Installing the Hexane/THF adapter kit for the ACQUITY UPLC H-Class system

This document outlines the steps necessary to upgrade the ACQUITY UPLC® H-Class system to accommodate hexane/THF fluids.

For safety advisory information, see Appendix A in the ACQUITY UPLC H-Class System Guide.

See also: Consult the Waters ACQUITY UPLC® H-Class System Hexane/Tetrahydrofuran Compatibility Release Notes (p/n 716002740rA) for specific information about how this procedure affects system qualification. To be certain you have the latest version of this procedure, visit www.waters.com.

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## Parts required

- 716002740rA – Waters ACQUITY UPLC® System Hexane/Tetrahydrofuran Compatibility Release Notes
- 205000661 – ACQUITY™ UPLC® Hexane/THF Mobile Phase Kit

## Parts being replaced

### Kit components

<table>
<thead>
<tr>
<th>Part number</th>
<th>Qty</th>
<th>Item Description/location</th>
</tr>
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<tbody>
<tr>
<td>289003360</td>
<td>1</td>
<td>Dual ball and seat check valve (G) Replaces standard accumulator check valve on QSM pump</td>
</tr>
<tr>
<td>289003706</td>
<td>1</td>
<td>Intelligent Intake Valve cartridge for Hexane/THF Replaces standard primary check valve for QSM I2Valve. See installation instructions P/N 71500144906.</td>
</tr>
<tr>
<td>405006531</td>
<td>1</td>
<td>Adapter fitting, 1/16” barb to 1/8” tube Use with 410001260 compression screw and 410000370 ferrule.</td>
</tr>
<tr>
<td>410000370</td>
<td>1</td>
<td>Ferrule, 1/8” OD with lock ring Use with 410001260 compression screw.</td>
</tr>
<tr>
<td>410001260</td>
<td>1</td>
<td>Compression screw, 1/4 - 28 thread Install on seal wash pump on QSM. Replaces standard PEEK barbed fitting.</td>
</tr>
<tr>
<td>425000545</td>
<td>1</td>
<td>O-ring, Simriz 495, 1.062” OD × 0.040” wide For QSM drip tray drain cup. For Col. Mgr. drain cup. Replaces standard EPDM O-ring.</td>
</tr>
<tr>
<td>430001831</td>
<td>1</td>
<td>Convoluted tube, 5/16” ID × 72” long For QSM drain cup outlet fitting. for Col. Mgr. drain cup outlet fitting. Replaces standard tygon 2075 tube. Stretch cuff ID if necessary.</td>
</tr>
</tbody>
</table>
Kit components (Continued)

<table>
<thead>
<tr>
<th>Part number</th>
<th>Qty</th>
<th>Item</th>
<th>Description/location</th>
</tr>
</thead>
<tbody>
<tr>
<td>430001847</td>
<td>1</td>
<td>Convoluted tube, 3/8” ID × 6.75” long</td>
<td>For QSM upper drip tray to QSM lower drip tray cover rear drain port. Replaces standard tygon 2075 drain tube. Stretch cuff ID if necessary.</td>
</tr>
<tr>
<td>430001861</td>
<td>1</td>
<td>Assy, TUV/PDA inlet SS tube, standard flow, 0.005” ID, 6.0” long</td>
<td>Replaces 6.00” long PEEK tube assy. from column heater to TUV/PDA inlet.</td>
</tr>
<tr>
<td>430001879</td>
<td>1</td>
<td>Assy, TUV/PDA inlet SS tube, standard flow, 0.005” ID, 10” long</td>
<td>Replaces 10.50” long PEEK tube assy. from column heater to TUV/PDA inlet.</td>
</tr>
<tr>
<td>716002740</td>
<td>1</td>
<td>Note, release, Hexane/THF mobile phase kit</td>
<td>Release information regarding use and compatibility of the ACQUITY UPLC H-Class system hexane/tetrahydrofuran kit.</td>
</tr>
<tr>
<td>715002210</td>
<td>1</td>
<td>Procedure, ACQUITY Hexane/THF adapter kit</td>
<td>Procedure for installing the Hexane/THF adapter kit.</td>
</tr>
</tbody>
</table>

Tools/Materials required

- Phillips screwdriver
- 5/16-inch wrench
- 1/4-inch wrench
- 1/2-inch wrench
- T8 Torx screwdriver
- T10 Torx screwdriver
Replacement procedure

This replacement procedure requires access to the inside of the Quaternary Solvent Manager (QSM).

The replacement procedure to accommodate hexane/THF fluids involves the following:

- Replacing the O-ring in the QSM drip tray drain cup. You must also replace the O-ring in the column heater/cooler drip tray drain cup (if applicable).
- Replacing the primary check valve cartridge on the QSM.
- Replacing the standard dual ball and seat check valve on the QSM.
- Replacing the upper QSM drip tray-to-lower drip tray waste line and the QSM drain-to-waste line with convoluted tubing.
- Replacing the PEEK barb fitting on the QSM seal wash pump.
- Replacing the standard PEEK tube from the column heater to the TUV inlet with a stainless steel tubing assembly.

