OPERATOR'S MANUAL 2094GXXXXXX-X

INCLUDING: SERVICE KITS, TROUBLESHOOTING, PARTS LIST, DISASSEMBLY AND REASSEMBLY.

RELEASED: 5-12-17
REVISED: 4-8-22
(REV: C)

TWO-BALL STYLE LOWER PUMP ENDS

Also covers K2094GXXXXXX 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 ARO® replacement parts to assure compatible pressure rating and longest service life.

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 an ARO pump. Replacement copies of these forms are available upon request.
  - ☐ 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 two-ball design provides better priming of the lower foot valve. The double acting feature is standard in all ARO 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 the entire pump system with a solvent that is compatible with the material being pumped.

Keep solvent cup filled with the compatible solvent. This will keep the material from drying on the piston rod, which would drag through 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 assembling, lubricate the parts as required. When assembling O-rings, or parts adjacent to O-rings, make sure not to damage the O-rings and O-ring groove surfaces.

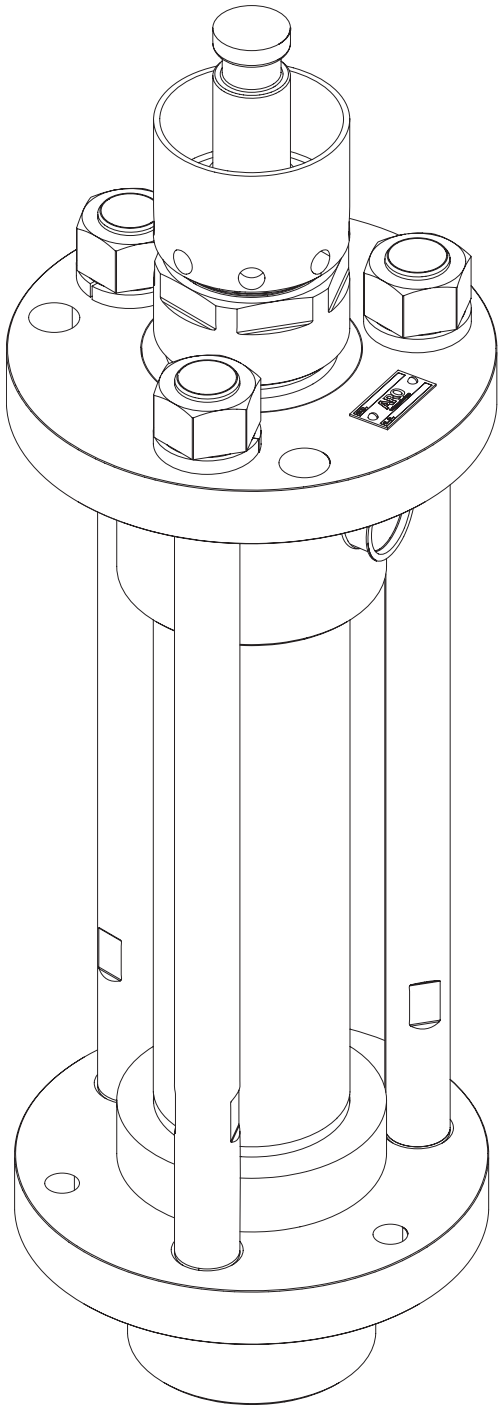


Figure 1

INGERSOLL RAND COMPANY INC
209 NORTH MAIN STREET – BRYAN, OHIO 43506
(800) 495-0276 • FAX (800) 892-6276

arozone.com

ARO Ingersoll Rand

MODEL DESCRIPTION CHART

2094 G X X X X X X - X

Inside Diameter of Pump Cylinder

2094 - 2.094" ID

Check Type / Wetted Material

G - Two Ball, 300 Series Stainless Steel With Carbide Seats

Container Suitability

1 - Remote Mounting (wall, floor stand, follower)

