

High-Pressure Pump

Description

The major components of pump model 337080 consist of an air-operated motor and a double-acting reciprocating pump tube. The pump tube is divorced from the motor which:

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

The pump tube is designed to deliver medium-to heavy-weight oils and light-bodied greases (up to NLGI # 0).

Mounting

This high-pressure (48:1) pump mounts from the motor housing to various structures.

Specifications

Air Motor

Piston Diameter / Stroke		Air Inlet / Outlet	Max. Air Pressure	
Inches	Centimeters		psi	Bars
6 / 4	15.3 / 10.2	3/4 " NPTF (f)	200	13.8

For information on the air motor, refer to Service Guide SER 323640-4

Pump Tube

Material Outlet	Max. Material Pressure		Delivery/Minute (Approximate)*		Displacement/Cycle	
	psi	Bars	gallons	liters	In ³	C ³
1/2 " NPTF (f)	9600	662	3.25	12.3	4.0	65.2

* For detailed information, refer to Figure 3

Table 1 Pump Model 337080 Specifications

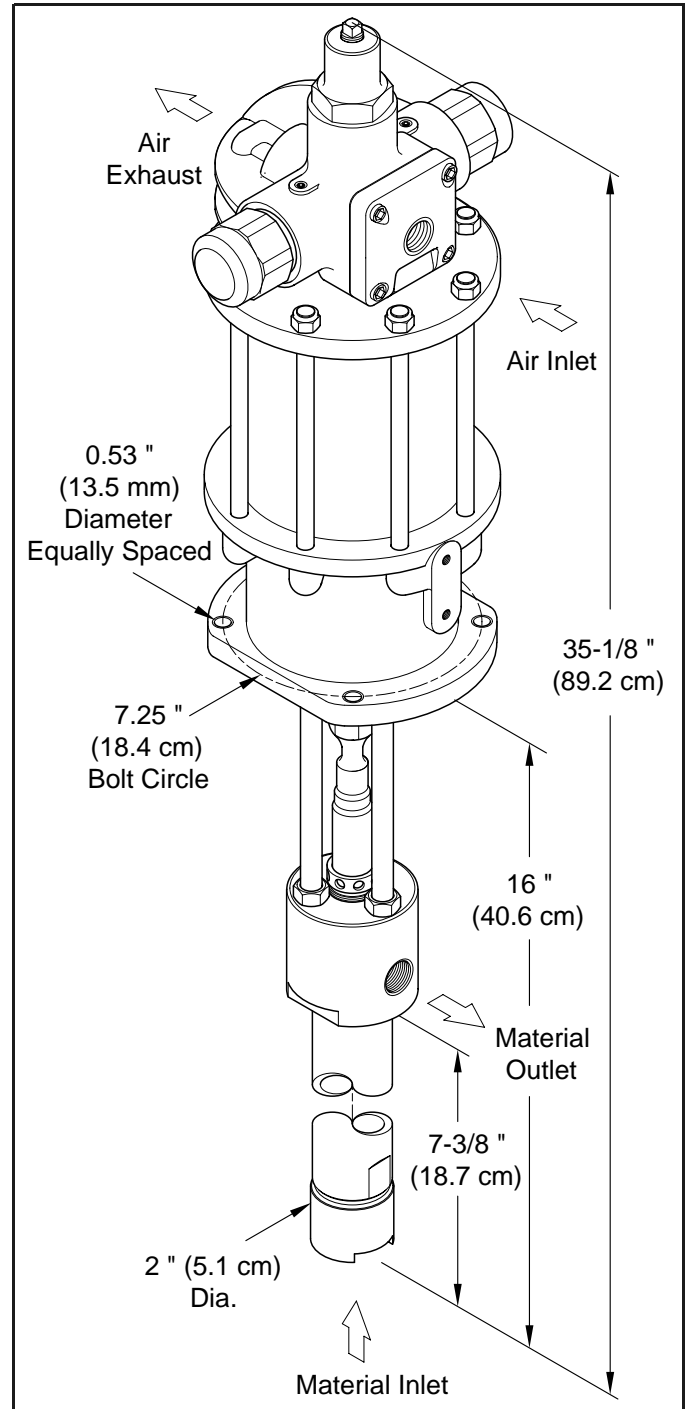


Figure 1 High-Pressure Pump Model 337080

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SER 337080
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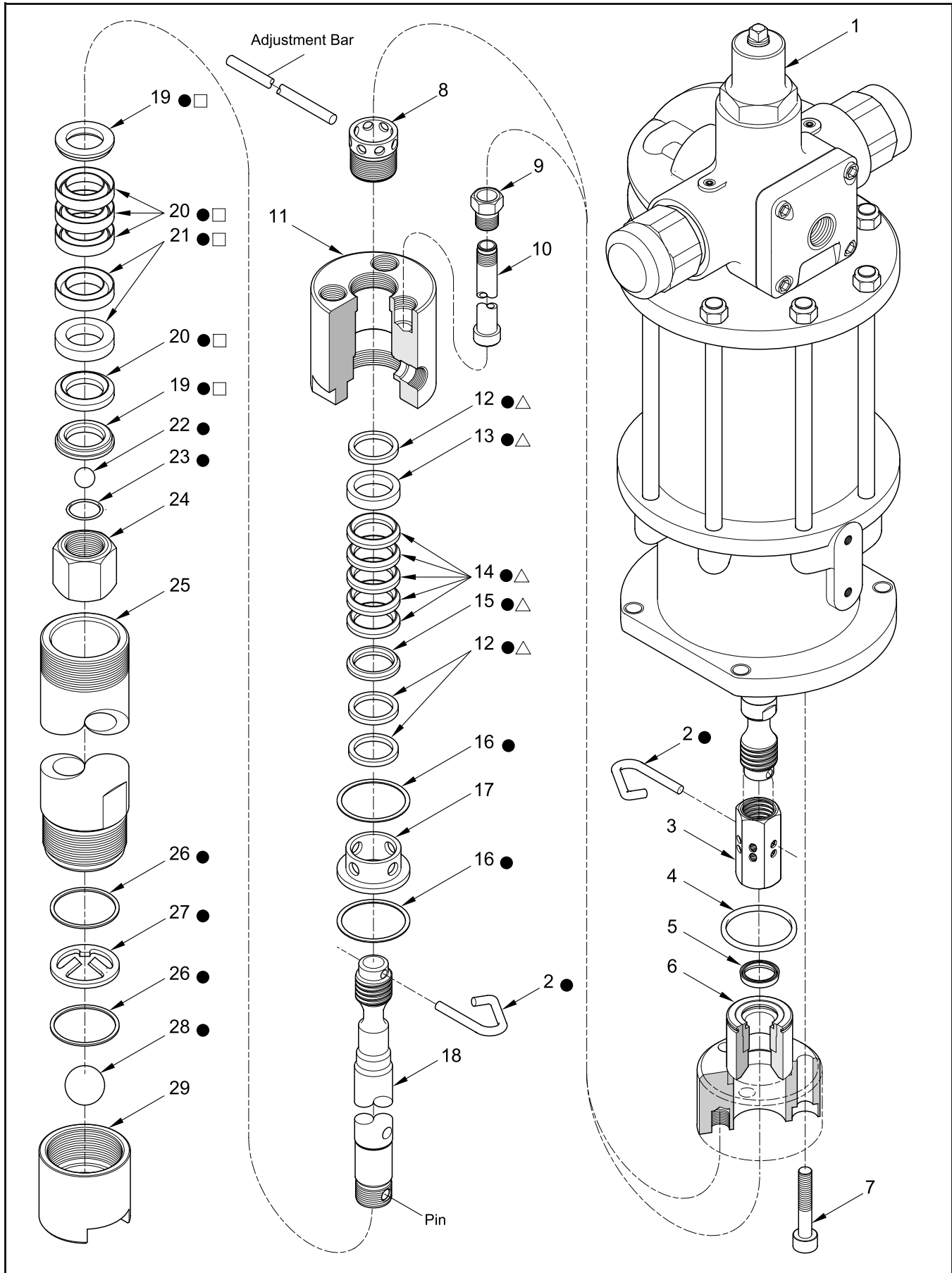


