

Hydrostatic Reservoir Sensors for Double-Wall Fiberglass Tanks

Installation Guide

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Introduction

This manual contains installation procedures for the installation or replacement of a Dual-Point Hydrostatic Sensor or Single-Point Hydrostatic Sensor for fiberglass tanks

This manual assumes all preliminary site preparation is completed, and that wiring from the monitor to the sensor junction box is in place and meets the requirements set out in the appropriate Console Site Prep manual. If this is a new installation or if site preparation is necessary, you must refer to the applicable Site Prep manual.

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 (Level 1) Certification: 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.

ATG Technician (Level 2/3 or 4) Certification: Contractors holding valid ATG 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

VR Vapor Products Certification: Contractors holding a certification with the following designations are approved to perform installation checkout, startup, programming, system tests, troubleshooting, service techniques and operations training on the designated system.

- ISD – In Station Diagnostics
- PMC – Pressure Management Control
- CCVP - Veeder-Root Vapor Polisher
- Wireless – ISD/PMC Wireless
- A current Veeder-Root Technician Certification is a prerequisite for the VR Vapor Products course.

Warranty Registrations may only be submitted by selected Distributors.

Related Documents

DOCUMENTS REQUIRED TO INSTALL EQUIPMENT

This equipment must be installed according to the applicable installation document:

	ATEX Descriptive System	IECEX Descriptive System	UL/cUL Control Drawing
	<u>Document No.</u>	<u>Document No.</u>	<u>Document No.</u>
<u>Associated Apparatus</u>			
TLS-450	331940-006	331940-106	331940-008
TLS-350R or TLS-350 Plus	331940-001	331940-101	331940-011
TLS-300	331940-002	331940-102	331940-013
TLS-50 or TLS2 or TLS-IB	331940-003	331940-103	331940-014
<u>Intrinsically Safe Apparatus for Wireless Applications</u>			
Tank Gauge Accessories	331940-005	331940-105	331940-012

REFERENCE MANUALS

576013-879	TLS-3XX Series Consoles Site Prep and Installation Manual
577013-879	TLS-450 Site Prep and Installation Manual

System Description

The Veeder-Root Hydrostatic Reservoir Sensor accurately detects the fluid level change in the reservoir and interstitial space of a double-wall fiberglass tank.

The hydrostatic sensor is available in a Dual-Point or Single-Point configuration. The Dual-Point version is ideal for high groundwater areas, and can differentiate between a high level alarm condition and a low level alarm condition. If an inner-wall leak occurs, the brine solution seeps into the tank lowering the brine level in the reservoir. The Dual-Point Sensor will then trigger a low level alarm. If an outer-wall leak occurs, the groundwater seeps into the reservoir. The Dual-Point sensor will then trigger a high level alarm.

The Single-Point Sensor is ideal for low groundwater areas, since it only detects low level alarm conditions. If an inner-wall leak occurs, the brine solution seeps into the tank. If an outer-wall leak occurs, the brine solution seeps out of the tank. In both cases, the brine level decreases and the Single-Point Sensor triggers a low level alarm.

The housing is constructed of clear PVC, allowing the operator to pull the sensor from the reservoir to visually inspect float operation. A vented riser cap restricts liquid from entering the reservoir.

DETECTION CAPABILITIES

- Dual-Point sensor alarm conditions:
 - Leak in inner wall triggers a low level alarm.
 - Leak in outer wall triggers a high level alarm in high groundwater areas and a Low level alarm in low groundwater areas.
- Single-Point sensor alarm conditions:
 - Leak in inner or outer wall triggers a low level alarm in low groundwater areas.

OPERATING CAPABILITIES

- Operating temperature Range: -25°C to +50°C
- Storage Temperature Range: -40°C to +60°C
- Operates in solutions containing up to 30% calcium chloride or 50% ethylene glycol.
- Cable length: 12 feet
- Single-Point Sensor Dimensions: 6.0" high, 2.5" diameter
- Dual-Point Sensor Dimensions: 17.3" high, 2.5" diameter
- Clear PVC housing permits visual inspection of float operation.

SENSOR MODELS

Table 1.- Sensor Part Numbers

Form No.	Description
794380-301	Single-Point Hydrostatic Sensor
794380-303	Dual-Point Hydrostatic Sensor

RISER CAP KIT

The Riser Cap kit contents for both the single- and dual-point hydrostatic sensors are listed in Table 2 and illustrated in Figure 1.

