

8 Inch Air Motor Assembly (900S069NP)



IMPORTANT: Read this document carefully before installing, operating or servicing this equipment

WARNING

When repairing the Air Motor turn off the air supply and bleed the material pressure from the pumping system.

Service Kits

Use only Johnstone replacement parts to insure compatibility and longest life.

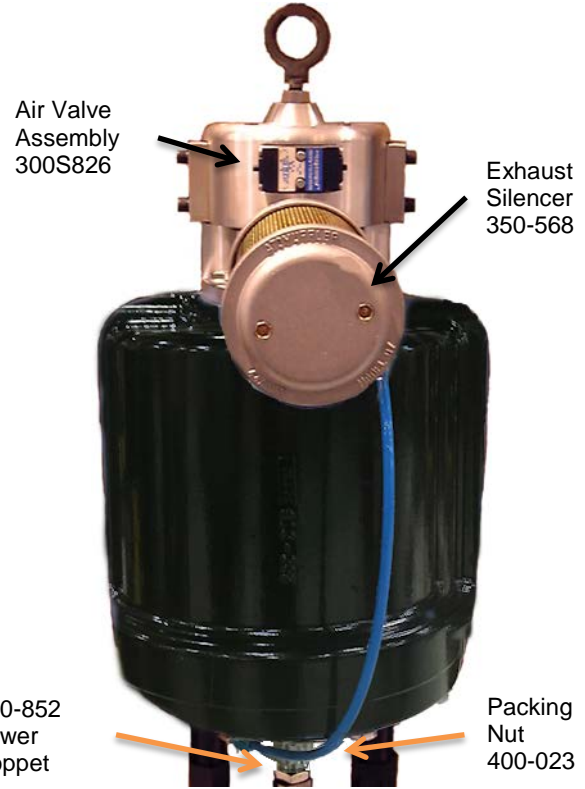
- Air Cylinder Repair Kit - 900S070RKN
- Air Valve Repair Kit - 300S826RK

Specifications

Air Inlet Port Size - 3/4" NPT
 Exhaust Port Size - 3/4" NPT
 Minimum Air Supply - 3/4" NPT
 Static Pressure Ratio 900-001 Pump - 42:1
 Static Pressure Ratio 300-701x Pump - 30:1
 Air Pressure Operating Range - 20 PSI (1.36BAR) to 100 PSI (6.8 BAR)

WARNING

Do not operate air motor at pressures above 100psi (6.8 bar)



Maintenance Schedule

MONTHLY:
 Add 10W oil to the lubricator.
 Check for air leaks.
 If air is exhausting out of the muffler when the air motor is stalled rebuild the air motor.

Operation

Supply air pressure to the Inlet port of the Air Valve. Adjust the Air Regulator to change the material pressure. Increase the air pressure for more PSI and decrease the air pressure for less PSI.

Replacement Procedure

1. Turn off the air supply to Air Motor.
2. Depressurize the Pump Material pressure.
3. Remove the Air supply hose.
4. Remove the collar and hex nuts from the connector assembly (900-022).
5. The Air motor can be removed from the pump.
6. Remove the spacer rods and attach them to the new Air Motor and tighten (100 Ft Lbs).
7. Install the air motor on the pump flange.
8. Tighten the collar assembly to the air piston rod (120 Ft Lbs).
9. Screw the Hex Nuts on the Spacer rods and tighten (100 Ft Lbs).
10. Connect the Air Supply hose to the air valve inlet port.

