JOHNSTONE

PUMP MANUAL

Johnstone Dispensing Systems
1872 Enterprise Drive
Rochester Hills MI 48309
Phone 248.293.5700 Fax 248.293.5800

OPERATOR'S MANUAL

55 GALLON PUMP ASSEMBLY

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

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

SPECIFICATIONS

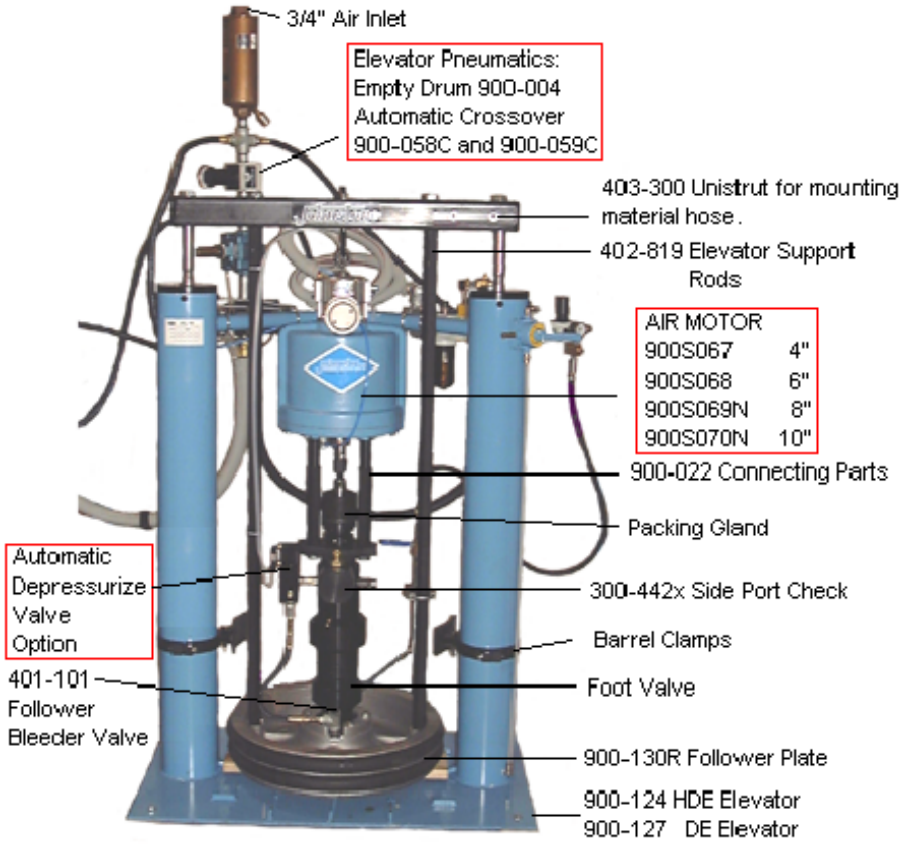
900S067 Air Motor 4 inch
900S068 Air Motor 6 inch
900S069N Air Motor 8 inch
900S070N Air Motor 10 inch

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

Air Inlet Port Size 3/4" NPT
Exhaust Port Size 3/4" NPT

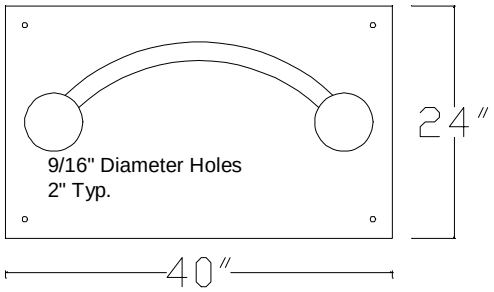
300–701xx PUMP RATIO				VOL./CYCLE
4"	6"	8"	10"	13.3 $IN.^3$
6:1	16:1	30:1	45:1	

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.



Elevator Height
Down 5 ft. 0 in.
Up 8 ft. 6 in.

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.

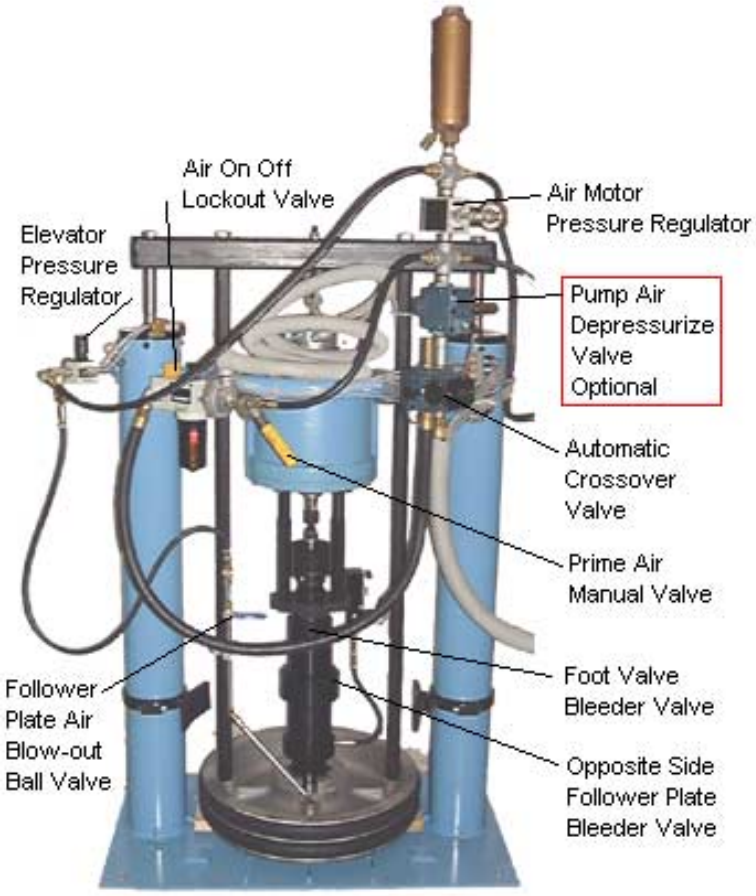
55 GALLON PUMP ASSEMBLY

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

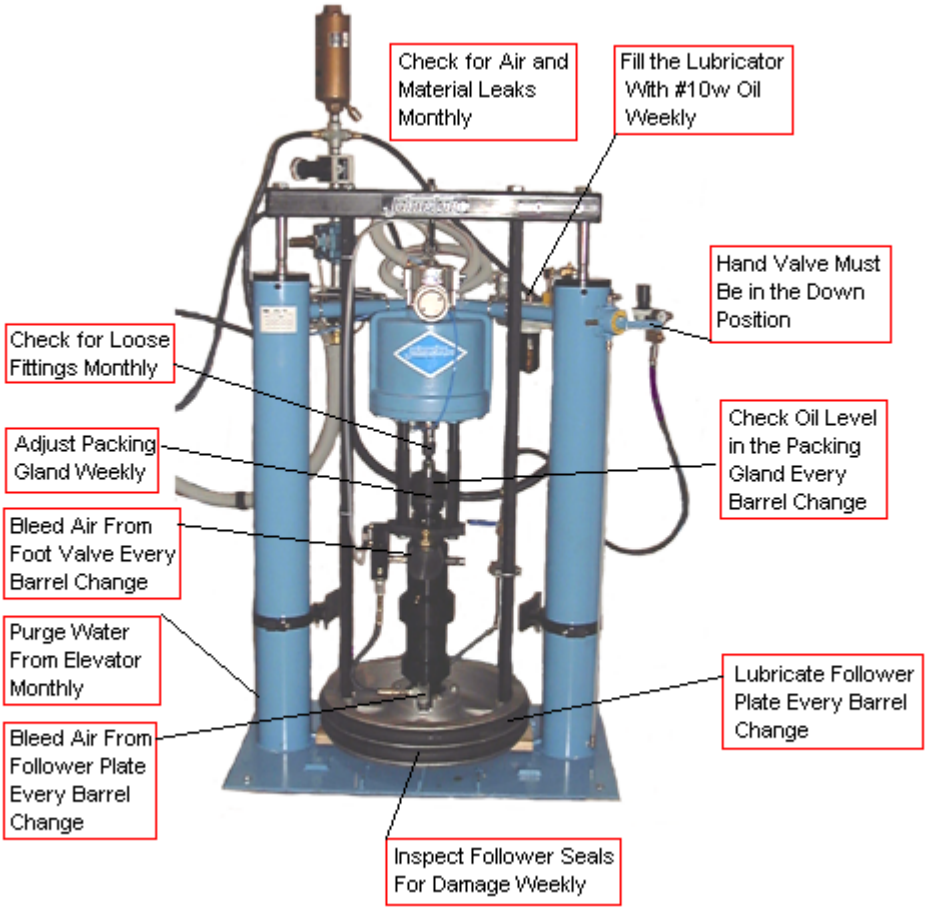
Turn up the Air Motor Pressure Regulator until the desired pressure is achieved.

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.

55 GALLON PUMP ASSEMBLY

MAINTENANCE SCHEDULE



PUMPS

DAILY:

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

OPERATOR'S MANUAL 650990-XXD

SPECIFICATIONS, SERVICE KITS, GENERAL INFORMATION, TROUBLESHOOTING
INCLUDE MANUALS: 67301-X LOWER PUMP END (PN 97999-962), 637345 AIR MOTOR (PN 97999-960) &
S-1212 GENERAL INFORMATION MANUAL (PN 97999-963)

RELEASED: 2-2-01
REVISED:
(REV. A)

12" AIR MOTOR
65:1 RATIO
6" STROKE

650990-XXD EXTRUSION PUMP

CARBON STEEL

READ THIS MANUAL CAREFULLY BEFORE INSTALLING, OPERATING OR SERVICING THIS EQUIPMENT.

It is the responsibility of the employer to place this information in the hands of the operator. Keep for future reference.

SERVICE KITS

- Use only genuine Johnstone® replacement parts to assure compatible pressure rating and longest service life.
- **637346 for repair of Air Motor section.**
- **637349-XXD for repair of Lower Pump section.**
  Refer to the chart on page 2 for description of -XXD options.

SPECIFICATIONS

Model Series (refer to option chart)	650990-XXD
Type	Air Operated, Extrusion, Double Acting Pump
Ratio	65:1
Air Motor	637345
Motor Repair Kit	637346
Motor Diameter	12" (30.5 cm)
Stroke	6" (15.2 cm)
Air Inlet	3/4 - 14 N.P.T.F. - 1 (female)
Air Exhaust	1-1/4 - 11-1/2 N.P.S.M. (female)
Lower Pump End Series	67301-XXD
Lower Pump Repair Kit	637349-XXD
Material Outlet	1-1/4 - 11-1/2 N.P.T.F. (female)
Weight	165 lbs (74.8 kgs)

PERFORMANCE

Air Inlet Pressure Range	30 - 90 p.s.i. (2.1 - 6.2 bar)
Fluid Pressure Range	1950 - 5850 p.s.i. (134.5 - 403.4 bar)
Max. Rec'd Cycles / Minute	70
Displacement In^3 Per Cycle	20.0
Volume / Cycle	11.08 oz. (327.6 ml)
Cycles Per Gallon	11.55
Flow @ 70 Cycles / Minute	6.06 g.p.m. (22.94 l.p.m.)
Noise Level @ 60 p.s.i. - 40 cpm	89.8 db(A) *

* The pump sound pressure level has been updated to an Equivalent Continuous Sound Level (L_{Aeq}) to meet the intent of ANSI S1. 13-1971, CAGI-PNEUROP S5.1 using four microphone locations.

