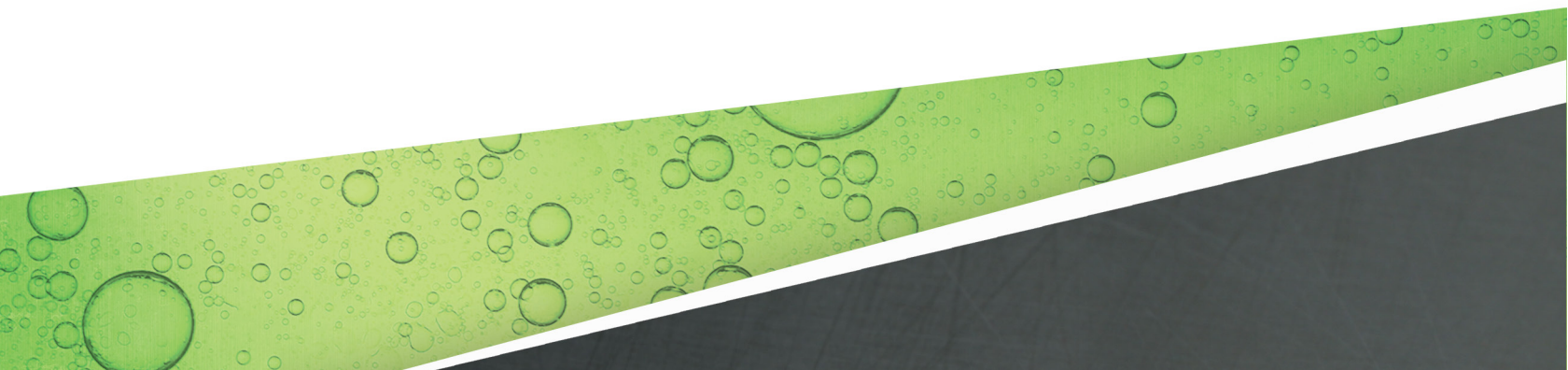


FMP-HFS2

HORIZONTAL FLOAT SWITCH SENSOR

INSTALLATION GUIDE



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Conventions used in this manual

This manual includes safety precautions and other important information presented in the following format:

NOTE: This provides helpful supplementary information.

IMPORTANT: This provides instructions to avoid damaging hardware or a potential hazard to the environment, for example: fuel leakage from equipment that could harm the environment.

▲ CAUTION: This indicates a potentially hazardous situation that could result in minor or moderate injury if not avoided. This may also be used to alert against unsafe practices.

▲ WARNING: This indicates a potentially hazardous situation that could result in severe injury or death if not avoided.

▲ DANGER: This indicates an imminently hazardous situation that will result in death if not avoided.

Operating precautions

Franklin Fueling Systems (FFS) equipment is designed to be installed in areas where volatile liquids such as gasoline and diesel fuel are present. Working in such a hazardous environment presents a risk of severe injury or death if you do not follow standard industry practices and the instructions in this manual. Before you work with or install the equipment covered in this manual, or any related equipment, read this entire manual, particularly the following precautions:

IMPORTANT: To help prevent spillage from an underground storage tank, make sure the delivery equipment is well-maintained, that there is a proper connection, and that the fill adaptor is tight. Delivery personnel should inspect delivery elbows and hoses for damage and missing parts.

▲ CAUTION: Use only original FFS parts. Substituting non-FFS parts could cause the device to fail, which could create a hazardous condition and/or harm the environment.

▲ WARNING: Follow all codes that govern how you install and service this product and the entire system. Always lock out and tag electrical circuit breakers while installing or servicing this equipment and related equipment. A potentially lethal electrical shock hazard and the possibility of an explosion or fire from a spark can result if the electrical circuit breakers are accidentally turned on while you are installing or servicing this product. Refer to this manual (and documentation for related equipment) for complete installation and safety information.