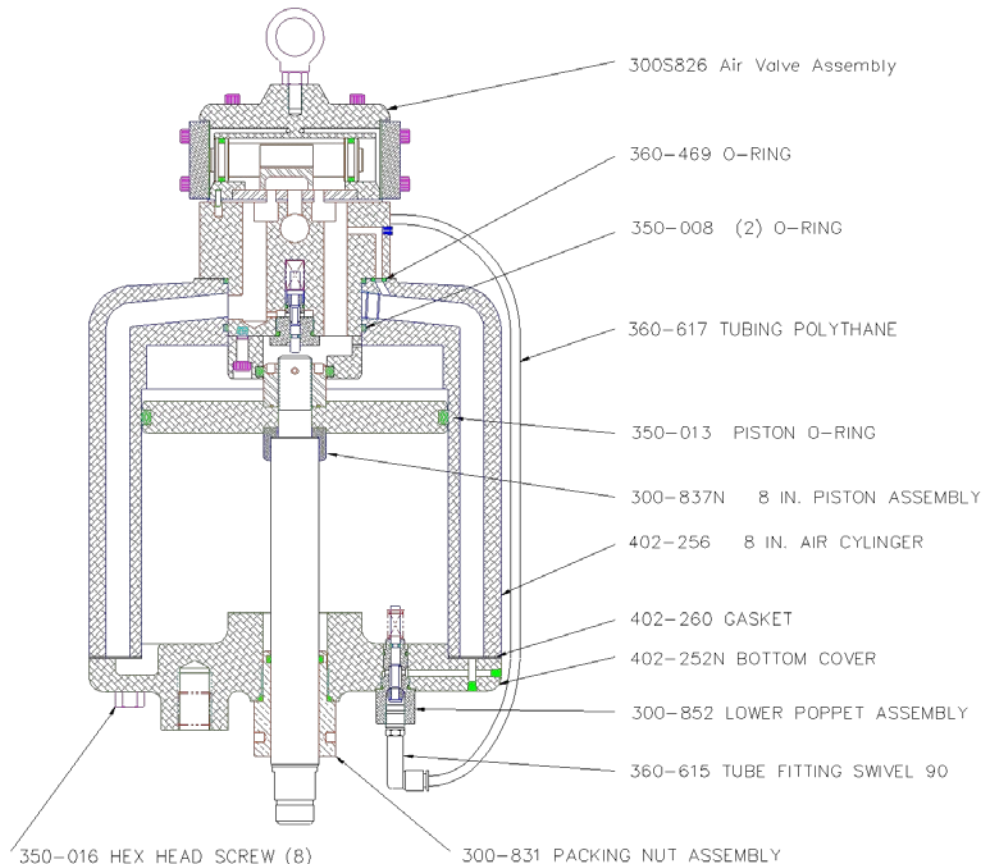
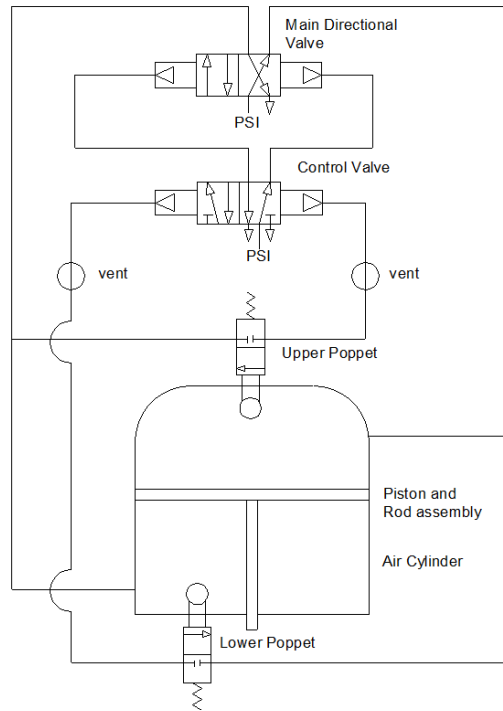