Inlet / Outlet Thread Type

1 - SAE Thread

Upper Packing Material

F - UHMW-PE
G - UHMW-PE / Glass Filled PTFE Staggered
H - UHMW- PE / Leather Staggered
K - Glass Filled PTFE
L - Leather
R - Glass Filled PTFE / UHMW-PE Staggered

Lower Packing Material

F - UHMW-PE
G - UHMW-PE / Glass Filled PTFE Staggered
H - UHMW-PE / Leather Staggered
K - Glass Filled PTFE
L - Leather
R - Glass Filled PTFE / UHMW-PE Staggered

Spring Type / Solvent Cup

4 - Multiple Wave Spring / Adjustable Solvent Cup

Plunger / Tube Type

7 - 17-4 Stainless Steel, Hard Chrome plated
8 - 17-4 Stainless Steel, Ceramic plated

Revision Level

PARTS LIST / 2094GXXXXXX-X

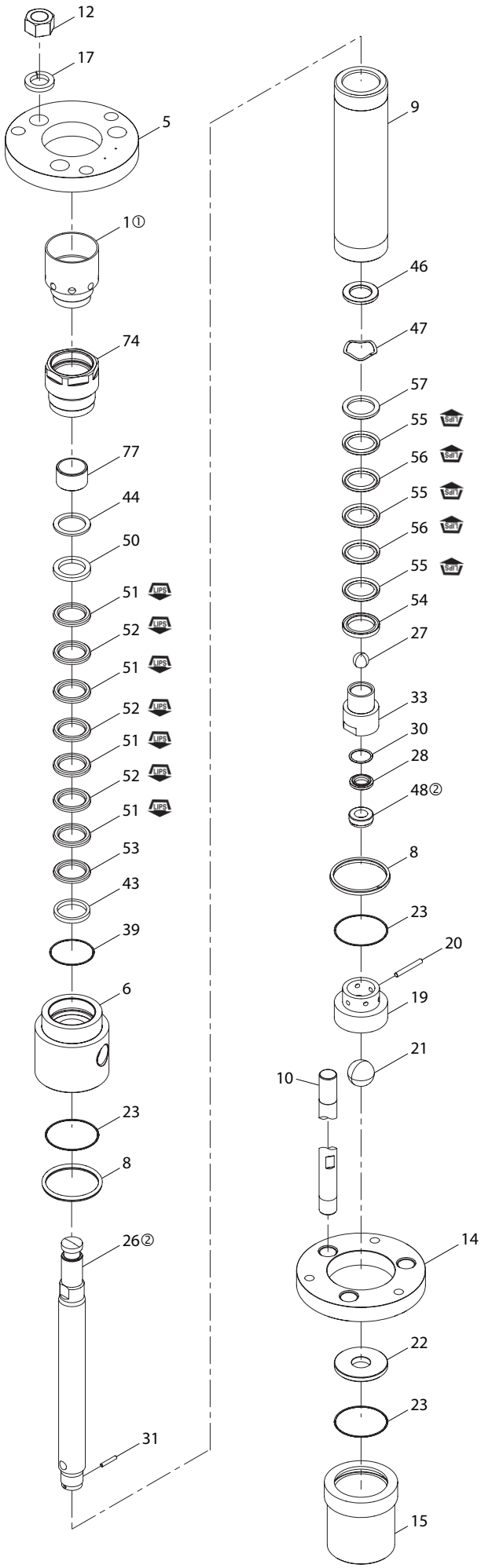
Item	Description (size)	Qty	Part No.	[Mtl]
1	Solvent Cup	1	97481	[SS]
5	Ring, Upper Retainer	1	97564	[SS]
6	Outlet Body	1	97560	[SS]
✓ 8	Kit, O-ring and Back Up Ring	2	97579	[V] / [PPS]
9	Tube (models 2094GXXXXXX7)	1	97557	[PSS]
	(models 2094GXXXXXX8)		97557-1	[CSS]
10	Stud	3	97566	[SS]
12	Nut	3	Y11-16-T	[SS]
14	Ring, Lower Retainer	1	97565	[SS]
15	Body, Foot Valve	1	97558	[SS]
17	Lock Washer	3	Y14-100-T	[SS]
19	Ball Guide	1	97562	[SS]
20	Pin	1	97576	[SS]
21	Ball	1	79155	[SS]
22	Seat	1	97561	[TC]
✓ 23	O-ring	3	Y328-40	[T]
26	Plunger (models 2094GXXXXXX7)	1	97563	[PSS]
	(models 2094GXXXXXX8)		97563-1	[CSS]
27	Ball	1	97582	[SS]
28	Seat	1	97569	[TC]
✓ 30	O-ring	1	Y327-122	[V]
31	Pin	1	97574	[SS]
33	Adapter	1	97571	[SS]
✓ 39	O-ring	1	Y328-36	[T]
43	Spring	1	97581	[SS]
44	Washer	1	97486	[SS]
46	Washer	1	93213	[SS]

