

PARTS LIST / PH10A-XXX-XXX FLUID SECTION

FLUID SECTION PARTS

Item	Description (size)	Qty	Part No.	[Mtl]
★	Fluid Section Service Kit		637339-()	
□ 1	Rod	(1)	98724-1	[C]
✓ 2	"O" Ring (3/32" x 3/4" o.d.)	(1)	Y330-113	[B]
★ 3	"O" Ring (3/32" x 11/16" o.d.)	(4)	Y328-112	[T]
□ 5	Plate	(2)	94074-1	[C]
□ 6	Diaphragm Plate	(2)	94055	[SS]
★ 7	Diaphragm	(2)	94800	[T]
9	Washer (1.375" o.d. x 0.505" i.d.)	(2)	93189-1	[SS]
14	Bolt (1/2" - 20 x 1-1/2")	(2)	Y5-87-T	[SS]
15	Fluid Cap	(2)	95191	[SS]
★ 19	"O" Ring (3/32" x 1-9/16" o.d.)	(4)	Y328-126	[T]
★ 21	Seat (PH10A-XSS-SXT)	(4)	90428-1	[SS]
	(PH10A-XSS-HXT)	(4)	93367-1	[SH]
★ 22	Ball (1" dia.) (PH10A-XSS-XST)	(4)	90948	[SS]
	(PH10A-XSS-XHT)	(4)	Y16-132	[SH]
26	Cap Screw (M8 x 1.25 x 25 mm)	(8)	95177	[SS]
29	Flange Nut (M8 x 1.25)	(16)	95535	[C]
32	Bracket, Right Side	(2)	94154-1	[C]
	Bracket, Left Side	(2)	94154-2	[C]
□ 36	Manifold (PH10A-ASS-XXT - N.P.T.F.)	(2)	94394	[SS]
	(PH10A-BSS-XXT - BSP)	(2)	94394-1	[SS]
43	Ground Lug	(1)	93004	[Co]
67	Screw (1/4" - 20 x 5/8")	(1)	93860	[SS]

□ "Smart Parts", keep these items on hand in addition to the service kits for fast repair and reduction of down time.

✓ Indicates parts included in 637338 air section service kit.

MATERIAL CODE

[B] = Nitrile	[Co] = Copper	[SS] =Stainless Steel
[C] = Carbon Steel	[SH] = Hard Stainless Steel	[T] = Teflon PTFE

FLUID SECTION DISASSEMBLY

The following procedure is for the installation of Fluid Section Service Kit parts. Refer to the view on page 5. The items with three digits are on pages 5, 6 and 7.

The steps shown below are for one side, repeat the steps 7 thru 12 to service the other side.

- Remove four (26) cap screws, releasing (36) top manifold.
- Remove (22) balls, (19) "O" rings and (21) seats.
- Remove four (26) cap screws, releasing (36) bottom manifold.
- Remove (19) "O" rings, (21) seats and (22) balls.
- Remove eight (29) nuts, releasing (32) brackets.
- Remove one (15) fluid cap.
- Using a plastic mallet, tap the (124) tie rods back flush into the auxiliary body.
- Remove two (158) cap screws, releasing (154 or 155) auxiliary body and diaphragm assembly.
- Remove (159) "O" ring and one (153) "O" ring.
 - SERVICE NOTE: The next few steps relate only to diaphragm disassembly. Further disassembly would not normally be required unless there is damage / wear found on the (148) piston or on the face of the (152) cylinder.
- Using a spanner wrench to hold the (149) adapter piston and a 3/4" socket on the (14) bolt, remove the (14) bolt, releasing (9) washer, (3) "O" ring, (6) diaphragm plate, (7) diaphragm, (5) plate and (3) "O" ring.
- Remove the piston assembly and inspect the (151) nut, (148) piston

assembly, (150) "O" ring and (149) adapter piston. Do not disassemble further unless damage is evident.

- Using an "O" ring pick, remove the (165) quad ring and two (164) back-up rings from the (163) bushing.
 - SERVICE NOTE: Removal of the (163) bushing should not be necessary, however it must be checked for sharp edges and removed to prevent possible further damage.