Figure 2

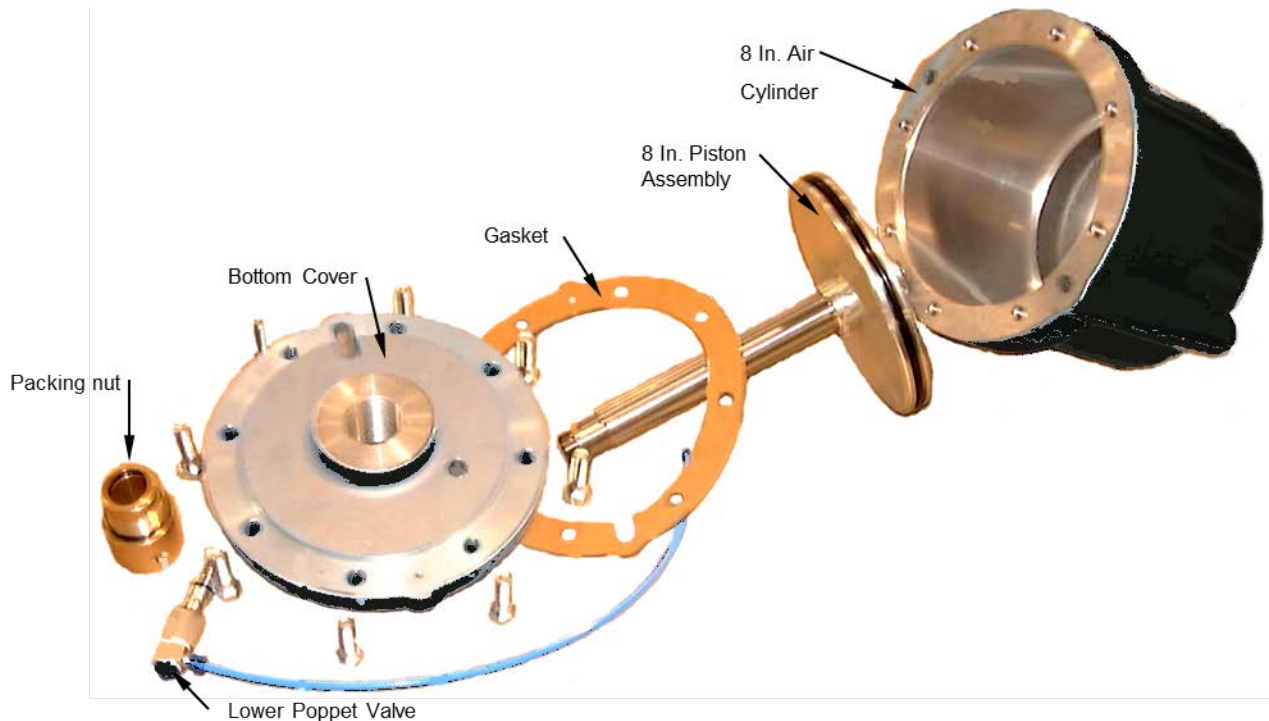
How the Pneumatic Circuit Works

1. Air pressure is sent to the Main Direction valve and Control Valve from the air valve inlet port.
2. The Main Directional Valve Sends air pressure to either the up or down port of the air cylinder.
3. When Air Pressure is sent to the down piston port, Air Pressure will also be sent to the Lower Poppet valve.
4. When the Air Piston Pushes on the Lower Poppet a signal will be sent to the control valve shifting it. The control valve will shift the Main Directional Valve sending the air pressure to the up port of the air cylinder.
5. When Air Pressure is sent to the up piston port, Air Pressure will also be sent to the upper Poppet valve
6. When the Air Piston Pushes on the upper Poppet a signal will be sent to the control valve shifting it. The control valve will shift the Main Directional Valve sending the air pressure to the down port of the air cylinder.



Air Motor Pneumatic Circuit

Air Motor Part Description			
In Repair Kit	Part No.	Amount	Description
Yes	402-260	1	8 inch gasket
Yes	350-008	2	O-ring Main air Valve
Yes	360-469	1	O-ring Top of air cylinder
Yes	400-023	1	Packing Nut
Yes	350-010	1	O-ring Piston seal in Packing Nut
Yes	350-130	1	O-ring Packing Nut thread seal
No	300-852	1	Lower Poppet Valve
Yes	300-854	1	Lower Poppet Pin Assembly
Yes	350-312	1	O-ring Lower Poppet
Yes	350-336	1	O-ring Lower Poppet
Yes	360-479	1	Retaining Ring Lower Poppet
Yes	360-514	1	Spring Lower Poppet
Yes	350-221	1	O-ring Air Piston Assembly
Yes	350-013	1	O-ring Air Piston Assembly
NO	402-256	1	8 inch Air Cylinder
NO	402-252N	1	8 inch Bottom Plate
NO	350-016	8	Hex head cap screws
NO	402-229N	1	Upper piston insert
NO	402-230	1	Lower piston insert
NO	402-231N	1	Air Piston Rod
NO	360-615	1	Tube fitting for poppet valve
YES	350-811	1	O-ring for Cushion (Optional)
YES	350-832	1	O-ring for old style piston assembly
NO	360-617	22in.	Air tubing for poppet valve



Disassembly

⚠ WARNING Ensure that the Air Pressure and Material Pressure is turned off before rebuilding.

