

Medium-Pressure Stainless Material Pump

Description

NOTE: The components within the fluid-wetted path of this pump are stainless steel and Teflon.

CAUTION

This pump is tested in mineral oil. Flush the pump thoroughly with a solvent compatible with the product dispensed as required.

The major components of pump model 7886-S5 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. This medium-pressure (11:1) pump contains a bung adapter [2" NPTF (m)] that allows operation directly from original 55-gallon (200/205 l) drums.

Specifications

Air Motor

Piston Diameter / Stroke		Air Inlet/Outlet	Max. Air Pressure	
Inches	Centimeters		psi	Bars
4-1/4 / 4	10.8 / 10.2	3/4" NPTF (f)	200	14

For air motor data, refer to Service Guide SER 323440-4
See **Figure 2** for performance curves.

Pump Tube

Material Outlet	Maximum Material Pressure		Max. Free-Flow Delivery/Minute *		Recommended Continuous Delivery/Minute		Displacement per Cycle	
	psi	Bars	Gallons	Liters	Gallons	Liters	In ³	Cm ³
1" NPTF (f)	2200	152	13	49.2	7.75	29.3	9.62	157.6

See **Figure 2** for performance curves.
* SAE 10 oil at 75 ° F (24 ° C) and 100 psi [6.9 Bars] air pressure.

Table 1 Pump Model 7886-S Specifications

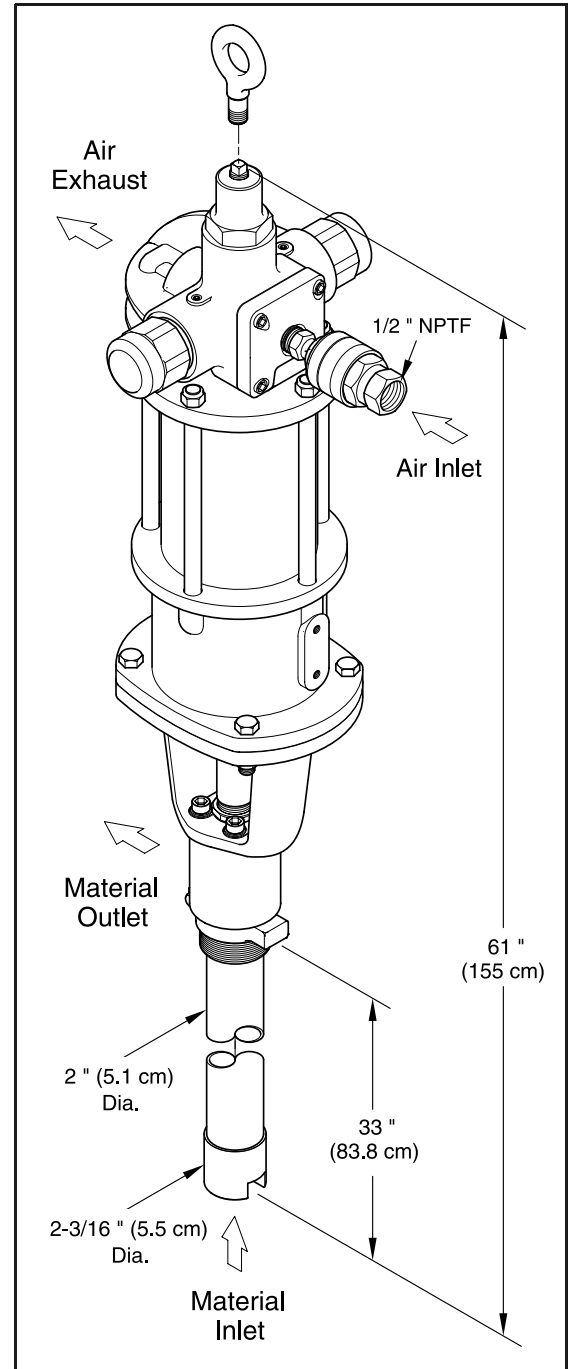


Figure 1 Medium-Pressure Stainless Pump Model 7886-S5

Alemite Corporation
PO Box 473515, Charlotte, North Carolina 28247-3515
www.alemite.com

Copyright © 2000 by Alemite Corporation

Accessories

Air Hose	Muffler	Cover	
		55-Gallon	200/205 Liter
317811-5	324170	318040-4	338984
		322590-4 *	
* This cover contains an inspection/fill port			

Table 2 Pump Model 7886-S5 Accessories

Hoists

Hoist Description	Pump	Hoist Model	Material Follower		
			Plate •		Adapter
			35-lb	400-lb	
Single-Post	7886-S5	2741-4, * 2742-4, * 2743-4	-	327242	330976
		2742-4, * 2743-4	324610	-	
* Requires Adapter Plate 322593 • Requires Adapter (Attaches the Plate to Inlet of Pump)					

Table 3 Hoists available for Pump Model 7886-S5

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).

