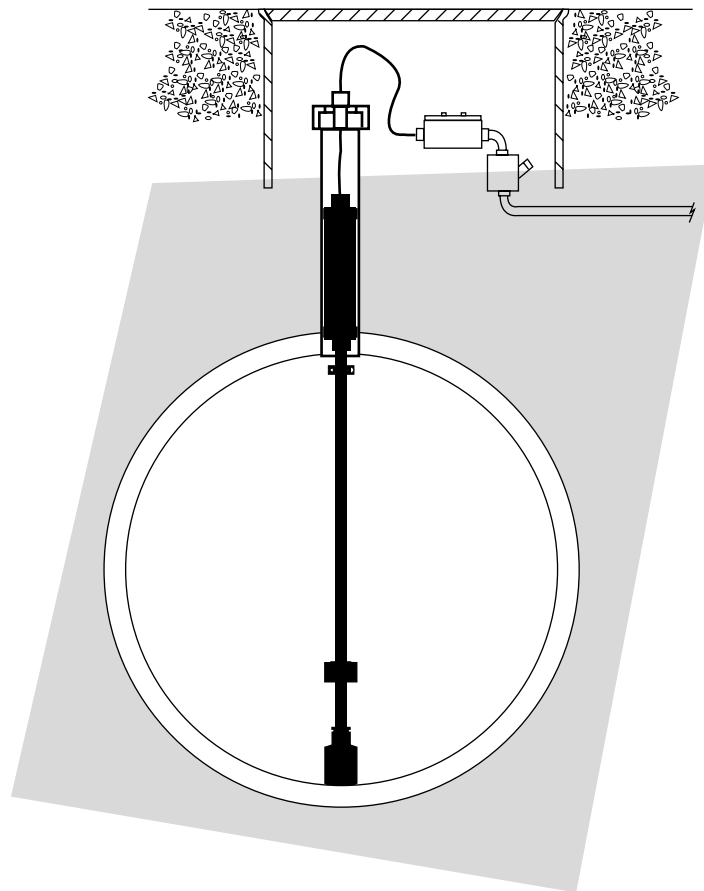


UST Installation Instructions

Global Probe For TLS-50 Console

Manual Number 577013-615, Revision B



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Introduction

This manual contains procedures to install, in underground storage tanks, a Global Probe that connects to a TLS-50 Console designed and manufactured by the Veeder-Root Company. This manual assumes all preliminary site preparation is completed, and that field wiring from the TLS console to the probe junction box is in place. This manual applies to Global Probes only reference form number 8468.

If this is a new installation and site preparation is necessary, refer to the appropriate Veeder-Root Site Preparation and Installation Instructions or contact your Veeder-Root representative for assistance. Do **not** attempt to wire a Global Probe into a new TLS-50 installation based solely on the information in this manual.

Safety Symbols

The following safety symbols 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. Always turn power off to the device and associated accessories when servicing the unit.



No Smoking

Sparks and embers from burning cigarettes or pipes can ignite fuels and their vapors



No Open Flames

Open flames from matches, lighters, welding torches, etc. can ignite fuels and their vapors.

**No Power Tools**

Sparks from power tools (such as drills) can ignite fuels and their vapors.

**No Vehicles**

Moving vehicles in the area during service can create a potential for personal injury to you or others. Sparks from starting vehicles can ignite fuels and their vapors.

**No People in the Area**

Unauthorized people in the area during service can create a potential for personal injury to you and them.

**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.

**Injury**

Careless or improper handling of materials can result in bodily injury.

**Wear Eye Protection**

Epoxy sealant contains epoxy resin and vinyl cyclohexane dioxide. Avoid eye and skin contact.

**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.











Damage Claims

1. Thoroughly examine all components and units as soon as they are received. If damaged, write a complete and detailed description of the damage on the face of the freight bill. The carrier's agent *must* verify the inspection and sign the description.
2. Immediately notify the delivering carrier of damage or loss. This notification may be given either in person or by telephone. Written confirmation must be mailed within 48 hours. Railroads and motor carriers are reluctant to make adjustments for damaged merchandise unless inspected and reported promptly.
3. Risk of loss, or damage to merchandise remains with the buyer. It is the buyer's responsibility to file a claim with the carrier involved.
4. Immediately advise your Veeder-Root representative, distributor, or the factory so that we may assist you.

Before You Begin

- Circuitry within the probe and console barrier form an intrinsically safe, energy limited system. The Global Probe wiring is intrinsically safe only when connected to Veeder-Root's TLS-50 Console, form number 8469.
- All Metric conversions in parenthesis are shown in Millimeters.

Safety Warnings

 WARNING	
        	<p>This product operates in a potentially highly combustible and explosive environment.</p> <p>Serious injury or death may result from improper use or assembly.</p> <p>This device is connected to equipment in which potentially lethal voltages exist and where product spillage could create serious environmental and safety hazards.</p> <ol style="list-style-type: none"> 1. Read and follow all warnings and installation instructions in this manual. 2. To maintain intrinsic safety, only use this equipment with Veeder-Root tank monitoring equipment. 3. Do not substitute components or make modifications to equipment. <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, fire, 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. Comply with all applicable codes including: the National Electrical Code; federal, state, and local codes; and other applicable safety codes. 2. Before installing this device, turn off power to the system, including console and submersible pumps. 3. To protect yourself and others from being struck by vehicles, block off your work area during installation or service.

Probe Installation Kit Contents

The Global Probe Installation Kit contains a combination of the items shown in the table below. You will have 2- inch (50.8) floats and 3- inch (76.2) spacer rings [See Figure 1].

