Ingersoll Rand

Assembly Solutions

PUMPS

5 GALLON PUMP MANUAL

Ingersoll Rand
Assembly Solutions

Ingersoll-Rand
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SAFETY INFORMATION

⚠ WARNING This symbol is to alert the user and service personnel to the presence of dangerous pressure that will cause a personal injury.

⚠ CAUTION This symbol is to alert the user and service personnel to the presence of important operating instructions that must be read and understood to prevent personal injury or damage to the equipment

⚠ WARNING

YOU MUST READ THIS MANUAL BEFORE OPERATING THE SYSTEM.

Mechanical repairs should be attempted only by authorized trained repairmen. Consult your service center listing for your nearest Ingersoll-Rand authorized service center.

For safe operation the following procedure must be followed.

⚠ WARNING

- **EXCESSIVE AIR PRESSURE. Can cause personal injury, pump damage or property damage. Do not exceed maximum inlet air pressure of 90 PSI (6.2 bar).**

⚠ WARNING

- **EXCESSIVE MATERIAL PRESSURE. Can cause personal injury, pump damage or property damage Do not exceed maximum material pressure of 5850 PSI (403.4 bar).**
- Explosion Hazard. Do not penetrate the elevator tubes. They are air accumulators. Can cause ersonal injury or equipment damage can occur.

⚠ WARNING

- Secure (lag) the elevator base to the floor before using
- Filtered air will allow the elevator to operate more efficiently and an oilier is included for the pump, use SAE 10W non-detergent oil. Set Lubricator not to exceed one drop per minute.
- Use the air regulators to control the pump cycle rate (PSI). This will help to prolong the life of the pump
- Use the air to control the down pressure of the elevator.
- Lubricate the Elevator with 90W non-detergent oil annually.
- **Lubricate the follower plate seal with a compatible lubricant every barrel change (Lubricant cannot react with the material).**

⚠ WARNING

- Lockout elevator air supply and install and lock the safety lockout bar if equipped before performing maintenance on the follower plate/pump.
-

⚠ WARNING

- Lockout the pump air supply before performing any maintenance on the pumps.

⚠ WARNING

- This equipment must be earth grounded to protect the operator from electric/ static shock. Keep body parts from in-between frame when raising and lowering elevator.
- Depressurize the pump when not in use.
- Use proper lifting techniques and/or mechanical lifting aids remove the pumps when repairing. Failure to follow instructions may result in personal injury. (See specification for module weight).

SAVE THESE INSTRUCTIONS

NOTICE

The use of other than genuine Ingersoll-Rand replacement parts may result in safety hazards, decreased tool performance, and increased maintenance, and may invalidate all warranties.

Refer All Communications to the Nearest Ingersoll-Rand Office or Distributor.

NOTICE

Ingersoll-Rand Company makes no warranty or implies any warranty or liabilities due to the misuse or damage resulting from the application of the information supplied by this manual. Liabilities due to errors in the manual are only limited to replacement of the manual. Ingersoll-Rand reserves the right to change information contained in this manual or the program without notice at anytime.

OPERATOR'S MANUAL

5 GALLON PUMP ASSEMBLY

IMPORTANT: READ THIS MANUAL CAREFULLY BEFORE INSTALLING, OPERATING, OR SERVICING THIS EQUIPMENT

⚠ WARNING

When repairing the Pump Turn off the Air Supply and bleed the material pressure from the pumping system.

SPECIFICATIONS

900S067 Air Motor 4 inch
900S068 Air Motor 6 inch
900S069N Air Motor 8 inch
900S070N Air Motor 10 inch

900–001 PUMP RATIO				VOL./CYCLE
4"	6"	8"	10"	12.0 $IN.^3$
10:1	24:1	42:1	65:1	

300–701xx PUMP RATIO				VOL./CYCLE
4"	6"	8"	10"	13.3 $IN.^3$
6:1	16:1	30:1	45:1	

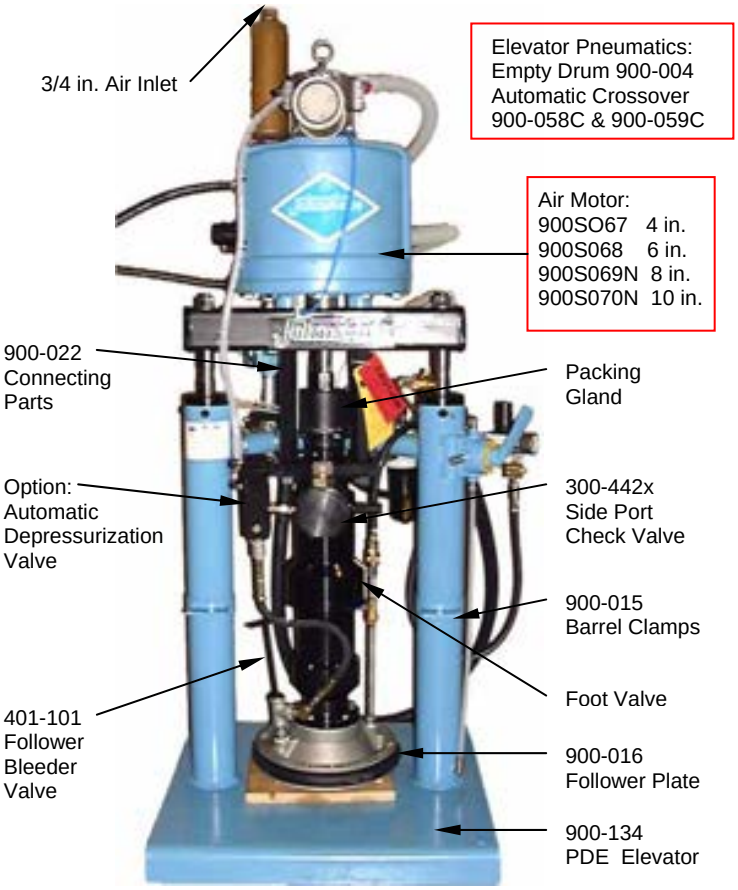
Air Inlet Port Size 3/4" NPT
Exhaust Port Size 3/4" NPT
Minimum Air Supply 3/4" NPT
Air Pressure Operating Range 20 PSI (1.36BAR) to 100 PSI (6.8 BAR)

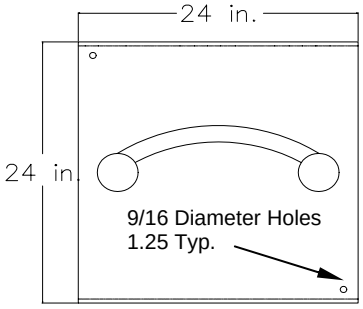
⚠ WARNING

DO NOT OPERATE AIR MOTOR AT PRESSURES ABOVE 100PSI (6.8 BAR).

INSTALLATION

1) Locate the pump so that one can work around it.
2) Secure the elevator base to the floor.
3) Leave 10 inches in-between elevator bases.
4) Connect Pneumatic crossover hoses. See 900-058 & 900-059 manual.
5) Install a shut off valve in-between the air supply and filter (customer supplied).
6) Install a ¾" NPT air supply to the inlet.
7) Depending on the style of the drum, the barrel clamps may need adjustment.
8) Connect the Material supply hose to the outlet port of the side port check valve.





Pump Height
With Air Motor
Down 4 ft. 8 in.(142cm)

UP 6 ft. 3 in. (198cm)

9) Support the material at the top of the elevator support. Unistrut clamp (403-300).
10) Raise the elevator up and down and ensure that the hoses will not be damaged.
11) Set the Elevator and Air Motor Pressures.

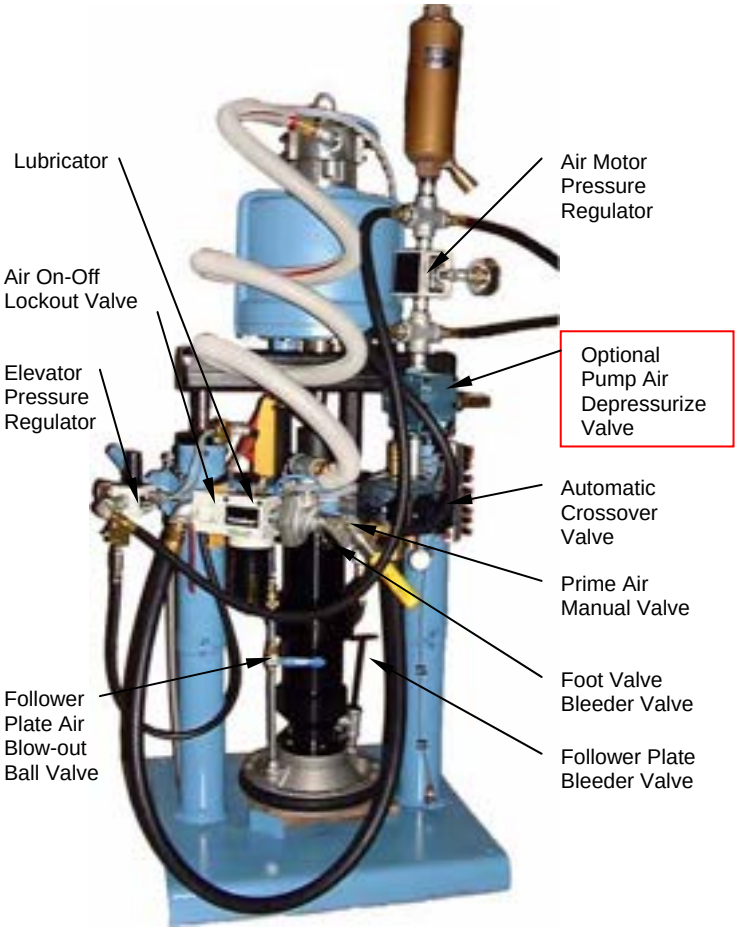
5 GALLON PUMP ASSEMBLY

ELEVATOR DRUM LOADING PROCEDURE

1) Close the Air Motor On-Off Lock-Out Valve.
2) Raise the Elevator by turning the hand valve to the up position.
3) Disconnect the follower plate air hose assembly and close the manual ball valve.
4) Lubricate the Follower Plate Seals.
5) Slide the drum into the elevator. The drum should be located in the center of the elevator base plate. Adjust the Barrel Clamps if it is not. (See Elevator Manual)
6) Lower the pump into the barrel by **slowly** moving the hand valve to the down position. When the follower plate reached the drum move the hand valve to the **stop** position.
7) Remove the Follower Plate Bleeder Valve and lower the pump into the drum by **slowly** moving the hand valve to the down position. When material starts coming out of the Bleeder valve port put the hand valve in the stop position
8) Thread the Follower Plate bleeder valve into the follower plate port.
9) Put the Elevator Hand Valve in the down position.
10) Place a container under the Foot Valve Bleeder Valve and open it several turns.
11) **Slowly** open the Prime Air Manual Valve and the pump will run and material will start coming out. Continue bleeding until all of the air bubbles have stopped.
12) Release the Prime Air Ball Valve and close the Foot Valve bleeder Valve.
13) Open the Air On-OFF Lock-Out Valve
14) The Pump is ready for operation (Check for Leaks).

ADJUSTING ELEVATOR PRESSURES

1) The elevator must always have down pressure on it to prevent air from entering the pump.
2) To set the air pressure run the pump and increase the pressure if the elevator raises when the pump is in the down direction.



ADJUSTING PUMP PRESSURES

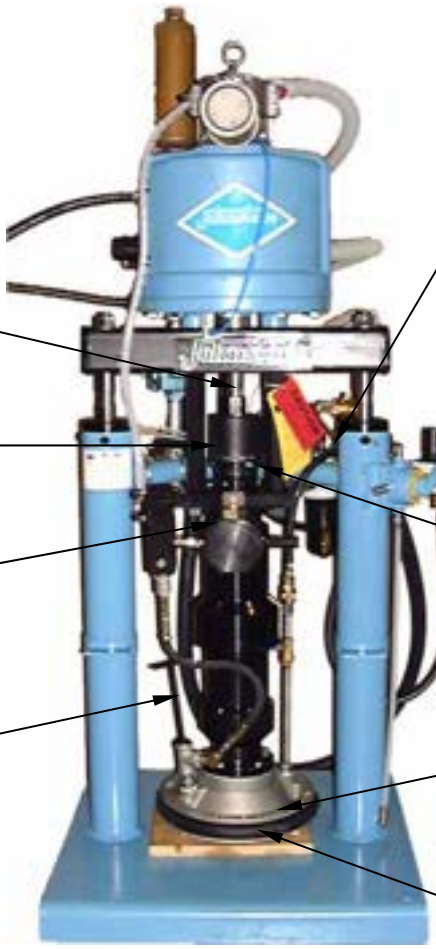
Turn up the Air Motor Pressure Regulator until the desired pressure is achieved.

DRUM UNOLADING PROCEDURE

1) Close the Air On-Off Lock-Out Valve.
2) Connect the Follower Plate blow out fitting and open the ball valve.
3) Put the Elevator hand valve in the Stop position and wait until the elevator stops exhausting air.
4) Use air pressure to raise the follower plate out of the drum. Depress the follower manual air valve (located by the elevator regulator) until the follower plate reached the top of the drum.
5) Slowly move the hand valve to the up position and raise the pump out of the drum.

5 GALLON PUMP ASSEMBLY

MAINTENANCE SCHEDULE



PUMPS

DAILY:

1. Assure that the packing oil cup is filled with oil.
   Recommended Lubricant Diisodecyl Phthalate (D.I.D.P)
2. Clean material from packing cut if necessary.
3. Assure hand valve for elevator is in down position.
4. Lubricate Follower Plate wiper ring every barrel change.
5. Bleed Air from Follower Plate every barrel change.
6. Bleed Air from Foot Valve every barrel change.
7. Verify the operation of the pump every barrel change.

WEEKLY:

1. Assure that the airline lubricators are filled with #10 oil.
2. Check follower plate wiper ring and replace if damaged

MONTHLY:

1. Check airline filters.
2. Clean or replace filter element as required.
3. Check for loose gaskets on air valve and air motor, tighten or replace.
4. Purge water from elevator.
   (Open valve at base of elevator tube)

900S068

6 INCH AIR MOTOR ASSEMBLY

IMPORTANT: READ THIS MANUAL 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	24:1
Static Pressure Ratio 300-701x Pump	16:1
Air Pressure Operating Range	20 PSI (1.36BAR) to 100 PSI (6.8 BAR)

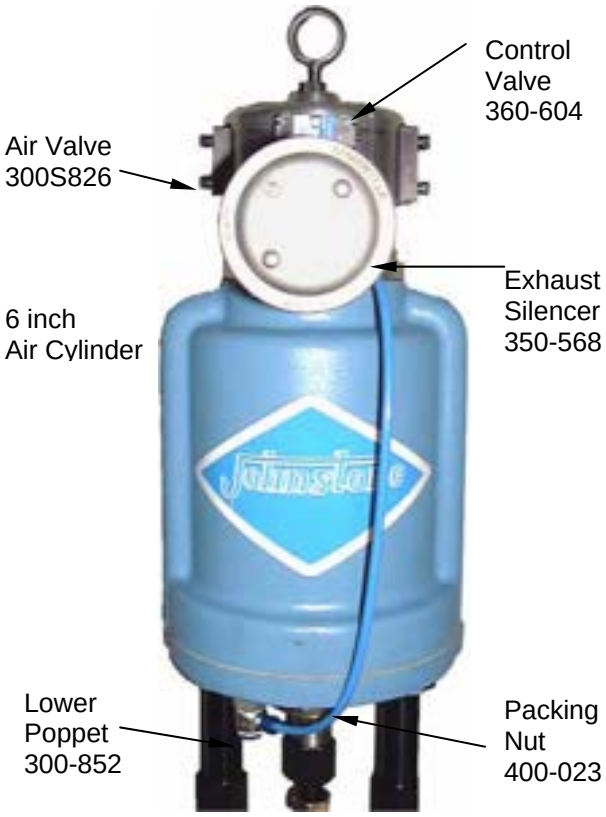
⚠ WARNING DO NOT OPERATE AIR MOTOR AT PRESSURES ABOVE 100PSI (6.8 BAR).

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

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

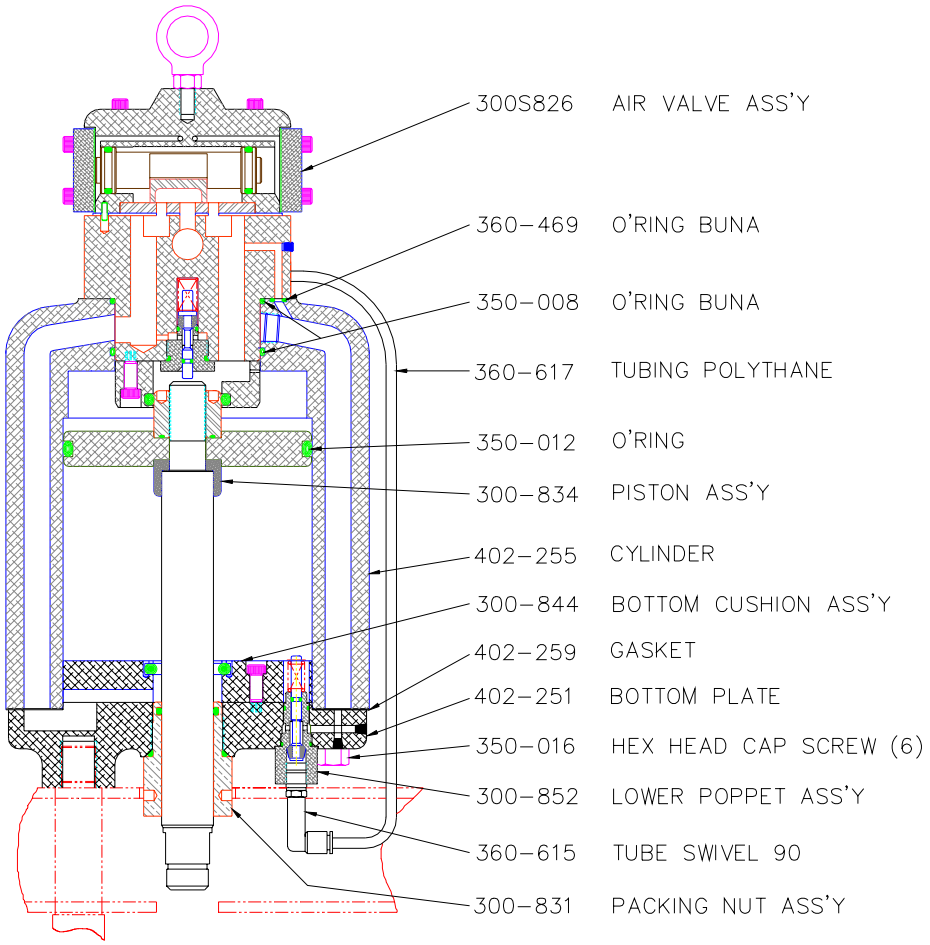
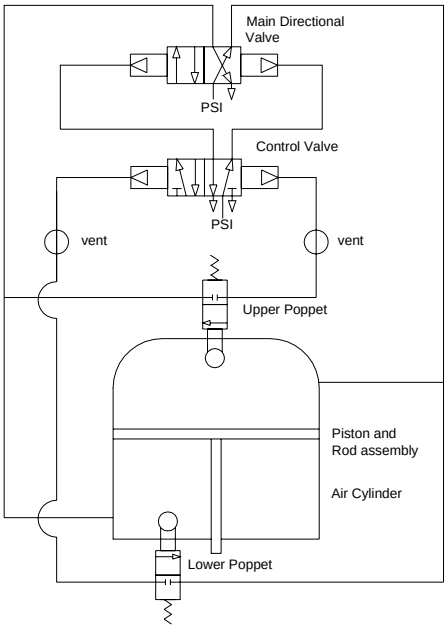


figure 2

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 PSI 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 and 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 and 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	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
NO	360-615	1	Tube fitting for Lower poppet valve
NO	360-615	22in.	Air tubing for Lower Poppet Valve
YES	360-479	1	Retaining Ring Lower Poppet
YES	360-514	1	Spring Lower Poppet
NO	402-319	1	Air Piston
YES	350-275	1	O'ring Air Piston Assembly
NO	402-231	1	Air Piston Rod
NO	402-229	1	Upper piston insert
NO	402-230	1	Lower piston insert
YES	350-832	1	O-ring for Piston assembly
NO	402-255	1	6 inch Air Cylinder
NO	402-251	1	6 inch Bottom Plate
YES	402-259	1	6 inch gasket
NO	402-248	1	6 inch Bottom Cushion
YES	350-811	1	O-ring for Cushion
NO	360-547	2	Shoulder Screws for Cushion
NO	350-016	6	Hex head cap screws