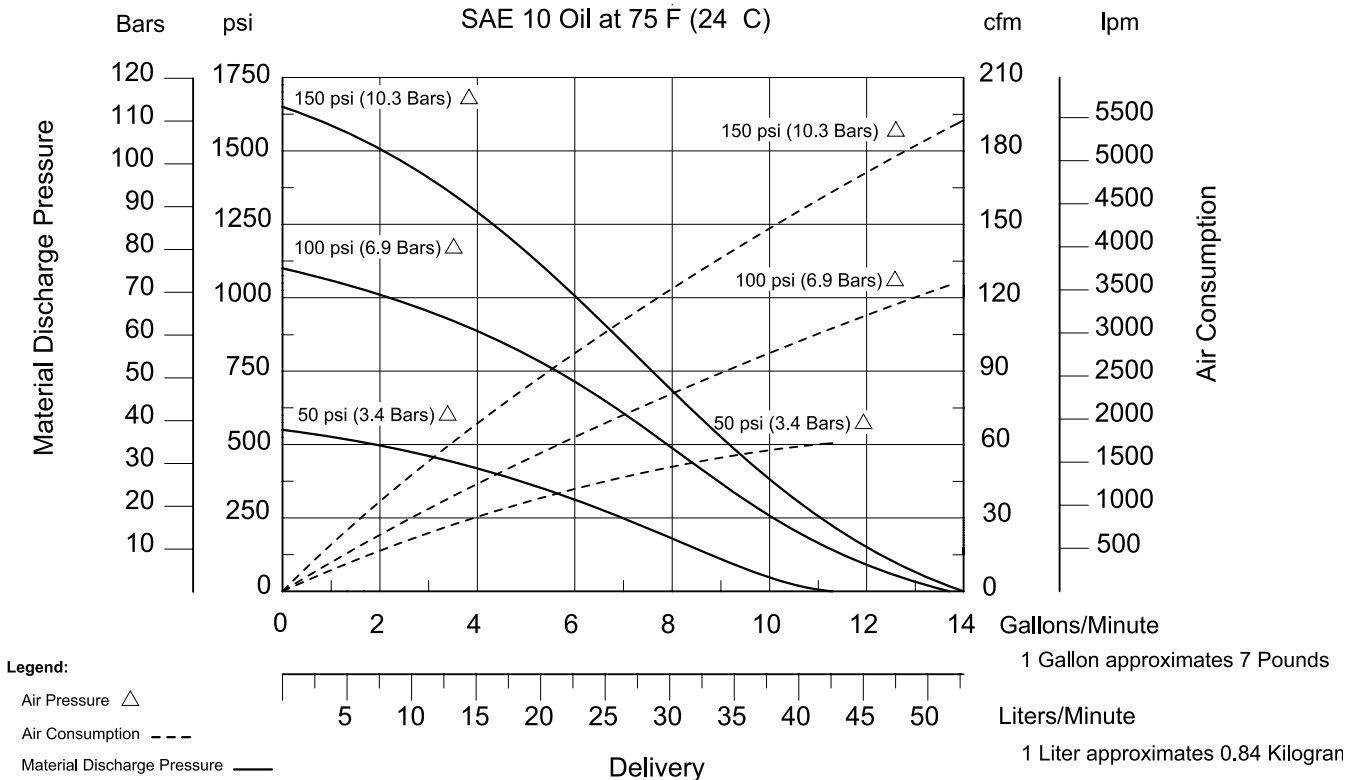
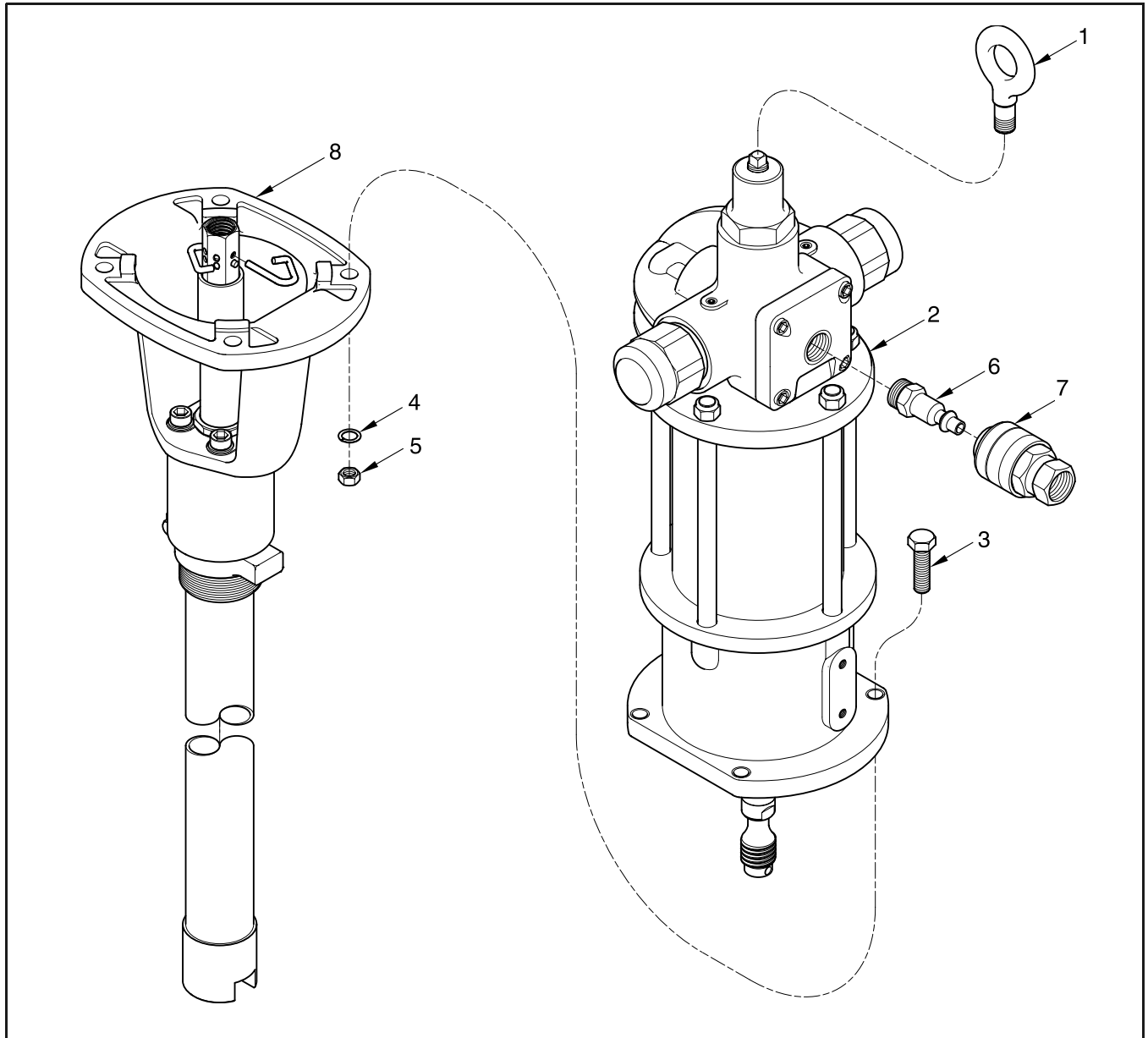