Figure 2 High-Pressure Pump Model 337080 - Exploded View

Item No.	Part No.	Description	Qty	Notes	Numeric Order Part # (Item #)
1		Motor Assembly, Air	1	See SER 323640-4	171009-33 (4)
2	324648	Clip, Spring	2	●	<i>171700-18</i> (22)
3	323439	Coupling	1		171700-56 (28)
4	171009-33	O-Ring, 1-13/16 " ID x 2 " OD	1		<i>171259-10</i> (23)
5	314632	Packing, Block-V	1		314632 (5)
6	323677-A1	Adapter Assembly	1		<i>318780-17</i> (15)
7	323801	Screw, 1/2 " -13 x 2-1/2 "	3		323439 (3)
8	323704	Screw, 1-1/8 " -18 x 3/4 "	1		<i>323640-4</i> (1)
9	323683	Plug, 15/16 " -20 x 19/32 "	3		323677-A1 (6)
10	324222	Tube and Bushing Assembly	3		323683 (9)
11	337018	Body, Pump	1		323693 (16)
12		Washer, Bearing (Aluminum)	3	●△	323704 (8)
13	326068-17	Ring, Back-Up, Female (Aluminum)	1	●△	323705 (17)
14		V-Packing (Teflon) 13/16 " ID x 1-5/16 " OD	5	●△	<i>323706</i> (12)
15		Ring, Support, Male (Aluminum)	1	●△	323801 (7)
16	323693	Gasket, 1.92 " OD (Aluminum)	2	●	323991 (27)
17	323705	Spacer	1		324222 (10)
18	336880	Rod and Pin Assembly	1		324252 (24)
19	326679	Ring, Bearing (Aluminum)	2	●□	324254 (25)
20	326157	V-Packing (Teflon) 0.745 " ID x 1.129 " OD	4	●□	324271 (29)
21	326156	Ring (Teflon) 0.75 " ID x 1.13 " OD	2	●□	324272 (26)
22		Ball, 9/32 " Diameter	1	●	324648 (2)
23		O-Ring, 9/16 " ID x 11/16 " OD	1	●	326068-17 (13)
24	324252	Body, Valve	1		<i>326069-17</i> (14)
25	324254	Cylinder	1		326156 (21)
26	324272	Gasket, 1.43 " OD (Aluminum)	2	●	326157 (20)
27	323991	Washer, Stop	1	●	326679 (19)
28	171700-56	Ball, 7/8 " Diameter	1	●	336880 (18)
29	324271	Body, Valve	1		337018 (11)

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

●△□ designates a repair kit item

Repair Kits

Part No.	Kit Symbol	Description
398999-2	●	Kit, Major Repair
394054	△	Kit, Minor Repair (Upper Packings)
394055-1	□	Kit, Minor Repair (Lower Packings)

Accessory

Component	Part Number
Muffler	324170

Table 2 High-Pressure Pump Model 337080 Accessory

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).