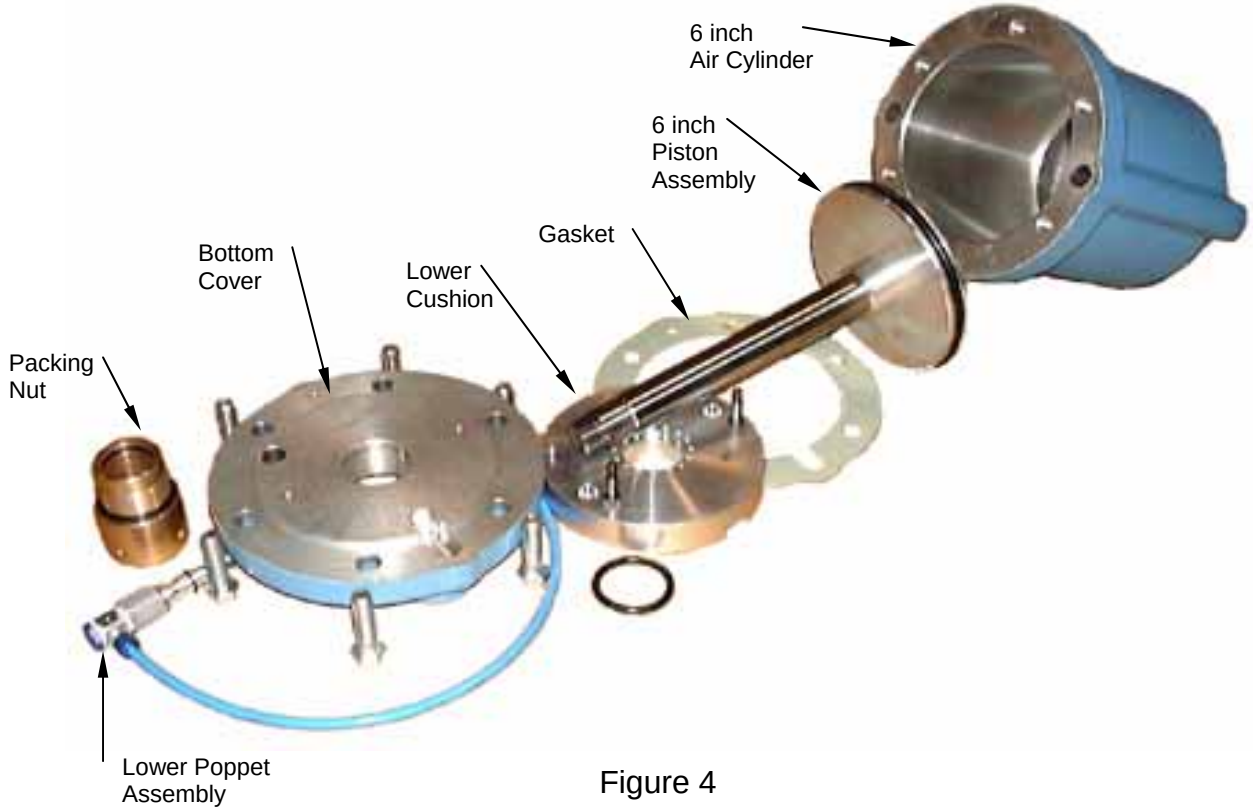


Figure 4

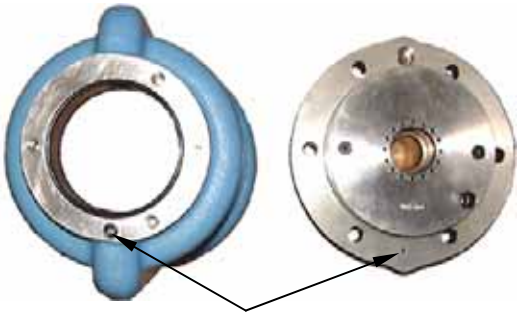
Disassembly:

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
      i) 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 6 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) Remove the O'rings from the Air cylinder, Piston assembly and Lower Cushion.
9) Clean and inspect the Cylinder for worn or damaged parts.
   a) 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.
      i) Install the Lower Piston Insert and O'ring on the Piston Rod.
      ii) Locktite the Piston Rod to the Piston and torque to 50 Ft. Lbs.
      iii) Install the Upper Cushion, Flat washer, Lock Washer and locktite the Hex Screw and torque to 20 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. See figure #5



These two Ports Must be aligned when assembling the Air Cylinder

Figure #5

Insert Piston Assembly into the bore at a 45 deg. Angle and straighten it so that the Piston assembly is at the bottom of the bore

Figure #6

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. See figure #6
7) Install the Gasket on the bottom cover. The Slot and Poppet hole should align. See figure #5
8) Install the Bottom Cover onto the Air Cylinder. Make sure that the poppet ports align up.
9) Install the 6 Hex Head Screws and torque them evenly to 30 Ft. Lbs.
10) 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.
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.

900S069N

8 INCH AIR MOTOR ASSEMBLY

IMPORTANT: READ THIS MANUAL 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

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

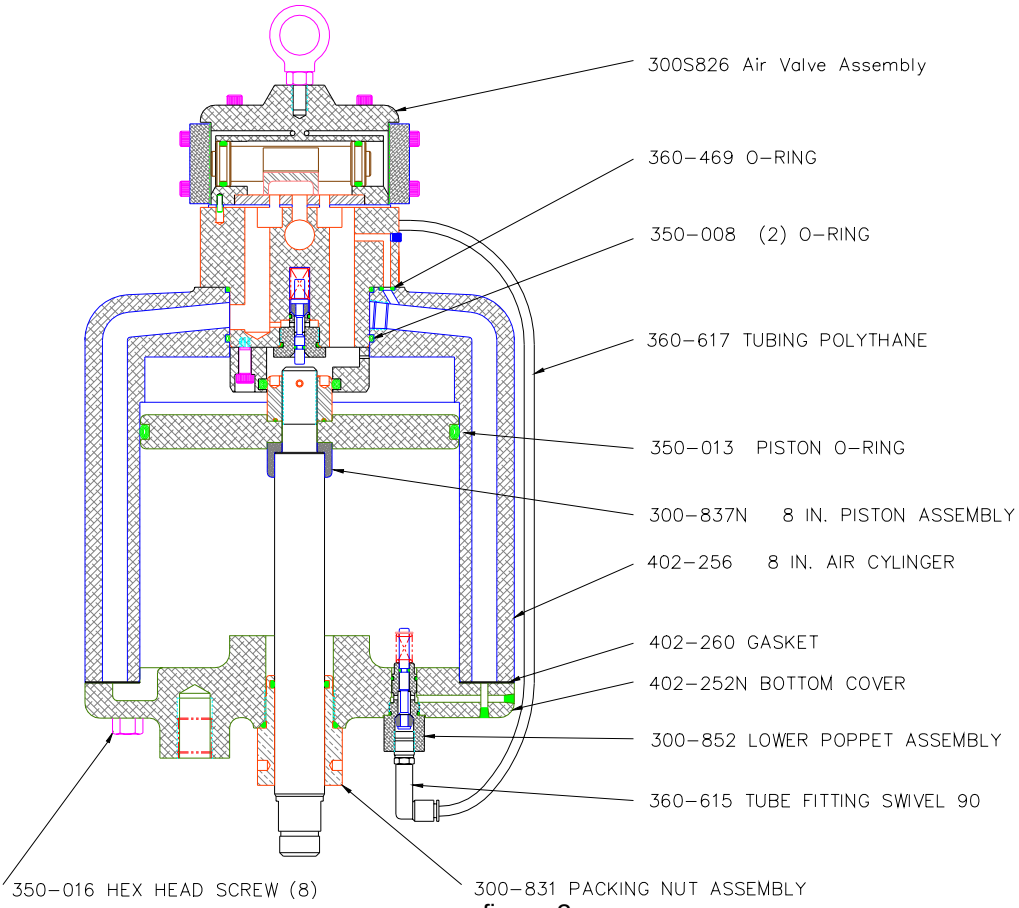
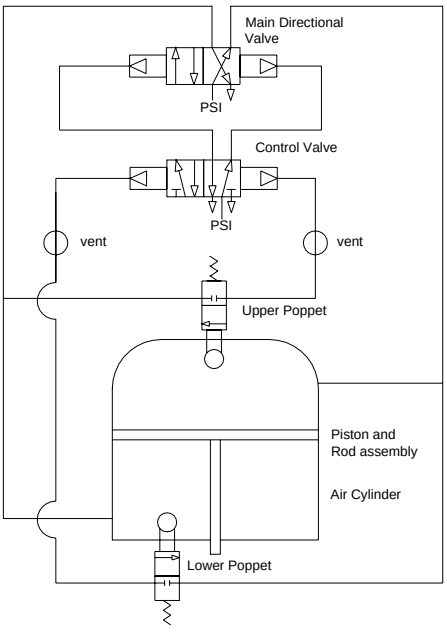


figure 2

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

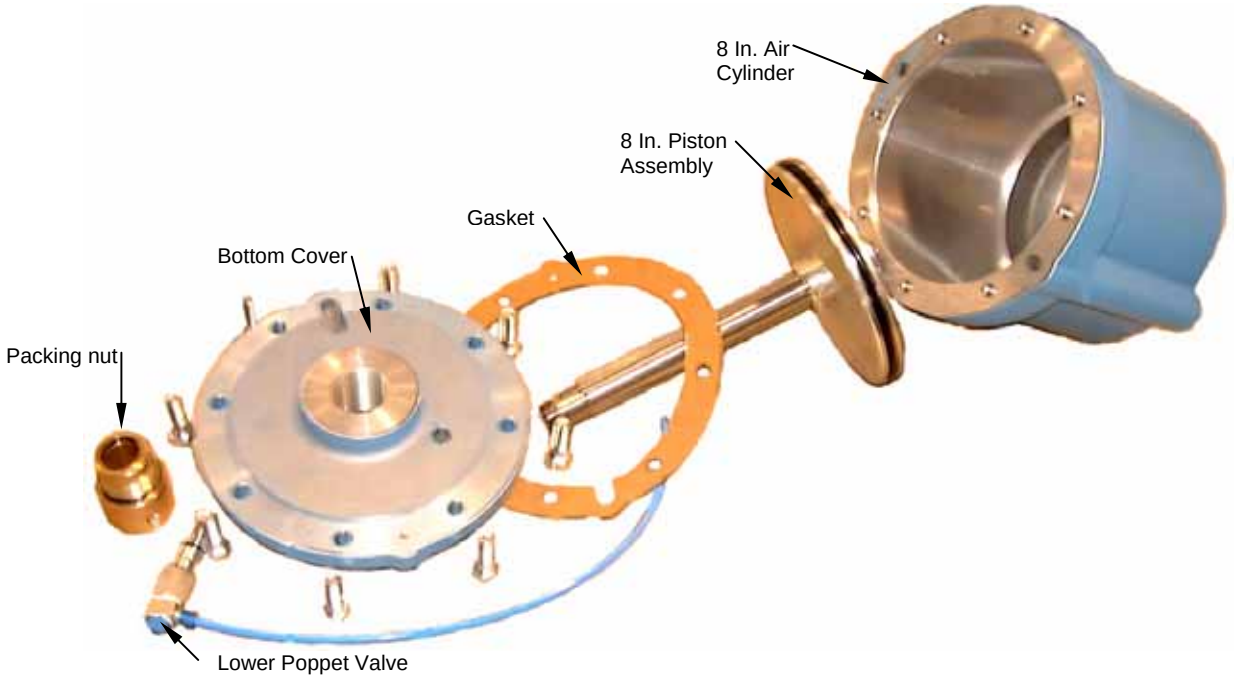


Figure 4

Dissassembly:

⚠ 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
      i) 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.
   a) 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 Loctited to the Piston Rod and torque 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. See figure #5

figure #5

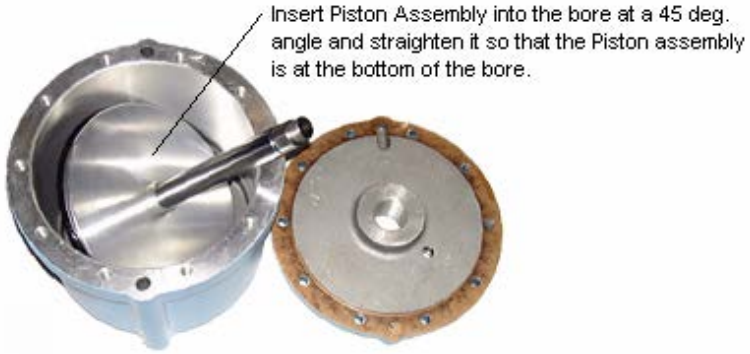


figure #6

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. See figure #6
7) Install the Gasket on the bottom cover. The Slot and Poppet hole should align. See figure #5
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 Small one 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.

900S070N

10 INCH AIR MOTOR ASSEMBLY

IMPORTANT: READ THIS MANUAL 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

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Exhaust Port Size	3/4" NPT
Minimum Air Supply	3/4" NPT
Static Pressure Ratio 900-001 Pump	65:1
Static Pressure Ratio 300-701x Pump	45:1
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

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

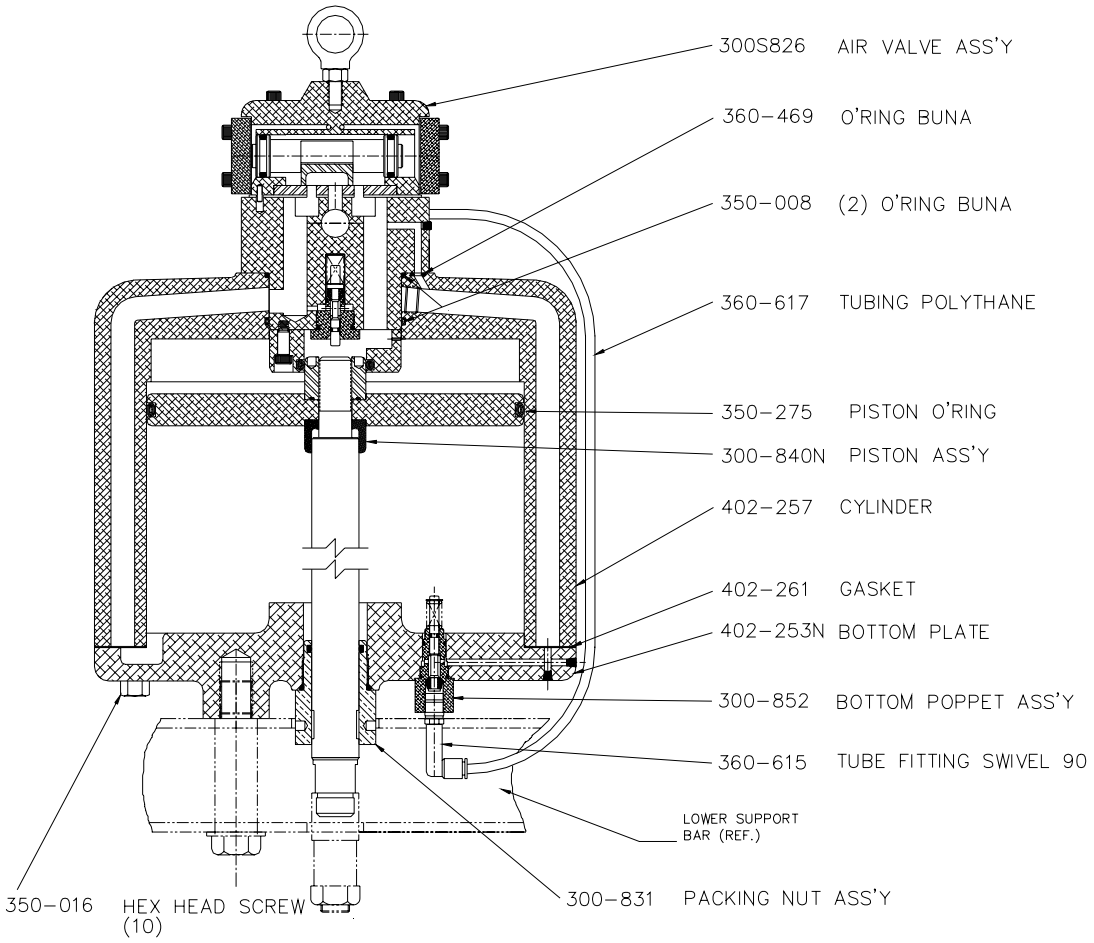
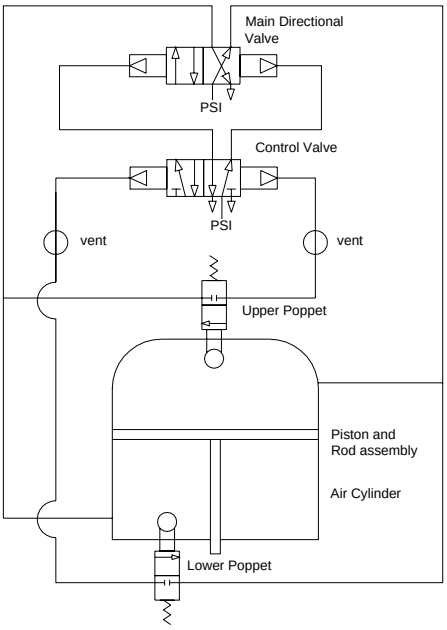


