

Function Archive Cartridge Pressure Testing Instructions

June 13, 2024

Purchased Parts



Port Plug, Standard Knurl, Acetal,
1/4-28 Flat-Bottom
IDEX
P-309



23G Needle 1 in.
Becton Dickinson
305145



1-mL Syringe Luer-Lok
Becton Dickinson
309628



5-mL Syringe Luer-Lok
Becton Dickinson
309646



-005 PTFE Backup Rings
McMaster-Carr
9560K31



Luer Adapter 1/4-28 Female to
Female Luer, Tefzel™ (ETFE)
IDEX
P-678

Tools



AR Valve Pushpin



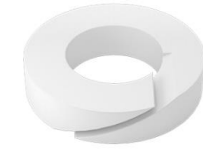
Magnetic Rod

1-mL Syringe Modification for High Pressure Testing

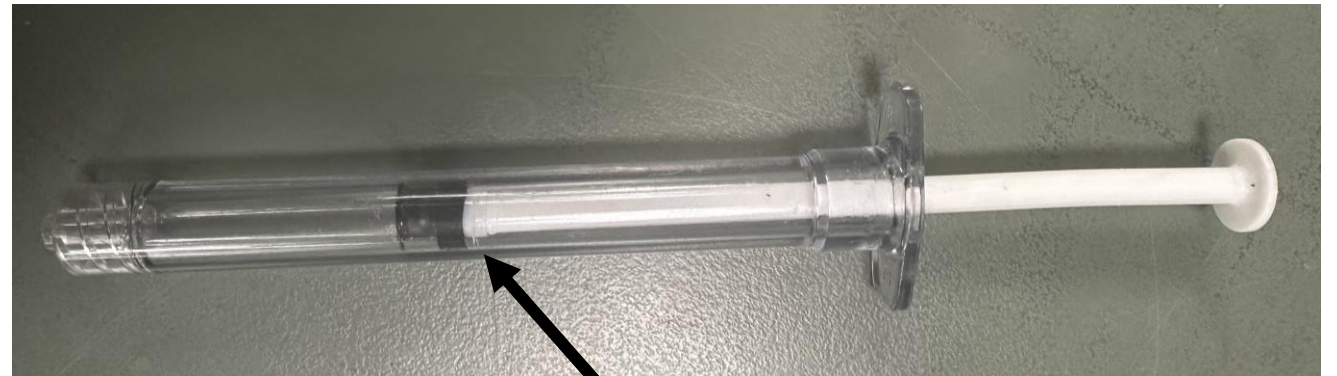
To withstand high pressures, a PTFE backup ring was added to the provided 1-mL syringes. The ring was inserted above the syringe plunger, in the groove.



