ACCQPrep Pump Assembly Replacement and HP150 to HP125 Pump Assembly Conversion Instructions

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Instruction Sheet #69-5233-940
Revision A, Jan 2, 2020

Overview

The ACCQPrep replacement pump assembly contains a pump sled assembled for a HP150 instrument, parts to convert the pump assembly to be used on a HP125 instrument, and parts to convert the old Valco pump bulkhead brackets and fittings to Swagelok on older HP125 instruments. If the replacement pump assembly is being installed on an HP150 configured ACCQPrep, then no conversion work needs to be completed before installing the replacement pump assembly.

Table 1: Parts List

Item	Quantity
Replacement Pump Assembly	1
Swagelok Bulkhead Assembly	1

The table below lists additional items that are required for the pump assembly conversion:

Table 2: Required Tools

Item	
#2 Phillips Screwdriver	Side Cutter
1/8” Small Flathead Screwdriver	5/16” Nut Driver or Rachet (optional)
5/16” Open End Wrench	Pliers
1/4” Open End Wrench	1/4” Rachet (optional)

Safety

The use of Personal Protective Equipment (PPE) is highly encouraged due to potential contact with residual solvents.

Time Required:

Typical time required to perform the pump greasing is approximately 1.5 hour.

Note

If the Swagelock Bulkhead Assembly (60-5237-141) will be installed with the replacement pump, then use these instructions to complete the work and ignore the installation instructions (69-5233-941) that come with the Swagelok Bulkhead Assembly.

Removing Solvent & Powering Down the Instrument

1. Remove all solvent supply lines from the solvent containers.
2. Remove the lower front cover of the instrument to expose the front of the current pump assembly
3. Select **Tools > Manual Control** from the upper tabs of the main screen of the instrument.
4. Set the **Flow Path** to “Prep HPLC column”. Set the **Flow Rate, ml/min** to 50.
5. If the instrument does not include a Solvent Select Valve, then proceed to Step 6, else Set **Solvent A** to one of the plumbed solvent lines and **Solvent B** to another of the plumbed solvent lines (ex: A1 - Methanol, B1-Water, etc.).
6. Press the **Pump Solvent A** button. Allow the pumps to run until there is no longer solvent flowing to the bottom of the A pumps. Press the **Stop** button. Press the **Pump Solvent B** button and repeat this process for the B pumps.
7. Shutdown the instrument by toggling the red power switch on the front of the instrument.
8. Wait 30 seconds after the touchscreen turns off and then disconnect power to the instrument either by disconnecting the power cable at the back of the instrument or at the wall outlet.

Removal of the Current Pump Assembly

1. With your fingers, disconnect the input tube at Y-connector below each set of pumps (Figure 1). If the fittings are too tight to be disconnected by hand, then gently use a pliers to loosen the fitting enough to finish disconnecting it by hand.

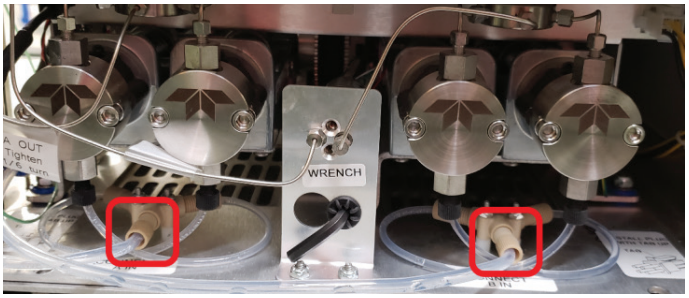

Figure 1: Y-Fitting inlet tubing

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2. Using a 5/16" or 1/4" open end wrench (depending on current configuration of the bulkhead connections), disconnect the output of pumps A & B at the bulkhead connection points. (Figure 2)

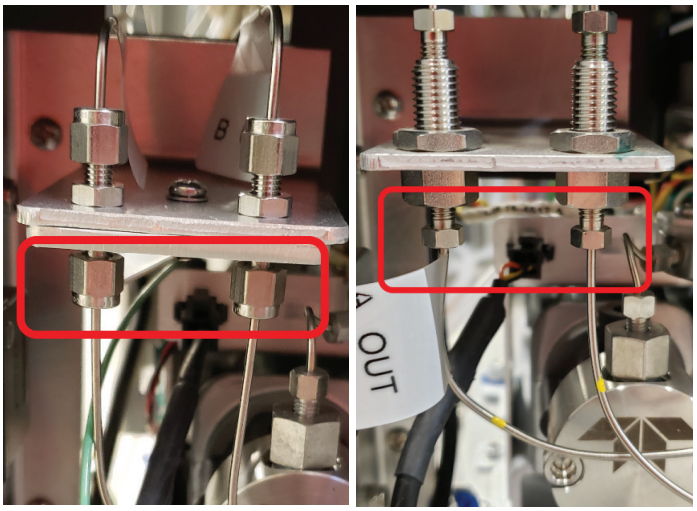

Figure 2: Bulkhead connections-Swagelok (left) Valco (right)