Table 2.- Riser Cap Kit (P/N 330020-435)

Item	Qty.	Description	P/N
1	1	Plastic 4-inch riser cap	329992-002
2	2	Cord grip nut	330594-001
3	2	Cord grip bushing	330787-002
4	1	Vent tube	329981-001

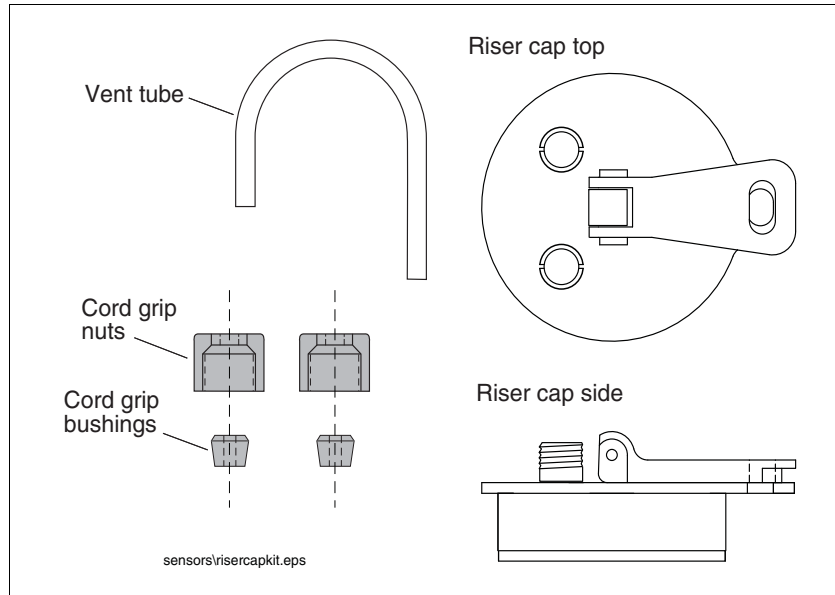


Figure 1. Plastic Riser cap kit contents

CABLE SEAL KIT

The Cable Seal Kit is required for field wiring connections and is listed in Table 3 and illustrated in Figure 2.

Table 3.- Cable Seal Kit (P/N 312020-990)

Item	Qty.	Description	P/N
1	1	Cord grip assy	331028-011
2	1	Sealing pack	514100-304
3	2	Wire nuts	576008-461
4	2	Tie wrap	510901-337

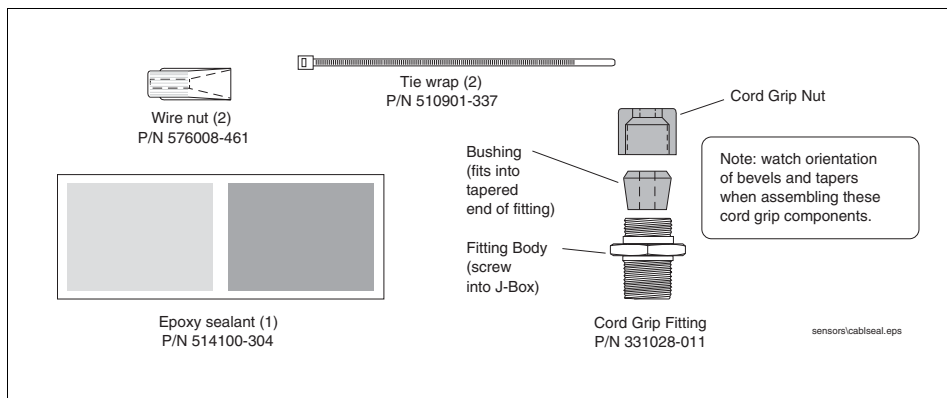












Figure 2. Cable seal kit contents








Safety Precautions

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

 <p>EXPLOSIVE Fuels and their vapors are extremely explosive if ignited.</p>	 <p>FLAMMABLE Fuels and their vapors are extremely flammable.</p>
 <p>ELECTRICITY High voltage exists in, and is supplied to, the device. A potential shock hazard exists.</p>	 <p>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>
 <p>INJURY Careless or improper handling of materials can result in bodily injury.</p>	 <p>WEAR EYE PROTECTION Wear eye protection when working with pressurized fuel lines or epoxy sealant to avoid possible eye injury.</p>
 <p>GLOVES Wear gloves to protect hands from irritation or injury.</p>	 <p>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.</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>	 <p>WARNING Heed the adjacent instructions to avoid equipment damage or personal injury.</p>