1-mL Syringe Luer-Lok
Becton Dickinson
309628



-005 PTFE Backup Rings
McMaster-Carr
9560K31



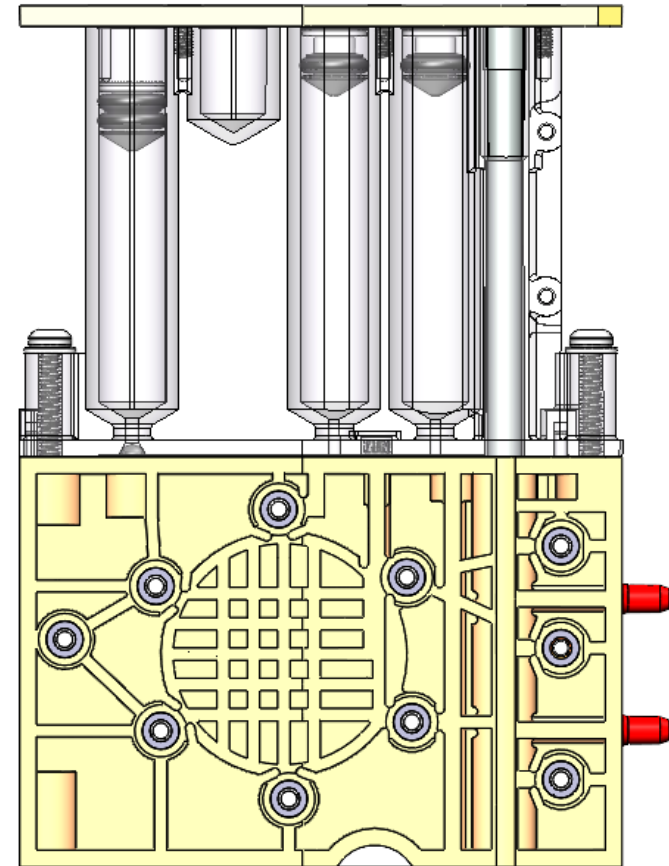
PTFE Backup Ring

Pass/Fail Criteria

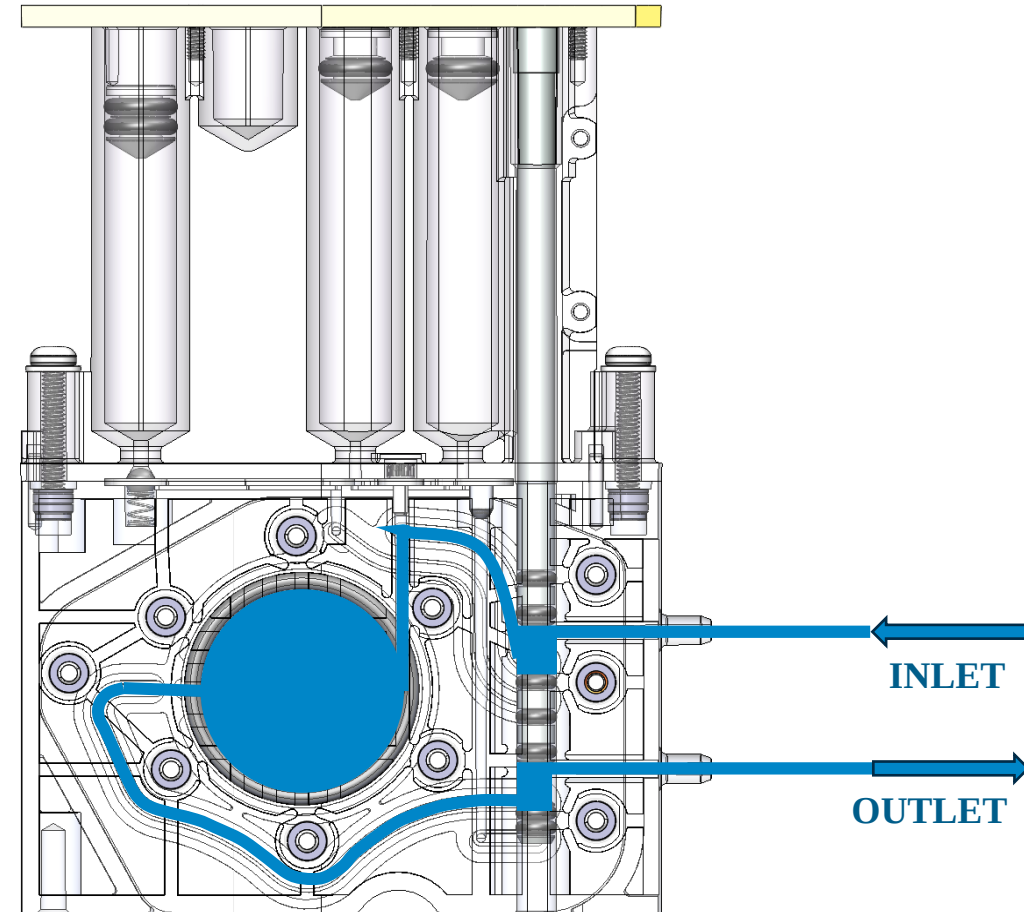
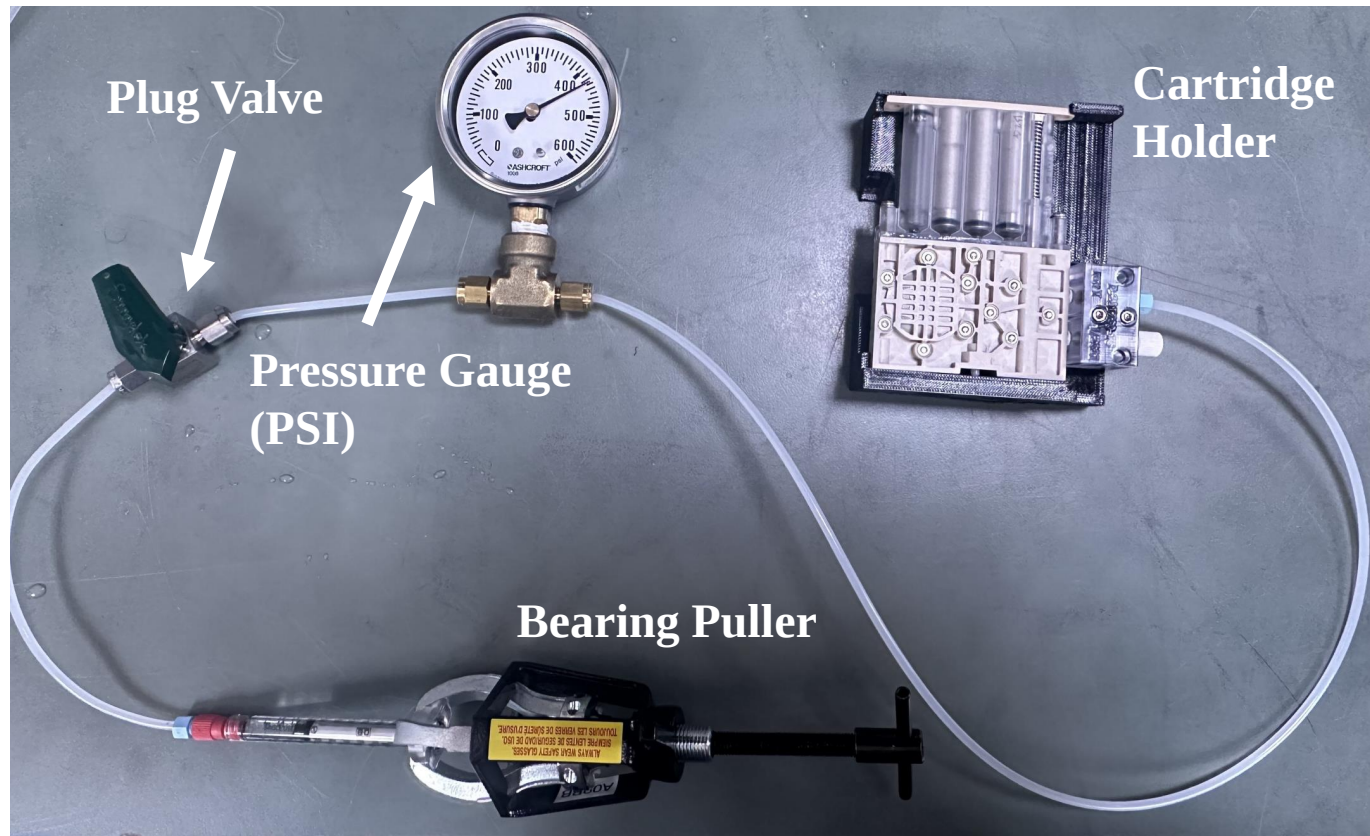
- No visible water leaks on any part of the assembly.
- Maintains pressure drop of less than 15% of starting pressure in 1 hour for Sample Line Testing (500 PSI)
- Rubber gaskets do not extrude from grooves.
- There are no occlusions. Fluid can flow into the cartridge. For sample line testing, fluid can flow into the cartridge inlet and out the cartridge outlet.

