Medium-Pressure Material Pump

Description

The major components of the pump models in the 7896 series consist of a reciprocating air motor and a double-acting pump tube. The pump tube is divorced from the motor which:

- protects the motor from product contamination
- allows separation without product leakage

The pump tube is designed to enable the delivery of a variety of materials. These medium-pressure (22:1) pumps contain a bung adapter [2 " NPTF (m)] that allows operation directly from original drums or bulk containers.

Models 7896-A5 and 7896-B5

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

NOTE: Each model can be hoist-mounted. Refer to Page 2 for details.

Specifications

Air Motor

<table>
<thead>
<tr>
<th>Piston Diameter / Stroke</th>
<th>Air Inlet/Outlet</th>
<th>Max. Air Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inches / Centimeters</td>
<td>psi / Bars</td>
<td></td>
</tr>
<tr>
<td>6 / 4</td>
<td>15.2 / 10.2</td>
<td>3/4 &quot; NPTF (f)</td>
</tr>
</tbody>
</table>

For air motor data, refer to Service Guide SER 323640-4

Pump Tube

<table>
<thead>
<tr>
<th>Material Outlet</th>
<th>Max. Material Pressure</th>
<th>Delivery/Minute (Approximate)*</th>
<th>Displacement/Cycle</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 &quot; NPTF</td>
<td>2200 152</td>
<td>7 26.5</td>
<td>9.62 157.6</td>
</tr>
</tbody>
</table>

* For detailed information, refer to Figure 2

Table 1 7896 Model Series Specifications

Alemite Corporation
167 Roweland Drive, Johnson City, Tennessee 37601
www.alemite.com

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Accessories

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Air Hose</th>
<th>Cover</th>
<th>Union</th>
<th>Muffler</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>55-Gallon</td>
<td>5-Gallon</td>
<td>200/205 Liter</td>
</tr>
<tr>
<td>7896-A5</td>
<td>317811-5</td>
<td>318040-4</td>
<td>-</td>
<td>338984</td>
</tr>
<tr>
<td>7896-B5</td>
<td>-</td>
<td>322590-4</td>
<td>-</td>
<td>327817-4</td>
</tr>
</tbody>
</table>

* This cover contains an inspection/fill port

<table>
<thead>
<tr>
<th>Hoist Description</th>
<th>Pump</th>
<th>Hoist Model</th>
<th>Material Follower</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Plate *</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>35-lb</td>
</tr>
<tr>
<td>Single-Post</td>
<td>7896-A5</td>
<td>2741-4, *</td>
<td>2742-4, *</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2742-4, *</td>
<td>2743-4</td>
</tr>
<tr>
<td></td>
<td>7896-B5</td>
<td>2742-4, *</td>
<td>2743-4</td>
</tr>
<tr>
<td>Dual-Post</td>
<td>7896-A5</td>
<td>7818-F5</td>
<td>-</td>
</tr>
</tbody>
</table>

* Requires Adapter Plate 322593  * Requires Adapter (Attaches the Plate to Inlet of Pump) ** Included with Hoist

| Hoists available for Pump Model 7896-A5 and 7896-B5

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 three 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).

Figure 2  Delivery versus Discharge Pressure and Air Consumption
<table>
<thead>
<tr>
<th>Item No.</th>
<th>Part No.</th>
<th>Description</th>
<th>Qty</th>
<th>Notes</th>
<th>Numeric Order Part # (Item #)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>323842</td>
<td>Bolt, Eye, 3/8 &quot; NPTF (m)</td>
<td>1</td>
<td></td>
<td>11828 (5)</td>
</tr>
<tr>
<td>2</td>
<td>323640-A1</td>
<td>Motor Assembly, Air</td>
<td>1</td>
<td>See SER 323640-4</td>
<td>77807 (8)</td>
</tr>
<tr>
<td>3</td>
<td>328037</td>
<td>Connector, 3/4 &quot; NPTF (m)</td>
<td>1</td>
<td></td>
<td>172207-4 (7)</td>
</tr>
<tr>
<td>4</td>
<td>328031</td>
<td>Coupler, Air, 1/2 &quot; NPTF (f)</td>
<td>1</td>
<td></td>
<td>323640-A1 (2)</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td>Screw, 1/2 &quot; -20 x 2 &quot;</td>
<td>4</td>
<td></td>
<td>323842 (1)</td>
</tr>
<tr>
<td>6</td>
<td></td>
<td>Tube Assembly, Pump</td>
<td>1</td>
<td>See Figure 3-B</td>
<td>328031 (4)</td>
</tr>
<tr>
<td>7</td>
<td>172207-4</td>
<td>Lockwasher, 1/2 &quot;</td>
<td>4</td>
<td></td>
<td>328037 (3)</td>
</tr>
<tr>
<td>8</td>
<td></td>
<td>Nut, 1/2 &quot; -20</td>
<td>4</td>
<td></td>
<td>331070-C1 (6)</td>
</tr>
</tbody>
</table>