figure 2

How the Pneumatic Circuit works

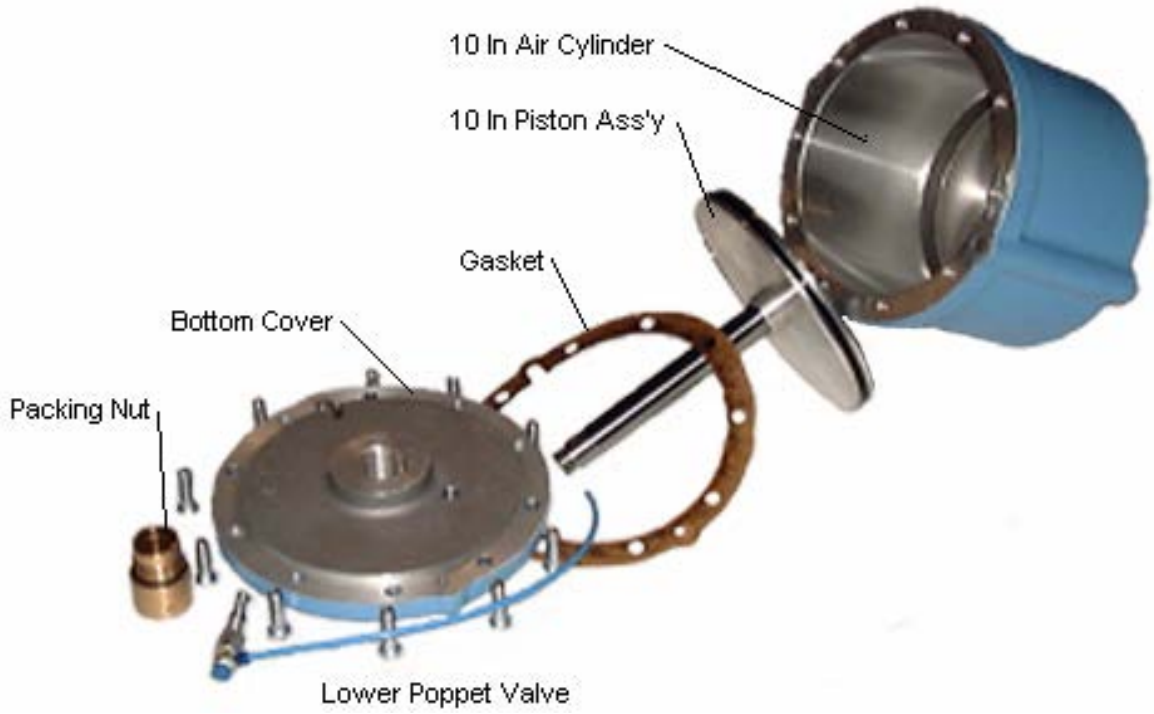
1) Air pressure is sent to the Main Direction valve and Control Valve from the air valve inlet port.
2) The Main Directional Valve Sends air pressure to either the up or down port of the air cylinder.
3) When Air Pressure is sent to the down piston port, Air Pressure will also be sent to the Lower Poppet 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	402-261	1	10 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	350-275	1	O'ring Air Piston Assembly
NO	402-257	1	10 inch Air Cylinder
NO	402-253N	1	10 inch Bottom Plate
NO	350-016	10	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

Figure 4



Dissassembly:

⚠ 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
      i) 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 10 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.
   a) 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 Loctited to the Piston Rod and torque 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. See figure #5

figure #5

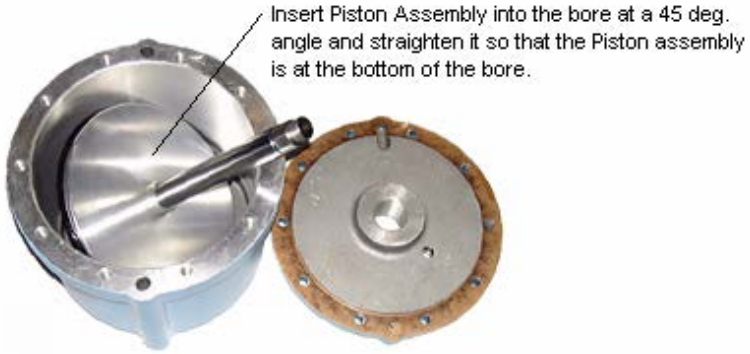
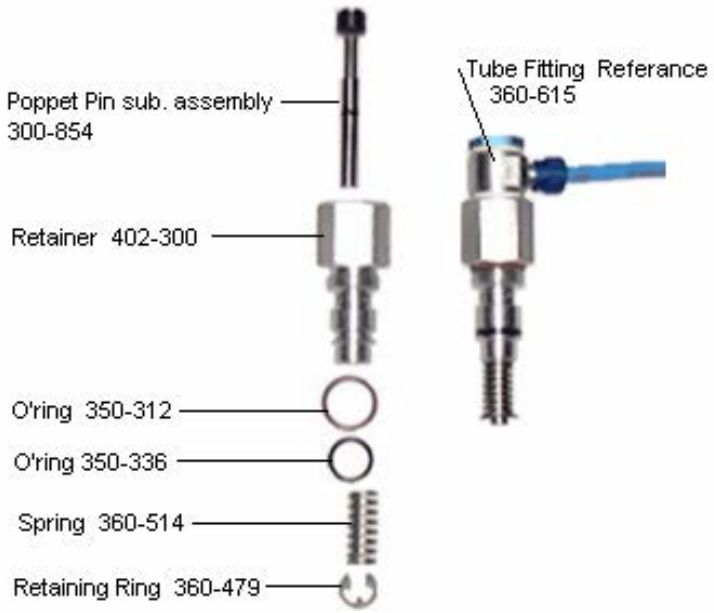


figure #6

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. See figure #6
7) Install the Gasket on the bottom cover. The Slot and Poppet hole should align. See figure #5
8) Install the Bottom Cover onto the Air Cylinder. Make sure that the poppet ports align up.
9) Install the 10 Hex Head Screws and torque them evenly to 30 Ft. Lbs.
10) 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.
11) Install the Air valve so that the poppet ports line up. (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.

300-852 LOWER POPPET ASSEMBLY

⚠ WARNING WHEN REPAIRING THE AIR MOTOR TURN OFF THE AIR SUPPLY AND BLEED THE MATERIAL PRESSURE FROM THE PUMPING SYSTEM



Repair Kit 300-855 Includes:

300-854 Poppet Pin sub-assembly.
350-312 O'ring
350-336 O'ring
360-514 Spring
360-479 Retaining Ring.

Rebuilding Instructions:

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.

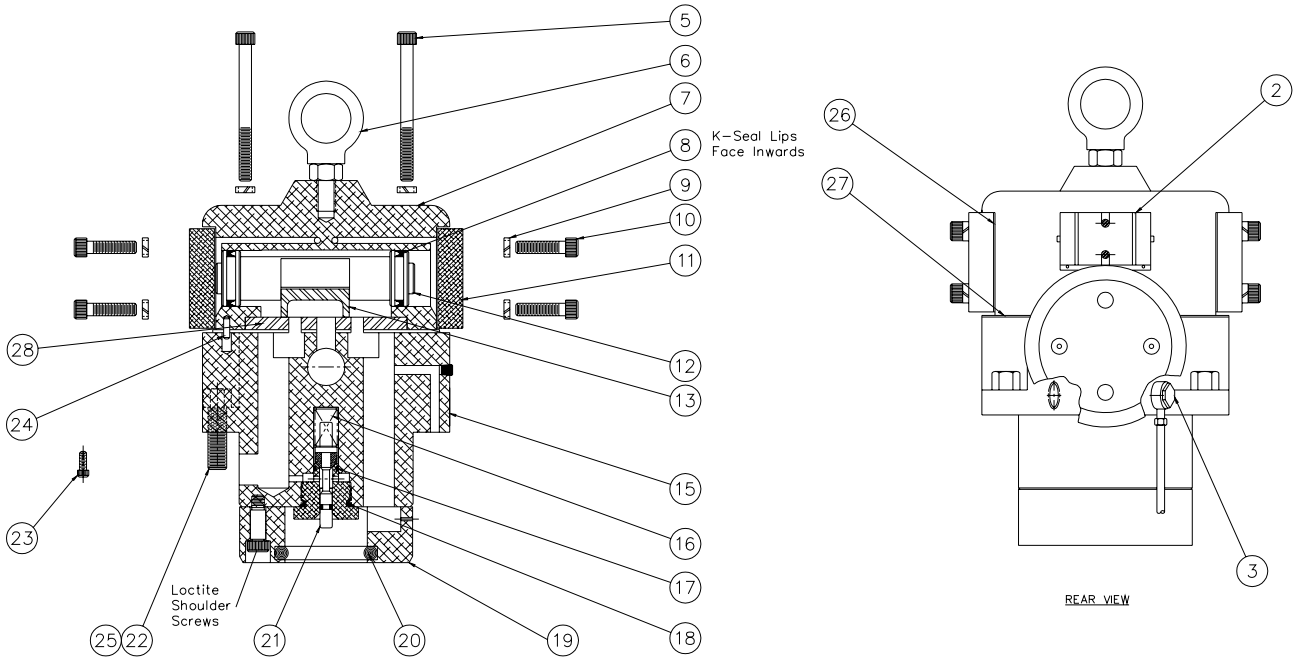


figure #8

Air Valve Part Description 300S826RK Repair Kit				
Detail 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
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

⚠ WARNING WHEN REPAIRING THE AIR MOTOR TURN OFF THE AIR SUPPLY AND BLEED THE MATERIAL PRESSURE FROM THE PUMPING SYSTEM

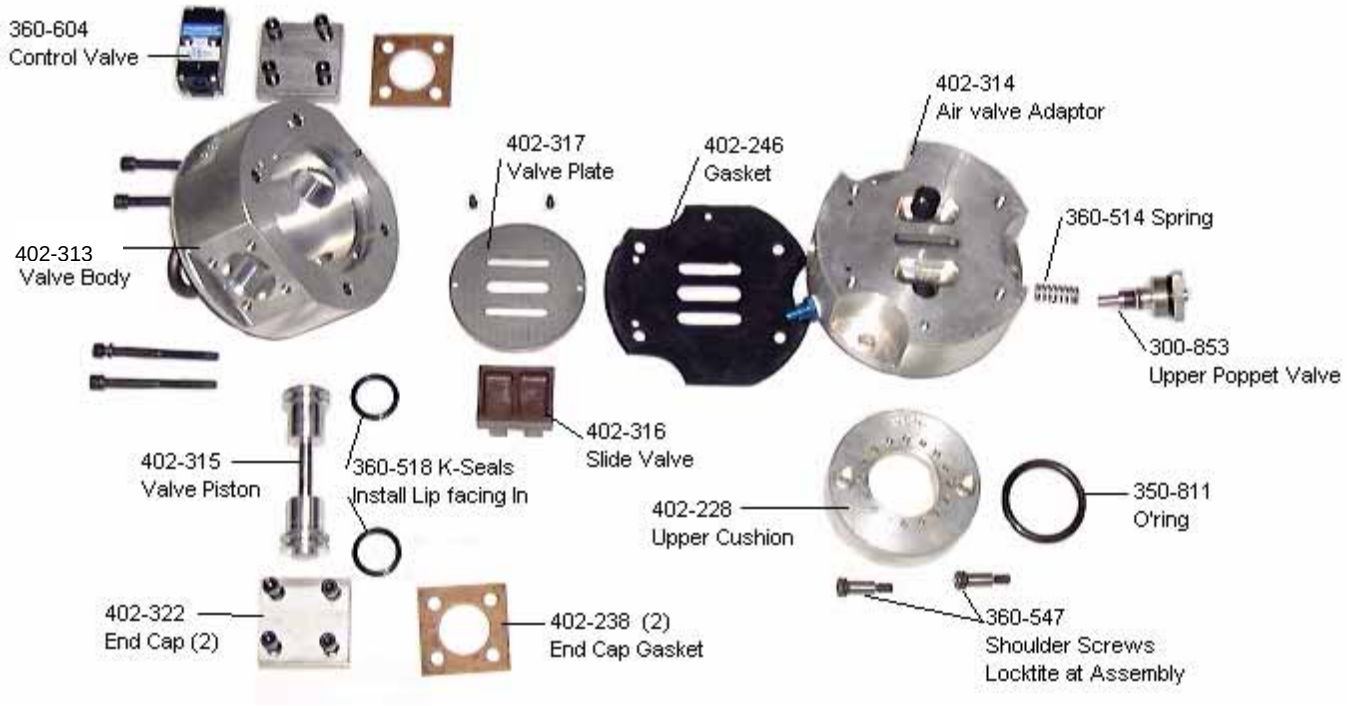


figure #9

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
   b) 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) Using a 1 1/8" socket the 300-853 Upper Poppet Valve can be removed without removing the Upper Cushion. 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 the300-856 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 a 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 ¼ x 1 ¼" 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) ¼ x 2 ¾' SHCS and lock washers thru the Valve body and line them up with the holes ine 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) There is a detent on the valve an it 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.

⚠ WARNING WHEN REPAIRING THE AIR MOTOR TURN OFF THE AIR SUPPLY AND BLEED THE MATERIAL PRESSURE FROM THE PUMPING SYSTEM

Repair Kit 300-857 Includes:

Poppet Pin sub-assembly 300-856
O'ring 350-420
O'ring 350-362
Spring 360-514
Retaining Ring 360-479.

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.
   b) Twisting helps remove it from the cylinder.
3) Using a 1 1/8" socket the 300-853 Upper Poppet Valve can be removed without removing the Upper Cushion. 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.

TROUBLE SHOOTING

Problem	Cause	Solution
AIR MOTOR / AIR VALVE		
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 gasket (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 (360-604).
	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.	Disassembly 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 of seal or replace lower poppet.
	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.	Rebuild or replace upper poppet valve.
	Damaged or dirty double pilot valve (360-604).	Clean or replace valve.

900-022 - 5 and 55 Gallon Connector Assembly.

IMPORTANT: READ THIS MANUAL 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.

ADJUSTING CONNECTOR:

1) Loosen the 350-025 Jam Nut from the displacement rod.
2) Turn the 400-113 Connecting rod until the 1-inch dimension is achieved.
3) Tighten the Jam nut to the displacement rod using 120 Lbs. of torque.
4) The Spacer Rods, Hex Nuts and Collar should all be torqued to 100 Ft. Lbs.

900-001

CHOP AND CHECK FOOT VALVE ASSEMBLY

IMPORTANT: READ THIS MANUAL 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.

- Foot Valve Repair Kit : 900-001RK

SPECIFICATIONS

Outlet Port Size 1 ¼ " NPT
Displacement = 12 Cubic inches per cycle.
Static Pressure Ratio 10 in. Air Motor 65:1
Static Pressure Ratio 8 in. Air Motor 42:1
Static Pressure Ratio 6 in. Air Motor 24:1
Static Pressure Ratio 4 in. Air Motor 10:1
Material Pressure Operating Range 0 PSI to 6500 PSI (442 BAR)

⚠ WARNING

DO NOT OPERATE AIR MOTOR AT PRESSURES ABOVE 100PSI (6.8 BAR).

MAINTENANCE SCHEDULE

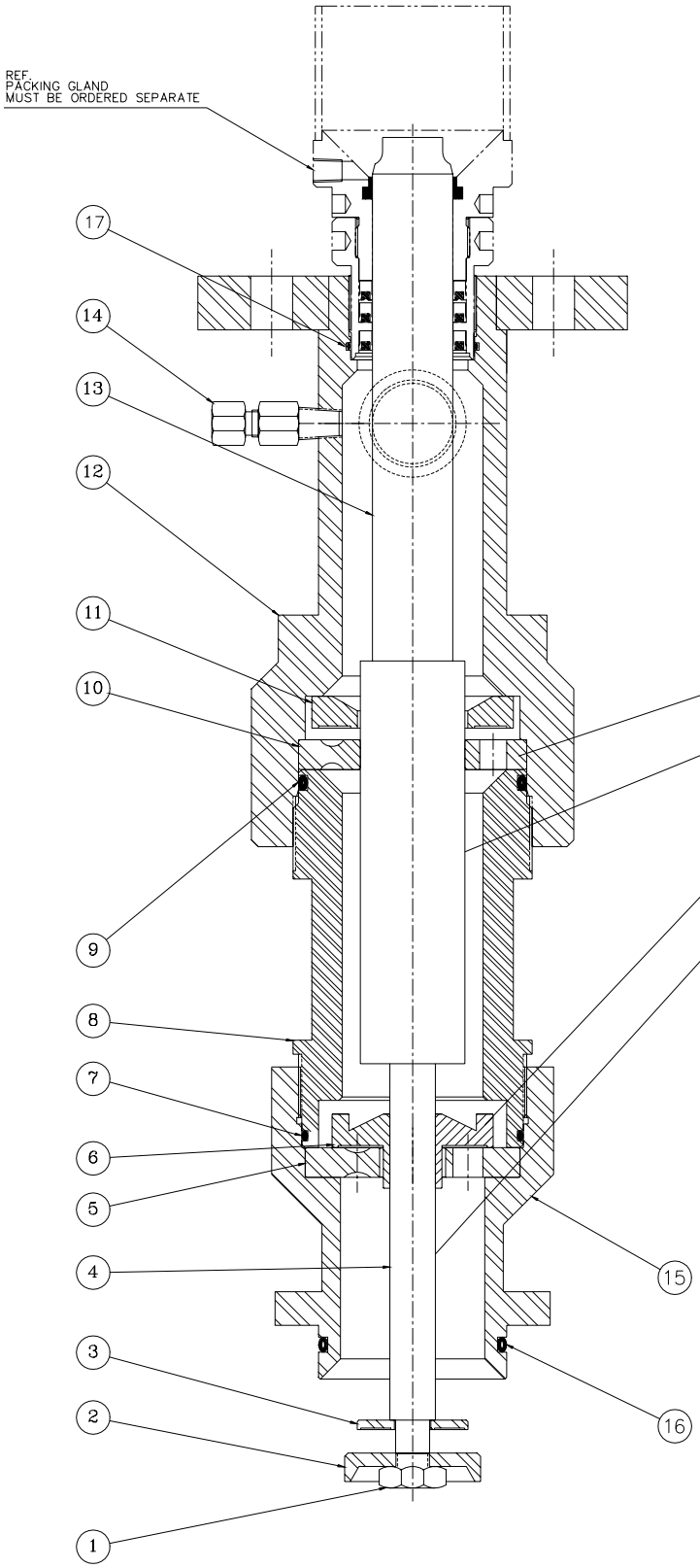
EVER BARREL CHANGE:

Add oil to the Packing Gland.
Bleed air from Foot Valve.
Check for material Leakage (rebuild if leaking at the threads)
Check for pump signal stroking. (signal stroking is the displacement rod moving very quickly in a direction without a pump output).
If the pump is signal stroking- bleed air from bleeder valve opposite the outlet port.
If bleeding does not correct signal stroking rebuild foot valve.

OPERATION

The Pump is double acting (output in both directions). When the Pump is going in the up direction the upper check close and material is pumped out. The lower checks open allowing the lower chamber to be filled. The primer checks help bring viscous material into the chamber. In the down direction the upper check plates opens and the lower check plate closes allowing material to be pumped out.

