Function LnG Cartridge Pressure Testing Instructions

June 19, 2023

Purchased Parts

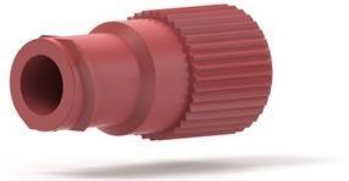
Pinport
Instech
PNP3F22

Pinport Connector
Instech
PNP3MC/22

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

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

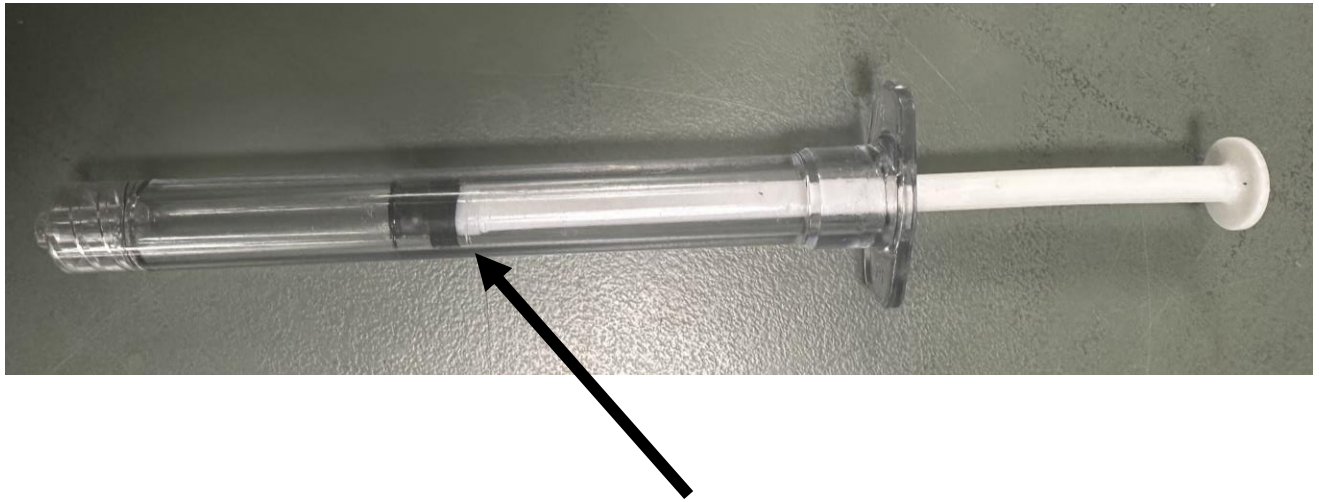
23G Needle 1 in.
Becton Dickinson
305145

1-mL Syringe Modification for High Pressure Testing

1-mL Syringe Luer-Lok
Becton Dickinson
309628

-005 PTFE Backup Rings
McMaster-Carr
9560K31

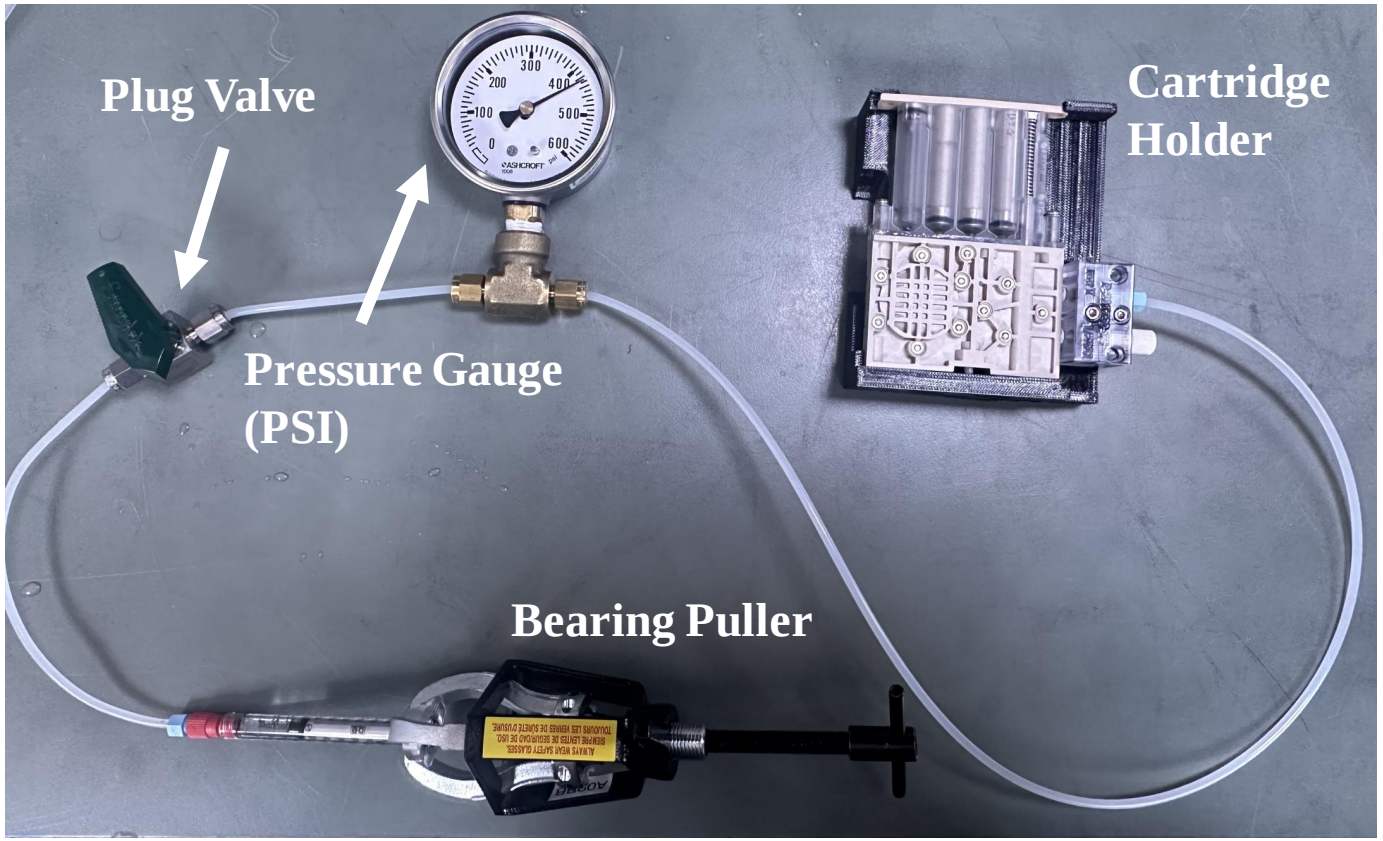
To withstand high pressures, a PTFE backup ring was added to the provided 1-mL syringes. The ring was inserted above the syringe plunger, in the groove.