Figure 2 Delivery versus Discharge Pressure and Air Consumption



Item No.	Part No.	Description	Qty	Notes	Numeric Order Part # (Item #)
1	323842	Bolt, Eye, 3/8 " NPTF (m)	1		11828 (3)
2	323440-A1	Motor Assembly, Air	1	See SER 323440-4	77807 (5)
3		Screw, 1/2 " -20 x 2 "	4	Included with Item 2	172207-4 (4)
4	172207-4	Lockwasher, 1/2 "	4		323440-A1 (2)
5		Nut, 1/2 " -20	4		323842 (1)
6	328037	Connector, 3/4 " NPTF (m)	1		327675-5 (8)
7	328031	Coupler, Air, 1/2 " NPTF (f)	1		328031 (7)
8		Tube Assembly, Pump	1	See Figure 3-B	328037 (6)

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

Figure 3-A Medium-Pressure Stainless Material Pump Model 7886-S5 - Exploded View

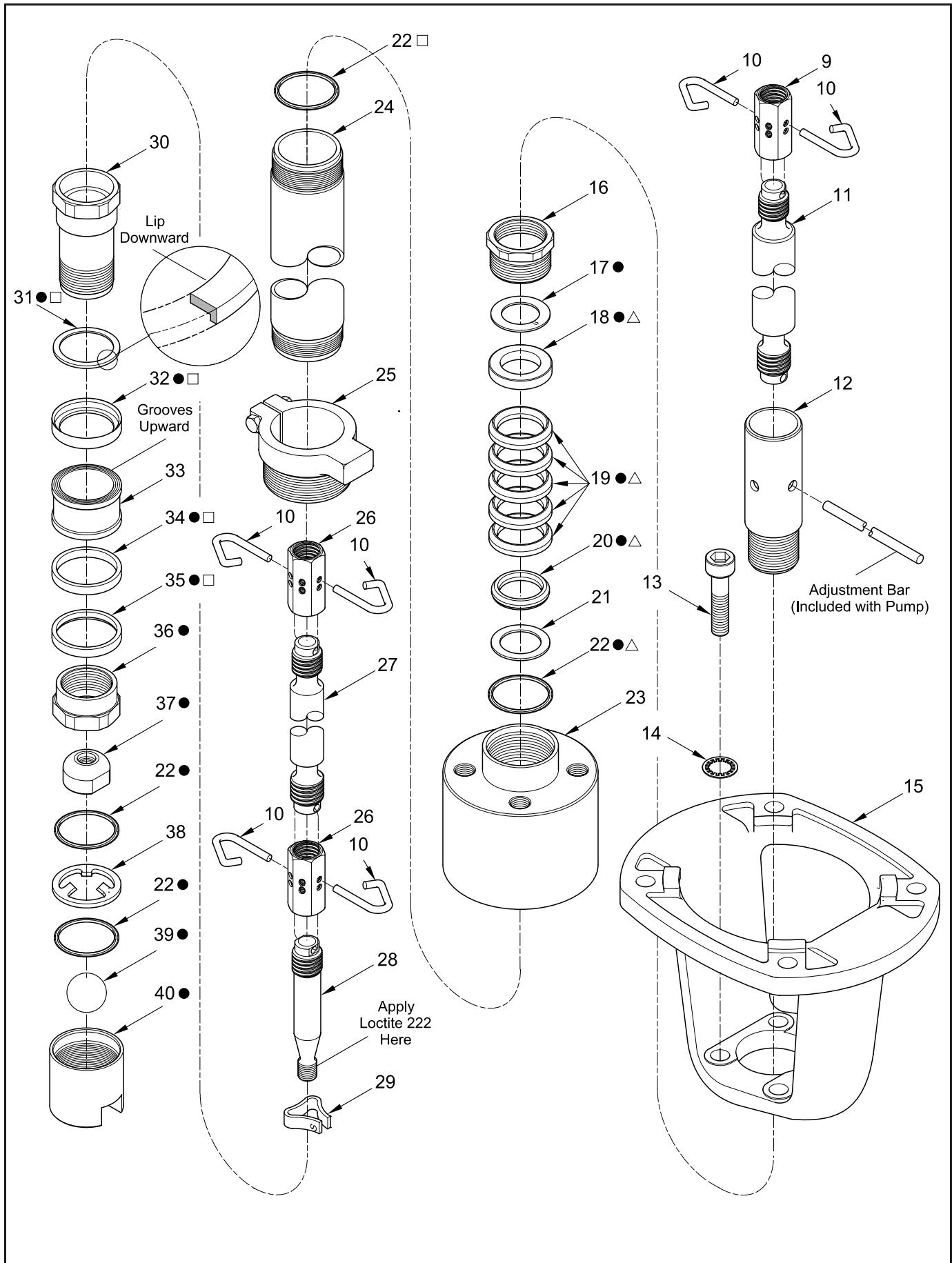


Figure 3-B Medium-Pressure Stainless Material Pump Model 7886-S5 - Exploded View

Item No.	Part No.	Description	Qty	Notes	Numeric Order Part # (Item #)
9	323439	Coupling	1		171256 (14)
10	326909	Clip, Spring (Stainless Steel)	6		171258 (13)
11	326907	Piston (Stainless Steel)	1		171701-80 (39)
12	335943	Screw, Packing	1		317419 (38)
13		Screw, 1/2 " -20 x 1-1/4 "	4		317425 (31)
14		Washer, Lock, 1/2 "	4		318855 (40)
15	330481-2	Mounting, Upper	1		323126 (32)
16	327278	Screw, Gland (Stainless Steel)	1		323439 (9)
17	334775	Washer, 1.31 " ID (Stainless Steel)	1	●	326069-24 (19)