900-001 CHOP AND CHECK FOOT VALVE



CAUTION: DO NOT OVER TIGHTEN HOUSINGS
MAXIMUM TORQUE 200 FT-LBS

FOOTVALVE PUMP RATIO				VOL./CYCLE
4"	6"	8"	10"	
10:1	24:1	42:1	65:1	12.0 $IN.^3$

FOOT VALVE WEAR TOLERANCE LIMITS

UPPER CHECK PLATE MAXIUM I.D. = 1.9640 in.

DISPLACEMENT ROD MINIMUM O.D. = 1.9425 in.

LOWER CHECK VALVE MAXIMUM I.D. = .8500 in.

PRIMER ROD MINIMUM O.D. = .8461

*REPAIR KIT #900-001RK

DET.	QTY.	PART No.	DESCRIPTION
*17	1	350-411	O'RING
*16	1	302-002	O'RING
15	1	401-904	PRIMER HOUSING
*14	1	300-847	BLEEDER VALVE
*13	1	401-915	PISTON ROD
12	1	401-940E	UPPER PUMP HOUSING
*11	1	401-909	UPPER CHECK VALVE
*10	1	401-907	UPPER CHECK PLATE
*9	1	360-573	O RING
8	1	401-911DM	LOWER PUMP HOUSING
*7	1	360-003	O RING
*6	1	401-913	LOWER CHECK VALVE
*5	1	401-912	LOWER PRIMER CHECK
*4	1	401-903	PRIMER ROD
3	1	401-902	PRIMER CHECK
2	1	401-900	PRIMER PLATE
*1	1	350-022	JAM NUT 5/8-16

900-001 FOOT VALVE

REMOVAL and INSTALL FROM PUMP

⚠ WARNING WHEN REPAIRING THE AIR MOTOR TURN OFF THE AIR SUPPLY AND BLEED THE MATERIAL PRESSURE FROM THE PUMPING SYSTEM.

⚠ CAUTION THE AIR MOTOR AND FOOT VALVE ARE VERY HEAVY.

1) Remove the Air Motor from the Pump.
   a) Remove the Air Supply hose to the Air Motor.
   b) Unscrew the 400-112 Collar that is attached to the Air Motor Piston Rod.
   c) Remove the ¾-10 Hex bolts that attach the spacer rods to the Foot Valve Flange.
   d) Lift the Air Motor off of the Foot Valve.
2) Remove the 5 or 6 Hex Screws that hold the Primer Housing to the Follower Plate.
3) Remove the Foot Valve from the Follower Plate by lifting it straight out.
4) To install reverse steps 1-3.

900-001 FOOT VALVE REBUILDING INSTRUCTIONS

DISASSEMBLY:

1) Clamp the Upper Pump Housing in a vice.
2) Remove the Primer Check.
   a) Hold the Piston Rod from moving using a 1 1/8" wrench.
   b) Remove the Nylock Jam Nut using a 15/16" Socket
   c) Unscrew the shovel Check (counter clockwise).
   d) The Shovel Valve can slide off the Primer Rod.
3) Remove the Primer Housing using a Large Hex Wrench (counter clockwise).
4) Remove the Lower Check Plate from the Primer Housing.
   a) Place the Primer housing so that the inlet is facing up.
   b) Tap on the center of the Lower Check Plate using a soft dowel (wooden handle) until the Check plate drops from its counter bore.
5) Remove the Lower Pump Housing from the Upper Pump Housing using a Large pipe wrench (counter clockwise).
6) Remove the Upper Check Plate from the Upper Pump Housing.
   a) Using channel pliers hold the Gusset of the Upper Check Plate and spin the check plate until it is out of the Upper Pump Housing.
7) Remove the Upper Check Valve.
8) The Displacement Rod can be remove from the Packing Gland.
9) Remove the Packing Gland from the Upper Pump Housing using spanner wrench No. 350-652.
10) Remove the Bleeder Valve from the Upper Pump Housing ¼" NPT.
11) Remove all of the O-rings and discard.
12) Clean and Inspect all parts for damage.

ASSEMBLY:

1) Install the 350-411 O-ring into the Upper Housing packing gland bore and Lubricate.
2) Install the O-rings on the Lower Pump Housing and lubricate.
   a) 360-573 O-ring goes on the Larger diameter.
   b) 360-003 O-ring goes on the smaller diameter.
3)
4) Clamp the Upper Pump Housing in a Vice and install the lubricated Packing Gland. Tighten with Spanner Wrench No. 350-652 to 30 Ft. Lbs.
5) Insert the Piston Rod into the Packing Gland through the lower end of the Upper Pump Housing. The Piston rod must be straight and spinning it helps to install it.
6) Install the Upper Check Valve (ears up) over the Piston rod.
7) Install the Upper Check Plate on the Piston rod and push it into the Upper Pump Housing. It must be fully seated. The Upper Check Plate can go on in either direction.
8) Install the Primer Rod into the Piston Rod. The Piloted end goes into the Piston Rod. Tighten to 30 Ft. Lbs.
9) Thread the Lower Pump Housing into the Upper Pump Housing and tighten.

⚠ CAUTION DO NOT OVERTIGHTEN Maximum torque 200 Ft. Lbs.

10) Install the Lower Check Valve on the Primer Rod with the ears facing up.
11) With the Primer Housing inlet facing down install the Lower Check Plate. The Check Plate must be fully seated. The Check Plate can go in either direction.
12) Thread the Primer Housing onto the Lower Pump Housing and tighten.

⚠ CAUTION DO NOT OVERTIGHTEN Maximum torque 200 Ft. Lbs.

13) Install the 360-002 O-ring on the Primer Housing.
14) Install the Primer Check valve on the Primer rod. Ground surface faces down.
15) Thread the Primer Plate on the Primer Rod hand tight. Tapered surface faces down.
16) Thread the Nylock Jam Nut on the primer Rod and tighten to 15 Ft. Lbs.
17) Install the Bleeder Valve in the Upper Pump Housing so that the outlet hole faces down. Use Pipe sealant.
18) Install Air Motor Connector into the Piston Rod. See 900-021 drawing for proper settings

TROUBLE SHOOTING

PROBLEM	*CAUSE*	*SOLUTION*
FOOT VALVE		
Material leakage from pump housing	Loose connections.	Tighten threads on housings.
	Cut o ring.	Disassembly and replace o ring.
	Check seated crooked in housing.	Check for worn seat area in housings.
	Cracked housing.	Replace housing.
Pump running but not delivering material (not creating pressure)	Air lock in foot valve.	Open bleeder valve of foot valve (opposite of outlet)
	Not enough down pressure on material.	Elevator hand valve in down position. Increase down pressure on elevator.
	No material available.	Check material supply.
	Lower check valve not closing or seating	Check for foreign object or worn parts, replace if needed
	Worn displacement rod, worn shovel rod, on O.D.	Replace rods.
	Worn checks on I.D.	Replace checks.
Pump not delivering material on up stroke (not creating pressure)	Foreign object on upper check, holding check open.	Clean checks.
	Worn out upper check.	Replace upper check (See tolerance chart).
	Worn out displacement rod.	Replace displacement rod (See tolerance chart).
	Check for elevator down. pressure.	See elevator (down pressure).
	Air lock in foot valve.	Open bleeder valve of foot valve (opposite of outlet)

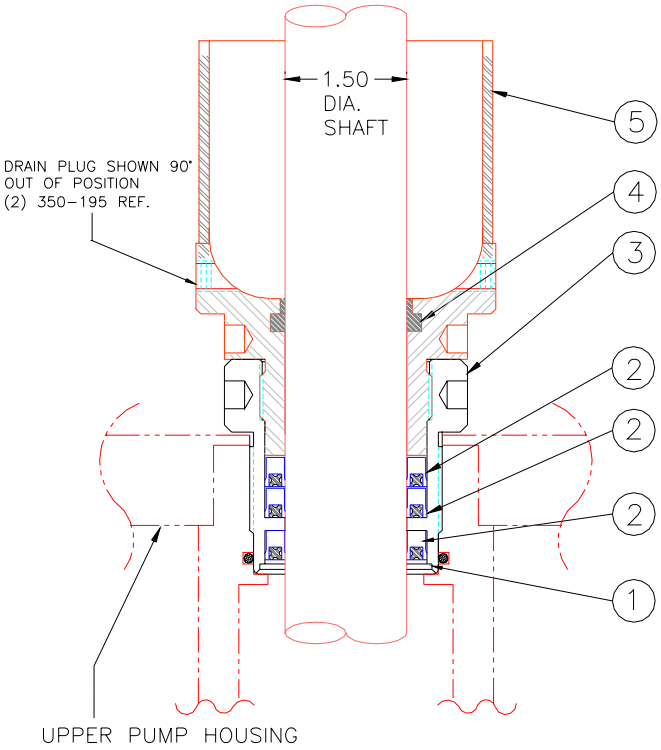
TROUBLE SHOOTING

PROBLEM	*CAUSE*	*SOLUTION*
FOOT VALVE		
Pump not delivering material on down stroke (not creating pressure)	Foreign objects holding lower checks open.	Clean checks.
	Worn out lower check.	Replace lower check (See tolerance chart).
	Worn out shovel rod.	Replace shovel rod (See tolerance chart).
	Check for elevator down pressure.	Check Elevator down pressure
	Air lock in foot valve.	Open bleeder valve of foot valve (opposite of outlet)
Pump completely inoperative	Check air supply to pump	Turn on air.
	Check air motor for proper cycling.	See air motor (not cycling).
	Check for proper connector	See connector settings.900-022.
	Check for elevator down pressure.	Check Elevator down pressure.
	Check for foreign objects in pump.	Disassemble and clean.
	Check for clogged or cured material in outlet line.	Disassembly and clean or replace.

300-972F3 1 ½ INCH PACKING GLAND

IMPORTANT: READ THIS MANUAL CAREFULLY BEFORE INSTALLING, OPERATING, OR SERVICING THIS EQUIPMENT

⚠ WARNING WHEN REPAIRING THE PACKING GLAND TURN OFF THE AIR SUPPLY AND BLEED THE MATERIAL PRESSURE FROM THE PUMPING SYSTEM.



DET.	QTY.	PART NO.	DESCRIPTION
5	1	402-926A	PACKING RETAINER
4	1	350-830	WIPER VITON
3	1	402-952	PACKING CUP
2	3	350-827	SEAL " FLUOROTREL "
1	1	350-810	SNAP RING

DISASSEMBLY

1) Unscrew the Packing Retainer from the Packing Cup.
2) Using needle nose pliers twist the Wiper out of its groove.
3) Using needle nose pliers remove the Polyseals from the Packing Cup. (The seals will be destroyed).
4) Remove the Snap Ring from the end of the Packing cup.
5) Using needle nose pliers remove the Polyseal from the Packing Cup (The seal will be destroyed).
6) Clean and inspect all parts.

ASSEMBLY

1) Lubricate the seals and wiper.
2) Install the Polyseal into the end of the Packing Cup (Heal First).
3) Install the Snap Ring.
4) Using needle nose pliers twist the Wiper into the Packing Retainer groove with the Lip facing UP.
5) Install the two Polyseals into the Packing Retainer Lip first.
   a) Push the Polyseals one at a time into the Packing retainer at a 45° until it reaches the bottom of the bore and then square up the Polyseal.
6) Thread the Packing Retainer into the Packing Cup hand tight. The Packing Retainer should bottom out to the Packing Cup.

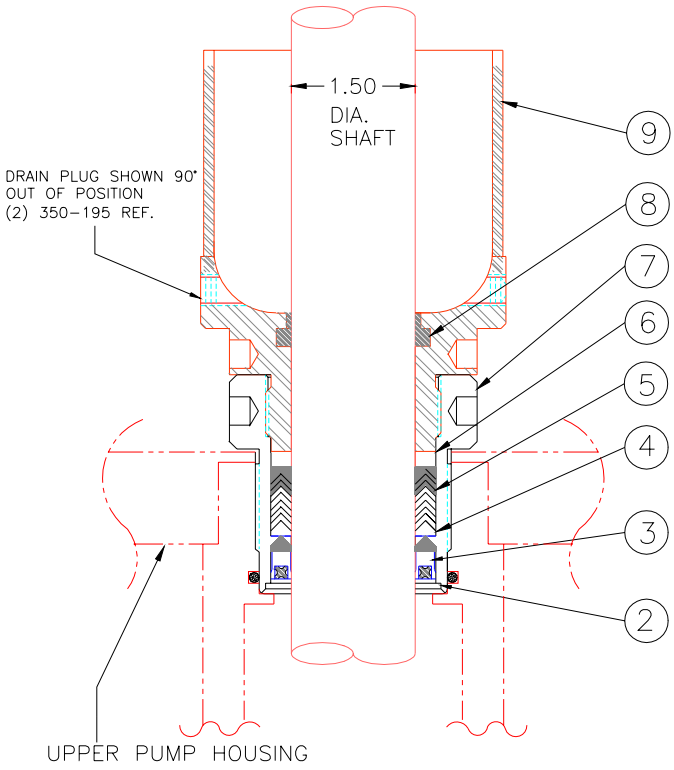
INSTALLATION

1) Push the Packing Gland Assembly over the Dispense rod.
2) Thread the Packing cup into the Upper Pump Housing and tighten.
3) Hand tighten the Packing Retainer. (Use spanner wrench #350-652)
4) Connect the foot valve piston rod to the Air motor. (See 900-022 connector)
5) Fill the Cup With Oil (DIDP) Diisodecyl Phthalate
6) Open the bleeder valve and run the pump slowly to bleed the air from the pump.
7) Close the bleeder valve.

300-972 1 ½ INCH PACKING GLAND

IMPORTANT: READ THIS MANUAL CAREFULLY BEFORE INSTALLING, OPERATING, OR SERVICING THIS EQUIPMENT

⚠ WARNING WHEN REPAIRING THE PACKING GLAND TURN OFF THE AIR SUPPLY AND BLEED THE MATERIAL PRESSURE FROM THE PUMPING SYSTEM.



ITEMS MARKED * ARE INCLUDED IN REPAIR KIT 300-972RK

DET.	QTY.	PART NO.	DESCRIPTION
9	1	402-926	PACKING RETAINER
8	1	350-830	* WIPER
7	1	402-952	PACKING CUP
6	1	401-955	* FEMALE ADAPTOR
5	8	361-290	* "V" RING TEFLON
4	1	401-956	* MALE ADAPTOR
3	1	350-827	* SEAL " FLUOROTREL "
2	1	350-810	* SNAP RING

DISASSEMBLY

1) Unscrew the Packing Retainer from the Packing Cup.
2) Using needle nose pliers twist the Wiper out of its groove.
3) Remove the Brass Female Adapter, (8) teflon V packings and Brass Male Adapter from the Packing Cup.
4) Remove the Snap Ring from the end of the Packing cup.
5) Using needle nose pliers remove the Poly Seal from the Packing Cup (The seal will be destroyed).
6) Clean and inspect all parts.

ASSEMBLY

1) Lubricate all of the seals and brass adapters.
2) Install the Poly Seal into the Packing Cup (Heal First).
3) Install the Snap Ring.
4) Using needle nose pliers twist the Wiper into the Packing Retainer groove with the Lip facing UP.
5) Install the Male Adapter into the Packing cup facing up.
6) Install (8) teflon V rings into the Packing cup with the lips facing down.
7) Install the Female Adapter into the Packing cup lips facing down.
8) Thread the Packing Retainer into the Packing Cup hand tight.

INSTALLATION

1) Push the Packing Gland Assembly over the Dispense rod.
2) Thread the Packing cup into the Upper Pump Housing and tighten.
3) Hand tighten the Packing Retainer. (Use spanner wrench #350-652)
4) Connect the foot valve piston rod to the Air motor. (See 900-022 connector)
5) Fill the Cup With Oil (DIDP) Diisodecyl Phthalate
6) Open the bleeder valve and run the pump slowly to bleed the air from the pump.
7) Close the bleeder valve.

300-442S 1 ¼ INCH SIDE PORT CHECK ASSEMBLY

IMPORTANT: READ THIS MANUAL CAREFULLY BEFORE INSTALLING, OPERATING, OR SERVICING THIS EQUIPMENT

⚠ WARNING WHEN REPAIRING THE SIDE PORT CHECK TURN OFF THE AIR SUPPLY AND BLEED THE MATERIAL PRESSURE FROM THE PUMPING SYSTEM.

Repair Kit 300-442RK Includes:
300-847 Bleeder Valve
350-028 1 ½" Ball
350-129V O-Ring
350-216V O-ring
401-158 Valve Ball Seat
401-162 Spring

OPERATION

The Side Port Check Valve prevents the back flow of material from the output header or hose. The valve is required if more than one pump is connected to the same output. This allows the pump to be isolated from the header for bleeding and maintenance purposes.

DISASSEMBLY INSTRUCTIONS

1) Hold the Cap in a vice.
2) Remove the Bleeder valve from the Plug.
3) Unscrew the Plug. The Spring, Ball and O-ring can be removed from the valve body.
4) Remove the JIC Fitting from the valve body.
5) Unscrew the Valve Body from the Cap.
6) Remove the O-ring from the Cap.
7) The Valve Seat can now be removed.
8) Inspect and clean all parts.

ASSEMBLY INSTRUCTIONS

1) Hold the Cap in a vice.
2) Install the valve Seat.
3) Install the O-ring in the Cap and lubricate.
4) Thread the Valve body into the Cap and tighten to 40 Ft. Lbs.
5) Install the Ball then Spring into the Valve Body.
6) Install the O-ring into the groove in the valve Body and lubricate.
7) Thread the Plug into the Valve Body and tighten to 40 Ft. Lbs. (The pilot goes into the spring).
8) Lubricate the JIC fittings O-ring and thread it into the valve body.
9) Apply thread sealant to the bleeder valve and install it so that the outlet hole faces down.

300-701P DOUBLE BALL WITH POLYSEALS
300-701PS DOUBLE BALL WITH SLEEVE

IMPORTANT: READ THIS MANUAL 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.