Table 1. Global Probe Installation Kit

Quantity	Description	Part Number
1	Cable, 5 feet (1524) long (standard size)	330272-001
1	2-inch (50.8) product float	331027-001
1	2-inch (50.8) water float	331030-00X
1	Boot	331011-001
2	3-inch (76.2) OD Probe Canister Spacer Rings	329541-002
1	Cable Seal Kit (CSK)	330020-067
1	Installation Instructions manual	577013-615

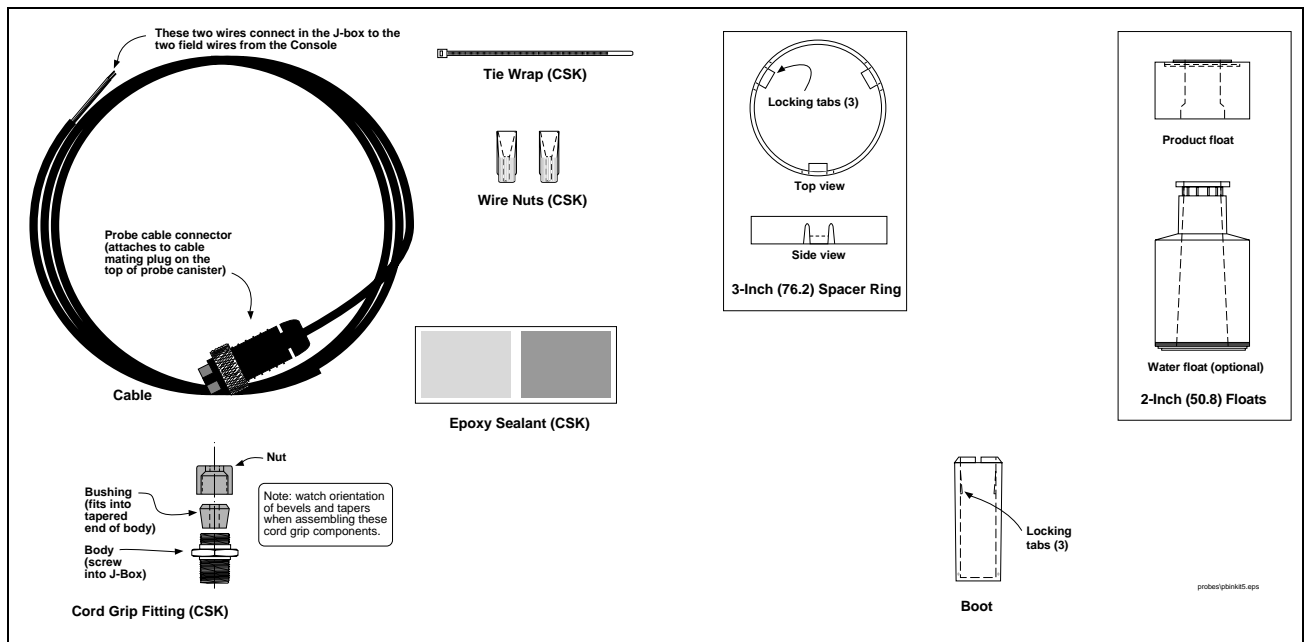
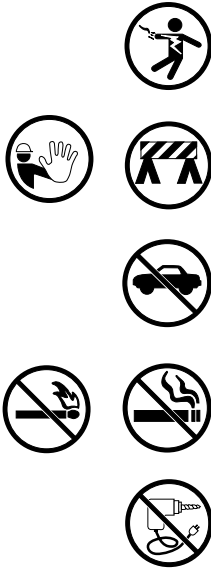


Figure 1. Global Probe Installation Kit

Probe Installation

Precautionary Guidelines

Please follow these precautionary guidelines while installing the Global Probe:



- To avoid electrical shock, be sure AC power to the TLS console is OFF during installation.
- Block off your work area during installation and service to protect yourself and others from being struck by vehicles.
- To achieve optimal performance, install the Global Probe in the riser closest to the center of the tank.
- Do not install probes next to a submersible pump. Global Probes must be installed at least 24 inches (609.6) from any pump.
- Do not install Global Probes in a tank's fill/drop tube. Failure to comply with this caution can result in equipment damage and/or inaccurate inventory control.
- Installation of Global Probes in magnetized riser pipes will result in improper operation. Failure to comply with this caution can result in equipment damage and/or inaccurate inventory control.
- The Global Probe operating temperature range is from -4 to +122°F (-20 to +50°C). Operating the Global Probe outside of this temperature range may damage the probe and cause it to generate false readings and alarms.

Global Probe Circuit Codes

The table below lists Global Probe circuit codes.

Table 2. Global Probe Circuit Codes

Circuit Code	Probe Form	Probe Type	Water Float Type	Temperature Measurement	Number of Floats
D021	846891-199	GLB8	Gasoline	Yes	2
D021	846891-299	GLB8	Diesel	Yes	2
D021	846891-399	GLB8	Light Oil	Yes	2
D022	846891-499	GLB9	Gasoline	No	2
D022	846891-599	GLB9	Diesel	No	2
D022	846891-699	GLB9	Light Oil	No	2
D023	846891-799	GLB10	None	Yes	1
D024	846891-899	GLB11	None	No	1


Important *Global Probe Form Nos. automatically include the float kit. Float kits are not ordered separately. The TLS-50 Console is the only product capable of recognizing Global Probes. The*

Alternative Fluid Probes, without water detection, do not use a water float. None of these probes will function with the TLS-2XX or TLS-3XX series of consoles.

The ballast weight for your Water Float was installed by the factory for use in one of four product groups:

- a. GASOLINE - for use with aviation gas, regular unleaded gasoline, premium unleaded gasoline, leaded gasoline, or gasohol (less than 20% alcohol) having a specific gravity of 0.70- 0.80.
- b. DIESEL - for use with jet fuel, kerosene, or #2 diesel having a specific gravity of 0.78- 0.88.
- c. LIGHT OIL - for use with motor oil, toluene, 90W gear oil, transmission fluid, or used oil having a specific gravity of 0.83- 0.90.
- d. HEAVY OIL - for use with oils having a specific gravity of 0.88- 0.94.