18	334776	Ring, Female Support (Glass-Filled Teflon)	1	●△	326750-A1 (25)
19	326069-24	V-Packing (Teflon)	5	●△	326906 (23)
20	334712	Ring, Male Support (Glass-Filled Teflon)	1	●△	326907 (11)
21	327279	Washer, 1.28 " ID (Stainless Steel)	1		326908-1 (24)
22	330478	Gasket (Stainless Steel)	4	●△□	326909 (10) 3 in ● kit 1 in △□ kits
23	326906	Body (Stainless Steel)	1		326911 (26)
24	326908-1	Cylinder (Stainless Steel)	1		327278 (16)
25	326750-A1	Adapter, Bung, 2 " NPTF (m)	1		327279 (21)
26	326911	Coupling (Stainless Steel)	2		327650 (37)
27	327655	Rod (Stainless Steel)	1		327651 (35)
28	327653	Stem (Stainless Steel)	1		327652 (33)
29	327657	Stop (Stainless Steel)	1		327653 (28)
30	327656	Adapter (Stainless Steel)	1		327655 (27)
31		Washer, 1.19 " ID (Stainless Steel)	1	● □	327656 (30)
32	323126	Packing, Cup (Glass-Filled Teflon)	1	● □	327657 (29)
33	327652	Spacer (Stainless Steel)	1		327664 (36)
34	328719	Packing (Glass-Filled Teflon)	1	● □	328719 (34)
35	327651	Ring, Back-Up (Stainless Steel)	1	● □	330478 (22)
36	327664	Seat, Valve (Stainless Steel)	1	●	330481-2 (15)
37	327650	Valve (Stainless Steel)	1	●	334712 (20)
38	317419	Washer, Stop (Stainless Steel)	1		334775 (17)
39	171701-80	Ball, 1-1/4 " Dia. (Stainless Steel)	1	●	334776 (18)
40	318855	Valve, Foot (Stainless Steel)	1	●	335943 (12)