- Foot Valve Repair Kit : 300-701PRK
- Foot Valve Seal Repair Kit: 300-701PSK

SPECIFICATIONS

Inlet Port Size	1 1/2" NPT
Outlet Port Size	1" NPT
Displacement = 13.3 Cubic inches per cycle.	
Static Pressure Ratio 10 in. Air Motor	45:1
Static Pressure Ratio 8 in. Air Motor	30:1
Static Pressure Ratio 6 in. Air Motor	16:1
Static Pressure Ratio 4 in. Air Motor	6:1
Material Pressure Operating Range 0 PSI to 5000 PSI (340 BAR)	

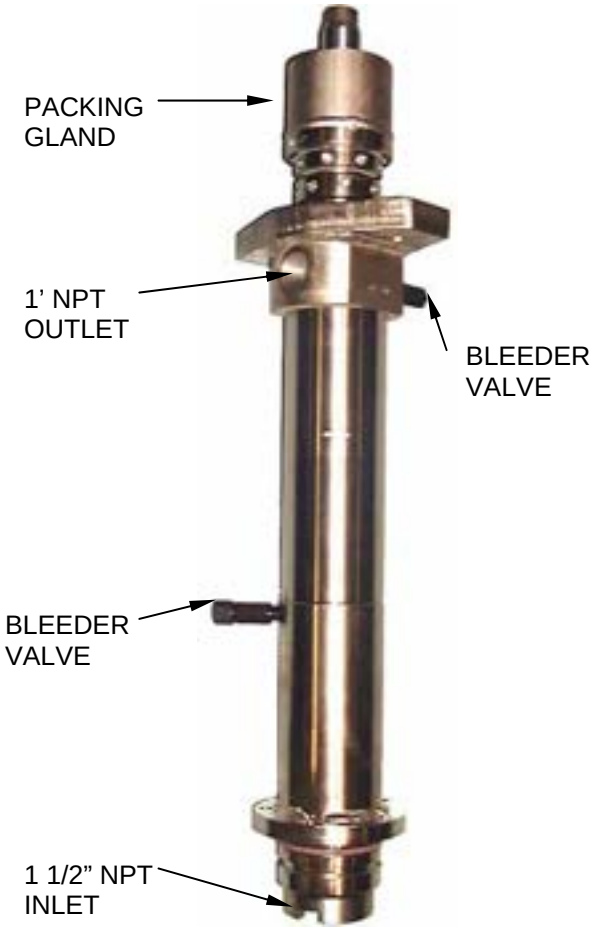
⚠ WARNING

DO NOT OPERATE AIR MOTOR AT PRESSURES ABOVE 100PSI (6.8 BAR).

MAINTENANCE SCHEDULE

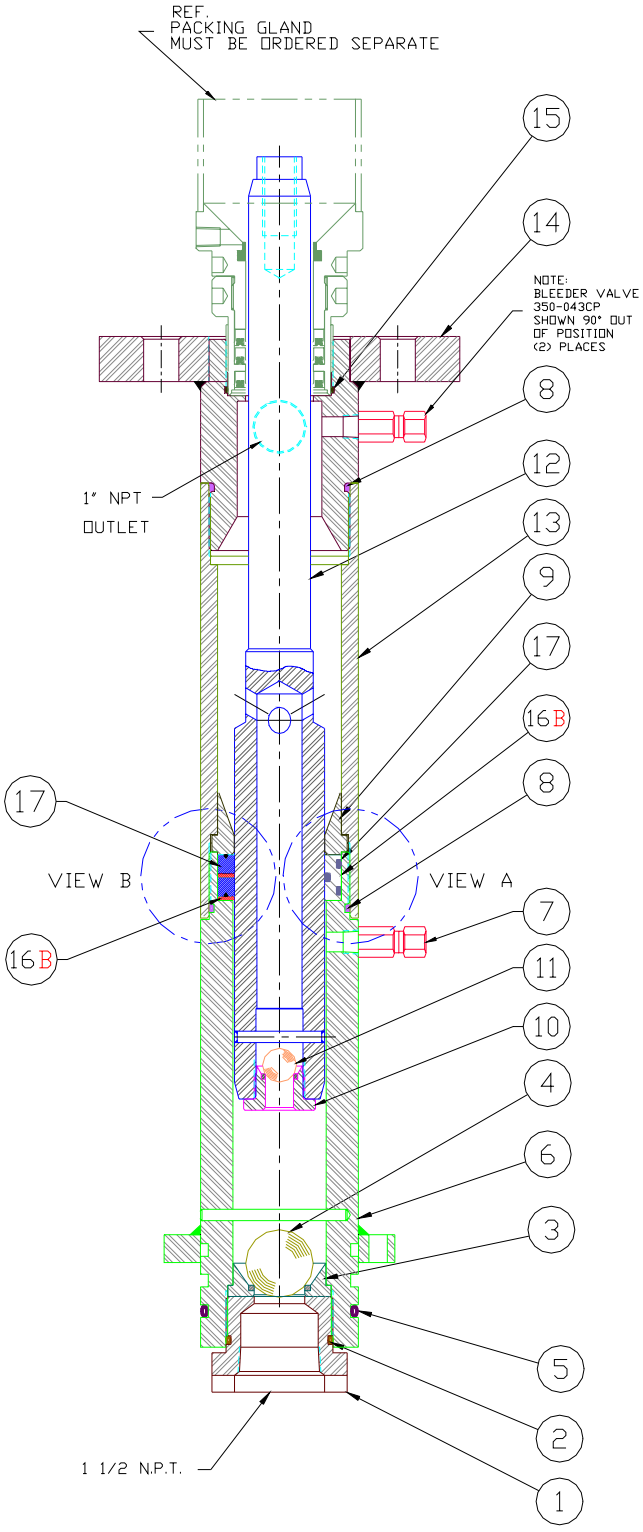
EVER BARREL CHANGE:

Add oil to the Packing Gland.
Bleed air from Foot Valve
Check for material Leakage (rebuild if leaking at the threads)
Check for pump signal stroking. (signal stroking is the displacement rod moving very quickly in a direction without a pump output).
If the pump is signal stroking- bleed air from bleeder valve opposite the outlet port. If bleeding does not correct signal stroking rebuild foot valve.

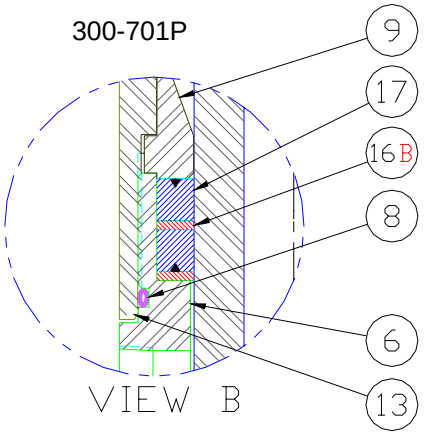


OPERATION

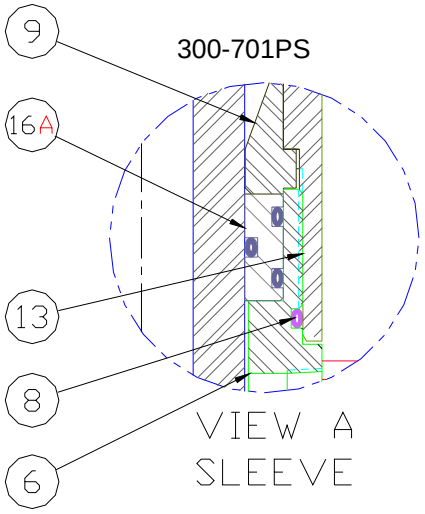
The Pump is double acting (output in both directions). When the Pump is going in the up direction the upper ball closes and material is pumped out. The lower ball opens allowing the lower chamber to be filled. In the down direction the upper ball opens and the lower ball closes allowing material to be pumped out.



300-701P



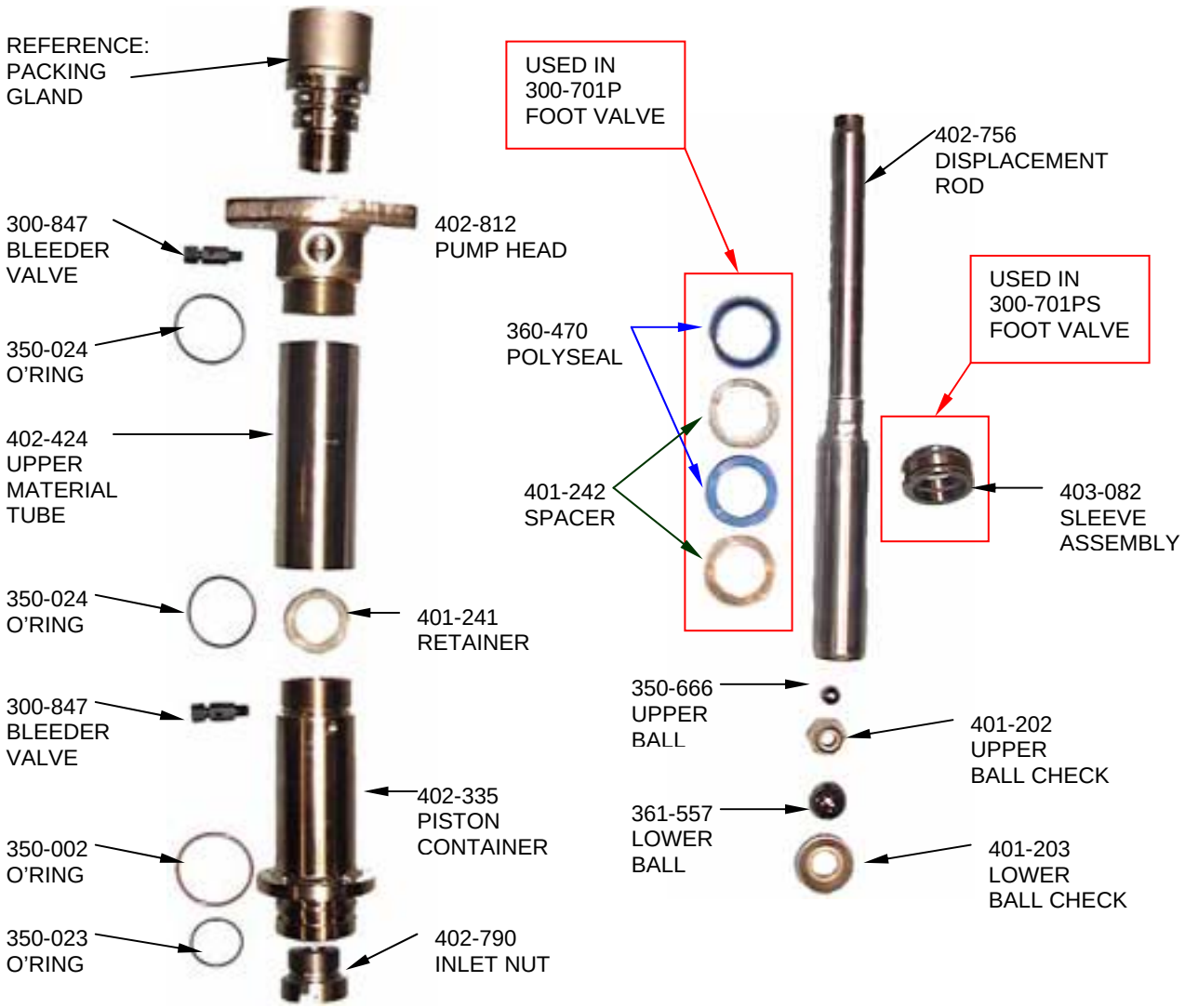
300-701PS



@ INCLUDED IN 300-701PSK
* INCLUDED IN 300-701PRK

	DET#	QTY	PART NO	DESCRIPTION
@*	17	2	360-470	POLYPACK SEAL FLURO 2 X 2 3/4 X 3/8
*	16B	2	401-242	SPACER
		2	350-412	O.D. O'RING FOR SLEEVE
		1	360-470	I.D. O'RING FOR SLEEVE
	16A	1	403-082	SLEEVE WITH O'RINGS
@*	15	1	350-411	O RING VITON 2 5/16 X 2 1/2 X 3/32
	14	1	402-812	PUMP HEAD WELDMENT
	13	1	402-424	UPPER MATERIAL TUBE PLATED
	12	1	402-756	PISTON ROD NITRALLOY
*	11	1	350-666	BALL 3/4 TC
*	10	1	401-202	UPPER BALL SEAT TC
	9	1	401-241	RETAINER RING
@*	8	2	350-024	O RING VITON 2 7/8 X 3 1/8 X 1/8
*	7	2	300-847	BLEED VALVE 1/4 NPT
	6	1	402-335	PISTON CONTAINER PLATED
@*	5	2	360-002	O RING VITON 3 1/8 X 3 1/2 X 3/16
*	4	1	361-557	1 1/2 DIA TUNGSTEN CARBIDE BALL
*	3	1	401-203	LOWER BALL SEAT TC
@*	2	1	350-023	O RING VITON 2 1/8 X 2 3/8 X 1/8
	1	1	402-790	INLET NUT PLATED

300-701P & 300-701PS DOUBLE BALL FOOT VALVE



FOOT VALVE REMOVAL AND INSTALLATION

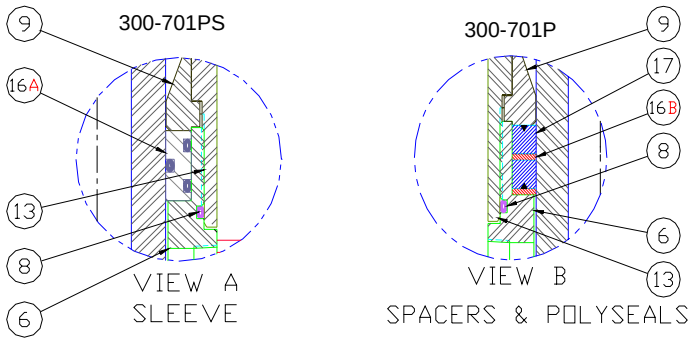
⚠ WARNING WHEN REPAIRING THE AIR MOTOR TURN OFF THE AIR SUPPLY AND BLEED THE MATERIAL PRESSURE FROM THE PUMPING SYSTEM.

⚠ CAUTION THE AIR MOTOR AND FOOT VALVE ARE VERY HEAVY.

1) Remove the Air Motor from the Pump.
   a) Remove the Air Supply hose to the Air Motor.
   b) Unscrew the 400-112 Collar that is attached to the Air Motor Piston Rod.
   c) Remove the ¾-10 Hex bolts that attach the spacer rods to the Foot Valve Flange.
   d) Lift the Air Motor off of the Foot Valve.
2) Remove the 5 or 6 Hex Screws that hold the Primer Housing to the Follower Plate.
3) Remove the Foot Valve from the Follower Plate by lifting it straight out.
4) To install reverse steps 1-3.

DISASSEMBLY PROCEDURE:

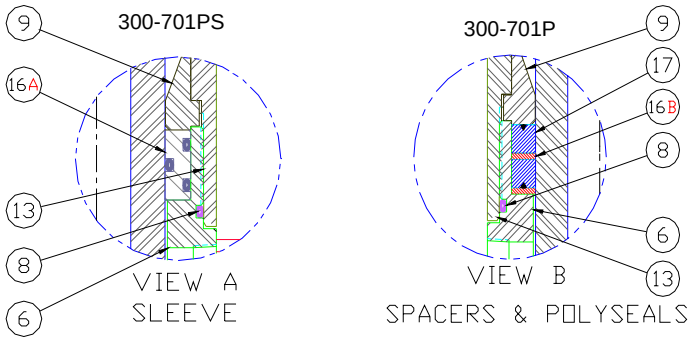
1) Clamp Pump Head (weldment) in vice.
2) Remove connector assembly from the Displacement Rod of the foot valve.
3) Remove Inlet Valve Nut from lower end of foot valve.
4) Remove O'ring from Inlet Valve Nut.
5) Remove the Lower Ball Seat and Lower Ball from the Piston Container.
6) Unscrew Piston Container from the material tube and pull it out from pump.
   a) The Displacement Rod and Polyseals/Sleeve will stay in the Piston Container.
7) Remove the Displacement Rod from the Piston container.
   a) 300-701P Remove the Polyseals and Spacers from the Piston Container.
   b) 300-701PS Remove the Sleeve and O'rings from the Piston Container.
      i) An internal Puller may be used to remove the Sleeve from the Piston Container.



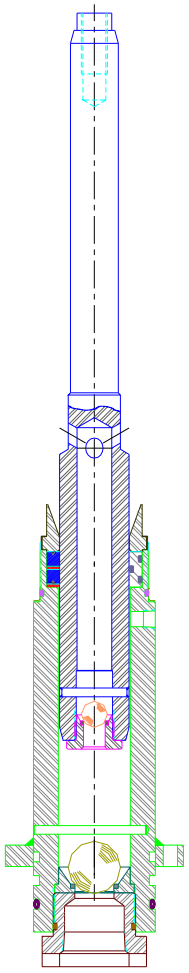
8) Remove the Retainer Ring from the Upper Material Tube.
9) Unscrew the Upper Material Tube from the Pump Head.
10) Unscrew the Packing Gland Assembly and O'rings from the Pump Head.
11) Remove the Bleeder Valve from the Pump Head.
12) Clamp the Displacement Rod in a Vice and unscrew the Upper Ball Seat.
13) Remove the Upper Ball from the Displacement Rod.
14) Clean and inspect all parts, replace if worn or damaged.

ASSEMBLY PROCEDURE

1) Clamp the Upper Ball Seat in a Vice.
2) Place the Upper Ball on the Upper Ball Seat.
3) Screw the Displacement Rod on the Upper Ball Seat and tighten to 50 Ft. Lbs.
   a) The Upper Ball should move freely in the Displacement Rod.
4) Place Piston Container inlet side up on a bench.
   a) Install the Lower Ball and Seat (carbide side facing ball).
   b) Install the O'ring on the inlet nut and lubricate.
   c) Screw the Inlet Nut into the Piston Container and tighten to 50 Ft. Lbs. The Lower Ball should move freely.
5) Turn the Piston Container over and install the 350-024 O'ring and lubricate.
   a) 300-701P Install the Spacer – Polyseal (lip down) – Spacer – Polyseal (lip up) into the Piston Container and lubricate.
   b) 300-701PS Lubricate the Sleeve/with O'rings assembly and install into the Piston Container.



Piston Container and Displacement Rod Assembly



6) Install the Displacement Rod assembly into the Piston Container. Be very careful not to damage the Polyseals.
7) Install the Retainer Ring.
8) Install the O'rings (350-024 and 350-411) in the Pump Head and lubricate.
9) Place the Pump Head in a vice.
10) Thread the Upper Material Tube to the Pump Head and tighten to 100 Ft. Lbs.
11) Thread the Displacement Rod and Piston Container assembly to the Upper Material Tube and tighten to 100 Ft. Lbs.
12) Rebuild Packing Gland assembly. See Packing Gland sheet for proper replacement of parts.
13) Lubricate the Packing Gland and Displacement Rod and install the Packing Gland Assembly and tighten.
14) Install the Bleeder Valve in the Pump Head and Piston Container. The outlet hole should face down. Use pipe sealant on the threads.
15) Install the Air Motor Connector into the Displacement Rod. See 900-022 Drawing for proper settings.