Legend:
Part numbers left blank (or in italics) are not available separately

Figure 3-A  Medium-Pressure Material Pump Model 7896 Series - Exploded View
Figure 3-B  Medium-Pressure Material Pump Model 7896 Series - Exploded View
## Repair Kits

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Kit Symbol</th>
<th>Description</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>393003</td>
<td></td>
<td>Kit, Major Repair</td>
<td>See Figure 4</td>
</tr>
<tr>
<td>331916</td>
<td></td>
<td>Kit, Changeover</td>
<td>See Figure 5</td>
</tr>
<tr>
<td>393004</td>
<td>Δ</td>
<td>Kit, Upper V-Packing (includes 8 V-Packings for upper end of tube)</td>
<td></td>
</tr>
<tr>
<td>393005</td>
<td>●</td>
<td>Kit, Lower V-Packing (includes 5 V-Packings for lower end of tube)</td>
<td></td>
</tr>
</tbody>
</table>
### Figure 4  Major Repair Kit 393003

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Part No.</th>
<th>Description</th>
<th>Qty</th>
<th>Item No.</th>
<th>Part No.</th>
<th>Description</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>324648</td>
<td>Clip, Spring</td>
<td>1</td>
<td>38</td>
<td>331007</td>
<td>Ring, Male</td>
<td>1</td>
</tr>
<tr>
<td>22</td>
<td>330974</td>
<td>Washer, 1.254 &quot;</td>
<td>4</td>
<td>39</td>
<td>331009</td>
<td>Ring, Female</td>
<td>1</td>
</tr>
<tr>
<td>23</td>
<td>330704</td>
<td>Ring, Female (Brass)</td>
<td>2</td>
<td>40</td>
<td>330301</td>
<td>Body</td>
<td>1</td>
</tr>
<tr>
<td>24</td>
<td>331185-24</td>
<td>V-Packing, (Buna-N)</td>
<td>13</td>
<td>41</td>
<td>327641</td>
<td>Valve, 1/4 &quot; NPTF (f)</td>
<td>1</td>
</tr>
<tr>
<td>28</td>
<td>17829</td>
<td>Screw, 1/4 &quot; -28 x 3/8 &quot;</td>
<td>1</td>
<td>42</td>
<td>X171018-32</td>
<td>O-Ring, 1-7/8 &quot; ID x 2 &quot; OD</td>
<td>2</td>
</tr>
<tr>
<td>30</td>
<td>X171018-31</td>
<td>O-Ring, 1-3/4 &quot; ID x 1-7/8 &quot; OD</td>
<td>2</td>
<td>46</td>
<td>171700-80</td>
<td>Ball, 1-1/4 &quot; Dia.</td>
<td>1</td>
</tr>
<tr>
<td>35</td>
<td>327646</td>
<td>Spacer</td>
<td>1</td>
<td>47</td>
<td>330973</td>
<td>Body, Valve</td>
<td>1</td>
</tr>
<tr>
<td>37</td>
<td>330302</td>
<td>Spring</td>
<td>1</td>
<td></td>
<td>NOTE: Part numbers in italics are not available separately</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Recommended for pumps that operate under severe conditions.
Recommended for pumps that deliver material that is incompatible with Buna-N seals
This kit contains Teflon seals

