

Interstitial Liquid Sensor - Fiberglass Tanks

Installation Guide

Notice

Veeder-Root makes no warranty of any kind with regard to this publication, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose.

Veeder-Root shall not be liable for errors contained herein or for incidental or consequential damages in connection with the furnishing, performance, or use of this publication.

Veeder-Root reserves the right to change system options or features, or the information contained in this publication.

This publication contains proprietary information which is protected by copyright. All rights reserved. No part of this publication may be photocopied, reproduced, or translated to another language without the prior written consent of Veeder-Root.

DAMAGE CLAIMS / LOST EQUIPMENT

Thoroughly examine all components and units as soon as they are received. If any cartons are damaged or missing, write a complete and detailed description of the damage or shortage on the face of the freight bill. The carrier's agent must verify the inspection and sign the description. Refuse only the damaged product, not the entire shipment.

VEEDER-ROOT'S PREFERRED CARRIER

1. Contact VR Customer Service at 800-873-3313 with the specific part numbers and quantities that were missing or received damaged.
2. Fax signed Bill of Lading (BOL) to VR Customer Service at 800-234-5350.
3. VR will file the claim with the carrier and replace the damaged/missing product at no charge to the customer. Customer Service will work with production facility to have the replacement product shipped as soon as possible.

CUSTOMER'S PREFERRED CARRIER

1. It is the customer's responsibility to file a claim with their carrier.
2. Customer may submit a replacement purchase order. Customer is responsible for all charges and freight associated with replacement order. Customer Service will work with production facility to have the replacement product shipped as soon as possible.
3. If "lost" equipment is delivered at a later date and is not needed, VR will allow a Return to Stock without a restocking fee.
4. VR will NOT be responsible for any compensation when a customer chooses their own carrier.

RETURN SHIPPING

For the parts return procedure, please follow the appropriate instructions in the "General Returned Goods Policy" and "Parts Return" pages in the "Policies and Literature" section of the Veeder-Root **North American Environmental Products** price list.

Introduction

Contractor Certification Requirements 1
Related Manuals 1
Safety Symbols 1
Operating Capabilities 2
Installation Kit 2
Sensor Models 3
Safety Warnings 3

Installation

Equipment Preparation 4
Installation of Float Switch 4

Figures

Figure 1. Installation kit 2
Figure 2. Sensor Dimensions and Installation Requirements - Fiberglass Tank..... 4
Figure 3. Correct sensor orientation entering top of tank annulus 5
Figure 4. Correct sensor orientation at bottom of tank annulus. 5
Figure 5. Sensor Field Wiring Diagram 6
Figure 6. Epoxy Sealing Sensor Field Connections 7

Introduction

This manual contains procedures to install an interstitial liquid sensor in a fiberglass tank. This manual assumes all preliminary site preparation is completed, and that wiring from the console to the sensor junction box is in place.

The Veeder-Root Interstitial Liquid Sensor for use in Fiberglass Tanks detects the presence of liquid in the interstitial space of a double-wall fiberglass tank. When liquid is detected, the sensor sends an alarm signal to console.

Contractor Certification Requirements

Veeder-Root requires the following minimum training certifications for contractors who will install and setup the equipment discussed in this manual:

Level 1 Contractors holding valid Level 1 Certification are approved to perform wiring and conduit routing, equipment mounting, probe and sensor installation, tank and line preparation, and line leak detector installation.

Level 2/3 Contractors holding valid Level 2 or 3 Certifications are approved to perform installation checkout, startup, programming and operations training, troubleshooting and servicing for all Veeder-Root Tank Monitoring Systems, including Line Leak Detection and associated accessories.

Warranty Registrations may only be submitted by selected distributors.

Related Manuals

Depending on your installed console, you must reference the appropriate manual below for sensor-to-console connections:

576013-879 TLS-3XX Site Prep Manual

577013-879 TLS-4XX Site Prep Manual

Safety Symbols

The following safety symbols may be used throughout this manual to alert you to important safety hazards and precautions.