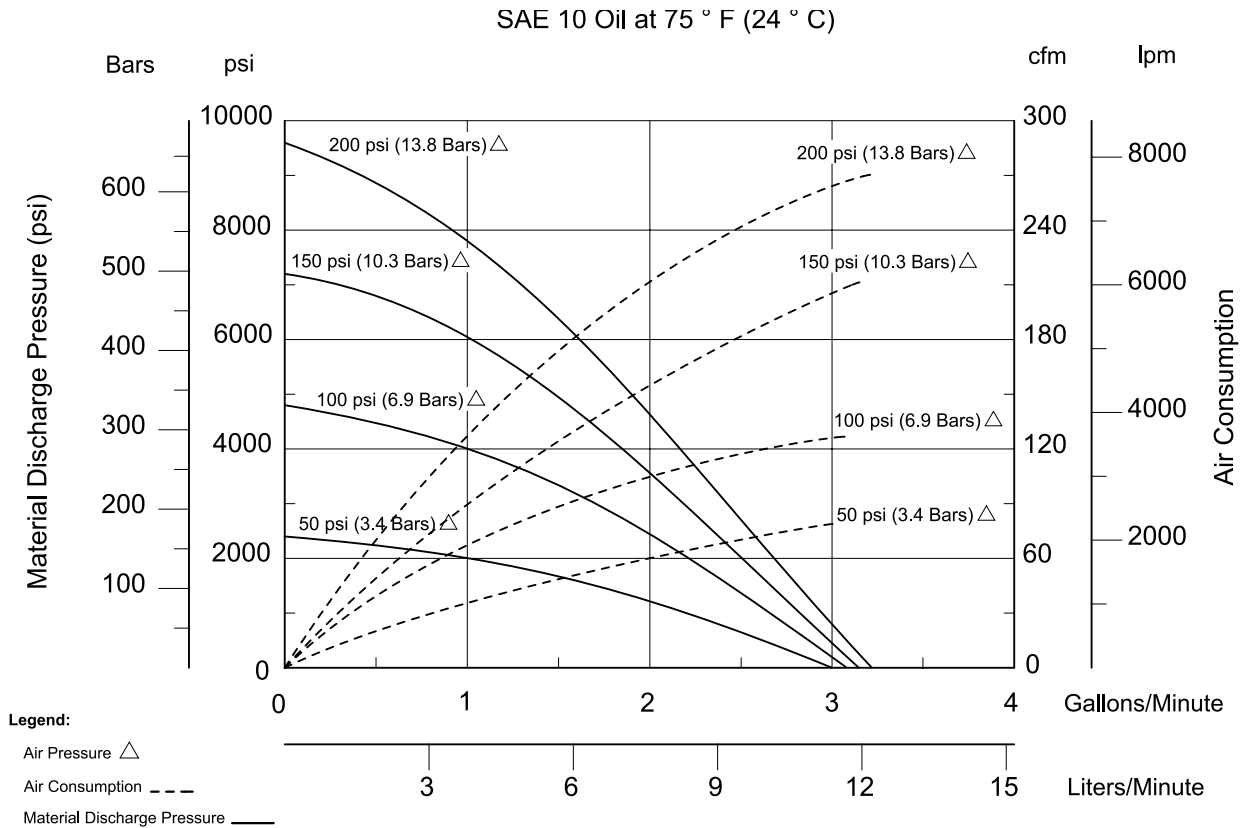


Figure 3 Delivery versus Discharge Pressure and Air Consumption

IMPORTANT: 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 in the pump 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 Air Motor from Pump Tube

1. Clamp the pump assembly horizontally in a soft-jaw vise at the base of Air Motor Assembly (1).
2. Cycle the Air Motor Assembly to expose Coupling (3) as required.
3. Remove upper Spring Clip (2) that secures the motor's piston rod to Coupling (3).
4. Unscrew Plugs (9) from Pump Body (11).
5. Unscrew the pump tube assembly from the air motor's piston rod.

6. Remove lower Spring Clip (2) that secures Rod and Pin Assembly (18) to the Coupling as required.
 - Unscrew the Coupling from the Rod and Pin Assembly as required.

Pump Tube

Valve Body and Cylinder

7. Clamp the pump tube horizontally in a soft-jaw vise.
8. Unscrew Valve Body (29) from Cylinder (25).
9. Remove Gasket (26), Stop Washer (27), additional Gasket (26), and Ball (28) from the Valve Body.
10. Unscrew the Cylinder from the Pump Body.
 - Remove the Cylinder from the Rod and Pin Assembly.

