

## Overview

### Material and Paint Pumps

The material and paint pump models listed in **Table 1** are obsolete. To maintain these pumps, a major repair kit is available that is applicable to all pump models.

### Major Teflon Repair Kit

► **IMPORTANT:** *Some of the items in the kit are not the same as those in the original pump. These kit items supersede original pump components.*

The material and paint pump models listed in **Table 1** are rebuilt with major Teflon repair kit number **327580-1**. See **Figure 2**.

**Figure 2** also lists additional wear items not available in kit form. These parts are interchangeable between all the pump models.

## Overhaul

Prior to performing any maintenance procedure, the following safety precautions must be observed. Personal injury may occur.



### WARNING

Release all pressure within the system prior to performing any overhaul procedure.

- Disconnect the air supply line from the pump motor.
- Into an appropriate container, operate the control valve to discharge remaining pressure within the system.

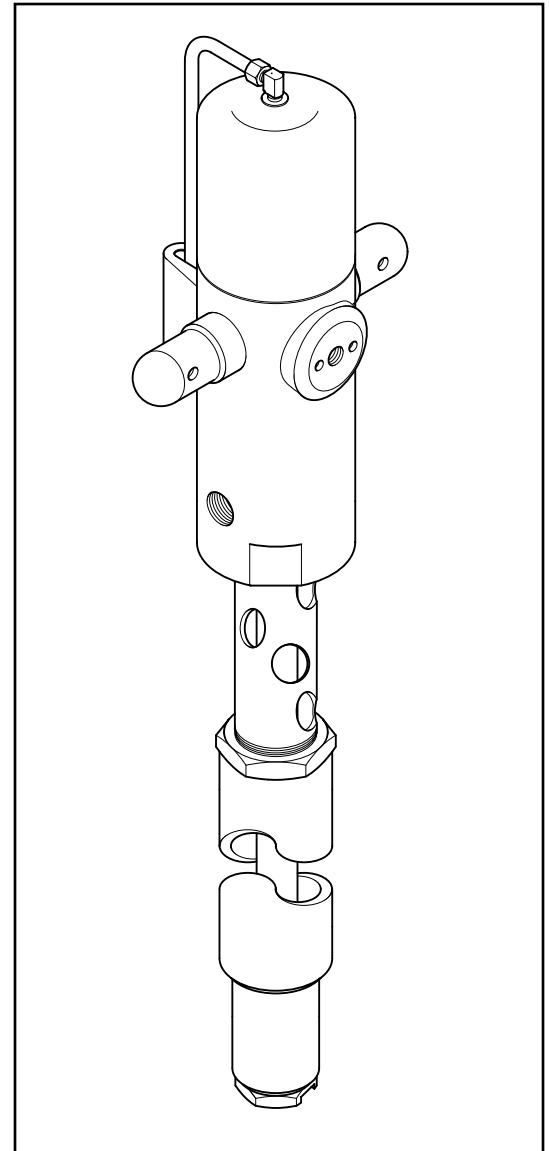
Never point a control valve at any portion of your body or another person. Accidental discharge of pressure and/or material may occur.

Read each step of the instructions carefully. Make sure a proper understanding is achieved before proceeding.

## Removal

Remove the pump and motor assembly (stripped pump) from the cover and/or any enclosure.

These removal procedures are dependent on the model of the pump assembly.



