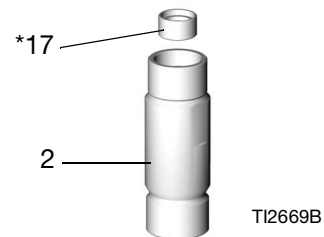
- a. **Models 246831, 246832, 245971, 245972, 24Y174, 18D010, 25P857, 25P858, 25P944, and 24Y175:** Grease the u-cup (20\*) and cylinder (2). Place the u-cup in the cylinder with the lips facing down. Be careful not to damage the sealing edges of the u-cup. Install the packing nut (19) to properly insert and align the u-cup, then remove the packing nut.



- b. **Models 246830 and 245970:** Grease the u-cup (20\*) and cylinder (2). Place the seal installation tool (23\*) in the cylinder. Place the u-cup in tool with lips facing down. Be careful not to damage the sealing edges of the u-cup. Press the u-cup in place with 7/8 in. deep-well socket (S). Remove the socket and tool.



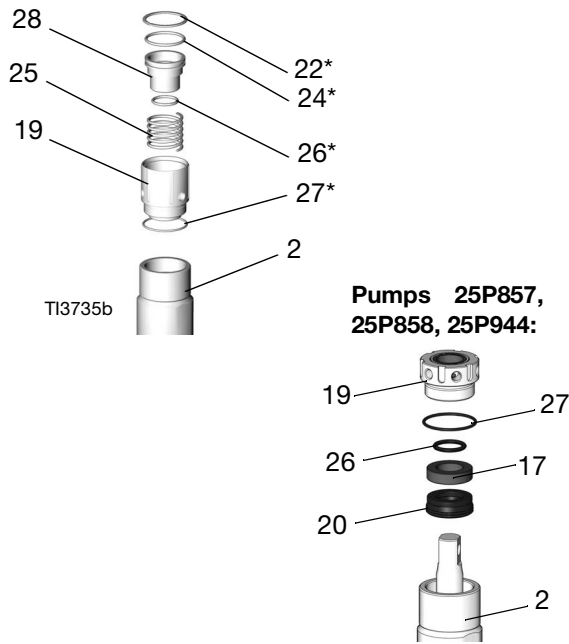
4. Insert bushing (17\*). Press bushing in place to seat u-cup.



5. Assemble the packing nut as follows:

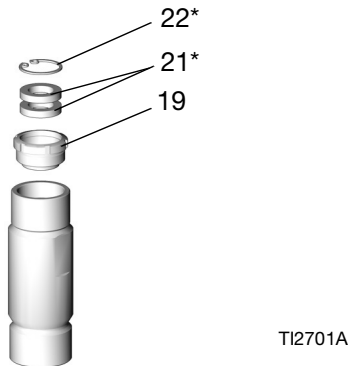
**a. Component A (ISO) Pump:**

- Install spring (25) in the wet-cup (19).
- Install o-rings (24\*, 26\*) on the piston (28) and insert the piston in the wet-cup.
- Compress the piston (28) into the wet-cup, using a 1/2 in. (13 mm) x 2.5 in. (64 mm) bolt with washers and nut.
- Install the retaining ring (22\*) in the groove.
- Remove the bolt, washers, and nut.
- Install the o-ring (27\*) on the wet-cup.
- Install the packing wet-cup assembly hand-tight. Screw the assembly all the way down, so the external o-ring (27) seats on top of the cylinder (2).



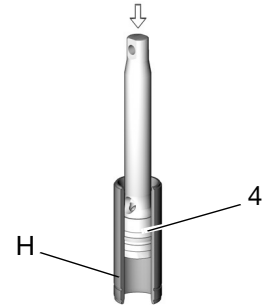
**b. Component B (Resin) Pump:**

- Install felt washers (21\*) into packing nut (19).
- Install the retaining ring (22\*).
- Install the packing nut handtight.

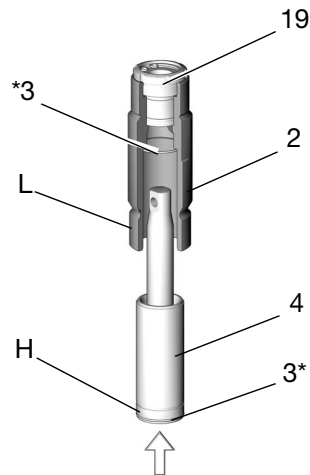


**NOTE:** The groove (H) in the sleeve outer surface must be toward the bottom.

6. Lubricate the piston u-cup and sleeve top edge. Push the piston assembly into the top of the sleeve (4). Drive in with a non-sparking hammer.

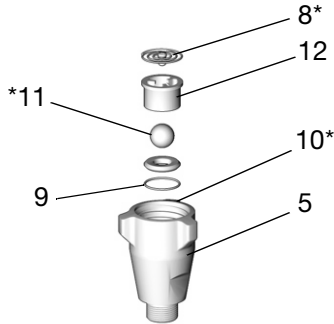


7. Lubricate the top 1-2 in. (25-50 mm) of the displacement rod (1) and outside of the sleeve (4). Grease the o-rings (3\*) and place one in the cylinder and other on the bottom of the sleeve.
8. Slide the sleeve into the bottom of the cylinder (2). Drive in with a hammer until the top of the groove (H) aligns with the bottom of the cylinder (L). Use a plastic rod to drive the displacement rod until 1/4-3/8 in. (6-10 mm) of its greatest diameter is visible above the packing nut (19).



- Reassemble the intake valve with o-ring (10\*), seat (9), and ball (11\*). Install ball guide (12).

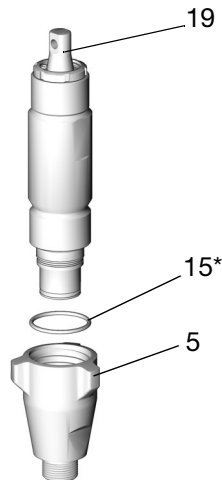
**Models 246832, 18D010, 25P857, 25P858, 25P944, and 245972 only:** Install spring (8\*) with screw at top.



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**NOTE:** The seat may be flipped over and used on the other side. Clean the seat thoroughly. No scratches are permitted on the sealing edge.

- Replace the o-ring (15\*). Install the intake valve. Torque the housing (5) as follows, or be sure the intake valve is snug against the cylinder.



