



SERVICE INSTRUCTIONS

338905

Air Motor

DESCRIPTION

The air motor has a 3" diameter piston with a 1-5/8" stroke.

When the pump-tube upper packing is not incorporated into the air motor, the air motor is considered a divorced pump. Divorced pumps are used with a variety of products, since materials can't move past the base packing. The air motor referenced in this instruction sheet is used with divorced pumps.

Each motor is pre-lubricated. It requires no further lubrication, except when servicing.

For further information regarding air motors and applications with other pump components, see the instruction sheet supplied with the specific pump.



SAFETY PRECAUTIONS

These safety precautions should be followed at all times.

1. Read all instructions sheets and all explanatory material before attempting to install, service, or operate the system.
2. DO NOT exceed the pressure rating of any component in the system.
3. Protect all air, material, and supply lines from damage or puncture. Keep all lines and hoses away from hot machinery, moving parts, and cramped areas where damage may occur from flexing or twisting.
4. Check all hoses for wear or damage prior to daily operation. Make sure all connections and fittings are secure.
5. Shut down the system and relieve all pressures before servicing any component in the system.
6. Never point the dispensing device at anyone. Accidental discharge can result in serious injury.
7. Never install a low-pressure air hose in any part of the pump's distribution system.

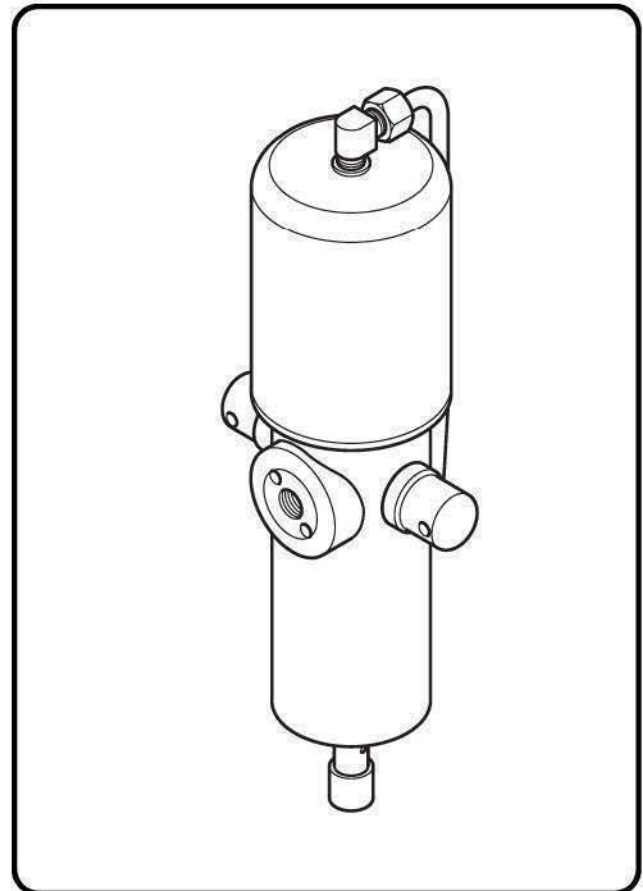


Figure 1: Model 338905 Air Motor

SPECIFICATIONS

Air Inlet..... 1/4" NPSI
Maximum Operational Air Pressure 200 psi
..... 13.6 bar

FOR FURTHER SERVICE, CONTACT YOUR LOCAL ALEMITE DISTRIBUTION CENTER



ALEMITE CORPORATION
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SER 338905 (8-11)