**Figure 1** 707 Series Model Pump

## Disassembly

### Separate Pump Tube from Air Motor

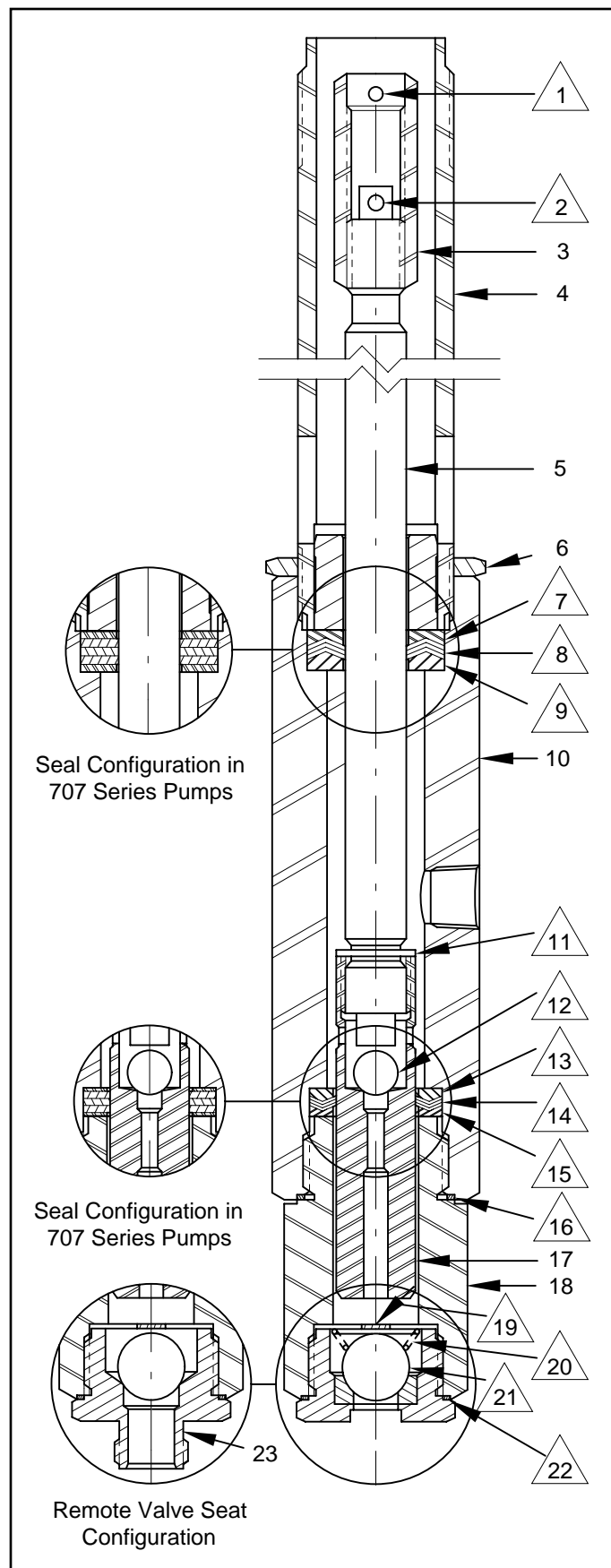
1. Place the pump assembly in a soft-jaw vise. See **Figure 3**.
  2. Align the **Roll Pin** that secures the pump tube **Coupling** to the pump's **Piston Rod** with an access hole in the **Tube and Bushing** assembly.
    - Cycle the motor with air pressure as needed.
  3. Remove the **Roll Pin** with a punch and hammer.
  4. Loosen the **Locknut** (as applicable) that secures the pump tube assembly to the air motor housing.
  5. Unscrew the **Tube and Bushing** assembly from the air motor.
- **NOTE:** At the same time the **Piston Rod** unscrews from the **Coupling**.
6. Remove the pump tube assembly from the air motor.
- **NOTE:** For service on pump air motors, refer to the appropriate Service Guide listed in **Table 1**.

### Pump Tube

- **NOTE:** Refer to **Figure 2** for component identification on pump tube disassembly procedures.
1. Clamp the Lower Body (10) in a soft-jaw vise.
    - Make sure Tube and Bushing assembly (4) faces upward.
  2. Loosen Locknut (6) that secures the Tube and Bushing assembly to the Lower Body.
  3. Unscrew the Tube and Bushing assembly (with Locknut) from the Lower Body.

Pump Model	Pump Air Motor	
	Motor Model	Service Guide
707 Series	327138	SER 327138-5
334901	334896	SER 327138-5
337410	324300-5	SER 324300-5