Rod and Pin Assembly

11. Loosen Screw (8) from the Pump Body.
 - Remove the Screw as required.
12. Remove the Rod and Pin Assembly from the Pump Body.
13. Unscrew Valve Body (24) from the Rod and Pin Assembly.
14. Remove Ball (22) from the Valve Body.
15. From the bottom of the Rod and Pin Assembly remove:
 - O-Ring (23) Qty 1
 - Bearing Ring (19) Qty 2
 - V-Packing (20) Qty 4
 - Ring (21) Qty 2

Pump Body

16. From the bottom of the Pump Body remove:
 - Gasket (16) Qty 2
 - Spacer (17) Qty 1
 - Bearing Washer (12) Qty 3
 - Male Support Ring (15) Qty 1
 - V-Packing (14) Qty 5
 - Female Back-Up Ring (13) Qty 1

Adapter Assembly

17. Unscrew Tube and Bushing Assemblies (10) from Adapter Assembly (6) as required.
 - Remove Plugs (9).

Refer to **SER 323640-4** for further details on the removal of the Adapter Assembly.

Clean and Inspect

NOTE: Use the appropriate repair kit for replacement parts.

1. Clean all metal parts in a modified petroleum-based solvent. The solvent should be environmentally safe.
2. Inspect all parts for wear and/or damage.
 - Replace as necessary.
3. Inspect Rod and Pin Assembly (18) closely. Use a magnifying glass to detect any score marks.
 - Replace as necessary.
4. Closely inspect the mating surfaces of all components for any imperfections. Ensure a smooth and clean contact is obtained when assembled.

EXAMPLE: Place Ball (28) onto Valve Body (29). Fill the Valve Body with solvent. Make sure no leakage occurs.

Perform the same test with Ball (22) and Valve Body (24).

Assembly

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

Pump Tube

Pump Body

NOTE: Refer to **Figure 4** for a section view of the pump tube assembly.

1. Position Pump Body (11) large bore upward.
2. Install and seat the following components in order:
 - Bearing Washer (12)Qty 1
 - Female Ring (13) [concave surface upward]....Qty 1
 - V-Packing (14) [concave surface upward]Qty 5
 - Male Ring (15) [flat surface upward]Qty 1
 - Bearing Washer (12)Qty 2
 - Gasket (16)Qty 1
 - Spacer (17) [small diameter first]Qty 1
 - Gasket (16)Qty 1

Item No.	Description
4	O-Ring, 1-13/16 " ID x 2 " OD
6	Block-V Packing
23	O-Ring, 9/16 " ID x 11/16 " OD

Table 3 Components Lubricated in Clean Oil

Rod and Pin Assembly

3. Position Rod and Pin Assembly (18) bore end upward.
4. Install and seat the following components in order:
 - Bearing Ring (19) [flat side first]Qty 1
 - V-Packing (20) [lip end first].....Qty 3
 - Ring (21) [flat surface upward]Qty 1
 - Ring (21) [concave surface upward]Qty 1
 - V-Packing (20) [concave surface upward]Qty 1
 - Bearing Ring (19) [flat side upward]Qty 1
 - O-Ring (23)Qty 1

Valve Bodies

5. Place Ball (22) into Valve Body (24).
6. Screw the Valve Body onto the Rod and Pin Assembly.
 - Tighten the Valve Body securely.
7. Install Ball (28) into Valve Body (29).
8. Install and seat Gasket (26), Stop Washer (27) [convex side upward], and additional Gasket (26) into the Valve Body.
9. Screw the small diameter of Cylinder (25) into the Valve Body Assembly.
 - Make sure the Gasket does not move.
 - Place a large wrench or other suitable tool into the slot of the Valve Body and tighten securely.

Cylinder

CAUTION

Use care installing the Rod and Pin Assembly into the Cylinder and Valve Body Assembly. Damage to the V-Packings can occur.