Archive Assembly for Pressure Testing

Follow 020000_Archive Assembly Instructions to assemble the bottom assembly and the syringe assembly.

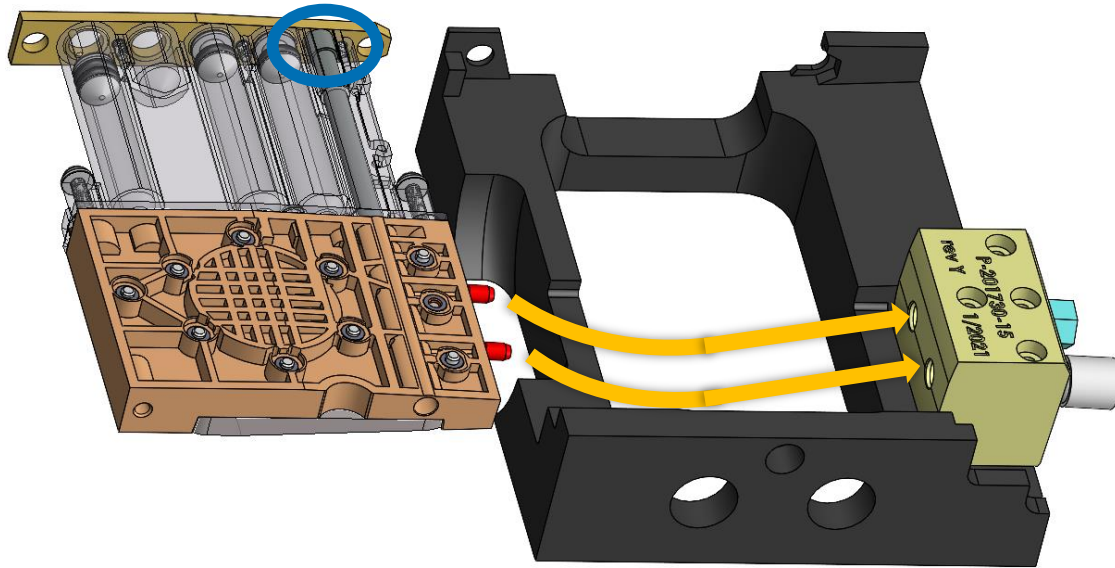


PART 1: Sample Line Testing (500 PSI)