**Table 1** Material and Paint Pump Models



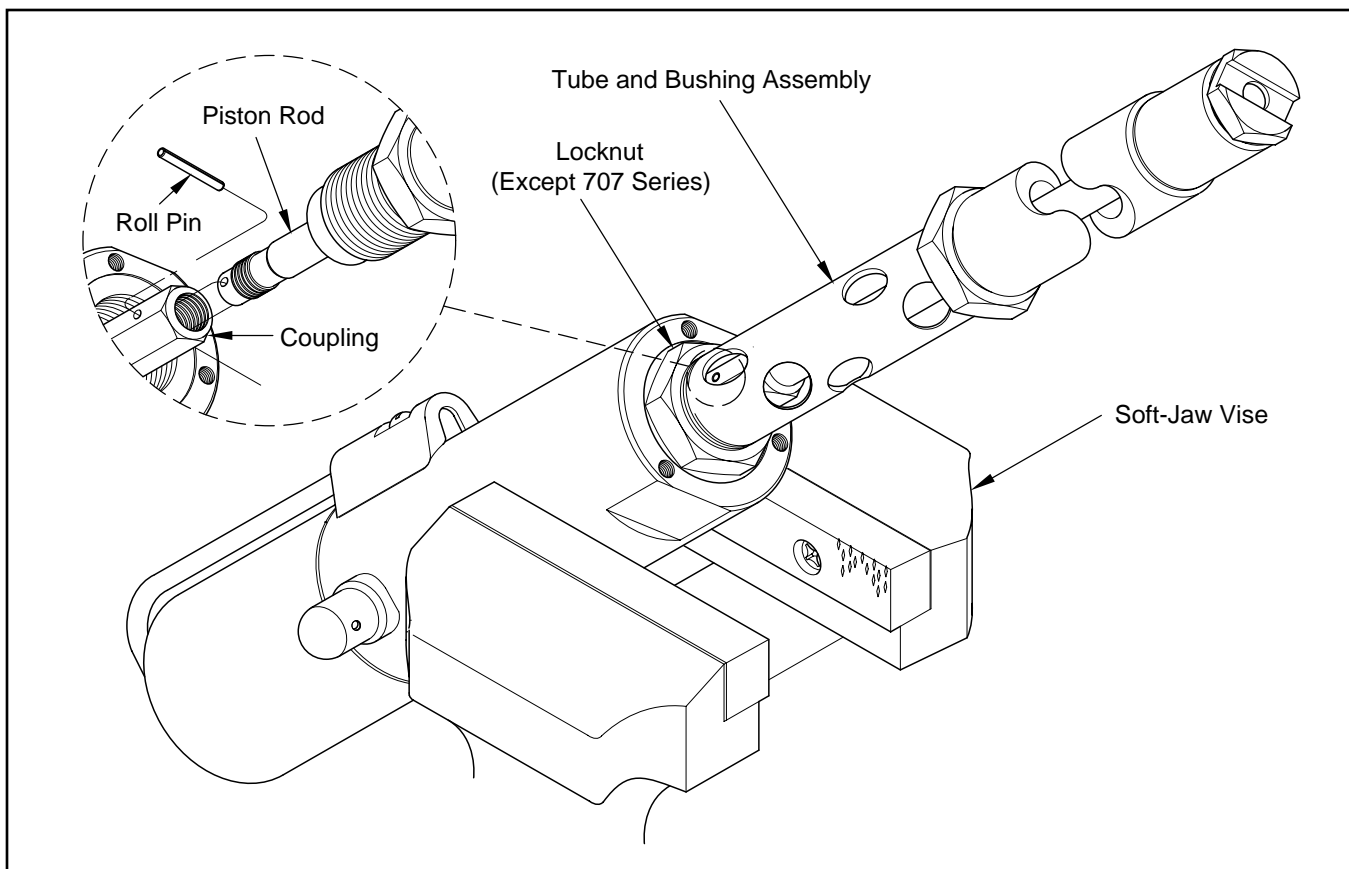
**Figure 2** Typical Material and Paint Pump Tube Assembly