Check the side of your water float. The indented markings indicate the intended product group for this water float.

Important  *Global Probes for Alternative Fluids without Water Detection - for use with alcohol (more than 20% alcohol), ethanol, methanol, MTBE, ETBE, used oil. Do not use a water float with this probe. Matching water floats with the WRONG product groups will result in improper system performance and equipment malfunction.*

Determining The Length of The Probe

Perform the following procedure to ensure that probes are installed in the proper tanks [Figure 2 on page 8]. Inaccurate readings will result if probes are not the correct length for the given tank diameter. If tank diameter is unknown, perform the following procedure:

1. Measure the distance from the bottom of the tank to the top of the probe riser pipe (A).
2. Measure the distance from the bottom of the probe riser pipe to the top of the probe riser pipe (B).
3. Subtract (B) from (A) to determine the correct tank diameter (C).
4. Custom Global Probe lengths are available from 24 to 144 inches (609.6 to 3657.6) in 1-inch (25.4) increments.

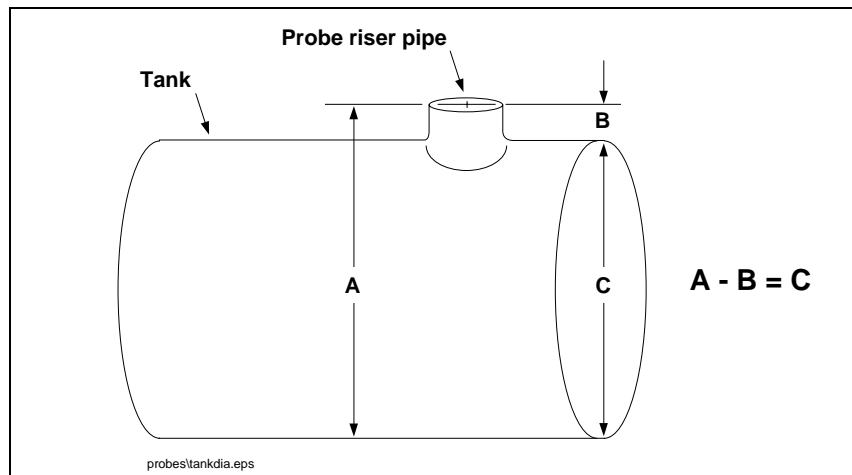


Figure 2. Calculating the Correct Probe Length

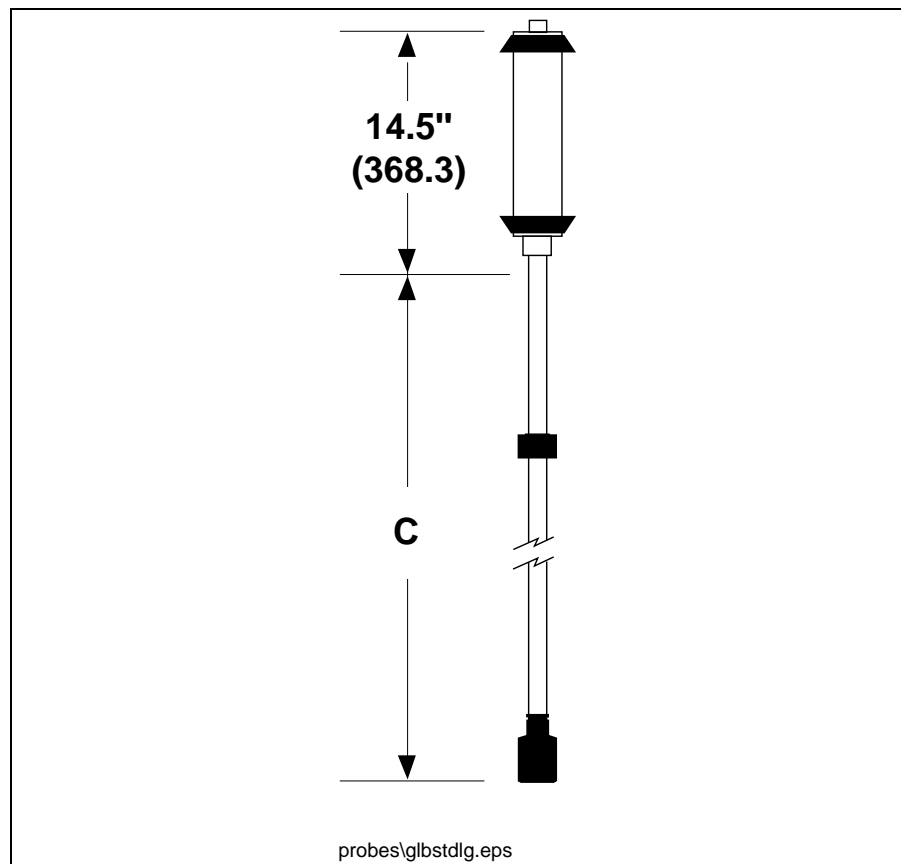


Figure 3. Standard Global Probe Lengths

Important ☞ *If the probe length exceeds the diameter of the tank, the float may become lodged in the riser pipe when the tank is overfilled. Install an optional split-ring collar (Part No. 576008-617) onto the probe shaft to prevent the float from entering the riser pipe.*

Probe Riser Cap

Order part number 330020-282 for the Probe Riser Cap (one-piece), one kit for each probe (separate cord grip fitting is not required).

Order part number 312020-952 for Metal Cap and Ring Kit, one kit for each probe (separate cord grip assembly is not required).

