

FLUID ELECTRONICS

SINGLE POINT OVERFILL ALARM FLOAT SWITCH

MODEL FOVF 600 B & S

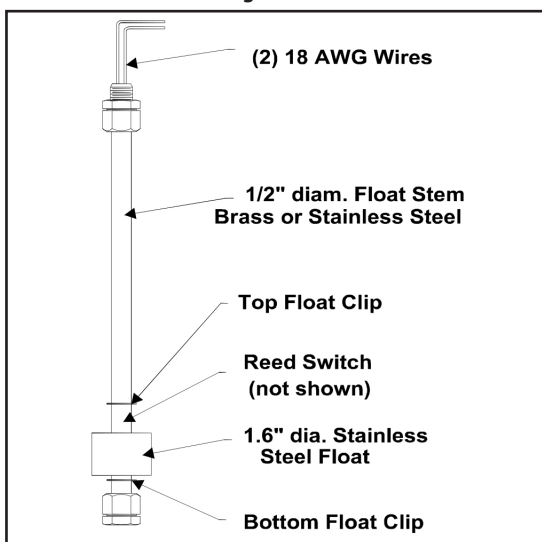
1. GENERAL DESCRIPTION

- 1.1. Fluid Electronics Single Float High Level Float Switch Sensor - FOVF 600 by Containment Solutions is designed to provide a signal indicating that a liquid has reached a critical High Level. This sensor is used in conjunction with a control panel as a Tank Overfill Alarm System. It must be installed in a "Vertical" position within the storage tank.
- 1.2. The FOVF 600 sensor interfaces with CSI's Fluid Electronics' family of control panels and with most control panels, manufactured by other vendors.

2. FEATURES

- 2.1. The FOVF 600 High Level Sensor is simple in design and operation. It consists of a single float and a dry reed switch encapsulated in the float stem. A magnet within the float actuates the reed switch that is hermetically sealed within the brass or stainless steel float stem. The switch is completely protected from exposure to liquid or vapor.
- 2.2. The Overfill "Alarm Point" is determined by how far the sensor extends into the storage tank. This point is varied by adding extensions onto the float stem during installation. The sensor may be installed up to 5000' from CSI's Fluid Electronics' Control Panel.
- 2.3. The float is a 1.6" diameter stainless steel sphere that travels between two points on the float stem. These points are set immediately above and below the reed switch. Movement of the float is restricted via the use of two stainless steel retainer clips.
- 2.4. The "standard" float stem is constructed of 1/2" brass tubing - FOVF 600 B. An Optional Stainless Steel stem is available - FOVF 600 S. The float stem is 12" in length. The reed switch is installed 8" from the top of the stem, with 10' of wire extending from the top. As little as a 1/8" movement of the float will actuate the reed switch. The switch is normally in the closed position and opens when the liquid/float rise above its position.
- 2.5. The FOVF 600 Series Sensors are intended to be used in conjunction with one of the following control/alarm panels:
 - 2.5.1. Fluid Electronics (CSI) - CPF 1, 2, 3 & 4.
 - 2.5.2. Pneumercator - LC 1000, E700-1, LDE-700, & LDE-740.
 - 2.5.3. Veeder Root - TLS 250 or TLS 350.

Figure 2-1



3. SENSOR OPERATION

- 3.1. The FOVF 600 Single Point Overfill Sensors are designed for "Vertical" installation in the tops of tanks. The sensor assembly consists of a float that travels over a single reed switch as the liquid level rises. The travel distance of the float is restricted by two clips placed directly above and below the switch. The float contains a magnet that opens a normally closed switch as the liquid level rises. The open circuit sends a signal to the control panel indicating an alarm condition. The FOVF 600 Sensors are designed to operate in WET environments within storage tanks.