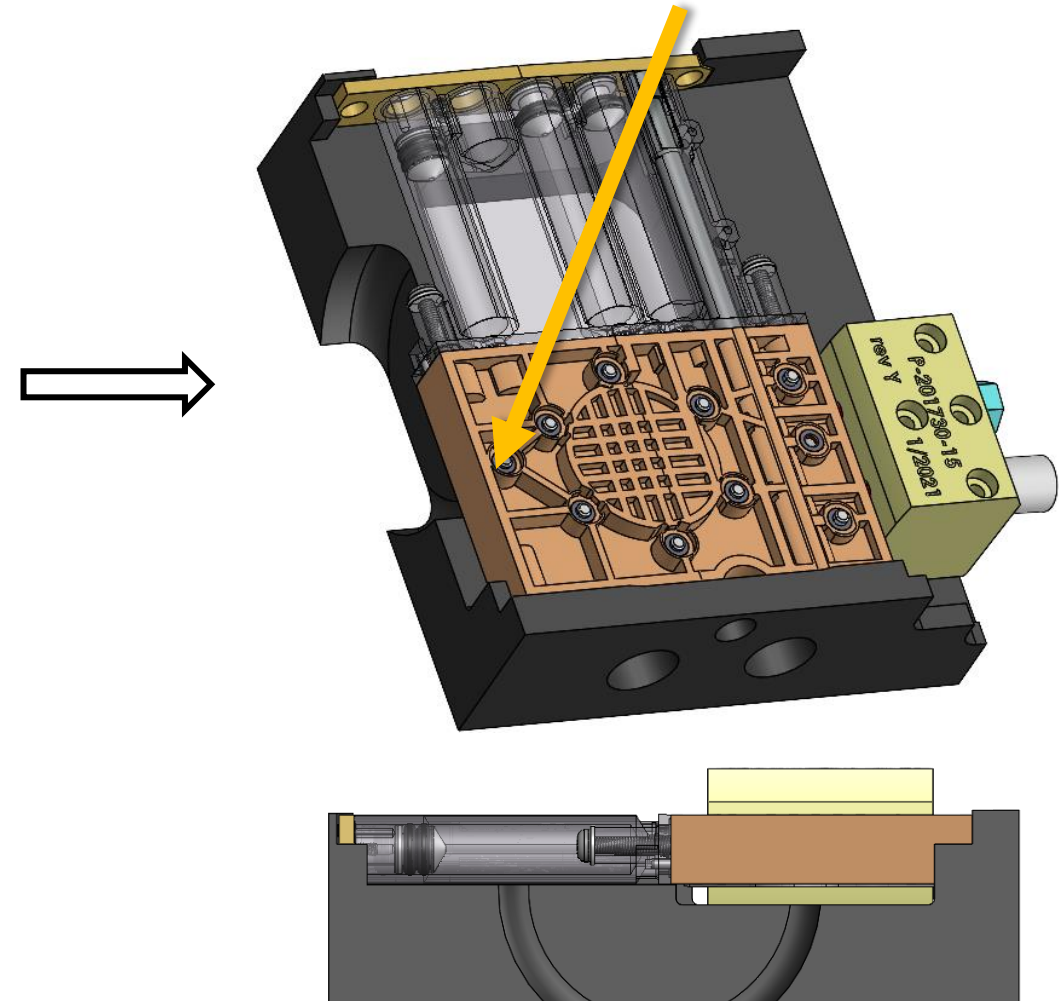


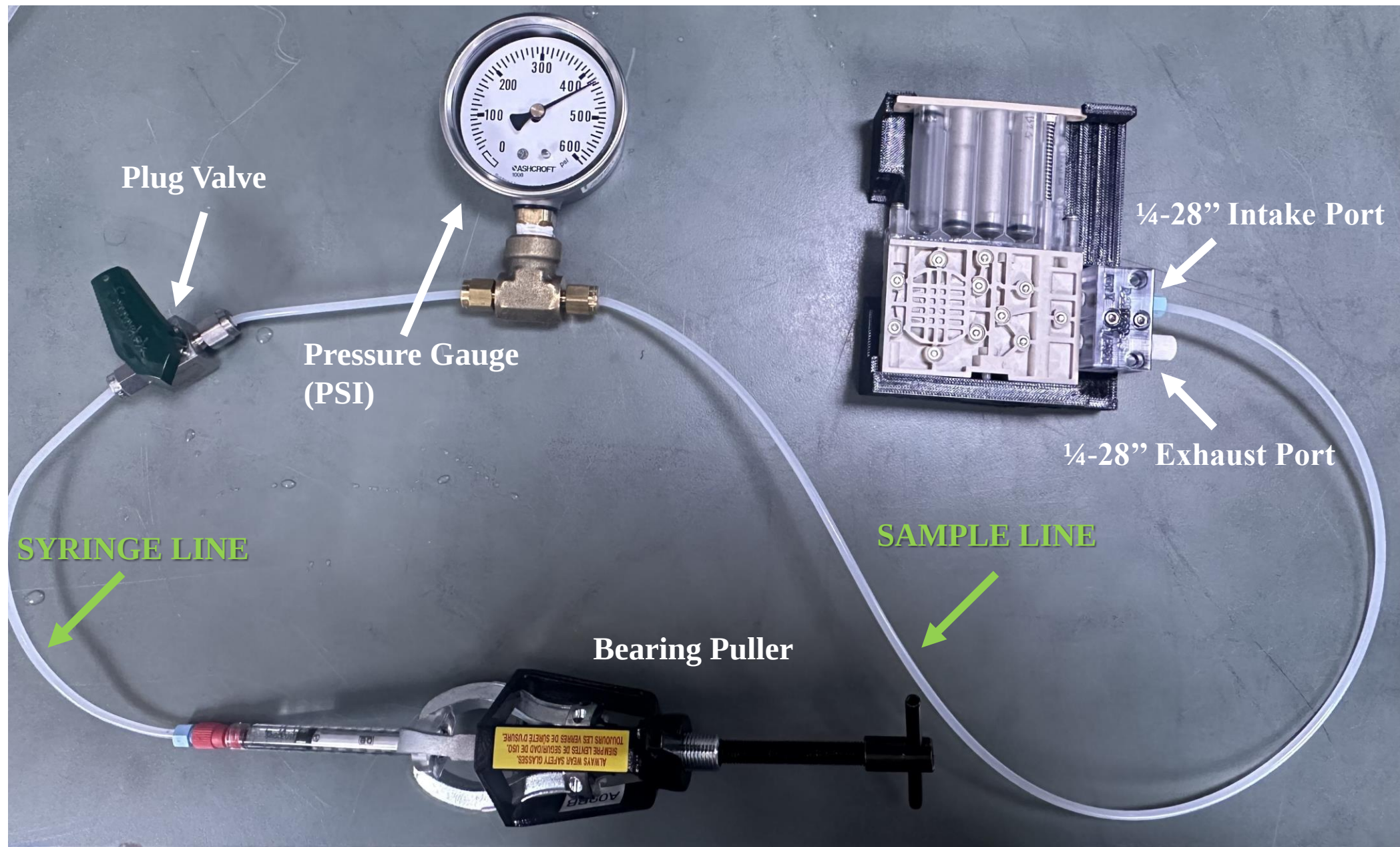
Setup – Sample Line Testing (500 PSI)

1. Insert assembled cartridge into cartridge holder. Be sure **020601_AR_valve** is flush to the top of the cartridge (circled in blue).



