

Medium-Pressure Stripped Pump

Description

The major components of the pumps in the 331571 series consist of an air-operated motor and a pump tube. The air motor connects directly to the double-acting reciprocating pump tube.

These medium-pressure pumps (26:1 ratio) are designed to deliver:

- light through medium-viscosity non-fibrous lubricants
- rust-proofing compounds

Models 331571-A5, 331571-B5, and 331571-C5

Each pump model is designed with a pump tube length to accommodate different size containers. See **Figure 1**.

Specifications

Air Motor

| Piston Dia. / Stroke | | Air Inlet | Max. Air Pressure | |
|---|---------|----------------|-------------------|------|
| Inches | mm | | psi | Bars |
| 2-7/16 / 1-5/8 | 62 / 41 | 1/4 " NPSI (f) | 200 | 14 |
| For information on the air motors, refer to Service Guide SER 324300-5 | | | | |

Pump Tube

| Material Outlet | Max. Material Pressure | | Delivery/Minute (Approximate)* | | Displacement/Cycle | |
|--|------------------------|------|--------------------------------|-----|--------------------|-----|
| | psi | Bars | gal | l | ci | cc |
| 3/8 " NPTF (f) | 5200 | 359 | 0.75 | 2.8 | 0.47 | 7.7 |
| * For detailed information, refer to Figure 3 | | | | | | |