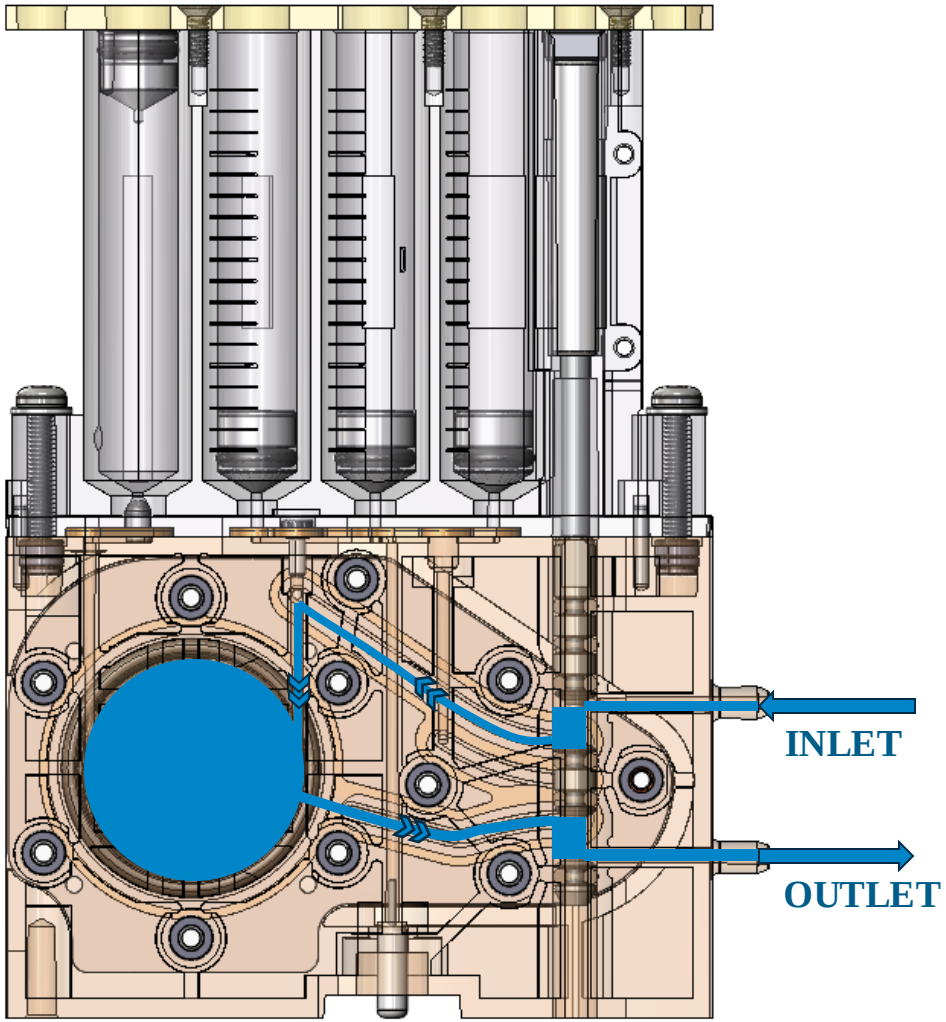


Pass/Fail Criteria

- 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)
- Maintains 50 PSI for the Manifold Line Testing (50 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.

PART 1: Sample Line Testing (500 PSI)



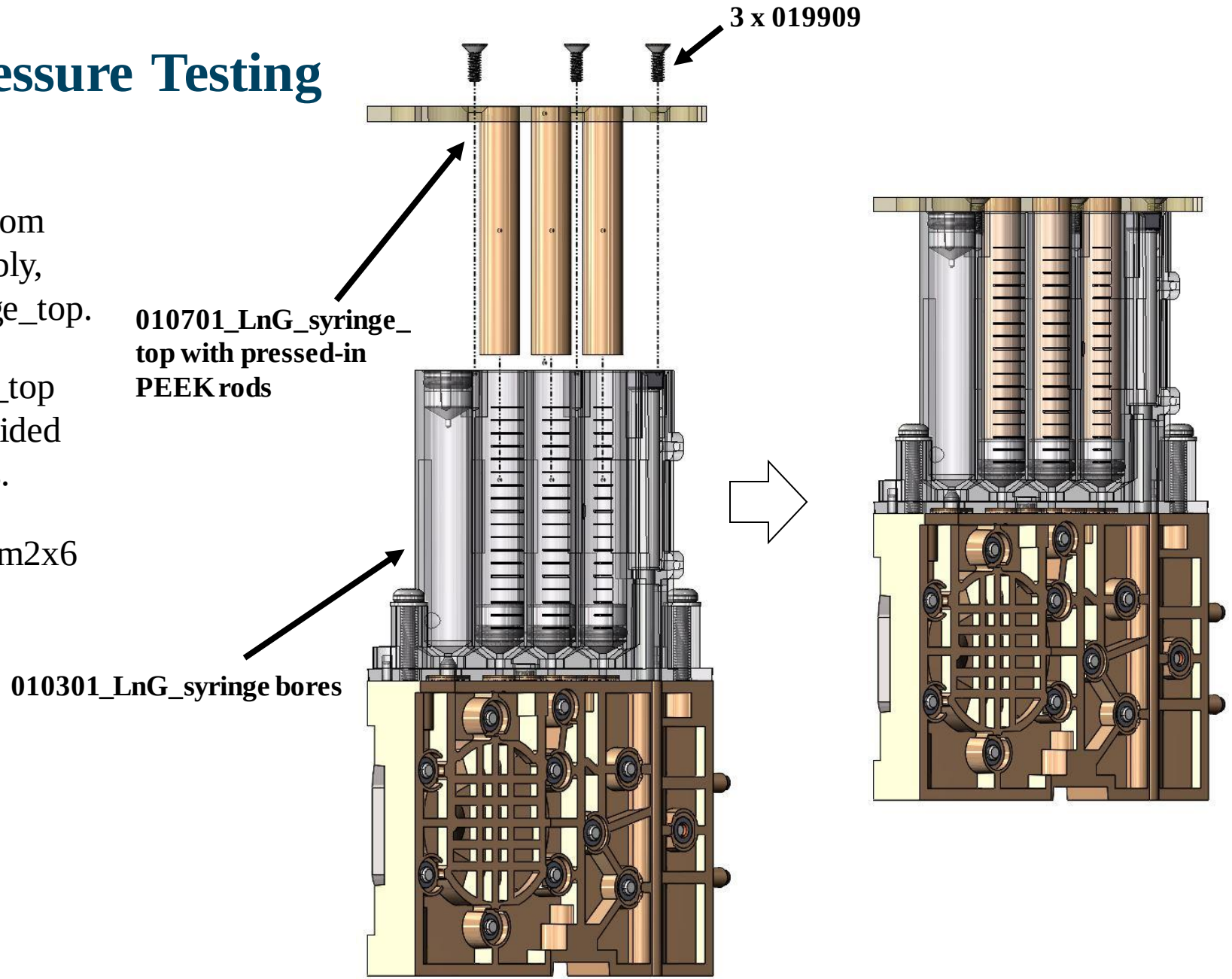


LnG Assembly for Pressure Testing

1. Follow 010000_LnG Assembly Instructions to assemble the bottom assembly and the syringe assembly, without the 010701_LnG_syringe_top.

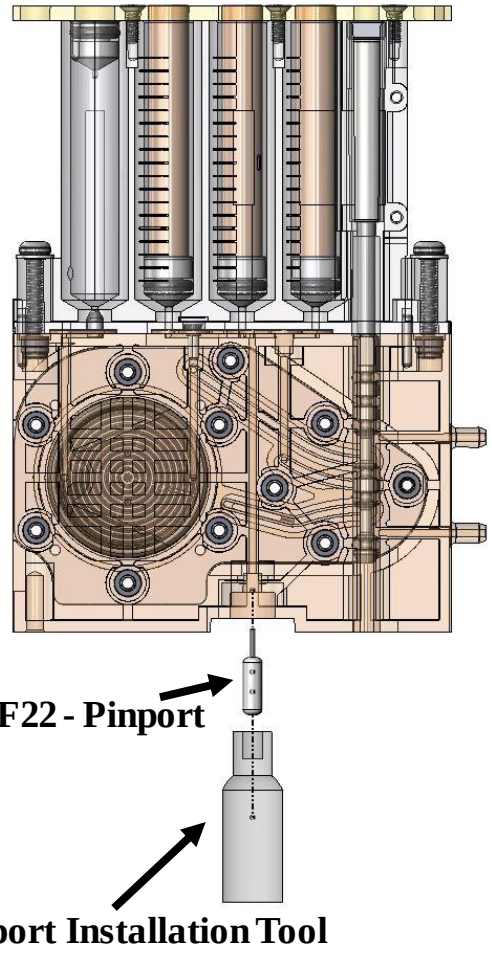
2. Insert the 010701_LnG_syringe_top with pressed-in PEEK rods provided into 010301_LnG_syringe bores.