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Model	Torque ft-lb (N•m)
246830, 245970, 18D010, and 25P857	65-75 (88-101)
246831, 245971, 25P858, and 24Y174	75-85 (101-114)
246832, 25P944, and 245972	185-215 (251-291)

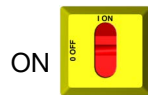
- Tighten the wet-cup.

**NOTE:** Do not overtighten the wet-cup. The throat u-cup (20) is not adjustable.

- Pump A: Wrap the base of the wet-cup (19) with a rag and tighten securely with channel locks.
- Pump B: Torque the packing nut (19) to 130-150 in-lb (15-17 N•m).

<p>Pump rod and connecting rod move during operation. Moving parts can cause serious injury such as pinching or amputation. Keep hands and fingers away from connecting rod during operation.</p>				

- Reconnect the power supply. Turn the main power



- Press . The motor will run until the pumps are at bottom of their strokes, then shut off.

- Turn the main power OFF . Disconnect the power supply.

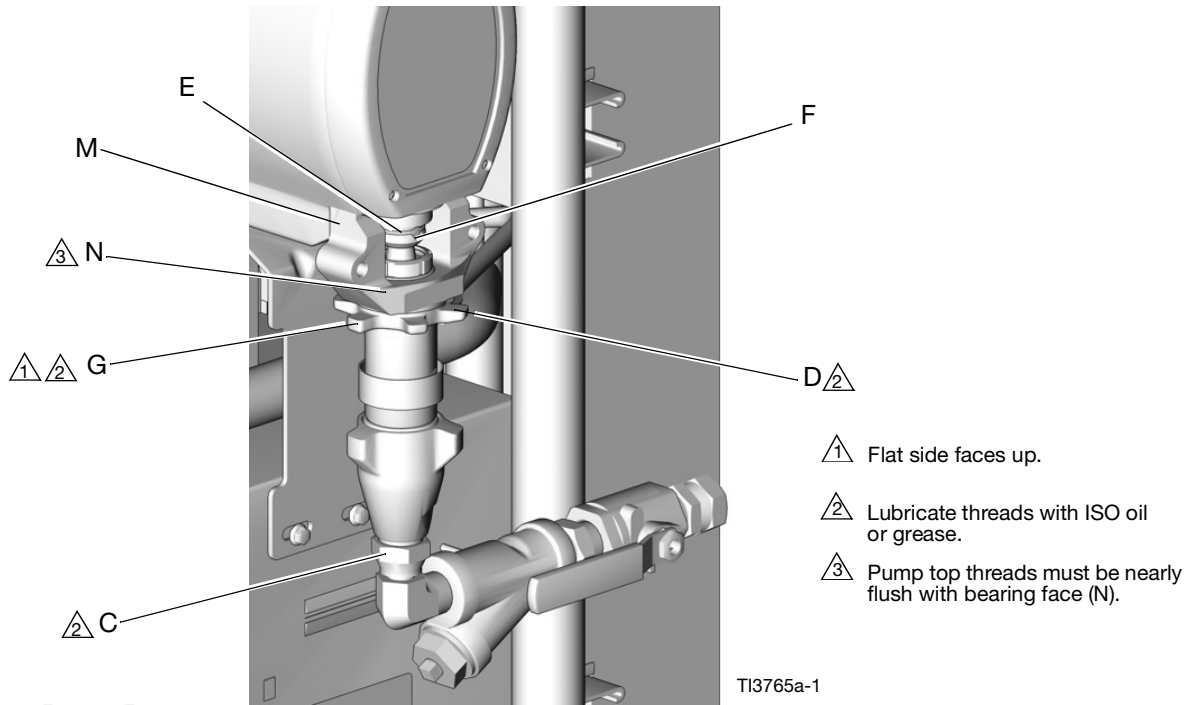
**NOTE:** Steps 15-18 apply to pump B. See FIG. 3. To reconnect pump A, go to step 19.

15. Ensure that the star-shaped locknut (G) is screwed on the pump with the flat side up. Screw the pump into the bearing housing (M) until the pin holes align. Push the pin (F) in. Pull the retaining spring (E) down.

16. Continue screwing the pump into the housing until the fluid outlet (D) is aligned with the steel tube and top threads are +/- 1/16 in. (2 mm) of the bearing face (N).

17. Tighten the star-shaped locknut (G) by hitting firmly with a non-sparking hammer.

18. Reconnect the fluid inlet (C) and outlet (D).



**FIG. 3 Reconnect Pump B**

**NOTE:** Steps 19-32 apply to pump A only. See FIG. 4.

19. Screw the pump into the bearing housing (M) until the top threads are level with the bearing face (N). Rotate the pump to align the pump outlet fitting to outlet tube.
20. The wet-cup has four 1/8 npt ports. Two will be inaccessible when the pump is installed. Note or mark these ports. Remove the pump. Apply thread sealant and install the plugs in the two ports. Torque the plugs to 10-15 ft-lb (14-20 N•m). **Do not overtighten.**
21. Ensure that the star-shaped locknut (G) is screwed on the pump with the flat side up. Carefully twist and extend the rod (1) 2 in. (51 mm) above the wet-cup assembly.
22. Start threading the pump into the bearing housing (M). Place a finger guard (P) over the rod when it is accessible through the window of the bearing housing. When the pin holes align, insert the pin. Pull the retaining spring down.

**NOTE:** A finger guard is not used on Model E-30.

23. Seat a finger guard (P) on the wet-cup (19). Continue threading the pump into the bearing housing (M) until the top threads are +/- 1/16 in. (2 mm) of the bearing face (N).