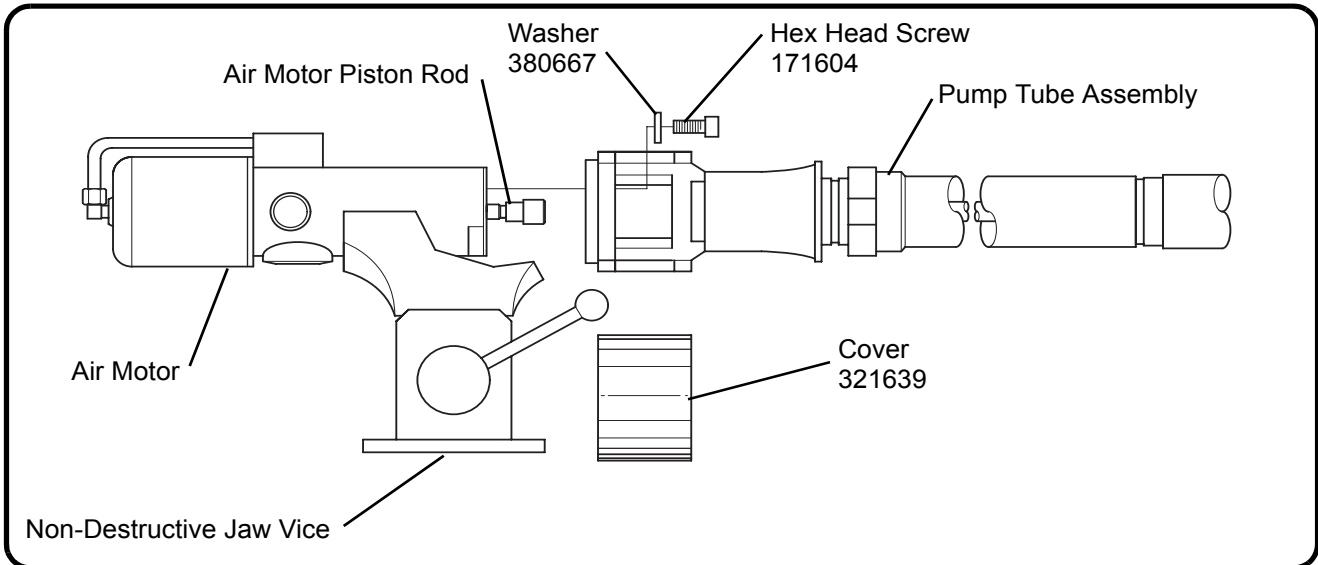


Figure 2: Removing Air Motor From Tube Rod Assembly

MAINTENANCE

If the air motor fails to function properly, check for:

- Adequate air pressure
- Worn or damaged parts in air motor
- Drain hole in plungers 321457 clogged

SERVICE

SEPARATE AIR MOTOR FROM PUMP TUBE

(See Figure 2)

The following instructions for separating the air motor from the pump tube are typical and may not be complete for any particular pump. Refer to the instructions supplied with each model for further information.



CAUTION

Before beginning service or attempting disassembly of any part, shut off air supply, reduce material pressure to zero, disconnect air and material supply lines, and remove pump assembly from container or system.

1. Clamp the pump assembly into a nondestructive jaw vise (See Figure 2).
2. Remove cover 321639 from around the pump tube assembly.
3. Remove 3 screws 171604 and washers 380667 to remove pump tube assembly from air motor 338905.

DISASSEMBLY OF AIR MOTOR

(See Figure 3)

Separate the air motor cylinder 331843-4 from the air motor body 338906 using the following procedure.

1. Remove screw 170294 and muffler 321085.
2. Unscrew the nuts of compression fitting 328306-52 and remove tube 331244 with sleeves and nuts of compression fitting attached to tube.
3. Carefully unscrew and remove cylinder 331843-4 and "O" ring 171003-11 from adapter 321087.

NOTE

Removal of cylinder is often aided by first tapping the cylinder gently at its threaded end with a nonmetal mallet. DO NOT use any tool or method to unscrew cylinder which causes it to distort or go out-of-round. Use a strap wrench at the top of the cylinder if removal is difficult.

4. Properly support coupling, then drive roll pin 171032-5 out using a punch of appropriate size. Remove coupling 321634.
5. Turn the air motor upright. Clamp the air motor body by the flats. Pull the piston assembly upward.
6. Hold spacer 320749 at its upper flats (located under the piston assembly) and unscrew piston nut 321086. Remove piston 321082 with two back up washers 131618.