FLUID SECTION REASSEMBLY

- Clean all parts upon reassembly. Lubricate all replacement parts and metallic moving parts with Key-Lube grease upon reassembly.
 - SERVICE NOTE: Teflon "O" rings are not resilient and they should always be replaced with new ones.
- Install the (164) back-up ring by pulling it apart, twist or walk it down into the cavity bottom inside the (163) bushing.
 - Install the (165) quad ring on top of the spiral ring by folding it in half allowing it to get past the bushing i.d. and into the cavity.
 - Install the second (164) back-up ring as in step 1. Locate it on top of the quad ring. Lubricate and smooth out the set with your finger to assure good alignment.
 - Place the (9) washer onto the (14) bolt, with the chamfer against the bolt head, place the (3) "O" ring onto the (14) bolt and insert these three parts thru the (6) plate.
 - Place the (7) diaphragm onto this assembly, (see assembly note, page 5).
 - Assemble the (150) "O" ring and (148) piston assembly to the (149) adapter piston, securing with the (151) nut.
 - Lubricate the (152) cylinder wall and insert the piston assembly into the cylinder and through the bushing / quad seal.
 - Apply Loctite® #271™ to the inner threads of the (149) adapter piston.
 - Place the (3) "O" ring on the end of the (149) adapter piston and slide the (5) plate over it.
 - Thread the piston assembly and diaphragm assembly together. Hold the piston assembly with a spanner wrench, align the diaphragm with the bolt holes and torque the (14) bolt to 49 - 52 ft lbs (66.4 - 70.5 Nm).
 - Install the (159) "O" ring and the (153) large "O" ring. Assembly hint: A liberal amount of Key-Lube grease will hold these in place temporarily.
 - Align the (154 or 155) auxiliary body with the (125) dowel pin and (158) cap screws, and push together, securing with two (158) cap screws.
 - CAUTION: The tie rods can tear the diaphragm and ruin it. Hold the diaphragm against the pump body with your fingers when pushing each rod end through.
 - Align the diaphragm with the proper holes in the body and push the rods through far enough to allow installation of the (15) fluid caps. Be certain the flow direction is oriented correctly.
 - Assemble four (29) nuts.
 - Install two (32) brackets, securing with four (29) nuts.
 - NOTE: Tighten the fluid cap nuts in a cross pattern alternately and **evenly**. Torque (29) nuts to 280 - 300 in. lbs (31.6 - 33.9 Nm).
 - Assemble (22) balls, (21) seats and (19) "O" rings into the cavity in the bottom of (15) fluid caps.
 - Assemble (36) bottom manifold to fluid caps, securing with (26) cap screws. NOTE: Torque (26) cap screws to 120 - 140 in. lbs (13.6 - 15.8 Nm).
 - Assemble (21) seats, (19) "O" rings and (22) balls into the cavity in the top of (15) fluid caps.
 - Assemble (36) top manifold to fluid caps, securing with (26) cap screws. NOTE: Torque (26) cap screws to 120 - 140 in. lbs (13.6 - 15.8 Nm).