PUMP DATA

MODEL 650990-XXD

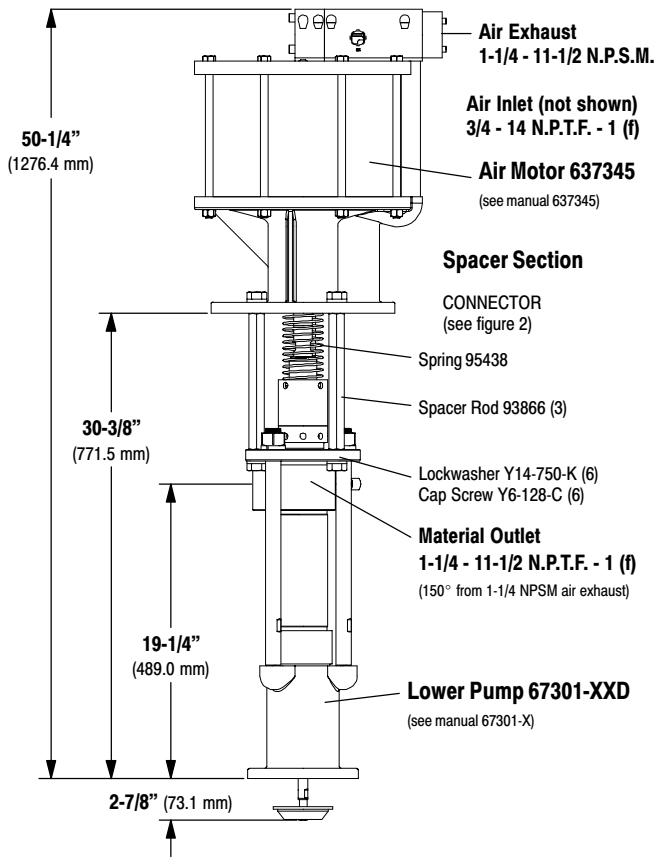


FIGURE 1

Accessories Available: 66718 Muffler, 66542 Wall Bracket, 65139 Floor Mount.

IMPORTANT

This is one of the four documents which support the pump. Replacement copies of these forms are available upon request.

- ☒ 650990-X MODEL OPERATOR'S MANUAL
- ☐ GENERAL INFORMATION – INDUSTRIAL PISTON PUMPS
- ☐ 67301-X LOWER PUMP END OPERATOR'S MANUAL
- ☐ 637345 AIR MOTOR OPERATOR'S MANUAL

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PUMP OPTION DESCRIPTION CHART

650990 - X X D

- X (1st) — PACKING MATERIAL
- X (2nd) — SPRING ARRANGEMENT
- D — PLUNGER TYPE

PACKING MATERIAL (PACKINGS ARE UPPER AND LOWER UNLESS NOTED)
J Polyurethane (Upper)
UHMW-PE (Lower)

SPRING ARRANGEMENT
3 No Spring

PLUNGER TYPE
D Hardened Stainless Steel W / Hard Chrome Plating

GENERAL DESCRIPTION

⚠WARNING HAZARDOUS PRESSURE. Do not exceed maximum operating pressure of 5850 p.s.i. (403.4 bar) at 90 p.s.i. (6.2 bar) inlet air pressure.

PUMP RATIO X INLET PRESSURE TO PUMP MOTOR	=	MAXIMUM PUMP FLUID PRESSURE

Pump ratio is an expression of the relationship between the pump motor area and the lower pump end area. EXAMPLE: When 90 p.s.i. (6.2 bar) inlet pressure is supplied to the motor of a 5:1 ratio pump it will develop a maximum of 450 p.s.i. (31.0 bar) fluid pressure (at no flow) – as the fluid control is opened, the flow rate will increase as the motor cycle rate increases to keep up with the demand.

⚠WARNING Refer to general information sheet for additional safety precautions and important information.

- The Extrusion (Chop-Check) pumps are primarily designed for the pumping of heavy viscous material with or without fibrous content. The models can be used with a gravity feed single post lift as a topper type assembly or with a two post lift as a force feed type assembly. The lower pump is designed for easy priming and the double acting feature is standard in all Johnstone industrial pumps. Material is delivered to the pump discharge outlet on both the up and down stroke.
- The motor is connected to the lower pump end by a spacer section. This allows for lubrication of the upper packing gland and prevents motor contamination because of normal wear and eventual leakage through the material packing gland. Be sure the lubricant cup is adequately filled with lubricant to protect the upper packings and insure longest service life.

TROUBLE SHOOTING

Pump problems can occur in either the Air Motor Section or the Lower Pump End Section. Use these basic guidelines to help determine which section is affected.

If the pump will not cycle.

- Be certain to first check for non-pump problems including kinked, restrictive or plugged inlet / outlet hose or dispensing device. Depressurize the pump system and clean out any obstructions in the inlet / outlet material lines.
- Refer to the motor manual for trouble shooting if the pump does not cycle and / or air leaks from the air motor.

If the pump cycles but does not deliver material.

- Refer to the lower pump end manual for further trouble shooting.

PUMP CONNECTION – UPPER / LOWER

NOTE: All threads are right hand.

1. Lay the pump assembly on a workbench.
2. Remove the three (Y6-128-C) cap screws and (Y14-750-K) lockwashers from the three spacer rods (figure 1).
3. Pull the air motor from the lower pump end until motor piston rod is in the "down" position and lower pump end rod is in "up" position.
4. Remove the three spacer rods by unscrewing the three (Y6-128-C) cap screws and (Y14-750-K) lockwashers.
5. Using e-ring pliers, slide the "e" ring up far enough to allow the sleeve to move upward and release the two connectors (figure 2).

PUMP CONNECTOR DETAIL

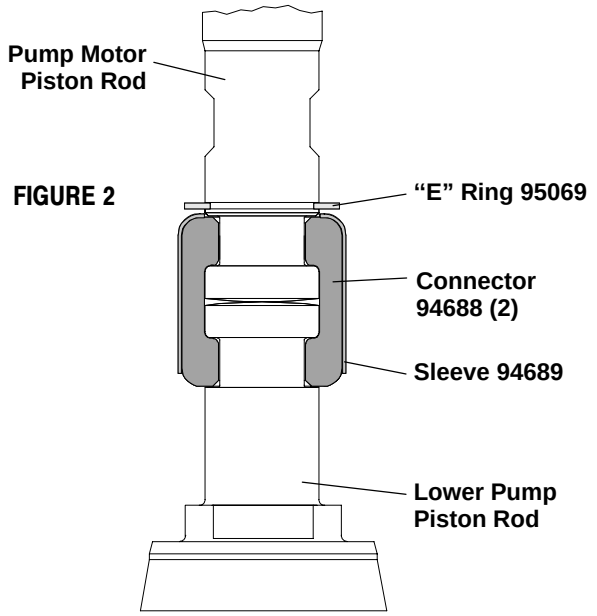

FIGURE 2

REASSEMBLY

1. Align the pump motor with the lower pump end. Position the air inlet of the motor 60° from the material outlet.
2. Install the two connectors and retain with the sleeve, slide the "e" ring back into position.
3. Assemble the three spacer rods to the lower pump and secure using three (Y6-128-C) cap screws and (Y14-750-K) lockwashers.
4. Reinstall the spacer rods to the pump motor.
5. Bring the motor and lower pump together and retain with the three (Y6-128-C) cap screws and (Y14-750-K) lockwashers.

OPERATOR'S MANUAL 637345

INCLUDING: OPERATION, INSTALLATION & MAINTENANCE

12" AIR MOTOR
6" STROKE

RELEASED: 2-2-01
REVISED:
(REV. A)

637345 AIR MOTOR

READ THIS MANUAL CAREFULLY BEFORE INSTALLING, OPERATING OR SERVICING THIS EQUIPMENT.

It is the responsibility of the employer to place this information in the hands of the operator. Keep for future reference.

SERVICE KITS

- Use only genuine Johnstone replacement parts to assure compatible pressure rating and longest service life.
- 637346 service kit includes the necessary soft parts for normal service of the entire air motor.
- 637347 service kit is a replacement valve kit.

GENERAL DESCRIPTION

The 12" air motor is a power unit used with a two ball or chop-check pump. It utilizes tie rod construction for easy breakdown and it connects to the lower pump end with tie rods for easy operation. Consult the pump model operator's manual for specific instructions.

OPERATING AND SAFETY PRECAUTIONS

DO NOT EXCEED MAXIMUM AIR INLET PRESSURE OF 90 P.S.I. (6.2 bar) OR 75 CYCLES PER MINUTE.

CAUTION: High pressure equipment – Always disconnect air supply and relieve material pressure before attempting to service.

A ground lug is located on the air motor. This ground lug allows proper grounding of the pump.

AIR AND LUBE REQUIREMENTS

A filter capable of filtering particles larger than 50 microns should be used with a lubricator.
Filtered and oiled air will allow the pump to operate more efficiently and yield a longer life to operating parts and mechanisms.
Use an air line lubricator and keep it supplied with a good grade of S.A.E. #90W non-detergent gear oil set at a rate not to exceed approximately 1 drop per minute.