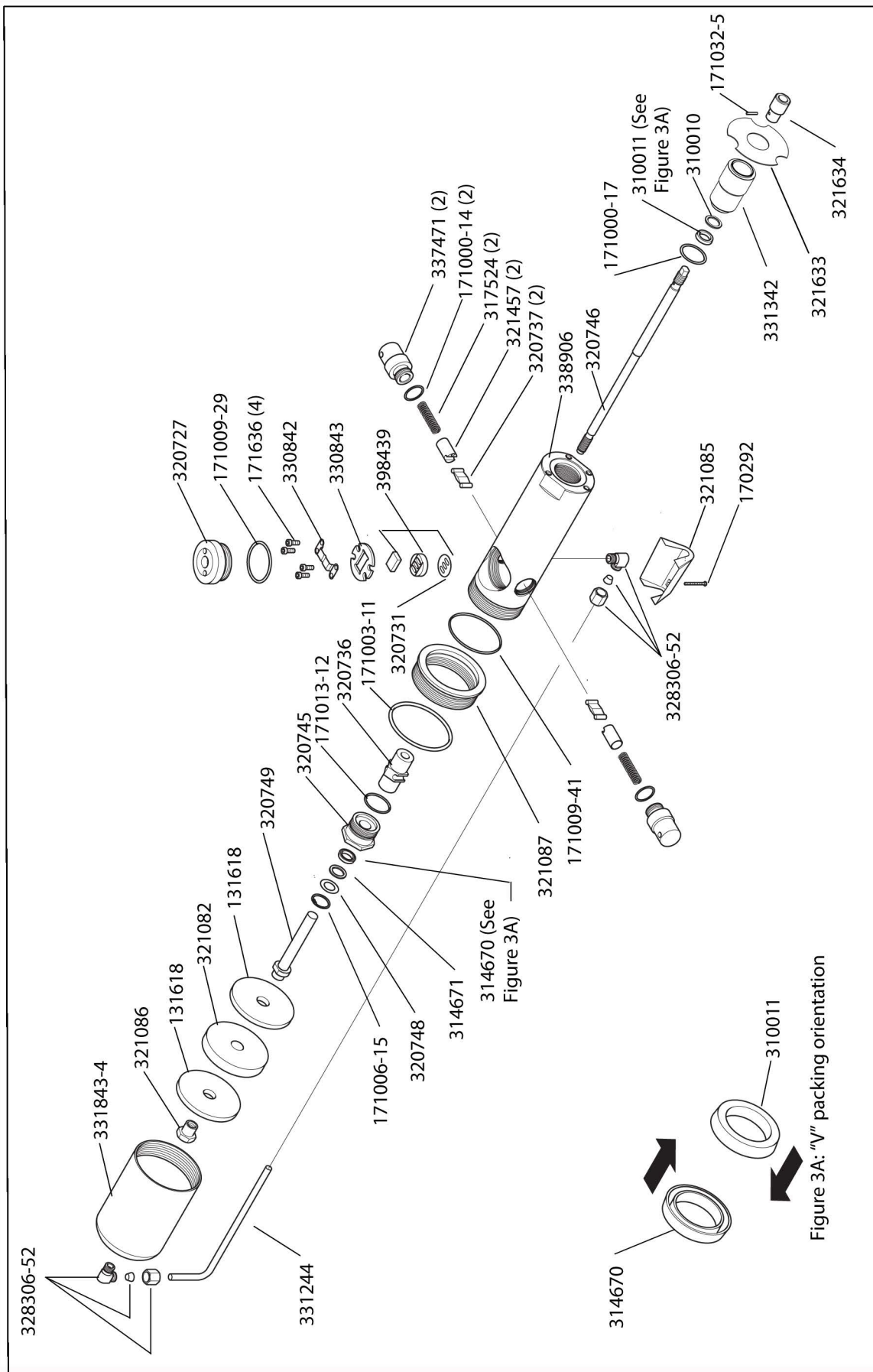


Fig 3: Air Motor Assembly

7. Hold piston rod 320746 at its bottom flats and unscrew spacer 320749 from the piston rod.
8. Pull piston rod down and out of air motor body 338906.
9. Unscrew inlet body 320727. Remove "O" ring 171009-29.
10. Unscrew two toggle caps 337471. Remove springs 317524 and "O" rings 171000-14.
11. Slide plungers 321457 and toggles 320737 out of shuttle 320736 and remove shuttle.
12. Unclamp and turn the air motor to the horizontal. Clamp the air motor body, with the inlet body opening face up.
13. Through the air-inlet body opening, unscrew four screws 171636. Lift out valve retaining spring 330842, slide valve 320726, valve retainer 330843, valve seat 320730, and gasket 320731.

NOTE

Inspect slide valve and seat (part of 398439) for any scoring or damage. They must be replaced if there is any damage.