▲ WARNING: Before you enter a containment sump, check for the presence of hydrocarbon vapors. Inhaling these vapors can make you dizzy or unconscious, and if ignited, they can explode and cause serious injury or death. Containment sumps are designed to trap hazardous liquid spills and prevent environmental contamination, so they can accumulate dangerous amounts of hydrocarbon vapors. Check the atmosphere in the sump regularly while you are working in it. If vapors reach unsafe levels, exit the sump and ventilate it with fresh air before you resume working. Always have another person standing by for assistance.

▲ WARNING: Follow all federal, state, and local laws governing the installation of this product and its associated systems. When no other regulations apply, follow NFPA codes 30, 30A, and 70 from the National Fire Protection Association. Failure to follow these codes could result in severe injury, death, serious property damage, and/or environmental contamination.

▲ WARNING: Always secure the work area from moving vehicles. The equipment in this manual is usually mounted underground, so reduced visibility puts service personnel working on it in danger from moving vehicles that enter the work area. To help prevent this safety hazard, secure the area by using a service truck (or some other vehicle) to block access to the work area.

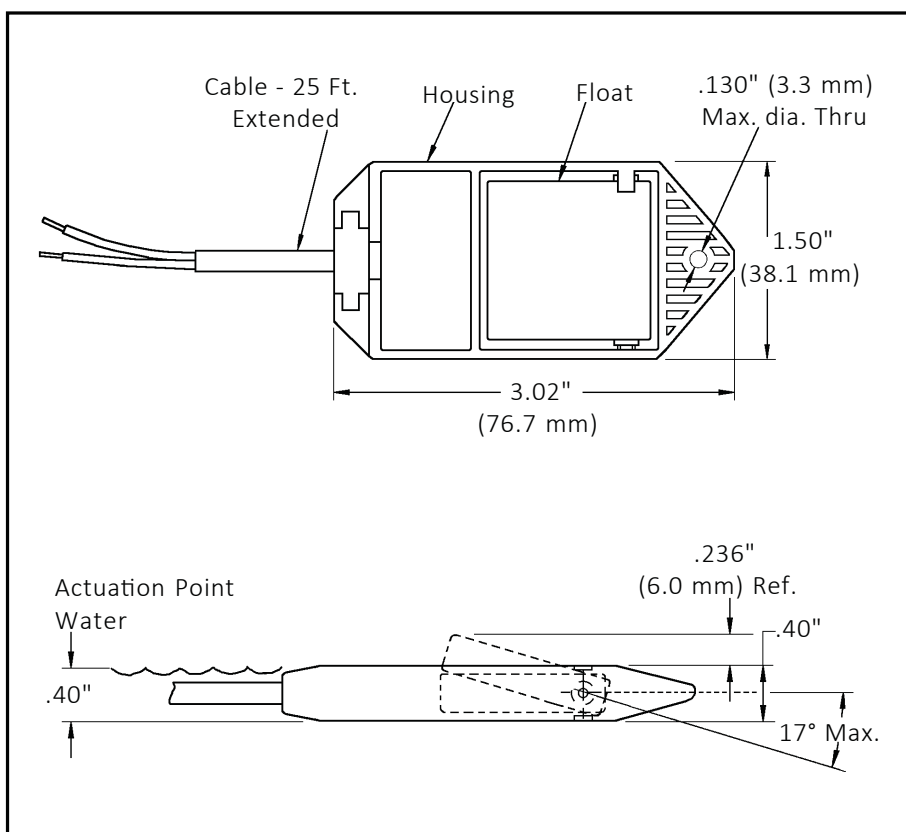
▲ DANGER: Make sure you check the installation location for potential ignition sources such as flames, sparks, radio waves, ionizing radiation, and ultrasound sonic waves. If you identify any potential ignition sources, you must make sure safety measures are implemented.

Installation

Overview

The FMP-HFS2 is a liquid sensor that is used to detect the presence of a liquid in the normally dry Class 1, Division 1, Group D Hazardous Areas of the interstitial area of double-wall storage tanks. The sensor is supplied with electrical connectors, 25 feet of cable, and a cord-grip fitting shown in the following diagrams. The FMP-HFS2 uses magnetic-float/reed-switch technology. The sensor must lay flat so the float can rise freely with the level of a liquid.