4. SPECIFICATIONS

Float	1.6" Dia., Stainless Steel
Float Stem	1/2" Dia. Brass - Standard Stainless Steel Optional
Retainer Clips (2)	Stainless Steel
Connector Cable	2 Conductor - 18 AWG 10' Length, PVC coated
Maximum Rating	400 Watts, 3 AMPS at 120 VAC (max)
Alarm Set Point	1/8" from Lower Retainer Clip
Sensor	Dry Reed type Switch (Hermetically Sealed)
Temperature Range	-20° F to 180° F (-29° C to 82° C)
Pressure	Full Vacuum to 150 PSI
Installation Distance	Up to 5000' from CSI's Fluid Electronics Control Panels
Approvals	FM, Intrinsically Safe for Class I, II and III, Division 1, Groups A, B, C, D, E, F & G when used with CSI's Fluid Electronics Model CPF Panels
Special Option	Manual Float Lift Lever (NCL)

5. INSTALLATION

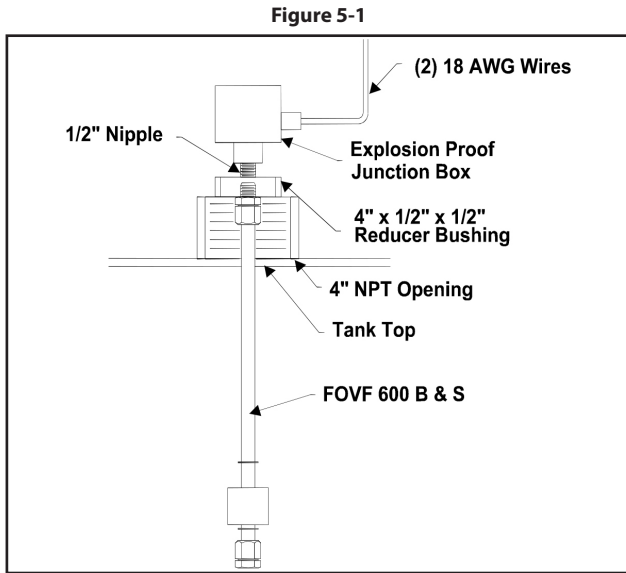
- 5.1. The FOVF 600 sensor must be placed in a minimum 2" NPT port, in the top centerline of the tank. If installed in a 2" NPT opening, a reducing bushing must be used. The sensor assembly must remain in the vertical position for proper operation. The installing contractor must supply the items listed in Table 5-1 to successfully install the sensor.

Table 5-1

No.	Description
1	4" x 1/2" NPT Double Tap Bushing
2	1/2" NPT Conduit Pipe
3	1/2" NPT Coupling
4	2" NPT Riser Pipe
5	Explosion Proof Junction Box

STANDARD TANK PORT MOUNTING

- 5.2. Standard Tank Fitting Installation (See Figure 5-1).
- 5.3. Attach the top (threaded) portion of the float stem to a 4" x 1/2" double tap bushing. The top of the stem must be threaded into the bottom of the bushing.



MANWAY AND RISER PIPE MOUNTING

- 5.4. Manway Installation (See Figure 5-2).
- 5.5. Riser Installation (See Figure 5-3).
- 5.6. Determine the length of 1/2" conduit required to place the sensor actuation point at the correct location within the tank. Thread both ends of the conduit after cutting to the correct length.
- 5.7. Assemble a 1/2" coupling onto one end of the conduit. Pass the sensor wire through the conduit so that the top threaded end of the float stem is attached to the coupling. Attach the other end of the conduit into the bottom of the double tap bushing.