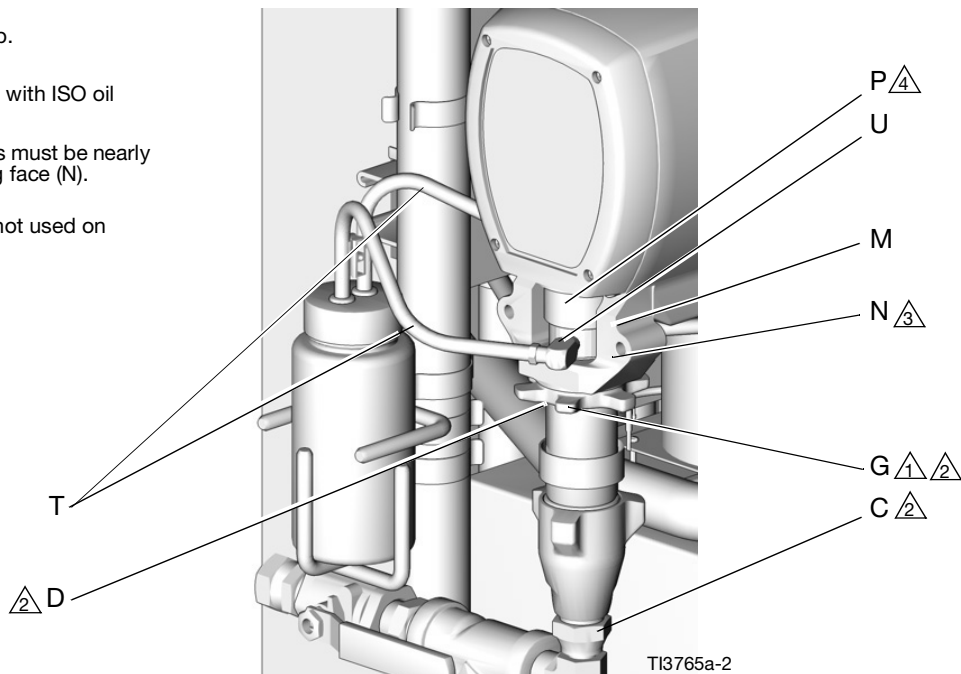
24. Apply thread sealant and screw the barbed fitting into the motor side of the wet-cup. Torque to 10-15 ft-lb (14-20 N•m). **Do not overtighten.**
25. Apply thread sealant and screw the elbow (U) into the remaining wet-cup port. Torque to 10-15 ft-lb (14-20 N•m). **Do not overtighten.**
26. Apply thread sealant and screw the barbed fitting into the elbow (U). Torque to 10-15 ft-lb (14-20 N•m). **Do not overtighten.**
27. Connect component A outlet tube loosely at the pump and at the heater. Line up the tube, then tighten the fittings securely.
28. Tighten the star-shaped locknut (G) by hitting firmly with a non-sparking hammer.
29. Apply thread sealant and screw the barbed fitting into the elbow (U). Torque to 10-15 ft-lb (14-20 N•m). **Do not overtighten.**
30. Apply a thin film of TSL to the barbed fittings. Using two hands, support the tubes (T) while pushing straight onto the barbed fittings. **Do not let tubes kink or buckle.** Secure each tube with a wire tie between two bars.
31. Reconnect the fluid inlet (C) and outlet (D).
32. Purge air and prime the system. See your Reactor operation manual.

① Flat side faces up.

② Lubricate threads with ISO oil or grease.

③ Pump top threads must be nearly flush with bearing face (N).

④ Finger guard (P) not used on Model E-30.



**FIG. 4 Reconnect Pump A**



Ref.	Part	Description	Qty.						
			246830	246831	246832	24Y175	25P857	25P858	25P944
1	240518	ROD, displacement; sst	1				1		
	240517	ROD, displacement; sst		1				1	
	246689	ROD, displacement; sst			1				1
	15H110	ROD, displacement; sst				1			
2	243346	CYLINDER, pump	1				1		
	243347	CYLINDER, pump		1				1	
	245413	CYLINDER, pump			1				1
	17F955	CYLINDER, pump				1			
3*	108526	O-RING; PTFE	2			2	2		
	107098	O-RING; PTFE		2				2	
	108822	O-RING; PTFE			2				2
4	24P853	SLEEVE, cylinder; sst	1				1		
	248210	SLEEVE, cylinder; sst		1				1	
	248979	SLEEVE, cylinder; sst			1				1
	15H112	SLEEVE, cylinder; sst				1			
5	195892	HOUSING, valve, intake	1			1	1		
	195894	HOUSING, valve, intake		1				1	
	198219	HOUSING, valve, intake			1				1
7	24U993	KIT, valve, piston		1				1	
	287388	VALVE, piston			1				
	287877	VALVE, piston	1			1	1		
	249177	VALVE, piston							1
8*	249770	SPRING, intake ball			1				1
	257842	SPRING, intake		1				1	
	255335	SPRING, intake					1		
9	239922	SEAT, intake; carbide; includes items 10 and 11	1			1	1		
	244199	SEAT, intake; carbide; includes items 10 and 11		1				1	
	240918	SEAT, intake; carbide; includes items 10 and 11			1				1
10*	107079	O-RING; PTFE	1			1	1		
	108526	O-RING; PTFE		1				1	
	107098	O-RING; PTFE			1				1
11*	105445	BALL, intake; sst; 0.5 in. (13 mm)	1			1	1		
	102972	BALL, intake; sst; 0.875 in. (22 mm)		1				1	
	107167	BALL, intake; sst; 1 in. (25 mm)			1				1
12	192624	GUIDE, ball	1			1	1		
	193027	GUIDE, ball		1				1	
	193391	GUIDE, ball			1				1
13*	117450	SEAL, u-cup, piston; UHMWPE	1			1	1		
	117449	SEAL, u-cup, piston; UHMWPE		1				1	
	117448	SEAL, u-cup, piston; UHMWPE			1				1

## Parts

Ref.	Part	Description	Qty.						
			246830	246831	246832	24Y175	25P857	25P858	25P944
14*	15B078	BUSHING, piston	1				1		
	15J197	BEARING, lower		1				1	
	15B079	BUSHING, piston			1				1
	17F958	BEARING, lower				1			
15*	156593	O-RING; BUNA-N	1			1	1		
	156633	O-RING; BUNA-N		1				1	
	160325	O-RING; BUNA-N			1				1
16*	105444	BALL, piston; sst; 0.3125 in. (8 mm)	1			1	1		
	101947	BALL, piston; sst; 0.375 in. (10 mm)		1				1	
	107203	BALL, piston; sst; 0.5625 in. (14 mm)			1				1
17*	15B075	BUSHING, rod	1			1	1		
	15B074	BUSHING, rod		1				1	
	15B076	BUSHING, rod			1				1
18*	15J196	BUSHING, pump		1				1	
	17F957	BUSHING, pump				1			
19†	15C569	NUT, packing	1			1			
	15C571	NUT, packing		1					
	15C573	NUT, packing			1				
	25P883	NUT, packing					1		
	25P884	NUT, packing						1	
	25P885	NUT, packing							1
20*	117447	SEAL, u-cup, throat; UHMWPE	1			1	1		
	117446	SEAL, u-cup, throat; UHMWPE		1				1	
	117448	SEAL, u-cup, throat; UHMWPE			1				1
22*†	118377	RING, retaining	1			1			
	118378	RING, retaining		1					
	118379	RING, retaining			1				
24*†	118381	O-RING; fluoroelastomer	1			1			
	107563	O-RING; fluoroelastomer		1					
	118403	O-RING; fluoroelastomer			1				
25†	118374	SPRING	1			1			
	118375	SPRING		1					
	118376	SPRING			1				
26*†	118380	O-RING; fluoroelastomer	1			1	1		
	110955	O-RING; fluoroelastomer		1				1	
	C20111	O-RING; fluoroelastomer			1				1
27*†	107563	O-RING; fluoroelastomer	1			1	1		
	103414	O-RING; fluoroelastomer		1				1	
	111178	O-RING; fluoroelastomer			1				1
28†	15C570	PISTON, wet-cup, ISO	1			1			
	15C572	PISTON, wet-cup, ISO		1					
	15C574	PISTON, wet-cup, ISO			1				