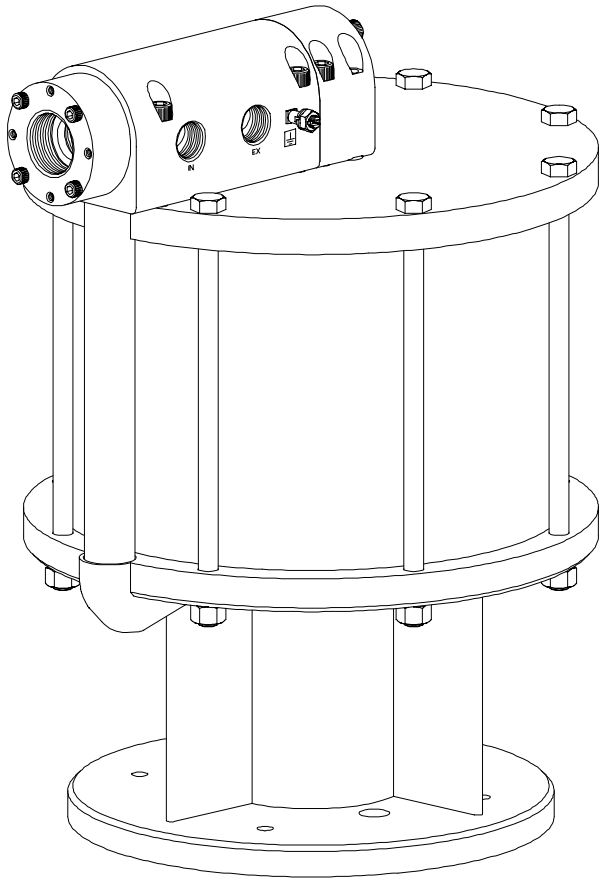

FIGURE 1

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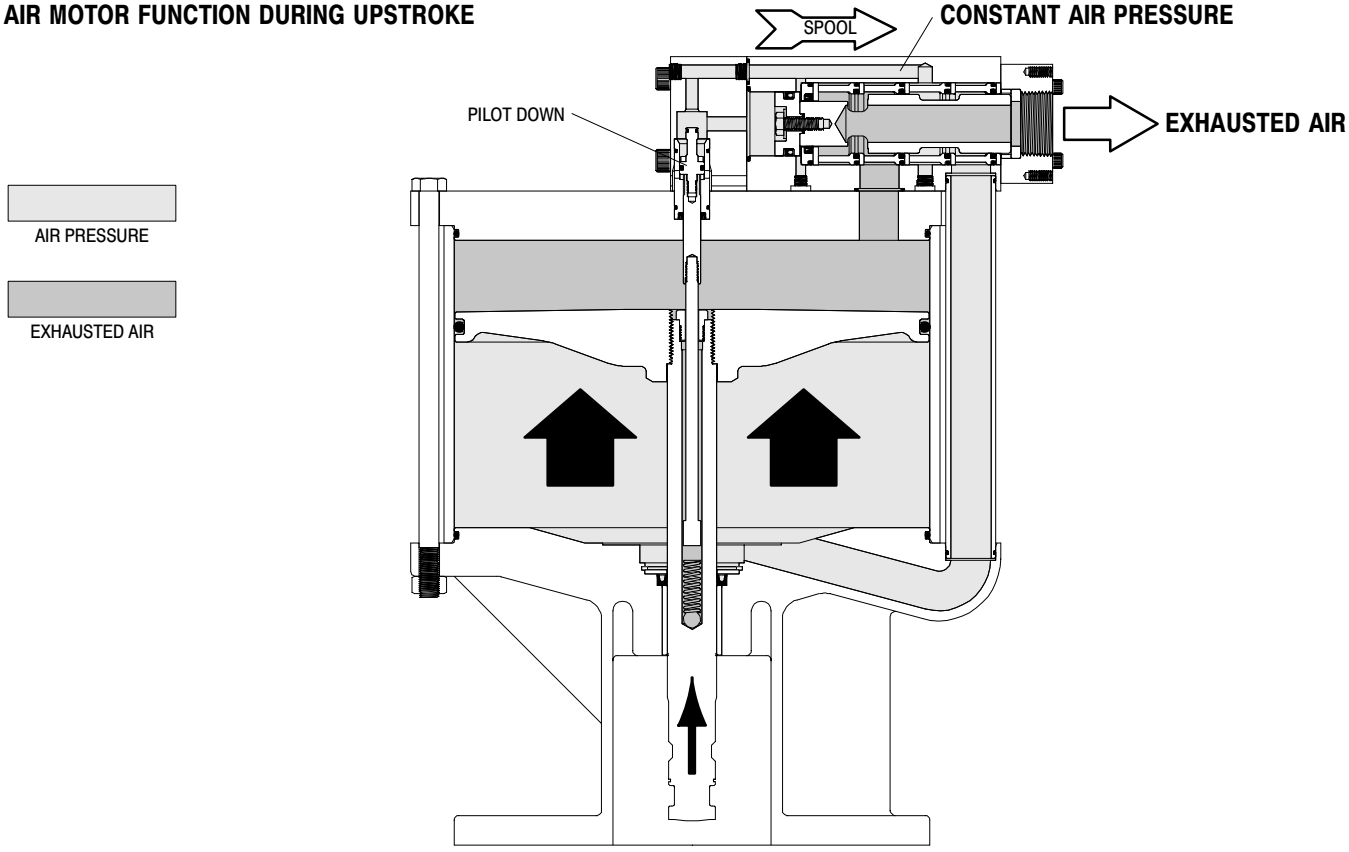
AIR MOTOR FUNCTION DURING UPSTROKE



AIR MOTOR FUNCTION DURING DOWNSTROKE

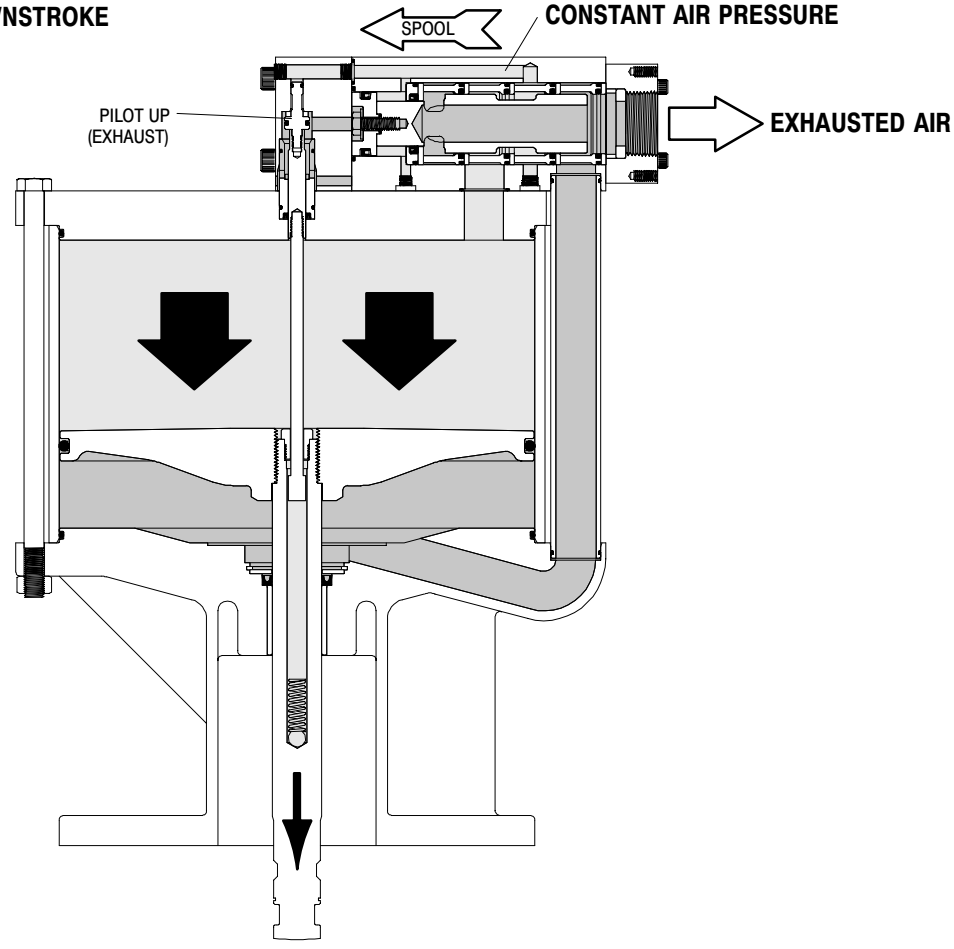


FIGURE 2

AIR MOTOR DISASSEMBLY

NOTE: All threads are right hand.

1. Place the air motor in an up-stroke position by pushing (43) piston assembly toward the top of the motor.
2. Remove six (26) cap screws from the top of (27 and 30) blocks.
3. Remove (27 and 30) blocks from (22) head plate.
4. Remove (34) tube from (46) base assembly. Remove two (33) "O" rings from (34) tube and one (33) "O" ring from the bottom of (30) block manifold.
5. Remove four (26) cap screws from the end of (27) block.
6. Separate (27) block from (30) block manifold and remove (28 and 29) "O" rings.
7. Remove 3/4 - 14 N.P.T. pipe plugs from the two exhaust ports, if applicable.
8. Using a 1/2" socket on (8) cap screw, turn (20) spool clockwise to align opening or slot in (20) spool with the 3/4 - 14 N.P.T. exhaust port nearest the (8) cap screw.
9. Insert a 1/4" rod or similar device thru the exhaust port of (30) block manifold and into the opening or slot of (20) spool. This rod will prevent rotation of (20) spool when removing (8) cap screw and (9) washer. **CAUTION: Do not permit this rod to rest against (17) spacer legs, which could cause breakage of (17) spacer.**
10. Remove (8) cap screw and (9) washer.
11. Unscrew four (32) cap screws and remove (31) cap assembly.
12. Remove (20) spool out the "exhaust end" of (30) block manifold and remove (11) piston out the other end.
13. From the "exhaust end" of (30) block manifold, remove four (19) washers, four (17) spacers, four (18) "O" rings, five (15) "O" rings, (16) washer, (14) "U" cup, (13) gland and (10) "O" ring.
14. Remove (12) "U" cup from (11) piston.
15. Using the wrench flats provided, remove the (2) piston assembly from the (5) extension rod.
16. Remove (1 and 3) "O" rings from (2) piston assembly.
17. Remove (4) washer, (6) cylinder, two (7) "O" rings and (24) "U" cup from (22) head plate.
18. Remove two (7) "O" rings and (24) "U" cup from (6) cylinder.
19. Remove eight (47) nuts from (49) cap screws.
20. Remove eight (49) cap screws from (22) head plate and (46) air motor base assembly.
21. Remove (22) head plate from (37) air cylinder, then remove (36) "O" ring from (22) head plate.
22. Pull upward on (37) air cylinder until (43) piston assembly separates from the (46) base assembly. If, in this step, the (43) piston assembly is not pulled from the (46) base assembly, then remove it after removing the (37) air cylinder.
23. If the (37) air cylinder and (43) piston assembly are removed as one unit, then remove the (43) piston assembly from the (37) air cylinder.
24. Remove the (36) "O" ring from the (46) base assembly.
25. Remove (40) retaining ring, (44) guide washer and (41) "U" cup from (46) base assembly.
26. Remove the (50) "O" ring from the (43) piston assembly.
27. Unscrew (5) extension rod from (39) valve rod by holding the (39) valve rod with an adjustable type pliers and using a wrench on the wrench flats provided at the top of the (5) extension rod.
28. Remove the (48) screw from the (43) piston assembly.
29. Remove the (39) valve rod, (45) spring and (42) ball from the (43) piston assembly.