When the float rises more than approximately 1/2 of an inch, the magnetically sensitive reed switch will open. An open circuit is recognized as an alarm-condition at the intrinsically safe (IS) leak detection circuits of the FFS (Franklin Fueling Systems) EVO™ 550, EVO™ 5000, & S940.



Equipment Required

- No-strip electrical connectors – recommended for sites: within flood zones, high groundwater tables, or with poor drainage.
- 1/2 or 3/4 inch NPT (National Pipe Thread, tapered), Rigid Metal Conduit (RMC) or nonmetallic (PVC) conduit if allowed by local codes.
- EYS Seal fittings and Epoxy to fill the fitting after operational testing is completed.
- Weatherproof junction box, gasket, and cover, plus a 3/4 to 1/2 inch NPT reducing bushing if 1/2 inch RMC is used. See the ATG Installation Guide for recommended electrical Junction boxes.
- Wire: THHN, TFFN or THWN, 18 AWG, White & Black, or Alpha Cable # 58411, 0.114 O.D. – 1,500 feet (457 meters) max. length. Alpha cable #58411 must be used with nonmettalic conduit.
- Slip joint pliers to seat the no-strip, self-sealing wire connectors (connectors are supplied with the sensor).
- UL Classified Thread Sealant or pipe dope.
- TSP-KI2 Riser Cap for 2-inch riser pipes, includes a pre-installed 1/2 inch NPT compression gland (cord grip) fitting. Other riser caps are available for different riser pipe sizes; consult your factory rep.*
- Riser pipe – 2 inch min. with all rough edges removed/deburred from the inner edges.*

*Needed for installation in UST interstitial areas (Figure 2)

Procedure

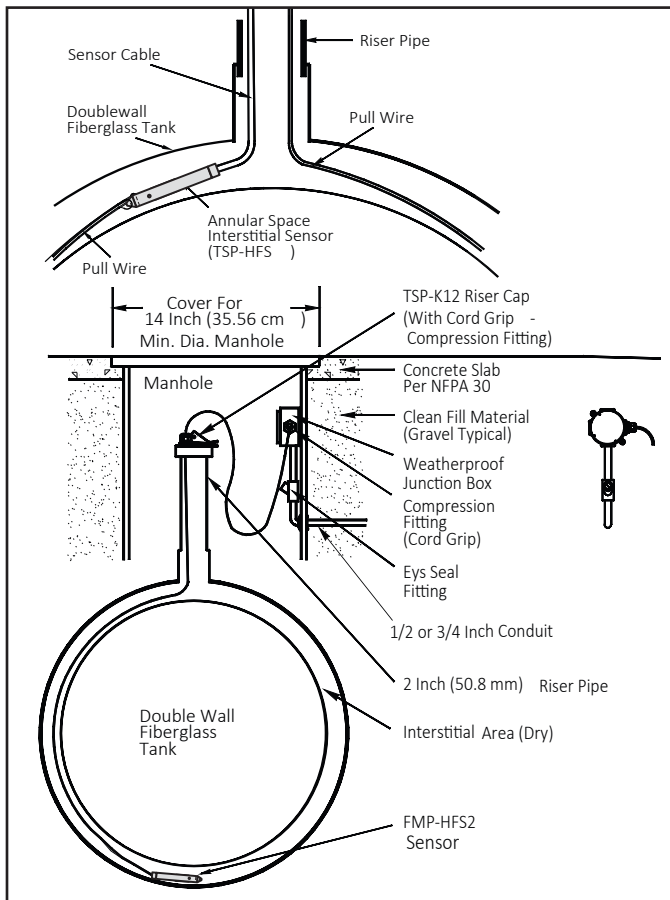
IMPORTANT: It is the installer's responsibility to comply with all applicable federal, state, and local codes. Failure to do so may create an environmental hazard.