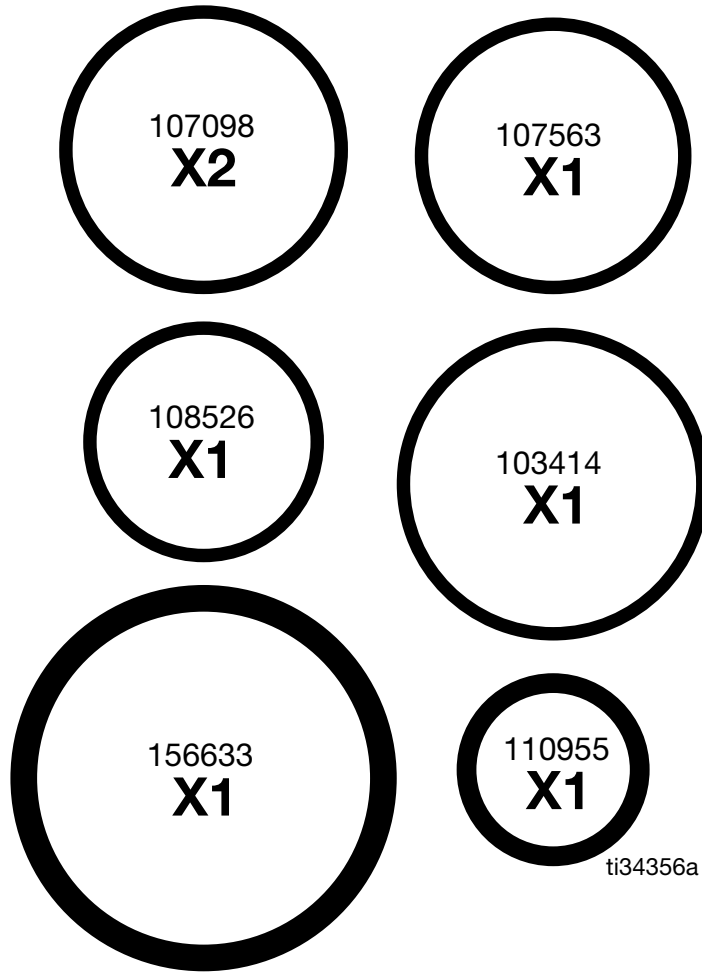
\* Parts included in Pump Repair Kits (purchase separately). Some parts in the kit may not be used in your pump.

† Parts included in Wet-Cup Kits. Order the correct kit for your pump from the table below. See page 33 for information on 246928 Reservoir Kit.

Pump Part	Pump Repair Kit	Wet-Cup Kit
246830	246420	246962
246831	15C851	246963
246832	15C852	246964
24Y175	17K351	246962
25P857	18E195	
25P858	18E250	
25P944	18E249	