AIR MOTOR ASSEMBLY

1. Place the (39) valve rod thru the (48) screw.
2. Clean the threads of the (39) valve rod and the (5) extension rod. Apply Loctite 271 to these threads and screw the (5) extension rod to the (39) valve rod and tighten by holding the (39) valve rod below the threads with an adjustable type pliers and using a wrench on the flats of the (5) extension rod. **CAUTION: Do not mar or damage the finish on the (5) extension rod.**
3. Place the (42) ball and (45) spring into the (43) piston assembly.
4. Place the (39) valve rod and (5) extension rod into the (43) piston assembly. Apply Loctite 271 to the threads of the (48) screw and thread the (48) screw into the (43) piston assembly and tighten.
5. Assemble the (50) "O" ring to the groove in the (43) piston assembly.
6. Assemble the (36) "O" ring to the groove in the (46) air motor base assembly.
7. Assemble the (41) "U" cup (lips up), (44) guide washer and (40) retaining ring into the (46) base assembly.
8. Assemble the (43) piston assembly into the (46) base assembly, being careful not to damage the (41) "U" cup.
9. Lubricate the inside diameter of the (37) air cylinder and slide it down over the (43) piston assembly and onto the (46) air motor base assembly (see figure 4).
10. Assemble the (36) "O" ring to the groove in the (22) head plate.
11. Align the notch in the (22) head plate with the port in the (46) air motor base assembly and press the (22) head plate down until it is seated against the (37) air cylinder.
12. Assemble eight (49) cap screws thru the (22) head plate and (46) air motor base assembly.
13. Assemble eight (47) nuts on the (49) cap screws and tighten alternately and evenly.
14. Assemble two (7) "O" rings to the grooves in the (6) cylinder.
15. Assemble the (24) "U" cup into the (6) cylinder, with the lips facing out.
16. Assemble the (6) cylinder over the (5) extension rod and into the (22) head plate. NOTE: Assemble the (6) cylinder with the "U" cup end onto the (5) extension rod first.
17. Assemble the (4) washer over the (5) extension rod and into the (6) cylinder.
18. Clean the threads on the (2) piston assembly. Apply Loctite 271 to the threads and assemble to the (5) extension rod and tighten, using the wrench flats. **CAUTION: Do not mar or damage the surface of either of these parts.**
19. Assemble the (1 and 3) "O" rings to the grooves in the (2) piston assembly.
20. Assemble the (14) "U" cup into the (13) gland, with the lips pointed into the gland. Lubricate the bore of the (30) block manifold and assemble the (13) gland into the (30) block manifold, with the lips of the (14) "U" cup pointed into the block manifold. NOTE: Be sure the (13) gland is seated squarely against the shoulder in the (30) block manifold.
21. Assemble one (15) "O" ring and the (16) washer into the (30) block manifold and against the (13) gland (see figure 5).
22. Assemble four (15) "O" rings, four (18) "O" rings, four (17) spacers and four (19) washers into the (30) block manifold (see figure 5). NOTE: Assemble the (19) washers with the i.d. lips toward the (18) "O" ring. Position the (17) spacers so the legs are not aligned with the 3/4 - 14 N.P.T. exhaust ports in the (30) block manifold.
23. Clean the threads in the (20) spool.
24. Apply grease to the exterior of the (20) spool and assemble it into the (30) block manifold. Align the slot in the (20) spool with the 3/4 - 14 N.P.T. exhaust port in the side of the (30) block manifold.
25. Assemble the (51) spacer into the (31) cap assembly and assemble the (31) cap assembly to the (30) block manifold, securing with four (32) cap screws.
26. Assemble the (12) "U" cup into the groove in the (11) piston, with the lips pointed toward the "boss" side of the piston.
27. Assemble the (10) "O" ring onto the boss portion of the (11) piston.
28. Clean the threads on the (8) cap screw.

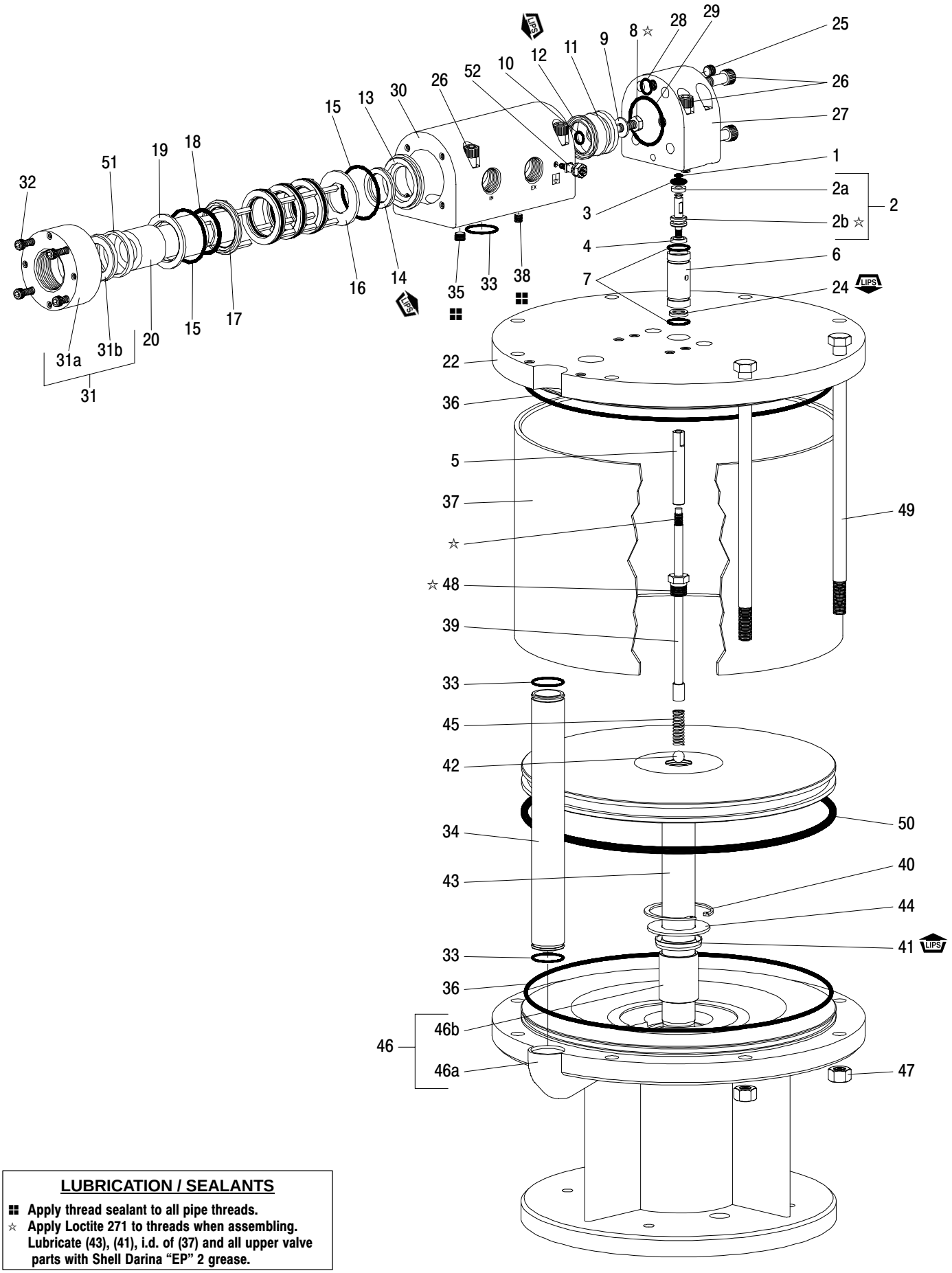
DISASSEMBLY / ASSEMBLY

29. Assemble the (8) cap screw and (9) washer thru the (11) piston.
30. Apply Loctite 271 to the threads of the (8) cap screw then thread it into the (20) spool.
31. Insert a 1/4" rod or similar device thru the 3/4 - 14 N.P.T. exhaust port in the side of the (30) block manifold and thru the slot of the (20) spool to prevent it from rotating, then tighten the (8) cap screw. Remove the 1/4" rod.
32. Assemble the (28 and 29) "O" rings into the (30) block manifold.
33. Assemble the (27) block to the (30) block manifold, securing with four (26) cap screws (hand tight only).
34. Assemble two (33) "O" rings to grooves in the (34) tube.
35. Assemble the (34) tube into the port provided in the (46) air motor base assembly.
36. Assemble one (33) "O" ring to the counterbore in the bottom of the (30) block manifold.
37. Lubricate the bore in the (27) block.
38. Carefully slide the (27 and 30) block assemblies down over the (2) piston assembly and (34) tube and onto the (22) head plate.
39. Assemble six (26) cap screws in the (27 and 30) block assemblies. Tighten the two (26) cap screws in the (27) block, making sure it rests squarely on the (22) head plate.
40. Snug up the other four (26) cap screws in the top of the (30) block manifold just enough to draw the (30) block manifold against the (22) head plate.
41. Tighten the four (26) cap screws which secure the (27) block to the (30) block manifold. Now, tighten the four (26) cap screws in the top of the (30) block manifold.

PARTS LIST

ITEM	DESCRIPTION (Size in Inches)	QTY	PART NO.
✓ 1	"O" Ring (1/16" x 5/16" o.d.)	(1)	Y325-8
2	Piston Assembly (includes items 2a and 2b)	(1)	66654
2a	Washer	(1)	92524
2b	Piston	(1)	92520
✓ 3	"O" Ring (3/32" x 5/8" o.d.)	(1)	Y325-111
✓ 4	Washer	(1)	92517
5	Extension Rod	(1)	92519
6	Cylinder	(1)	92513
✓ 7	"O" Ring (1/16" x 7/8" o.d.)	(2)	Y325-18
8	Cap Screw, Hex Head (5/16" - 18 x 7/8")	(1)	Y6-54-C
9	Washer	(1)	F15-44-C
✓ 10	"O" Ring (1/16" x 1/2" o.d.)	(1)	Y325-12
11	Piston	(1)	92521
✓ 12	"U" Cup Packing (3/16" x 1-5/8" o.d.)	(1)	Y186-53
13	Gland	(1)	94789
✓ 14	"U" Cup Packing (3/16" x 1-1/2" o.d.)	(1)	Y189-52
✓ 15	"O" Ring (3/32" x 2-1/16" o.d.)	(5)	Y325-134
16	Washer	(1)	94790
17	Spacer	(4)	93250
✓ 18	"O" Ring (1/8" x 1-3/4" o.d.)	(4)	Y325-222
19	Washer	(4)	93251
20	Spool	(1)	92522
22	Head Plate	(1)	90056-1
✓ 24	"U" Cup Packing (1/8" x 11/16" o.d.)	(1)	Y186-46
25	Pipe Plug (1/8 - 27 N.P.T.)	(2)	Y17-50
26	Cap Screw, Socket Head (3/8" - 16 x 2-1/2")	(10)	Y99-68
27	Block	(1)	92514
✓ 28	"O" Ring (1/16" x 5/8" o.d.)	(1)	Y325-14
✓ 29	"O" Ring (3/32" x 1-7/8" o.d.)	(1)	Y325-131
30	Block Manifold	(1)	92515
31	Cap Assembly (includes items 31a and 31b)	(1)	66655
31a	Cap	(1)	92531
31b	Washer	(1)	92516
32	Cap Screw, Socket Head (1/4" - 20 x 1-3/4")	(4)	Y99-45
✓ 33	"O" Ring (1/16" x 1-1/4" o.d.)	(3)	Y325-24
34	Tube	(1)	92518
35	Pipe Plug (1/8 - 27 N.P.T.)	(1)	Y227-2
✓ 36	"O" Ring (1/8" x 11-3/4" o.d.)	(2)	Y325-277
37	Air Cylinder	(1)	90035
38	Pipe Plug (1/16 - 27 N.P.T.)	(1)	Y227-1
39	Valve Rod	(1)	92527
40	Retaining Ring (2.630" o.d.)	(1)	Y147-237
✓ 41	"U" Cup Packing (1/4" x 1-3/4" o.d.)	(1)	Y186-24
42	Ball (.4375" dia.)	(1)	Y16-14
43	Piston Assembly	(1)	62111-B
44	Guide Washer	(1)	92216
45	Spring	(1)	24143-B
46	Air Motor Base Ass'y (includes items 46a and 46b)	(1)	66507-1
46a	Air Motor Base	(1)	90034
46b	Bushing	(1)	92511
47	Nut (1/2" - 20)	(8)	Y11-8-C
48	Screw	(1)	92525
49	Cap Screw, Hex Head (1/2" - 20 x 10-1/4")	(8)	94046-1
✓ 50	"O" Ring (1/4" x 12" o.d.)	(1)	Y325-452
51	Spacer	(1)	92860
52	Connector	(1)	93006
✓ ⁎	Darina® EP 2 Grease Packet (1/4 oz.)	(1)	94833
✓	Items included in Service Kit		637346
	Service Kit (entire valve section)		637347

⁎ Not included with 637345 air motor.