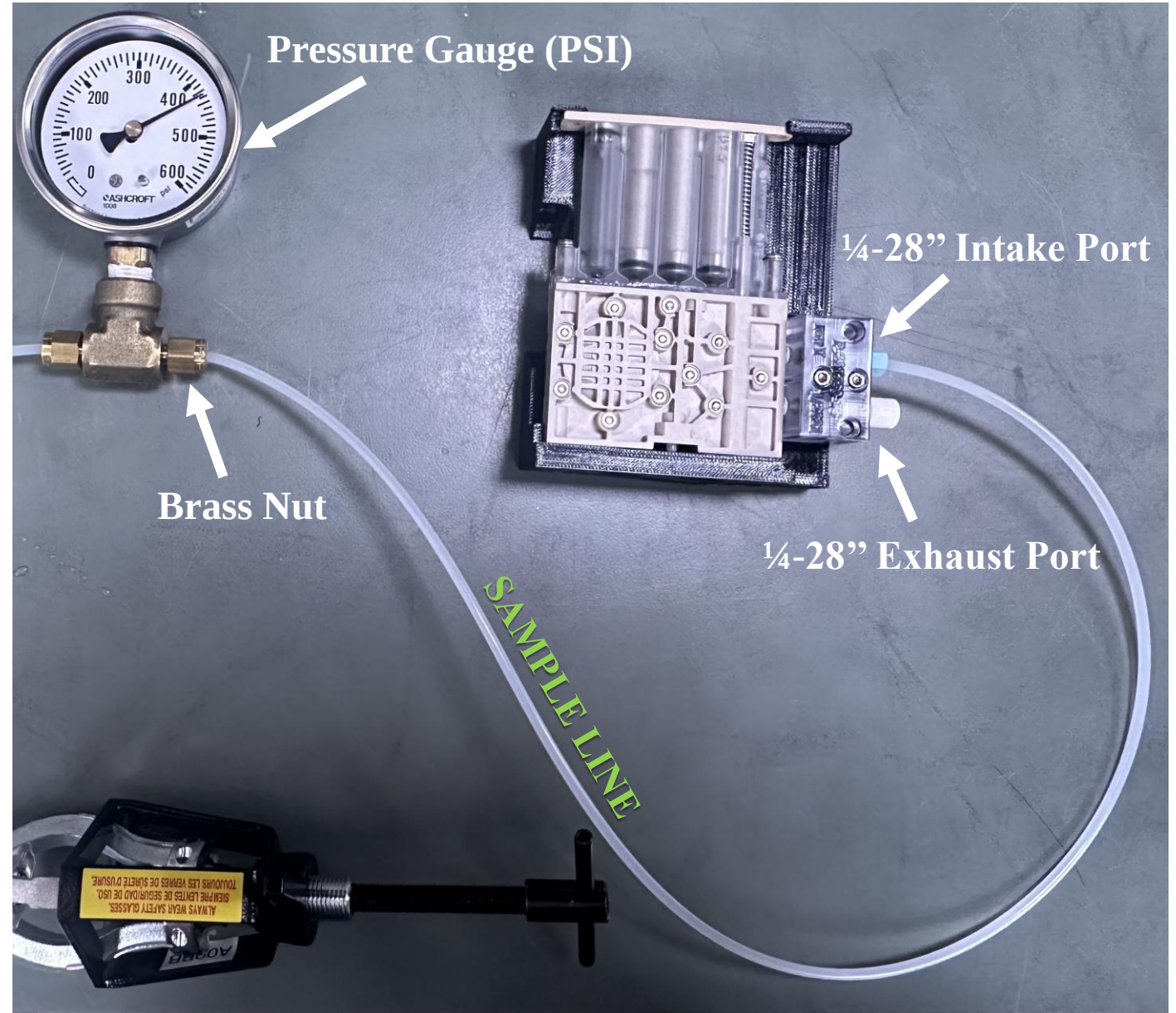
2. When inserted into ports, push down on the outer edge of the cartridge so it sits flush to the holder.