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Part No.</th>
<th>Description</th>
<th>Qty</th>
<th>Item No.</th>
<th>Part No.</th>
<th>Description</th>
<th>Item No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>324648</td>
<td>Clip, Spring</td>
<td>1</td>
<td>30</td>
<td>X171018-31</td>
<td>O-Ring, 1-3/4 &quot; ID x 1-7/8 &quot; OD</td>
<td>2</td>
</tr>
<tr>
<td>22</td>
<td>330974</td>
<td>Washer, 1.254 &quot;</td>
<td>4</td>
<td>39</td>
<td>331009</td>
<td>Ring, Female</td>
<td>1</td>
</tr>
<tr>
<td>23</td>
<td>330704</td>
<td>Ring, Female (Brass)</td>
<td>2</td>
<td>42</td>
<td>X171018-32</td>
<td>O-Ring, 1-7/8 &quot; ID x 2 &quot; OD</td>
<td>2</td>
</tr>
<tr>
<td>24</td>
<td>326069-24</td>
<td>V-Packing, (Teflon)</td>
<td>13</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

NOTE: Part number in *italics* is not available separately

Figure 5  Changeover Kit 331916
Service Hints
Refer to the Overhaul Procedures for Details

Observe Hole in Packing Screw for Oil Overflow
Packing Screw Loose and/or Worn or Damaged V-Packings Exist

Fill Cavity of Packing Screw with Oil
Prevent Product from Drying on Rod

Loosen Valve Screw Prior to Seal Lubrication
Damage to Seals can Occur

Measure these Distances During the Assembly Process
Dimensions Effects Pump Performance
Overhaul

NOTE: Refer to Figure 3-A and 3-B for component identification on all overhaul procedures.

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

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. 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.

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

Disassembly

Separate Air Motor from Pump Tube
1. Clamp the pump assembly vertically in a vise at Bung Adapter (29).

2. Remove Screws (5), Lock Washers (7), and Nuts (8) that secure the Air Motor Assembly to the Pump Tube Assembly.

3. Lift the motor upward to expose upper Coupling (9) and at the same time place a wood block (2" x 4") onto the surface of Upper Mounting (16). See Figure 6.

4. Lower the Air Motor onto the wood block.

5. Remove upper Spring Clip (10) that secures the air motor piston to the Coupling.

6. Rotate the Coupling until the air motor piston is free.

7. Remove the Air Motor Assembly.

Access to Body Packing
8. Remove lower Spring Clip (10) that secures Rod (11) to the Coupling.
   - Remove the Coupling from the Rod.

9. Remove Packing Screw (12) from Plate (15).

10. Clamp the pump assembly horizontally in a vise (material outlet upward) at Body (19).

11. Unscrew and remove Extension Cylinder (31) [with attached components] from the Body.
   - Use a strap wrench.

12. Remove O-Ring (30) from the Extension Cylinder.

Body Packing
13. Remove Screw (28) from the Body.
   - Access is through the Body’s outlet.

14. From the bottom of the Body remove:
   - Spacer (27) .................................................. Qty 1
   - Male Rings (25) .......................................... Qty 2
   - V-Packings (24) ........................................ Qty 8
   - Female Rings (23) ....................................... Qty 2
   - Washers (22) ............................................ Qty 3
   - Lantern Ring (26) ........................................ Qty 1

Figure 6  Separation of Air Motor from Pump Tube with use of Wooden Block
Pump Tube

15. Unscrew Valve Body (47) from Cylinder (43).
16. Remove O-Ring (42) from the Cylinder.
17. Remove Stop Washer (44), Washer (45), and Ball (46) from the Valve Body.
18. Push Rod (11) out the Extension Cylinder.
   • Remove the Rod assembly from the Cylinder.
19. Remove upper and lower Spring Clips (10) that secure Extension Rod (33) and Stem (34) to lower Coupling (9).
20. Unscrew the Rod assembly and the Stem assembly from the Coupling.
21. Clamp the flats of the Stem assembly in a vise.
22. Unscrew Valve (41) from the Stem.
23. Remove the Body and V-Packing assembly from the Stem.
24. Remove Stop (35) from the Stem.
26. From the top of the Body remove:
   • Spring (37) ...................................................... Qty 1
   • Washer (22) ...................................................... Qty 1
   • Male Ring (38) ................................................ Qty 1
   • V-Packings (24) [concave surface upward]..... Qty 4
   • Female Ring (23) [concave surface upward]....Qty 1
   • Washers (22) ...................................................... Qty 1
   • Lantern Ring (26)............................................ Qty 1
   • Washer (22)...................................................... Qty 1
   • Female Ring (23) [concave surface upward]....Qty 1
   • V-Packings (24) [concave surface upward]..... Qty 4
   • Male Ring (25) [ flat surface upward] ..........Qty 1
   • Washer (22)...................................................... Qty 1
27. Unscrew Coupling (32) from Cylinder (43).
   • Use two strap wrenches.
28. Remove additional O-Ring (42).
29. Unscrew Extension Cylinder (31) from the Coupling.
30. Remove additional O-Ring (30).