Metal Cap and Ring Kit Modification

Important ☞ *In order to ensure that the riser cap seals properly to the probe cable and riser, we recommend that you purchase one of the kits available for this purpose.*



WARNING



Probe Riser Caps are installed in a potentially hazardous area.

Sparks from drilling or tapping operations in hazardous areas can cause fire or explosion which could result in serious personal injury, death, property loss or equipment damage.

Do not perform drilling and tapping in a hazardous area near the tanks where fuel or vapors may be present or nearby.

Important ☞ *Riser Caps from other manufacturers MAY require modification.*

If you use your own cap, you must modify it as follows:

1. Use a standard riser cap.
2. Drill and tap the cap for a 1/2"-14 NPT cord grip thread [Figure 4 on page 10].
 - a. Use a Cord Grip Fitting purchased from Veeder-Root (Part No. 331028-001).
3. Using UL-classified pipe sealant (suitable for the fuels involved) to ensure watertightness, screw the watertight riser cap cord grip fitting [Figure 1 on page 5] into the tapped hole in the top of the riser cap.

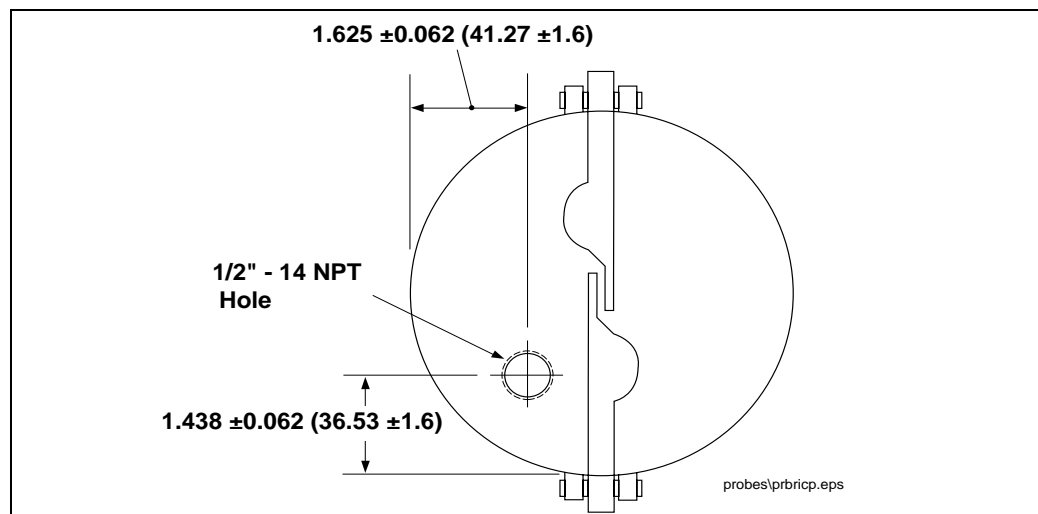


Figure 4. Riser Cap Modification

Attaching Probe Canister Spacer Rings

1. Remove the probe from its box and place it on its side.
2. Following the instructions in Figure 5, obtain and install the spacer rings on the probe canister.

