Coating the SPE-DEX 4790 Extractor Water Inlet Valves

The 4790 Water Inlet Valve assembly is made of PTFE. Due to the surface tension of water, and where the PTFE is not a very “wettable” surface, a phenomenon termed a Vapor Lock can occur. When this happens, water from the sample bottle does not flow down into the Disk Holder during the sample-processing step of the extraction method, even if the valve is fully open. If the sample does not flow down quick enough or does not flow at all, the Liquid Level Sensors will warm-up and prompt the system to advance to the next step, Air Dry the disk, and then to the Rinse steps. During the Rinse steps, solvent shoots up into the bottle containing sample, which will break the Vapor Lock and cause an overflow. To prevent this, the valve is conditioned with the ST-100 hydrophilic solution (PN: 165-0712). This solution will increase the “wettability” of the surfaces of the valve, thus preventing a Vapor Lock. The coating will lose its effect over time with usage and the valve will need to be recoated. Incorporate the valve conditioning as part of the laboratory’s preventive maintenance program. The following are instructions on how to use the solution to coat the valve.

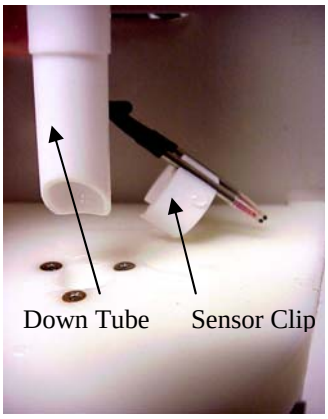

Figure 1: Sensor Clip

Step 1) Turn the controller off.

Step 2) Adjust the pressure regulator bracket for the solvent bottles pressure to 0 psi. Then set the extractor pressure to 0 psi.

Step 3) Remove the five screws located around the rear panel of the extractor cover. Slide the cover back and lift to remove.

Step 4) Carefully slide the sensor clip off the Down Tube and set it aside on the platform. Be careful not to knock the sensors. It is not necessary to remove the sensors from the clip or to disconnect them from the Extractor PC board. Refer to Figure 1.

Step 5) Place a small vial over the end of the Down Tube. The vial (19/22 taper) needs to form an airtight seal to prevent any leaks. Refer to Figure 2.

Step 6) Locate the black actuator inside the front panel of the extractor. Refer to Figure 3. Facing the back of the Extractor and using a 9/32” open-end wrench, turn the shaft on the actuator counterclockwise until the flat side is in the vertical position. The flat side will be on the left when looking at the actuator from the back. The valve is now in the open position.

Figure 2: Down Tube and Vial.

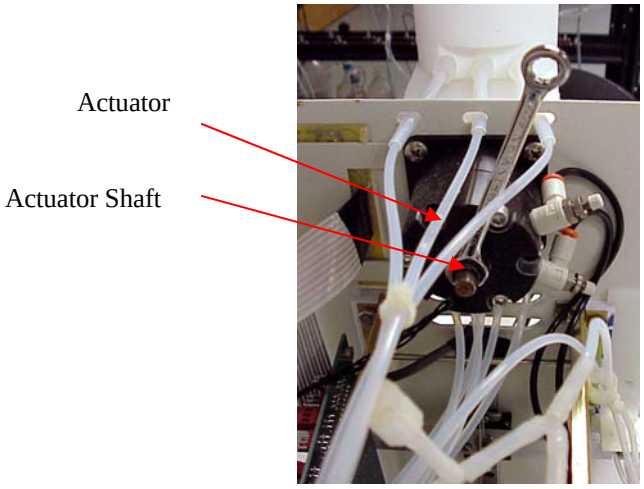

Figure 3: Actuator and Shaft

Step 7) Pour the STD-100 Hydrophilic Solution down the valve from the Bottle Holder. Pour enough solution to fill the narrow opening to the top, where the Bottle Holder begins.

Step 8) Using the open-end wrench, turn the actuator shaft back to the closed position (flat side of shaft horizontal). Then turn it back to the fully open position. Repeat this two or three times.

Step 9) Turn the actuator shaft approximately ¼ of the way to slightly open the valve. Leave the valve in this position.

Step 10) Pour more hydrophilic solution into the valve if the level has dropped below the top narrow opening of the Bottle Holder.

Step 11) Let the water inlet valve sit overnight with the solution.

Step 12) Using the open-end wrench, turn the actuator shaft to completely open the valve. The flat side of the key will be on the left when facing the back of the extractor. Place a large beaker on the platform below the Down Tube to prevent the solution from spilling onto the extractor. Remove the vial and allow the solution to completely drain into the beaker.

Step 13) Turn the actuator shaft back in the horizontal position to completely close the valve.

Step 14) Slip the sensor clip back onto the Down Tube while holding the platform down. Be careful not to knock the sensors as this could cause damage. Verify that the sensor clip and sensors are properly aligned. Refer to Figure 4.

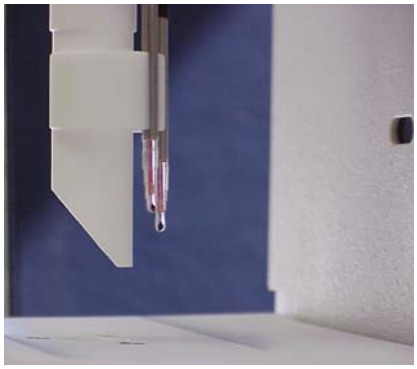

Figure 4: Position of Sensors

Step 15) Replace the cover on the extractor unit and secure it with the screws.

Step 16) Adjust the pressure regulator bracket to read 40 psi for the extractor pressure and between 10 - 15 psi for the solvent bottles pressure.

Step 17) Run a purge method two or three times. Then run a blank water sample to test the water sample-processing step.