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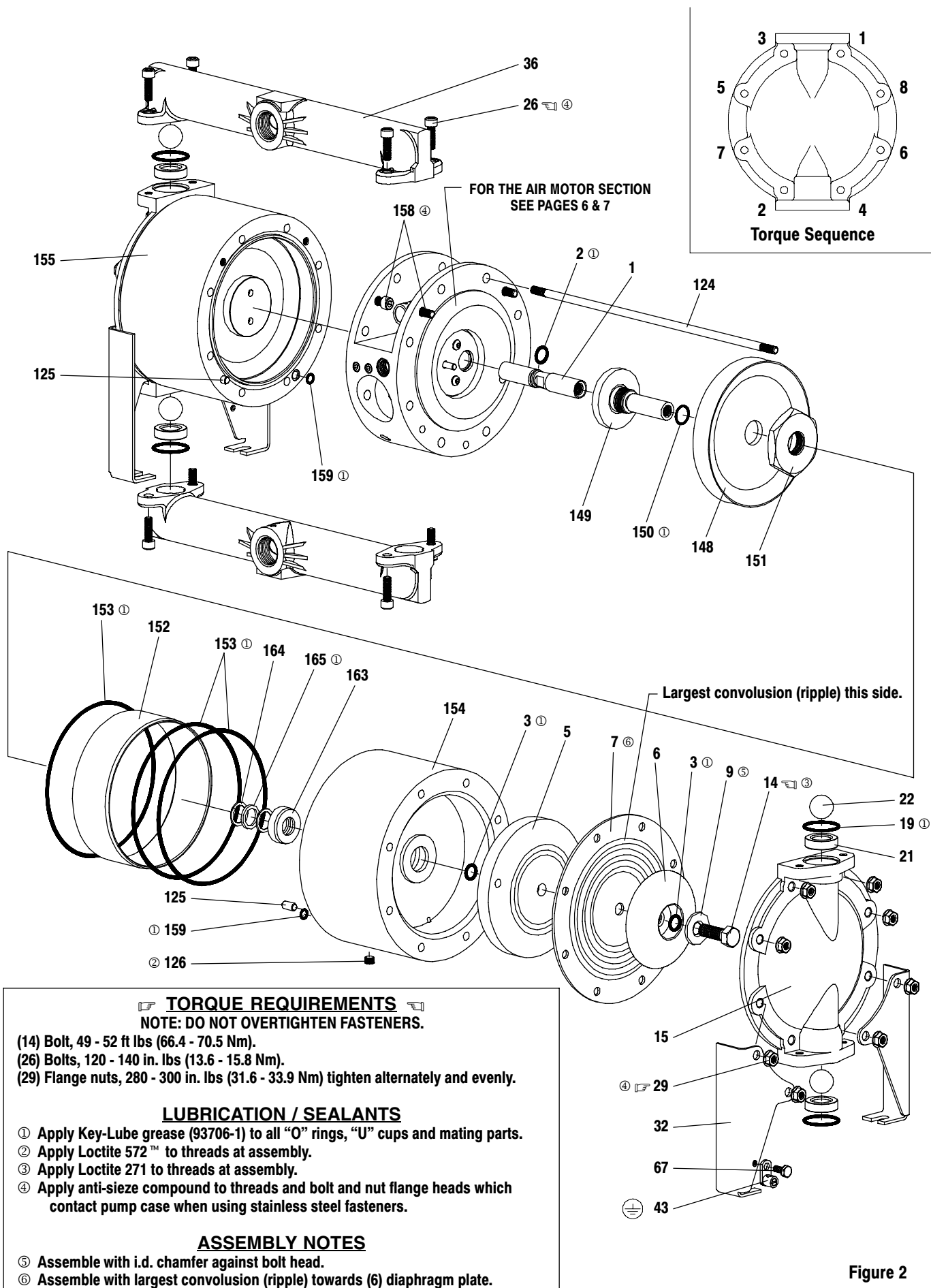


Figure 2

PARTS LIST / PH10A-XXX-XXX AIR MOTOR SECTION

✓ Indicates parts included in 637338 Air Section Repair Kit.

Item	Description (size)	Qty	Part No.	Mtl
101	Motor Center Body	(1)	95122-1	[A]
✓ 102	"O" Ring (1/16" x 1" o.d.)	(2)	Y325-20	[B]
□ 103	Sleeve	(1)	94527	[D]
104	Plate	(2)	95125	[SS]
109	Piston	(1)	92011	[D]
✓ 110	"U" Cup (3/16" x 1-3/8" o.d.)	(1)	Y186-51	[B]
111	Spool	(1)	92005	[A]
112	Washer (1.556" o.d.)	(5)	92877	[Z]
✓ 113	"O" Ring (small) (1/8" x 1-1/4" o.d.)	(5)	Y325-214	[B]
✓ 114	"O" Ring (large) (3/32" x 1-9/16" o.d.)	(6)	Y325-126	[B]
115	Spacer	(4)	92876	[Z]
116	Spacer	(1)	92006	[Z]
□ 118	Actuator Pin	(2)	95126	[SS]
□ 121	Plug	(2)	95123	[D]
123	Button Head Screw (M6 x 1 x 12 mm)	(4)	95176	[C]
124	Tie Rod	(8)	95195	[SH]
125	Dowel Pin (5/16" o.d. x 5/8")	(2)	Y148-45	[C]
126	Pipe Plug (1/8 - 27 N.P.T.)	(10)	Y227-2-L	[C]
127	Street Elbow	(1)	94763	[Br]
136	Plug	(2)	94075	[SS]
✓ 137	"O" Ring (1/16" x 1-7/8" o.d.)	(2)	Y325-31	[B]
148	Piston Assembly	(2)	61419	[B]
149	Adapter Piston	(2)	94073-1	[C]