Item No.	Part No.	Description	Qty	Notes	Numeric Order Part # (Item #)
1	171032-6	Pin, Roll, 0.100 " Dia., 0.562 " Long	1	△	49711 (22)
2	171033-4	Pin, Roll, 1/8 " Dia. x 9/16 " Long	1	△	171032-6 (1)
3	320974	Coupling	1		171032-7 (11)
4		Tube and Bushing Assembly, Upper	1		171033-4 (2)
5	331826	Rod, Piston	1		171701-20 (12)
6		Locknut, 1-1/4 " - 18	1		171701-32 (21)
7		Ring, Back-Up, Female, 1.114 " OD (Brass)	1	△	318275 (16)
8	326069-71	Ring, Packing, Upper (Glass-Filled White Teflon)	3	△	320974 (3)
9		Ring, Support, Male, 1.114 " OD (Brass)	1	△	326069-71 (8)
10		Body, Lower	1		326069-72 (14)
11	171032-7	Pin, Roll, 0.100 " Dia., 0.625 " Long	1	△	327582 (13)
12	171701-20	Ball, 5/16 " Dia.	1	△	327583 (15)
13		Ring, Support, Male, 1.00 " OD (Brass)	1	△	327585 (9)
14		Ring, Packing, Lower (Glass-Filled White Teflon)	3	△	327586 (7)
15		Ring, Back-Up, Female, 1.00 " OD (Brass)	1	△	327851 (17)
16	318275	Gasket, 1-17/64 " Dia. (Copper)	1	△	331728 (20)
17	327851	Piston	1		331826 (5)
18		Adapter	1		334899 (23)
19		Stop	1	△	382082 (19)
20		Spring	1	△	
21	171701-32	Ball, 1/2 " Dia.	1	△	
22	49711	Washer, 1.115 " Dia. (Copper)	1	△	
23	334899	Seat, Valve	1		

**Legend:**  
 Part numbers left blank are not available separately  
 △ designates a repair kit item

**Repair Kit**

Part No.	Kit Symbol	Description
327580-1	△	Kit, Major Teflon Repair



**Figure 3** Separation of Pump Tube Assembly from Air Motor

4. Pull upward on the Piston Rod (5) to remove the following assembled components:

- Piston Rod
- Female Back-Up Ring (7)
- 
- Upper Teflon Packing Rings (8)
- Male Support Ring (9)
- Roll Pin (11)
- Piston (17)
- Ball (12)

► NOTE: Certain models use back-up washers to support duck and rubber packings.

5. Unscrew Valve Seat (23) from Adapter (18).

► NOTE: The assembly may break at the Lower Body. If so, clamp the Adapter assembly in a vise and remove Valve Seat from Adapter.

6. Remove Adapter from Lower Body as required.

7. Remove Gasket (16) from the Lower Body.

8. Remove Female Back-Up Ring (15), Teflon Packing Rings (14), and Male Support Ring (13) from the Body.

► NOTE: Certain models use back-up washers to support duck and rubber packings.

9. Disassemble Adapter assembly [including Stop (19), Spring (20), and Ball (21)] making sure to remove Washer (22).

10. Remove the Packing Ring assembly from Piston Rod.

11. Remove Roll Pin (11) that secures Piston (17) to Piston Rod (5).

- Use a punch and hammer.

12. Unscrew Piston Rod from Piston.

13. Remove Ball (12).

► NOTE: Coupling (3) may be removed from the air motor's piston rod as required.

14. Pull Coupling out of air motor housing to expose Roll Pin (1).

15. Remove Roll Pin (1).

- Use a punch and hammer.

## Clean and Inspect

► **NOTE:** Use the repair kit for replacement parts. Make sure all the components are included in the kit before discarding used parts.

1. Clean all metal parts in a modified petroleum-based solvent. The solvent should be environmentally safe.
2. Inspect Piston (17) and Piston Rod (5) closely. Use a magnifying glass to detect any wire draw marks.
  - Replace as necessary.
3. Closely inspect the mating surfaces of all components for any imperfections. Ensure a smooth and clean contact is obtained when assembled.

► **EXAMPLE:** Place Ball (21) into Valve Seat (23). Fill the Valve Seat with solvent. Make sure no leakage occurs. Repeat process for Ball (12) and Piston (17).

## Assembly

Refer to **Figure 2** for component identification on pump tube assembly procedures.

### Pump Tube

1. Place Adapter (18) in a vise with the male threaded end pointing downward.
2. Install Stop (19), Spring (20) [large diameter first], and large Ball (21) into the Adapter.
  - Make sure the Ball centers in the Spring.
3. Install Washer (22) into the Adapter.
4. Thread Valve Seat (23) into the Adapter.
  - Do not tighten.

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### CAUTION

**Use care to install the Teflon Packing Rings over the fine threads on Piston Rod (5). Installing the rings incorrectly will damage the components.**

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5. Install Male Support Ring (9), three Upper Teflon Packing Rings (8) [small inside diameter], and Female Back-Up Ring (7) onto Piston Rod (5).
  - Make sure the Rings face as shown in **Figure 2**.
6. Install small Ball (12) into Piston (17).
7. Screw the Piston Rod assembly (fine thread-end) into the Piston until it seats.