TROUBLE SHOOTING A SERIES #3
DOUBLE BALL FOOT VALVE

A) PUMP NOT DELIVERING MATERIAL ON THE UP STROKE

1. Air inside Foot Valve. Bleed Air.
2. The upper ball not seating properly on the ball seat. (located in the displacement rod)
3. Cracked upper ball seat or ball held open with material.
4. Internal polyseals are worn out.
5. Damaged upper ball.
6. Foreign material inside Foot Valve. Rebuild

B) PUMP NOT DELIVERING MATERIAL ON THE DOWN STROKE

1. Air inside Foot Valve. Bleed Air
2. The lower ball not seating properly on the ball seat. (located on top of the inlet valve nut)
3. Cracked lower ball seat or ball held open with material.
4. Internal polyseals are worn out.
5. Damaged lower ball.
6. Foreign material inside Foot Valve. Rebuild

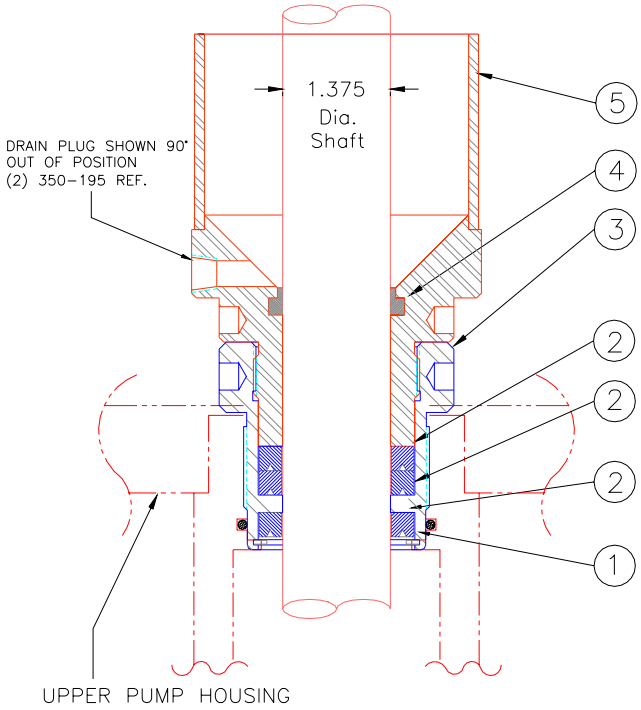
C) PUMP COMPLETELY INOPERATIVE

1. Internal polyseals worn out.
2. Lower ball not opening. (Bent pin in the container)
3. Elevator not applying enough down pressure.
4. Air trapped inside pump. Bleed Air.

300-991F3 1 3/8 INCH PACKING GLAND

IMPORTANT: READ THIS MANUAL CAREFULLY BEFORE INSTALLING, OPERATING, OR SERVICING THIS EQUIPMENT

⚠ WARNING WHEN REPAIRING THE PACKING GLAND TURN OFF THE AIR SUPPLY AND BLEED THE MATERIAL PRESSURE FROM THE PUMPING SYSTEM.



* INCLUDED IN REPAR KIT 300-911FRK

DET.	QTY.	PART NO.	DESCRIPTION
5	1	403-018	PACKING RETAINER
4	1	350-813	* WIPER FLOUROTREL
3	1	403-017	PACKING CUP
2	3	360-308	* SEAL FLUOROTREL
1	1	350-810	* SNAP RING

DISASSEMBLY

1) Unscrew the Packing Retainer from the Packing Cup.
2) Using needle nose pliers twist the Wiper out of its groove.
3) Using needle nose pliers remove the Polyseals from the Packing Cup. (The seals will be destroyed).
4) Remove the Snap Ring from the end of the Packing cup.
5) Using needle nose pliers remove the Polyseal from the Packing Cup (The seal will be destroyed).
6) Clean and inspect all parts.

ASSEMBLY

1) Lubricate the seals and wiper.
2) Install the Polyseal into the end of the Packing Cup (Heal First).
3) Install the Snap Ring.
4) Using needle nose pliers twist the Wiper into the Packing Retainer groove with the Lip facing UP.
5) Install the two Polyseals into the Packing Retainer Lip first.
   a) Push the Polyseals one at a time into the Packing retainer at a 45° until it reaches the bottom of the bore and then square up the Polyseal.
6) Thread the Packing Retainer into the Packing Cup hand tight. The Packing Retainer should bottom out to the Packing Cup.

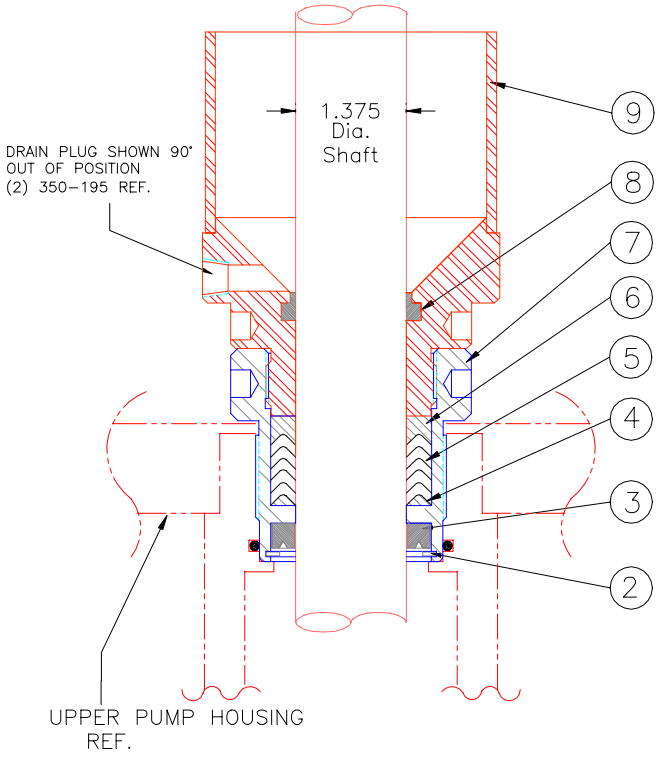
INSTALLATION

1) Push the Packing Gland Assembly over the Dispense rod.
2) Thread the Packing cup into the Upper Pump Housing and tighten.
3) Hand tighten the Packing Retainer. (Use spanner wrench #350-652)
4) Connect the foot valve piston rod to the Air motor. (See 900-022 connector)
5) Fill the Cup With Oil (DIDP) Diisodecyl Phthalate
6) Open the bleeder valve and run the pump slowly to bleed the air from the pump.
7) Close the bleeder valve.

300-991P 1 3/8 INCH PACKING GLAND

IMPORTANT: READ THIS MANUAL CAREFULLY BEFORE INSTALLING, OPERATING, OR SERVICING THIS EQUIPMENT

WARNING WHEN REPAIRING THE PACKING GLAND TURN OFF THE AIR SUPPLY AND BLEED THE MATERIAL PRESSURE FROM THE PUMPING SYSTEM.



* INCLUDED IN REPAIR KIT300-991PRK

DET.	QTY.	PART NO.	DESCRIPTION
9	1	403-018B	PACKING RETAINER
8	1	350-832	* WIPER
7	1	403-017	PACKING CUP
6	1	402-979-1	* FEMALE ADAPTOR
5	5	350-775-1	* "V" RING TEFLON
4	1	402-979-2	* MALE ADAPTOR
3	1	360-308	* SEAL " FLUOROTREL "
2	1	350-810	* SNAP RING

DISASSEMBLY

1) Unscrew the Packing Retainer from the Packing Cup.
2) Using needle nose pliers twist the Wiper out of its groove.
3) Remove the Brass Female Adapter, (5) teflon V packings and Brass Male Adapter from the Packing Cup.
4) Remove the Snap Ring from the end of the Packing cup.
5) Using needle nose pliers remove the Polyseal from the Packing Cup (The seal will be destroyed).
6) Clean and inspect all parts.

ASSEMBLY

1) Lubricate all of the seals and brass adapters.
2) Install the Polyseal into the Packing Cup (Heal First).
3) Install the Snap Ring.
4) Using needle nose pliers twist the Wiper into the Packing Retainer groove with the Lip facing UP.
5) Install the Male Adapter into the Packing cup facing up.
6) Install (5) teflon V rings into the Packing cup with the lips facing down.
7) Install the Female Adapter into the Packing cup lips facing down.
8) Thread the Packing Retainer into the Packing Cup hand tight.

INSTALLATION

1) Push the Packing Gland Assembly over the Dispense rod.
2) Thread the Packing cup into the Upper Pump Housing and tighten.
3) Hand tighten the Packing Retainer. (Use spanner wrench #350-652)
4) Connect the foot valve piston rod to the Air motor. (See 900-022 connector)
5) Fill the Cup With Oil (DIDP) Diisodecyl Phthalate
6) Open the bleeder valve and run the pump slowly to bleed the air from the pump.
7) Close the bleeder valve.

300-442-1 1 INCH SIDE PORT CHECK ASSEMBLY

IMPORTANT: READ THIS MANUAL CAREFULLY BEFORE INSTALLING, OPERATING, OR SERVICING THIS EQUIPMENT

WARNING WHEN REPAIRING THE SIDE PORT CHECK TURN OFF THE AIR SUPPLY AND BLEED THE MATERIAL PRESSURE FROM THE PUMPING SYSTEM.

Repair Kit 300-442RK Includes:
300-847 Bleeder Valve
350-028 1 ½" Ball
350-129V O-Ring
350-216V O-ring
401-158 Valve Ball Seat
401-162 Spring

OPERATION

The Side Port Check Valve prevents the back flow of material from the output header or hose. The valve is required if more than one pump is connected to the same output. This allows the pump to be isolated from the header for bleeding and maintenance purposes.

DISASSEMBLY INSTRUCTIONS

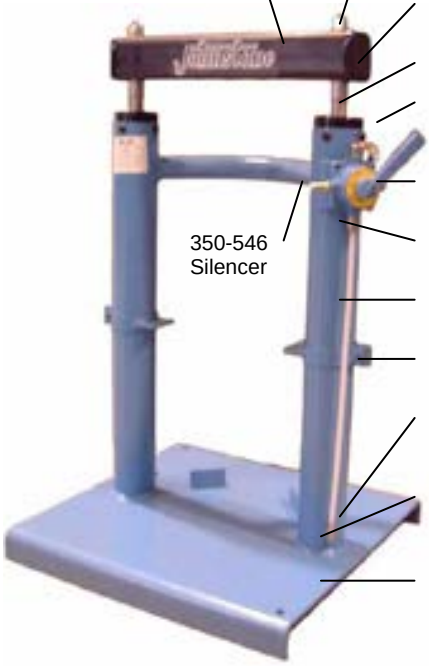
9) Hold the Cap in a vice.
10) Remove the Bleeder valve from the Plug.
11) Unscrew the Plug. The Spring, Ball and O-ring can be removed from the valve body.
12) Remove the JIC Fitting from the valve body.
13) Unscrew the Valve Body from the Cap.
14) Remove the O-ring from the Cap.
15) The Valve Seat can now be removed.
16) Inspect and clean all parts.

ASSEMBLY INSTRUCTIONS

10) Hold the Cap in a vice.
11) Install the valve Seat.
12) Install the O-ring in the Cap and lubricate.
13) Thread the Valve body into the Cap and tighten to 40 Ft. Lbs.
14) Install the Ball then Spring into the Valve Body.
15) Install the O-ring into the groove in the valve Body and lubricate.
16) Thread the Plug into the Valve Body and tighten to 40 Ft. Lbs. (The pilot goes into the spring).
17) Lubricate the JIC fittings O-ring and thread it into the valve body.
18) Apply thread sealant to the bleeder valve and install it so that the outlet hole faces down.

900-134 PAIL DOUBLE ELEVATOR ASSEMBLY 5 GALLON

⚠ WARNING IMPORTANT: WHEN REPAIRING THE ELEVATOR TURN OFF THE AIR SUPPLY AND BLEED THE AIR PRESSURE BEFORE, OPERATING, OR SERVICING THIS EQUIPMENT



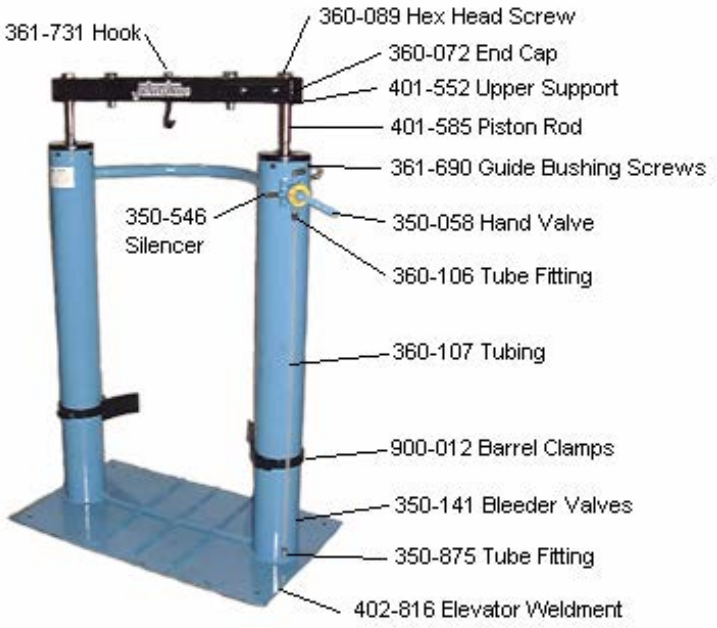
REBUILDING

1) Remove the 350-034 hex nuts and the pump and lower support can be lifted off the elevator.
2) Remove the (8) Guide Bushing Screws.
3) Remove the Guide Bushings.
4) Open the Bleeder Valves at the bottom of the elevator tubes and pull the Piston and Rod assemblies out of the elevator.
5) Remove the O'rings, Scrapers and Wear strips from the Piston and Guide Bushings.
6) Clean and inspect the Elevator, Piston and Guide Bushing.
7) Install new O'rings and Scraper on the Piston, Guide Bushing and Lubricate with 90W oil.
8) Lubricate the Elevator Tube with 90W oil.
9) Hold the Wear Strip on the Piston and install the piston assembly into the elevator.
10) Install the Guide bushings and secure them with the Socket Cap Screws.
11) Replace the Lower Support and Pump assembly. Tighten the 350-034 hex nuts.

Adjust the Barrel Clamps so that the tab of the clamps are over the top flange of the pail.

900-124 Heavy Duty Elevator Assembly 55 Gallon

⚠ WARNING WHEN REPAIRING THE ELEVATOR TURN OFF THE AIR SUPPLY AND BLEED THE AIR PRESSURE BEFORE, OPERATING, OR SERVICING THIS EQUIPMENT



REBUILDING

1) Remove the pump assembly by unscrewing the 360-089 screw and removing the upper support.
2) Remove the (8) Guide Bushing Screws.
3) Remove the Guide Bushings.
4) Open the Bleeder Valves at the bottom of the elevator tubes and pull the Piston and Rod assemblies out of the elevator.
5) Remove the O'rings, Scrapers and Wear strips from the Piston and Guide Bushings.
6) Clean and inspect the Elevator, Piston and Guide Bushing.
7) Install new O'rings and Scraper on the Piston, Guide Bushing and Lubricate with 90W oil.
8) Lubricate the Elevator Tube with 90W oil.
9) Hold the Wear Strip on the Piston and install the piston assembly into the elevator.
10) Install the Guide bushings and secure them with the Socket Cap Screws.
11) Replace the Upper Support and tighten the Hex screw.

900-012 Barrel Clamp

Adjust Clamp so that the Clamp Shoe is Flush against the Drum and located just above the lower chime.

AUTOMATIC CROSSOVER PUMP PNEUMATICS

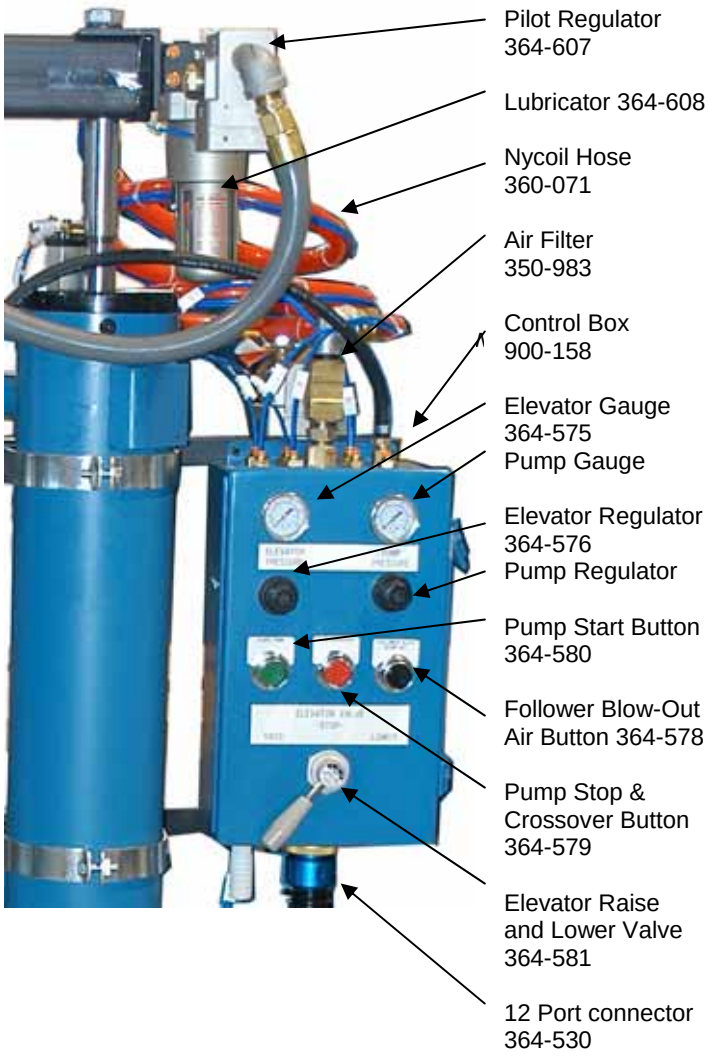
IMPORTANT: READ THIS MANUAL CAREFULLY BEFORE INSTALLING, OPERATING, OR SERVICING THIS EQUIPMENT

WARNING NOTE: WHEN REPAIRING THE PNEUMATICS TURN OFF THE AIR SUPPLY AND BLEED THE AIR PRESSURE FROM THE PUMPING SYSTEM.

DESCRIPTION

User friendly pump control box where all of the controls are at the front of the pump.
It features:
Elevator Up – Down – Stop Hand Valve,
Start and Stop Pump Pushbuttons.
Follower plate Blow out Pushbutton
Automatic Empty Drum Shutoff.
Automatic Empty Drum Crossover.
Separate regulator controls for the Elevator and Pump (air motor).
Basic Pump Monitoring – Device Net
1. Drum Empty “A “ “B”
2. Pump Active “A “ “B”
3. Pump Runaway
4. Pump Air ON/OFF- Pressurize

Device Net is used to communicate to the Pumps and a 12 port connector interconnects Both pumps so that the signal plumbing is easy To connect.