Optional Procedures

31. Unscrew Rod (11) from Extension Rod (33) as required.
32. Remove Screws (13) and Lock Washers (14) that secure Plate (15) to the Body as required.
   • Remove the Plate from Upper Mounting (16).
33. Remove Hydraulic Fitting (17) as required.
34. Unscrew Valve Seat (20) with Screw (21) as required.

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.

1. Clean all metal parts in a modified petroleum-based solvent. The solvent should be environmentally safe.
2. Make sure to remove the thread sealant from both male and female threaded connections.
3. Inspect all parts for wear and/or damage.
   • Replace as necessary.
4. Inspect Rod (11) and Cylinder (43) closely. Use a magnifying glass to detect any score marks.
   • Replace as necessary.
5. Closely inspect the mating surfaces of all check valve components for any imperfections. Ensure a smooth and clean contact is obtained when assembled.
   EXAMPLE: Place Ball (46) into Valve Body (47). Fill the Valve Body with solvent. Make sure no leakage occurs.

Assembly

NOTE: Prior to assembly, certain components require lubrication in clean oil. Refer to Table 4 for details.

Body Packing

NOTE: Refer to Figure 7 for a section view of the Pump Tube Assembly.

1. Position Body (19) large diameter upward.
2. Install and seat the following components in order:
   • Washer (22)...................................................... Qty 1
   • Female Ring (23) [concave surface upward]....Qty 1
   • V-Packings (24) [concave surface upward]..... Qty 4
   • Male Ring (25) [ flat surface upward] ..........Qty 1
   • Washer (22)...................................................... Qty 1
   • Lantern Ring (26)............................................ Qty 1
   • Washer (22)...................................................... Qty 1
   • Female Ring (23) [concave surface upward]....Qty 1
   • V-Packings (24) [concave surface upward]..... Qty 4
   • Male Ring (25) [ flat surface upward] ..........Qty 1

<table>
<thead>
<tr>
<th>Item No. on Figure 3-B</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>24</td>
<td>V-Packing (Buna-N and Teflon)</td>
</tr>
<tr>
<td>30</td>
<td>O-Ring, 1-3/4 &quot; ID x 1-7/8 &quot; OD</td>
</tr>
<tr>
<td>32</td>
<td>O-Ring, 1-7/8 &quot; ID x 2 &quot; OD</td>
</tr>
</tbody>
</table>

Table 4 Lubricated Components
Figure 7  Pump Tube Assemblies 331070-C1 and 331070-D1 - Section View

Refer to Figure 3-B
Parts List
for Parts Identification
3. Install Spacer (27) [small diameter first] into the Body.
   • Make sure the Spacer aligns with the bolt hole and seats properly.

   **CAUTION**

   Make sure Screw (28) does not bind on the Spacer. The Screw seats on the Body and allows the Spacer to move.

4. Install Screw (28) into the Spacer and Body.
   • Tighten the Screw securely.
   • Make sure the Spacer moves.

5. Position the Body small diameter upward.

6. Install and align Upper Mounting (16) onto the Body.

7. Install and align Plate (15) onto the Body.

8. Install Lock Washers (14) and Screws (13) that secure the Plate and Upper Mounting to the Body.
   • Tighten the Screws securely in a crisscross pattern.

   **Pump Tube**

9. Secure Extension Rod (33) securely in a soft-jaw vise.

10. Screw Rod (11) onto the Extension Rod [with Loctite 222].
    • Tighten securely.

   **CAUTION**

   Use care installing the Rod assembly into the Body assembly. Damage to the V-Packings can occur.