EXPLOSIVE

Fuels and their vapors are extremely explosive if ignited.



FLAMMABLE

Fuels and their vapors are extremely flammable.



ELECTRICITY

High voltage exists in, and is supplied to, the device. A potential shock hazard exists.



TURN POWER OFF

Live power to a device creates a potential shock hazard. Turn Off power to the device and associated accessories when servicing the unit.

	<p>WEAR EYE PROTECTION Fuel spray from residual pressure in the lines can cause serious eye injuries. Always wear eye protection.</p>		<p>INJURY Careless or improper handling of materials can result in bodily injury.</p>
	<p>GLOVES Wear gloves to protect hands from irritation or injury.</p>		<p>READ ALL RELATED MANUALS Knowledge of all related procedures before you begin work is important. Read and understand all manuals thoroughly. If you do not understand a procedure, ask someone who does.</p>

⚠ **WARNING**

This product is to be installed and operated in the highly combustible environment of a gasoline storage tank where flammable liquids and explosive vapors may be present.

Improper installation may result in fire or explosion causing serious injury or death.

Leaking underground tanks can create serious environmental and health hazards. It is your responsibility to install this product in accordance with the instructions and warnings found in this manual. Failure to do so could result in undetected potential environmental and health hazards.

Failure to install this product in accordance with its instructions and warnings will result in voiding of all warranties connected with this product.

Operating Capabilities

- Operating temperature Range: -20°C to +70°C (hydrocarbons); 0°C to 70°C (non-freezing water).
- Storage Temperature Range: - 40° C to + 75° C.
- Dimensions: 2.13" long, 1.27" wide, 0.58" high

Installation Kit

Figure 1 shows the components in the sensor install kit, P/N 31 2020-949. Note: this sensor requires an Interstitial Sensor Interface module to connect to a TLS-35X Console.

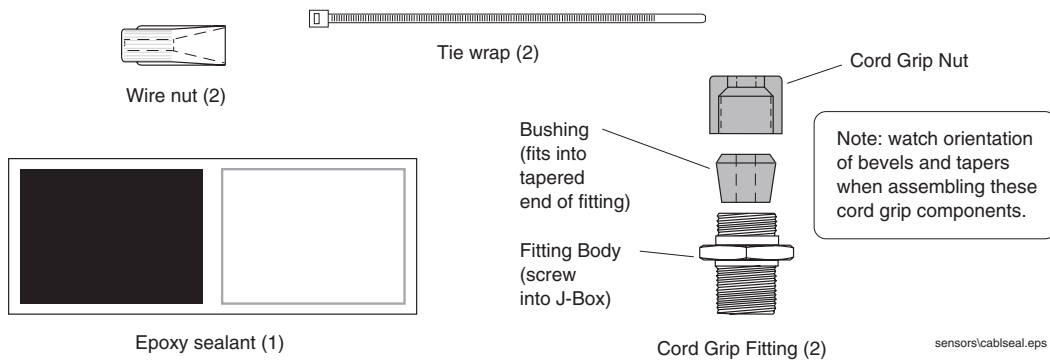


Figure 1. Installation kit


Sensor Models

Table 1 lists the different Interstitial Liquid sensors.

Table 1. Interstitial Liquid Sensors

Part No.	Description
794390-401	Sensor for 4' to 5' diameter fiberglass tanks
794390-404	Sensor for 5'-4" to 7' diameter fiberglass tanks
794390-407	Sensor for 7'-6" to 9' diameter fiberglass tanks
794390-409	Sensor for 9'-6" to 12' diameter fiberglass tanks

Safety Warnings

⚠ WARNING	
	<p>This device is installed in equipment where potentially lethal voltages may exist and where product spillage could create serious environmental and safety hazards.</p> <p>The following hazards exist:</p> <ol style="list-style-type: none"> 1. Electrical shock resulting in serious injury or death may result if power is on during installation and the device is improperly installed. 2. Product leakage could cause severe environmental damage or explosion resulting in death, serious personal injury, property loss and equipment damage, <p>Observe the following precautions:</p> <ol style="list-style-type: none"> 1. Read and follow all instructions in this manual, including all safety warnings. 2. Comply with all applicable codes including: the National Electrical Code; federal, state, and local codes; and other applicable safety codes. 3. Before installing this device, turn Off power to the system, including console and submersible pumps. 4. Substitution of components may impair intrinsic safety.