Table 1 Medium-Pressure Pump Model 331571 Series Specifications

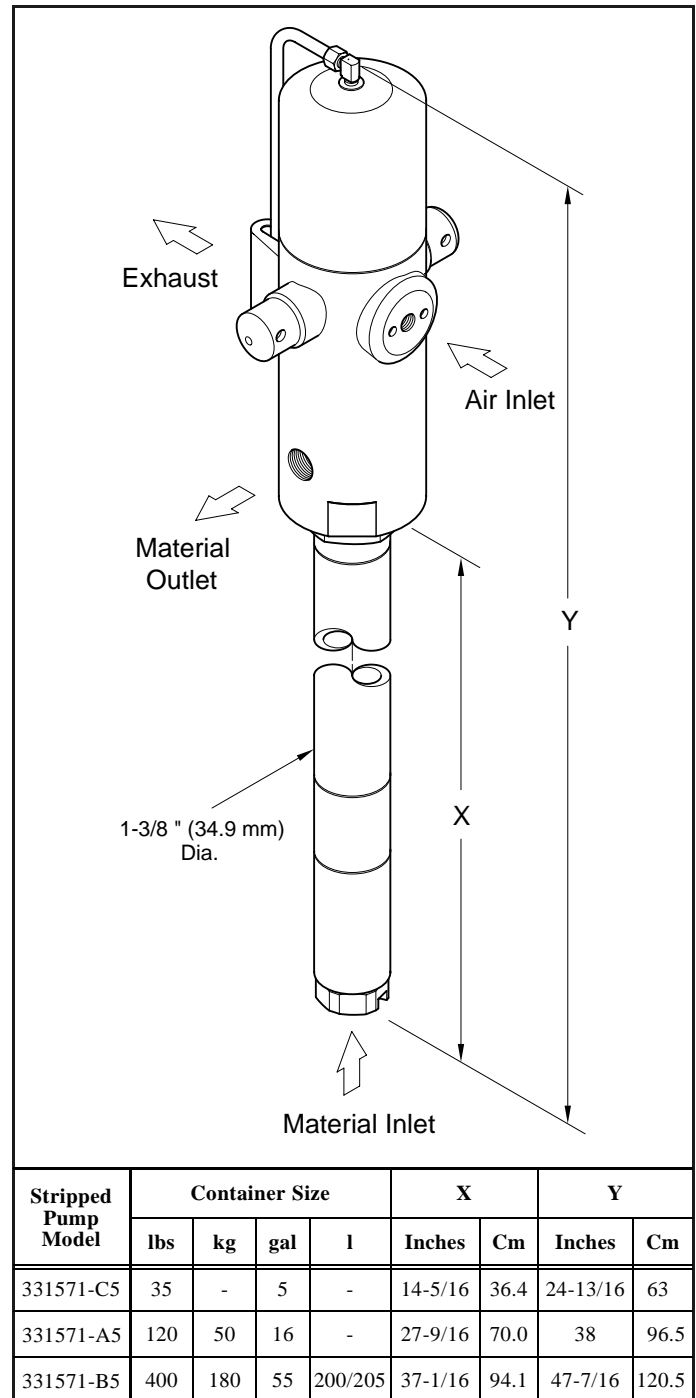


Figure 1 Medium-Pressure Pump Model 331571 Series

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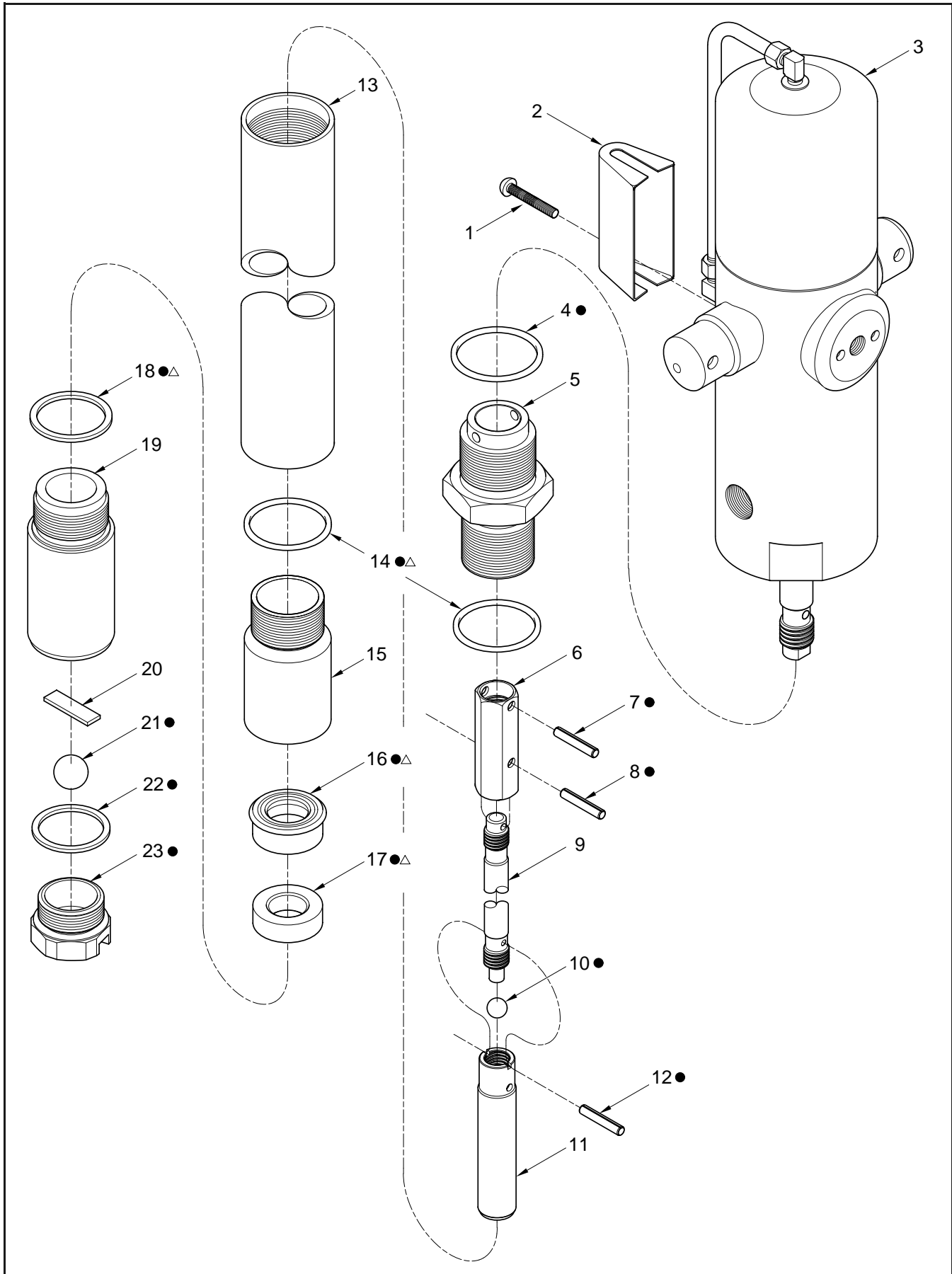