1. Remove the Tubing from the Lower Poppet.
2. Remove the three hex head bolts that hold the Air Valve to the Air Cylinder
 - a. Remove the Air Valve from the Air Cylinder (Twisting helps remove it from the cylinder).
3. Remove the Lower Poppet assembly.
4. Remove the Packing Nut using a spanner wrench #350-083
5. Remove the 8 Hex Head Screws that hold the bottom cover to the cylinder.
6. Remove the Bottom Cover from the Cylinder.
7. Remove the Air Piston Rod assembly by tilting it 45 deg. and pulling it out of the cylinder.
8. Clean and inspect the Cylinder for worn or damaged parts.



Caution: The Air Piston Assembly should NOT be taken apart. Take apart only if a Part is damaged.

Assembly

1. Install the O-ring on the Piston and lubricate them.
 - a. If the Piston Assembly is rebuilt the Upper Cushion Must be secured to the Piston Rod with Loctite and torqued to 100 Ft. Lbs.
2. Install the two O-rings on the Packing Nut assembly and lubricate them.
3. Thread the Packing Nut into the Bottom Cover and tighten to 60 Ft. Lbs.
4. Lubricate the Air Cylinder with 90W oil.
5. Align the Air cylinder poppet ports with the Bottom Cover poppet air ports.

Alignment



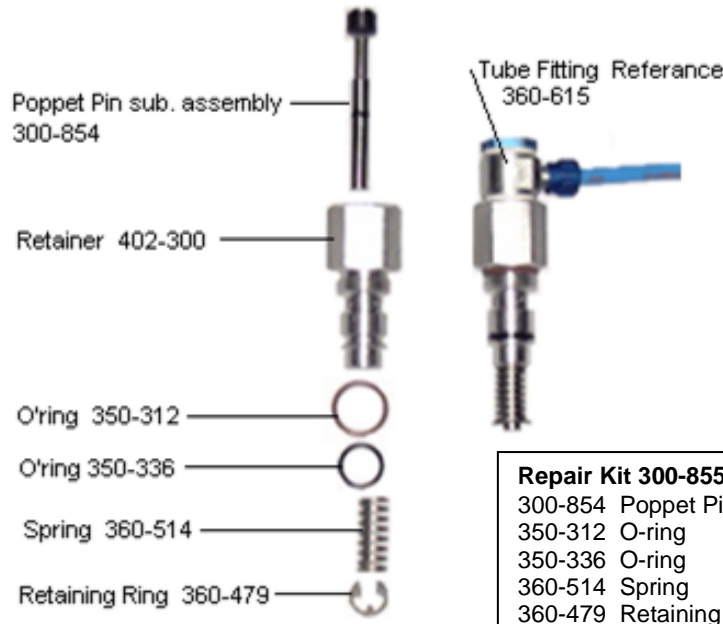
Piston Assembly



6. Insert the Piston Assembly into the bore at a 45 deg. angle and straighten it so that the Piston is square at the bottom of the bore.
7. Install the Gasket on the bottom cover. The Slot and Poppet hole should align.
8. Install the Bottom Cover onto the Air Cylinder. Make sure that the poppet ports align up.
9. Install the 8 Hex Head Screws and torque them evenly to 30 Ft. Lbs.
10. Install the two large Air Valve O-rings 350-008 and one small 360-469 at the top opening of the Air cylinder and lubricate them.
11. Install the Air valve so that the poppet ports line up. See figure 2 (page 2)
12. Install the Three 3/8-16 Hex Screws and lock washers and tighten them to 20 Ft. Lbs.
13. Attach the tubing from the air valve to the lower poppet.