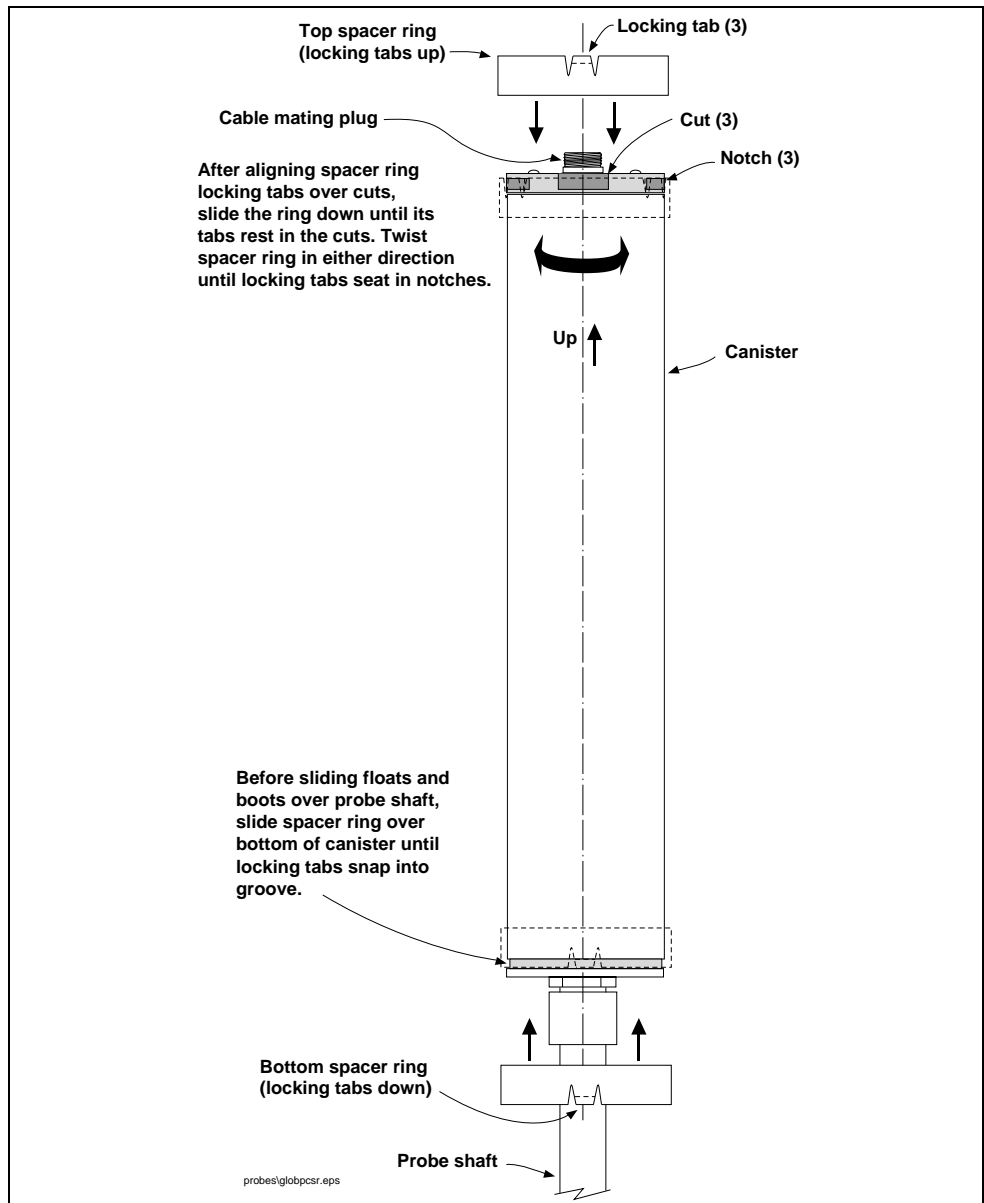


Figure 5. Installing Probe Canister Spacer Rings

Assembling Floats onto Probe Shaft

1. Obtain the Water Float from the Global Probe installation kit [Figure 1 on page 5].
2. Obtain the Product Float and the Boot from the kit.
3. Assemble the floats and boot on the probe shaft in the exact sequence and orientation shown in Figure 6 on page 12.

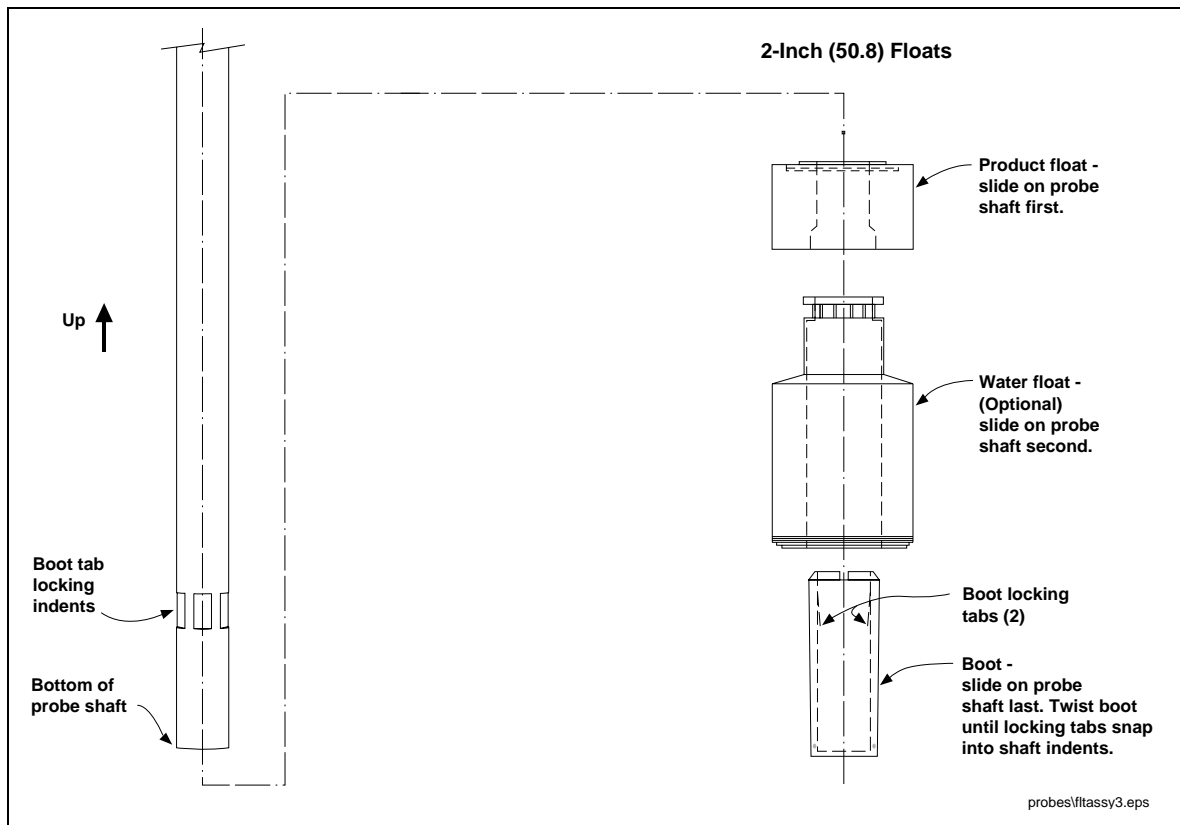


Figure 6. Installing Floats onto Probe Shaft

Important ⚠ *Failure to snap the boot locking tabs into the locking indents on the probe shaft could cause the boot and float(s) to fall into the tank.*

Lowering Probe Into Tank



1. Turn OFF power to the TLS system.
2. Remove any sludge from the bottom of the tank.
3. Attach the connector end of the probe cable from the installation kit [Figure 1 on page 5] to the mating plug on top of the probe canister [Figure 5 on page 11]. Be sure the connector is attached securely by hand tightening the knurled locking ring.
4. Gently slide the float(s) to the bottom of the probe shaft.

Important ⚠ *Handle probes carefully. Striking or dropping the probe will result in loss of calibration and could cause permanent damage.*

When using shielded cable for probe wiring, the drain wire from the shielded cable must be connected to the ground lug in the TLS console's intrinsically safe area.