10. Install the Rod and Pin Assembly into the Cylinder and Valve Body Assembly.
11. Install the Rod and Cylinder assembly into the bottom of the Pump Body.
 - Use care not to damage the V-Packings within the Pump Body.
12. Screw the Cylinder into the Pump Body.
 - Make sure the Gasket does not move.
 - Tighten the Cylinder securely.

IMPORTANT: Do not overtighten Screw (8). The pump must cycle with an initial air pressure setting of 15 psi (1 Bar).

13. Tighten Screw (8) into the Valve Body until it contacts the V-Packing group.
 - Use the adjustment bar to snug the installation.
14. Screw Coupling (3) onto the Rod and Pin Assembly until the Spring Clip holes align.
15. Install Spring Clip (2).

Adapter Assembly

16. Install Plugs (9) [threaded end first] onto each Tube and Bushing Assembly (10) as required.
17. Screw each Tube and Bushing Assembly into Adapter Assembly (6) as required.
 - Tighten each Tube and Bushing Assembly securely.

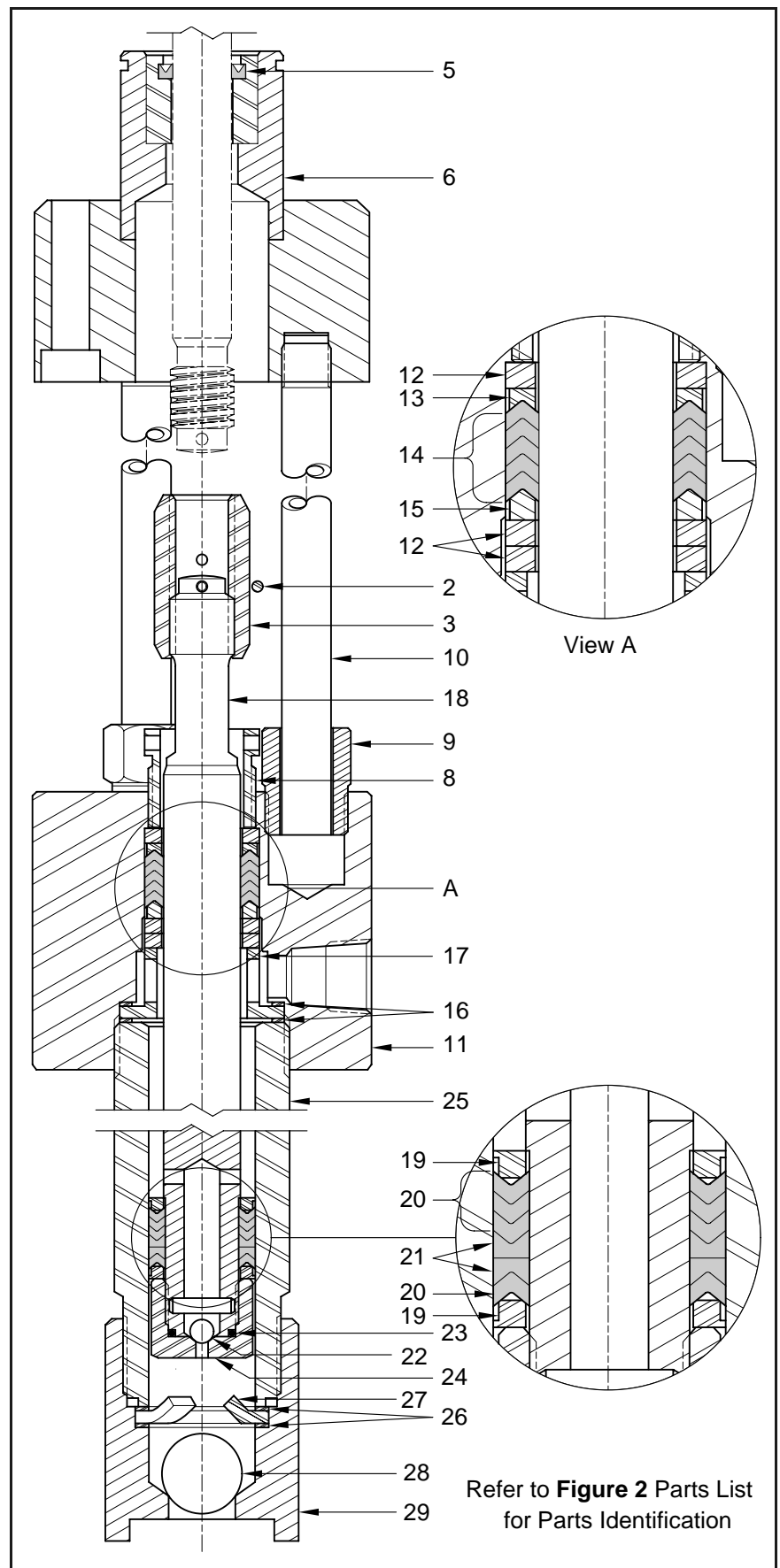
Refer to **SER 323640-4** for further details on the assembly of the Adapter Assembly.