3. Fasten with the 019909_scr_fh_m2x6 screws.

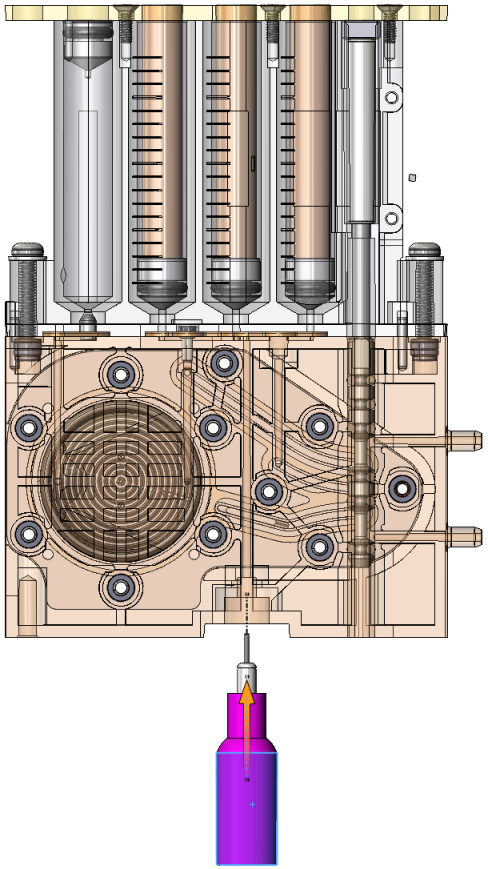


LnG Cartridge and Pinport Assembly

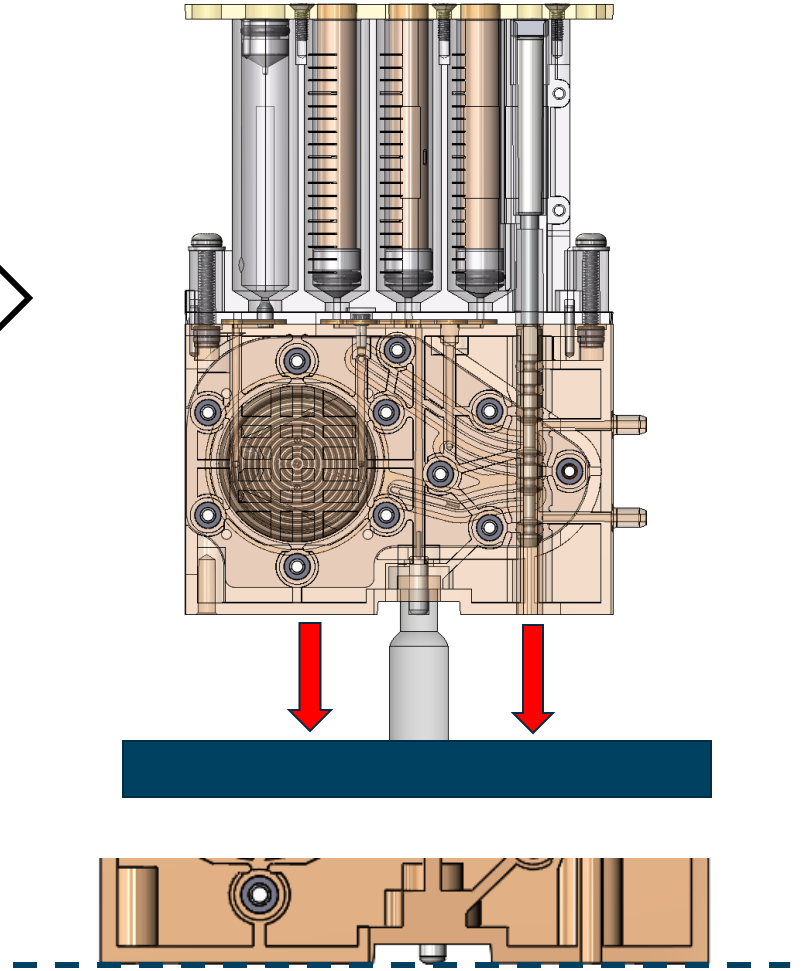
1. Seat the Pinport into the Pinport Installation Tool bore.



2. Align the Pinport to the manifold line.



3. Push the bottom of the Pinport Installation Tool against a flat surface until there is a hard stop.



**Pinport should be flush to the bottom of the cartridge.

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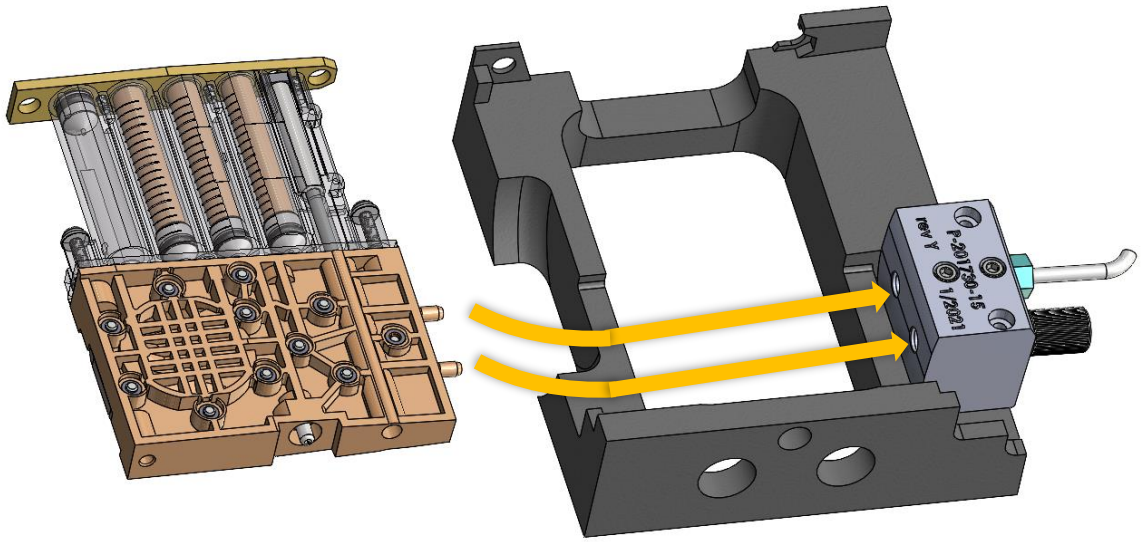
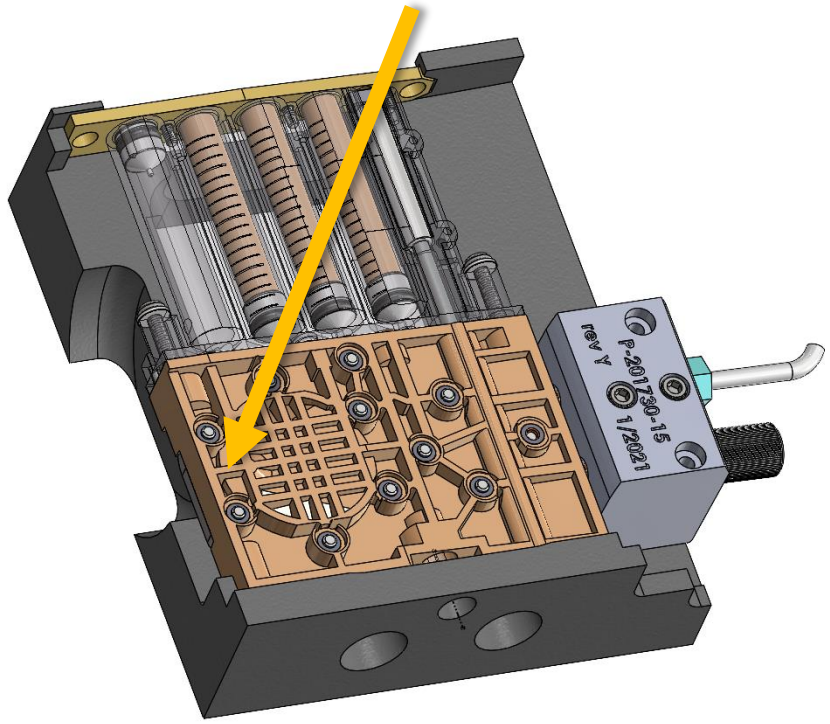
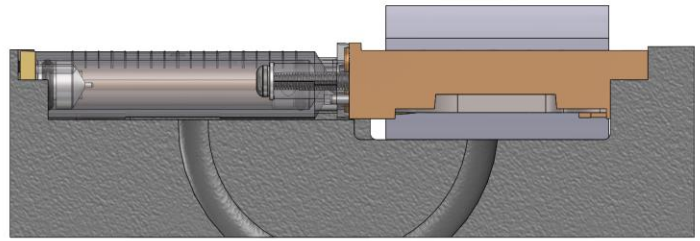
Setup – Sample Line Testing (500 PSI)