11. Install the Rod assembly [Extension Rod first] into the top of the Body assembly.

   **Piston Packing**

12. Clamp the flats of Guide (36) horizontally into a soft-jaw vise.

13. Install and seat Spring (37) onto the Guide.

14. Position Valve Seat (40) small diameter upward.

15. Install and seat the following components in order:
    • Female Ring (39) [concave surface upward] ....Qty 1
    • V-Packings (24) [concave surface upward] .....Qty 5
    • Male Ring (38) [flat surface upward] ..........Qty 1
    • Washer (22) ...............................................Qty 1

16. Screw the Valve Seat assembly into the Guide.
    • Reposition the Spring onto the Body as required.

17. Install Stop (35) onto Stem (34).

18. Install the Valve Seat and Guide assembly (Guide end first) onto the Stem assembly.

19. Clamp the flats of Valve (41) horizontally into a soft-jaw vise.

20. Screw the Stem assembly [with Loctite 222] into the Valve.
    • Tighten the Stem assembly securely.

21. Measure the distance from the bottom of the Stem to the bottom of the Valve.
    • The distance must not be greater than 0.15 " (3.8 mm). See Figure 5.

    **NOTE:** This setting ensures the life expectancy of the Valve.

22. Screw lower Coupling (9) onto the Stem until the Spring Clip holes align.

23. Measure the distance from the bottom of the Coupling to the top of the Stop.
    • The distance must not be less than 0.18 " (4.6 mm) and no greater than 0.21 " (5.3 mm). See Figure 5.

    **NOTE:** This setting effects the efficiency of the pump.

24. Install Spring Clip (10).

   **Rods and Cylinders**

   **IMPORTANT:** Make sure O-Ring (30) fits in the groove at the shoulder of Extension Cylinder (31). See Figure 6.

25. Install O-Rings (30) onto each end of Extension Cylinder (31).

    **IMPORTANT:** If a primer is used with Loctite 222, the curing time is greatly reduced.

26. Screw the Extension Cylinder (knurled end first) [with Loctite 222] into the Body assembly.
    • Do not tighten at this time.
27. Install Bung Adapter (29) onto the Extension Cylinder.

28. Screw Coupling (32) onto the Extension Cylinder (with Loctite 222).
   • Do not tighten at this time.

Valve Seat and Guide Assembly

29. Install the Valve Seat and Guide assembly onto Extension Rod (33) until the Spring Clip holes align.

30. Install Spring Clip (10).

   **IMPORTANT:** Make sure O-Ring (42) fits in the groove at the shoulder of Extension Cylinder (43). See Figure 6.

31. Install O-Rings (42) onto each end of Cylinder (43).

---

**CAUTION**

*Use care installing the Cylinder into the Coupling. Damage to the V-Packings can occur.*

32. Screw the Cylinder (knurled end first) [with Loctite 222] into the Coupling.
   • Do not tighten at this time.

Valve Body

33. Install Ball (46) into the top of Valve Body (47).

34. Install and seat Washer (45) and Stop Washer (44) [convex upward] into the Valve Body.

35. Screw the Valve Body assembly onto the Cylinder (with Loctite 222).
   • Make sure the Ball moves freely.

36. Place a large wrench or other suitable tool into the slot of the Valve Body.
   • Tighten all the components of the assembly securely.

37. Install Tag (18) and Hydraulic Fitting (17) as required.

38. Screw Valve Seat (20) [with Screw (21)] into the Body as required.
   • Make sure the bleed hole points downward.

Attach Air Motor to Pump Tube

39. Extend Rod (11) from the top of the Body assembly until it locks.

   **IMPORTANT:** Do not overtighten Screw (12). The pump must cycle with an initial air pressure setting of 15 psi (1 Bar).

40. Tighten Packing Screw (12) into Plate (15) until it contacts the V-Packling group.
   • Use the torque bar to snug the installation.

41. Screw upper Coupling (9) onto the Rod until the Spring Clip holes align.

42. Install Spring Clip (10).

43. Position the pump assembly vertically in a soft-jaw vise.

44. Fill the cavity of the Packing Screw with oil.*

   **NOTE:** If Teflon V-Packings are used, fill the Screw cavity with a solution that prevents product from drying on the Rod.

   *This step is important for visual feedback due to possible leakage during the initial start-up procedures.*

45. Place a wood block (2" x 4") onto the surface of the Upper Mounting as illustrated in Figure 6.

46. Position Air Motor Assembly (2) onto the Pump Tube Assembly and block.
   • Make sure to orient the Air Motor Assembly properly.