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

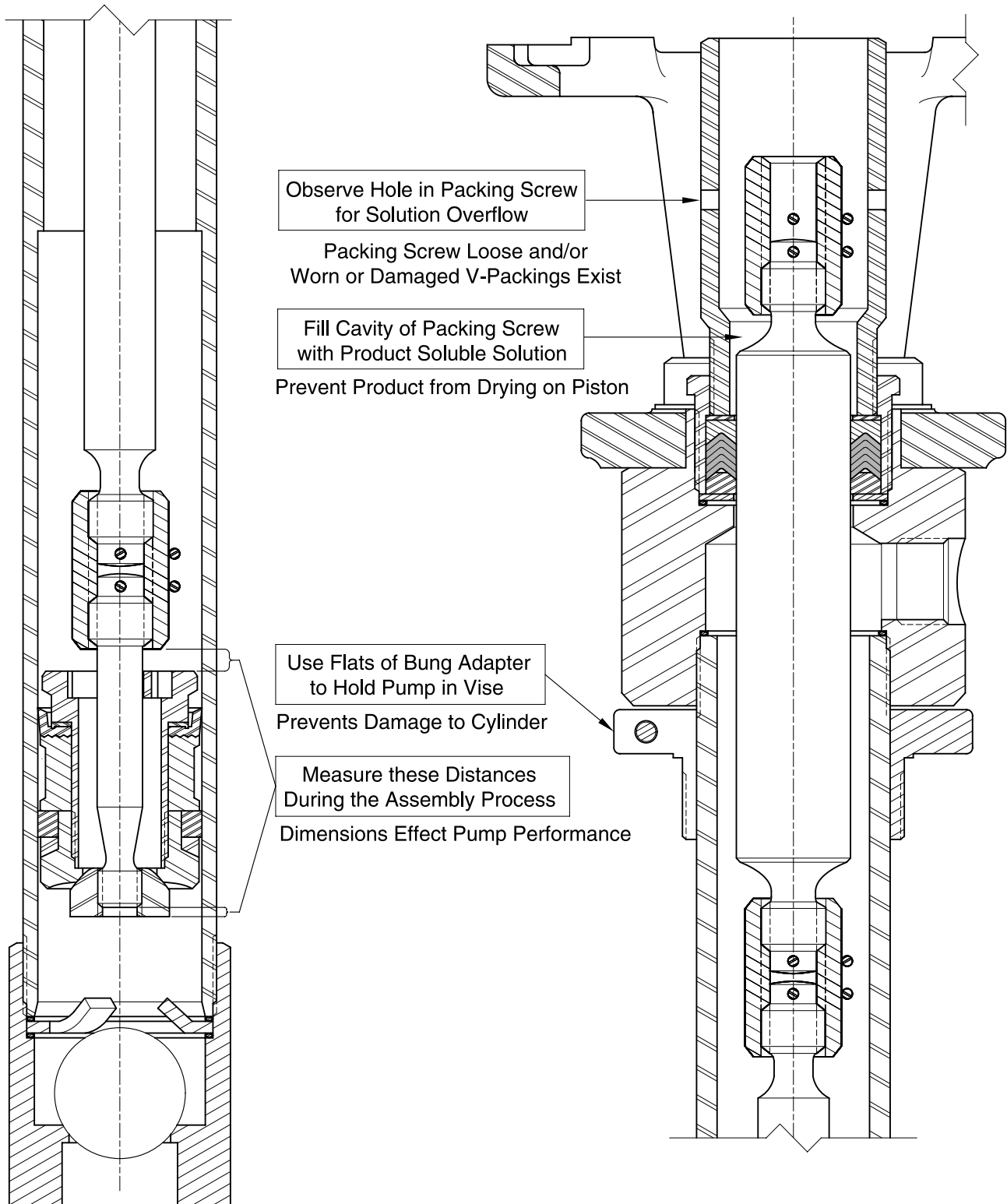
●△□ designates a repair kit item

Repair Kits

Part No.	Kit Symbol	Description
393006	●	Kit, Major Repair
393007	△	Kit, Minor, Upper Packing
393008	□	Kit, Minor, Lower Packing

Service Hints

Refer to the Overhaul Procedures for Details



Observe Hole in Packing Screw
for Solution Overflow

Packing Screw Loose and/or
Worn or Damaged V-Packings Exist

Fill Cavity of Packing Screw
with Product Soluble Solution

Prevent Product from Drying on Piston

Use Flats of Bung Adapter
to Hold Pump in Vise

Prevents Damage to Cylinder

Measure these Distances
During the Assembly Process

Dimensions Effect 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

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 (25).
2. Remove Screws (3), Lock Washers (4), and Nuts (5) 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 (15). See **Figure 4**.
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 Gland Screw (16).
10. Clamp the pump assembly horizontally in a vise at Body (23).
11. Unscrew and remove Cylinder (24) [with attached components] from the Body.
 - Use a wrench on the Bung Adapter.