Before You Begin

⚠ WARNING

      	<p>FAILURE TO COMPLY WITH THE FOLLOWING WARNINGS AND SAFETY PRECAUTIONS COULD CAUSE DAMAGE TO PROPERTY, ENVIRONMENT, RESULTING IN SERIOUS INJURY OR DEATH.</p> <p>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.</p> <p>This device is connected to equipment in which potentially lethal voltages exist. Electrical shock resulting in serious injury or death may result if the device is improperly installed.</p> <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 and lock out power to the system, including console and submersible pumps. 4. To protect yourself and others from being struck by vehicles, block off your work area during installation or service. 5. Substitution of components may impair intrinsic safety.
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Installation

Dual-Point Hydrostatic Sensor Installation



1. Turn Off power to the console.
2. Lower the sensor into the riser until it rests on the bottom of the reservoir (see Figure 3). Note: Refer to the tank manufacturer's instructions for setting the proper brine levels. The ideal brine solution level is approximately halfway between the high and low water levels. With the Dual-Point Sensor resting on the inner-tank wall, the sensor will alarm when the brine level is below 2" or when the brine level is above 13".
3. Install a cord grip bushing/nut into one of the two riser cap fittings. Loosen the nut and push the straight end of the vent tube down through the bushing (ref. Figure 3) about an inch and tighten the cord grip nut. Insert the remaining cord grip bushing and nut from the riser cap kit in the other riser cap fitting. Push the sensor cable up through the loosened second cord grip. Place the cap in the riser and snap down the cap lever to seat the gasket against the inside of the pipe.

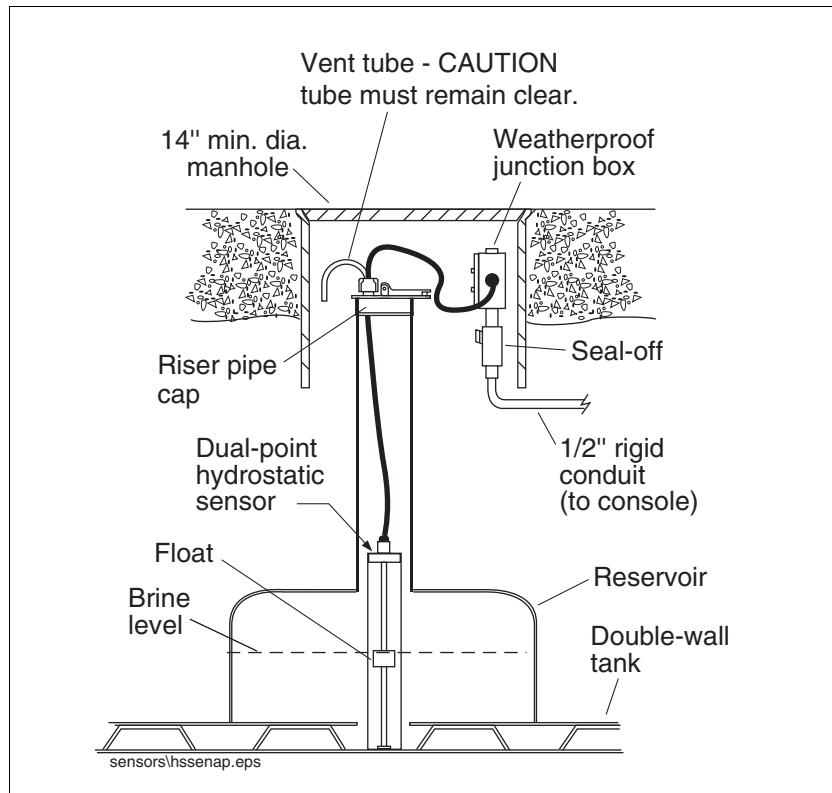


Figure 3. Dual-Point Sensor Installation

4. With the sensor still resting on the bottom of the reservoir, gently pull out the excess sensor cable, leaving a little slack in cable between the cap and the sensor. Tighten the cable's cord grip nut.
5. Install the cord grip from the Cable Seal kit into the field junction box. Push the sensor cable into the junction box through the cord grip. Using the wire nuts from the kit, connect the sensor cable to the console cable as shown in Figure 4. Tighten the cord grip.
6. Seal wire nuts with epoxy sealant following the instructions in Figure 5.
7. Push the epoxy sealed bag into the junction box. Replace and tighten the junction box cover.