Figure 2 Medium-Pressure Stripped Pump Model 331571 Series - Exploded View

| Item No. | Part No. | Description | Qty | Notes | Numeric Order Part # (Item #) |
|----------|-----------|---------------------------------------|-----|----------------------|-------------------------------|
| 1 | 170292 | Screw, Machine 8-32 x 1-1/4 " Long | 1 | | 49711 (22) |
| 2 | 321085 | Muffler | 1 | | 170292 (1) |
| 3 | | Motor Assembly, Air | 1 | See SER 324300-5 | 171009-10 (14) |
| 4 | 171013-12 | O-Ring, 1-1/8 " ID x 1-1/4 " OD | 1 | ● | 171013-12 (4) |
| 5 | 327169 | Adapter, Tube | 1 | | 171032-6 (7) |
| 6 | 320974 | Coupling | 1 | | 171032-7 (12) |
| 7 | 171032-6 | Pin, Roll, 3/32 " Dia. x 0.562 " Long | 1 | ● | 171033-4 (8) |
| 8 | 171033-4 | Pin, Roll, 1/8 " Dia. x 9/16 " Long | 1 | ● | <i>172190-4</i> (16) |
| 9 | 327166 | Rod, 21.53 " Long | 1 | | 172270-7 (10) |
| | 327166-1 | Rod, 31 " Long | 1 | | 172270-14 (21) |
| | 327166-2 | Rod, 8.25 " Long | 1 | | <i>318275</i> (18) |
| 10 | 172270-7 | Ball, 5/16 " Dia. | 1 | ● | 320974 (6) |
| 11 | 327851 | Piston | 1 | | 321085 (2) |
| 12 | 171032-7 | Pin, Roll, 3/32 " Dia. x 0.625 " Long | 1 | ● | <i>324300-5</i> (3) |
| 13 | 327167 | Tube, 27-35/64 " Long | 1 | | 327142 (19) |
| | 327167-1 | Tube, 37-1/16 " Long | 1 | | 327166 (9) |
| | 327167-2 | Tube, 10.00 " Long | 1 | | 327166-1 (9) |
| 14 | 171009-10 | O-Ring, 1 " ID x 1-1/8 " OD | 2 | ●△ Qty of 1 in △ Kit | 327166-2 (9) |
| 15 | 327168 | Retainer | 1 | | 327167 (13) |
| 16 | | Seal, 0.6 " ID x 1.00 " OD | 1 | ●△ | 327167-1 (13) |
| 17 | | Bearing (Brass) | 1 | ●△ | 327167-2 (13) |
| 18 | | Gasket, 1-17/64 " OD (Copper) | 1 | ●△ | 327168 (15) |
| 19 | 327142 | Adapter | 1 | | 327169 (5) |
| 20 | | Stop | 1 | | 327849 (23) |
| 21 | 172270-14 | Ball, 19/32 " Dia. | 1 | ● | 327851 (11) |
| 22 | 49711 | Gasket, 1.12 " OD (Copper) | 1 | ● | <i>337103</i> (17) |
| 23 | 327849 | Seat, Valve | 1 | ● | <i>382082</i> (20) |

Legend:
 Part numbers left blank (or in *italics*) are not available separately
 ●△ designates a repair kit item

Repair Kits

| Part No. | Kit Symbol | Description |
|----------|------------|-------------------|
| 394778-2 | ● | Kit, Major Repair |
| 394777-1 | △ | Kit, Minor Repair |

Accessories

These model pumps can be used in a variety of applications which allows an assortment of accessory items to be utilized. Please refer to the Sales Catalog for details on additional accessory items.

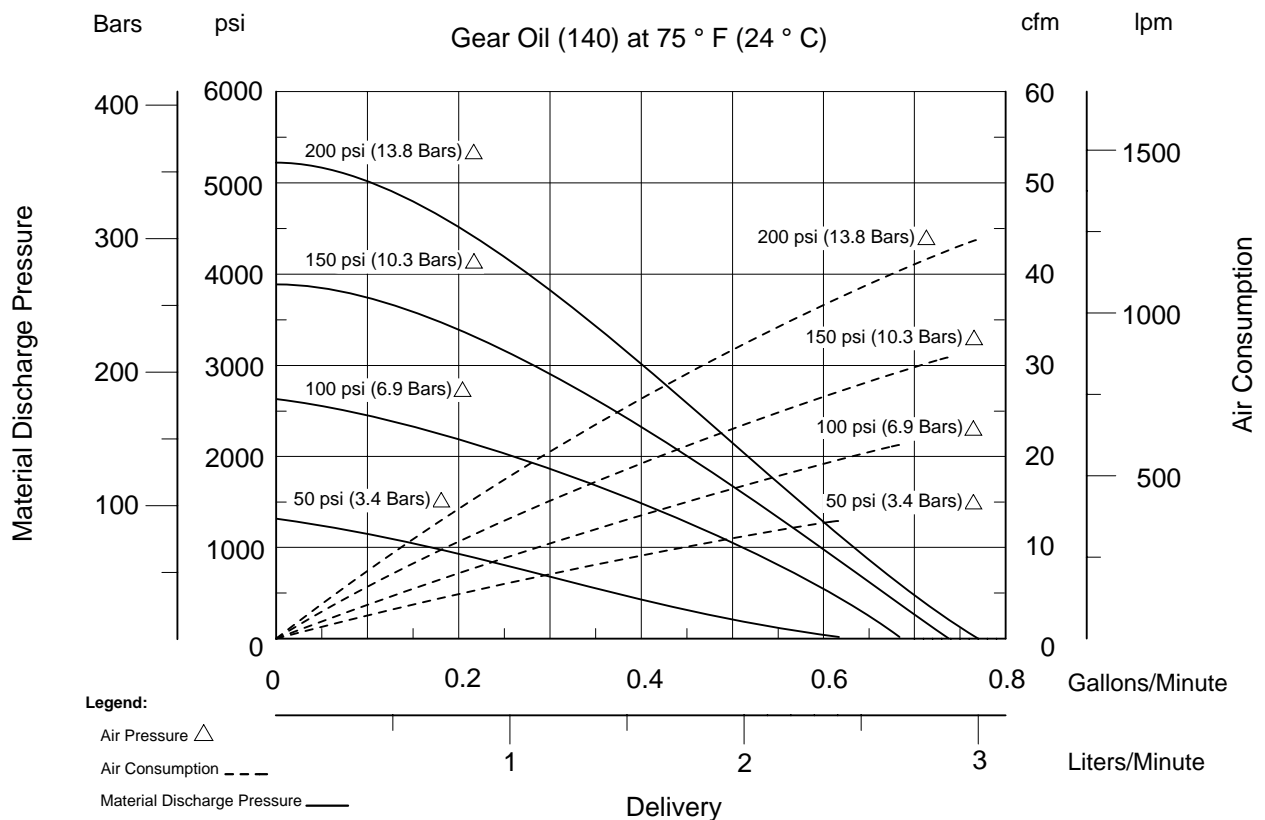
| Pump Model | Container Size | | | | Cover Assembly | | Follower | | Bung Adapter | Dolly |
|------------|----------------|-----|---------|---------|----------------|--------|----------|--------|--------------|-----------|
| | lbs | kg | gallons | liters | | | lbs | kg | | |
| 331571-C5 | 35 | - | 5 | - | 338166 | | 338825 | | - | 336899 |
| 331571-B5 | 120 | | 16 | | 338371 | | 338802 | | 326750 | 316315-5 |
| | | 50 | | - | | 338983 | | 338993 | | |
| 331571-A5 | 400 | | 55 | | 318040-4 | | 338911 | | - | 336575-A1 |
| | | 180 | | 200/205 | | 338984 | | 338911 | 326750 | |