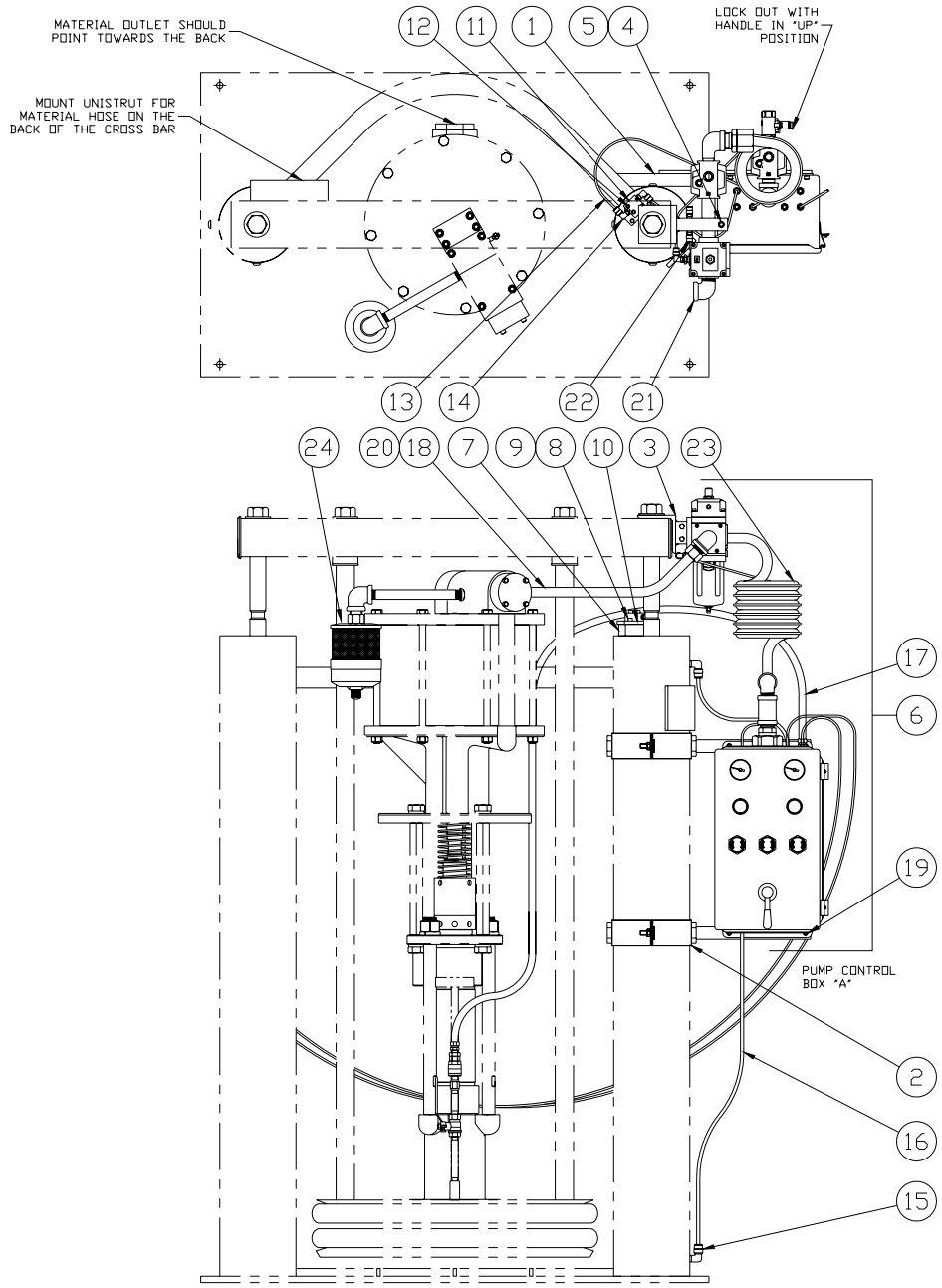
OPERATION

1. The Hand Valve controls the elevator up down and stop movements.
2. The Green Pushbutton Starts the Pump
3. The Red Pushbutton Stops the Pump and sends a signal to crossover the pumps.
4. The black Pushbutton is used to inject air under the follower plate – this aids in removing the follower plate from the drum.
5. The Elevator is controlled by adjusting the regulator located directly under Elevator the gauge.
6. The Pump (Air Motor) pressure is controlled by adjusting the regulator located directly under the Pump air pressure gauge.
7. The Device Net I/O rack communicates between the Pumps and the Autostream PC.
   a. The PC Turn on a solenoid valve, this allows the pumps to run.
   b. The PC monitor six pressure switches to monitor the following:
      Empty Drum “A” & “B”
      Air Supply on “A” & “B”
      Pump Run away “A” & “B” if a runaway

MAINTENANCE

Check Filter Weekly for Water.
Fill Lubricators Weekly with 10W oil or Synthetic oil.
Check for air leaks Monthly.

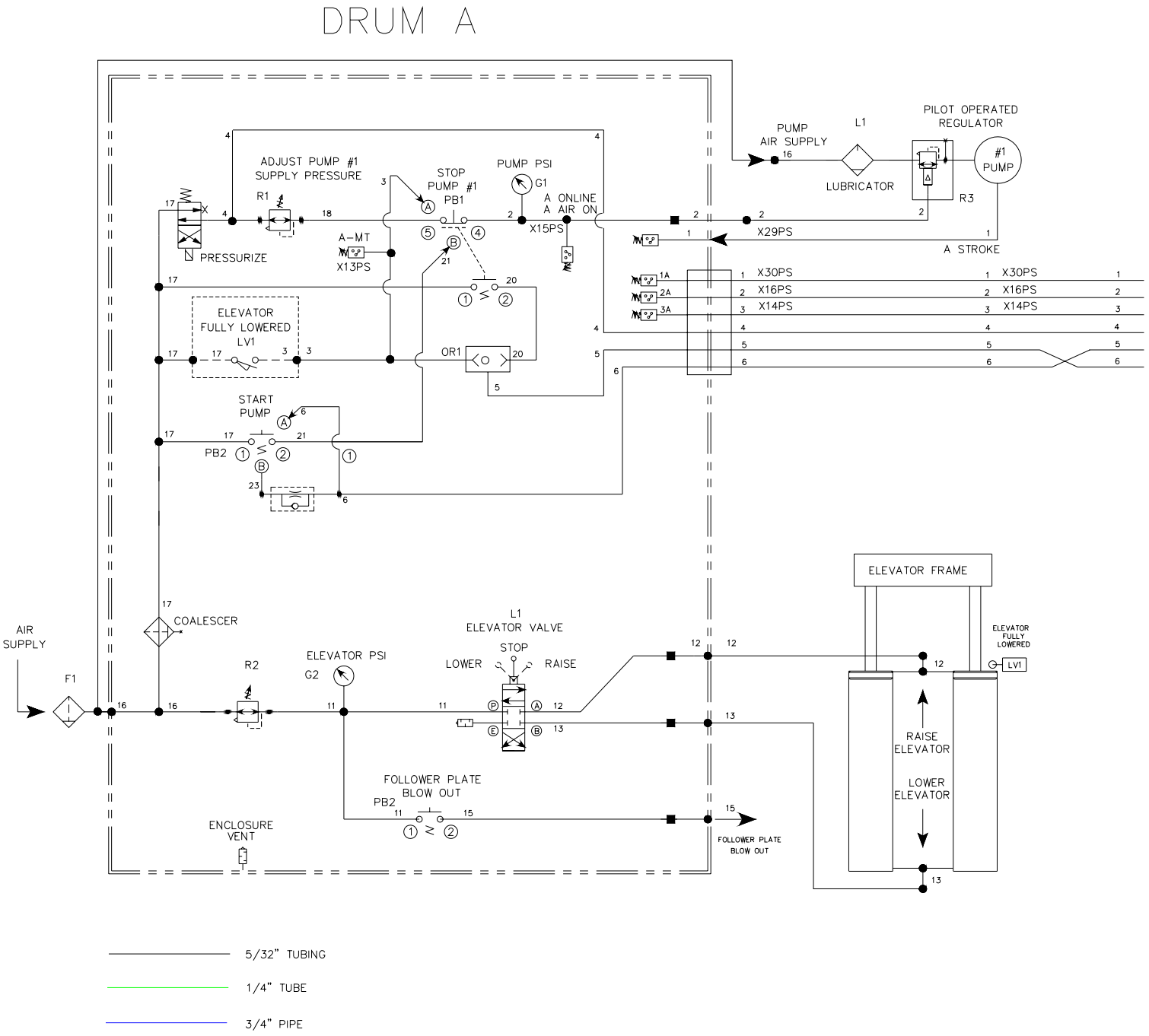
AUTOMATIC CROSSOVER PUMP PNEUMATICS



DET	QTY	PART NUMBER	DESCRIPTION
15	4	364-570	TUBE FITTING 90° PUSHLOC 1/4" T X 1/4" NPT SMC
14	4	364-568	TUBE FITTING 90° PUSHLOC 5/32" T X 1/8" NPT SMC
13	24'	363-236	POLYETHYLENE TUBE 5/32" BLUE
12	4	350-358	SCREW SOC HD CAP #10-24 X .88" LG.
11	2	350-878	VALVE 3-WAY 1/8" NPT PORTS
10	2	401-611	VALVE MOUNTING BRACKET
9	12	361-233	LOCK WASHER 1/4" HI-COL.
8			
7	2	403-552	SPACER FOR VALVE RISER ARO
6	2	364-530	PUMP CONTROLS IN A BOX
5	2	361-756	LOCK WASHER 5/16" HI-COL.
4	2	350-918	SCREW SOC HD CAP 5/16-18 X 1.75" LG.
3	2	401-563	LUBRO BRACKET
2	4	364-484	B-LINE CLAMP
1	4	409-625	PUMP PNEUMATICS BOX MOUNTING BRACKET

DET	QTY	PART NUMBER	DESCRIPTION
29	4	350-581	SCREW SOC HD CAP 1/4-20 X 2.25" LG.
28	2	364-398	VENT
27	8	350-027	NIPPLE 3/4" NPT X 2" LG.
26	2	350-490	REDUCER BUSHING 1/4" NPTM X 1/8" NPTF
25	2	360-299	NIPPLE 3/4" NPT X 5 1/2" LG.
24	2	301-070R-1	AIR RECLASSIFIER SMC
23	2	360-071	SELF SORTING HOSE ASM 3/4" X 8' LG.
22	8	364-569	TUBE FITTING STRAIGHT 5/32" T X 1/8" NPT SMC
21	2	350-496	STREET ELBOW 90° GALV. 3/4" NPT
20	4	362-334	STREET ELBOW 45° GALV. 3/4" NPT
19	8	350-005	SCREW SOC HD CAP 1/4-20 X .50" LG.
18	2	364-571	HOSE GRAY PVC 250 PSI 3/4" X 24" LG.
17	2	900-159	AIR HOSE ASSY 6'
16	8'	360-112B	POLYTHANE TUBE 1/4" OD BLUE
15	4	364-570	TUBE FITTING 90° PUSHLOC 1/4" T X 1/4" NPT SMC

AUTOMATIC CROSSOVER PUMP PNEUMATICS



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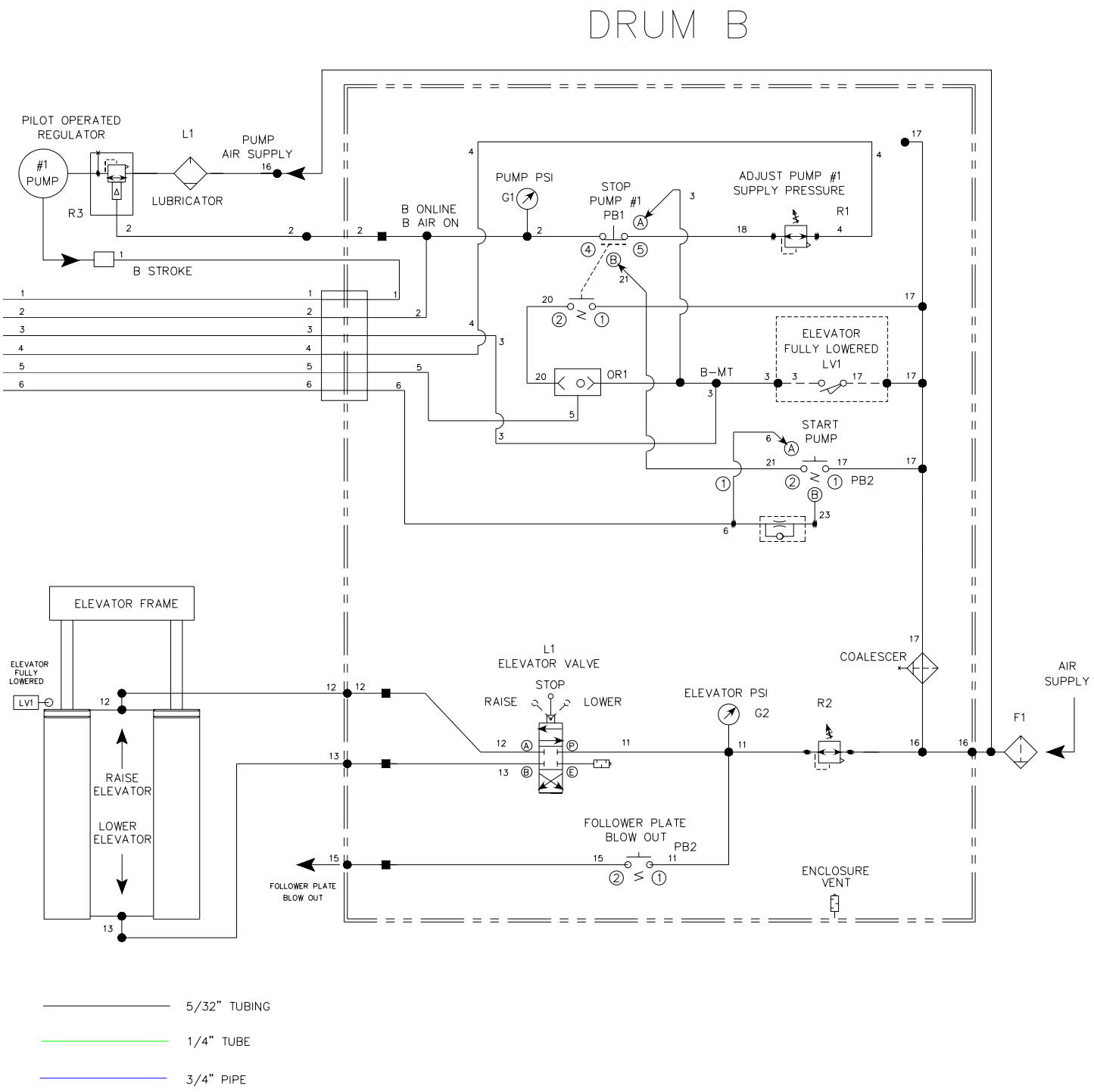

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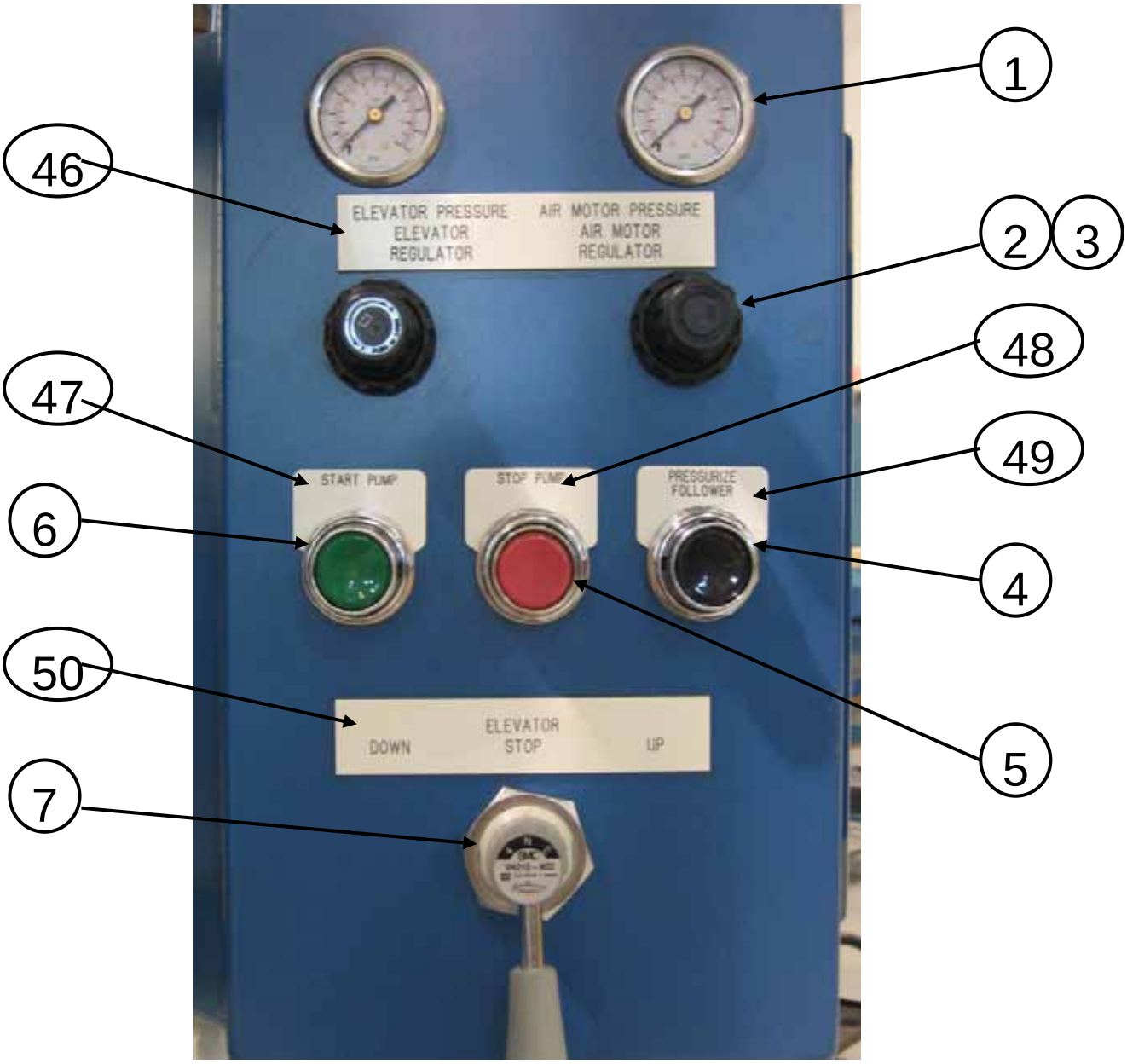