3. Disconnect the signal and power cables connected to the pump assembly. (Figure 3).

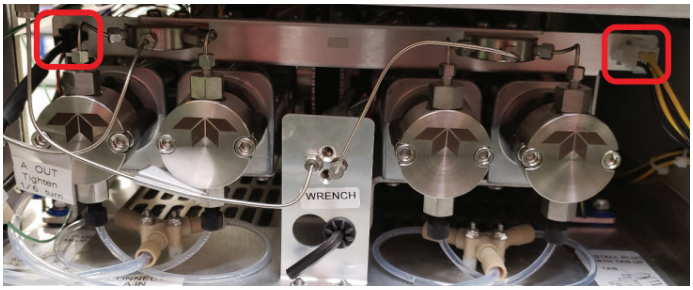

Figure 3: Pump assembly electrical connection locations

4. Using the 3/16" Allen wrench attached to the front of the pump assembly, remove the two screws that secure the pump assembly to the instrument (Figure 4). Use the Allen wrench on the replacement pump assembly if it is missing from the current pump assembly.

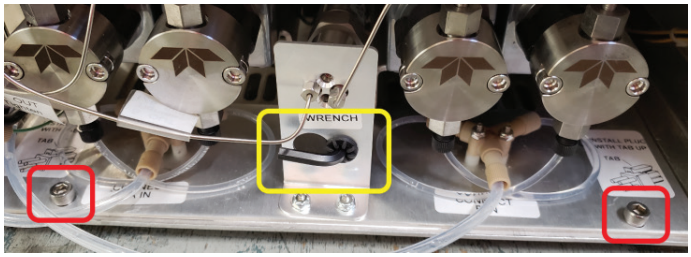

Figure 4: Allen key and pump assembly securing screw locations

5. Gently pull the pump assembly from the instrument. Make sure not to damage any tubing or wiring surrounding the pump assembly when slowly pulling it out. (Figure 5)

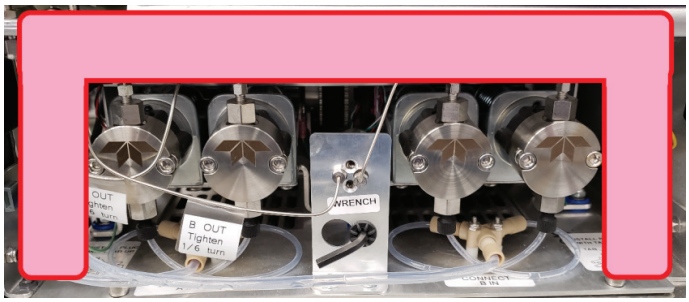

Figure 5: Wiring and tubing locations highlighted

Caution

Monitor the RFID boards and wiring that is located above the pump assembly as you remove it from the instrument. The wiring can droop down, become caught on the pump assembly, and damage the RFID boards and wires. (Figure 6)

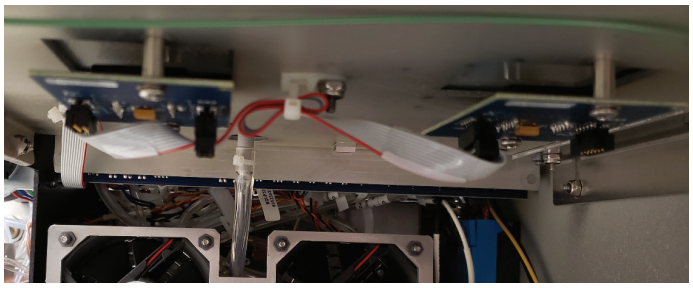

Figure 6: RFID boards above the pump assembly

6. If the pump bulkhead connections are currently Swagelok on this instrument (Figure 7) and the instrument is a HP125 (Figure 8), then the **Installation of Swagelok Bulkhead** section can be skipped.