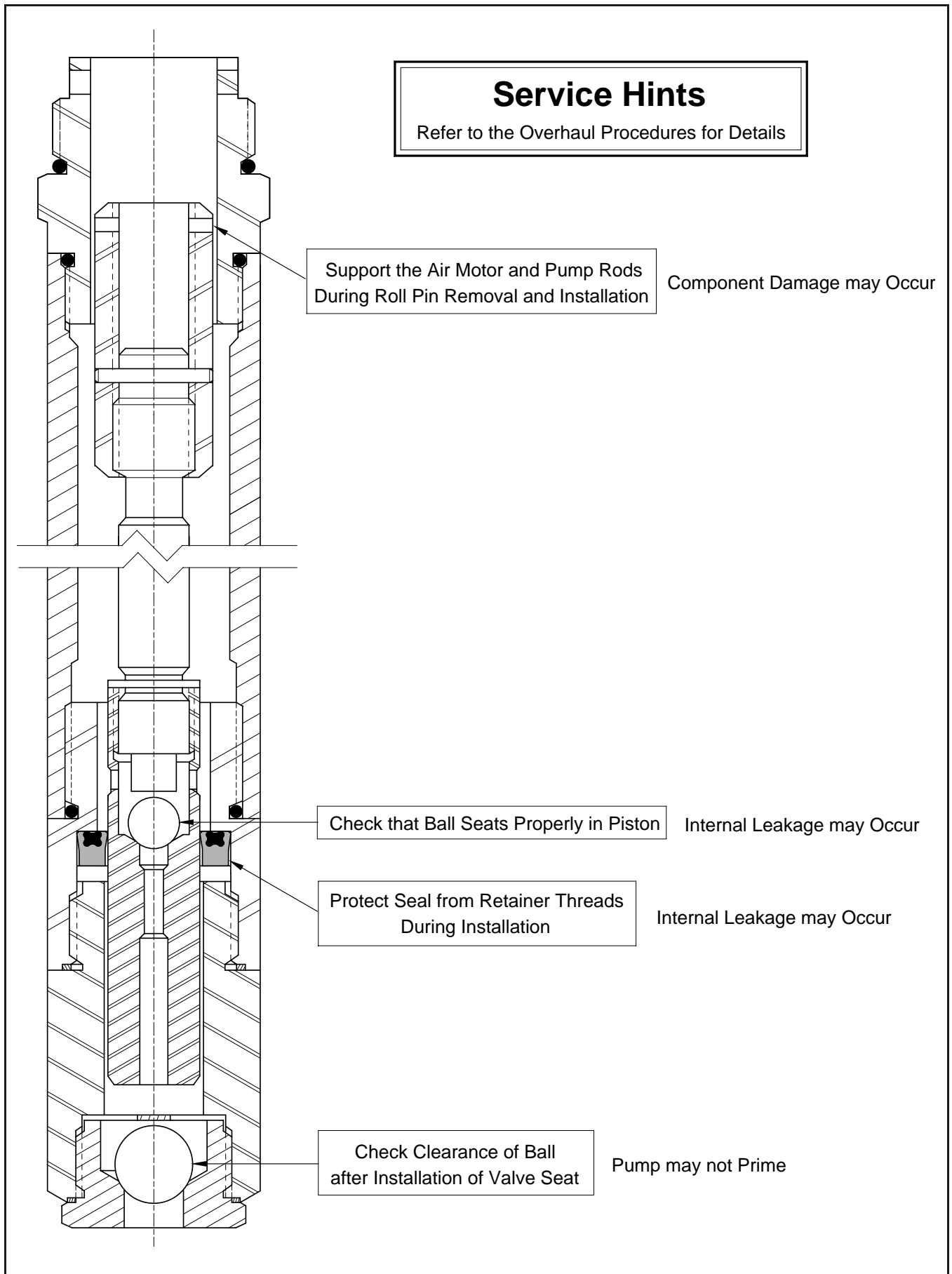
Table 2 Model 331571 Series Accessory Components