Body Packing

12. Remove Gasket (22) from the bottom of the Body.
13. Remove Screws (13) and Lock Washers (14) that secure Upper Mounting (15) to the Body.
 - Remove the Upper Mounting.
14. Remove Gland Screw (16) [with attached components] from the Body.
15. Remove Washer (21) and Gasket (22) from the top of the Body.
16. From the bottom of the Gland Screw remove:
 - Male Support Ring (20)Qty 1
 - V-Packings (19)Qty 5
 - Female Support Ring (18).....Qty 1
 - Washer (17).....Qty 1

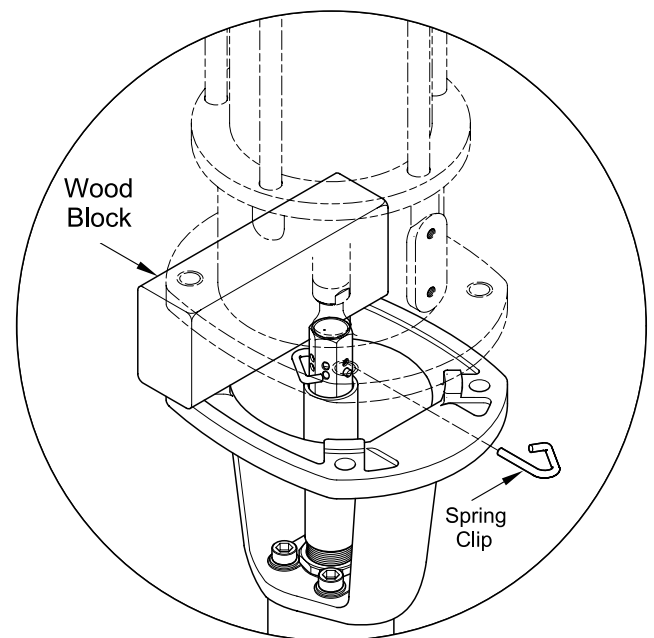


Figure 4 Separation of Air Motor from Pump Tube with use of Wooden Block

Pump Tube

17. Clamp the Cylinder assembly horizontally in a vise at the Bung Adapter.
18. Unscrew Foot Valve (40) from Cylinder (24).
 - Place a large wrench in the slot of the Foot Valve.
19. Remove Gasket (22), Stop Washer (38), additional Gasket (22), and Ball (39) from the Foot Valve.
20. Remove the Rod assembly from the bottom of the Cylinder.
21. Remove upper and lower Spring Clips (10) that secure Rod (27) and Stem (28) to lower Coupling (26).
22. Unscrew the Rod assembly and the Stem assembly from the Coupling.
23. Clamp the flats of the Stem assembly in a vise.
24. Unscrew Valve (37) from the Stem.
25. Remove the Valve Seat and Packing assembly from the Stem.
26. Remove Stop (29) from the Stem.
27. Unscrew Valve Seat (36) from Adapter (30).
28. Remove Packing (34) and Back-Up Ring (35) from the Valve Seat.
29. Remove Spacer (33), Cup Packing (32), and Washer (31) from the Adapter.

Optional Procedures

30. Remove upper and lower Spring Clips (10) that secure Piston (11) and Rod (27) to upper Coupling (26).
31. Unscrew the Piston and the Rod from the Coupling.

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 solvent compatible with the product dispensed. 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 Piston (11) and Cylinder (24) 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 (39) into Foot Valve (40). Fill the Foot Valve with solvent. Make sure no leakage occurs.

Assembly

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

Body Packing

NOTE: Refer to **Figure 5** for a section view of the Pump Tube Assembly.

1. Position Gland Screw (16) threads upward.
2. Install and seat the following components in order:
 - Washer (17).....Qty 1
 - Female Ring (18) [concave surface upward]....Qty 1
 - V-Packings (19) [concave surface upward] Qty 5
 - Male Ring (20) [flat surface upward].....Qty 1
3. Clamp Body (23) small diameter upward.
4. Install and seat Gasket (22) and Washer (21) into the Body.
5. Screw the Gland Screw assembly into the Body.
 - Tighten securely to properly crush the Gasket.
6. Install and align Upper Mounting (15) onto the Body.
7. Install Lock Washers (14) and Screws (13) that secure the Upper Mounting to the Body.
 - Tighten the Screws securely in a crisscross pattern.