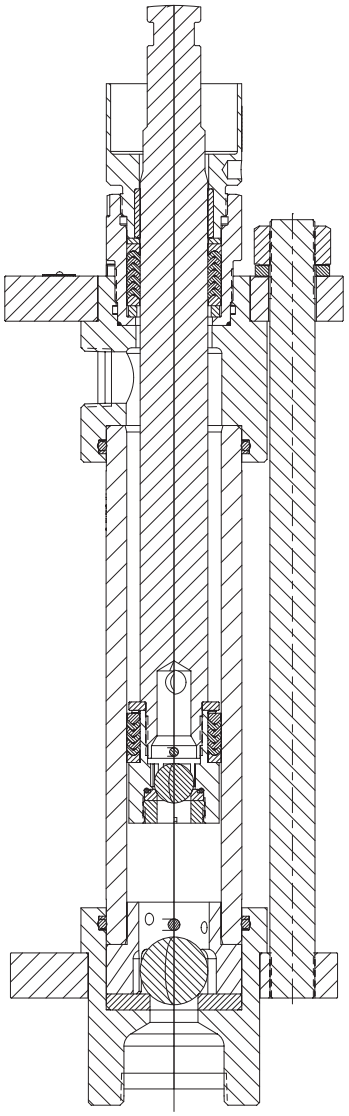
PARTS LIST / 2094GXXXXXX-X

Item	Description (size)	Qty	Part No.	[Mtl]
47	Spring Washer	1	97578	[SS]
48	Retaining Nut	1	97568	[SS]
✓ 50	Female Packing Washer, Upper	1	97487	[PPS]
✓ 51	"V" Packing (2094GXXFXXX)	7	93628-4	[UH]
	(2094GXXKXXX)		93628-2	[GFT]
	(2094GXXLXXX)		93628-1	[L]
	(2094GXXGXXX, 2094GXXHXXX)	4	93628-4	[UH]
	(2094GXXRXXX)	4	93628-2	[GFT]
✓ 52	"V" Packing (2094GXXGXXX)	3	93628-2	[GFT]
	(2094GXXHXXX)		93628-1	[L]
	(2094GXXRXXX)		93628-4	[UH]
53	Male Packing Washer, Upper	1	97488	[SS]
✓ 54	Female Packing Washer, Lower	1	92266	[PPS]
✓ 55	"V" Packing (2094GXXXFXX)	5	93628-4	[UH]
	(2094GXXXKXX)		93628-2	[GFT]
	(2094GXXXLXX)		93628-1	[L]
	(2094GXXXGXX, 2094GXXXHXX)	3	93628-4	[UH]
	(2094GXXXRXX)	3	93628-2	[GFT]
✓ 56	"V" Packing (2094GXXXGXX)	2	93628-2	[GFT]
	(2094GXXXHXX)		93628-1	[L]
	(2094GXXXRXX)		93628-4	[UH]
57	Male Packing Washer, Lower	1	97572	[SS]
74	Nut	1	97480	[SS]
✓ 77	Bushing	1	97482	[PPS]
✓	Items included in Service Kit		K2094GXXXXXX-X	