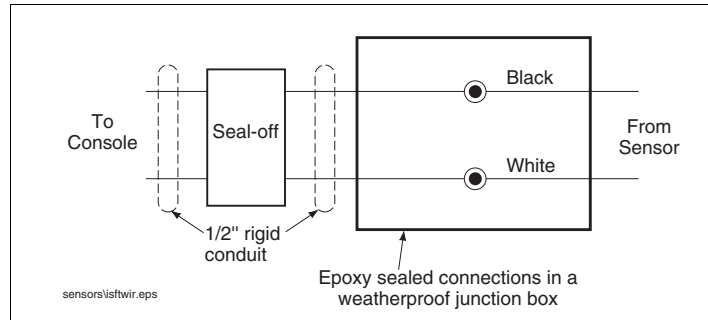


Figure 4. Sensor Field Wiring Diagram

A

B

C

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.

consoles\epxy2w.eps

Figure 5. Epoxy Sealing Sensor Field Connections

Single-Point Hydrostatic Sensor Installation



1. Turn Off power to the console.
2. Install a cord grip bushing/nut into one of the two riser cap fittings. Loosen the nut and push the straight end of the vent tube down through the bushing (ref. Figure 6) about an inch and tighten the cord grip nut. Insert the remaining cord grip bushing and nut from the riser cap kit in the other riser cap fitting. Push the sensor cable up through the loosened second cord grip. Place the cap in the riser and snap down the cap lever to seat the gasket against the inside of the pipe.

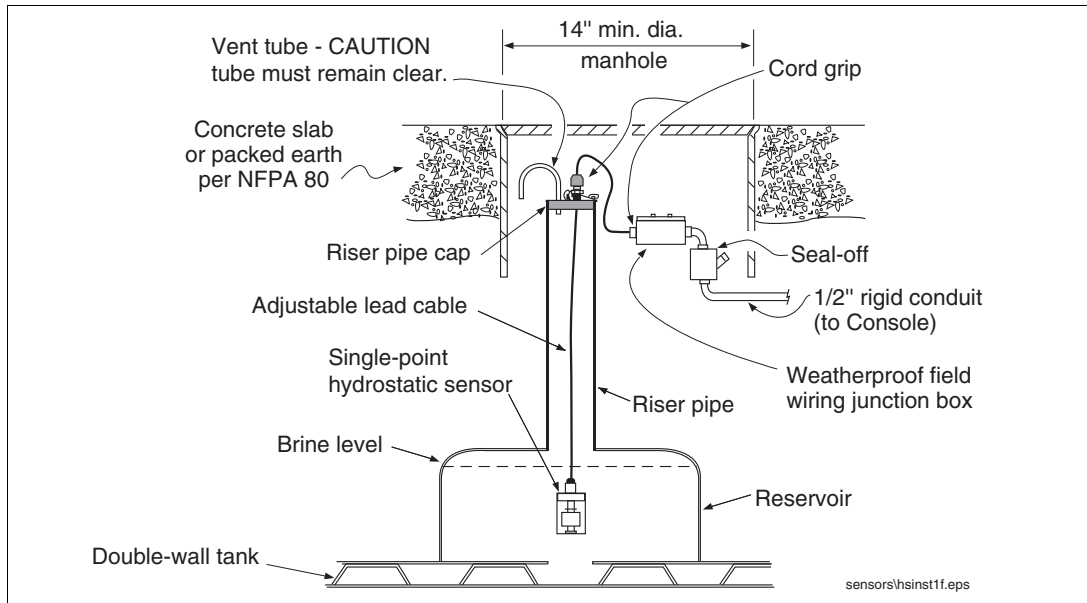


Figure 6. Single-Point Sensor Installation

3. Install the cord grip from the Sensor Install Kit into the field junction box. Push the sensor cable into the junction box through the cord grip. Using the wire nuts from the Sensor Install Kit, connect the sensor cable to the console cable as shown in Figure 4. Tighten cord grip.
4. Seal wire nuts with epoxy sealant following the instructions in Figure 5.
5. Turn On power to the console.
6. With the sensor resting on the top of the tank, mark the cable position at the riser cap with a piece of tape.
7. Pull the sensor up until it triggers an alarm on the console. Mark the cable position at the top of the cap with a piece of tape.
8. Lower the sensor until the riser cap is halfway between the taped marks on the cable.
9. Secure the sensor in position by tightening the cable cord grip in the cap (see Figure 6).