Attach Pump Tube to Motor

18. Install the pump tube onto the Adapter Assembly.
 - Make sure to orient the pump's outlet in the direction required.
19. Screw the Coupling onto the air motor's piston rod until the Spring Clip holes align.

NOTE: It may be necessary to pull the Rod and Pin Assembly from the Pump Body. Loosen Screw (8) as required.

20. Install Spring Clip (2).
21. Screw the Plugs into the Pump Body.
 - Tighten each Plug securely.



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

Figure 4 Pump Tube Assembly 324250 - Section View

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 an air connector to the inlet of Air Motor Assembly (1).
3. Connect an air coupler 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 Screw (8).

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

CAUTION

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

With air pressure at zero:

5. Connect a product hose to the pump's material outlet.
 - Direct the hose into a collection container.
6. Place the pump in the product to be dispensed.

7. Slowly supply air pressure to the pump's motor once again.

8. 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.

9. Inspect Screw (8) for leakage.

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

With air pressure at zero:

10. 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.

11. Slowly supply air pressure to the pump's motor.

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

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

14. Operate the control valve into the container momentarily.

15. 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.

16. Check the motor for air leakage.

If the motor leaks, refer to **SER 323640-4** for details.

17. Open the control valve once again and allow the pump to operate for 5 minutes.

18. Inspect Screw (8) for leakage.

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

Troubleshooting Chart

Pump Indications	Possible Problems	Solution
Pump does not cycle	<ol style="list-style-type: none"> 1. Screw (8) 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 Screw (8) 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 Screw (8)	<ol style="list-style-type: none"> 1. Screw (8) not sufficiently tight 2. Worn or damaged V-Packings (14) 3. Damaged Rod and Pin Assembly (18) 	<ol style="list-style-type: none"> 1. Tighten Screw (8) with use of adjustment bar 2. Replace V-Packings (14) 3. Replace Rod and Pin Assembly (18)
Product leakage visible at bottom of Pump Body (11)	<ol style="list-style-type: none"> 1. Pump tube not sufficiently tight 2. Damaged Gasket(s) (16) 	<ol style="list-style-type: none"> 1. Tighten pump tube assembly 2. Replace Gaskets (16)
Product leakage visible at top of Valve Body (29)	<ol style="list-style-type: none"> 1. Cylinder (25) not sufficiently tight 2. Damaged Gasket(s) (26) 	<ol style="list-style-type: none"> 1. Tighten Cylinder (25) into Valve Body (29) 2. Replace Gaskets (26)
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 (28) and Valve Body (29) 2. Foreign material between Ball (22) and Valve Body (24) 3. Worn or damaged Ball (28) 4. Worn or damaged Valve Body (29) 5. Worn or damaged Ball (22) 6. Worn or damaged Valve Body (24) 7. Worn or damaged V-Packings (20) 8. Worn or damaged Cylinder (25) 9. Worn or damaged O-Ring (23) 	<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

Initial Release