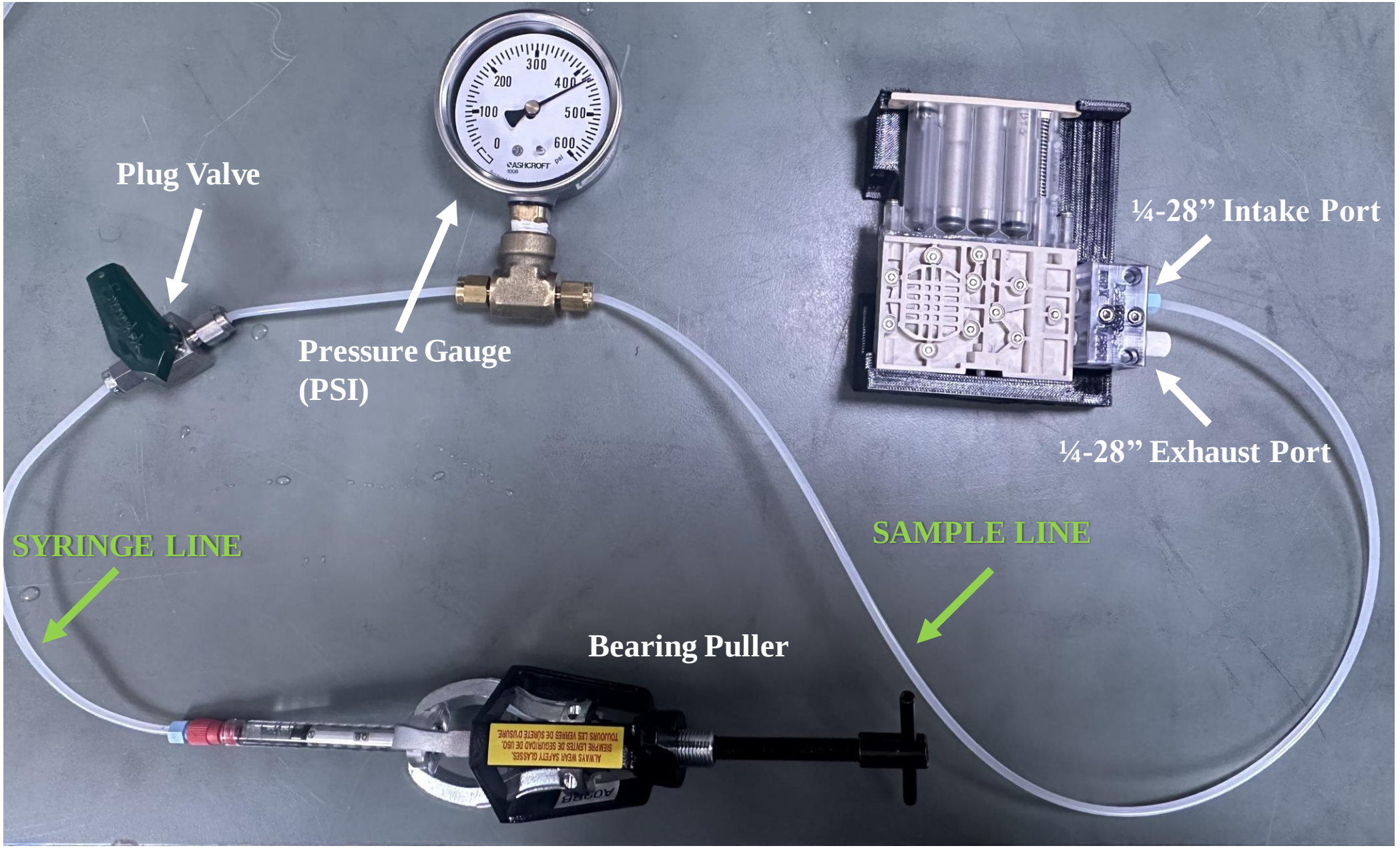
1. Insert assembled cartridge into cartridge holder.