7. If the pump bulkhead connections are currently Swagelok on this instrument (Figure 7) and instrument is a HP150 (Figure 8), then the **Installation of Swagelok Bulkhead** and **Converting Pump Assembly from HP150 to HP125 Configuration** sections can be skipped.

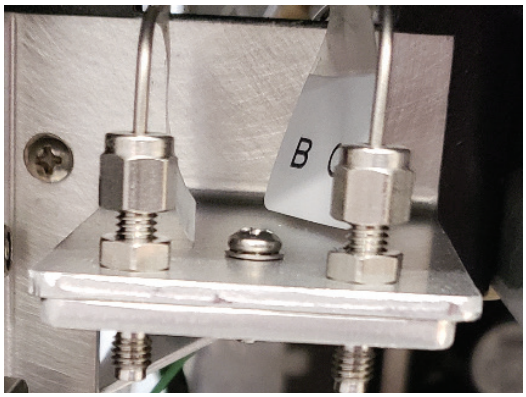

Figure 7: Swagelok style pump bulkhead connections

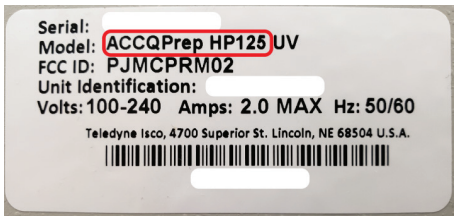

Figure 8: Instrument configuration label

Installation of Swagelok Bulkhead

1. Using a 1/4" open end wrench, disconnect the upper Valco bulkhead connections (Figure 9)

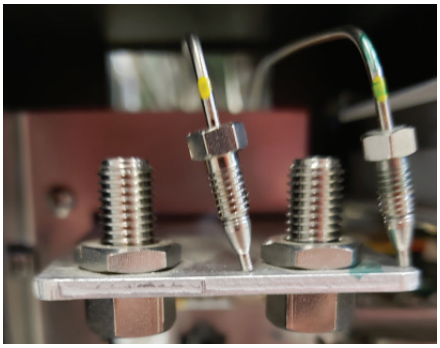

Figure 9: Upper bulkhead connections disconnected

2. Using a 5/16" open end wrench or rachet, remove the three nuts attaching the bulkhead bracket to the frame (Figure 10; red). Using a #2 Phillips screwdriver remove the four screws attaching the bulkhead bracket to the frame (Figure 10; yellow). The two lower screws must be removed from the underside of the instrument.

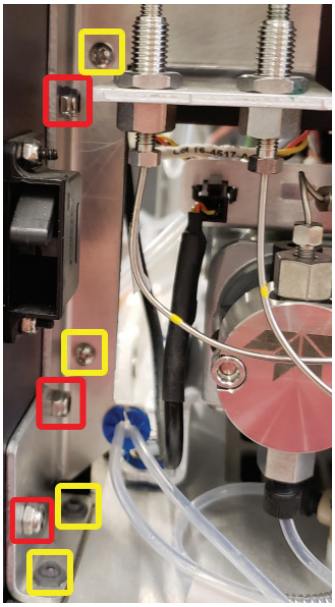

Figure 10: Bulkhead fasteners

3. Install the new Swagelok bulkhead bracket in the same location as the previous bracket and fasten it down using the same nuts and screws removed in Step 2.
4. Using a #2 Phillips screwdriver, remove 8 screws securing the left side panel and set the panel aside (Figure 11)

Figure 11: Left side panel

5. Using a 1/4" open end wrench, disconnect one of the upper Valco bulkhead connections at prime valve port 2 or 5 and remove the tubing from the instrument (Figure 12)

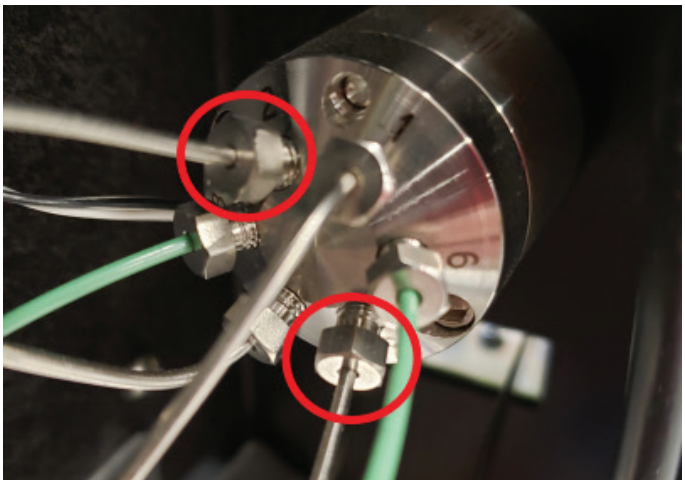

Figure 12: Prime valve connections

6. Find the pre-swaged 11" stainless steel tubing in the kit with the same label as the tubing that was just pulled from the instrument. Using the original tubing as a guide, bend the new tubing into the same shape. This will make it easier to reinstall into the instrument (Figure 13)