Lower Poppet Assembly (300-852)

⚠ WARNING When repairing the Air Motor turn off the air supply and bleed the material pressure from the pumping system.



Disassembly

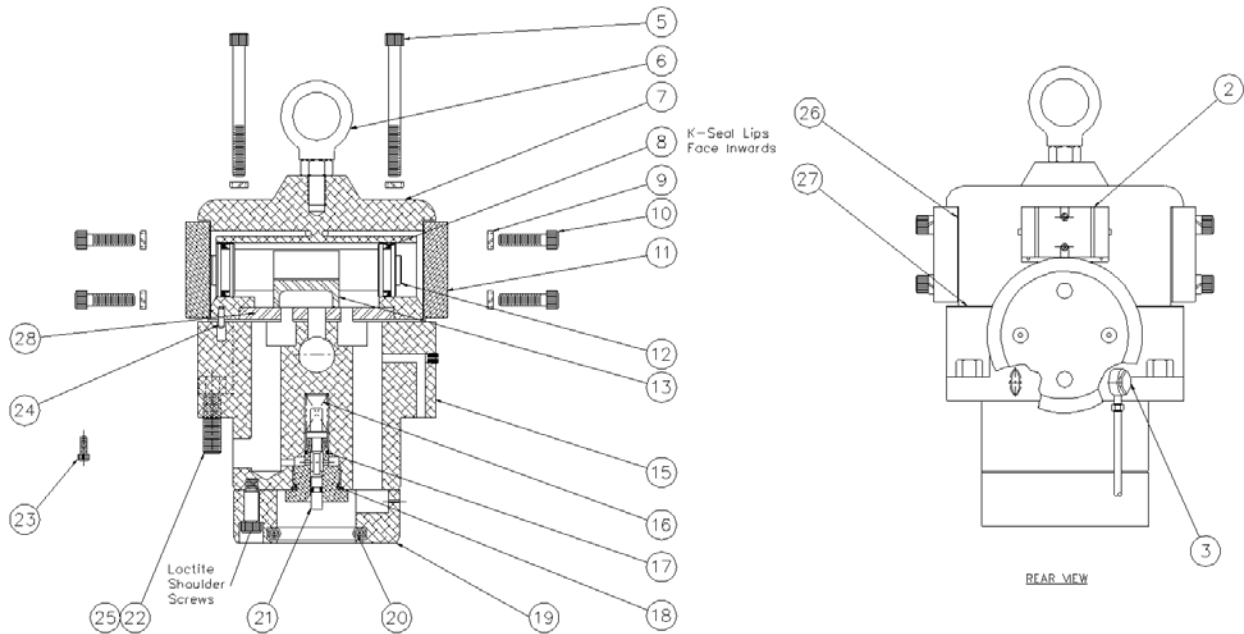
1. Remove Poppet from Bottom Cover of the Air Motor.
2. Remove the tube fitting from the Poppet.
3. Using Pliers remove the retaining ring.
4. Pull off the spring and remove the pin assembly by pushing it through the Retainer.
5. Remove the Two O-rings on the Retainer.
6. Clean the Retainer and look for damage