MATERIAL CODE	
[CSS]	= Ceramic coated stainless steel
[GFT]	= Glass filled PTFE
[L]	= Leather
[PPS]	= Polypropylene sulfide
[PSS]	= Hard Chrome Plated Stainless Steel

MATERIAL CODE	
[SS]	= Stainless Steel
[T]	= PTFE
[TC]	= Tungsten Carbide
[UH]	= UHMW-PE
[V]	= FKM





☞ TORQUE REQUIREMENTS ☜

NOTE: DO NOT OVERTIGHTEN FASTENERS.

(12) Nuts, to 300 ft lbs. (406.7 Nm) min.
(26) Plunger, to 245 ft lbs. (332.2) min.
(48) Retaining Nut, to 150 ft lbs. (203.4) min.
(1) Solvent Cup, to Hand Tight, Do Not Overtighten.
(74) Nut to 150 ft lbs. (203.4 Nm) minimum.

LUBRICATION / SEALANTS

Apply Lubriplate® FML-2 grease to all O-rings, "U" cups and mating parts. Apply Lubriplate FML-2 grease to the threads of (1) Solvent Cup and (74) Nut.

① Keep solvent cup filled with a lubricant such as Wet Sol "plus" or equivalent.

② Apply PTFE tape to threads.

Figure 2

LOWER PUMP DISASSEMBLY

IMPORTANT: The lower pump is designed so that access to the upper "V" packings (51 and 52) can be accomplished without disassembly of the inlet / outlet bodies from the main pump tube. Complete lower disassembly should not be necessary, in most cases skip steps 3-19 below.

NOTE: All threads are right hand.

1. Secure the lower pump assembly vertically in a vise, clamping on the (15) foot valve body.
2. Loosen (1) solvent cup to relieve pressure on (51 and 52) "V" packings.
3. Unscrew the (74) nut and remove the solvent cup assembly from the lower pump.

⚠ CAUTION Do not damage the (51 and 52) "V" Packings.

4. Remove the (39) O-ring from the (6) outlet body.
5. Remove the three (12) nuts and (17) lock washers.
6. Remove the (5) upper retaining ring.
7. Pull the (6) outlet body from (9) tube.
8. Remove the (23) O-ring and (8) O-ring/backup ring from the outlet body. **Note the orientation of the (8) O-ring/backup ring.**
9. Pull the (9) tube from the (19) ball guide.
10. Remove the (23) O-ring and (8) O-ring/backup ring from the (15) foot valve body. **Note the orientation of the (8) O-ring/backup ring.**
11. Push the (33) adapter down until (55 and 56) the "V" packings are exposed at bottom of the tube.

⚠ CAUTION Do not damage the (55 and 56) "V" Packings.

12. Unscrew the (48) retaining nut and remove the (28) seat, (30) O-ring and (27) ball from the (33) adapter. Inspect the (28) seat for wear or damage.
13. Unscrew the (33) adapter and remove the (46) washer, (47) spring washer, (57) male packing washer, (55 and 56) "V" packings, (54) female packing washer and (31) pin.
14. Remove the (19) ball guide from the (15) foot valve body. If the (19) ball guide is stuck, place a wood dowel through the inlet of (15) foot valve body and against the (21) ball and push the (19) ball guide out of the (15) foot valve body.
15. Remove the (20) pin and the (21) ball from (15) foot valve body. Note the set of holes (20) pin is in the (19) ball guide.
16. Remove the (22) check valve seat from the (15) foot valve body. Inspect the (22) check valve seat for wear or damage.
17. Remove the (23) O-ring from the (15) foot valve body.
18. Remove the (14) lower retaining ring.
19. Remove the three (10) studs from the (14) lower retaining ring.
20. Secure the (74) nut in a vise and unscrew the (1) solvent cup.
21. Remove the (77) bushing, (44) washer, (50) female packing washer, (51 and 52) "V" packings, (53) male packing washer and (43) spring.