Do not connect the drain wire to the tank probe J-box ground lug. Improper system performance could result if the drain wire is connected to both the TLS console's intrinsically safe ground lug and the tank probe's J-Box ground lug.

5. Carefully lower the probe into the riser pipe until the boot rests on the bottom of the tank [See Figure 7 on page 14 for UST installation].

Riser Cap Installation

(Part No. 330020-282)


(See Figure 8 on page 15)

Important  *This procedure is to be performed after the Global Probe is installed in the tank.*

1. Remove any existing hardware from the riser so that the 4" NPT riser threads are exposed.
2. Ensure that the nut on the cap is loose so that the grommet can rotate freely.
3. Thread the probe cable through the grommet and nut on the cap, leaving a minimal amount of slack between the probe and cap.
4. Install the cap onto the riser, threading it by hand until the gasket first contacts the riser pipe. Then use the Installation Tool (Part No. 331137-001) to tighten the cap an additional 3/4 turn. Proceed to the next section, "Completing Probe Installation".

Metal Cap and Ring Kit Installation

(Part No. 312020-952)

Important  *This procedure is to be performed after the Global Probe is installed in the tank.*

1. Remove any existing hardware from the riser so that the 4" NPT riser threads are exposed.
2. Separate the ring from the cap by pulling each lever towards the edge of the cap.
3. Lift the cap off the ring (the cap and ring may stick a little).
4. Thread the ring onto the riser by hand until the gasket first contacts the riser pipe. Then tighten the ring an additional 3/4 turn using a strap wrench or similar tool.
5. After feeding the two-wire end of the probe cable through the riser cap cord grip fitting, position the riser cap onto riser pipe. Secure the riser cap to the top of the riser pipe. A padlock may be installed for added security.

Completing Probe Installation

For a UST installation, hand tighten the riser pipe cord grip fitting nut until it bottoms.