Assembly

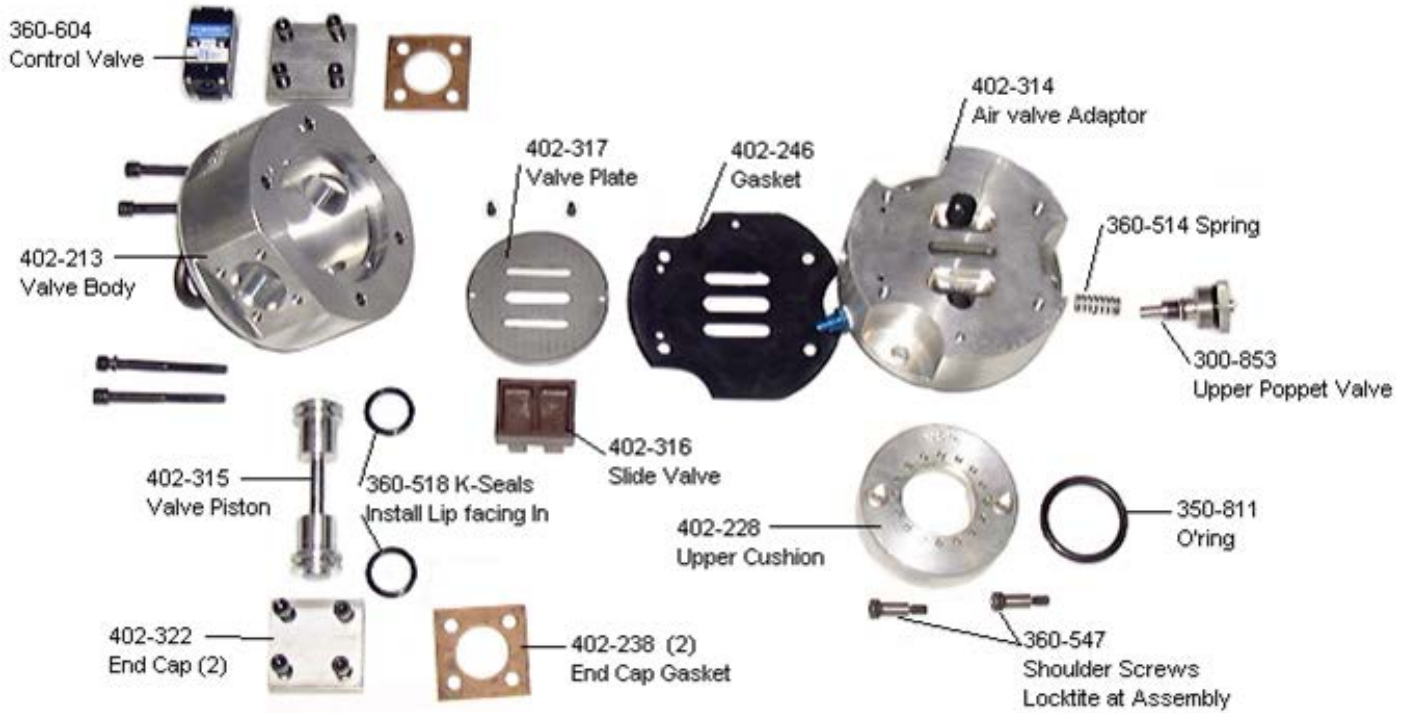
1. Install the two O-rings on the retainer and lubricate.
2. Lubricate and install new Pin sub-assembly into the Retainer.
3. Slide the spring over the Pin so that is against retainer body.
4. Insert the Retaining ring into the groove on the Pin assembly.
 - a. The groove will be in the middle of the spring at this time.
 - b. Hold the Retaining ring with pliers and spin the spring counter clockwise until the Retaining ring is past the end of the spring.
5. Ensure that the Retainer is securely in the groove on the pin.
6. Install the Tube Fitting in the end of the Poppet.
7. Thread the Poppet into the Bottom Cover of the Air Motor and tighten to 20 Ft. Lbs.

Air Valve Assembly (300S826)

⚠ WARNING When repairing the Air Motor turn off the air supply and bleed the material pressure from the pumping system.



Air Valve Part Description 300S826RK Repair Kit				
Number	In Repair Kit	Part No.	Amount	Description
2	NO	360-604	1	Control Valve
4	NO	350-568	1	¾ NPT Silencer
5	NO	350-916	4	Socket Head Screw ¼-20 x 2 ¾
6	NO	360-097	1	3/8 in Eye bolt
7	NO	402-313	1	Valve Body
8	YES	360-518	2	K-Seal (Seal lips face inwards)
9	NO	361-233	12	Lock Washer High collar ¼
10	NO	350-285	8	Socket Head screw ¼-20 x 1"
11	NO	402-322	2	End Cap
12	NO	402-315	1	Valve Piston
13	Yes	402-316	1	Slide Valve
15	NO	402-314A	1	Adapter
16	Yes	360-514	1	Spring for Upper Poppet
17	Yes	350-420	1	O-ring for Upper Poppet
18	Yes	350-362	1	O-ring for Upper Poppet
19	NO	300-828	1	Upper Cushion assembly
20	Yes	350-811	1	O-ring for Upper Cushion Assembly
21	Yes	300-856	1	Upper Poppet Pin assembly
22	NO	350-185	3	Hex Head Screws 3/8-16 x 1 ¼
23	NO	360-517	2	Socket Head Screw 6-32 x 3/8
24	NO	350-308	1	Roll Pin
25	NO	350-180	3	Lock Washer 3/8
26	Yes	402-238	2	End Cap Gaskets
27	Yes	402-246	1	Valve Body Gasket
28	Yes	402-317	1	Valve Plate



