Interstitial Liquid Sensor - Fiberglass Tanks

Installation Guide

VEEDER-ROOT

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.

Contact TLS Systems Technical Support for additional troubleshooting information at 800-323-1799.

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 must be notified of any damages and/or shortages within 30 days of receipt of the shipment, as stated in our Terms and Conditions.

VEEDER-ROOT'S PREFERRED CARRIER

1. Contact Veeder-Root 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 Veeder-Root Customer Service at 800-234-5350.

3. Veeder-Root 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, Veeder-Root will allow a Return to Stock without a restocking fee.

4. Veeder-Root 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" pages in the "Policies and Literature" section of the Veeder-Root **North American Environmental Products** price list. Veeder-Root will not accept any return product without a Return Goods Authorization (RGA) number clearly printed on the outside of the package.

Introduction

Figures

Tables

Introduction

This manual contains procedures to install an interstitial liquid sensor in a fiberglass tank.

This manual assumes all preliminary site preparation is completed as instructed in the appropriate console site prep manual, and that field 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:

Installer Certification (Level 1): Contractors holding valid Installer Certification are approved to perform wiring and conduit routing; equipment mounting; probe, sensor and carbon canister vapor polisher installation; wireless equipment installation; tank and line preparation; and line leak detector installation.

Technician Certification (Level 2/3): Contractors holding valid Technician Certifications are approved to perform installation checkout, startup, programming and operations training, system tests, troubleshooting and servicing for all Veeder-Root Series Tank Monitoring Systems, including Line Leak Detection. In addition, Contractors with the following sub-certification designations are approved to perform installation checkout, startup, programming, system tests, troubleshooting, service techniques and operations training on the designated system.

- Wireless 2
- Tall Tank

Warranty Registrations may only be submitted by selected distributors.
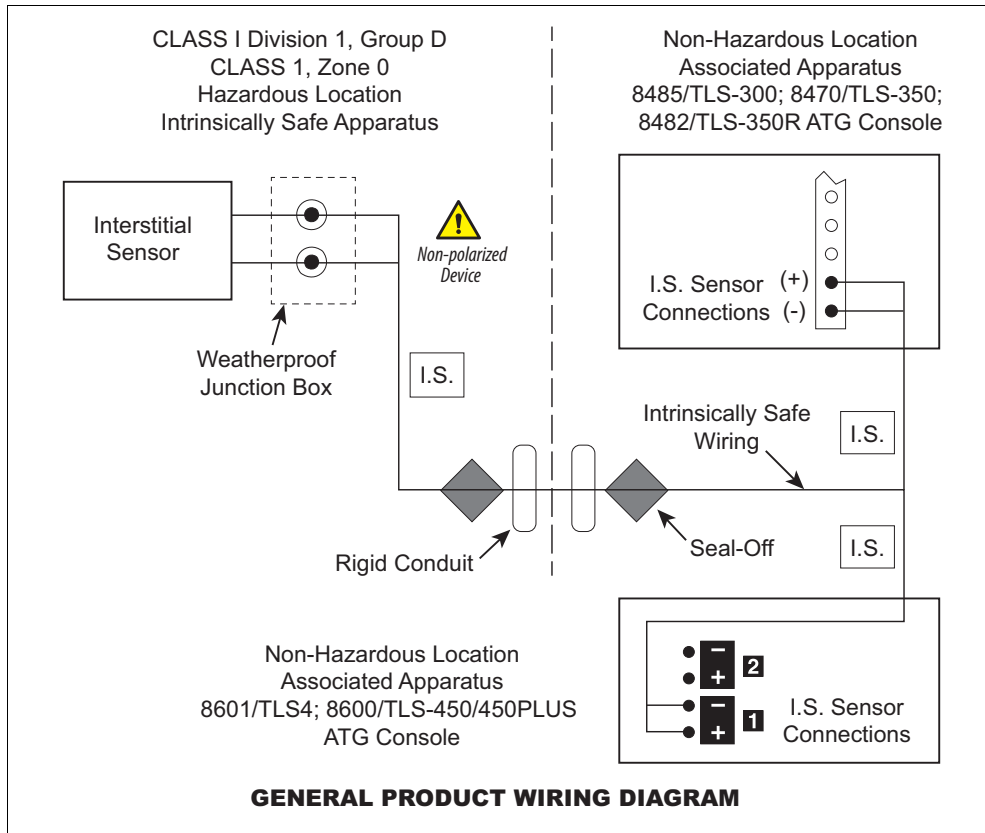
Product Marking Information