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

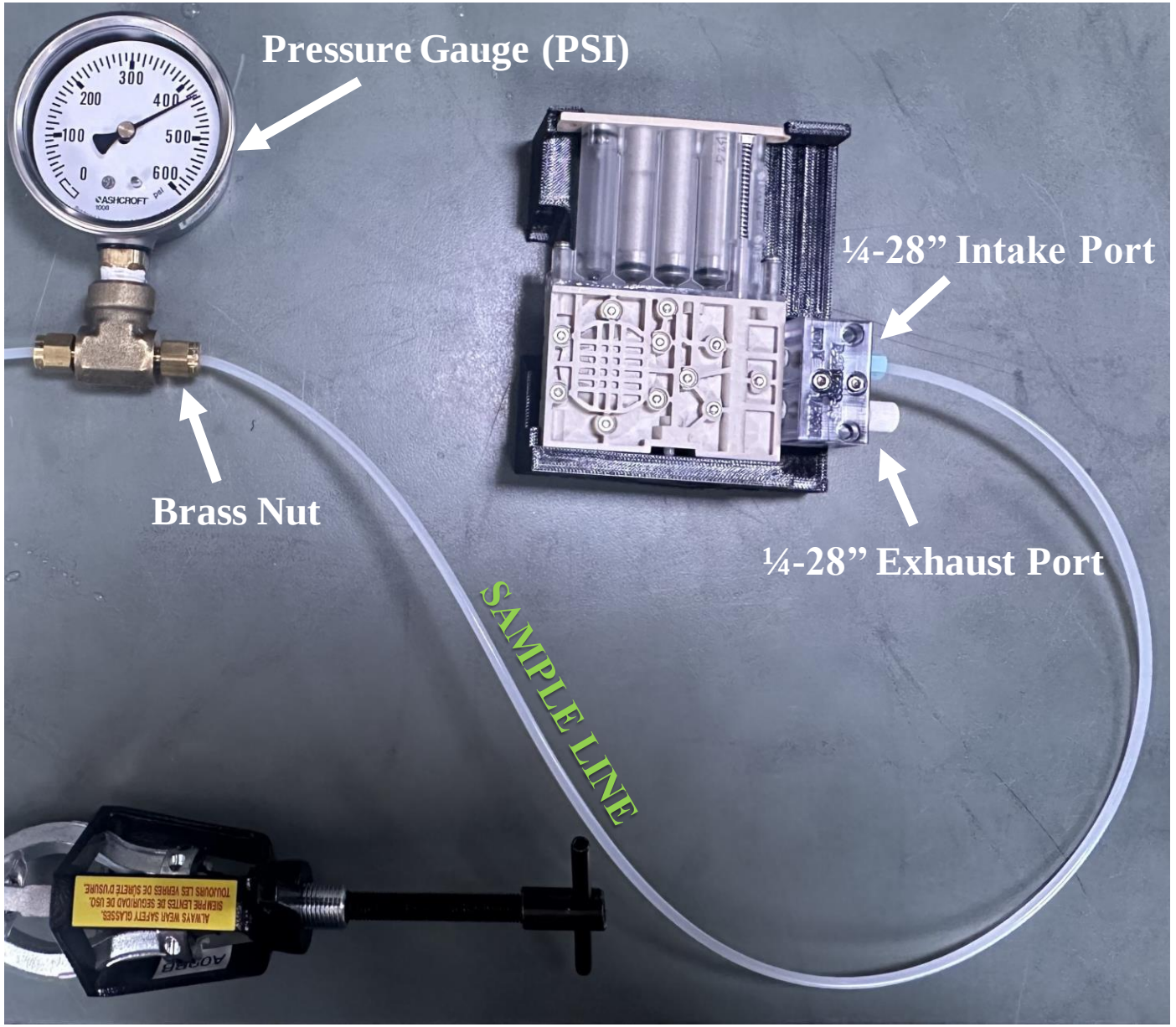





Plug Valve
Pressure Gauge
(PSI)
¼-28” Intake Port
¼-28” Exhaust Port
SYRINGE LINE
SAMPLE LINE
Bearing Puller

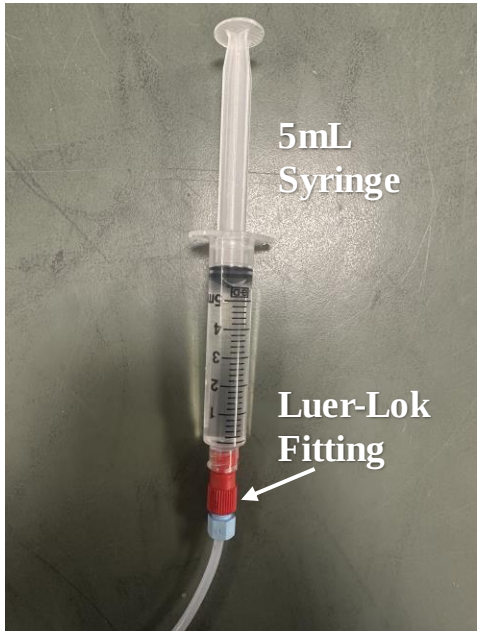
Setup – Sample Line Test

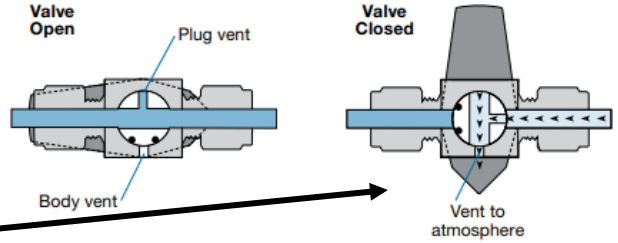
1. Insert the brass nut on the end of the Sample Line onto the pressure gauge and tighten. The other end of this line has a blue ¼-28” fitting that is pre-installed in the intake port of the cartridge holder.

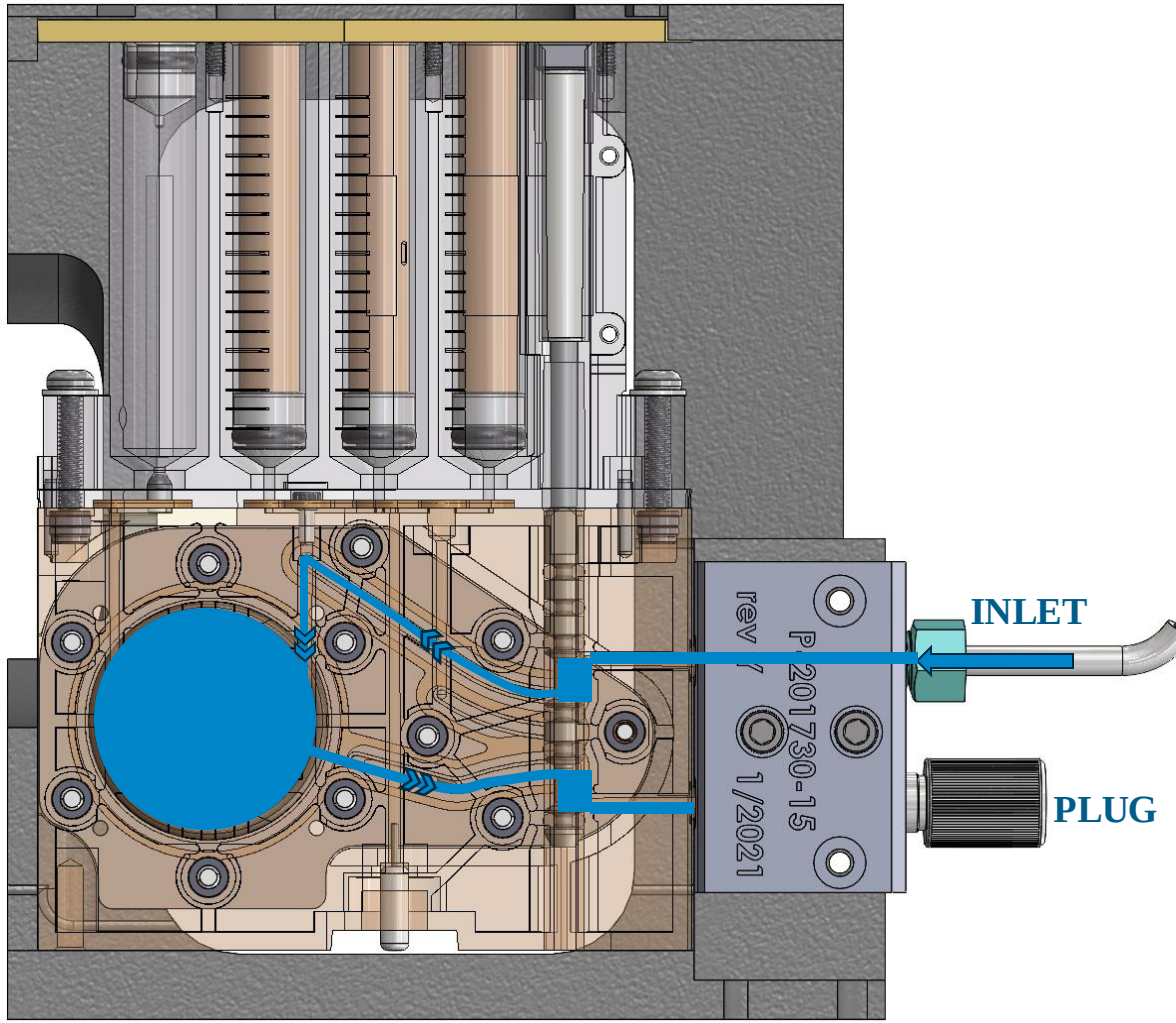


Priming the Sample Line

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.