Item No.	Description
11	Piston
24	bore of Cylinder

Table 4 Components Lubricated in Clean Mineral Oil

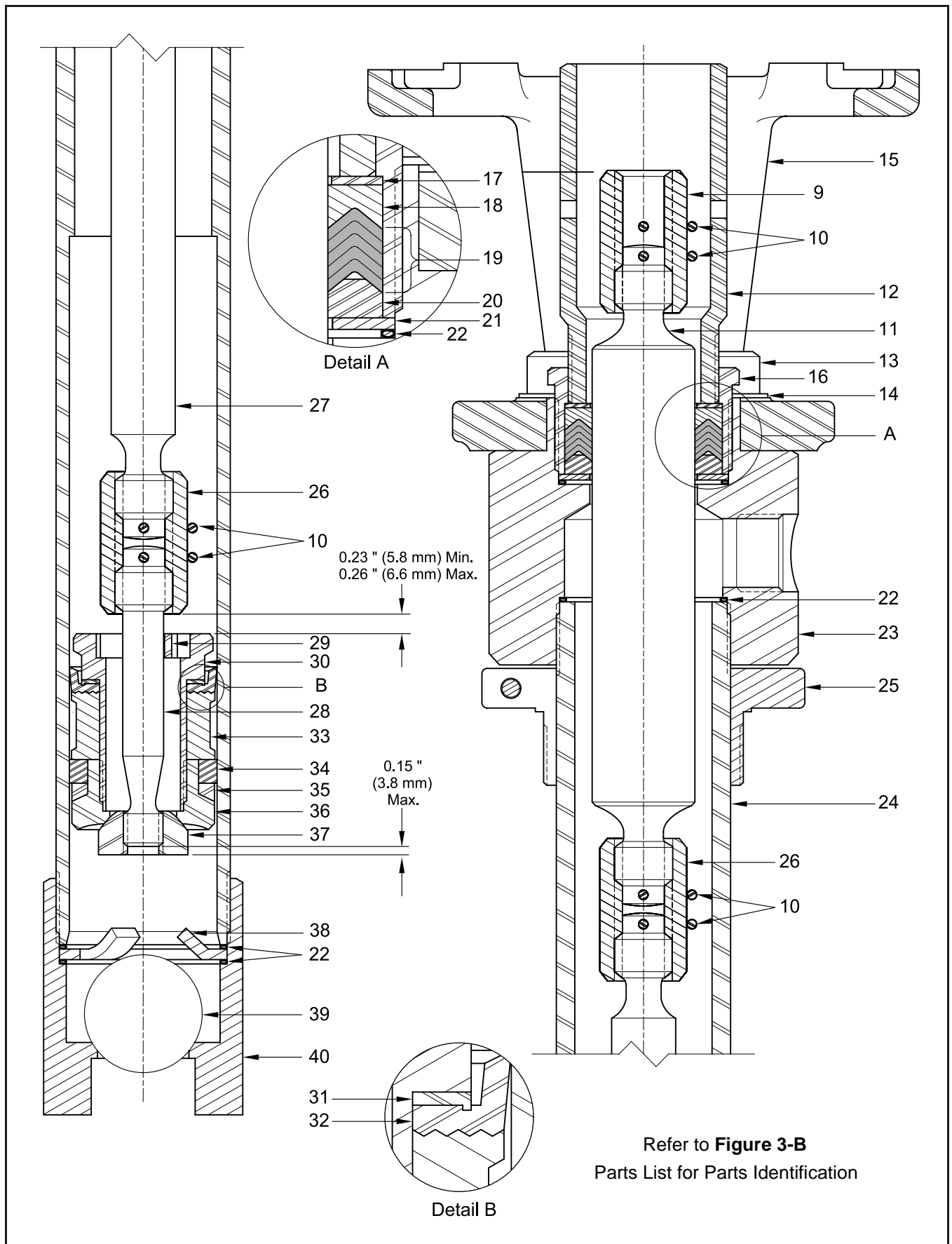


Figure 5 Pump Tube Assembly 327675-5 - Section View

Pump Tube

CAUTION

Use care installing Piston (11) into the Body assembly. Damage to the V-Packings can occur.

8. Install Piston (11) into the top of the Body assembly.

Valve and Packing Assembly

9. Position Adapter (30) threaded end upward.
10. Install Washer (31) [lip upward], Cup Packing (32) [flat side upward], and Spacer (33) [grooved end first] onto the Adapter.
11. Install Back-Up Ring (35) [concave end first] and Packing (34) onto Valve Seat (36).
12. Screw the Valve Seat assembly onto the Adapter assembly.
 - Tighten the Valve Seat after it bottoms.
13. Install Stop (29) onto Stem (28).
14. Install the Valve Seat and Packing assembly [Adapter end first] onto the Stem assembly.
15. Clamp the flats of Valve (37) horizontally into a soft-jaw vise.
16. Screw the Stem assembly [with Loctite 222] into the Valve.
 - Tighten the Stem assembly securely.
17. 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 components remain engaged.
18. Screw lower Coupling (26) onto the Stem until the Spring Clip holes align.
19. Measure the distance from the bottom of the Coupling to the top of the Stop.
 - The distance must not be less than 0.23 " (5.8 mm) and no greater than 0.26 " (6.6 mm). See **Figure 5**.

NOTE: This setting effects the efficiency of the pump.
20. Install Spring Clip (10).

Rod and Cylinder

21. Install the Valve Seat and Packing assembly onto Rod (27) until the Spring Clip holes align.
22. Install Spring Clip (10).
23. Screw upper Coupling (26) onto the Rod until the Spring Clip holes align.
24. Install Spring Clip (10).

CAUTION

Use care installing Cylinder (24) onto the Rod assembly. Damage to the Cup Packing can occur.