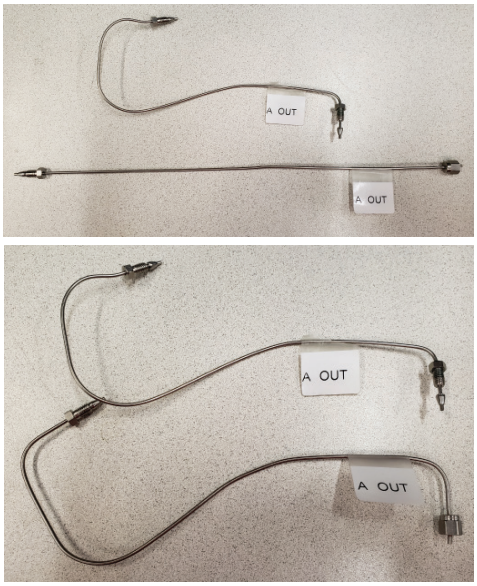

Figure 13: Bulkhead to prime valve tubing

7. Install the newly bent tubing into the instrument, secure the Valco fitting to the open port on the prime valve by hand, and secure the Swagelok fitting to the corresponding upper bulkhead connection port by hand.
8. After both fittings are finger tight, use a 1/4" open end wrench to tighten down the Valco fitting 1/8 – 1/4 a turn and use a 5/16" open end wrench to tighten down the Swagelok fitting 1/8 – 1/4 a turn to fully seat these connections.
9. Repeat Steps 5 – 9 to replace the second tubing from the pump bulkhead connection bracket to the prime valve

Converting the Pump Assembly from HP150 to HP125 Configuration

1. Using a 1/4" open end wrench or ratchet, remove the 4 nuts securing the two Y-connectors below each set of pumps on the replacement pump assembly (Figure 14)

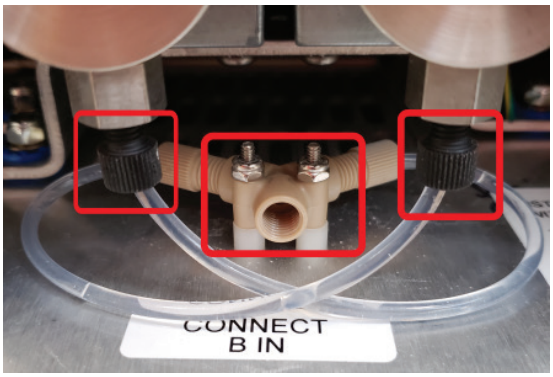

Figure 14: Pump inlet Y-connector

2. Disconnect the fitting on the bottom side of each of the four pump heads (Figure 14)
3. Remove the Y-connectors and associated tubing from the replacement pump assembly (Figure 15)