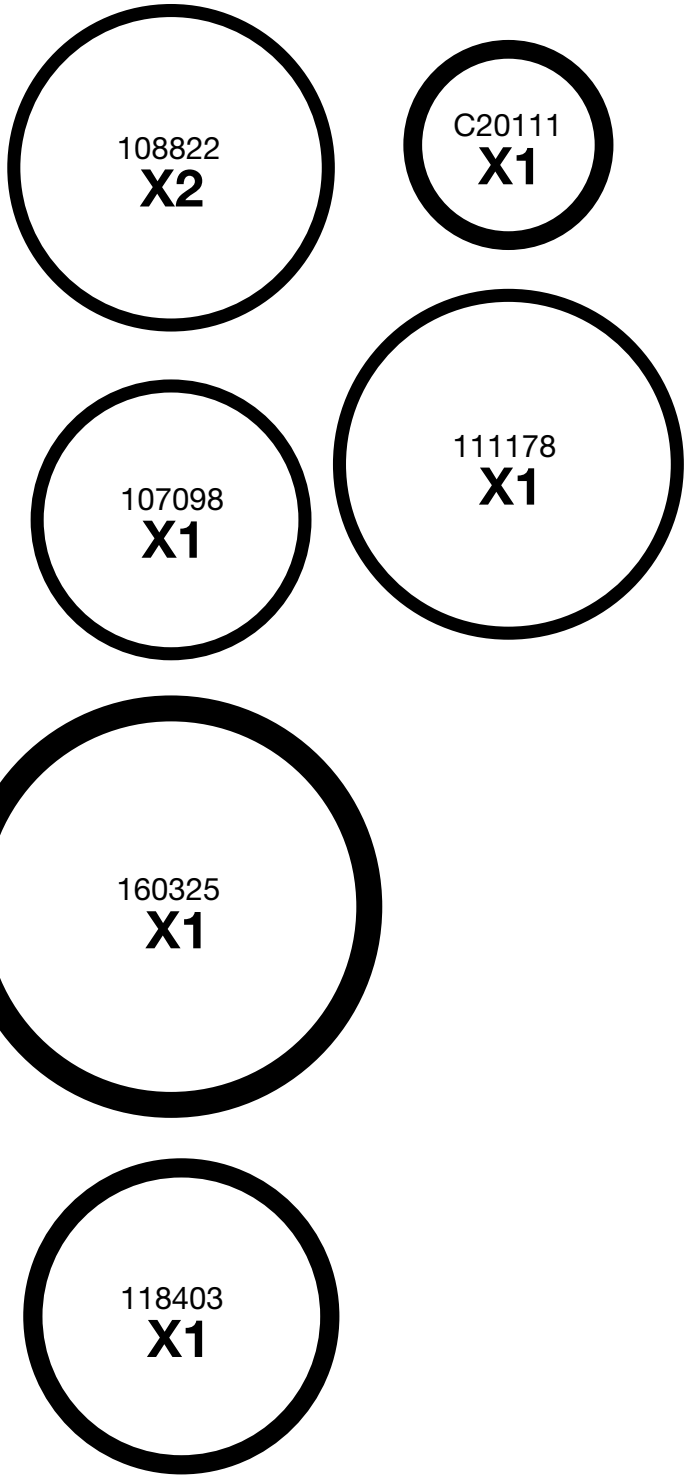
**Component A Pump Repair Kits**

**15C851**

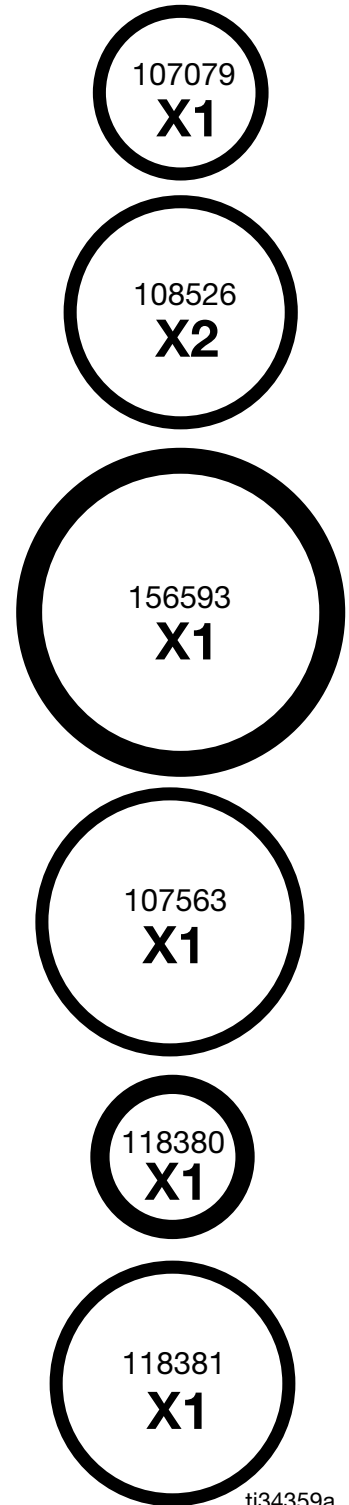


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### 15C852

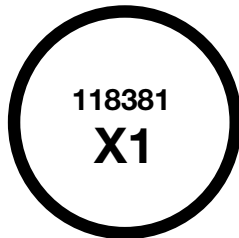
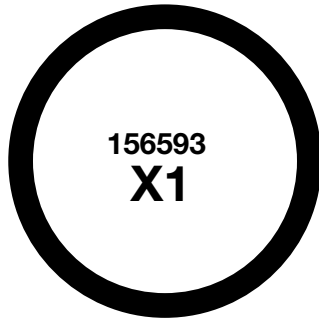
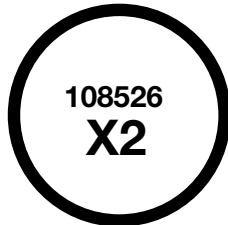
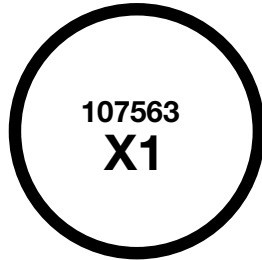


### 246420/17K351

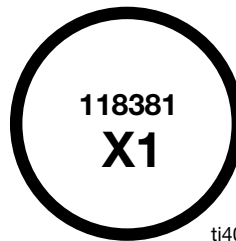
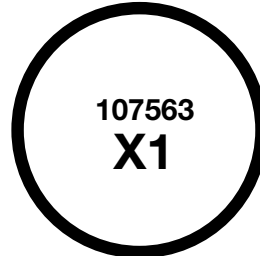
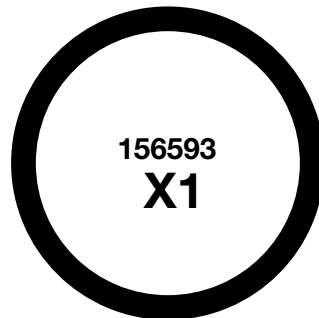
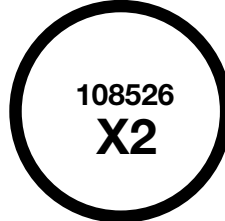
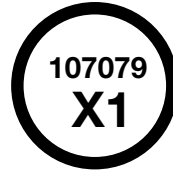


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**17K352**

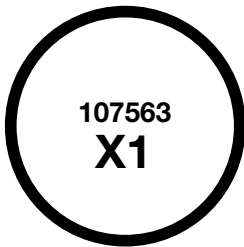
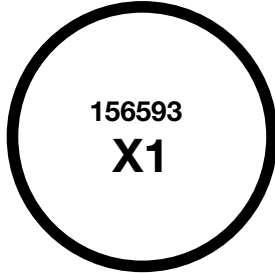
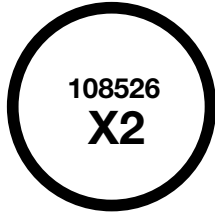


**246420**

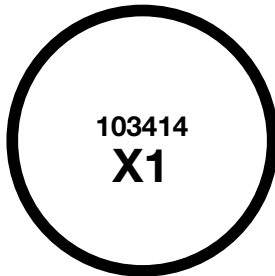
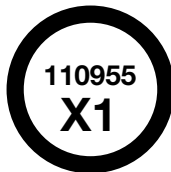
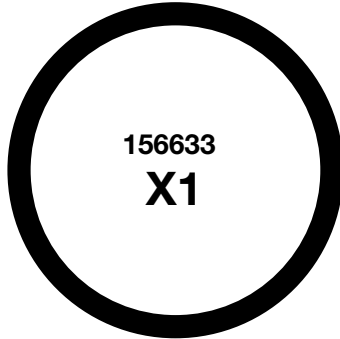
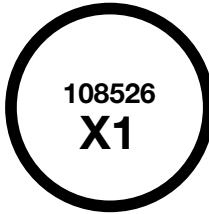
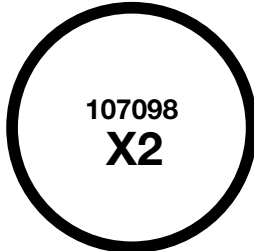