14. Remove retaining ring 171006-15, brass washer 320748, leather washer 314671 and block "V" packing 314670, from inside of packing nut at top of the air motor base

NOTE

Packing nut 320745 is staked in place and should not be removed unless damaged. If the retaining ring is damaged, order either the packing nut 320745 or the entire air-motor base assembly (See Figure 3). This part must be staked into position when reassembled.

15. Remove retainer 321633, adapter 331342, washer 310010, v-packing 310011, and o-ring 171000-17 from the air-motor base.
16. Inspect the body 338906 for excessive rust or damage. If this part must be replaced, it can be removed from adapter 321087. The two parts are sealed together with o-ring 171009-41, then staked together. The parts must be staked into position after reassembly.
17. Clean all parts and inspect for wear or damage.



CAUTION

Worn or damaged motor and pump parts can cause injury to personnel and damage to property. REPLACE any worn or damaged parts. If using an Alemite repair kit, use all replacement parts in kit.

REASSEMBLY OF AIR MOTOR

1. Before reassembling the air motor, lubricate parts as noted in the following instructions:
 - a. Lubricate all "O" rings, seals, and packings with oil.
 - b. Brush a coat of grease containing molybdenum (moly) in toggle sockets of shuttle 320736 and plungers 321457, inside bore of shuttle, outside diameter of plungers, and on slide valve 320726.
 - c. Dip gasket 320731 and springs 317524 in Lubriplate® #1550 lubricant.
 - d. Coat the bore of cylinder 331843-4 and outside diameter of piston 321082 with the mixture outlined in step 1c.
 - e. Soak leather washer 314671 in SAE No. 30 oil for a minimum of eight hours.
2. Before reassembly of the air motor, reassemble all parts that must be staked into position, as noted in the following instructions:
 - a. Packing nut 320745 is sealed to the top of body 338906 with o-ring 171013-12. Stake the packing nut to the body.
 - b. Body 338906 and adapter 321087 are sealed together with o-ring 171009-41. Stake the adapter to the body.
3. Position block "V" packing 314670, leather washer 314671, and brass washer 320748 into packing nut. Secure with retaining ring 171006-15 (See Figure 3a).

NOTE

The open end of the "V", from block "V" packing 314670 must face the bottom of air motor base. (Step 3).

4. Slide washer 310010 into adapter 331342. Slide v-packing 310011 into adapter.

NOTE

The open end of the "V", from block "V" packing 310011 must face the top of air motor base. (Step 4).

5. Slide adapter 331342 into the air-motor base.
6. Place gasket 320731, valve seat 320730, valve retainer 330842, slide valve 320726, and valve retaining spring 330842 into air motor base. Secure with four screws 171636.

NOTE

Tighten screws 171636 evenly, then torque alternately (crisscross) to 25-30 inch lbs. (75-90 Nm). Retorque to ensure the same torque on all screws. Valve should move from one position to the other with a force of 12 to 14 ozs. (340 to 396 Grams). Force must be applied in the same direction as the shuttle applies force in normal operation. Adjust spring to meet load if necessary.

7. Position shuttle 320736 in the air inlet body opening. The end of the shuttle with a large opening must face the top of the air motor, and the flat side must be facing valve retaining spring 330842.
8. Holding one toggle 320737 with pliers, insert it through the toggle-cap opening in the side of the air motor base. Slide it into the socket in shuttle 320736. Repeat for the other toggle.
9. Insert piston rod 320746 into lower end of air motor base, through the shuttle and packing nut.

**CAUTION**

Insert piston rod 320746 into the air motor base before inserting the seals. Inserting the seals before the piston rod damages the seals and causes the pump to leak.

10. Apply Loctite[®] 242[®] to the threads at the top of the piston rod and slide spacer 320749 over piston rod end. Feed rod through packing and into the upper end of the shuttle. Hold the piston rod at the bottom flats and screw the spacer onto the piston rod as far as it will go.
11. Place first washer 131618, packing 321082, and second washer 131618 onto piston rod and spacer.
12. Screw piston nut 321086 onto piston rod. Torque to 10 ft.-lbs. Rotate spacer counterclockwise until it is secure against the piston nut. Torque to 20 ft.-lbs.
13. Install plungers 321457 onto toggles, with the drain holes on the bottom. Insert springs 317524 into the plungers and slide "O" rings 171000-14 over the ends of toggle caps 337471. Screw toggle caps into place by hand.