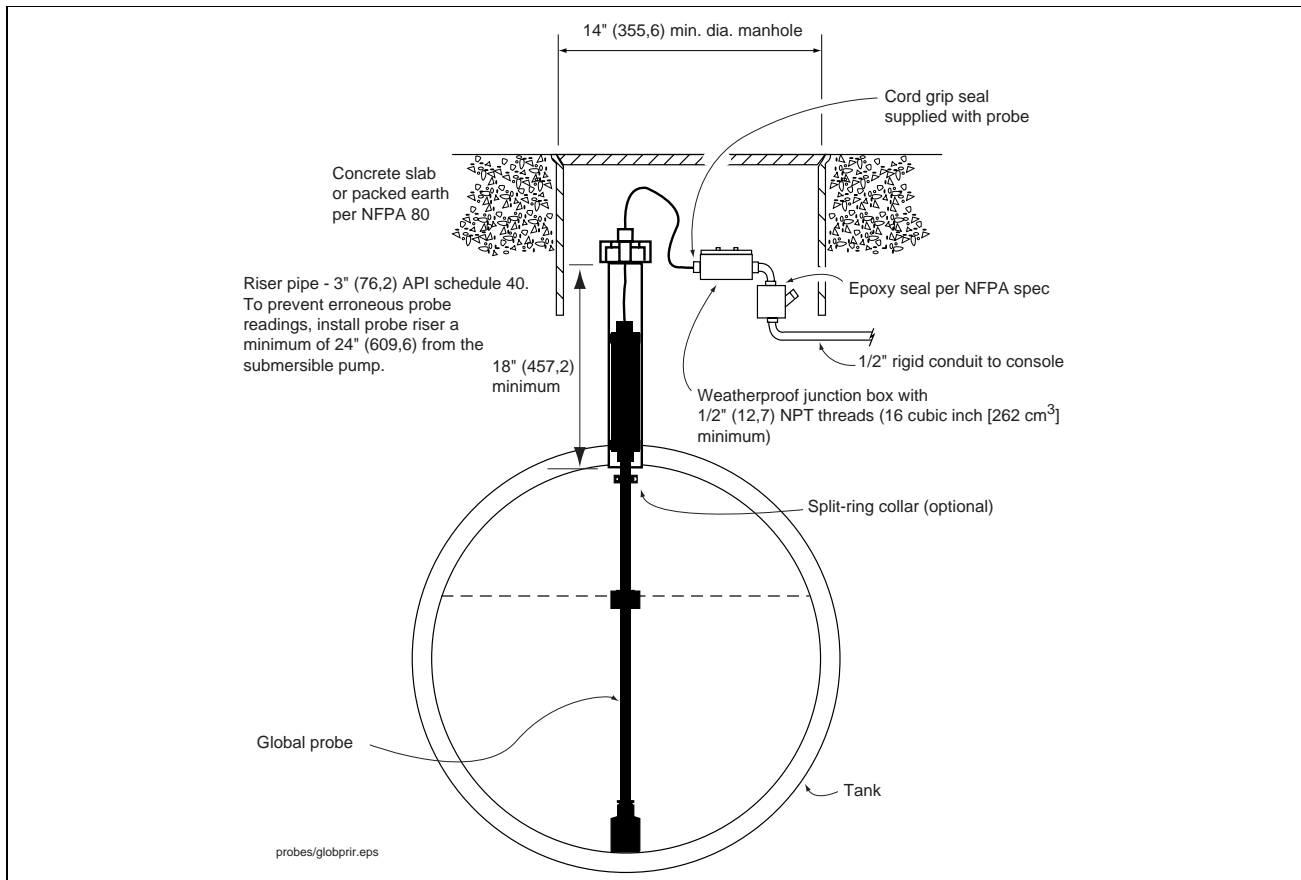


Figure 7. Global Probe Installation Requirements

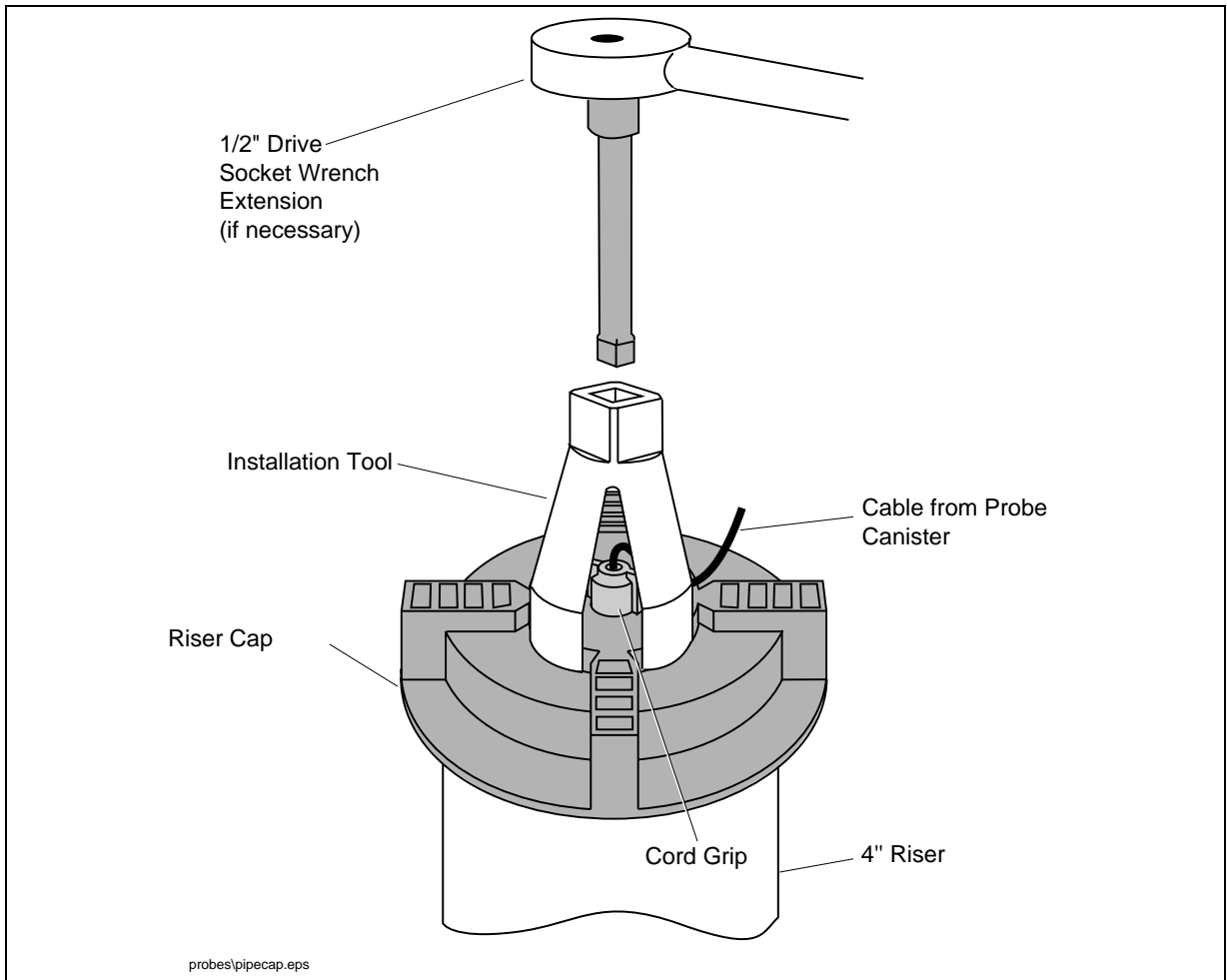


Figure 8. Riser Cap Installation

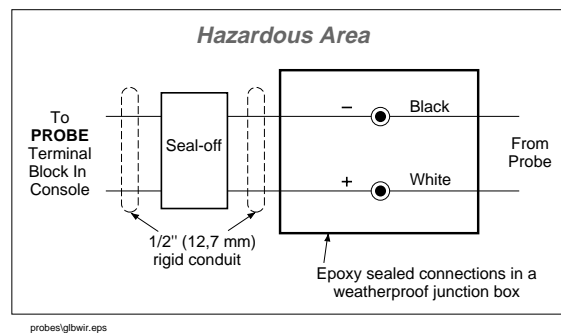
Wiring the Probe to the Console



1. Turn OFF power to the TLS system.
2. For a UST installation, obtain the epoxy sealing package, tie wrap, two wiring nuts, and the J-box cord grip fitting from the probe installation kit [Figure 1 on page 5].
3. Pass the two-wire end of the probe cable through the J-box cord grip fitting and into the J-box. Pull the excess wire through the fitting and out the opened side of the J-box. After sliding the J-box cord grip fitting up to the J-box, apply the UL-classified sealant (suitable for use with the fuel involved) to the fitting then screw it into the J-box. Tighten the J-box cord grip fitting winged nut to ensure a watertight seal at the probe cable entry. Using the wiring nuts, connect the wires from the probe cable to the field wires from the console. Be sure to observe proper polarity between probe and console [Figure 9].

Important ⚠️ *Avoid splicing the probe field wires at any point other than the J-Box. Improper splices can result in loss of signal, causing probe failure.*

4. The conduit must be properly sealed in accordance with the National Electrical Code (NFPA 70) and the Automotive and Marine Service Station Code (NFPA 30A) because they pass from a Class I, Division I or Division II area into a nonhazardous area.



GLOBAL PROBE FIELD WIRING

Figure 9. Two-Wire Global Probe Field Wiring Diagram



CAUTION



Epoxy sealant may be irritating to skin and eyes, absorbed through the skin, or cause skin sensitization in susceptible individuals.