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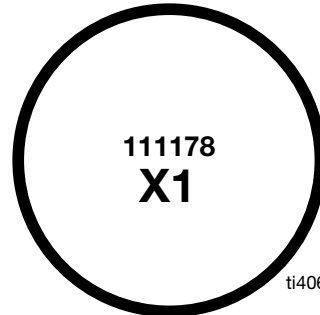
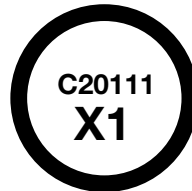
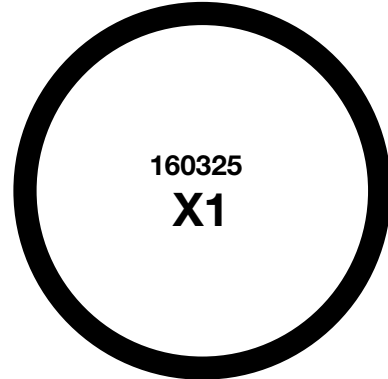
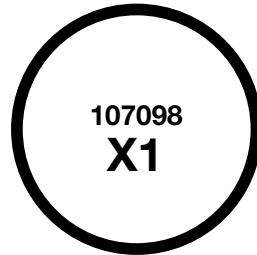
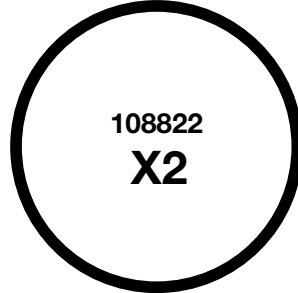
**18E195**



**18E250**



**18E249**




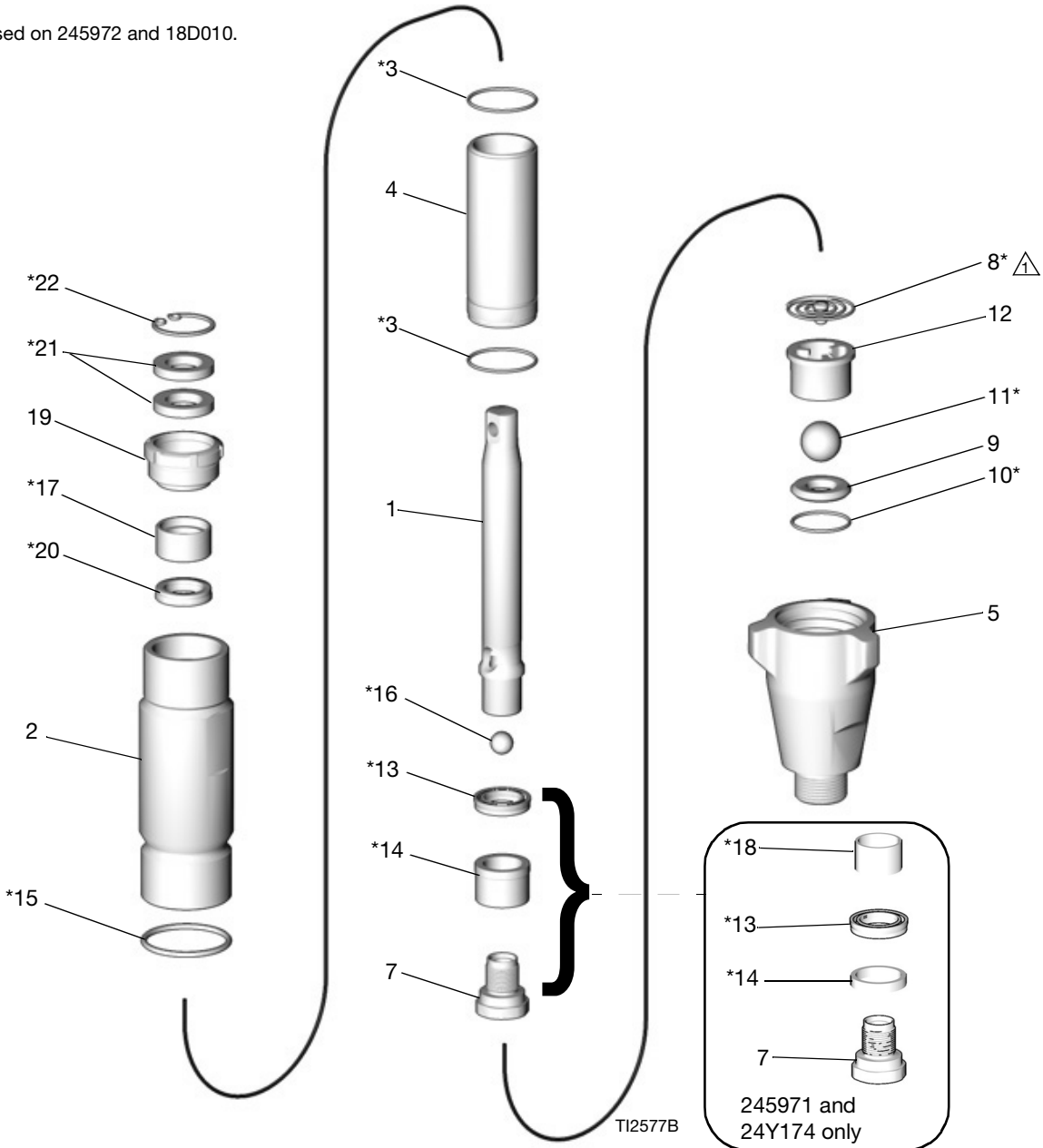
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### Component B (Resin) Pumps

- Part 245970 E-20 and E-XP1; includes items 1-7, 9-23
- Part 245971 E-XP2 and A-25; includes items 1-7, 9-22
- Part 245972 E-30; includes items 1-22 (shown)
- Part 24Y174 A-XP1; includes items 1-7, 9-22
- Part 18D010 Reactor 3 E-20; includes items 1-17, 19-22

**NOTE:** These pumps were also used on Component A (ISO) side of Reactors built before May 2003.

 Used on 245972 and 18D010.