Performance Curves

A pump's ability to deliver material is based on the pressure (psi/Bars) and quantity (cfm/lpm) of air supplied to the motor and the amount of material discharge [back] pressure to be overcome within the system.

This chart contains curves based on four different air pressures. The curves relate delivery in gallons (liters) per minute (X axis) to air consumption in cubic feet (liters) per minute (right Y axis) and to material discharge pressure in psi/Bars (left Y axis).





WARNING

Do not use halogenated hydrocarbon solvents such as methylene chloride or 1,1,1-trichloroethane in this pump. An explosion can result within an enclosed device capable of containing pressure when aluminum and/or zinc-plated parts come in contact with halogenated hydrocarbon solvents.

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 can result in injury.

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

Overhaul

NOTE: Refer to **Figure 2** for component identification on all overhaul procedures.

Disassembly**Separate Pump Tube from Air Motor**

1. Clamp the pump assembly in a soft-jaw vise. See **Figure 4**.
2. Unscrew Tube Adapter (5) from Air Motor assembly (3).
 - Pull the Tube Assembly to expose the Coupling.

CAUTION

Support Coupling (6) and the Air Motor Piston Rod during Roll Pin removal. Damage to components can occur.

3. Remove Roll Pin (7) that secures Coupling (6) to the Air Motor Piston Rod.
4. Unscrew the Coupling from the Piston Rod.
5. Remove the pump tube assembly from the air motor.