LOWER PUMP ASSEMBLY

NOTE: Lubricate all rubber goods and packings with a compatible lubricant prior to assembly.

Inspect and replace the old parts with the new parts as necessary. Look for deep scratches on the metallic surfaces and nicks or cuts in the O-rings and packings. Refer to the sealant and torque notes in figure 2.

1. Secure the (74) nut in a vise and insert the (43) spring, (53) male packing washer, (51 and 52) "V" packing, (50) female packing washer and (44) washer into (74) nut.
2. Place the (77) bushing into (1) solvent cup and screw (1) the solvent cup into (74) nut. **DO NOT TIGHTEN.**
3. Secure the (6) outlet body in a vise and insert the (39) O-ring into the (6) outlet body.
4. Screw the (74) nut into the (6) outlet body and tighten the (74) nut to 150 ft lbs. (203.4 Nm).
5. Insert the (30) O-ring into the (33) adapter and place the (28) seat (beveled inside diameter facing (27) ball) and tighten the (48) retaining nut to 150 ft lbs. (203.4 Nm).
6. Slide the (54) female packing washer, (55 and 56) "V" packings, (57) male packing washer and (47) spring washer over (33) adapter. Place the (27) ball into the (33) adapter.

⚠ CAUTION Do not damage the (55 and 56) "V" Packings.

7. Slide the (46) washer over the (26) plunger and insert the (31) pin into the (26) plunger.
8. Screw the (33) adapter onto the (26) plunger and tighten to 245 ft lbs. (332.2 Nm).
9. Insert the (8) O-ring/backup ring and (23) O-ring into (6) outlet body. **Note the orientation of the (8) O-ring/backup ring shown in figure 2.**
10. Slide the (26) plunger into the (6) outlet body.

⚠ CAUTION Do not damage the (51 and 52) "V" Packings.

11. Slide the (9) tube over the (26) plunger into the (6) outlet body.
12. Slide the (14) lower retaining ring with three (10) studs onto the (15) foot valve body.
13. Secure the (15) foot valve body vertically in a vise.
14. Insert the (23) O-ring into the (15) foot valve body.
15. Place the (22) check valve seat (beveled inside diameter facing (21) ball), (21) ball into (15) foot valve body.
16. Slide the (20) pin into the holes located on the (19) ball guide. Slide the (19) ball guide into (15) the foot valve body. **NOTE:** The (20) pin is positioned in the center holes from the factory. If more ball lift is desired for the heavier (more viscous) materials, change the pin to upper holes. For less lift (light materials), change the pin to lower holes.
17. Insert the (23) O-ring and (8) O-ring/backup ring into the (15) foot valve body. **Note the orientation of the (8) O-ring/backup ring shown in figure 2.**
18. Slide the (9) tube into the (15) foot valve body.
19. Slide the (5) upper retaining ring onto the (6) outlet body and secure using the three (17) lock washers and (12) nuts. Tighten the (12) nuts in increments to 300 ft lbs. (406.7 Nm).
20. Tighten the (1) solvent cup to hand tight.

TROUBLESHOOTING

No material at outlet (pump continually cycles).

- Check the material supply. Disconnect or shut off the air supply and replenish the material, reconnect.

Material on one stroke only (fast down stroke).

- The (21) lower ball may not be seating in the (22) seat (see lower pump disassembly). Remove the ball from the seat, clean and inspect the ball and seat area. If the ball or seat is damaged, replace.

Material on one stroke only (fast upstroke).

- 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.