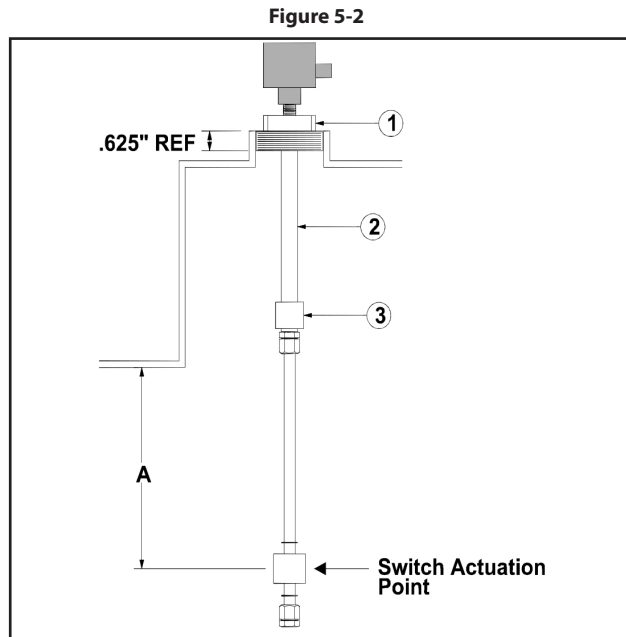
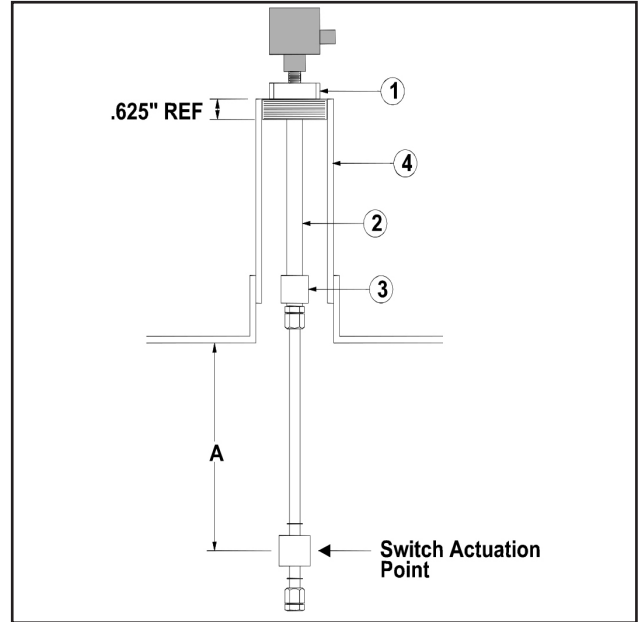


Figure 5-3



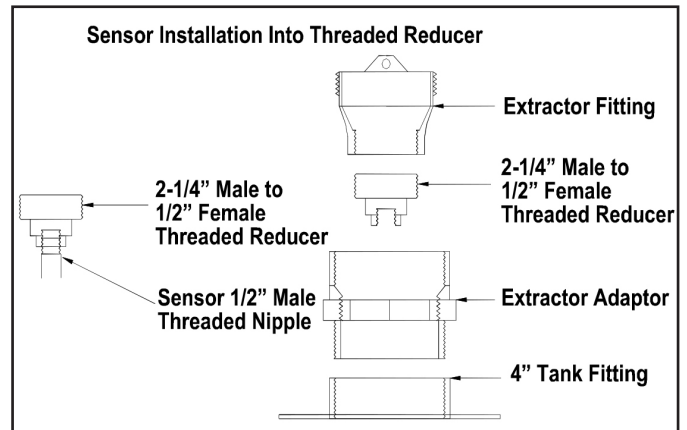
TANK PORT, MANWAY AND RISER PIPE MOUNTINGS

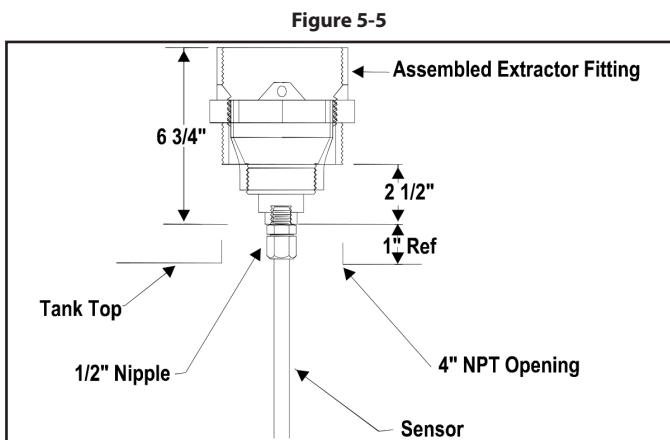
- 5.8. Standard Tank Fitting Installation (See Figure 5-1).
- 5.9. Attach an approved junction box to the nipple or conduit. The connector cable from the sensor must pass through the 1/2" opening in the bushing, into the junction box.