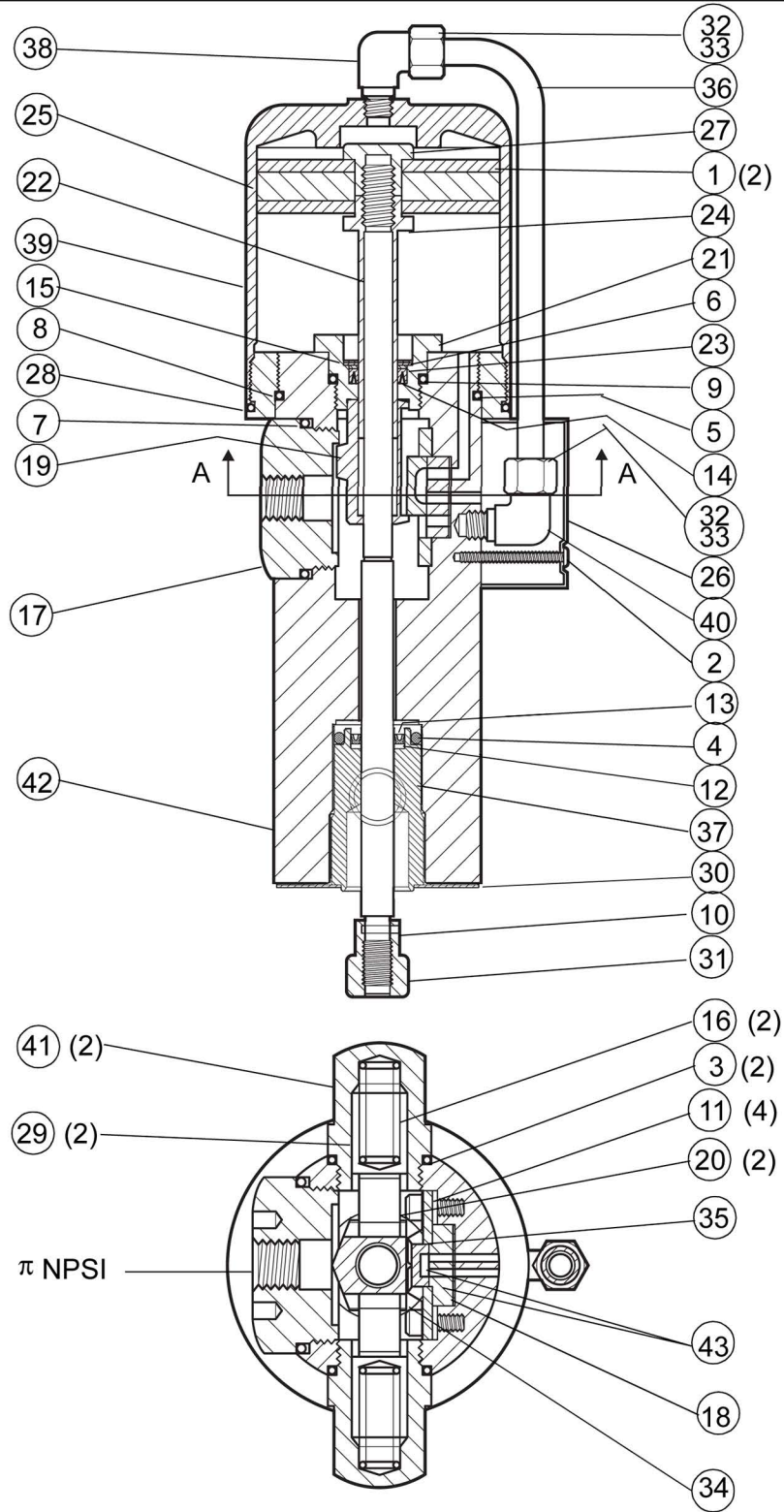
**CAUTION**

If the toggle cap is not centered when tightened, applying force will break toggle. If difficulty is encountered while tightening toggle caps by hand, loosen toggle cap, reposition, and retighten. Final tightening of cap should be done carefully.

14. Pack approximately 1/4 oz. (7.08 Grams) of Lubriplate[®] #1550 lubricant into the air-motor valve cavity. Install "O" ring 171009-29 onto air inlet body 320727. Install air inlet body into air motor base.
15. Position "O" ring 171003-11 onto air-motor base and screw cylinder 331843-4 onto air motor.
16. Install retainer 321633.
17. Install coupling 321634 onto the piston rod. Press roll pin 171032-5 into piston rod.
18. Reconnect tube 331244 and tighten the nuts of compression fittings 328306-52.
19. Air motor is now ready for reattachment to the tube pump.

