Replacing the Head Seals

Select this procedure to replace the plunger seal or the face seals in the pump head.

When to Replace

- If the retention times are erratic
- If the pump head is leaking solvent
- If there are large pressure fluctuations

**NOTE:** The face seals do not need to be replaced every time the plunger seal is replaced. Replace the face seals after the plunger seals have been replaced two to three times. Select this procedure to replace only the plunger seal or the face seals in the head assembly.

Parts Required

- (1) Wash Tube Seal Replacement Kit (4/kit), WAT270940
- (1) Plunger Wash Seal Replacement Kit (2/kit), WAT271018
- (2) Seal Wash Face Seal Replacement Kit (1/kit), WAT271017

Tools/Materials Required

- 100% Methanol
- lint-free absorbent towel
- Seal removal tool, WAT039803
- Seal insertion tool, WAT270969
- Priming syringe, 30 mL, WAT270949
**Preparation**

Ensure the gradient proportioning valve is turned off to prevent siphoning of mobile phase.

1. From the 2695 Main screen press the **Diagnostics** key. The Diagnostics screen appears (Figure 1).

![Diagnostic Screen](image1)

*Figure 1  Diagnostic Screen*

2. Press the **Other Tests** key and select **Turn Off GPV** from the list.

3. Press **OK**. A message box appears indicating that the gradient proportioning valve is off (Figure 2).

![GPV Status Screen](image2)

*Figure 2  GPV Status Screen*

4. Open the solvent management compartment doors.
Removing the Head Assembly

1. Turn the head nut counterclockwise several turns to remove it (Figure 3).
2. Grasp the head inlet tube and pull the head straight out to remove it from the piston cavity.

![Figure 3 Removing the Head Assy.](image)

Replacing the Head Plunger Seal

**CAUTION: Be careful not to scratch the surface of the head when removing the seals.**

1. Extract the plunger seal from the head using the nylon-tipped end of the seal removal tool.
2. Place the head, new plunger seal and seal insertion tool on a lint-free absorbent towel and thoroughly wet with methanol.
3. Slide the plunger seal onto the seal insertion tool with the spring side exposed, and insert the seal into the head (Figure 4).

![Figure 4 Plunger Seal Orientation](image)
Replacing the Face Seals

**CAUTION**: Be careful not to scratch the surface of the head when removing the seals.

1. Remove the face seals from the head using a blunt tool.
2. Wet the new face seals and the openings in the head thoroughly with methanol.
3. Place the face seals into the openings on the head and press them into place using a flat object that covers the whole area of the seal (Figure 5).

**NOTE**: Do not use your thumb or fingernail to press the seals into place as they may not sit flush in the head.

![Figure 5 Face Seal Orientation](image)

Installing the Head Assembly

1. Insert the head assembly into the piston cavity making sure the head alignment pin is properly oriented and the J tube is facing down.
2. Replace the headnut and turn it clockwise until the head nut is tight.
3. Open the gradient proportioning valve by pressing OK to return the gradient proportioning valve to its normal open state (Figure 2). You will be informed to stand-by while the GPV resets itself.
4. Press the Exit key to the exit diagnostics.

Priming the Solvent Management System

**NOTE**: To prime the Solvent Management System you will need to perform a Dry Prime.

1. Press the Menu/Status key to enter the Status screen.
2. Press the Direct Function screen key and the Direct Functions menu appears.
3. Select Dry Prime, and then press OK. The Dry Prime dialog box appears (Figure 6).
4. Press the screen key corresponding to the solvent line you want to prime.

5. Open the vent valve and insert the priming syringe.

6. Withdraw the syringe plunger to pull solvent through the tubing. You may need to exert force to pull the air and solvent through the system. Continue until you pull all the air through the solvent line into the syringe (Figure 7).

7. Repeat the dry prime for each solvent line you want to use, and then close the prime/vent valve.

8. Press the screen key corresponding to the solvent line with which you want to prime the system.

**NOTE:** Waters recommends that you prime using the solvent with the lowest viscosity to help purge air from the lines, especially if the inline vacuum degasser is installed.

9. In the **Enter a Duration** field, enter the length of time (in minutes) to prime the solvent management system (Figure 6). Start with a value of 5 minutes. Press **Continue**. The solvent management system begins to operate. At the end of the priming period, the solvent management system turns off and the Separations Module enters the Idle mode.