LUBRICATION / SEALANTS

- ■ Apply thread sealant to all pipe threads.
- ☆ Apply Loctite 271 to threads when assembling. Lubricate (43), (41), i.d. of (37) and all upper valve parts with Shell Darina "EP" 2 grease.

FIGURE 3

DISASSEMBLY / ASSEMBLY

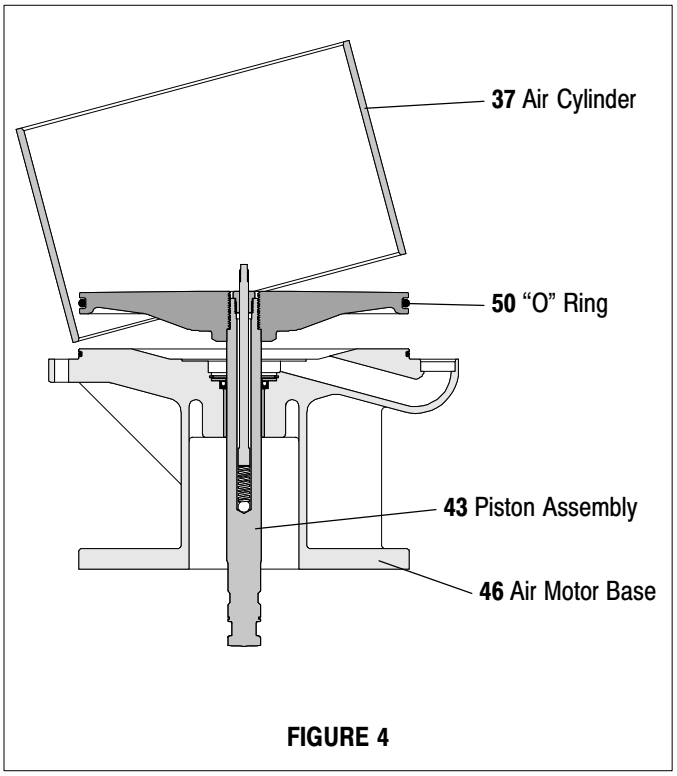


FIGURE 4

TROUBLE SHOOTING

Air leakage out of the main exhaust.

- Check for worn or damaged (18) "O" rings on spool.
- Check for worn or damaged (14) "U" cup packing.
- Check for worn or damaged (20) spool.
- Check for worn or damaged (50) "O" ring on (43) piston assembly.

Air leakage around (43) piston assembly.

- Check for worn or damaged (12) "U" cup packing.

Air leakage out of the pilot exhaust hole.

- Check for worn or damaged (3) "O" ring.
- Check for worn or damaged inside diameter of (6) cylinder.
- Check for worn or damaged (1) "O" ring.
- Check for worn or damaged (24) "U" cup packing.
- Check for worn or damaged (12) "U" cup packing on (11) piston.

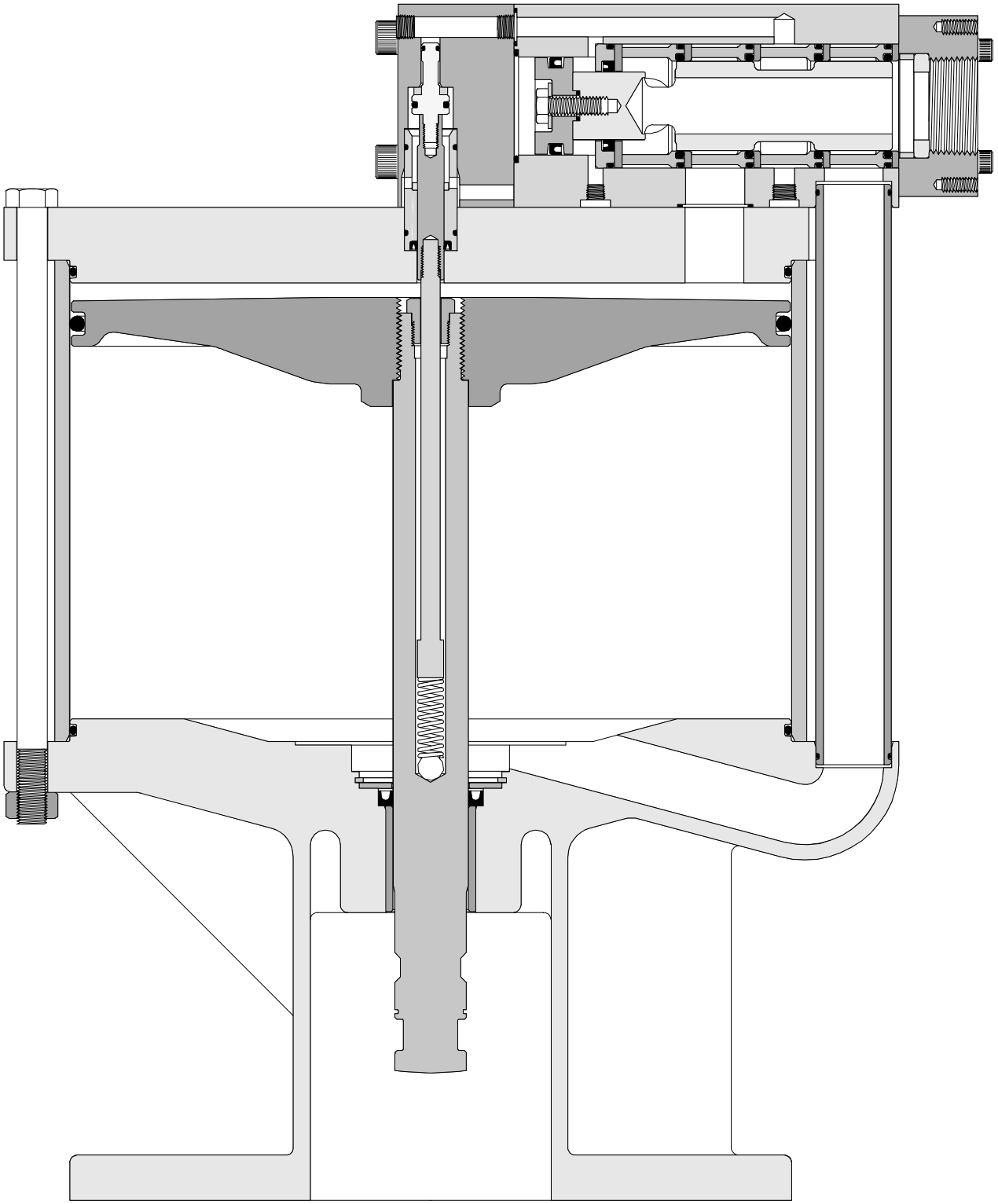


FIGURE 5

OPTIONAL 66718 MUFFLER ASSEMBLY

MUFFLER INSTALLATION

NOTE: Secure fittings after all components have been positioned.

1. Remove nut and sleeve from the (1) 90° short angle elbow.
2. Insert and install the 3/4 - 14 N.P.T. end of the (1) elbow to the air motor (back off the retaining nut a few turns).
3. Insert the (5) pipe plug into the air motor secondary exhaust port.
4. Slide the sleeve and nut onto the (2) tube and insert the tube into the (1) elbow.
5. Locate the (3) muffler on the collar of the air motor while aligning the (2) tube with the hole provided in the muffler.
6. Secure the muffler to the air motor collar with four (4) cap screws.
7. Secure all connections.

66718 PARTS LIST

ITEM	DESCRIPTION (Size in Inches)	QTY	PART NO.
1	90° EMT Short Angle Elbow	(1)	79294
2	Tube	(1)	79293
3	Muffler	(1)	79295
4	Cap Screw (1/4" - 20 x 4")	(4)	Y6-417
5	Pipe Plug (3/4 - 14 N.P.T.)	(1)	Y17-14-C

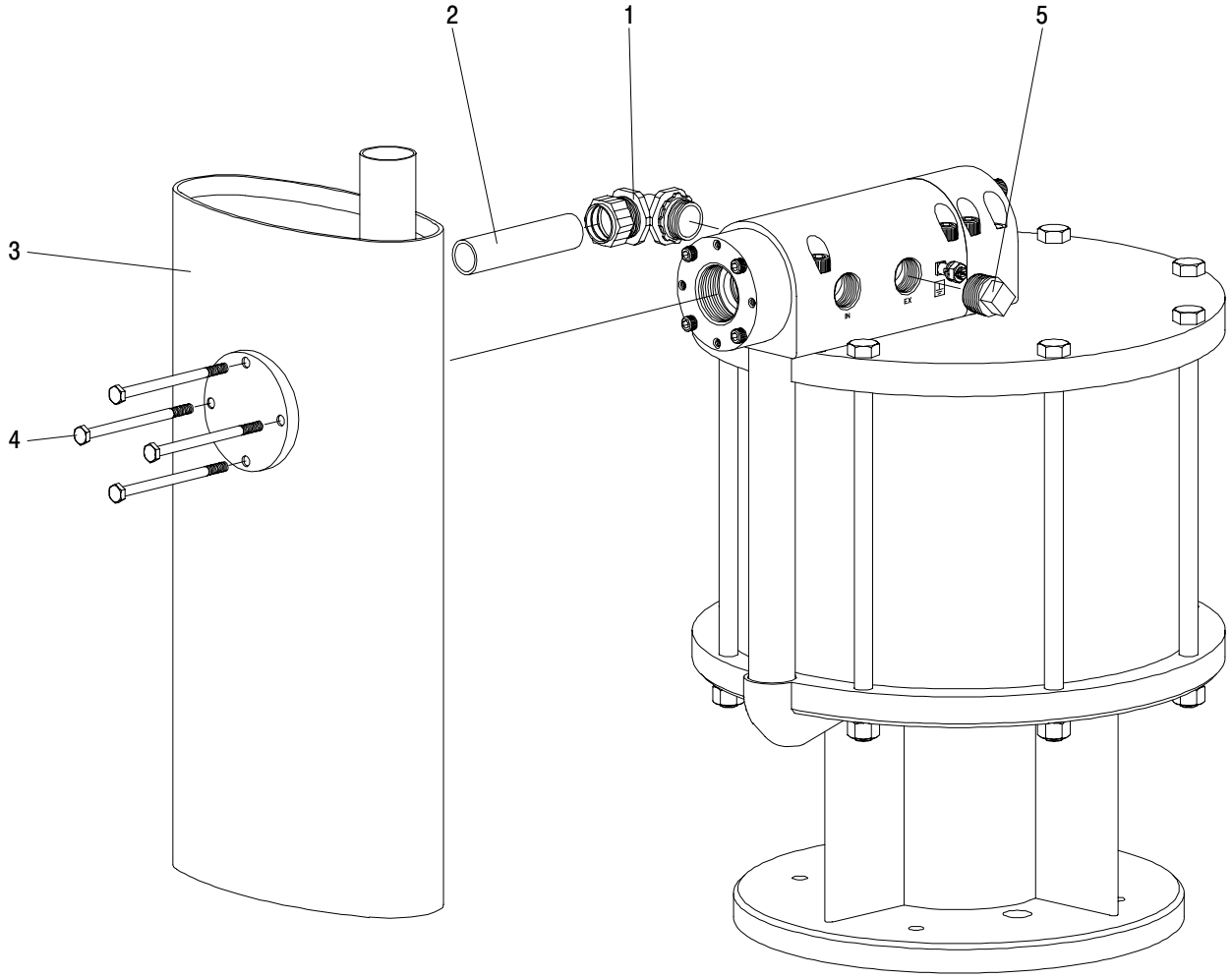


FIGURE 6

OPERATOR'S MANUAL 67301-X

INCLUDING: SERVICE KIT, TROUBLESHOOTING, PARTS LIST, DISASSEMBLY & REASSEMBLY

RELEASED: 2-2-01
REVISED:
(REV. A)

CHOP-CHECK STYLE LOWER PUMP ENDS

ALSO COVERS 637349-X SERVICE KITS

READ THIS MANUAL CAREFULLY BEFORE INSTALLING, OPERATING OR SERVICING THIS EQUIPMENT.