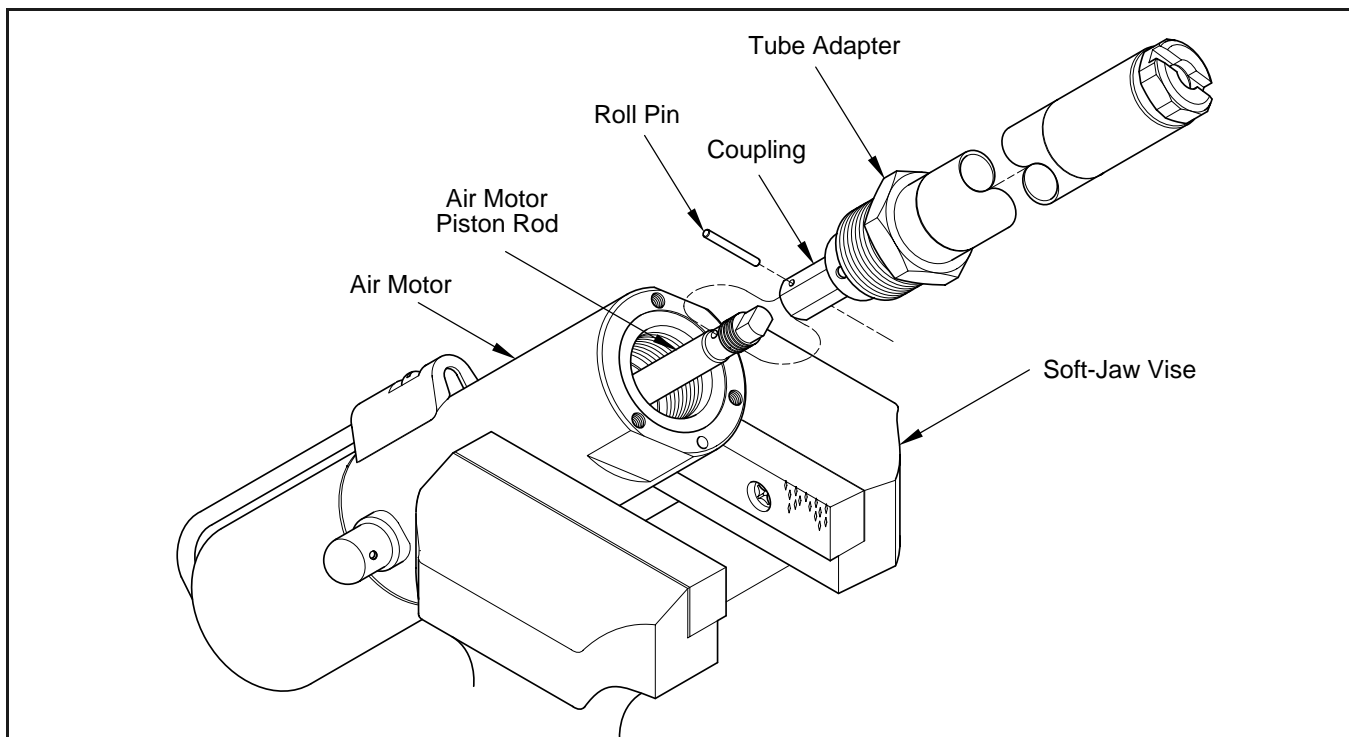


Figure 4 Separation of Pump Tube Assembly from Air Motor

Pump Tube

Piston Assembly

- Grasp the Coupling and pull the piston assembly from the Tube assembly.

CAUTION

Support Coupling (6), Rod (9), and Piston (11) during Roll Pin removal. Damage to components can occur.

- Remove Roll Pin (8) that secures Coupling (6) to Rod (9).
 - Use a punch and a small hammer.
- Remove Roll Pin (12) that secures Piston (11) to the Rod.
 - Use a punch and a small hammer.
- Unscrew the Rod from the Coupling and the Piston.
- Remove Ball (10) from the Piston.

Tube Assembly

- Clamp the pump tube in a vise at Valve Seat (23) with Tube Adapter (5) facing upward.
- Unscrew the Tube Adapter from Tube (13).

NOTE: The Tube may break at Retainer (15), Adapter (19), or Valve Seat (23). Use a strap wrench to hold the necessary component.
- Remove O-Ring (4) and O-Ring (14) from the Tube Adapter.
- Unscrew the Tube from the Retainer.
- Unscrew the Retainer from Adapter (19).
- Remove O-Ring (14), Bearing (17), Seal (16), and Gasket (18) from the Retainer.
- Unscrew the Adapter from Valve Seat (23).
- Remove Stop (20) and Ball (21) from the Valve Seat.
- Remove Gasket (22) from the Adapter.

Clean and Inspect

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

- Clean all metal parts in a modified petroleum-based solvent. The solvent should be environmentally safe.
- Inspect all parts for wear and/or damage.
 - Replace as necessary.
- Inspect Piston (11) closely. Use a magnifying glass to detect any wire draw marks on the ball seat.
 - Replace as necessary.
- Closely inspect the mating surfaces of all components for any imperfections. Ensure a smooth and clean contact is obtained when assembled.

EXAMPLE: Place Ball (10) into Piston (11). Fill the Piston with solvent. Make sure no leakage occurs.

Place Ball (21) into Valve Seat (23) and fill the Valve Seat with solvent. Make sure no leakage occurs. Replace components as necessary.

Assembly

NOTE: Prior to assembly, certain components require lubrication in clean oil. Refer to **Table 3** for details.

Pump Tube

NOTE: Refer to **Figure 5** and **Figure 2** for component identification on pump tube assembly procedures.

Tube Assembly

IMPORTANT: Use care not to damage Seal (16) on the threads of Retainer (15). Angle the Seal [lips first] into the Retainer then gently rotate the Seal squarely in the bore.