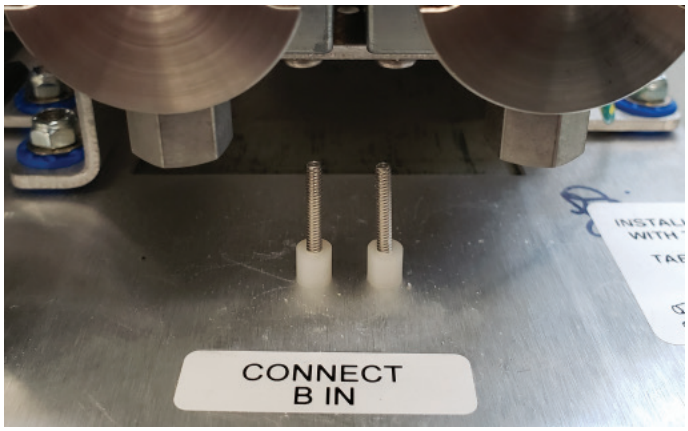

Figure 15: Y-connector and tubing removed

4. Install both sets of HP125 Y-connector and tubing on the replacement pump assembly (Figure 16).

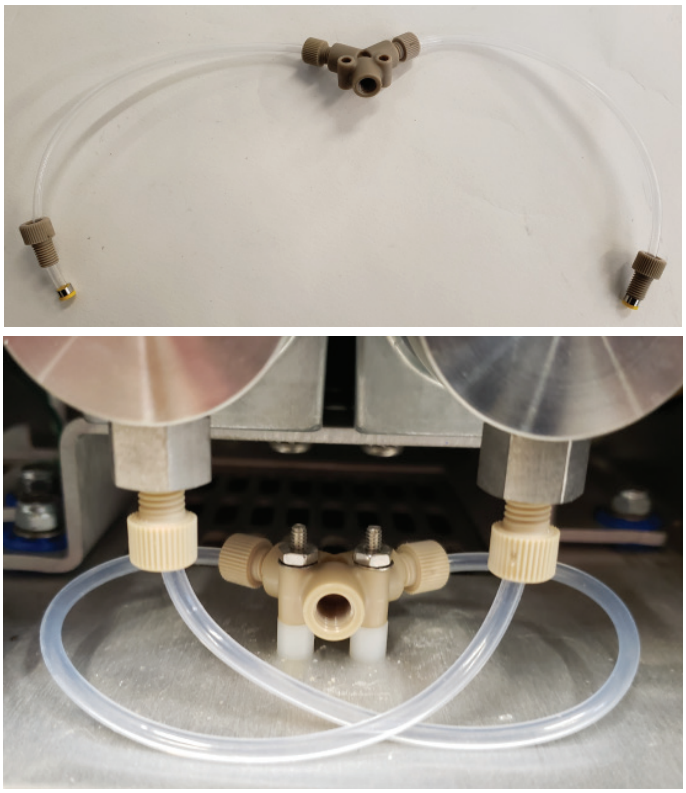

Figure 16: HP125 replacement tubing and Y-connector

5. Using a small 1/8" flathead screwdriver, adjust the rotary switch on the left pump board from 3 to 1 and adjust the rotary switch on the right pump board from 4 to 2 (Figure 17)

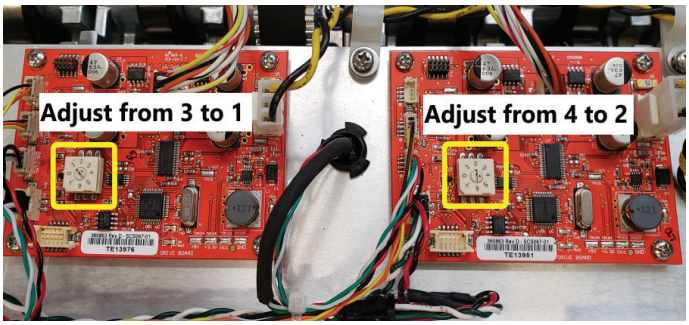

Figure 17: Pump board rotary switches

Installing the Replacement Pump Assembly & Testing the Instrument

1. Write down the revision listed on the label of each of the pump boards (Figure 18). Pump A is the left board and Pump B is the right board. These values will be entered in the Pump tab of Service menu when the instrument is first powered on.

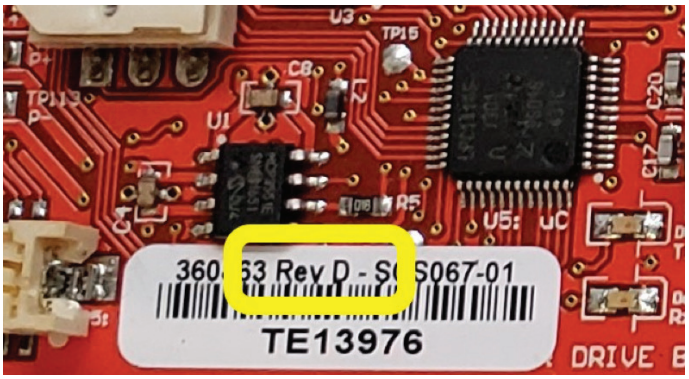

Figure 18: Pump board revision sticker

2. Gently slide the replacement pump assembly into the instrument. Make sure not to damage any tubing or wiring surrounding the pump assembly as it is being slid into place. (Figure 5/6

Note

The two slots on the backside of a pump assembly align with two stand-offs in the instrument opening near the rear fans. If the pump assembly is correctly installed, then the holes for the two front securing screws will be lined up. If these holes are not aligned, then the pump assembly rear slots are most likely not aligned with the rear stand-offs.