RELATED DOCUMENTS

Documents Required to Install Equipment

This intrinsically safe apparatus is only for use as part of a Veeder-Root Automatic Tank Gauging System (ATG Console with probes and sensors). To install intrinsically safe apparatus, use the specific control drawing that appears on the nameplate of the applicable associated apparatus (ATG Console):

Equipment	UL/cUL Control Drawing Document No.
Associated Apparatus	
TLS-450, TLS-450PLUS /8600	331940-008
TLS-350, TLS-350R	331940-011
TLS-300	331940-013
TLS4/8601	331940-018

The control drawings contain information related to the correct installation of the overall intrinsically Safe System. This includes information such as maximum number of apparatus, specific apparatus allowed in the system, maximum cable lengths, references to codes, proper grounding and so on. Control drawings can be found on the accompanying Compact Disk (TECH DOCS CD) or on the Internet at veeder.com under SUPPORT; VR TECHNICAL DOCUMENTS; DRAWINGS.

GENERAL PRODUCT WIRING DIAGRAM

Product Label Contents

Safety Warnings

⚠ WARNING

This product is to be installed in systems operating near locations where highly combustible fuels or vapors may be present.

FAILURE TO COMPLY WITH THE FOLLOWING WARNINGS AND SAFETY PRECAUTIONS COULD CAUSE DAMAGE TO PROPERTY, ENVIRONMENT, RESULTING IN SERIOUS INJURY OR DEATH.

1. **Read and follow all instructions in this manual, including all safety warnings to protect yourself and others from serious injury, explosion, or electrical shock.**

2. **Comply with all applicable codes including: the National Electrical Code; federal, state, and local codes; and other applicable safety codes.**

3. **To protect yourself and others from being struck by vehicles, block off your work area during installation or service.**

4. **Do not alter or modify any component or substitute components in this kit.**

5. **Warning! Substitution of components may impair intrinsic safety.**

6. **Field wiring to the Interstitial Sensor must not share a conduit with any non-intrinsically safe device's wiring.**

7. **Warning! To prevent ignition of flammable or combustible atmospheres, disconnect power before servicing.**

8. **Before installing or taking the unit into a hazardous area, earth the unit in a safe area to remove any static charge. Then immediately transport the unit to the installation site. Do not rub or clean the unit prior to installation. Cleaning is not required under normal service conditions. Do not rub or clean the unit after installation. If the unit is not fixed to a known earth point when installed, ensure that a separate earth connection is made to prevent the potential of a static discharge. When fitting or removing the unit, use of anti-static footwear or clothing is required.**

9. **Materials used in the construction of this device do not contain, by mass, more than 10% in total of aluminum, magnesium, zirconium and titanium or 7.5% in total of magnesium, titanium and zirconium.**

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.
	WEAR EYE PROTECTION Wear eye protection when working with pressurized fuel lines or epoxy sealant to avoid possible eye injury		**INJURY** Careless or improper handling of materials can result in bodily injury.
	GLOVES Wear gloves to protect hands from irritation or injury.		**USE SAFETY BARRICADES** Unauthorized people or vehicles in the work area are dangerous. Always use safety cones or barricades, safety tape, and your vehicle to block the work area.

| ⚠ | **WARNING**
Heed the adjacent instructions to avoid equipment damage or personal injury. | | **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. |

Operating Capabilities

- Operating temperature Range: -20°C to +60°C (hydrocarbons); 0°C to 60°C (non-freezing water).
- Storage Temperature Range: - 40° C to + 75° C.
- Dimensions: 2.76" (70mm) long, 1.30" (33mm) wide, 0.69" (17.5mm) high