Perform the following steps before starting the procedure:

1. Remove power from all ACQUITY UPLC system components.
2. Remove unneeded equipment/cables from system components (Ethernet connections, switches, remote sensors, etc.)
3. Remove all solvent bottles and the bottle tray.
Replacing the O-Ring in the QSM drip tray drain cup

This procedure outlines the steps necessary to replace the standard EPDM O-ring, located in the bottom of the QSM drip tray drain cup with the O-ring contained in the kit.

**Note:** Follow this same procedure if your system has a column heater/cooler drain cup installed.

**To replace the O-ring**

1. Rotate the waste tube clamp clockwise to free the stainless steel waste tube.
2. Remove the stainless steel waste tube from the drain cup cover and move it to the side.
3. Remove the drain cup cover by first removing the T10 Torx screw.

**QSM bottom drip tray**

4. Lift the cover to find a T10 Torx screw securing the drain plate to the top of the shaft.
5. Hold the drain cup while loosening the T10 Torx screw at the top of the shaft. The drain plate holds the drain cup to the drain tray. Be careful not to disturb the three small washers under the drain plate.
6. Separate the drain cup from the drip tray and replace the O-ring (1.062” \times 0.04”).

7. Ensure that the shaft is aligned properly in the bottom of the drain cup. 

**Requirement:** Make sure that the metal shaft bottom lines up with the two plastic posts in the bottom of the cup. Improper alignment will shear the posts.

8. Tighten the small Phillips head screw at the bottom of the drain cup.

9. Position the drain cup under the drain tray so that the shaft comes up from below.

10. Position the drain plate so the its three notches fit onto the three posts molded into the drain tray.

**Requirement:** Ensure that three small washers are in position on posts under the drain plate before continuing.

11. Reattach the drain cup to the drip tray by tightening the T10 Torx screw.

**Tip:** The drain cup should not move freely when secured properly.

12. Reattach the drain cup cover using the T10 Torx screw removed earlier.

13. Return the stainless steel waste tube and clamp to their original positions.
Replacing the check valve

This procedure outlines the steps necessary to replace the check valve for the accumulator actuator. Prime the pump and perform a leak test after completing the entire upgrade.

See also: To replace the Intelligent Intake Valve (I$^2$V) cartridge, follow the instructions in the ACQUITY UPLC H-Class Quaternary Solvent Manager Operator’s Overview and Maintenance Information document, located on the ACQUITY UPLC H-Class System Documentation CD, p/n 715002124rA.

Part required

289003360 – Dual Ball and seat check valve (G) for accumulator actuator

Tools required

- 5/16-inch open-end wrench
- 1/2-inch open-end wrench
- 1/4-inch open-end wrench
- T8 Torx driver for I$^2$V cartridge replacement

To replace the check valve

1. Remove the solvent inlet tubing from the check valve fitting using a 5/16 and 1/4-inch open-end wrench.
2. Remove the check valve from the pump head using the 1/2-inch open end wrench.

3. Insert the new check valve into the pump head and finger-tighten.

4. Use the 1/2-inch wrench to tighten the fitting 1/4 turn beyond finger tight.

5. Reattach the solvent inlet tubing to the check valve fitting and tighten a 1/4-turn past finger tight.

**Tip:** For a used fitting, tighten a 1/4 turn; for a new fitting, tighten a 3/4 turn.

**Requirement:** After completing the entire upgrade procedure, you must prime the pump and perform a leak test.
Replacing the drip tray tubing

Parts required

- 430001847 – Convoluted Tube, 3/8” ID x 6.75” Long

To replace the drip tray

1. Remove the Pharmed tubing that runs from the QSM top drip tray to the QSM bottom drip tray.

2. Replace the Pharmed tubing with the 6.75” long corrugated drain tube from the kit.

Tip: Stretch corrugated tubing cuff ID if necessary.
Replacing the seal wash pump outlet adapter fitting

Use the adapter fitting, compression screw and ferrule listed below to replace the standard barbed PEEK fitting on the seal wash pump’s outlet.

Parts required

- 405006531 – Seal wash pump outlet adapter fitting, 1/16 barb to 1/8 tube
- 410001260 – Compression screw, 1/4 - 28 thd
- 410000370 – Ferrule, 1/8 OD with lock ring

Replace the fitting as shown in the following figure.
Installing the Stainless Steel Column Heater Tube

Part required

430001861 – Stainless steel tubing assembly

Tools Required

• 1/4-inch wrench
• 5/16-inch wrench

To install the column heater tube

1. Remove the standard PEEK tubing that runs from the outlet of the column to the detector or heater/chiller.

2. Install the stainless steel tubing assembly from the kit using the 5/16” wrench on the column and the 1/4” wrench on the fitting.
Completing the upgrade

When you finish replacing the required parts and installing the heater tube, complete the upgrade as outlined in the following procedure.

To complete the upgrade

1. Power-up the system.

2. Run the Dynamic Leak Test from the QSM Diagnostics in the ACQUITY UPLC Console software.

Requirement: Prior to running the leak test, ensure that Prime is checked in the Solvent field of the Leak Test dialog box.