3. Using the 3/16" Allen wrench attached to the front of the pump assembly, install the two front screws to secure the pump assembly to the instrument (Figure 4)
4. Connect the signal and power cables to the pump assembly. (Figure 3)
5. Connect the output of pumps A & B to the lower bulkhead connection points (Figure 2). After finger tightening the Swagelok fittings, use a 5/16" open end wrench to tighten down each fitting a 1/8 – 1/4 a turn to fully seat these connections.
6. Connect the solvent inlet tube at Y-connector below each set of pumps (Figure 1).
7. Connect the power cable at the back of the instrument and/or at the wall outlet to provide power to the instrument.
8. Power on the instrument by toggling the red power switch on the front of the instrument.
9. In **Help > Service**, type in the password "accqprep" to access the Service menu (Figure 19)

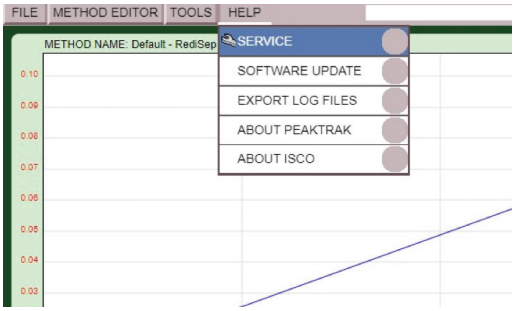

Figure 19: Service menu location

10. Located in the upper right corner of the Pumps tab is the "Pressure transducer calibration" section (Figure 20). Enter in the revision for each of the pump boards. If the revision listed on a pump board label is A-E, then select "**Rev E or Earlier**". If the revision listed on the pump board label is F-Z, then select "**Rev F or Later**". Press the **Save** button.

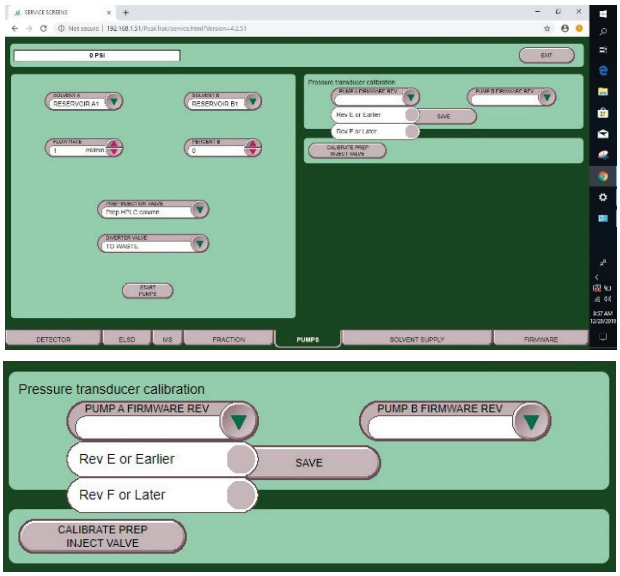

Figure 20: Pump tab of the Service menu

11. Press the **Exit** button in the upper righthand corner of the Service menu to save all changes and reboot to the main screen
12. Install all solvent supply lines into the solvent containers.
13. Turn the prime knob on the front of the instrument to the "**Prime**" position and press the **OK** button in the pop-up window to prime the pumps with solvent. Turn prime knob back to the "**Run**" position when automated prime is complete. Repeat this step if the solvent inlet tubing is not filled with solvent (air bubbles)
14. Install a column on the instrument. Install restrictive capillary tubing in place of a column if one is not available.
15. In **Tools > Manual Control** begin running solvent through the instrument. When the pressure stabilizes, begin increasing the flow rate to increase pressure within the instrument. At each incremental change in flowrate/pressure, check all stainless-steel tubing connections on the pump assembly and bulkhead bracket. If you performed the Installation of Swagelok Bulkhead section, then perform the same leak check on the prime valve fittings.

Note

If there is any solvent leaking from a fitting, tighten the fitting further and continue the leak check up to the maximum pressure rated for the installed column or maximum pressure set in the configuration menu.

16. Install the lower front cover of the instrument and install the left side panel if it was also removed
17. Pump assembly replacement is complete

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