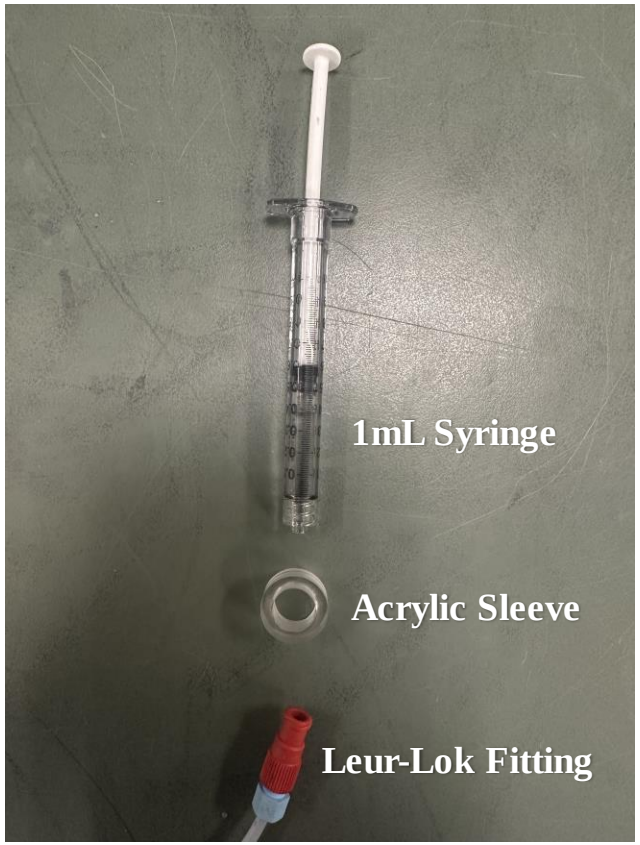






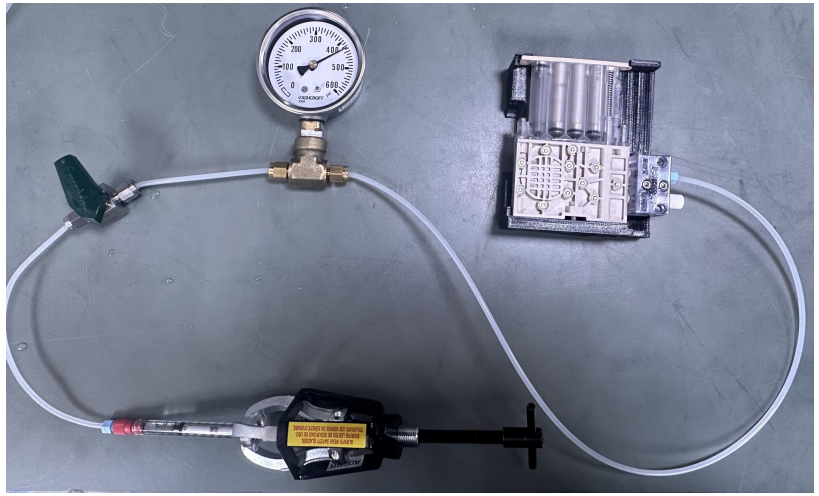
Sample Line Test – 500 PSI

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.



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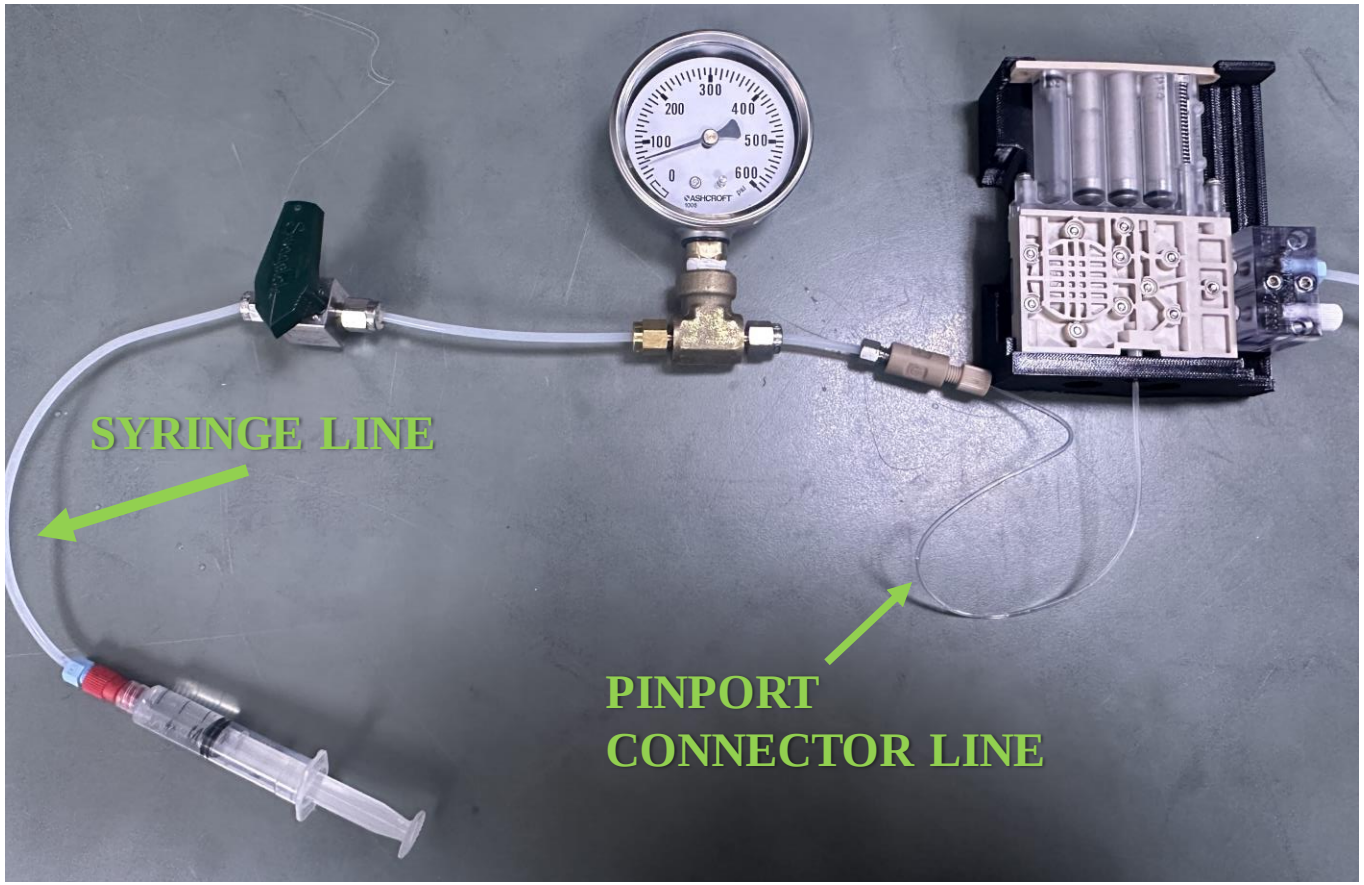
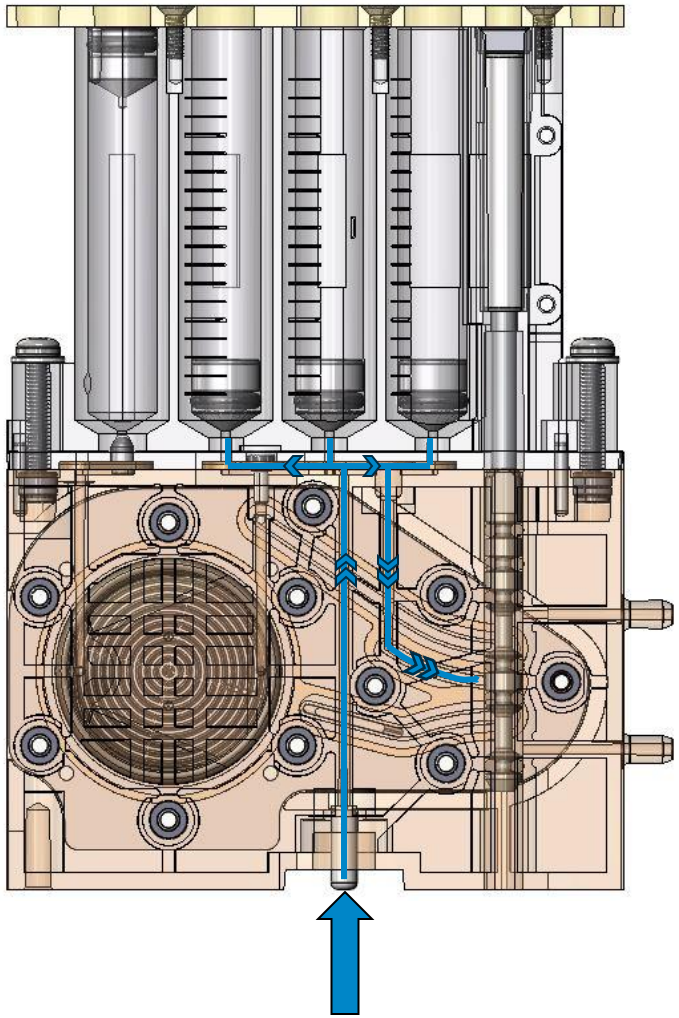
6. Once the syringe reaches empty, close the plug valve.
7. Remove the 1mL syringe from the red luer-lok fitting and twist the center bolt counterclockwise.
8. Remove the syringe from the bearing puller.
9. Refill the 1mL syringe to 0.5mL and reattach the syringe to the red luer-lok fitting with the 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.