Disassembly

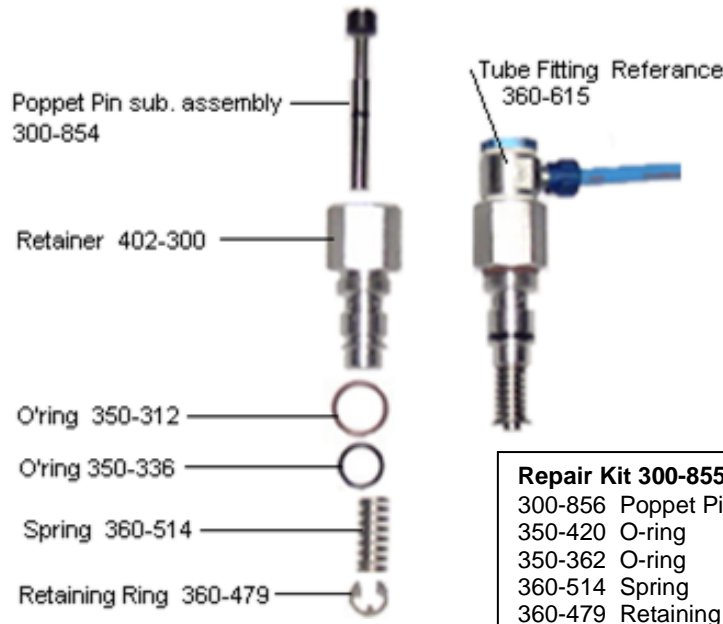
1. Remove the Tubing from the Lower Poppet.
2. Remove the three hex head bolts that hold the Air Valve to the Air Cylinder.
 - a. Remove the Air Valve from the Air Cylinder. (Twisting helps remove it from the cylinder).
3. Remove the 360-604 Control by unscrewing the (2) slotted screws.
4. Remove the 402-213 Valve Body by unscrewing the (4) SHCS and Lock washers on the top surface.
5. Remove both 402-322 End Caps by unscrewing the (8) SHCS and Lock washers.
6. Remove the 402-317 Valve Plate and 402-316 Slide Valve by unscrewing the (2) SHCS in the valve Plate.
7. The 402-315 Valve Piston Can be Removed by pushing out thru the bore.
 - a. Remove the 360-518 K-Seals.
8. Remove the O-ring from the 402-228 Upper Cushion Assembly.
9. Use a 1 1/8" socket to remove the 300-853 Upper Poppet Valve without removing the Upper Cushion.
 - a. The 360-514 Spring should be removed at this time.
10. Clean all parts and replace any damaged parts.