8. Turn the Piston Rod counterclockwise 2 full turns to align the hole in the Rod with the hole in the Piston.
  - This sets the proper free-play for Ball (12).

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### CAUTION

**Do not mar the surface of the Piston or the Piston Rod. Damaged components will require replacement.**

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9. Install long Roll Pin (11) with a hammer.
10. Shake the assembly to ensure the Ball is moving freely.
11. Place Lower Body (10) in a vise with the outlet port closest to the top.
  - **IMPORTANT:** **Figure 2** illustrates the Lower Teflon Packing Rings with the pump tube in the normal operation position. Keep in mind that the following step is into the bottom of the Lower Body.
12. Install Male Support Ring (13), three Lower Teflon Packing Rings (14) [large inside diameter], and Female Back-Up Ring (15) into the Lower Body.
  - Make sure the Rings face correctly and seat properly.
13. Install Gasket (16) into the Lower Body.
14. Install the previously assembled Adapter and Valve Seat assembly into the Lower Body.
  - Do not seat or tighten.
15. Turn the Lower Body assembly end for end.

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### CAUTION

**Do not force the Piston past the Lower Teflon Packing Rings. Component damage can occur.**

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16. Install the Piston and Piston Rod assembly (including the Support Ring and Upper Teflon Packing Rings) into the Lower Body.
  - Use a slight twisting motion to aid the Piston past the Lower Teflon Packing Rings.
17. Seat the Male Support Ring, three Upper Teflon Packing Rings, and Female Back-up Ring into the Lower Body.
18. Thread Upper Tube and Bushing assembly (4) into Lower Body. Back off Lock Nut (6) as necessary.
  - Do not tighten either component.
19. Connect Coupling (3) to the air motor with Roll Pin (1) if previously disassembled.

### Connect Pump Tube to Air Motor

1. Place the air motor in a soft-jaw vise. See **Figure 3** and **Figure 2**.
  - ▶ NOTE: Make sure the washer is seated properly in the air motor.
2. Thread the **Upper Tube and Bushing** assembly into the air motor.
  - ▶ NOTE: At the same time the **Piston Rod** screws into the **Coupling**.
3. Align the hole in the **Piston Rod** with the hole in the **Coupling**. This is visible through an access hole in the **Tube and Bushing** assembly.
4. Install the **Roll Pin** with a hammer.
5. Screw the pump tube assembly into the air motor housing securely.
  - Use a tool that will not mar the surface of the **Tube and Bushing** assembly.
6. Tighten the **Locknut** that secures the pump tube assembly to the air motor housing (Except 707 Series).
7. Hand tighten the Lower Body onto the Tube and Bushing assembly.
  - This seats the Teflon Packing Rings properly.
8. Tighten Locknut (6) that secures the pump tube assembly to the Lower Body.
9. Tighten the Adapter and Valve Seat assembly into the Lower Body.
  - Tighten sufficiently to properly crush both gaskets.

### Operation

#### Bench Test and Prime

▶ NOTE: Perform the following procedures at a pressure not to exceed 40 psi (2.8 Bars).

1. Make sure air pressure at the regulator reads zero.
2. Connect an air adapter to the inlet of the motor.
3. Connect a product hose to the outlet of the pump.
4. Place the hose into an appropriate collection container.
5. Connect an air line coupler to the air motor.
6. Slowly supply air pressure to the pump's motor.
  - The pump assembly should cycle.

If the pump assembly does not cycle, refer to the **Troubleshooting Chart** for details.

#### Priming

With air pressure at zero:

7. Place the pump in the product to be dispensed.
8. Slowly supply air pressure to the pump's motor.
9. Allow the pump to cycle slowly until the system and product is free of air.
10. Check the motor for air leakage.

If the motor leaks, refer to the appropriate **Air Motor Service Guide** for details.