It is the responsibility of the employer to place this information in the hands of the operator. Keep for future reference.

SERVICE KITS

- Use only genuine Johnstone replacement parts to assure compatible pressure rating and longest service life.
- 637349-J3D for general repair of 67301-J3D lower pump ends.

GENERAL DESCRIPTION

⚠WARNING DO NOT EXCEED MAXIMUM OPERATING PRESSURE AS INDICATED ON PUMP MODEL PLATE.

⚠WARNING REFER TO GENERAL INFORMATION SHEET FOR ADDITIONAL SAFETY PRECAUTIONS AND IMPORTANT INFORMATION.

- This manual only covers the lower pump section, it is one of four documents which support a Johnstone pump. Replacement copies of these forms are available upon request.
  - ❑ 650XXX PUMP MODEL OPERATOR'S MANUAL.
  - ❑ GENERAL INFORMATION FOR AIR OPERATED OR HYDRAULICALLY OPERATED PUMPS.
  - ▩ LOWER PUMP END OPERATOR'S MANUAL.
  - ❑ AIR OR HYDRAULIC MOTOR OPERATOR'S MANUAL
- The Chop-Check design provides for easy priming of the lower foot valve. The double acting feature is standard in all Johnstone industrial pumps, material is delivered to the pump discharge outlet on both the up and down stroke.

MAINTENANCE

The air / hydraulic motor is completely separate from the lower pump end. This helps to keep the motor from being contaminated by the material being pumped. Periodically, flush entire pump system with a lubricant that is compatible with the material being pumped.

Keep lubricant cup filled with this compatible lubricant. This will keep material from drying on the piston rod, which would drag thru the packings, ruin them and eventually scour the piston rod.

Provide a clean work surface to protect sensitive internal moving parts from contamination from dirt and foreign matter during disassembly and reassembly.

Before reassembling, lubricate parts as required. When assembling "O" rings, or parts adjacent to "O" rings, exercise care to prevent damage to "O" rings and "O" ring groove surface.

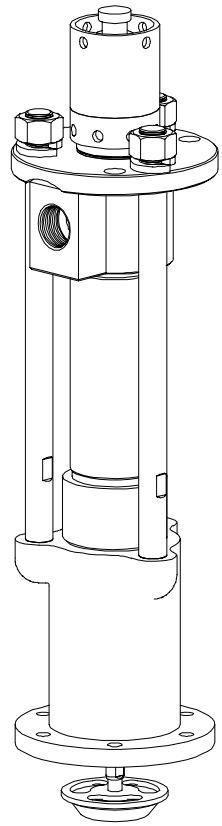


Figure 1

LOWER PUMP END DESCRIPTION CHART

67301 - X X X

PACKING MATERIAL
J - Polyurethane (upper)
- UHMW-PE (lower)

SPRING ARRANGEMENT
3 - No Spring

PLUNGER TYPE
D - Hardened Stainless Steel with Hard Chrome Plating

SERVICE KIT SELECTION 67301 - X X X

EXAMPLE: Lower Pump End # 67301-J3D
Service Kit # 637349-J3D

637349 - X X D
Packing — Spring

INGERSOLL-RAND COMPANY
1872 ENTERPRISE DRIVE • ROCHESTER HILLS, MICH. 48309
✆ (248) 293-5700 • FAX (248) 293-5820

Johnstone

PARTS LIST

ITEM	DESCRIPTION (Size in Inches)	QTY	PART NO.	[MTL]
1	Lubricant Cup	(1)	92689	[C]
2	Lower Gland	(1)	95327	[C]
3	"O" Ring (1/16" x 3" o.d.)	(1)	Y325-40	[B]
5	Bushing	(1)	95328	[D]
6	Outlet Body	(1)	95263	[C]
✓ 7	"O" Ring (1/16" x 3-1/8" o.d.)	(2)	Y328-41	[T]
9	Tube	(1)	95261	[C]
10	Stud	(3)	95351	[C]
12	Nut (1" - 14)	(3)	Y11-16-C	[C]
14	Upper Gland Nut	(1)	95326	[C]
15	Pressure Chamber Body	(1)	95308	[I]
17	Lock Washer (1")	(3)	Y14-100-C	[C]
✓ 18	Truarc Ring (2.295" o.d.)	(1)	76243-2	[SS]
21	Foot Valve Body	(1)	92682	[SH]
22	Check Valve Seat	(1)	92683	[SH]
25	Check Stop	(1)	95262	[SS]
26	Plunger	(1)	95270-1	[PSH]
27	Valve Seat	(1)	95307	[SH]
28	Valve Seat	(1)	95267	[SH]
30	Primer Rod	(1)	91719	[SH]
31	Primer Plate	(1)	93599-1	[SS]
32	Primer Button	(1)	93598-1	[SS]
33	Lock Nut (7/16" - 20)	(1)	Y171-7-C	[C]
34	Valve Rod	(1)	95306	[SH]
36	Valve Seat Nut	(1)	95269	[C]
✓ 37	Retaining Ring (1.136" o.d.)	(1)	Y147-102	[C]
✓ 38	"O" Ring (1/16" x 2-5/8" o.d.)	(1)	Y328-37	[T]
✓ 44	"O" Ring (1/8" x 3-1/2" o.d.)	(1)	Y328-236	[T]
✓ 47	Bowed Washer	(1)	95266	[C]
54	Female Packing Washer	(1)	95256	[D]
✓ 55	"V" Packing	(5)	95257-4	[UH]
57	Male Packing Washer	(1)	95258	[C]
✓ 64	Seal	(3)	95325	[U]
✓ 65	"U" Cup	(1)	90911	[GFT]
88	Bleeder Valve Body	(1)	402-763	[C]
89	Needle Bleed Valve	(1)	402-271	[C]
✓	Items included in Service Kit		637349-J3D	

MATERIAL CODE

[B] = Nitrile	[SH] = Hardened Stainless Steel
[C] = Carbon Steel	[SS] = Stainless Steel
[D] = Acetal	[T] = Teflon
[GFT] = Glass Filled Teflon	[U] = Polyurethane
[I] = Iron	[UH] = UHMW-PE
[PSH] = Hard Chrome Plated Hardened Stainless Steel	

LOWER PUMP DISASSEMBLY

NOTE: All threads are right hand.

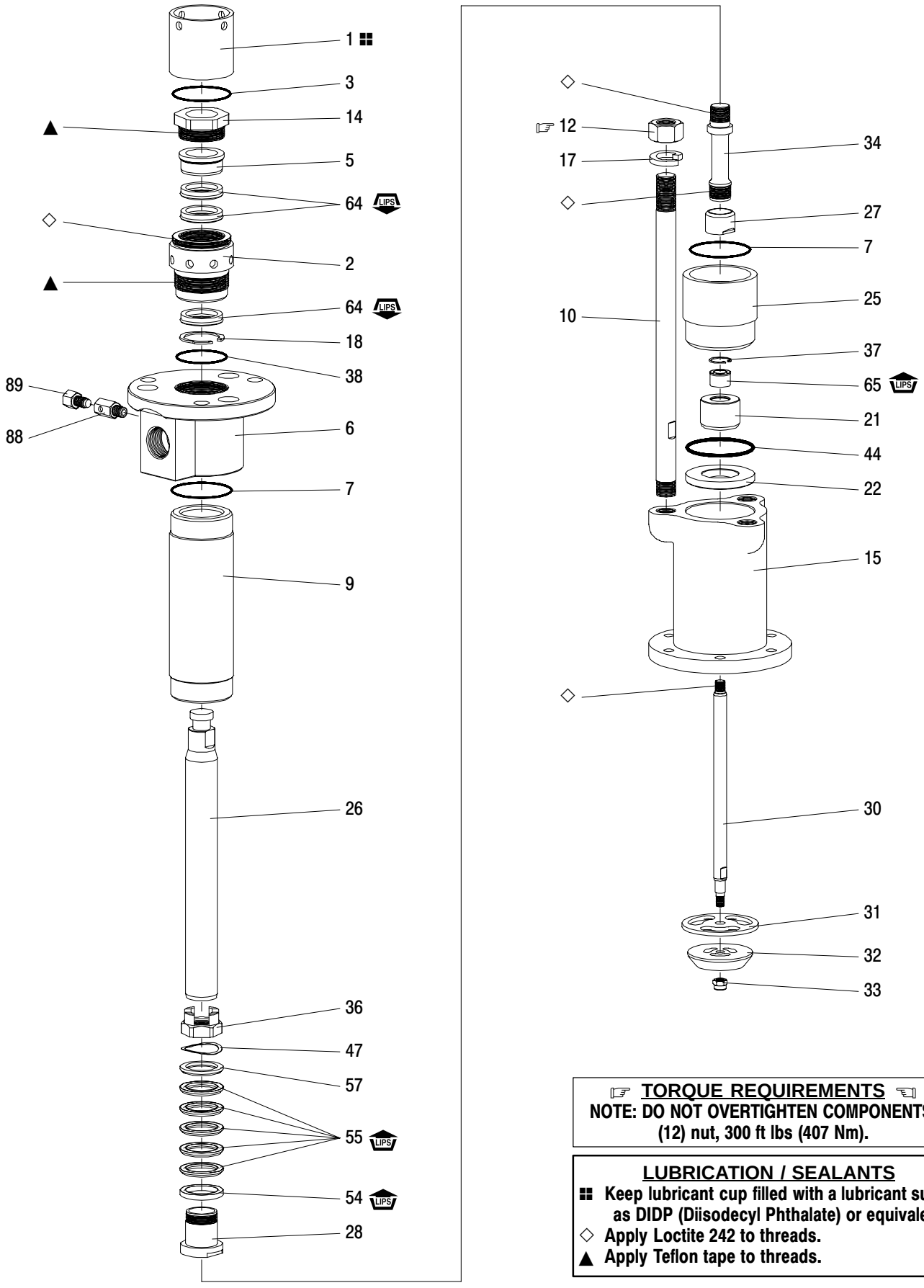
1. Using a wrench on flats of (30) primer rod and a 5/8" wrench on (33) lock nut, remove (33) lock nut, releasing (32) primer button and (31) primer plate.
2. Using a wrench on flats of (10) stud and an 1-1/2" wrench on (12) nut, remove three (12) nuts and (17) lock washers from (10) studs.
3. Remove (6) outlet body, (9) tube and components from (15) pressure chamber body.
4. Remove (7) "O" ring from (25) check stop.
5. Using a wrench on flats of (10) stud, remove three (10) studs.
6. Using a wrench on flats of (30) primer rod, remove (30) primer rod from (34) valve rod.
7. Remove (9) tube and (7) "O" ring from (6) outlet body.
8. Remove (34) valve rod from (26) plunger, releasing (28) valve seat and components.
9. Clamp the (28) valve seat in a vise and remove (36) valve seat nut, releasing (47) bowed washer, (57) male packing washer, five (55) "V" packings and (54) female packing washer.
10. Remove (1) lubricant cup and (3) "O" ring from (2) lower gland.
11. Remove (26) plunger.
12. Remove (2) lower gland and (38) "O" ring from (6) outlet body.
13. Remove (14) upper gland nut, releasing (5) bushing and two (64) seals.
14. Remove (18) retaining ring, releasing (64) seal.
15. Remove (25) check stop from (15) pressure chamber body.
16. Remove (21) foot valve body from (15) pressure chamber body.
17. Remove (37) retaining ring, releasing (65) "U" cup from (21) foot valve body.
18. Remove (44) "O" ring and (22) check valve seat from (15) pressure chamber body.