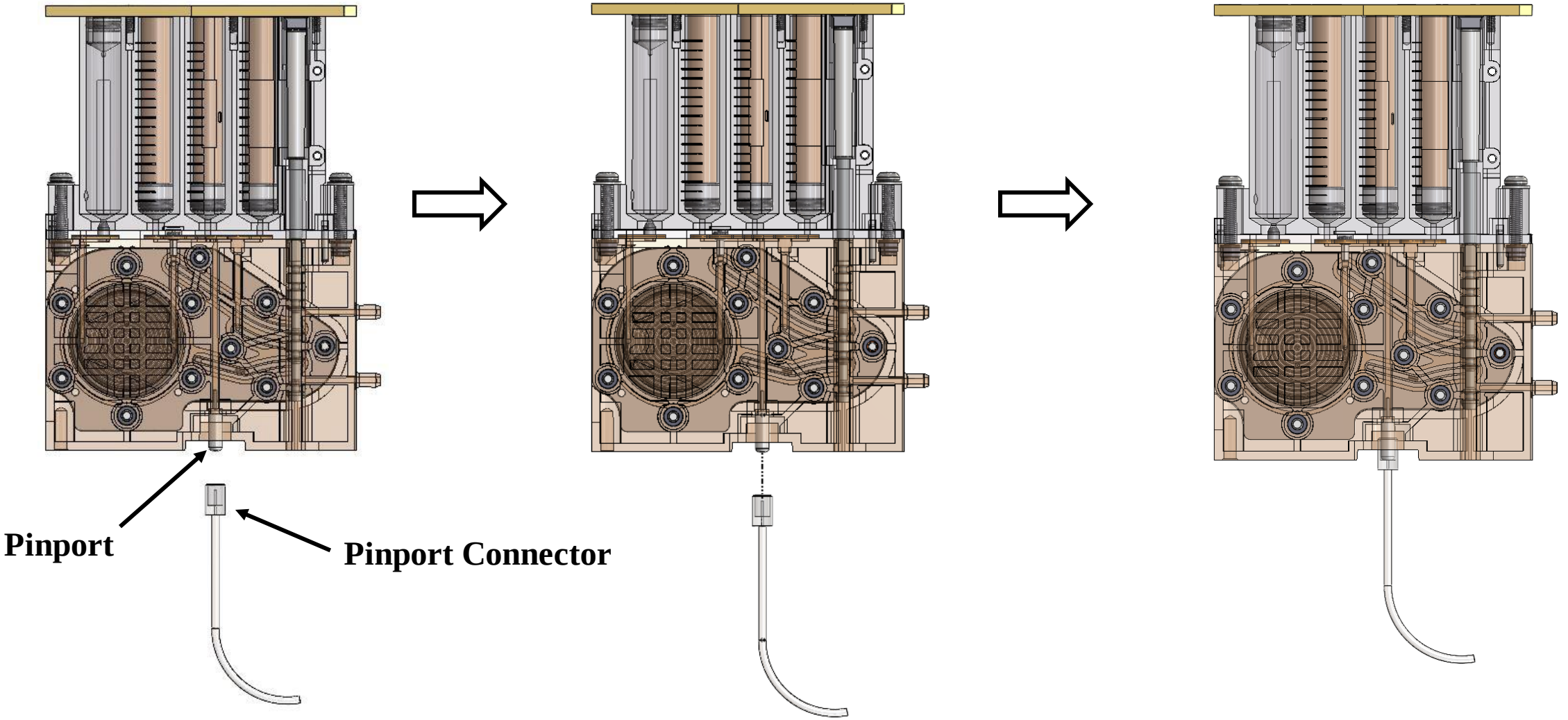
PART 2: Manifold Line Testing (50 PSI)





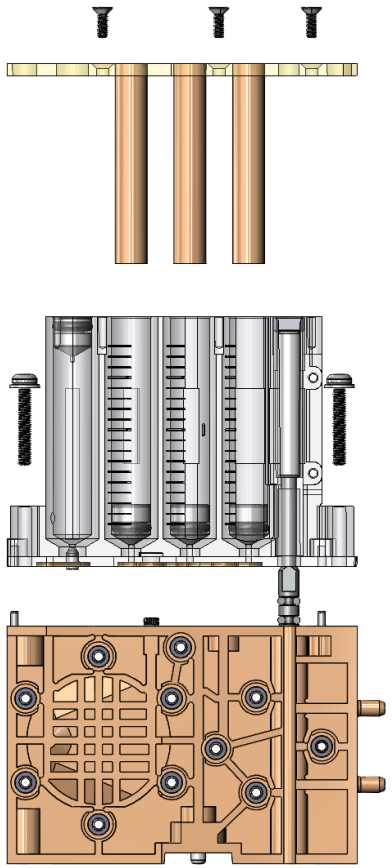
Setup – Manifold Line Testing (50 PSI)

1. Remove the cartridge from the cartridge holder. Insert the Pinport Connector line to the Pinport installed in the cartridge.