Installation Kit

Figure 1 shows the components in the sensor install kit, P/N 312020-949.
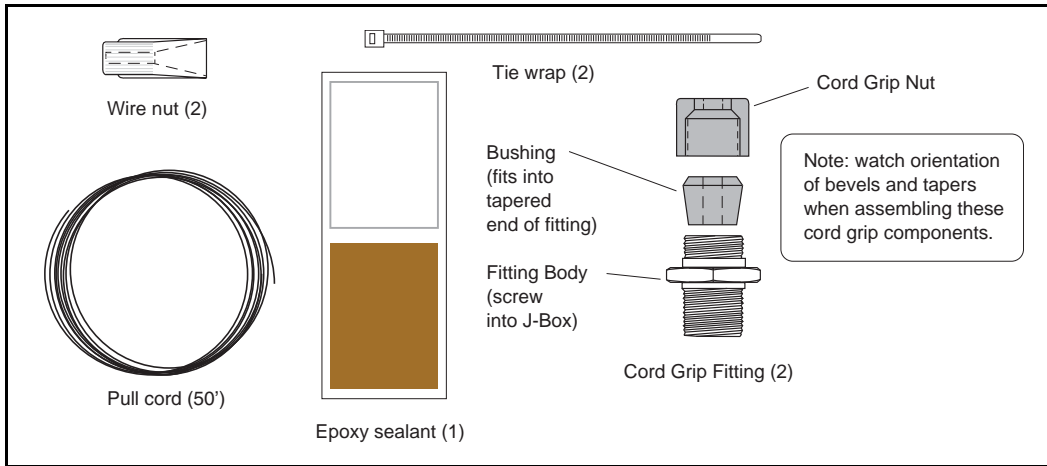

Figure 1.   Installation Kit

Sensor Part Number

Table 1 lists the Interstitial Liquid Sensor part number for fiberglass tanks.

Table 1. Interstitial Liquid Sensor

Part No.	Description
794390-409	Sensor for 4' to 12' diameter fiberglass tanks

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 remove any liquid in the annular space will lead to an alarm.**

3. Measure the length of the riser pipe as shown in Figure 2.

14" min. dia. manhole

Weatherproof junction box with 1/2-inch N.P.T. threads (16 Cubic inch volume minimum)

Cord grips

Seal-off

1/2" rigid conduit (to Console)