Minor injury may result. Also, materials contained in epoxy have caused skin cancer in animal tests.

Avoid skin and eye contact. Wear appropriate safety equipment. Use only in well ventilated areas.

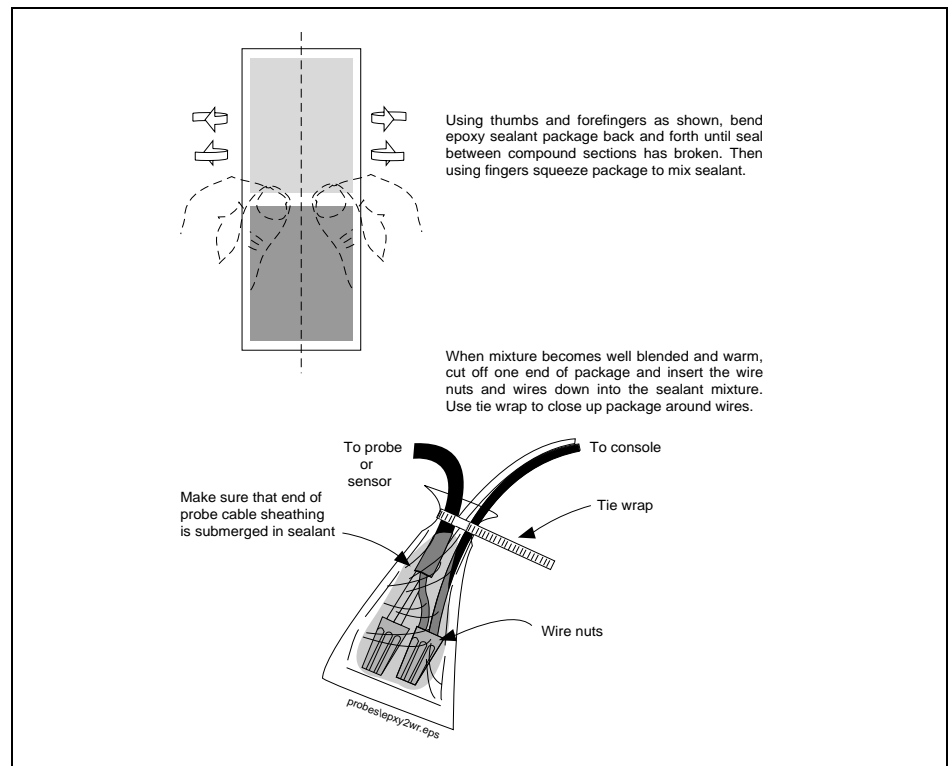


Figure 10. Epoxy Sealing the Wire Nut Connections

7. Seal wire nuts with epoxy sealant following instructions in Figure 10, using one bag for the two wire-nut connection.

Important

If more than two wire nut connections share an epoxy sealant bag, the connections will not be properly sealed. Improper sealing of the connections may result in inaccurate readings and possibly false alarm conditions.

8. Push the tie-wrapped, epoxy sealed bag into the J-box. Replace and tighten the J-box access cover. Replace the manhole cover if you did a UST installation.

Warranty Conditions and Limitations of Liability

Limitations Of Liability

We warrant that this product will be free from defects in materials and workmanship for a period of 1 year from the date of installation or 15 months from the date of invoice, whichever occurs first. During the warranty period, we or our representative will repair or replace the product, if determined by us to be defective, at the location where the product is in use and at no charge to the purchaser.

We shall not be responsible for any expenses incurred by the user.

This warranty applies only when the product is installed in accordance with Veeder-Root's specifications. This warranty will not apply to any product which has been subjected to misuse, negligence or accident; or misapplied; or used in violation of product manuals, instructions or warnings; or modified or repaired by unauthorized persons; or improperly installed.

Inspection

You shall inspect the product promptly after receipt and shall notify us at our Simsbury office in writing of any claims, including claims of breach of warranty, within 30 days after you discover or should have discovered the facts upon which the claim is based. Your failure to give written notice of a claim within the time period shall be deemed to be a waiver of such claim.

Limitation of Remedy and Warranty

The provisions of "Limitations Of Liability" on page 19 are our sole obligation and exclude all other remedies or warranties, express or implied, including warranties of MERCHANTABILITY and FITNESS FOR A PARTICULAR PURPOSE, whether or not purposes or specifications are described herein. We further disclaim any responsibility whatsoever to you or to any other person for injury to person or damage to or loss of property or value caused by any product which has been subjected to misuse, negligence, or accident; or misapplied; or used in violation of product manuals, instructions or warnings; or modified or repaired by unauthorized persons; or improperly installed.

Limitation of Damages

Under no circumstances shall we be liable for any incidental, consequential or specific damages, losses or expenses arising from this contract or its performance or in connection with the use of, or inability to use, our product for any purpose whatsoever.

Limitation of Actions

No action regardless of form arising out of this contract may be commenced more than 1 year after the cause of action has accrued, except an action for nonpayment.

Collateral Promises

There are no representations, warranties, or conditions, express or implied, statutory or otherwise except those herein contained, and no agreement or waivers collateral hereto shall be binding on either party unless in writing and signed by you and accepted by us at our Simsbury office.

Interpretation

Rights and liabilities arising out of any contract with us shall be determined under the Uniform Commercial Code as enacted in Connecticut.

Storage Temperature Range

The Global Probe is a precision instrument. Storing the Global Probe outside a temperature range of -40 to +176°F (-40 to +80°C) automatically voids the warranty.

Tampering with Probe

The Global Probe does not contain any user controls. Opening or tampering with the Global Probe will result in voiding the warranty.

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