Ref.	Part	Description	Qty.				
			245970	245971	245972	24Y174	18D010
1	240518	ROD, displacement; sst	1				1
	240517	ROD, displacement; sst		1			
	246689	ROD, displacement; sst			1		
	15H110	ROD, displacement; sst				1	
2	243346	CYLINDER, pump	1				1
	243347	CYLINDER, pump		1			
	245413	CYLINDER, pump			1		
	17F955	CYLINDER, pump				1	
3*	108526	O-RING; PTFE	2				2
	107098	O-RING; PTFE		2			
	108822	O-RING; PTFE			2		
4	24P853	SLEEVE, cylinder; sst	1				1
	293019	SLEEVE, cylinder; sst		1			
	193390	SLEEVE, cylinder; sst			1		
	15H112	SLEEVE, cylinder; sst				1	
5	195892	HOUSING, valve, intake	1			1	1
	195894	HOUSING, valve, intake		1			
	198219	HOUSING, valve, intake			1		
7	24U993	KIT, valve, piston		1			
	287388	VALVE, piston			1		
	287877	VALVE, piston	1			1	1
8*	249770	SPRING, intake ball			1		
	257842	SPRING, intake		1			
	255335	SPRING, intake ball					1
9	239922	SEAT, intake; carbide; includes items 10 and 11	1			1	1
	244199	SEAT, intake; carbide; includes items 10 and 11		1			
	240918	SEAT, intake; carbide; includes items 10 and 11			1		
10*	107079	O-RING; PTFE	1			1	1
	108526	O-RING; PTFE		1			
	107098	O-RING; PTFE			1		
11*	105445	BALL, intake; sst; 0.5 in. (13 mm)	1			1	1
	102972	BALL, intake; sst; 0.875 in. (22 mm)		1			
	107167	BALL, intake; sst; 1 in. (25 mm)			1		
12	192624	GUIDE, ball	1			1	1
	193027	GUIDE, ball		1			
	193391	GUIDE, ball			1		
13*	117450	SEAL, u-cup, piston; UHMWPE	1			1	1
	117449	SEAL, u-cup, piston; UHMWPE		1			
	117448	SEAL, u-cup, piston; UHMWPE			1		
14*	15B078	BUSHING, piston	1				1
	15J197	BEARING, lower		1			
	15B079	BUSHING, piston			1		
	17F958	BEARING, lower				1	
15*	156593	O-RING; BUNA-N	1			1	1
	156633	O-RING; BUNA-N		1			
	160325	O-RING; BUNA-N			1		

Parts

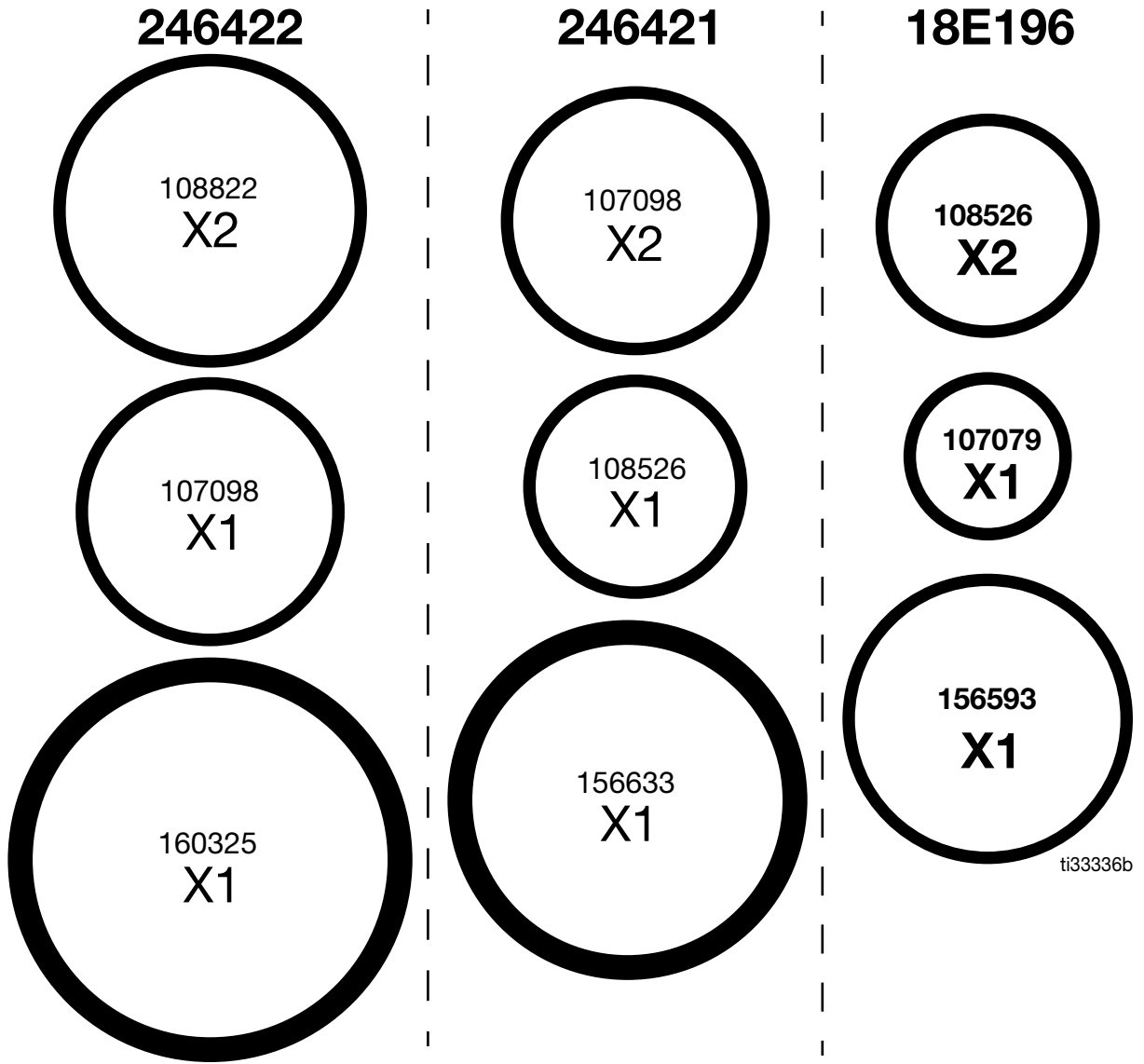
Ref.	Part	Description	Qty.				
			245970	245971	245972	24Y174	18D010
16*	105444	BALL, piston; sst; 0.3125 in. (8 mm)	1			1	1
	101947	BALL, piston; sst; 0.375 in. (10 mm)		1			
	107203	BALL, piston; sst; 0.5625 in. (14 mm)			1		
17*	15B075	BUSHING, rod	1			1	1
	15B074	BUSHING, rod		1			
	15B076	BUSHING, rod			1		
18*	15J196	BUSHING, pump		1			
	15J197	BUSHING, pump				1	
19†	193046	NUT, packing	1			1	1
	193032	NUT, packing		1			
	15J792	NUT, packing			1		
20*	117447	SEAL, u-cup, throat; UHMWPE	1			1	1
	117446	SEAL, u-cup, throat; UHMWPE		1			
	117448	SEAL, u-cup, throat; UHMWPE			1		
21*	117597	WASHER, felt	2			2	2
	117599	WASHER, felt		2			
	117600	WASHER, felt			2		
22*	551528	RING, retaining	1			1	1
	117718	RING, retaining		1			
	117719	RING, retaining			1		