Riser length

4" dia. riser

Part number

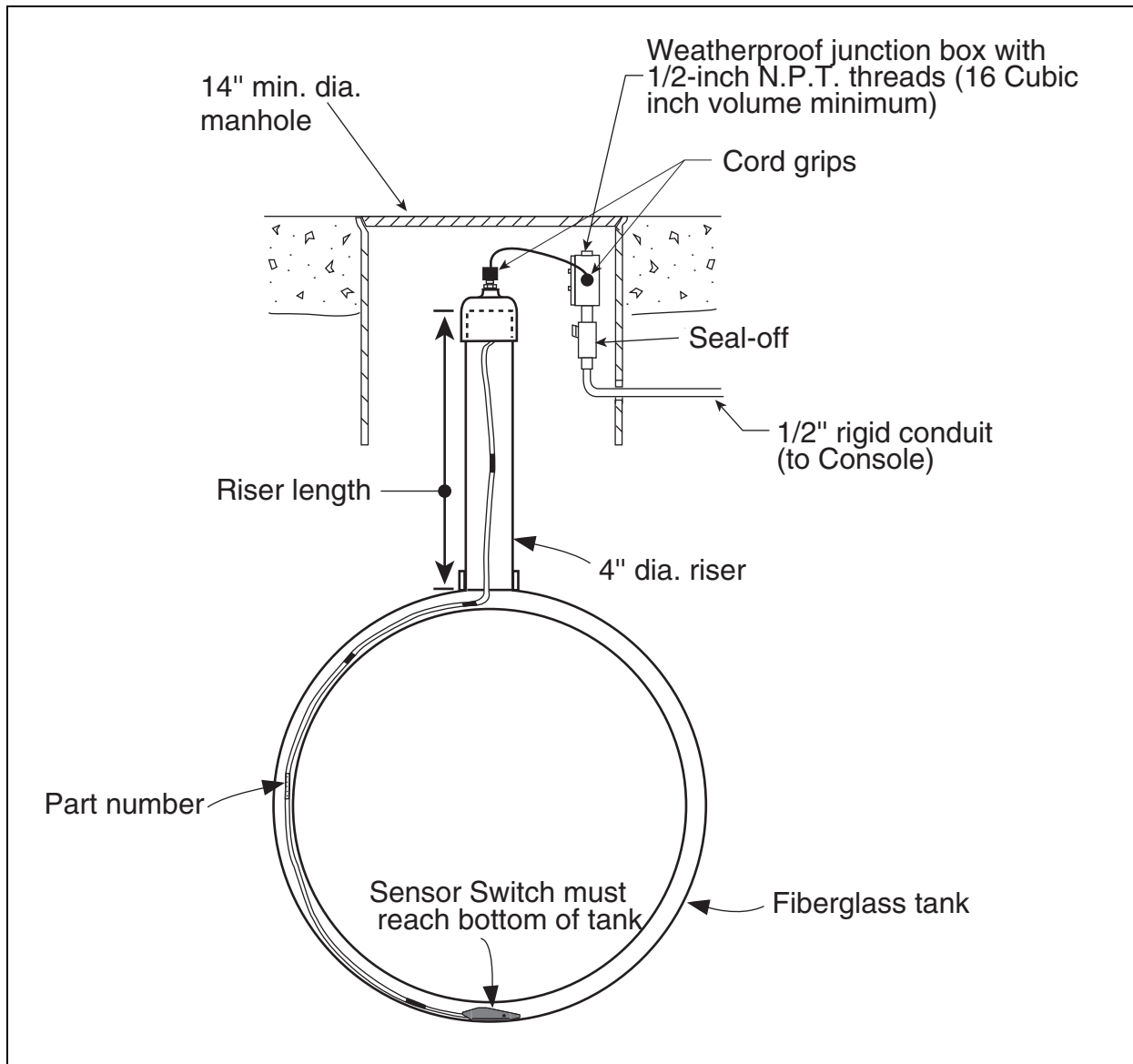Sensor Switch must reach bottom of tank

Fiberglass tank

Figure 2.   Example Sensor Installation

4. Locate the label on the sensor cable that corresponds to the tank size. Add the riser pipe length determined in Step 3 (measuring away from the sensor). Mark this position on the cable with one of the tie wraps provided, NOT by cutting into the cable jacket with a knife.

5. Attach a pull cord to the eyelet in the sensor and after confirming correct entry orientation (ref. Figure 3), pull the sensor through the interstitial space until the cable marked tie wrap is even with the top of the riser pipe. NOTE: All sensor types should rest at the bottom of the tank as shown in Figure 4.

    The switch assembly has a flat, white bottom for switch orientation during installation. When installing the sensor, start the sensor into the annulus with the white bottom piece facing up (Figure 3).
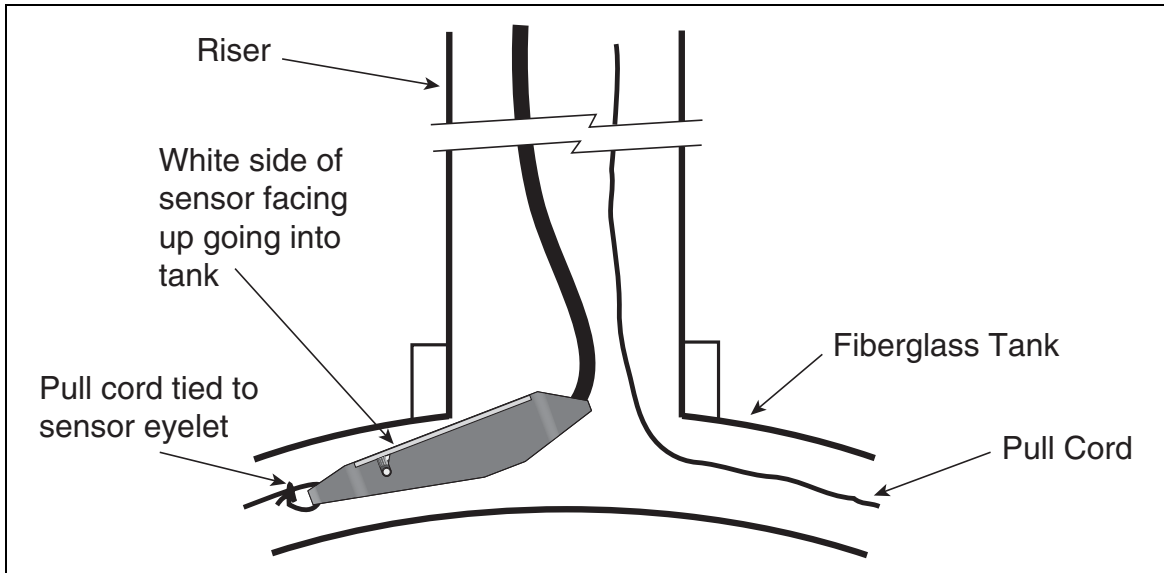