Installation

Equipment Preparation

To prepare your equipment for sensor installation:

1. Turn Off power to the console.
2. Make sure no liquid is present in the annular space. Do not install the sensor if any liquid is present in the annular space. Failure to comply will lead to an alarm.
3. An eyelet has been provided at the end of the sensor for attaching the pull-cord.
4. To ensure the sensor will reach the bottom of the annular space, the splice between the leader cable and the sensor must be 1 foot from the bottom of the riser pipe (Figure 2).
 - a. First measure the sensor riser pipe from the bottom of the pipe to the top.
 - b. Subtract 1 foot from the riser pipe measurement,
 - c. Measure the distance up the leader cable from its connection to the sensor; mark the leader cable with a piece of tape.

Installation of Float Switch

To ensure proper operation of the float switch, it is important that you install a sensor with the correct cable length. This ensures the float switch will rest as close as possible to the bottom of the tank annulus (Figure 2).

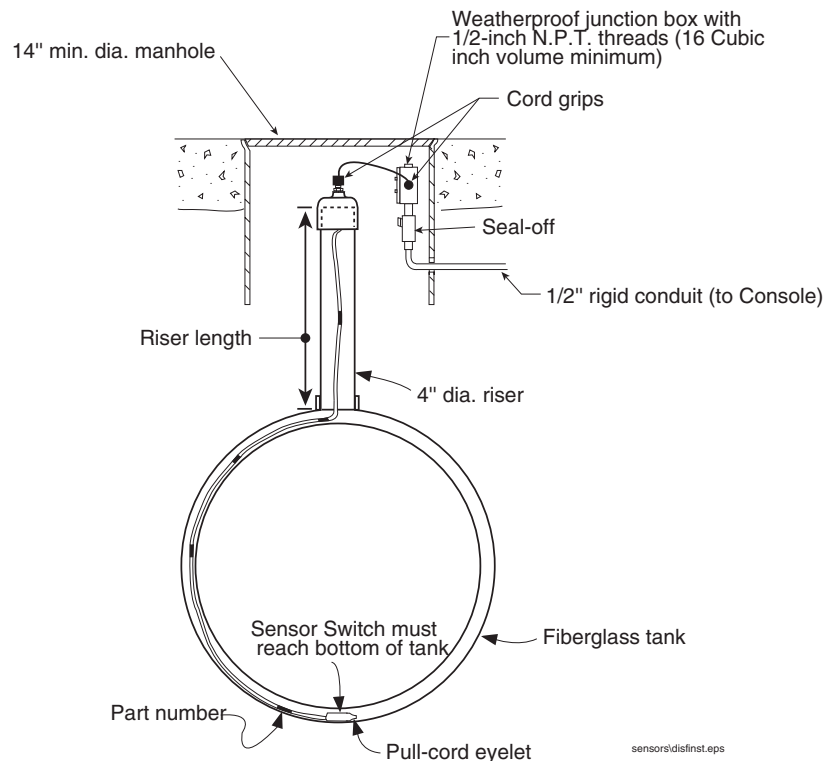


Figure 2. Sensor Dimensions and Installation Requirements - Fiberglass Tank

Red dots are painted on the top of the switch and 4 feet up the sensor, for switch orientation references during installation. When installing the sensor, start the sensor in the annulus with the red dot facing down (Figure 3).