▲ CAUTION: Seal all threaded fittings and conduit threads to produce a weatherproof seal during installation/maintenance.

▲ WARNING: Conduits must have EYS seal fittings installed in accordance with NFPA 70 (National Electric Code) and NFPA 30A (Automotive and Marine Service Station Code). Failure to seal conduits in accordance with NFPA 30A, and NFPA 70 could allow flammable vapors to travel through the conduit in the ATG console. An explosion could result causing serious injury, property loss, or death.

1. Install the riser pipe in the manhole.
2. Install conduit, EYS fittings, and the weatherproof junction box.
3. FFS recommends testing the sensor with a multi-meter prior to installing in the tank. Connect the senor wires to the two probes of a multimeter set for continuity. Move the flapper to ensure the resistance changes with movement of the flapper.

4. Shut off power.
5. Using a fish tape, run a pull-wire down the riser and around the inner tank. You will need access to both ends of the pull wire.
6. Measure the length of the riser pipe + 1.5 x diameter of tank = _____ total length. Mark this length on the cable, and pull it through the TSP-KI2 riser cap cord-grip until the mark is 12 inches (30.5 cm) above the fitting. Tie one end of the pull-wire to the sensor pull cap and pull the wire until the sensor cable moves just above the cord-grip. Leave the pull wire in place, loop the wire around the cable, and then tighten the fitting.

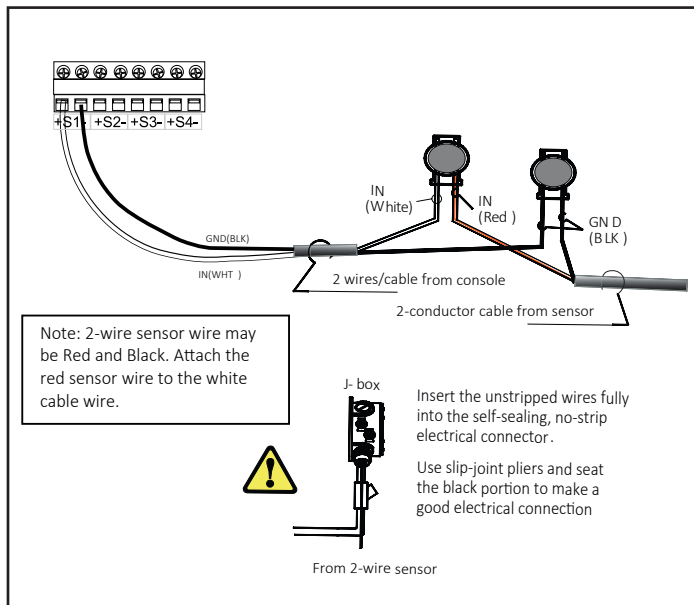


- 3

10. Turn off power. If other devices are to be installed, repeat Step 3.
11. Reinstall all safety covers, guards, and the junction box gasket and covers. Use pipe-dope to seal all fitting threads.
12. Install the manhole cover.
13. Record the location where the sensor was installed on the chart on the last page of these instructions.
14. Turn on power and program the alarm console.

You must install a weatherproof, electrical junction box inside each manhole. The junction box should be installed high on the manhole wall to prevent it from being submerged during heavy rains.

Electrical Wiring



Refer to the EVO™ 550 / EVO™ 5000 ATG installation manual and the drawing above for sensor wiring details. This sensor (FMP-HFS2) can connect to a two-wire sensor module or 3 wire sensor module in the EVO™ 550 / EVO™ 5000 ATG. Or it may connect to an S940 as shown above. (Not compatible with EVO™ 200/ EVO™ 400).

Testing

Testing this device is a matter of moving the float away from alignment with the sensor body. This should cause an alarm at the ATG console. Test the sensor for proper operation on a yearly basis, or more frequently per local code.

Sensor Location

Sensor	Channel Number	Notes