47. Screw the air motor piston rod onto the Coupling until the Spring Clip holes align.

48. Install the Spring Clip.

49. Remove the block and position the Air Motor Assembly onto the Pump Tube Assembly.

50. Install Screws (5), Lock Washers (7), and Nuts (8) that secure the Air Motor Assembly to the Pump Tube Assembly.
   • Tighten the Screws securely in a crisscross pattern.

*Refill the cavity at each pump changeover. Note that oil may overflow the opening of the Packing Screw on initial start-up. This is due to the position of Rod (11) [not at top dead center].
Lubricate V-Packings

51. Open Valve Screw (21).

52. Place an appropriate collection container underneath the Valve Seat.

53. Attach a hand gun to Hydraulic Fitting (17).

54. Pump a high quality NLGI 1 or 2 grease* until the grease is free of air (product if not rebuilt).

55. Close the Valve Screw.

Bench Test and 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.

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

Initial Start Up

1. Make sure air pressure at the regulator reads zero.

2. Install air Connector (3) to the inlet of the air motor.

3. Connect Air Coupler (4) to the Connector.

   **IMPORTANT:** The pump must begin to cycle once the air pressure reaches 15 psi (1 Bar).

4. Slowly supply air pressure [not to exceed 15 psi (1 Bar)] to the pump’s motor.
   • The pump assembly should begin to cycle.

If the pump assembly does not cycle, loosen the Packing Screw.

**NOTE:** The pump may not cycle for additional reasons. Refer to the Troubleshooting Chart for details.

Should the pump cycle before 15 psi (1 Bar) is reached, tighten the Packing Screw.

**CAUTION**

Do not operate the pump longer than 2 minutes during the adjustment procedure. Excessive heat due to friction can change the setting.

5. Continue to adjust the Packing Screw until the pump begins to cycle at 15 psi (1 Bar).

With air pressure at zero:

6. Connect a product hose to the pump’s material outlet.
   • Direct the hose into a collection container.

7. Place the pump in the product to be dispensed.

8. Slowly supply air pressure to the pump’s motor once again.

9. Allow the pump to cycle slowly until the product is free of air.

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

10. Inspect Packing Screw (12) for leakage.

    Should oil (solution) overflow the torque hole in the Packing Screw, tighten the Packing Screw clockwise 1/8 turn.

    With air pressure at zero:

11. Attach a control valve to the outlet hose of the pump.
    • Make sure the nozzle on the control valve is open and pointed into an appropriate collection container.

12. Slowly supply air pressure to the pump’s motor.

13. Allow the pump to cycle slowly until the product is once again free of air.

14. Set the air pressure to 100 psi (6.9 Bar).

15. Operate the control valve into the container momentarily.

* Lubricate the V-Packings once again after 8 hours of operation. Thereafter, lubricate once every 24 hours of operation.
16. Shut off the control valve.
   • Visually inspect the pump for external leaks.
   • The pump should not cycle more than once or twice in one hour.

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

17. Check the motor for air leakage.

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

   **NOTE:** The following procedures are applicable for pumps with Teflon V-Packings.

18. Open the control valve and allow the pump to operate for 5 minutes.

19. Inspect Packing Screw (12) for leakage.

   Should oil (solution) overflow the torque hole in the Packing Screw, tighten the Packing Screw clockwise an additional 1/8 turn.

   **IMPORTANT:** After 8-10 hours of operation, inspect the Packing Screw for leakage once again. Tighten an additional 1/8 turn as required.

### Installation

Additional items that should be incorporated into the air piping systems are listed in **Table 5**.

