INTRODUCTION

Installation and adjustment of the Noise Compensation Kit, PN 15841-10, is described in this Supplement. The Kit is installed in a Model 14CNB Signal Converter when the Converter and a Model Series 14 Meter Body with a deflection sensor produce inaccurate output signals while monitoring a process operating at zero or low flow rates. The inaccuracy is caused by excessive noise, which exceeds the hysteresis setting, overriding the desired flow signals.

The major Kit component is a variable resistor. When installed in the Converter, the resistor will be in series with one of the sensor leads from the Meter Body and, therefore, becomes a part of the flow sensing bridge network.

The variable resistor is adjusted to modify bridge balance, compensating for the static pressure effect on the sensor signal at a zero or low flow condition. In the event that compensation cannot produce accurate output signals, it will be necessary to adjust the hysteresis potentiometer.

Once satisfactory compensation is achieved, no further adjustment is required unless the deflection sensor is replaced. Replacement of the sensor requires readjustment of the variable resistor.

KIT COMPONENTS

<table>
<thead>
<tr>
<th>Qty</th>
<th>Description (see Figure 1)</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Circuit Board Assembly</td>
<td>15841-1</td>
</tr>
<tr>
<td>1</td>
<td>Jumper Wire Assembly</td>
<td>15750-211</td>
</tr>
<tr>
<td>2</td>
<td>#6 Screws and Pressure Plates</td>
<td>7418-365</td>
</tr>
</tbody>
</table>

SUGGESTED EQUIPMENT

A. Test Equipment: One or more of the following may be used to monitor Converter signals during noise compensation. Items 1 and 2 are suggested. Items 3 and 4 can be used, however, compensation is more difficult.

1. Dual Channel Oscilloscope; Vertical - 0.5V/division
   Horizontal - 0.1 second to 1 millisecond

2. Series 36 Recorder

3. Analog or Digital Milliammeter; Range - 4 to 20mA

4. Totalizer
B. Other equipment:

1. Common electronic hand tools
2. Jeweler's screwdriver
3. SD14-3, Installation and Service Instruction, SSPH Fluidic Flowmeter, Model 14 Signal Converter for Meter Body With Deflection Sensor.

KIT INSTALLATION

1. Remove ac line power from the Signal Converter to prevent electrical shock hazard.
2. Refer to SD14-3, section 2.2.2. Open enclosure cover, then remove the terminal enclosure cover.
3. Locate wiring terminals 10, 11 and 12 and note the two unused terminals between 11 and 12.
4. Remove the red wire from terminal 11.
5. Refer to Figures 1 and 2. From the Kit, use the two screws and pressure plates to mount the circuit board assembly, the red wire, and ring terminal end of the jumper wire as shown.
6. Connect the spade lug end of the jumper wire to terminal 11.
7. Check all connections.

EQUIPMENT CONNECTIONS

A. Oscilloscope
   Refer to Figure 3 and connect oscilloscope probes as indicated.

B. Recorder or Milliammeter
   Connect recorder to Converter current output terminals 4 and 5. See Figure 2.

C. Totalizer
   Connect to pulse output as described in SD14-3, section 2.5.

NOISE COMPENSATION

1. Rotate variable resistor screw counterclockwise (to minimum resistance) until a soft clicking noise is heard or a slight resistance is felt at each complete rotation.
2. If an oscilloscope is used, ground the input to each channel and adjust each trace to the mid-screen graticule. Readjustment may be required during the procedure.

   Release the inputs from ground.
3. Apply power to the Converter.

4. Activate the process and set it to zero or low flow.

5. Note the indications on the test equipment. A noisy signal will be indicated as follows.

   Oscilloscope - Noise pulses will exceed the hysteresis waveform. Refer to Figure 4 for a low noise display.

   Recorder or Milliammeter - Noise will cause a higher than normal reading that will also be quite variable.

   Totalizer - Noise will cause the totalizer to increment at a higher than normal rate and the counting rate may be variable.

6. Rotate the variable resistor screw clockwise one-half turn at a time pausing for several seconds after each adjustment to allow the circuit to stabilize. Continue this adjustment until the noise begins to decrease, then very slowly fine adjust the resistor reducing the noise to minimum.

   IMPORTANT

   a. Noise compensation response is in the form of a notch about two turns (of the resistor screw) wide at the point where noise reduction begins. See Figure 5. If the screw is turned too fast, or if test equipment is not carefully monitored, it is possible to pass the notch without seeing it. If this occurs, repeat steps 1 and 6.

   b. The screwdriver, and human body, may pick-up radiated power line energy and inject it into the Converter. Check for this effect by comparing the noise level while touching and not touching the screw with the screwdriver. Pick-up can make a fine setting difficult.

   c. The variable resistor is a 25-turn potentiometer.

If indicated noise is unaffected or increased by adjusting of variable resistor, proceed to steps 7, 8, and 9.

If noise can be reduced, but not to where satisfactory flow measurement is achieved or noise amplitude is within the hysteresis waveform, proceed to step 10.

If noise can be reduced permitting acceptable flow measurement, proceed to step 11.
7. Refer to Figure 2. Transfer the resistor to the other bridge leg as follows:
   - Disconnect the jumper wire from terminal 11.
   - Remove the red wire from the board assembly and connect the wire to terminal 11.
   - Remove the white wire from terminal 10 and connect it to the board assembly in place of the red wire.
   - Connect the jumper wire to terminal 10.

8. Rotate the variable resistor counterclockwise as directed in step 1.


10. Only if necessary, increase the hysteresis setting by rotating R13 clockwise (See Figure 3). This will reduce turn-down.

11. Disconnect test equipment, install terminal enclosure cover, and close enclosure cover.

SERVICE PUBLICATIONS DEPT.

rab