**TS-VFM Installation Guide**

This install guide provides necessary installation instructions for the mounting of the INCON Vapor Flow Meter inside a dispenser or inside a dispenser sump. Information regarding the cabling and the connection to the Tank Sentinel Console is found in the Tank Sentinel Installation Guide (p/n 000-2150). All documentation relating to operability, maintenance, and testing of the Vapor Flow Meter is found in the Vapor Recovery Monitor Operator’s Guide (p/n 000-2058).

**Important:** See the Vapor Recovery Install/Operators Manual or Tank Sentinel Installation Manual for Important Safety Messages.

### Required Tools
- Pipe joint tape (Teflon Tape)
- Pipe Wrench
- Small screwdriver (terminal block connection)
- Slip joint pliers (crimping splice connector)

### Related Documents
- 000-2058 : Vapor Recovery Monitor Operators Guide
- 000-2150 : Tank Sentinel Installation Guide - TS-5XXX Series
- 000-2142 : Tank Sentinel Programming Guide - TS-5XXX Series
- 000-2151 : Tank Sentinel Operator’s Guide - TS-5XXX Series

### Parts List and Materials Needed

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Supplied By</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vapor Flow Meter, TS-VFM</td>
<td>INCON</td>
<td>1</td>
</tr>
<tr>
<td>Sensor Installation Kit, 020-1509</td>
<td>INCON</td>
<td>1</td>
</tr>
<tr>
<td>Weatherproof Junction Box</td>
<td>Contractor</td>
<td>1</td>
</tr>
<tr>
<td>1.5&quot; to 1&quot; reducing bushing</td>
<td>Contractor</td>
<td>1</td>
</tr>
<tr>
<td>1.5&quot; to __&quot; reducing bushing*</td>
<td>Contractor</td>
<td>1</td>
</tr>
<tr>
<td>1&quot; pipe nipple</td>
<td>Contractor</td>
<td>1</td>
</tr>
<tr>
<td>__&quot; pipe nipple*</td>
<td>Contractor</td>
<td>1</td>
</tr>
<tr>
<td>Pipe Union</td>
<td>Contractor</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Supplied By</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vapor Flow Meter, TS-VFM</td>
<td>INCON</td>
<td>1</td>
</tr>
<tr>
<td>Sensor Installation Kit, 020-1509</td>
<td>INCON</td>
<td>1</td>
</tr>
<tr>
<td>Weatherproof Junction Box</td>
<td>Contractor</td>
<td>1</td>
</tr>
<tr>
<td>1.5&quot; pipe nipple</td>
<td>Contractor</td>
<td>2</td>
</tr>
<tr>
<td>1.5&quot; pipe union</td>
<td>Contractor</td>
<td>1</td>
</tr>
</tbody>
</table>

* - piping size is dependent on vapor piping size inside the dispenser. Typically the connection to a Healy VP1000 is a ½" NPT. Thus, the bushing size will be 1.5" to 0.5".

### Installation Steps

#### Above Shear Valve

1. Lock and tag out power to the dispenser and the console before attempting any work on the dispenser.
2. Refer to Figure 1 for reference.
3. Do not remove the protective caps on the Vapor Flow Meter until you are ready to thread the nipples into the Flow Meter.
4. Begin by connecting the two 1.5" to 1" reducing bushings to the Vapor Flow Meter’s body. Be sure to use only Teflon tape when sealing these threads. Take special precaution not to let any foreign material fall inside of the Vapor Flow Meter.
5. Next, start assembling the hardware from the bottom up. Connect a short, 1" NPT threaded nipple to the top of the vapor shear valve and to the 1.5" to 1" reducing bushing on the flow meter. Followed by a 1" pipe union. The existing dispenser piping can now connect to the top of the union.
6. If there is not already a watertight junction box for the intrinsically safe cables, then install one as described earlier in Tools Required.
7. Pull the black Vapor Flow Meter cable through the supplied cable grip and into the junction box. Using the supplied crimp connectors, splice the flow meter cable to the field cable. The color codes on the black flow meter cable are: **Red = + (plus) and Black = – (minus)**

#### Below Shear Valve

1. Lock and tag out power to the dispenser and the console before attempting any work on the dispenser.
2. Refer to Figure 2 for reference.
3. Do not remove the protective caps on the Vapor Flow Meter until you are ready to thread the nipples into the Flow Meter.
4. Begin by connecting two 1.5" NPT pipe nipples to the Vapor Flow Meter’s body. Be sure to use only Teflon tape when sealing these threads. Take special precaution not to let any foreign material fall inside of the Vapor Flow Meter.
5. Next, prepare the piping inside of the dispenser sump to connect to the Vapor Flow Meter. If flexible piping is currently installed, make sure, when adding the Vapor Flow Meter, that there are no bend radii that are too sharp, kinks, or traps. The contractor may need to replace the existing flexible piping with a shorter length in order to avoid potential flow restrictions.
6. Add the Vapor Flow Meter between the existing piping in the sump and the bottom of the vapor shear valve. In most cases the vapor shear valve will need to be temporary removed in order to assist with making the connection. Add a union to either the top of the shear valve or below the shear valve.
7. If there is not already a watertight junction box for the intrinsically safe cables, then install one as described earlier in Tools Required.
8. Pull the black Vapor Flow Meter cable through the supplied cable grip and into the junction box. Using the supplied crimp connectors, splice the flow meter cable to the field cable. The color codes on the black flow meter cable are: **Red = + (plus) and Black = – (minus)**
Gasoline Vapor IN from Existing Dispenser Piping

Pipe Union

Pipe Nipple

Vapor Flow Meter (supplied by Franklin Fueling Systems)

1.5” NPT Reducing Bushing

1” NPT Pipe Nipple

Intrinsically Safe Conduit to Tank Sentinel Console

Weatherproof Junction Box

Approximately 10”

Cord Grip

1.5” NPT to 1” NPT Reducing Bushing

Weatherproof Junction Box

Vapor Shear Valve

1” NPT Pipe Nipple

Vapor Flow Meter (supplied by Franklin Fueling Systems)

Gasoline Vapor Out to Field Piping

Figure 1
Flow Meter Above Shear Valve

Figure 2
Flow Meter Below Shear Valve