NOTE

The parts listed in this instruction sheet are for reference identification in the instructions and illustrations. Some are not available as separate parts and are noted in the parts list. Standard items (such as nuts, bolts, etc.) should be purchased at a hardware store. Refer to the current parts price list and bulletins before ordering parts, and always give the part number, quantity, description, and model (if available) when ordering parts. Parts availability and prices are subject to change without notice.



SECTION AA

Figure 4: Cross Section

PARTS LIST - Model 338905 Air Motor

Item	Part No	Description	Qty
1	131618	BACK UP WASHER, 2 15/16" O.D. (Zinc-Plated Steel)	2
2	170292	PAN HEAD MACHINE SCREW, 8-32 X 1"	1
3	171000-14	● "O" RING, 3/4" I.D. X 15/16" O.D.	2
4	171000-17	● "O" RING, 7/8" I.D. X 1 1/8" O.D.	1
5	171003-11	● "O" RING, 2-7/8" I.D. X 3-1/8" O.D.	1
6	171006-15	● STEEL RETAINING RING, 7/8" Diameter (Internal)	1
7	171009-29	● "O" RING, 1-9/16" I.D. X 1 3/4" O.D.	1
8	171009-41	● "O" RING, 2-5/16" I.D. X 2-1/2" O.D.	1
9	171013-12	● "O" RING, 1-1/8" I.D. X 1-1/4" O.D.	1
10	171032-5	● ROLL PIN, 3/32" Diameter X 1/2" Long	1
11	171636	● HEX-HEAD CAP SCREW, 10-32 X 3/8" Long	4
12	310010	● LEATHER WASHER, 11/16" O.D.	1
13	310011	● BLOCK "V" PACKING, 47/64" O.D.	1
14	314670	● BLOCK "V" PACKING, 3/4" O.D.	1
15	314671	● LEATHER WASHER, 3/4" O.D.	1
16	317524	● SPRING, 1-7/16" Long - 14 Coils	2
17	320727	INLET BODY, 1-15/16" O.D. (Zinc-Plated Steel)	1
18	320731	■ GASKET, 1" O.D. (Rubber-Coated Fabric)	1
19	320736	● SHUTTLE (Steel)	1
20	320737	● TOGGLE (Steel)	2
21	320745	PACKING NUT (Zinc-Plated Steel)	1
22	320746	PISTON ROD, 9-3/8" Long	1
23	320748	WASHER, 33/64" I.D. X 7/8" O.D. (Brass)	1
24	320749	SPACER, 3-11/64" Long (Chrome-Plated Steel)	1
25	321082	● PISTON, 3-1/32" O.D. (Rubber)	1
26	321085	MUFFLER	1
27	321086	PISTON NUT, 3/8-24 UNF-2B (Zinc-Plated Steel)	1
28	321087	ADAPTER, (Zinc-Plated Steel)	1
29	321457	● PLUNGER, 9/16" O.D. (Steel)	2
30	321633	RETAINER, (Stainless Steel)	1
31	321634	COUPLING, 31/32" Long (Zinc-Plated Steel)	1
32	328306-52	□ COMPRESSION FITTING for 5/16" Tubing	2
33	330842	● VALVE RETAINING SPRING (Beryllium Copper)	1
34	330843	● VALVE RETAINER, 1-11/16" O.D. (Spring Steel)	1
35	331244	□ TUBE, 5/16" O.D. (Zinc-Plated Steel)	1
36	331342	ADAPTER, 1-3/8" Long X 1-1/8" O.D.	1
37	331843-4	□ CYLINDER, 3-13/16" Long	1
38	337471	TOGGLE CAP, 1-5/8" Long (Zinc-Plated Steel)	2
39	338906	BODY, 6-21/32" Long (Zinc-Plated Steel)	1
40	398439	● SLIDE VALVE AND SEAT KIT	1



398653-4 Major repair kit for air motor 338905



393124 - Cylinder and tube conversion kit



Part of slide valve and seat kit 398439



Not Available as a separate purchased part

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NOTES:

CHANGES SINCE LAST PRINTING

Added Compng 328306-52