EXTRACTOR FITTING INSTALLATION

- 5.10. Extractor Fitting Installation (See Figure 5-4).
- 5.11. Extractor Fitting Sensor Installation (See Figure 5-5).
- 5.12. The FOVF 600 sensor may be installed in a 4" NPT opening, using the optional extractor fitting assembly. The sensor assembly must remain in the vertical position for proper operation. It is critical that the contractor positions the sensor actuation point at the correct location within the tank.
- 5.13. The extractor adapter is installed in a 4" NPT threaded tank coupling. The threaded 1/2" nipple of the sensor assembly screws into the 2 1/2" male to 1/2" female threaded reducer. The threaded reducer is then screwed into the extractor fitting. This installation allows the easy removal of the sensor for maintenance and observation.

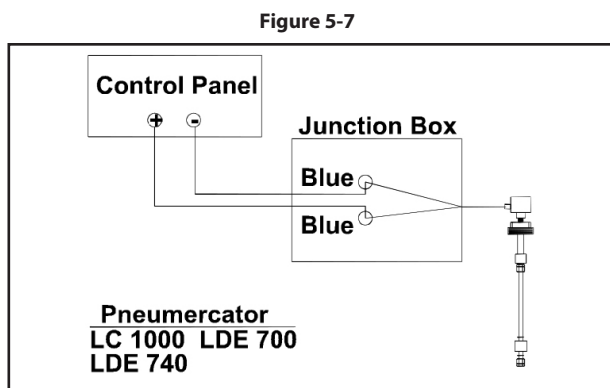
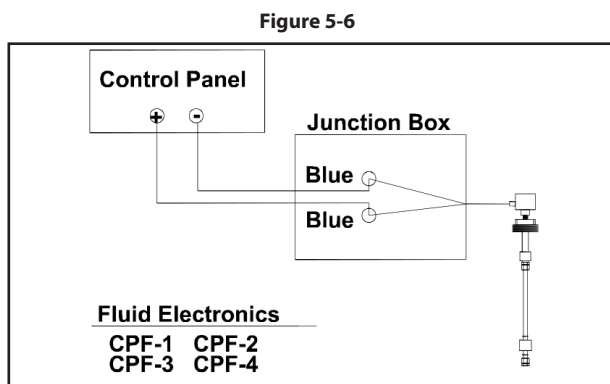
Figure 5-4





WIRING

- 5.14. The sensor is wired differently for various alarm panels and must be connected correctly with the alarm panel in order for the system to operate properly. See the control panel manufacturer's instructions for type of wire to be used and for the most recent wiring diagrams. All conduit and electrical junction boxes must be watertight to prevent intrusion of groundwater or rainwater from entering conduits and junction boxes. Ensure that wiring meets all local, state and national codes.
- 5.15. Fluid Electronics CPF 1, 2, 3, & 4 (See Figure 5-6).
- 5.16. Pneumercator LC 1000, LDE 700 & LDE 740 (See Figure 5-7).



6. SENSOR TESTING AND MAINTENANCE

- 6.1. The sensor consists of a single reed switch and float. To determine if the float switch is functioning properly these steps must be followed prior to installation, at least annually or when an alarm condition exists:
- 6.2. Prior to Installation
 - 6.2.1. Connect the sensor to the control panel according to Section 5. The alarm panel should be in the normal operations mode.
 - 6.2.2. While holding the sensor assembly upright in one hand, use the free hand to move the stainless steel float up the stem, the red LED should illuminate and the buzzer should sound.
 - 6.2.3. The sensor is ready for installation according to Section 5.
- 6.3. Periodic Testing
 - 6.3.1. Remove sensor from the tank. The control panel should be in the normal operations mode. The red alarm indicator not should be illuminated and the buzzer should not be sounding.
 - 6.3.2. While holding the sensor assembly upright in one hand, use the free hand to move the stainless steel float up the stem, the red LED should illuminate and the buzzer should sound.
 - 6.3.3. Reinstall the sensor according to Section 5.