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>338862</td>
<td>Moisture Separator/Regulator &amp; Gauge Combination</td>
</tr>
<tr>
<td>5608-2</td>
<td>Moisture Separator</td>
</tr>
<tr>
<td>7608-B</td>
<td>Regulator and Gauge</td>
</tr>
<tr>
<td>5908-2</td>
<td>Lubricator *</td>
</tr>
</tbody>
</table>

**Table 5  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

<table>
<thead>
<tr>
<th>Pump Indications</th>
<th>Possible Problems</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pump does not cycle</td>
<td>1. Packing Screw (12) too tight</td>
<td>1. Loosen Packing Screw (12)</td>
</tr>
<tr>
<td></td>
<td>2. Air motor not operating properly</td>
<td>2. Inspect air motor and rebuild or replace as necessary</td>
</tr>
<tr>
<td></td>
<td>3. Pump tube jammed and/or contains loose components</td>
<td>3. Rebuild pump tube</td>
</tr>
<tr>
<td></td>
<td>4. Insufficient air pressure</td>
<td>4. Increase air pressure</td>
</tr>
<tr>
<td>Pump will not prime</td>
<td>1. Excessive cycling speed</td>
<td>1. Reduce air pressure</td>
</tr>
<tr>
<td></td>
<td>2. Pump leaking internally</td>
<td>2. See <strong>Internal Leaks</strong></td>
</tr>
<tr>
<td>Pump cycles rapidly</td>
<td>Product source empty</td>
<td>Replenish product</td>
</tr>
<tr>
<td>Pump cycles continuously, or slowly</td>
<td>1. Pump leaking internally</td>
<td>1. See <strong>Internal Leaks</strong></td>
</tr>
<tr>
<td>(once or twice/hour)</td>
<td>2. Pump leaking externally</td>
<td>2. See <strong>External Leaks</strong></td>
</tr>
<tr>
<td></td>
<td>3. Distribution system leaking</td>
<td>3. Correct leak</td>
</tr>
<tr>
<td><strong>External Leaks</strong></td>
<td>Product leakage visible at top or bottom of Packing Screw (12)</td>
<td>1. Tighten Packing Screw (12) with use of torque bar</td>
</tr>
<tr>
<td></td>
<td>1. Packing Screw (12) not sufficiently tight</td>
<td>2. Replace V-Packings (24)</td>
</tr>
<tr>
<td></td>
<td>2. Worn or damaged V-Packings (24)</td>
<td>3. Inspect Rod (11) and replace as necessary</td>
</tr>
<tr>
<td></td>
<td>3. Damaged Rod (11).</td>
<td></td>
</tr>
<tr>
<td>Product leakage visible at bottom of</td>
<td>1. Pump tube not sufficiently tight</td>
<td>1. Tighten pump tube assembly</td>
</tr>
<tr>
<td>Body (19)</td>
<td>2. Damaged O-Ring (30).</td>
<td>2. Replace O-Ring (30)</td>
</tr>
<tr>
<td>Product leakage visible at top</td>
<td>1. Cylinder(s) not sufficiently tight</td>
<td>1. Tighten Cylinder (31) and/or Cylinder (43) into Coupling (32)</td>
</tr>
<tr>
<td>and/or bottom of Coupling (32)</td>
<td>2. Damaged O-Ring (30) and/or (42)</td>
<td>2. Replace O-Ring (30) and/or (42)</td>
</tr>
<tr>
<td>Product leakage visible at top of</td>
<td>1. Valve Body (47) not sufficiently tight</td>
<td>1. Tighten Valve Body (47) into Cylinder (43)</td>
</tr>
<tr>
<td>Valve Body (47)</td>
<td>2. Damaged O-Ring (42)</td>
<td>2. Replace O-Ring (42)</td>
</tr>
<tr>
<td><strong>Internal Leaks</strong></td>
<td>1. Foreign material between Ball (46) and Valve Body (47)</td>
<td>Locate and eliminate source of foreign material.</td>
</tr>
<tr>
<td>Pump does not prime or cycles</td>
<td>2. Foreign material between Valve (41) and Valve Seat (40)</td>
<td>Disassemble pump tube, clean, inspect and replace worn or damaged</td>
</tr>
<tr>
<td>continuously, or slowly (once or twice/hour)</td>
<td>3. Worn or damaged Ball (46)</td>
<td>components.</td>
</tr>
<tr>
<td></td>
<td>4. Worn or damaged Valve Body (47)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5. Worn or damaged Valve (41)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6. Worn or damaged Valve Seat (40)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>7. Worn or damaged V-Packings (24)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>8. Worn or damaged Rod (11)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>9. Worn or damaged Cylinder (43)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>10. Worn or damaged Spring (37)</td>
<td></td>
</tr>
</tbody>
</table>

**Changes Since Last Printing**

Changed Stop Washer 318866 to 317419