Assembly

1. Install the O-rings 350-420 and 350-362 on the Upper Poppet Retainer and lubricate.
2. Lubricate the 300-856 Upper poppet Pin assembly and install it into Upper Poppet Retainer.
3. Drop the 360-514 Spring into the Upper Poppet bore of the 402-314 Adaptor and screw the Upper poppet assembly and torque to 20 Ft. Lbs.
4. Install the 350-811 O-ring into the Upper Cushion.
 - a. If the Upper Cushion was removed, replace it using the two 360-547 Shoulder Screws and LOCTITE.
5. Install Both 360-518 K-Seals on the 402-315 Valve Piston. The Seal Lips MUST FACE INWARDS and Lubricate the seals.
6. Push the 402-315 Valve Piston into the 402-213 Valve Body. The piston should go in very easy.
7. Install the 402-316 Slide valve onto the 402-315 Valve piston and lubricate it with light oil.
8. Install the 402-317 Valve Plate in the 402-213 Valve Body so that the 6-32 screw holes line up with the holes in the plate. Do Not Over Tighten the Screws. Torque to 10 Inch Lbs.
9. Install both 402-322 End Caps and 402-238 End Cap Gasket using the eight SHCS $\frac{1}{4}$ x 1 $\frac{1}{4}$ " and Lock washers and torque to 10 Ft. Lbs.
10. Install the Valve body assembly on the air valve adaptor.
 - a. Line up the 402-246 Gasket so that the Pilot Ports line up and the. Location pin. The scallops of the gasket should match the scallops of the air valve adaptor.
 - b. Insert the (4) $\frac{1}{4}$ x 2 $\frac{3}{4}$ " SHCS and lock washers thru the Valve body and line them up with the holes in the air valve adaptor. Ensure that the Pilot ports line up.
 - c. Tighten the SHCS to 10 Ft. Lbs of torque.
11. Install the 350-604 control on the Valve body. The slotted screws should be tightened to 20 inch Lbs of torque.
 - a. A detent on the valve must match the detent hole in the Valve body.
12. Install the Two large Air Valve O-rings 350-008 and Small one 360-469 at the top opening of the Air cylinder and lubricate them.
13. Install the Air valve so that the poppet ports line up. See figure 2 (page 2)
14. Install the Three 3/8-16 Hex Screws and lock washers and tighten them to 20 Ft. Lbs.
15. Attach the tubing from the air valve to the lower poppet.

Upper Poppet Assembly (300-853)

⚠ WARNING When repairing the Air Motor turn off the air supply and bleed the material pressure from the pumping system.



Disassembly

1. Remove the Tubing from the Lower Poppet.
2. Remove the three hex head bolts that hold the Air Valve to the Air Cylinder.
 - a. Remove the Air Valve from the Air Cylinder. (Twisting helps remove it from the cylinder).
3. Use a 1 1/8" socket to remove the 300-853 Upper Poppet Valve without removing the Upper Cushion.
 - a. The 360-514 Spring should be removed at this time.
4. Clean all parts and replace any damaged parts.

Assembly

1. Install the O-rings 350-420 and 350-362 on the Upper Poppet Retainer and lubricate.
2. Lubricate the 300-856 Upper poppet Pin assembly and install it into Upper Poppet Retainer.
3. Drop the 360-514 Spring into the Upper Poppet bore of the 402-314 Adaptor and screw the Upper poppet assembly and torque to 20 Ft. Lbs.
4. If the Upper Cushion was removed Replace it using the two 360-547 Shoulder Screws and LOCTITE.

Troubleshooting

Issue	Possible Cause	Possible Solution
Air blowing out exhaust port.	Loose valve body (402-313).	Tighten four bolts (350-916).
	Worn slide valve (402-316).	Replace.
	Worn valve plate (402-317).	Replace.
	Worn valve plate (402-246).	Replace gasket.
	Worn O-ring of air motor cylinder	Replace O-ring (350-275)
	Check control valve for dirt or damage	Replace valve (350-604)
	Worn K-seals (360-518) on valve piston (402-315).	Replace K-seals
Air blowing out bottom of air motor.	Worn packing nut assembly.	Replace assembly (300-831)
	Damaged O-ring in packing nut assembly (300-831).	Replace O-ring
	Damaged or loose gasket.	Replace gasket (402-261)
	Worn or damaged piston rod (402-231N).	Replace piston rod
	Crack in cylinder (402-257).	Replace cylinder
Air motor stalling at end of stroke.	Internal piston parts loose.	Disassemble air motor and reassemble parts
Air motor piston rod stuttering at top of stroke.	Lower poppet (300-852) being held open with dirt or bent pin.	Clean seat or replace lower poppet valve
	Damaged or dirty double pilot valve (360-604).	Clean or replace valve
Air motor piston rod stuttering at bottom of stroke	Upper poppet (300-853) being held open.	Clean seat or replace upper poppet valve
	Damaged or dirty double pilot valve (360-604).	Clean or replace valve