Item	Description (size)	Qty	Part No.	Mtl
✓ 150	"O" Ring (1/16" x 1-3/16" o.d.)	(2)	Y325-23	[B]
□ 151	Nut	(2)	94072	[C]
152	Cylinder	(2)	94801	[Fg]
✓ 153	"O" Ring (1/8" x 6-1/2" o.d.)	(6)Ⓞ	Y325-259	[B]
154	Auxiliary Body - Right	(1)	94750-1	[A]
155	Auxiliary Body - Left	(1)	94751-1	[A]
158	Cap Screw (M8 x 1.25 x 25 mm)	(4)	95177	[SS]
✓ 159	"O" Ring (1/16" x 7/16" o.d.)	(2)	Y325-11	[B]
163	Bushing	(2)	94053	[Bz]
✓ 164	Back-Up Ring (3/4" i.d. x 1" o.d.)	(4)	Y118-210	[T]
✓ 165	Quad Ring	(2)	94050	[B]
✓ 167	Pilot Piston (includes 168 and 169)	(1)	67164	[D]
168	"O" Ring (3/32" x 5/8" o.d.)	(2)	94433	[U]
169	"U" Cup (1/8" x 7/8" o.d.)	(1)	Y240-9	[B]
170	Piston Sleeve	(1)	94081	[Br]
✓ 171	"O" Ring (3/32" x 1-1/8" o.d.)	(1)	Y325-119	[B]
✓ 172	"O" Ring (1/16" x 1-1/8" o.d.)	(1)	Y325-22	[B]
✓ 173	"O" Ring (3/32" x 1-3/8" o.d.)	(2)	Y325-123	[B]
✓ 174	"U" Cup (1/8" x 1/2" o.d.)	(2)	Y186-43	[B]
201	Muffler	(1)	93110	[C]
✓ ★	Key-Lube "O" Ring Lubricant	(1)	93706-1	
	10 Pack Key-Lube Grease		637175	

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★ Indicates parts included in 637339-() fluid section service kit.

MATERIAL CODE		
[A] = Aluminum	[C] = Carbon Steel	[SS] = Stainless Steel
[B] = Nitrile	[D] = Acetal	[T] = Teflon PTFE
[Br] = Brass	[Fg] = Fiberglass	[U] = Polyurethane
[Bz] = Bronze	[SH] = Hard Stainless Steel	[Z] = Zinc

AIR SECTION SERVICE

Service is divided into two parts - 1. Pilot Valve, 2. Major Valve.

GENERAL SERVICE NOTES:

- Air Motor Section Service is continued from step 8 of the Fluid Section Disassembly.
- It is not necessary to remove the Fluid Section Ends to gain access to the Air Motor Major Valve Section.
- In most cases, problems of an air control nature will reside in the Air Valve area.
- Removal of the Fluid Sections is required to install all of the parts included in the Air Section Service Kit, if this is the case, follow steps 1 thru 8 of the Fluid Section Disassembly on both sides and isolate the Air Section.
- Ⓞ SERVICE KIT NOTE: Only two replacement "O" rings are supplied in the 637338 and 637339-() kits.

PILOT VALVE DISASSEMBLY

- NOTE: Both outer pump Fluid Sections must be removed to access the Pilot Section parts (see figure 3, page 7).
- 1. Remove two (123) screws and (104) plate from both sides of the (101) motor center body.