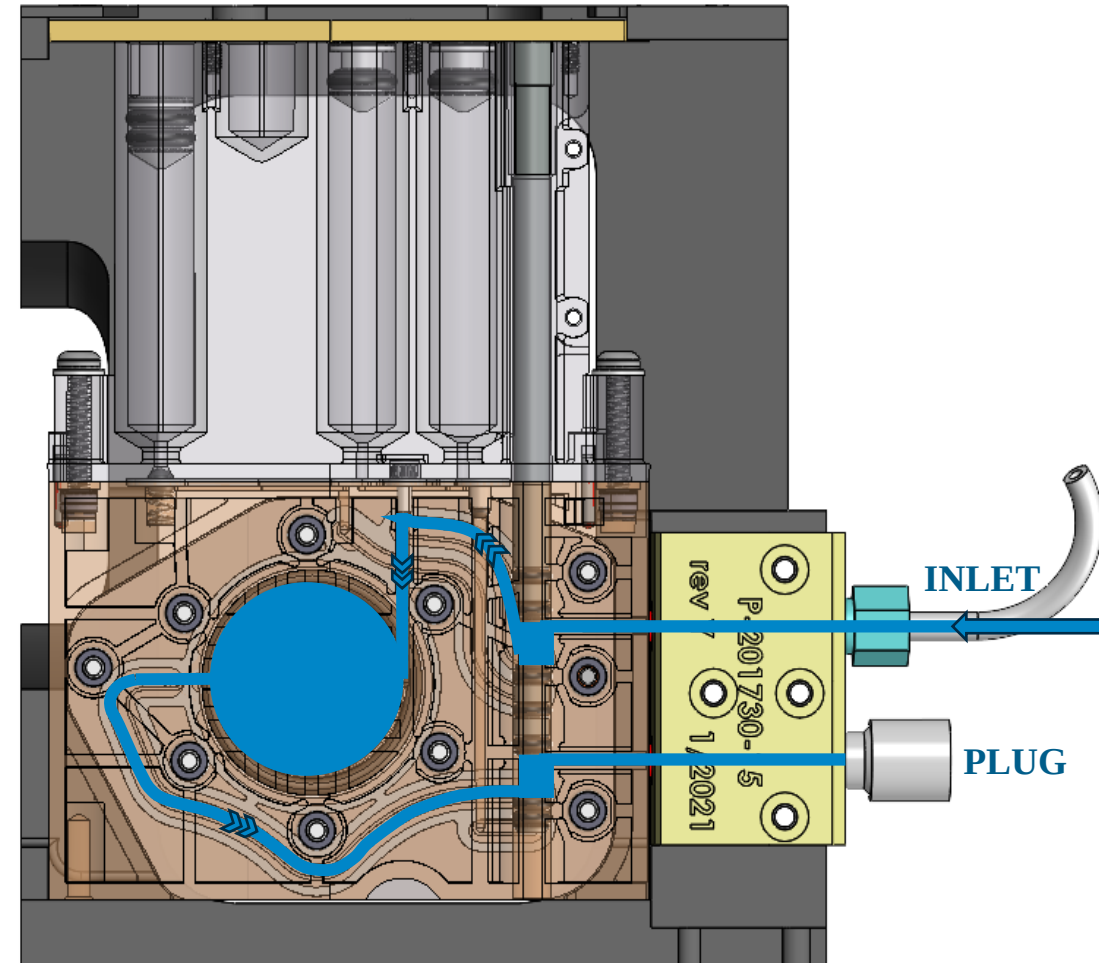
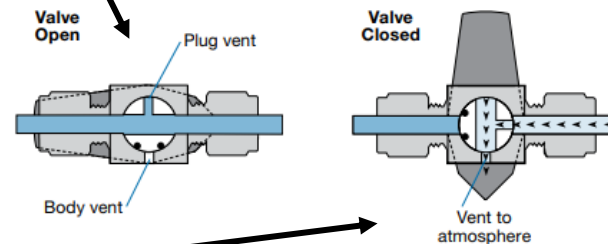
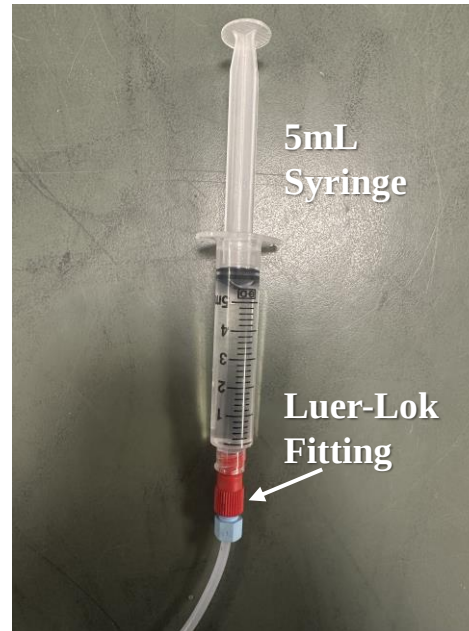
Setup – Sample Line Test

1. Insert the brass nut on the end of the Sample Line onto the pressure gauge and tighten. The other end of this line has a blue $\frac{1}{4}$ -28" fitting that is pre-installed in the intake port of the cartridge holder.



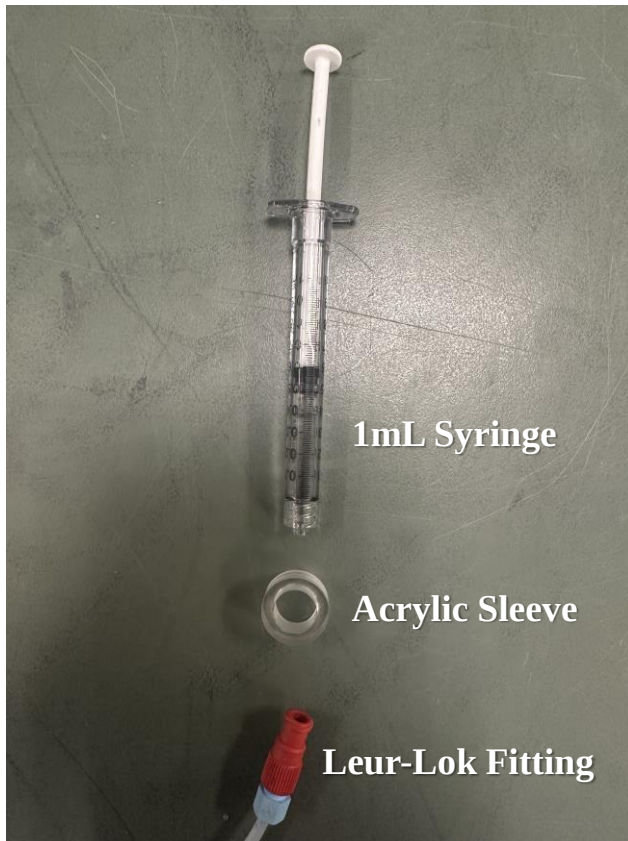
Priming the Sample Line

1. Fill the 5mL syringe with water and twist it onto the red luer-lok fitting on the Syringe Line.
2. Loosen the white plug on the exhaust port.
3. Push fluid through the line using the syringe until water begins to drip out the exhaust port and there are no air bubbles in the line. Check that the plug valve is in the open position.
4. Once the line is filled, continue to push fluid through the line while finger tightening the white plug on the exhaust port.
5. After the plug is tightened, continue to push down on the syringe until the pressure gauge reads about 100 PSI.
6. Close the plug valve.
7. Remove the 5mL syringe.