Figure 3.   Correct Sensor Orientation Entering Top Of Tank Annulus

The switch will be orientated correctly at the bottom of the tank with the white bottom piece facing down (Figure 4).
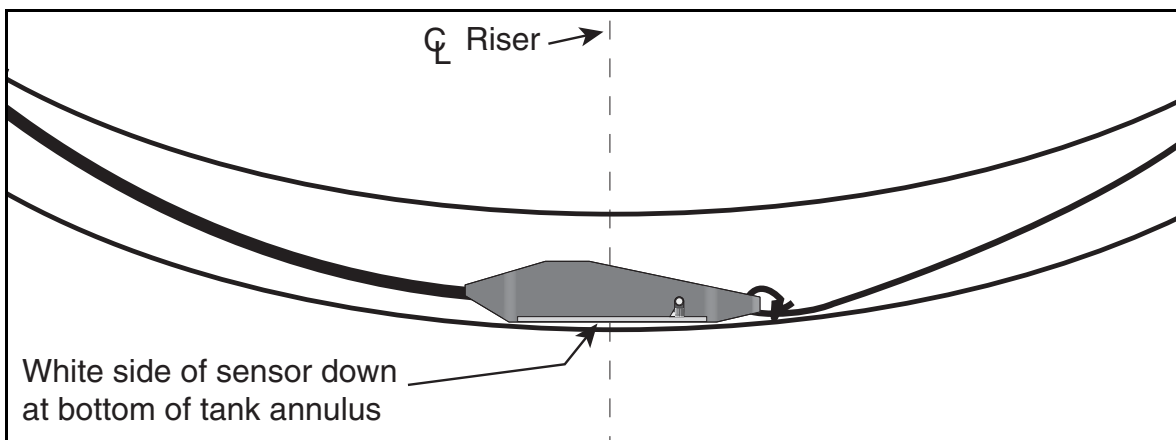

Figure 4.   Correct Sensor Orientation At Bottom Of Tank Annulus

6. Get the installation kit. Put the cord grip bushing in the riser cap and screw the cord grip nut onto the fitting. Screw the second cord grip fitting into the junction box.

7. Pass the end of the sensor cable through the cord grip fittings in the riser cap and in the junction box.

8. Secure the riser cap to the riser pipe.

9. Tighten the cable cord grip nuts on the riser cap and junction box to ensure a water-tight seal at the cable entry.

10. Using wire nuts from the kit, connect the two wire sensor cable to the field wires in the sensor junction box (ref. Figure 5).
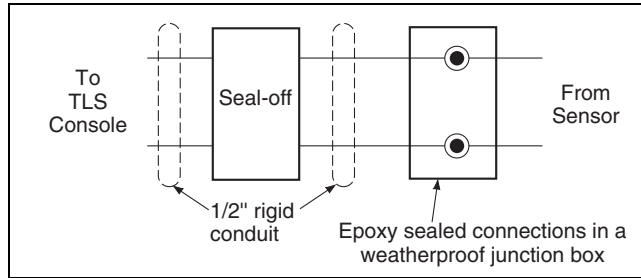

Figure 5.   Sensor Field Wiring Diagram

11. Seal wire nuts with epoxy sealant following the instructions in Figure 6.

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 epoxycarboxylate.

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

consoles\epxy2w.eps

Figure 6.   Epoxy Sealing Sensor Field Connections

12. Push the epoxy sealed bag into the junction box. Replace and tighten the junction box cover.

13. Turn On power to the console.

VEEDER-ROOT