Installing the High-Sensitivity Noise Filter

This procedure describes how to install the High-Sensitivity Noise Filter into the 501, 510, 515 and 590 pumps. You may install this filter to minimize flow noise when applications require operating pressures below 1000 psi (70 bars). The high-sensitivity noise filter can be left in the system at pressures up to 2000 psi (140 bars).

Parts Required

The High-Sensitivity Noise Filter Accessory Kit (part number WAT025200) contains the following parts:

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>WAT019895</td>
<td>Filter Mount Clamp</td>
<td>1</td>
</tr>
<tr>
<td>WAT024641</td>
<td>Washer</td>
<td>2</td>
</tr>
<tr>
<td>WAT098060</td>
<td>Low Pressure Filter Assy.</td>
<td>1</td>
</tr>
<tr>
<td>WAT025561</td>
<td>Restrictor Assy.</td>
<td>1</td>
</tr>
<tr>
<td>WAT025313</td>
<td>Compression Screw</td>
<td>3</td>
</tr>
<tr>
<td>WAT097332</td>
<td>Union</td>
<td>1</td>
</tr>
<tr>
<td>WAT022330</td>
<td>Ferrules</td>
<td>3</td>
</tr>
<tr>
<td>WAT025534</td>
<td>High Sens. Filter Manifold</td>
<td>1</td>
</tr>
<tr>
<td>WAT022024</td>
<td>Screw 8 - 32 x 12 Hex SOC</td>
<td>2</td>
</tr>
<tr>
<td>WAT025641</td>
<td>Trans-to Filter Tube Assy.</td>
<td>1</td>
</tr>
<tr>
<td>WAT025462</td>
<td>Screw 8 - 32 x 06 Binder</td>
<td>2</td>
</tr>
</tbody>
</table>

Tools/Materials Required

- Flat-blade screwdriver
- Holding screwdriver
- 5/16-inch open end wrenches
- 5/8-inch dowel
- Magic marker
Procedure

1. Turn the pump off and disconnect the power cord. If the pump is inside of a cabinet, remove it from the instrument.

2. Remove the two screws on the front panel where the filter manifold will be mounted and secure the filter manifold to the front panel with the two screws (WAT022024) provided in the kit (Figure 1).

3. Loosen the four front panel mounting screws and lift the front panel up about one inch.

4. Place the unit on its electronics side.
   
   To install the high sensitivity noise filter in the Model 590, perform steps 5 through 7. For all other pumps, skip ahead to step 8.

5. Loosen the four Allen screws on the bottom of the pump. These screws secure the mechanics to the base plate. Hold the mechanics portion of the M590 while removing the screws.

6. Place the pump on its right side. Disconnect the motor cable from the interconnect board and loosen the two screws that hold the top of the pump mechanics to the metal plate.

7. Remove the pump mechanics from the M590 chassis.

8. Install the low pressure filter and restrictor.
   
   a. Place a screw (WAT025462) and a washer (WAT024641) into a screwhole on the underside of the pump housing. It may be easier to use the hole closest to the side of the chassis. Do not tighten the screw.

   b. Verify that the restrictor and the low pressure filter each has a long and a short tube extending from them.

Figure 1 - High Sensitivity Noise Filter Manifold
c. Bend both long tubes over the sides of the restrictor and low pressure filter. Run the tubing down the side or in crevice about 2 inches, and then out (Figure 2). Running the tubing in the crevice between the restrictor and filter will prevent possible crimping of the tubing when installed back into the pump.

![Figure 2 – Bending the Filter and Restrictor Tubing](image)

d. Use a piece of tape to label the restrictor tube to simplify reconnection.

e. Insert the longer tubing ends through the hole in the underside of the pump housing and then out through the opening in the front of the housing (Figure 3). Be sure that the tube clears the loosened front panel assembly.

![Figure 3 - Installing Filter and Restrictor Assemblies](image)

f. Hold the low pressure filter and restrictor in the cavity under the pump housing. Slide one end of a clamp (WAT019895) under the screw head and washer in the underside of the housing.

g. Align the filter and restrictor under the clamp. Use a screw (WAT025462) and washer (WAT024641) to attach the unaffixed end of the clamp to the housing.

h. Position the filter and restrictor so that the short tubes on each extend out from the pump housing. Tighten both screws securely.

i. Attach one compression screw and one ferrule to each of the shorter tube ends. Use a union (WAT097332) to seat ferrules onto the tubes.

j. Coil each tubing two turns around a 5/8" dowel or magic marker. Connect the two ends with the union and push the coils and union neatly against the filter and restrictor bodies (Figure 4).
9. For a 590 pump, replace the pump mechanics into the chassis as follows:
   - Replace the pump mechanics into the pump housing.
   - Replace and tighten the four Allen screws on the bottom of the pump.
   - Place the pump on its right side.
   - Reconnect the motor cable from the interconnect board.
   - Tighten the two screws that hold the top of the pump mechanics to the metal plate.

10. Bend the two tubes extending from the pump housing toward the left side of the pump.

11. Remove the grommet from the left portion of the front panel assembly and slide it over the two tubes. Attach a compression screw and a ferrule to each of the two tubes.

12. Feed the tubing out through the slot on the lower left corner of the front panel.

13. Install the restrictor and the low pressure filter to the filter manifold.
   a. The tube with the smaller inside diameter is the restrictor tube and the other is the low pressure filter tube.

*NOTE:* The proper connection of the high sensitivity noise filter and restrictor tubes is important because the high sensitivity noise filter tubing has an inside diameter of 0.020 in. (0.51mm) and the restrictor has an inside diameter of 0.009 in. (0.23mm). Reversing these tubes will impair the proper operation of the M590 pump.
b. Coil the low pressure filter tubing two turns to the left (Figure 5). Attach the coiled tubing to the lower right hole of the manifold filter block. Coil the restrictor tube to the right and attach it to the lower left manifold filter block hole (Figure 5).

c. Arrange the two coils neatly.

d. Place the jumper tube from the transducer outlet to the filter manifold inlet on the right top side of the manifold.

e. Connect the outlet tube (inlet to the injector) in the top left port of the filter manifold.

14. If necessary, install the pump into the cabinet.