Sample Line Test – 500 PSI

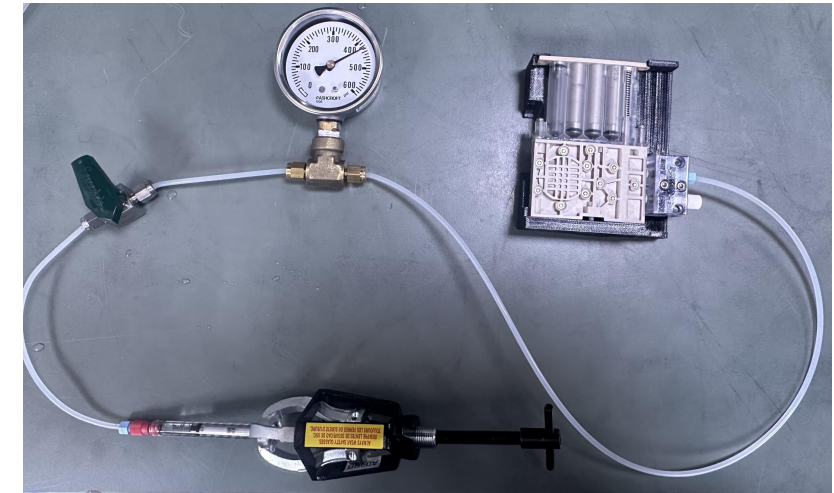
1. Fill the 1mL syringe to 0.5mL.
2. Slide the acrylic sleeve on the 1mL syringe and twist the syringe onto the red luer-lok fitting on the Syringe Line.



3. Place the bearing puller over the syringe and rotate the T-handle clockwise until the three jaws are engaged with the bottom of the acrylic sleeve. Rotate the center bolt until it is engaged with the syringe piston center.

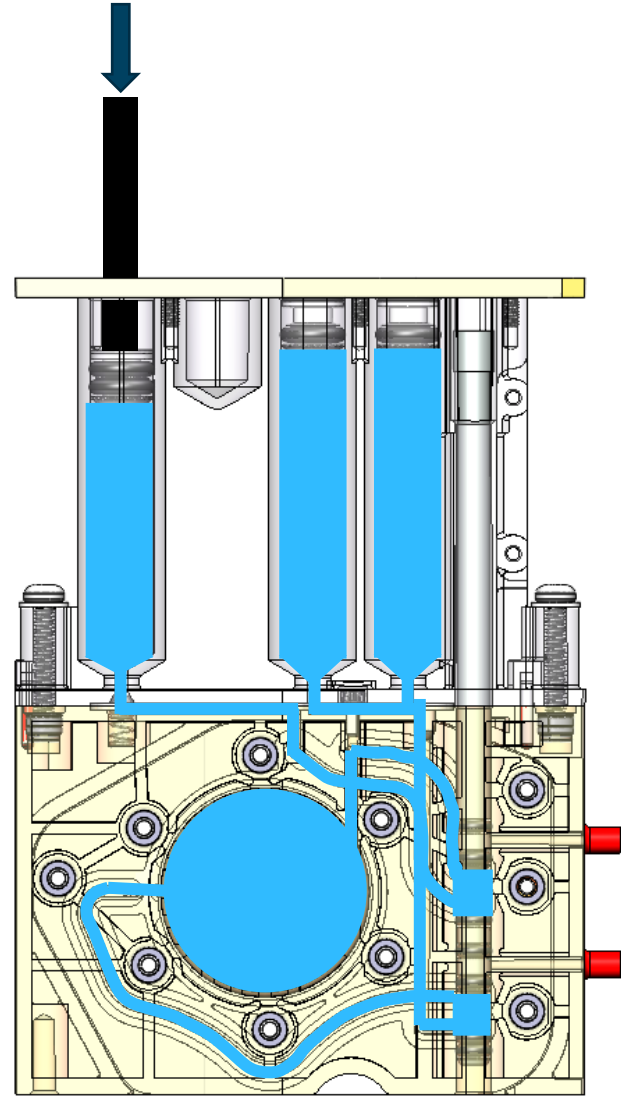


4. Continue to rotate the center bolt of the bearing puller. After rotating the center bolt at least two rotations, open the plug valve.
5. Continue rotating the center bolt with the plug valve open. The pressure reading should increase.