† Wet-Cup Conversion Kits may be purchased separately to convert pumps 245970, 245971, and 245972. See page 33 for further information.

\* Parts included in Pump Repair Kits (purchase separately). Some parts in the kit may not be used in your pump. Order the correct kit for your pump from the table below.

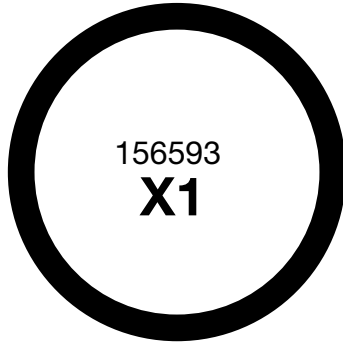
Pump Part	Repair Kit
245970	246420
245971	246421
245972	246422
24Y174	17K352
18D010	18E196

### Component B Pump Repair Kits

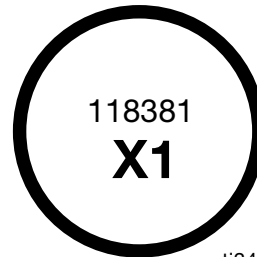
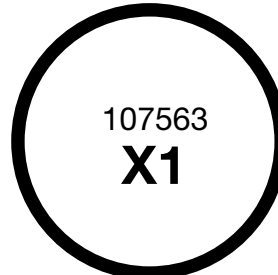
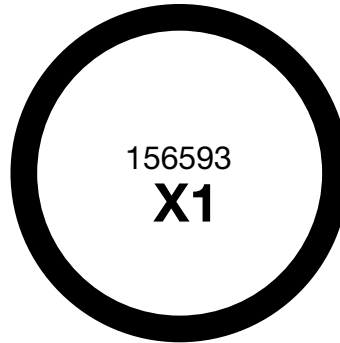
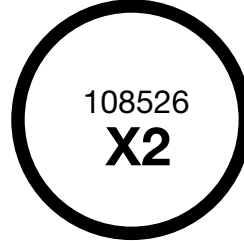
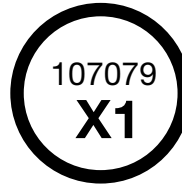


ti33336b

# 17K352



# 246420



ti34358a

## Accessories

### Wet-Cup Conversion Kits

These kits convert 245970, 245971, or 245972 pumps to the wet-cup flush design. Refer to the following table to select the correct kit for your pump. Kits include a Pump Wet-cup Flush Kits manual.

Part	Wet-Cup Conversion Kit	
245970, 24Y174	<b>248061</b> , includes:	
	246962 Wet-Cup Kit (see page 23 for parts)	246928 Reservoir Kit (see below)
245971, 262648	<b>248062</b> , includes:	
	246963 Wet-Cup Kit (see page 23 for parts)	246928 Reservoir Kit (see below)
245972	<b>248063</b> , includes:	
	246964 Wet-Cup Kit (see page 23 for parts)	246928 Reservoir Kit (see below)

### 246928 Reservoir Kit

This kit is included with Wet-Cup Conversion Kits 248061, 248062, and 248063 (see above).

This kit can also be used if replacing an earlier style ISO pump with the wet-cup flush design. Order this kit separately, and order the correct pump for your Reactor from page 20.

Kit includes reservoir, tubing, mounting hardware, and fittings to supply TSL to flush wet-cup. Includes Pump Wet-cup Flush Kits manual.

### Throat Seal Liquid

Use in reservoir for piston style wet-cups on component A pumps, or to fill wet-cup of component B pumps.

Part	Quantity
206995	1 qt (1 l)
206996	1 gal. (3.8 l)

### 217374 ISO Pump Oil

Use in wet-cups of non-piston style component A pumps (built before May 2003), and as thread lubricant when rebuilding pumps.

# Technical Specifications

<b>Displacement Pump</b>		
	<b>US</b>	<b>Metric</b>
Maximum fluid working pressure	3500 psi	24.5 MPa, 245 bar
<b>Effective Area of Displacement</b>		
Models 246830, 245970, 24Y174, 24Y175, 18D010, 25P857	0.396 in. <sup>2</sup>	2.55 cm <sup>2</sup>
Models 246831, 245971, 25P858	0.522 in. <sup>2</sup>	3.56 cm <sup>2</sup>
Models 246832, 245972, 25P944	0.743 in. <sup>2</sup>	4.79 cm <sup>2</sup>
<b>Fluid Inlet Sizes</b>		
Models 246830, 246831, 245970, 245971, 24Y174, 24Y175, 18D010, 25P857, 25P858	3/4 npt(f)	
Models 246832, 245972, 25P944	1 npt(f)	
<b>Fluid Outlet Sizes</b>		
Models 246830, 245970, 24Y174, 24Y175, 18D010, 25P857	1/4 npt(f)	
Models 246831, 246832, 245971, 245972, 25P858, 25P944	3/8 npt(f)	
<b>Materials of Construction**</b>		
Wetted materials on all models	stainless steel, PTFE, zinc-plated carbon steel, acetal, tungsten carbide, chrome plating, ultra-high molecular weight polyethylene	
<b>Notes</b>		
All trademarks or registered trademarks are the property of their respective owners.		

# California Proposition 65

## CALIFORNIA RESIDENTS

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

# Graco Standard 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

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Original instructions. This manual contains English. MM 309577

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**International Offices:** Belgium, China, Japan, Korea

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