2. A light tap on (118) actuator pin should expose the opposite (121) plug and (167) pilot piston.
3. Remove (170) piston sleeve and inspect the inner bore for damage.

PILOT VALVE REASSEMBLY

- Lubricate all soft parts, spool and bores with Key-Lube grease upon reassembly.
1. Assemble the trailing (102) "O" ring to (103) sleeve and assemble sleeve into motor center body, pushing thru far enough to expose "O" ring groove on opposite end.
 2. Assemble (102) "O" ring to (103) sleeve and push sleeve onto motor center body.
 3. Assemble (2) "O" ring to (1) rod and assemble into (103) sleeve.
 4. Assemble (171 and 172) "O" rings to (170) piston sleeve and assemble into (101) center body. NOTE: Assemble sleeve with small i.d. into center body.
 5. Assemble two (168) "O" rings and (169) "U" cup to (167) pilot piston (note the lip direction of "U" cup) and assemble into (170) piston sleeve.
 6. Assemble (173) "O" rings and (174) "U" cups (note lip direction) to (121) plugs.
 7. Assemble (118) actuator pins to (121) plugs and assemble (121) plugs into (101) center body.
 8. Assemble (104) plates to (101) center body, securing with (123) screws.
 9. Reassemble fluid section parts.

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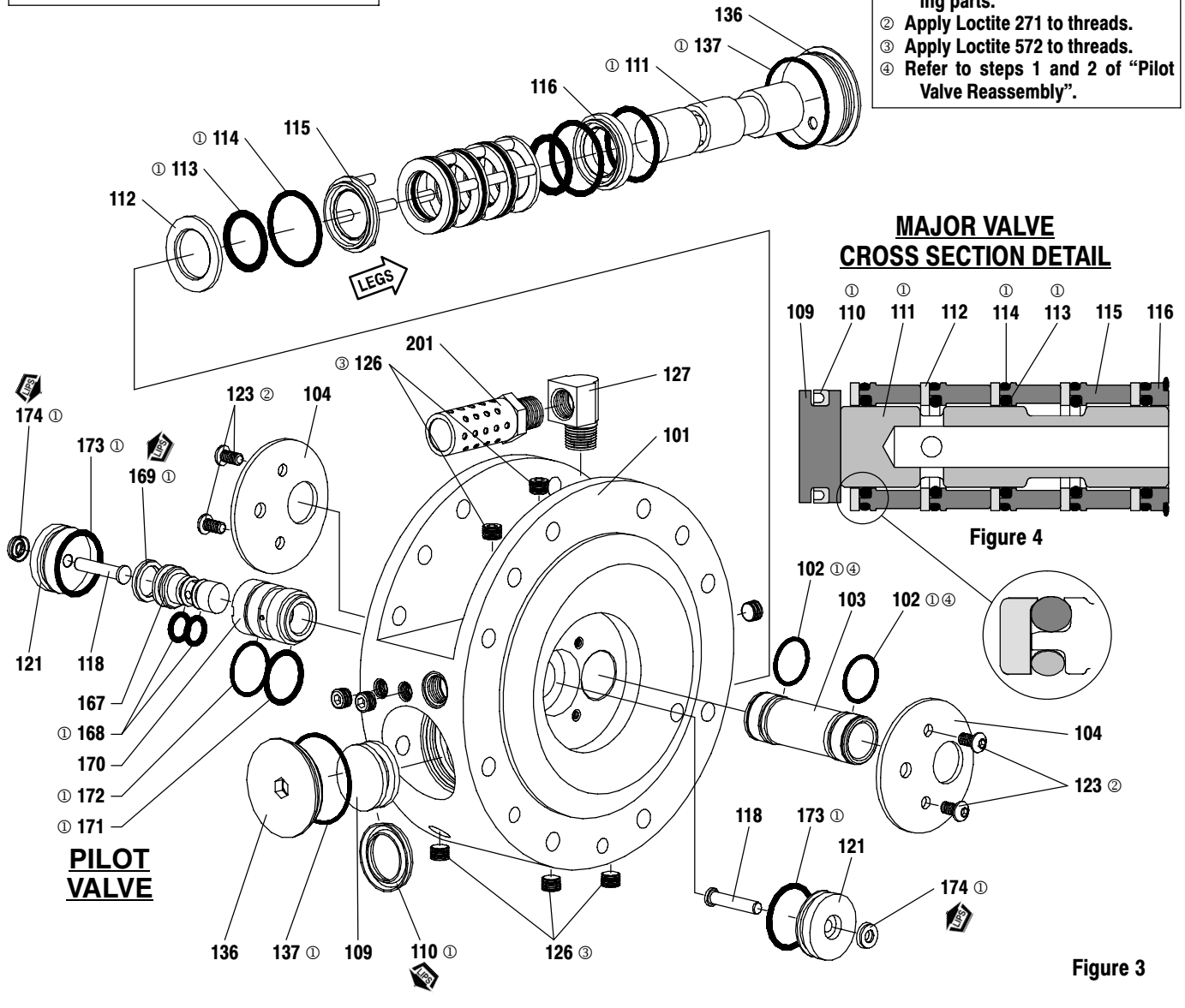
IMPORTANT
BE CERTAIN TO ORIENT (115) SPACER LEGS AWAY FROM BLOCKING INTERNAL PORTS WHEN REASSEMBLING AIR SECTION.