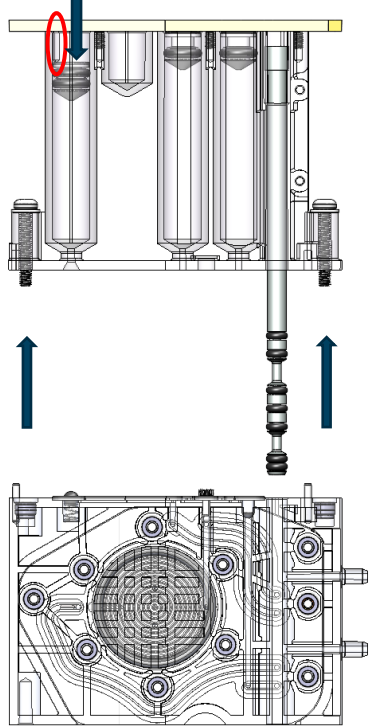
6. Once the syringe reaches empty, close the plug valve.
7. Remove the 1mL syringe from the red luer-lok fitting and twist the center bolt counterclockwise.
8. Remove the syringe from the bearing puller.
9. Refill the 1mL syringe to 0.5mL and reattach the syringe to the red luer-lok fitting with the acrylic sleeve over the syringe.
10. Repeat steps 3 – 5 until 500 PSI is reached.
11. Close the plug valve and take note of the starting pressure.
12. Monitor the pressure gauge to see if the pressure is stable and check for leaks. If pressure drops more than 15% of starting pressure in an hour or there are visible leaks, the cartridge has failed.
13. After the test is complete, open the plug valve and rotate the center bolt counterclockwise slowly to release the pressure.
14. Remove the syringe from the red luer-lok fitting.

PART 2: Syringe Line (B) Pressure Test



Setup – Syringe Line Test

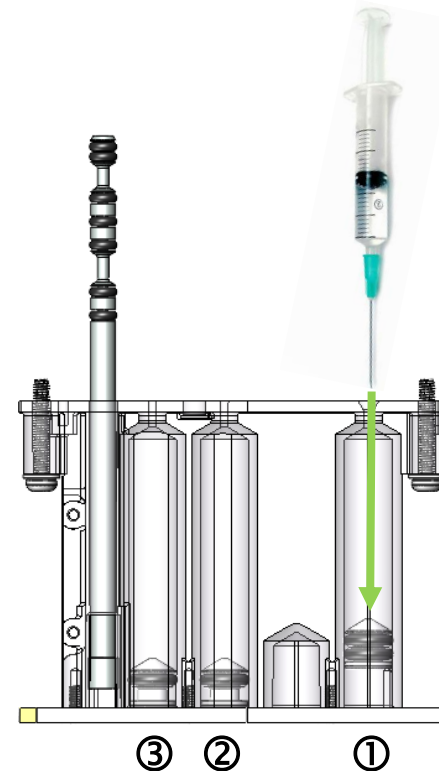
1. Remove cartridge from cartridge holder and unscrew the 2 x M2.5x0.45, 16mm long SST pan head screw (019912_scr_fh_m2p5x16). Push the first plunger just below the top vent, circled in **red**. Leave the other two plungers at the top of the syringe.



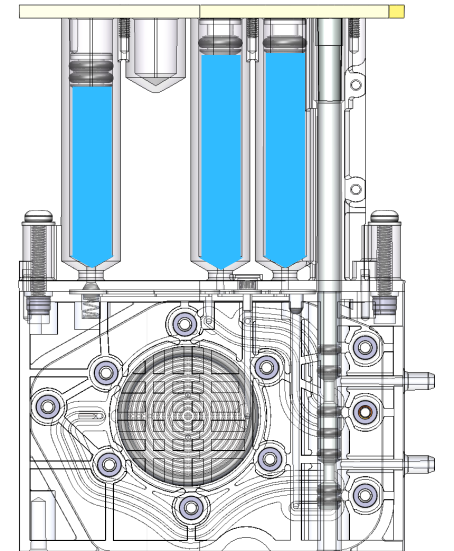
2. Fill a 5mL Syringe with water, and twist on the Needle tip.



3. Fill the 3 indicated syringes with water by placing the needle through the bottom of the syringe. Bring the syringe up to the plunger to fill. There should be minimal to no air bubbles.

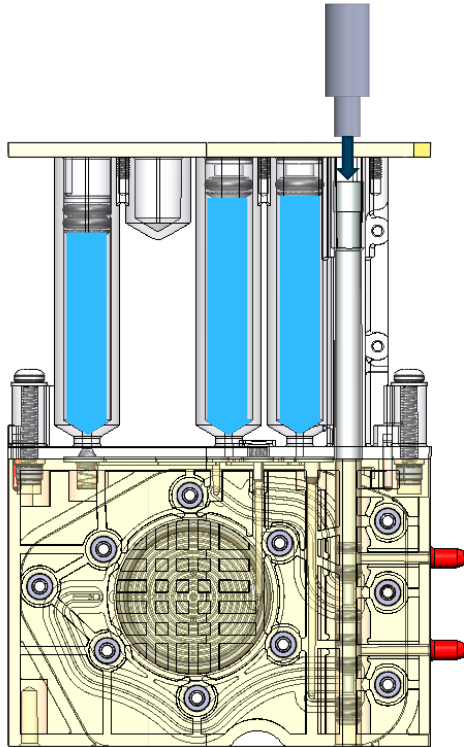


4. Assemble the syringe body back onto the cartridge assembly. Check that all gaskets and orings are dry and that the balls and springs are still in place.



Setup – Syringe Line Test

5. Use the **AR_valve_pushpin** to push the **020601_AR_valve** into position. Push until the pushpin tool bottoms out on the cartridge top.



Sample Line Test

1. Use non-magnetic end of magnetic rod to push the plunger in Syringe 1 down until plunger is fully seated in bore. Keep rod in place and inspect for leaks.