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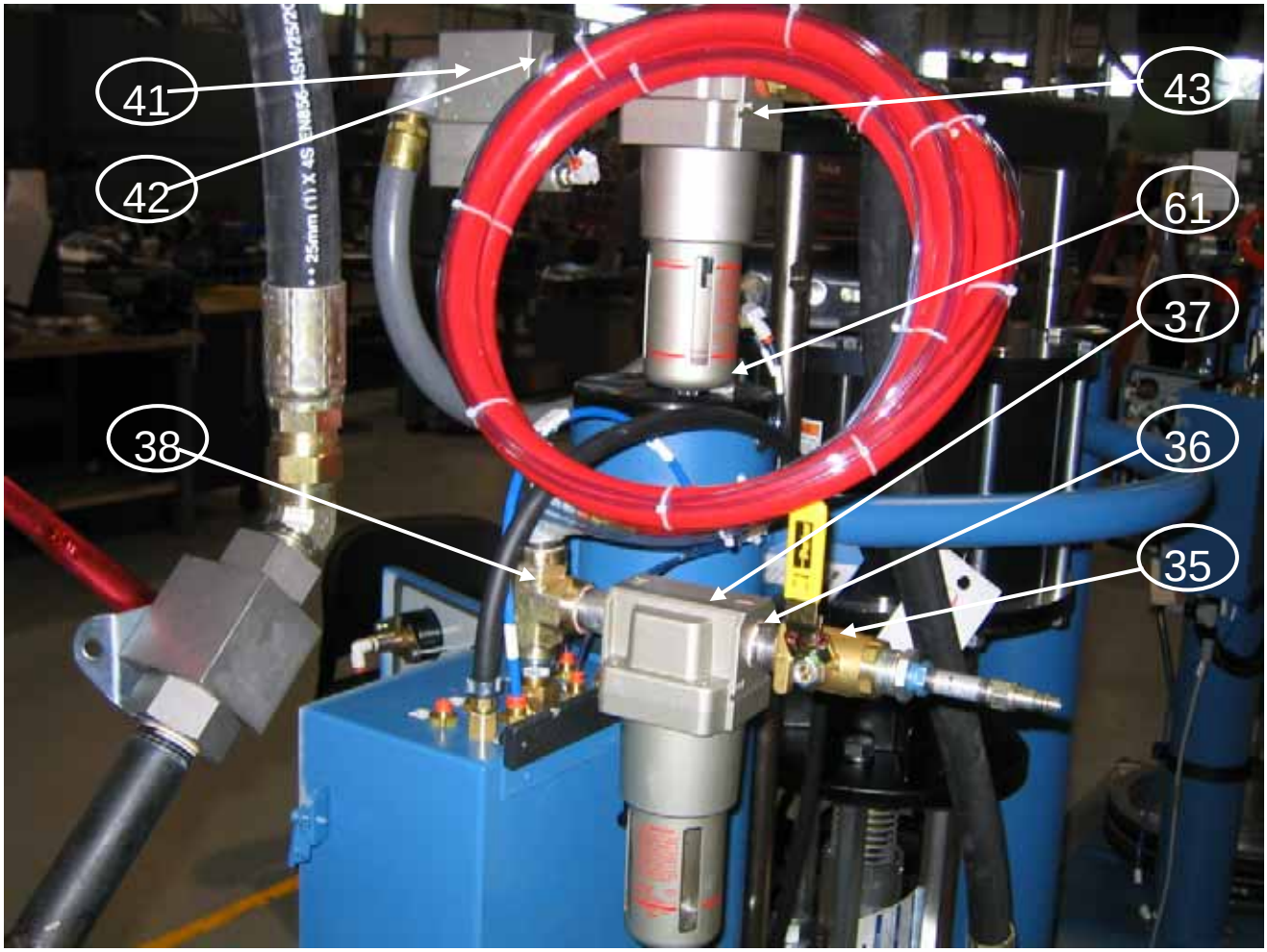

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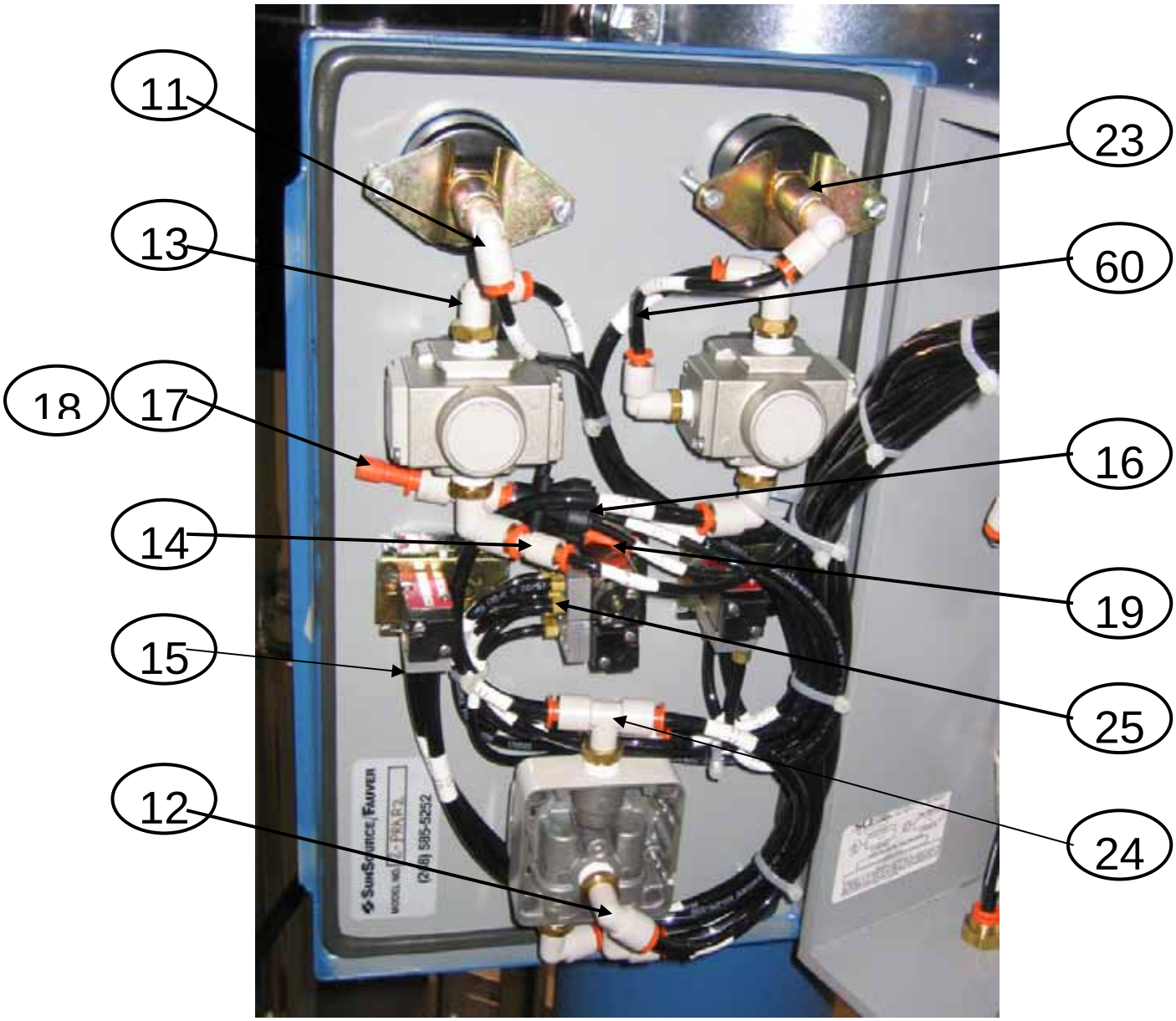
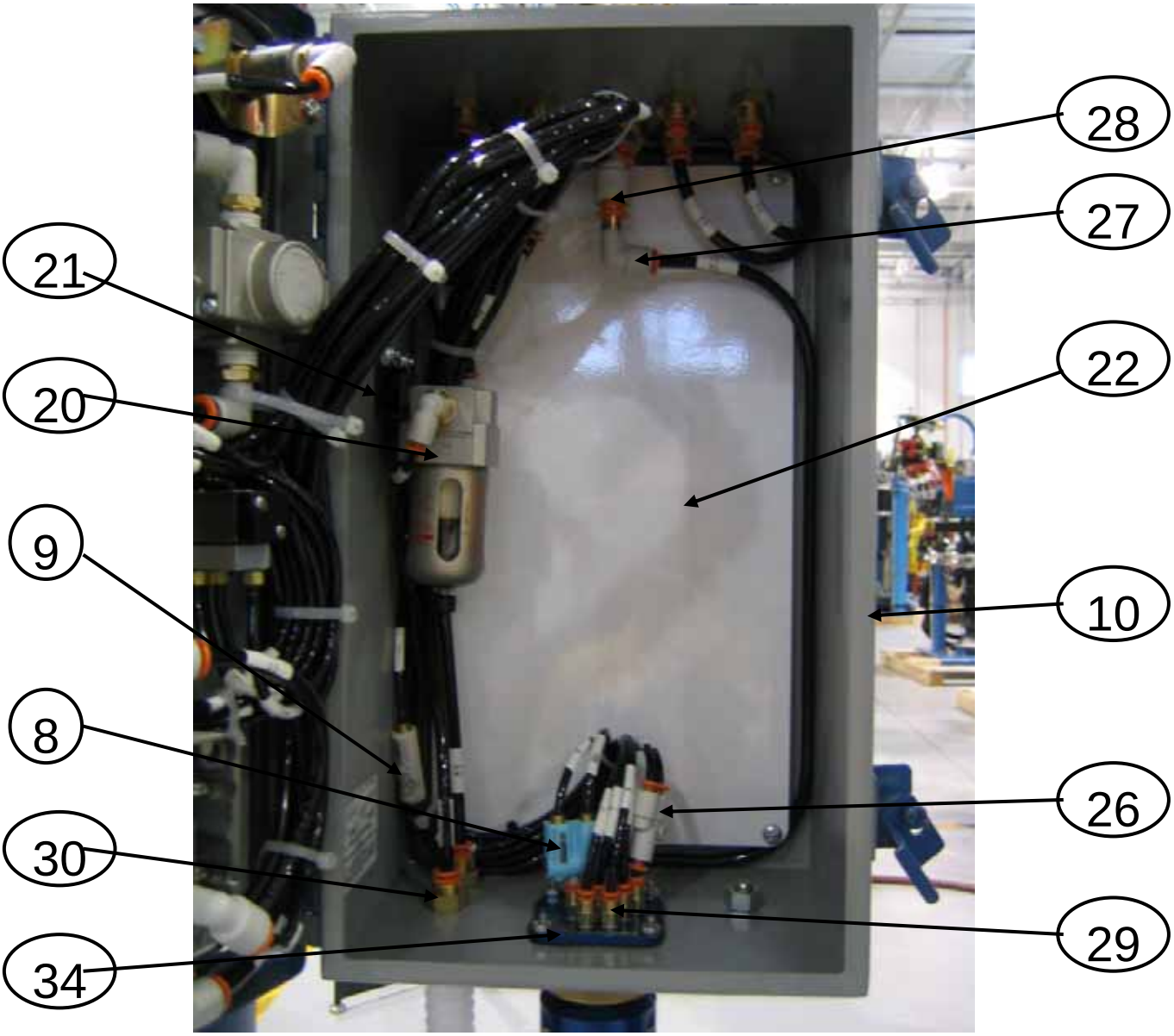


AUTOMATIC CROSSOVER PUMP PNEUMATICS

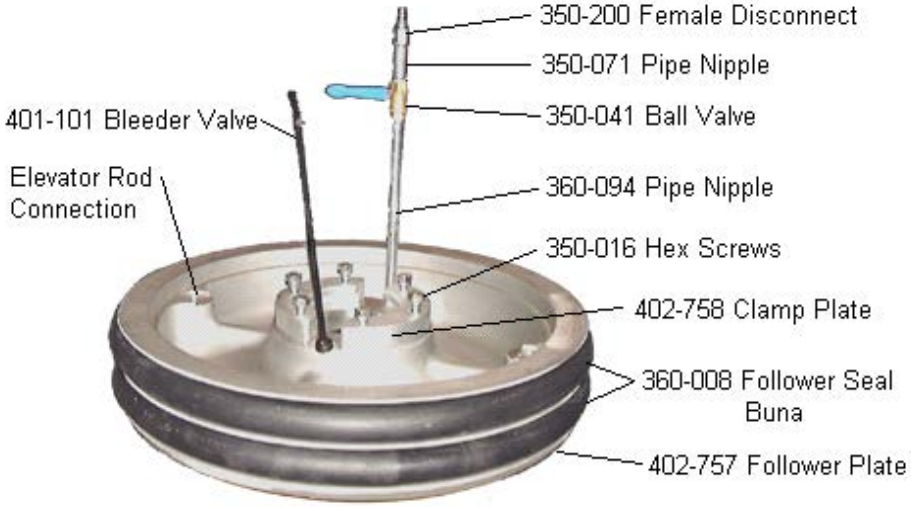


AUTOMATIC CROSSOVER PUMP PNEUMATICS

Item Number	IR Part Number	Description	Quantity
1	364-575	Guage - 100 psi	2
2	364-576	Regulator Valve	2
3	364-577	Nut for Regulator	2
4	364-578	Push Button Black	1
5	364-579	Push Button Red	1
6	364-580	Push Button Green	1
7	364-581	Hand Valve	1
8	364-582	OR Element	1
9	364-583	Flow Control	1
10	364-584	8" X 14" X 8" Enclosure	1
11	364-568	Tube Fitting 90 Deg. Pushloc 5/32" T X 1/8" NPT SMC	3
12	364-570	Tube Fitting 90 Deg. Pushlock 1/4" T X 1/4" NPT SMC	7
13	364-585	Tube Fitting 90 Deg. Pushlock 5/32" T X 1/4" NPT SMC	3
14	364-586	Reducer	1
15	364-587	Tube Fitting Tee 1/4" T X 1/4" T X 1/4" NPT SMC	2
16	364-588	Double Plug In Y	1
17	364-589	Tube Coupling 1/4" T X 1/4" T	1
18	364-590	1/4" Plug	1
19	364-591	5/32" Plug	1
20	364-592	Micro-mist Filter	1
21	364-593	Bracket and Nut	1
22	364-594	Panel	1
23	350-329	Coupling 1/8" NPT	2
24	361-801	Barb Fitting 1/4" T X 10-32	2
25	364-595	Barb Fitting 5/32" T X 10-32	10
26	364-596	Tube Fitting Y Pushloc 5/32" T	6
27	364-597	Reducer Elbow 3/8" T X 1/4" T	1
28	364-598	Plug-in Reducer 3/8" T X 1/2" T	1
29	364-599	Tube Fitting Pushloc 5/32" T X 10-32	6
30	364-600	Bulkhead Connector 1/4" T X 1/4" NPT X 9/16"-18 UNF	2
31	364-601	Bulkhead Union 1/4" T X 9/16"-18 UNF	2
32	364-602	Bulkhead Union 5/32" T X 1/2-20 UNF	6
33	364-603	Bulkhead Connector 1/2" T X 1/2" NPT X 1"-12 UNF	1
34	364-604	12 Port 10-32 Multi-Connector	1
35	364-605	3/4" Ball Valve	1
36	350-983	Nipple, Closed 3/4" Galvanized	1
37	364-606	Filter, 3/4" NPT	1
38	350-977AQ	Tee, 3/4"	1
39	350-062	Reducer Bushing 3/4" X 1/2"	1
40	350-496	Street Elbow 90 Deg., 3/4"	2
41	364-607	Regulator Valve	1
42	360-023	Nipple, 3/4" X 4"	1
43	364-608	Lubricator	1
44	364-609	Muffler	1
45	350-953	Nipple, 1/2" X 2"	1
59	364-083	Tube - 1/4" Black	6'
60	93960-BK	Tube - 5/32" Black	6'
61	364-624	Valve	1

900-130 55 Gallon Follower Plate

IMPORTANT: READ THIS MANUAL CAREFULLY BEFORE INSTALLING, OPERATING, OR SERVICING THIS EQUIPMENT



WARNING WHEN REPAIRING THE FOLLOWER PLATE TURN OFF THE AIR MOTOR SUPPLY PRESSURE AND BLEED THE MATERIAL PRESSURE FROM THE PUMPING SYSTEM.

MAINTENANCE

1) Lubricate the Follower Seals every barrel change.
2) Inspect the Follower Seals weekly for damage or material build up.
3) Keep the Follower Plate CLEAN.

REBUILDING INSTRUCTIONS

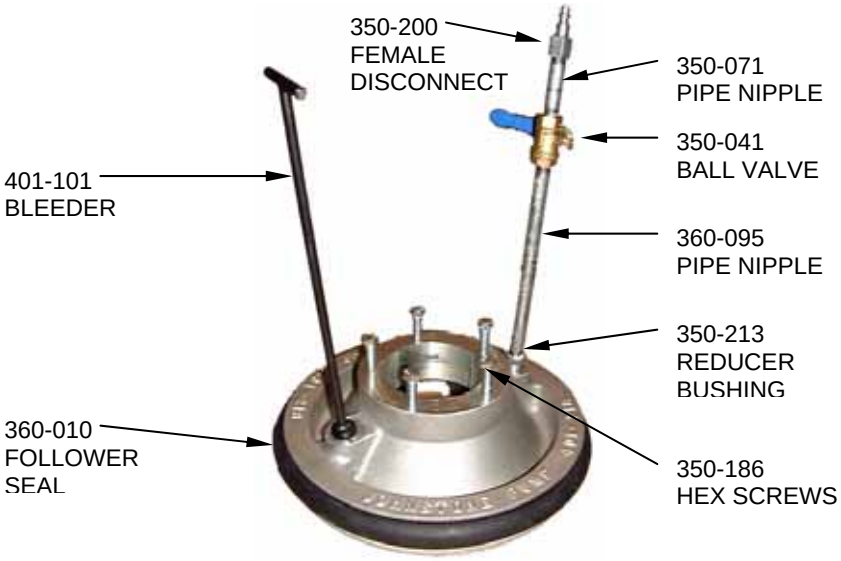
1) Remove the six hex screws that clamp the Foot Valve.
2) Remove the two clamps.
3) Pull the Foot valve out from the Follower Plate. NOTE: The Foot Valve is Very Heavy.
4) Unscrew the Elevator Connecting Hex Screws.
5) Remove Follower Plate from Elevator.
6) Using a Large Screwdriver Pry off the Follower Seals.
7) Clean and inspect Follower Plate for Damage.

ASSEMBLY INSTRUCTIONS

1) Install the Follower Seal into the Groove by rolling it over the casting.
2) Thread the Elevator Support Rods into the casting.
3) Place the Follower plate in the elevator and tighten the two hex nuts that connect the support rods to the elevator.
4) Insert the Foot Valve into the Follower Plate.
5) Clamp the Foot Valve using the Clamp Plates and six hex screws.
6) Install Both Bleeder Valves assemblies.
7) Lubricate the Follower Seal.

900-016 5 Gallon Follower Plate

IMPORTANT: READ THIS MANUAL CAREFULLY BEFORE INSTALLING, OPERATING, OR SERVICING THIS EQUIPMENT



WARNING

WHEN REPAIRING THE FOLLOWER PLATE TURN OFF THE AIR MOTOR SUPPLY PRESSURE AND BLEED THE MATERIAL PRESSURE FROM THE PUMPING SYSTEM.

MAINTENANCE

1) Lubricate the Follower Seals every barrel change.
2) Inspect the Follower Seals weekly for damage or material build up.
3) Keep the Follower Plate CLEAN.

REBUILDING INSTRUCTIONS

1) Raise the elevator to the full up position.
2) Remove the five hex screws that clamp the Follower Plate.
3) Remove the Follower Plate from the Foot Valve.
4) Using a Large Screwdriver Pry off the Follower Seal.
5) Clean and inspect Follower Plate for Damage.

ASSEMBLY INSTRUCTIONS

1) Install the Follower Seal into the Groove by rolling it over the casting.
2) Place the Follower Plate on the Foot Valve.
3) Tighten the Five hex screws .
4) Install the Bleeder.
5) Lubricate the Follower Seals.