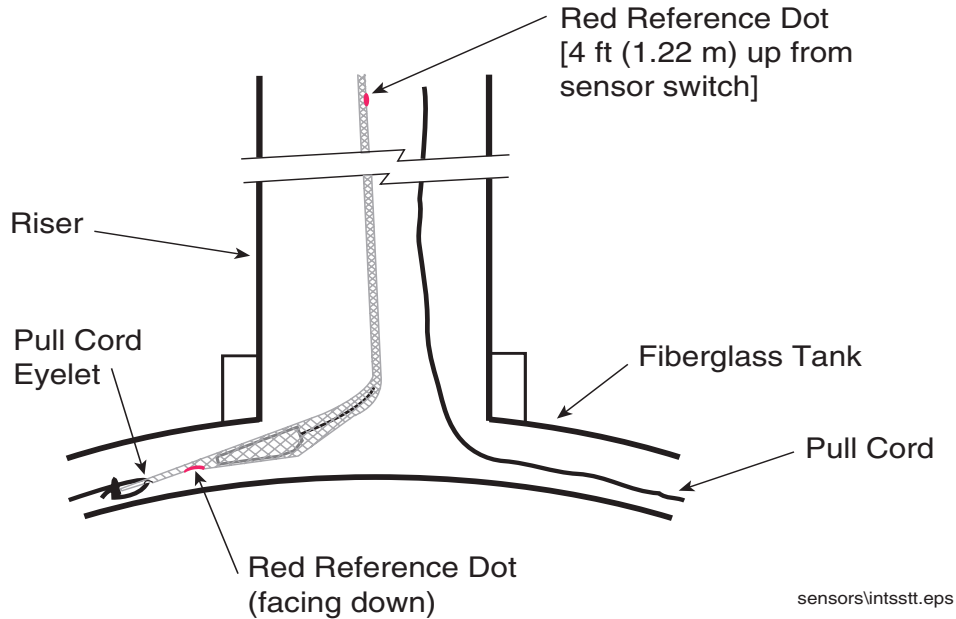


Figure 3. Correct sensor orientation entering top of tank annulus

This way the switch will be orientated correctly at the bottom of the tank with the red dot facing up (Figure 4).

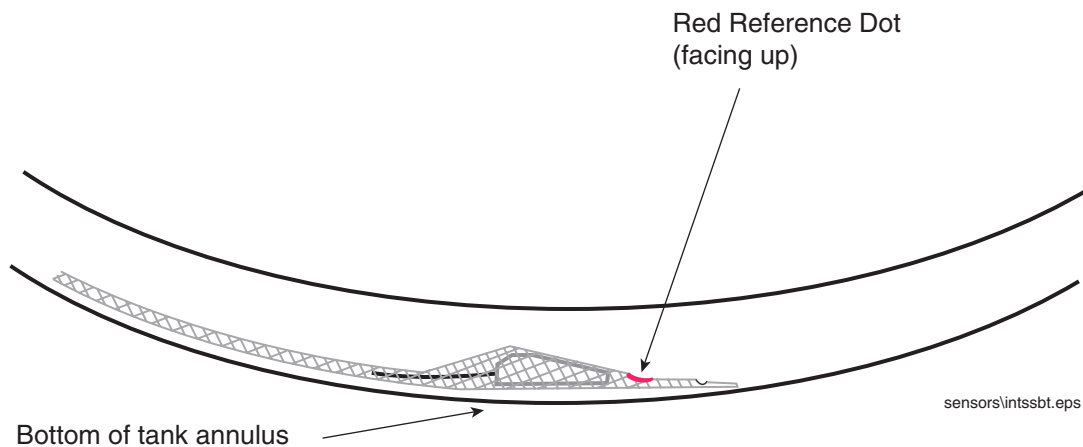


Figure 4. Correct sensor orientation at bottom of tank annulus.

1. As you pull the cord, feed the sensor into the riser pipe until the sensor reaches the top cavity of the tank and rests at the beginning of the annulus, as shown in Figure 2.
2. Before continuing, verify correct switch orientation by connecting an ohm meter to the two-wire cable of the interstitial sensor. The ohm meter should read 0 ohms (continuity) at this point. If the meter reads 100k ohms, the float switch is in the wrong position (red dot is up) and must be removed and flipped over.