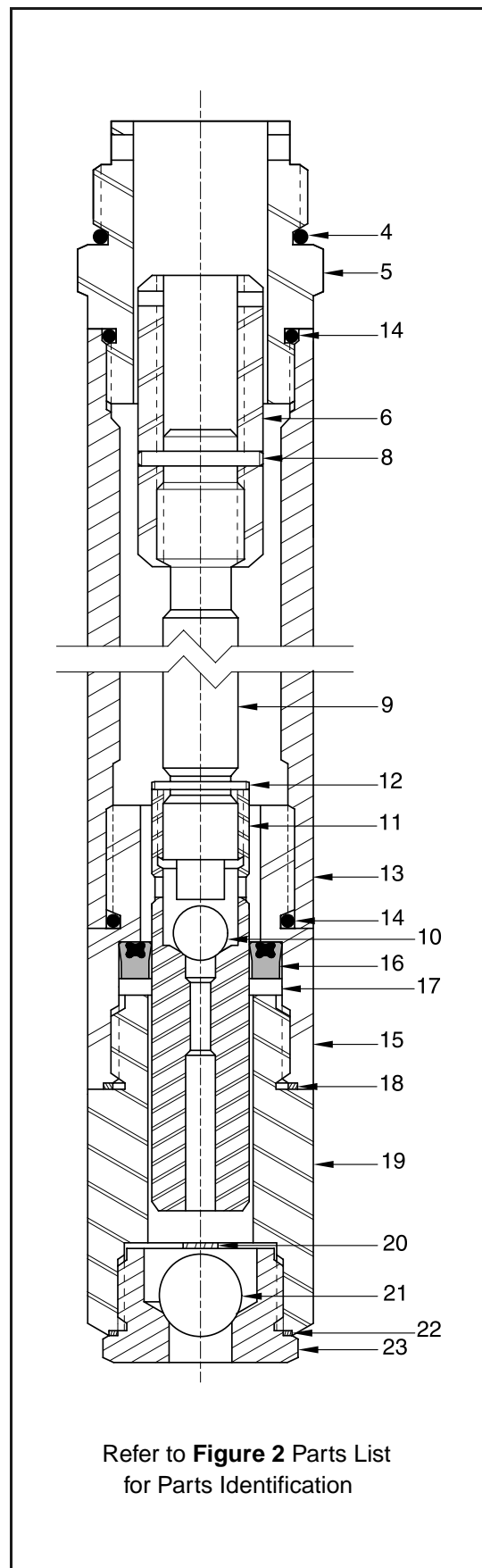
1. Install and seat Seal (16) [lip-end first] into the bottom of Retainer (15).
2. Install and seat Bearing (17) and Gasket (18) into the Retainer.
3. Screw the Retainer assembly onto Adapter (19).
 - Do not tighten at this time.
4. Install O-Ring (14) onto the top of the Retainer.
5. Screw Tube (13) onto the Retainer.
 - Do not tighten at this time.
6. Install O-Ring (4) and O-Ring (14) onto Tube Adapter (5).
 - Make sure to place the larger O-Ring on the upper portion of the Tube Adapter (with cross-hole).
7. Screw the Tube Adapter into the Tube.
 - Do not tighten at this time.

Piston Assembly

8. Install Ball (10) into the top of Piston (11).
9. Screw Rod (9) into the Piston until the hole in the Rod aligns with the notch in the Piston.
10. Screw Coupling (6) onto the Rod until the holes align.

| Item No. | Description |
|----------|---------------------------------|
| 4 | O-Ring, 1-1/8 " ID x 1-1/4 " OD |
| 14 | O-Ring, 1 " ID x 1-1/8 " OD |
| 16 | Seal, 0.6 " ID x 1.00 " OD |

Table 3 Components Lubricated with Clean Oil



Refer to **Figure 2** Parts List for Parts Identification

Figure 5 Pump Tubes 327164, 327164-1, and 327164-A1 Section View

CAUTION

Support the Rod, Piston, and Coupling during Roll Pin installation. Damage to components can occur.

11. Install Roll Pin (12) to secure the Rod to the Piston.
 - Use a small hammer.
12. Install Roll Pin (8) to secure the Rod to the Coupling.
 - Use a small hammer.
13. With a slight twisting motion, install the piston assembly [Piston end first] into the top of the Tube assembly.
 - Ease the Piston into the Seal.
14. Install and seat Gasket (22) and Stop (20) onto the bottom of Adapter (19).
15. Install Ball (21) into Valve Seat (23).
16. Screw the Valve Seat assembly into the Adapter.

IMPORTANT: Press on the Ball to ensure it moves freely. This ensures the Stop is positioned properly.

17. Tighten all the components of the pump tube.
 - Tighten sufficiently to properly crush the copper gaskets.

Connect Pump Tube to Air Motor

18. Clamp Air Motor assembly (3) in a vise with the piston rod facing upward.
19. Thread the Coupling onto the Air Motor Piston Rod until the Pin holes are in alignment.

CAUTION

Support the Coupling and the Air Motor Piston Rod during Roll Pin installation. Damage to components can occur.

20. Install Roll Pin (7) to secure the Piston Rod to the Coupling.
21. Thread the Tube Adapter into the air motor and tighten securely.
 - Use care when passing over the O-Ring.

Operation

WARNING



Do not exceed the lowest pressure rating of any component in the system.

Never point a control valve at any portion of your body or another person. Lubricant discharged at high velocity can penetrate the skin and cause severe injury. Should any fluid appear to puncture the skin, get medical care immediately.

Ensure all components are in operable condition. Replace any suspect parts prior to operation. Personal injury can occur.

1. Slowly supply air pressure [not to exceed 25 psi (1.7 Bars)] to the pump's motor.

- The pump assembly should cycle.