LOWER PUMP REASSEMBLY

NOTE: All threads are right hand.

1. Assemble (22) check valve seat and (44) "O" ring into (15) pressure chamber body. NOTE: Assemble (22) check valve seat with i.d. chamfer up.
2. Assemble (65) "U" cup into (21) foot valve body, securing with (37) retaining ring. NOTE: Assemble "U" cup with lips facing up.
3. Assemble (21) foot valve body into (15) pressure chamber body.
4. Assemble (25) check stop assembly into (15) pressure chamber body.
5. Assemble (7) "O" ring into (6) outlet body.
6. Assemble (38) "O" ring into (6) outlet body.
7. Assemble one (64) seal into bottom of (2) lower gland, securing with (18) retaining ring. NOTE: Assemble (64) seal with lips facing out.
8. Assemble two (64) seals into (2) lower gland, with lips into gland first.
9. Assemble (5) bushing into (2) lower gland.
10. Apply Teflon tape to threads of (14) upper gland nut and assemble to (2) lower gland.
11. Apply Teflon tape to threads of (2) lower gland and assemble to (6) outlet body.
12. Assemble (26) plunger into (6) outlet body from the bottom end.
13. Tighten (2) lower gland until it is snug.
14. Using an open end wrench, tighten (14) upper gland nut.
15. Assemble (3) "O" ring to (2) lower gland.
16. Apply Loctite 242 to threads of (1) lubricant cup and (2) lower gland.
17. Assemble (1) lubricant cup to (2) lower gland and tighten, using a spanner wrench.
18. Assemble (89) bleed valve to (88) valve body and assemble (88) valve body to (6) outlet body. Tighten with outlet of (88) valve body pointed downward.
19. Secure (6) outlet body and components in a vise, clamping on flats of (26) plunger.

(continued on page 4)



☞ TORQUE REQUIREMENTS ☜
NOTE: DO NOT OVERTIGHTEN COMPONENTS.
(12) nut, 300 ft lbs (407 Nm).

LUBRICATION / SEALANTS
■ Keep lubricant cup filled with a lubricant such as DIDP (Diisodecyl Phthalate) or equivalent.
◇ Apply Loctite 242 to threads.
▲ Apply Teflon tape to threads.

Figure 2

20. Assemble (54) female packing washer, five (55) “V” packings, (57) male packing washer and (47) bowed washer to (28) valve seat, securing with (36) valve seat nut. NOTE: Apply Loctite 242 to threads of (28) valve seat and (36) valve seat nut. NOTE: Assemble “V” packings with lips facing up.
21. Apply Loctite 242 to threads of (34) valve rod and assemble to (27) valve seat.
22. Assemble (28) valve seat and components to (26) plunger.
23. Apply Loctite 242 to threads of (34) valve rod and assemble (34) valve rod thru (28) valve seat and thread into (26) plunger.
24. Using DIDP (Diisodecyl Phthalate), lubricate the i.d. of (9) tube and the o.d. of (55) “V” packings and assemble (9) tube over “V” packings and into (6) outlet body.
25. Apply Loctite 242 to threads of (30) primer rod and assemble to (34) valve rod.
26. Apply Lubriplate to threaded holes of (15) pressure chamber body and assemble three (10) studs to (15) pressure chamber body.
27. Assemble (7) “O” ring into (25) check stop.
28. Assemble (6) outlet body, (9) tube and components to (15) pressure chamber body, aligning holes in (6) outlet body with (10) studs.
29. Lubricate threads of (10) studs with Lubriplate and assemble three (17) lock washers and (12) nuts to (10) studs and tighten to 300 ft lbs (407 Nm).
30. Assemble (31) primer plate and (32) primer button to (30) primer rod, securing with (33) lock nut.

TROUBLE SHOOTING

- **No material at outlet (pump continually cycles).** Check material supply, disconnect or shut off the air supply and replenish the material, reconnect.
- **Material on one stroke only (fast downstroke).** The (21) foot valve body may not be seating in the (22) check valve seat (see lower pump disassembly). Remove the (21) foot valve body from the (22) check valve seat, clean and inspect the check valve seat area. If the foot valve or seat is damaged, replace.
- **Material on one stroke only (fast upstroke).** The (27) valve seat may not be seating in the (28) valve seat (see lower pump disassembly). Remove (27) valve seat from (28) valve seat, clean and inspect. If the (27) valve seat is damaged, replace. Check for worn or damaged packings and seals. Replace the packings and seals as necessary.
- **Material leakage out of the solvent cup or material appears on the pump plunger rod.** Relieve the pressure in the pump and tighten the solvent cup until leakage discontinues. If this procedure does not aid in stopping the leakage problem, the upper packings may be worn (see lower pump disassembly). Replace the packings as necessary.

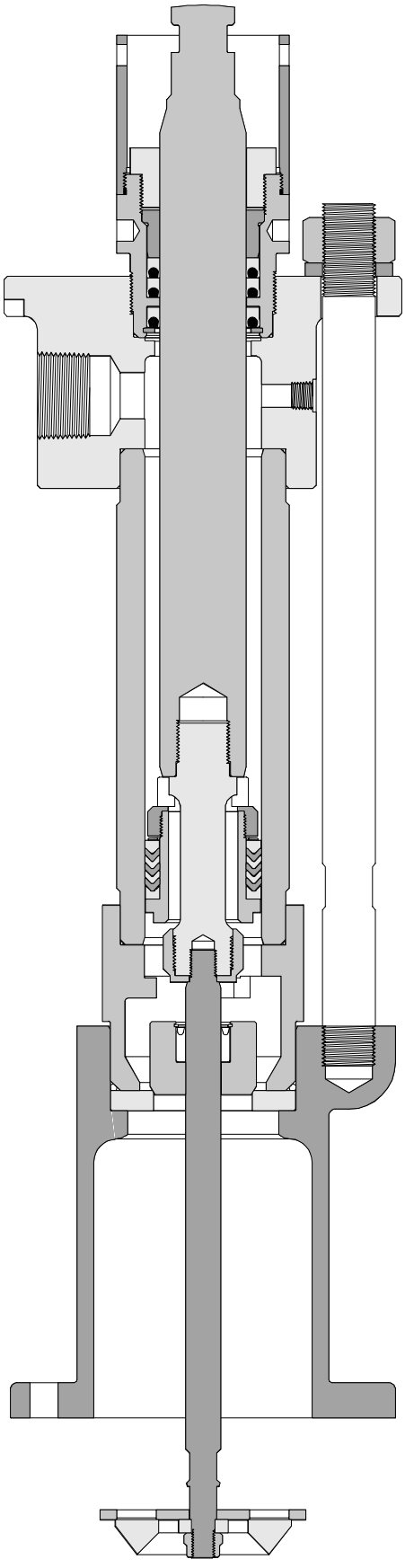


Figure 3

300-442S 1 ¼ INCH SIDE PORT CHECK ASSEMBLY

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

NOTE: 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

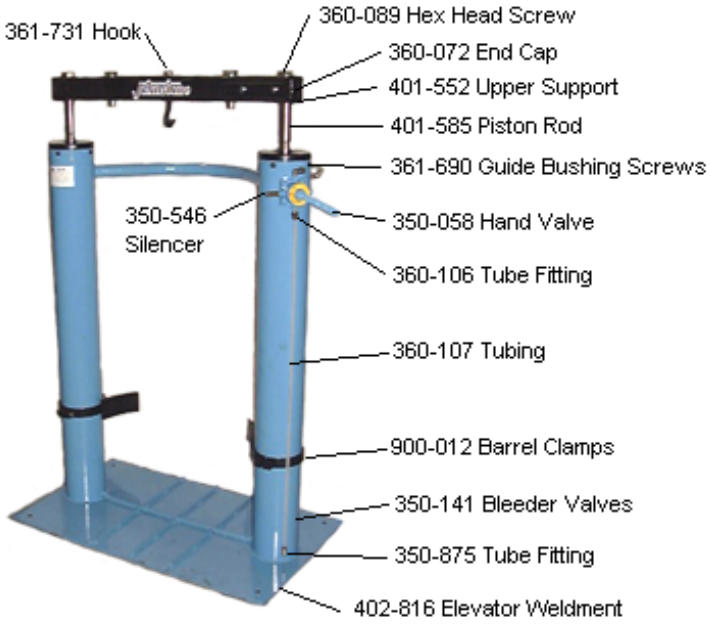
1) Hold the Cap in a vice.
2) Remove the Bleeder valve from the Plug.
3) Unscrew the Plug. The Spring, Ball and O-ring can be removed from the valve body.
4) Remove the JIC Fitting from the valve body.
5) Unscrew the Valve Body from the Cap.
6) Remove the O-ring from the Cap.
7) The Valve Seat can now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

900-124 Heavy Duty Elevator Assembly 55 Gallon

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 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.