3. If the switch reads 0 ohms (red dot is down), continue to pull the switch into the annular space, until the switch reaches the bottom of the tank (the splice between the sensor and leader cable should be 1 foot from the bottom of the riser pipe.)
4. Verify the switch is in the correct position by re-checking the ohm meter reading. The ohm meter will read 100k ohm if the sensor is properly installed.
5. Secure the riser cap to the riser pipe.
6. Tighten the cable bushing nuts on the riser cap and junction box to ensure a water-tight seal at the cable entry.
7. Using wire nuts, connect the two-wire sensor cable to the field wires in the sensor junction box (Figure 5). You do not have to observe polarity for this sensor.

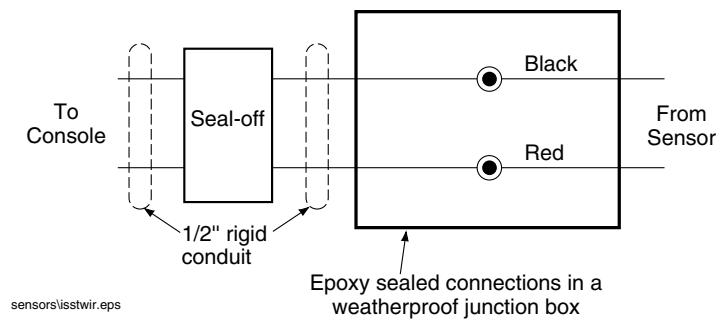
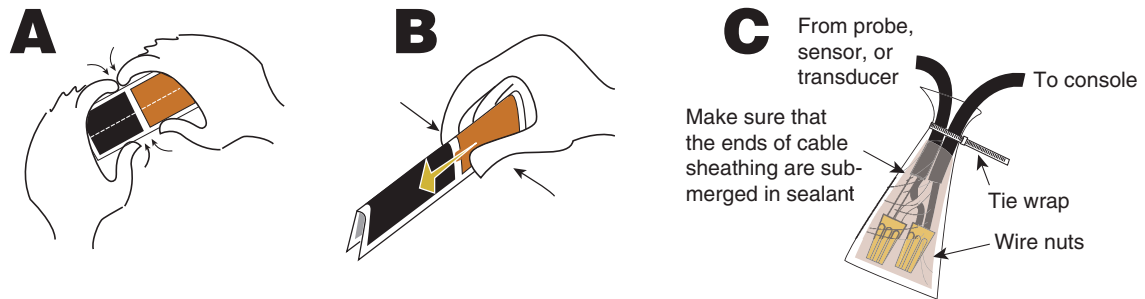


Figure 5. Sensor Field Wiring Diagram

8. Seal wire nuts with epoxy sealant following the instructions in Figure 6.
9. Push the epoxy sealed bag into the junction box. Replace and tighten the junction box cover.
10. Turn On power to the console.

**Instructions:**

NOTE: When temperature is below 50°F (10°C), keep resin in a warm place prior to mixing (e.g., in an inside pocket next to body).

1. Open epoxy sealant package, and remove resin pak.
2. Holding resin pak as shown in A, bend pak along long length.
3. As shown in B, firmly squeeze the RED SIDE of the resin, forcing it through the center seal and into BLACK SIDE.

4. Mix thoroughly to a uniform color by squeezing contents back and forth 25-30 times.
5. Squeeze mixed, warm resin into one end of bag and cutoff other end.
6. Slowly insert wiring connections into sealing pack until they fit snugly against the opposite end as shown in C.
7. Twist open end of bag and use tie wrap to close it off and position the tie wrapped end up until the resin jells.



CAUTION: Epoxy sealant is irritating to eyes, respiratory system, and skin. Can cause allergic skin reaction. Contains: epoxy resin and Cycloaliphatic epoxy-carboxylate.

Precautions: Wear suitable protective clothing, gloves, eye, and face protection. Use only in well ventilated areas. Wash thoroughly before eating, drinking, or smoking.

consolesepxy2w.eps

Figure 6. Epoxy Sealing Sensor Field Connections