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

With air pressure at zero:

2. Connect a product hose to the pump's material outlet.
 - Direct the hose into an appropriate container.
3. Place the pump in the product to be dispensed.
4. Slowly supply air pressure to the pump's motor.
5. Allow the pump to cycle slowly until the system and product is free of air.

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

WARNING



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

With air pressure at zero:

6. Attach a control valve to the outlet hose of the pump.
7. Slowly supply 35 psi (2.4 Bars) air pressure to the pump's motor.
8. Operate the control valve into a container.
9. Allow the pump to cycle until the system and product is once again free of air.
10. Shut off the control valve.
11. Set the air pressure to 100 psi (6.9 Bar).
12. Visually inspect the pump for external leaks.
 - The pump should not cycle.

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

13. Check the motor for air leakage.

If the motor leaks, refer to the **Troubleshooting Chart** in the **Air Motor Service Guide** for details.

Installation

Additional items that should be incorporated into the air piping system are illustrated in **Table 4**.

| Part Number | Description |
|-------------|--|
| 338860 | Moisture Separator/Regulator & Gauge Combination |
| 5604-2 | Moisture Separator |
| 7604-B | Regulator and Gauge |
| 5904-2 | Lubricator * |

Table 4 *Air Line Components*

* Although the air motor is lubricated at the factory, the life of the motor can be extended with the use of a lubricator.

Troubleshooting Chart

| Pump Indications | Possible Problems | Solution |
|--|---|---|
| Pump does not cycle | <ol style="list-style-type: none"> 1. Air motor not operating properly 2. Pump tube jammed and/or contains loose components 3. Insufficient air pressure | <ol style="list-style-type: none"> 1. Inspect air motor and rebuild or replace as necessary 2. Rebuild pump tube 3. Increase air pressure |
| Pump will not prime | <ol style="list-style-type: none"> 1. Excessive cycling speed 2. Pump leaking internally | <ol style="list-style-type: none"> 1. Reduce air pressure 2. See Internal Leaks |
| Pump cycles rapidly | Product source empty | Replenish product |
| Pump cycles continuously, or slowly (once or twice/hour) | <ol style="list-style-type: none"> 1. Pump leaking internally 2. Pump leaking externally 3. Distribution system leaking | <ol style="list-style-type: none"> 1. See Internal Leaks 2. See External Leaks 3. Correct leak |
| External Leaks | | |
| Product visible at Tube Adapter (5) | <ol style="list-style-type: none"> 1. Initial tightening of Tube Adapter (5) to Tube (13) and/or Motor not sufficient 2. Damaged O-Ring (4), O-Ring (14), Tube Adapter (5) or Tube (13) | <ol style="list-style-type: none"> 1. Tighten Tube Adapter (5) into Tube (13) 2. Disconnect Tube Adapter (5) from Tube (13) and Motor. Clean and inspect all parts. Replace parts as necessary. |
| Product visible between Tube (13) and Retainer (15) | <ol style="list-style-type: none"> 1. Initial tightening of Tube (13) to Retainer (15) not sufficient 2. Damaged O-Ring (14), Tube (13), or Retainer (15) | <ol style="list-style-type: none"> 1. Tighten Tube (13) onto Retainer (15) 2. Disconnect Retainer (15) from Tube (13). Clean and inspect all parts. Replace parts as necessary. |
| Product visible between Retainer (15) and Adapter (19) | <ol style="list-style-type: none"> 1. Initial tightening of Retainer (15) to Adapter (19) not sufficient 2. Damaged Gasket (18) | <ol style="list-style-type: none"> 1. Tighten Retainer (15) onto Adapter (19) 2. Disconnect Adapter (19) from Retainer (15). Replace Gasket (18) |
| Product visible between Adapter (19) and Valve Seat (23) | <ol style="list-style-type: none"> 1. Initial tightening of Adapter (19) to Valve Seat (23) not sufficient 2. Damaged Gasket (22) | <ol style="list-style-type: none"> 1. Tighten Adapter (19) onto Valve Seat (23) 2. Disconnect Valve Seat (23) from Adapter (19). Replace Gasket (22) |
| Internal Leaks | | |
| Pump does not prime or cycles continuously, or slowly (once or twice/hour) | <ol style="list-style-type: none"> 1. Foreign material between Ball (10) and Piston (11) 2. Foreign material between Ball (21) and Valve Seat (23) 3. Stop (20) misaligned in Adapter (19) 4. Worn or damaged Ball (10) and/or (21) 5. Worn or damaged Piston (11) 6. Worn or damaged Valve Seat (23) 7. Worn or damaged Seal (16) | <ol style="list-style-type: none"> 1. Locate and eliminate source of foreign material. 2. Disassemble pump tube, clean, inspect, and replace worn or damaged components. |

Changes Since Last Printing

Removed Protective Sleeve from Repair Kits