## Stall Test

**WARNING**

**Should leakage occur anywhere within the system, disconnect power to the motor. Personal injury can occur.**

With air pressure at zero:

1. Attach a control valve to the outlet hose of the pump.
2. Set the air pressure to 100 psi (6.9 Bar).
3. Allow the pump to cycle until the system and product is once again free of air.
4. Shut-off the control valve.
  - The pump should not cycle.\*

If the pump cycles continuously, refer to the **Troubleshooting Chart** for details.

## Adjustments

After the first few hours of initial operation, the upper packing rings require reseating.

To reseal Upper Packing Rings (8):

1. Loosen Locknut (6) that secures Tube and Bushing assembly (4) to Lower Body (10).
2. Hand tighten the Tube and Bushing assembly into the Lower Body.
3. Tighten the Locknut.

Reseat the Upper Packing Rings anytime the pump fails to stall.

## Installation

Install the pump and motor assembly (stripped pump) to the cover and/or any enclosure.

Installation procedures are dependent on the model of the pump assembly.

## Troubleshooting Chart

Refer to **Table 2** for details on troubleshooting.

\* Teflon packing rings may require a break-in period.

<b>Changes Since Last Printing</b>
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Added Items to Repair Kit 327580-1
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<b>Pump Indications</b>	<b>Possible Problems</b>	<b>Solution</b>	<b>Reference See:</b>
Pump does not cycle	<ol style="list-style-type: none"> <li>1. Air motor not operating properly</li> <li>2. Pump tube jammed and/or contains loose components</li> <li>3. Upper Tube and Bushing assembly (4) too tight</li> </ol>	<ol style="list-style-type: none"> <li>1. Inspect air motor and rebuild or replace as necessary</li> <li>2. Rebuild pump tube</li> <li>3. Loosen connection</li> </ol>	Air motor Service Guide Section <b>Assembly</b>
Pump cycles once or continuously	<ol style="list-style-type: none"> <li>1. Leaking externally</li> <li>2. Leaking internally</li> </ol>	See specific leak under <b>Pump Indications</b>	
Product leakage at outlet hose	Hose connection to Body (10) not tightened sufficiently	Tighten connection	
Product leakage at control valve	Control valve connection to hose not tightened sufficiently	Tighten connection	
Product leakage past Upper Packing Rings (8) and visual at Upper Tube and Bushing assembly (4)	<ol style="list-style-type: none"> <li>1. Initial tightening of Upper Tube and Bushing assembly (4) not sufficient</li> <li>2. Foreign material between Packing Rings (8) and Piston Rod (5)</li> <li>3. Damaged Packing Rings (8) and/or Piston Rod (5)</li> </ol>	<ol style="list-style-type: none"> <li>1. Tighten Tube and Bushing assembly (4)</li> <li>2. Disassemble pump, clean and inspect Packing Rings (8). Inspect Piston Rod (5). Replace parts as necessary. Locate and eliminate source of foreign material.</li> </ol>	<b>Assembly:</b> <b>Pump Tube Step 5</b>
Product leakage past Lower Packing Rings (14)	<ol style="list-style-type: none"> <li>1. Foreign material between Packing Rings (14) and Piston (17)</li> <li>2. Damaged Packing Rings (14) and/or Piston (17)</li> </ol>	<ol style="list-style-type: none"> <li>1. Disassemble pump, clean and inspect Packing Rings (14). Inspect Piston (17). Replace parts as necessary. Locate and eliminate source of foreign material.</li> </ol>	
Product leakage past Ball (12)	<ol style="list-style-type: none"> <li>1. Foreign material between Ball (12) and Piston (17)</li> <li>2. Damaged Ball (12)</li> <li>3. Damaged Piston (17)</li> </ol>	<ol style="list-style-type: none"> <li>1. Disassemble pump, clean and inspect seat areas. Check mating surfaces and replace parts as necessary. Locate and eliminate source of foreign material.</li> </ol>	
Product leakage past Ball (21)	<ol style="list-style-type: none"> <li>1. Foreign material between Ball (21) and Valve Seat (23)</li> <li>2. Damaged Ball (12)</li> <li>3. Damaged Valve Seat (17)</li> </ol>	<ol style="list-style-type: none"> <li>1. Disassemble pump, clean and inspect seat areas. Check mating surfaces and replace parts as necessary. Locate and eliminate source of foreign material.</li> </ol>	

**Table 2** *Pump Assembly Troubleshooting Chart*