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

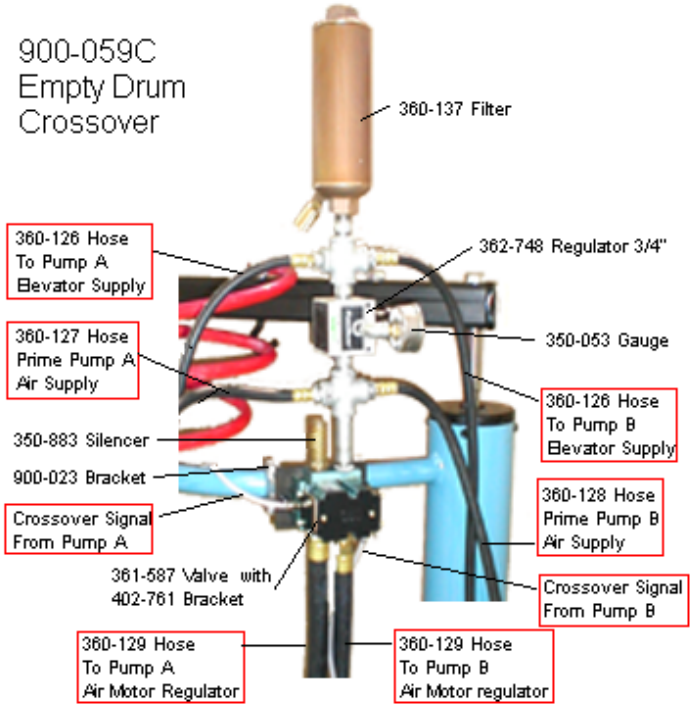
900-058C & 900-059C EMPTY DRUM CROSSOVER.

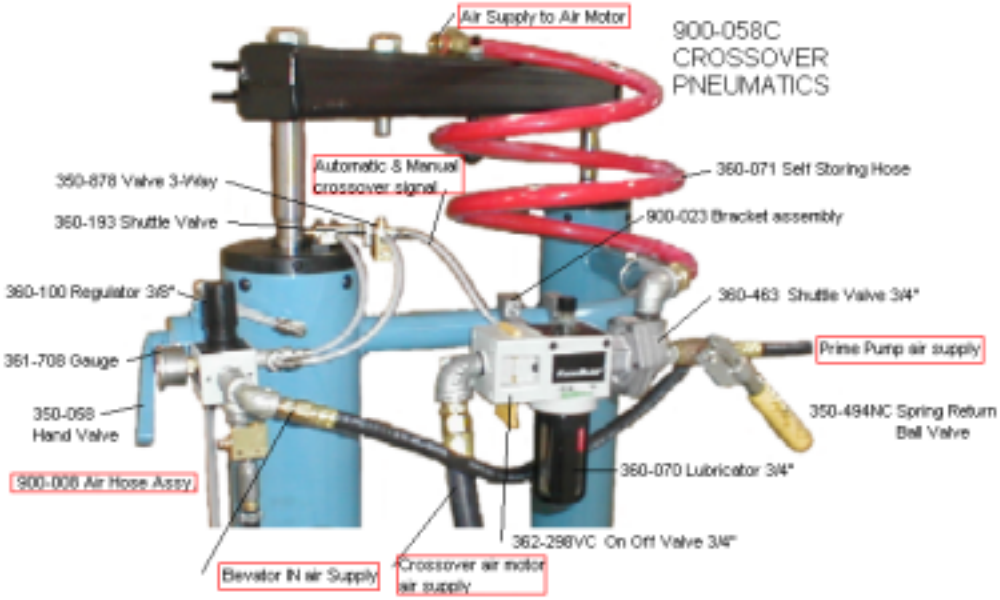
IMPORTANT: READ THIS MANUAL CAREFULLY BEFORE INSTALLING, OPERATING, OR SERVICING THIS EQUIPMENT

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

OPERATION INSTRUCTIONS

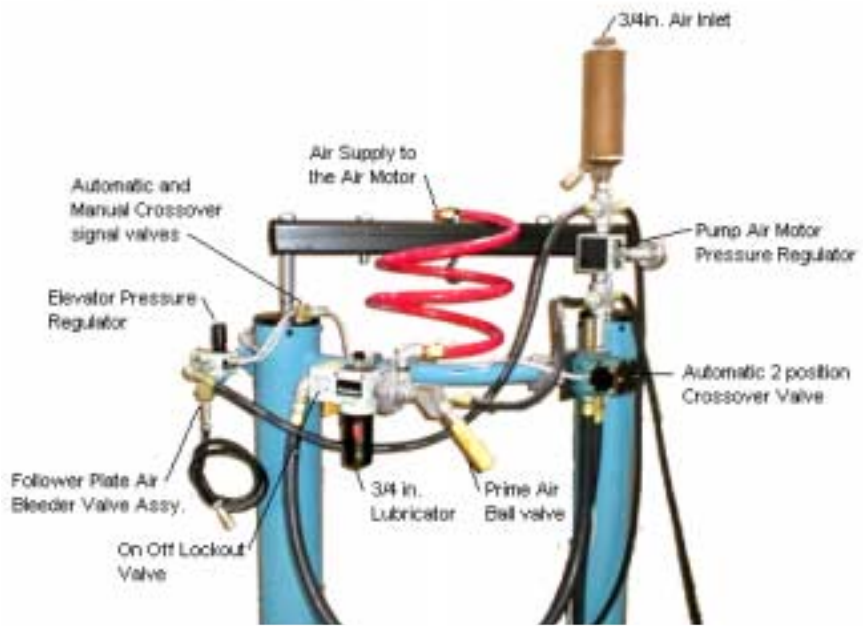
1) One 3/4in.(recommended) Air supply feeds both pumps and is connected at the Filter.
2) Plant air pressure is directed to both Elevator regulators. Which controls the Up and Down Pressure.
3) At the elevator regulator, air pressure is supplied to the Automatic & Manual crossover signal valves. Located at the top of the elevator post.
   a) A manual crossover valve is plumbed non-passing. If the valve is depressed it will send a signal to crossover valve.
   b) An automatic crossover valve is plumbed normally passing and rides engerized on the elevator rod. A groove is machined in the elevator rod. When the valve enters the groove it sends a signal to the crossover valve. This is the Empty Drum Signal.
4) A 3/4in. Regulator supplies both pump Air Motors. Allowing both pumps to run at equal air pressures.
5) A 3/4in. air piloted 2 position valve supplies Air pressure to only one (on line) pump at a time. The automatic Crossover or manual signals change the direction of the valve. The air is exhausted on one pump and pressure is sent to the other.
6) A Prime Pump air system supplies regulated air to a spring return ball Valve. This allows the operator to run the off line pump. (For bleeding) The valve can be manually opened to cycle the pump. When the operator releases the ball valve automatically closes. This ensures that the prime Air supply is turned off allowing a normal crossover to occur.





900-058C & 900-059C EMPTY DRUM CROSSOVER

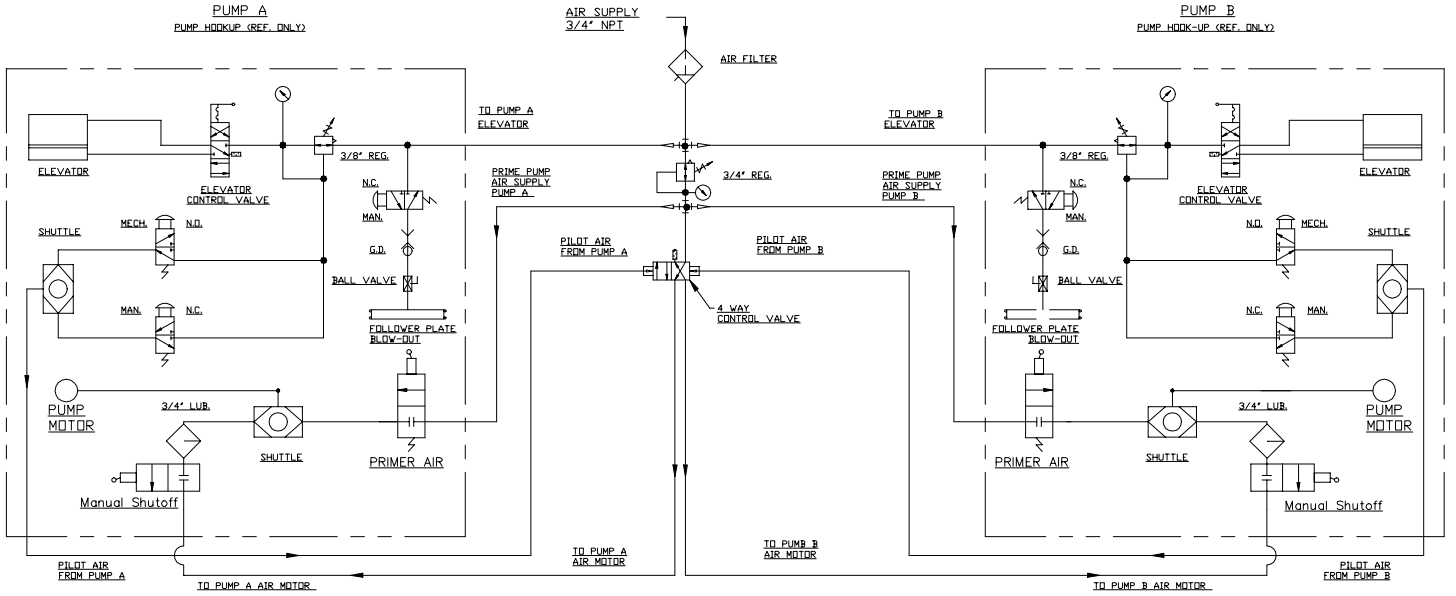
The System requires two 900-058C Elevator Regulator Pneumatics and One 900-059C Crossover Pneumatics.



MAINTENANCE

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

AUTOMATIC CROSSOVER SCHEMETIC

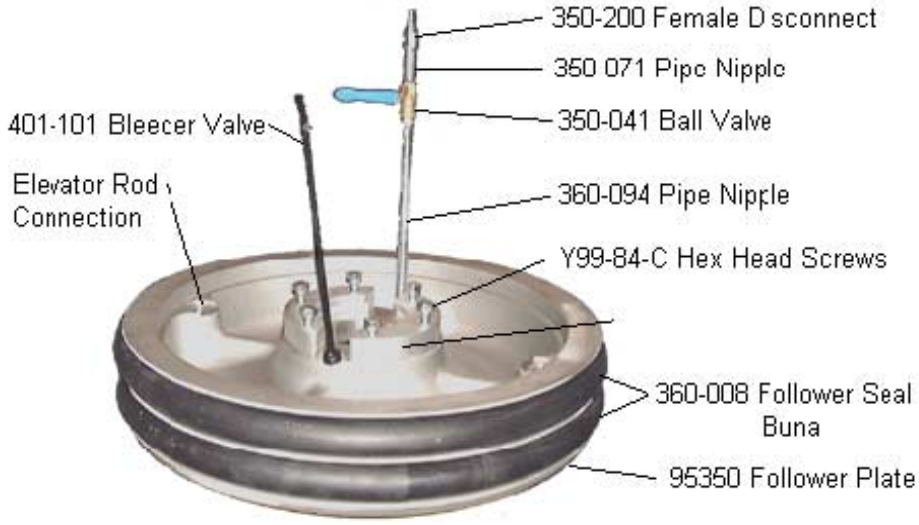


900-008 AIR HOSE ASSEMBLY INSTRUCTIONS

1) Install Reducing Bushing into the elevator Pneumatics.
2) Connect female couplet to male coupler on the follower Plate and open the ball valve.
3) Put elevator hand valve in the stop position
4) Depress the 3-way valve until the follower plate reaches The top of the barrel. Release the valve.
5) Using the elevator hand valve raise the pump assembly Slowly out of the drum.
6) Close the follower plate ball valve.

900-130JR 55 Gallon Follower Plate

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



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 Seals.