25. Install Cylinder (24) [large bore first] onto the top of the Rod assembly.
 - Make sure the Coupling on the Rod assembly is exposed from the top of the Cylinder.
 26. Install Gasket (22) [seam first] into the bottom of the Body.
 27. Screw the Rod assembly onto the Piston until the Spring Clip holes align.
 28. Install Spring Clip (10).
 29. Screw the Cylinder into the Body assembly.
 - Do not tighten at this time.
 30. Install Bung Adapter (25) onto the Cylinder.
- #### Foot Valve
31. Install Ball (39) into the top of Foot Valve (40).
 32. Install and seat Gasket (22) [seam upward], Stop Washer (38) [convex upward], and additional Gasket (22) [seam first] into the Foot Valve.
 33. Screw the Foot Valve assembly onto the Cylinder.
 - Make sure the Ball moves freely.
 34. Clamp the pump assembly at the Body.
 35. Place a large wrench or other suitable tool into the slot of the Foot Valve.
 - Tighten all the components of the assembly securely.
 - Make sure to properly crush all Gaskets.

Attach Air Motor to Pump Tube

CAUTION

Do not extend the Piston too far from the Body. The Coupling and Spring Clip assembly will contact the V-Packing group.

36. Extend Piston (11) from the top of the Body assembly enough to allow access to its Spring Clip hole.

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

37. Install and tighten Packing Screw (12) into Gland Screw (16) until it contacts the V-Packing group.
- Use the torque bar to snug the installation.
38. Screw upper Coupling (9) onto the Rod until the Spring Clip holes align.
39. Install Spring Clip (10).
40. Position the pump assembly vertically in a soft-jaw vise.
41. Fill the cavity of the Packing Screw with a solution that prevents product from drying on the Piston.
- This step is important for visual feedback due to possible leakage during the initial start up procedures.**
42. Place a wood block (2" x 4") onto the surface of the Upper Mounting as illustrated in **Figure 4**.
43. Position Air Motor Assembly (2) onto the Pump Tube Assembly.
- Make sure to orient the Air Motor Assembly properly.
44. Screw the air motor piston rod onto the Coupling until the Spring Clip holes align.
45. Install the Spring Clip.
46. Remove the block and position the Air Motor Assembly onto the Pump Tube Assembly.
47. Install Screws (3), Lock Washers (4), and Nuts (5) that secure the Air Motor Assembly to the Pump Tube Assembly.
- Tighten the Screws securely in a crisscross pattern.

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. Product discharged at high velocity can penetrate the skin and cause severe injury. Should any material 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 (6) to the inlet of the air motor.
3. Connect Air Coupler (7) 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 the 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.
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.

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

19. Inspect Packing Screw (12) for leakage.

Should the 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**.

Part Number	Description
338862	Moisture Separator/Regulator & Gauge Combination
5608-2	Moisture Separator
7608-B	Regulator and Gauge
5908-2	Lubricator *

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

Pump Indications	Possible Problems	Solution
Pump does not cycle	<ol style="list-style-type: none"> 1. Packing Screw (12) too tight 2. Air motor not operating properly 3. Pump tube jammed and/or contains loose components 4. Insufficient air pressure 	<ol style="list-style-type: none"> 1. Loosen Packing Screw (12) 2. Inspect air motor and rebuild or replace as necessary 3. Rebuild pump tube 4. 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 leakage visible at torque hole or bottom of Packing Screw (12)	<ol style="list-style-type: none"> 1. Packing Screw (12) not sufficiently tight 2. Worn or damaged V-Packings (19) 3. Damaged Piston (11) 	<ol style="list-style-type: none"> 1. Tighten Packing Screw (12) with use of torque bar 2. Replace V-Packings (19) 3. Inspect Piston (11) and replace as necessary
Product leakage visible at top of Body (23)	<ol style="list-style-type: none"> 1. Gland Screw (16) not sufficiently tight 2. Damaged Gasket (22) 	<ol style="list-style-type: none"> 1. Tighten Gland Screw (16) 2. Replace Gasket (22)
Product leakage visible at bottom of Body (23)	<ol style="list-style-type: none"> 1. Pump tube not sufficiently tight 2. Damaged Gasket (22) 	<ol style="list-style-type: none"> 1. Tighten pump tube assembly 2. Replace Gasket (22)
Product leakage visible at top of Foot Valve (40)	<ol style="list-style-type: none"> 1. Foot Valve (40) not sufficiently tight 2. Damaged Gasket(s) (22) 	<ol style="list-style-type: none"> 1. Tighten Foot Valve (40) into Cylinder (24) 2. Replace Gasket(s) (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 (39) and Foot Valve (40) 2. Foreign material between Valve (37) and Valve Seat (36) 3. Worn or damaged Ball (39) 4. Worn or damaged Foot Valve (40) 5. Worn or damaged Valve (37) 6. Worn or damaged Valve Seat (36) 7. Worn or damaged Cup Packing (32) 8. Worn or damaged Packing (34) 9. Worn or damaged Cylinder (24) 	<p>Locate and eliminate source of foreign material.</p> <p>Disassemble pump tube, clean, inspect and replace worn or damaged components.</p>

Changes Since Last Printing

Changed Cylinder 326908-1



Every effort has been made to ensure that the information within this publication is accurate.

Please send any comments or inquiries to chris.schrader@btrinc.com