DIMENSIONAL DATA

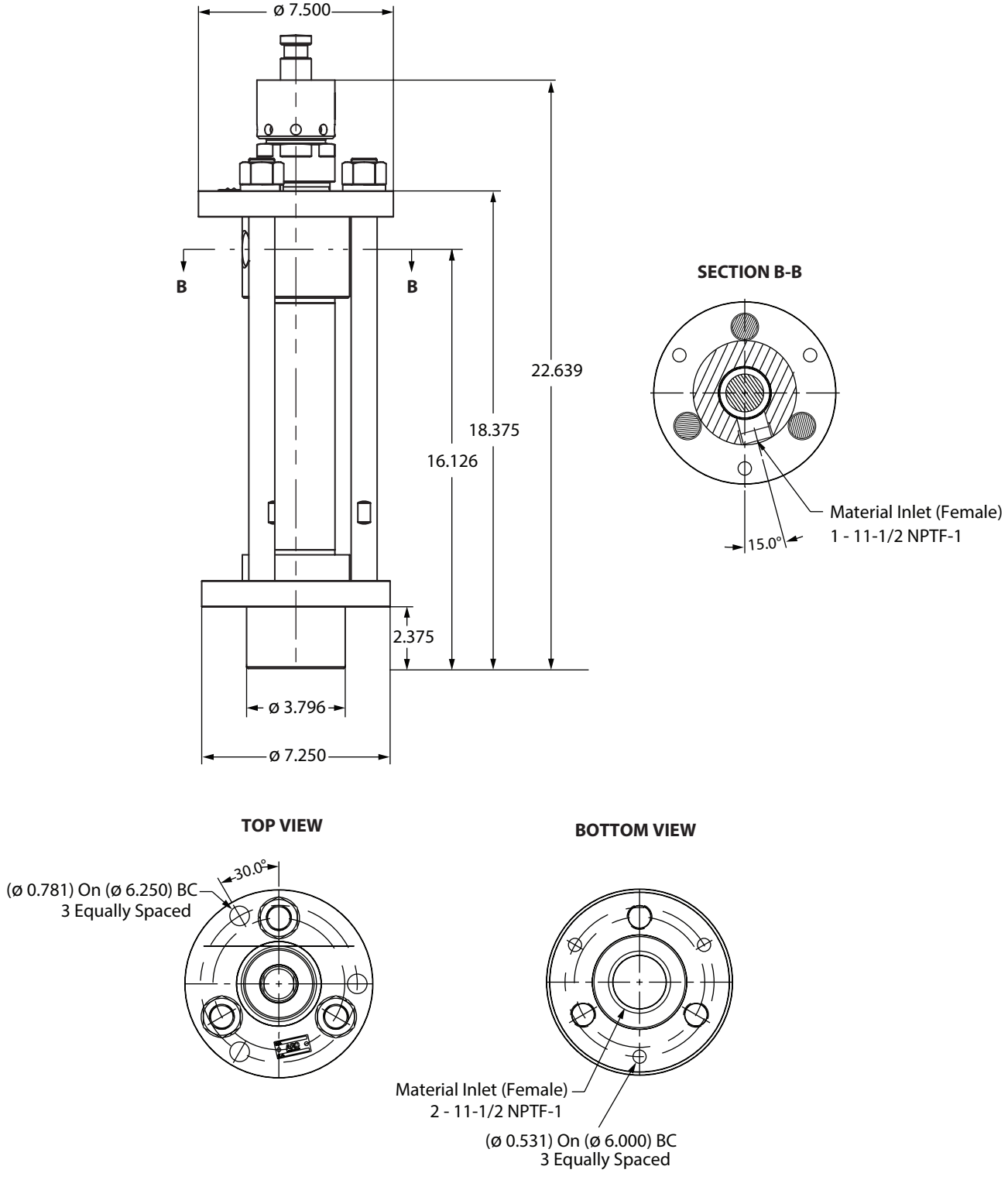


Figure 3