MAJOR VALVE

See cross section detail figure 4.

LUBRICATION / SEALANTS

- ① Apply Key-Lube grease (93706-1) to all "O" rings, "U" Cups & mating parts.
- ② Apply Loctite 271 to threads.
- ③ Apply Loctite 572 to threads.
- ④ Refer to steps 1 and 2 of "Pilot Valve Reassembly".



MAJOR VALVE CROSS SECTION DETAIL

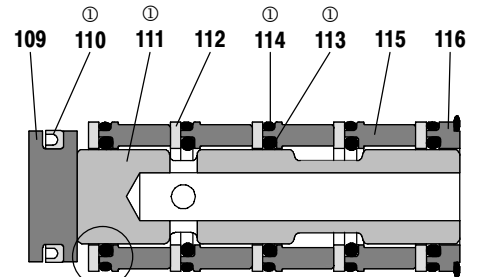


Figure 4

Figure 3

MAJOR VALVE DISASSEMBLY

1. Remove the two (124) tie rods blocking the (136) plugs.
2. Using a 3/8" Allen wrench, remove both (136) plugs. Check the (137) "O" rings and make certain they are intact and undamaged. Fragments of "O" rings can cause the pump to malfunction.
3. From the air inlet side (use a large dowel and soft mallet) tap moderately on the (109) piston and then push the entire valve stack out the opposite side. Clean and inspect all parts for damage and wear.

MAJOR VALVE REASSEMBLY

- Lubricate all soft parts, spool, and bores with Key-Lube grease upon reassembly.
1. For best results, rebuild the Major Valve stack one piece at a time. Start with the (112) washer and install it in the side opposite the air inlet. Place the washer into the bore with the raised edge facing out-

- ward, follow it with the larger (114) "O" ring.
2. Place (113) "O" ring on the (115) spacer, insert the spacer with the legs facing outward, be sure not to block the internal ports with the spacer legs. Repeat this process three times and make certain each set is pressed in well.
3. Install the last (112) washer and a (114) "O" ring, place the last (113) "O" ring on the (116) spacer and install. Install the last (114) "O" ring.
4. Lubricate the (111) spool and install (this is the side opposite of the air inlet). Note: The end with the hole in it faces outward.
5. Install a new (137) "O" ring on the (136) plug and thread it into the (101) motor center body.
 - Note: Align plug carefully and take care not to damage "O" rings.
6. Assemble the (110) "U" cup to the (109) piston and install it into the air inlet side with the lips facing outward.
7. Install new (137) "O" ring on the (136) plug and install into the (101) motor center body.
8. Assemble (124) tie rods, securing with (29) nuts. NOTE: Torque (29) nuts to 280 - 300 in. lbs (31.6 - 33.9 Nm).