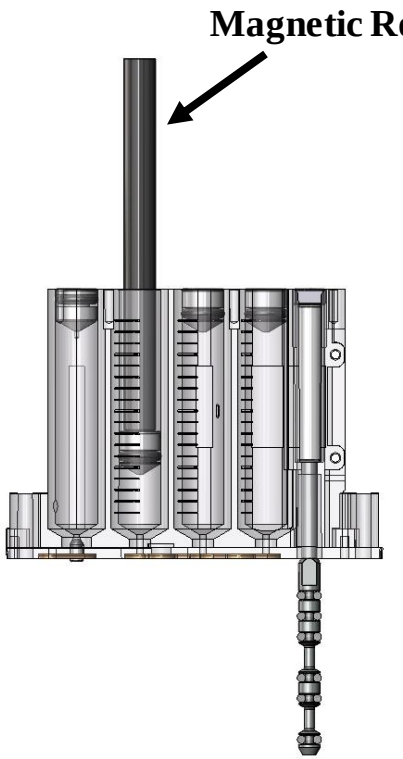


Priming the Manifold Line

1. Remove Syringe Top with pressed in PEEK rods and Syringe Body assembly from the cartridge.

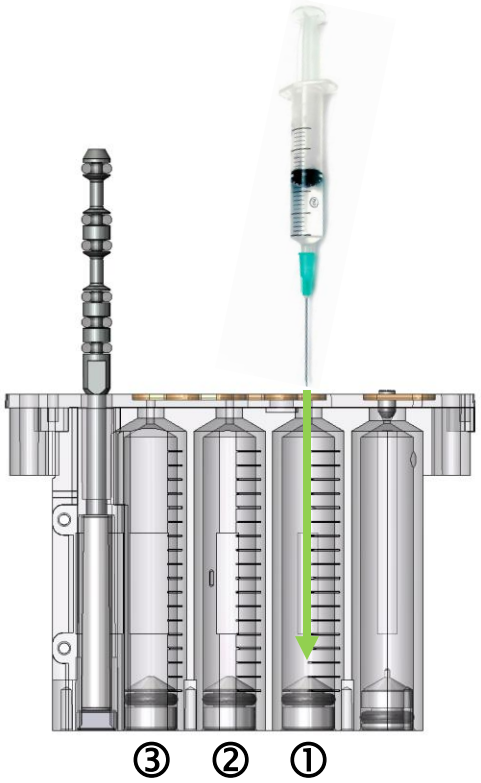


2. Use provided Magnetic Rod to pull plungers to the top of the Syringe Body.

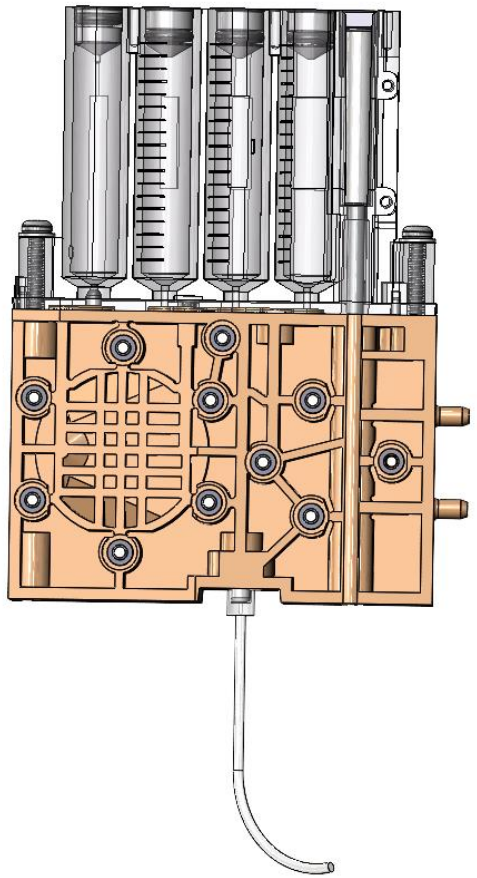


3. Fill a 5mL Syringe with water, and twist on the Needle tip.

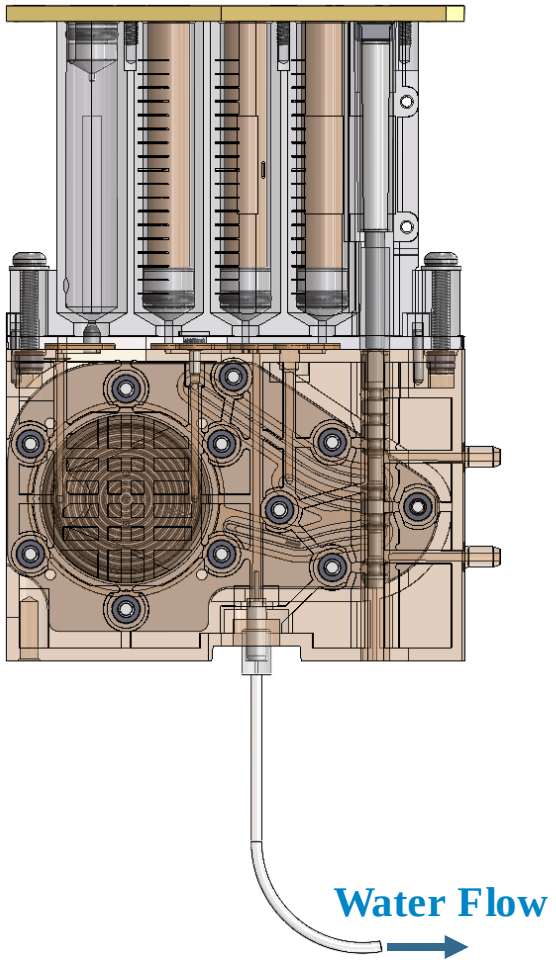
4. Fill the 3 indicated syringes with water by placing the needle through the bottom of the syringe.



5. Assemble the syringe body back onto the cartridge assembly. Check that all gaskets are dry and that the ball and spring are still in place.



6. Assemble the syringe top with the pressed-in PEEK rods to the syringe body. Slowly push the plungers down with the PEEK rods. This will fill the lines, and water will start coming out of the end of the Pinport Connector line.



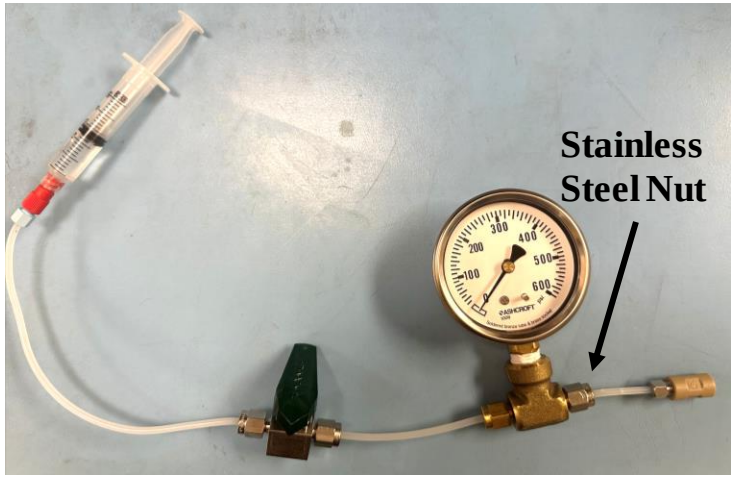
7. Remove the brass nut on the Sample Line that was used for the Sample Line Test from the pressure gauge. Install the Stainless Steel nut on the Pinport Adapter onto the pressure gauge.

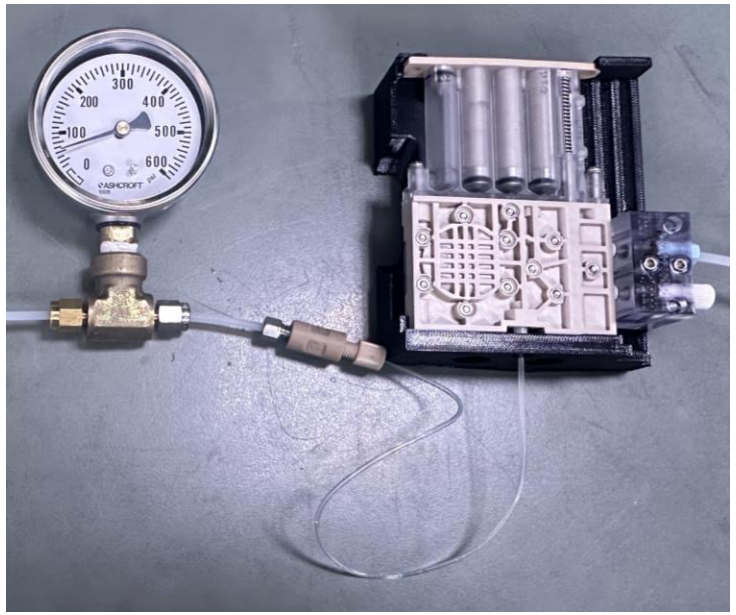
8. Fill the 5mL syringe with water and connect it to the red luer-lok fitting.

9. Push fluid through the line with the syringe until water flows out of the line and there are no air bubbles in the line. Plug valve should be in the open position.

10. Connect the Pinport Connector line to the adapter.
***Note: Cartridge does not have to be in cartridge holder as shown in the picture.**

Pinport Adapter





Procedure – Manifold Line Test

1. Fill the 5mL syringe with water if the syringe is near empty.
2. Connect the 5mL syringe to the red luer-lok fitting Syringe Line.
3. Open the plug valve and push down on the syringe piston until the pressure gauge reads 50 PSI.
4. While holding down on the syringe to maintain 50 PSI, close the plug valve.
5. Monitor the pressure gauge to see if the pressure is stable and check for leaks.
6. When test is complete, open plug valve to release the pressure.