PMP CORPORATION

Manual Number: **01-64-xxx**
Revision : **5**
Date: **05/01/19**

Installation Instructions

Veeder-Root Mag Probes

PMP p/n:	Cross- Reference	Probe Type
66390-xxx	846390-xxx	Mag Plus Probe
67390-xxx	847390-xxx	Standard Mag

Contents

Disclaimer

Related Manuals

This installation requires specific knowledge of Veeder-Root equipment and you may need to refer to the OEM manuals to complete the installation. There are a number of manuals that might apply to Mag Probe installation. The following are just a few which cover the most common applications:

576013-879	TLS-3XX Series Console Site Prep and Installation Manual
577013-879	TLS-4XX Series Console Site Prep and Installation Manual
576013-818	TLS-3xx Series Console Troubleshooting Guide
577013-918	TLS-4xx Series Console Troubleshooting Guide
576013-774	Mag Plus Probe - Assembly Guide
577014-348	Magnetostrictive Probes – Quick Troubleshooting Guide
577013-814	Operability Testing Guide

Safety Symbols

The following safety symbols are used to alert you to potential hazards and precautions that should be taken. These symbols are not intended to alert you to all of the potential hazards you could be exposed to while working in a service station environment. These symbols cannot replace common sense and industry practices.

	**READ ALL RELATED MANUALS** Read and understand all of the written material related to the installation of this product. If you are un-sure of any aspect of this product, contact PMP for clarification
	**WARNING** Attention. Pay particular attention to the text adjacent to the use of this symbol to alert you to safety or operational issues.
	**TURN OFF POWER** Remove / disconnect all power before proceeding with this installation.
	**ELECTRICITY** Potential shock hazard. Test circuit to verify power has been disconnected
	**BARRIERS** Cordon off work area with barriers to avoid contact with traffic
	**EXPLOSIVE** Potentially explosive materials and or atmosphere. Take necessary precautions.
	**FLAMMABLE** Potentially flammable materials and or atmosphere. Take necessary precautions.
	**ESD (Electrostatic Discharge)** Take necessary precautions to avoid damaging sensitive electronics
	**SAFETY** Use appropriate safety equipment including equipment that may be mandated by federal, state and local regulations.
	**GLOVES** Wear gloves during this operation.

BEFORE YOU BEGIN

- **Service station equipment has both electricity and hazardous, flammable and potentially explosive liquid. Failure to follow the precautions below and instructions in this guide may result in serious injury and death. Follow all rules, codes and laws that apply in your area.**
- **Veeder-Root requires training certifications for contractors who install and set up equipment related to the TLS-350. Installers of this product must have a Veeder-Root® certification of Level 2/3. Be sure that you have familiarized yourself with these requirements and determined if you are qualified to perform this installation.**

- **PMP shall not be liable for errors contained herein or for incidental or consequential damages in connection with furnishing, performance or use of this publication.**
- **PMP reserves the right to change product features or the information contained in this publication.**
- **Failure to install this product in accordance with OEM instructions and warnings will result in voiding of all warranties connected with this product and may damage the environment.**

SAFETY PRECAUTIONS FOR INSTALLATION AND MAINTENANCE

- **Only a person with knowledge and experience with service station equipment should perform this work.**

- **Always make sure ALL power to the equipment you are working with is turned OFF before starting any maintenance.**

- **Note that more than one disconnect switch may be required to de-energize the equipment for maintenance and servicing. Use a voltmeter to make sure ALL circuits in the dispenser are de-energized. Failure to do so may result in serious injury.**

Description

PMP Corporation's 66390-xxx and 67390-xxx are repaired versions of Veeder-Root 846390-xxx and 847390-xxx. More commonly referred to as the Standard Mag Probe and the Mag Plus Probe 846390-xxx and 847390-xxx probes respectively.

Used in conjunction with a Veeder-Root TLS console, these probes perform vital roles in business management and environmental compliance. In order for this probe to operate properly, it is essential that the probe be installed properly and that the TLS console is programmed correctly.

Probe Models

PMP Number	OEM Number	Description
66390-xxx	847390-xxx	Standard Mag Probe
67390-xxx	846390-xxx	Mag Plus Probe

Note:
Installation of probes may require additional hardware not included with this probe. Consider purchasing a new PMP probe cable to ensure a reliable connection. Order by length required:
5' Probe Cable p/n 80207
10' Probe Cable p/n 80208
20' Probe Cable p/n 80209

Installation of the Probe

You must refer to the OEM manuals listed earlier in this manual for detailed instructions for the correct console setup and site preparations required for your application.

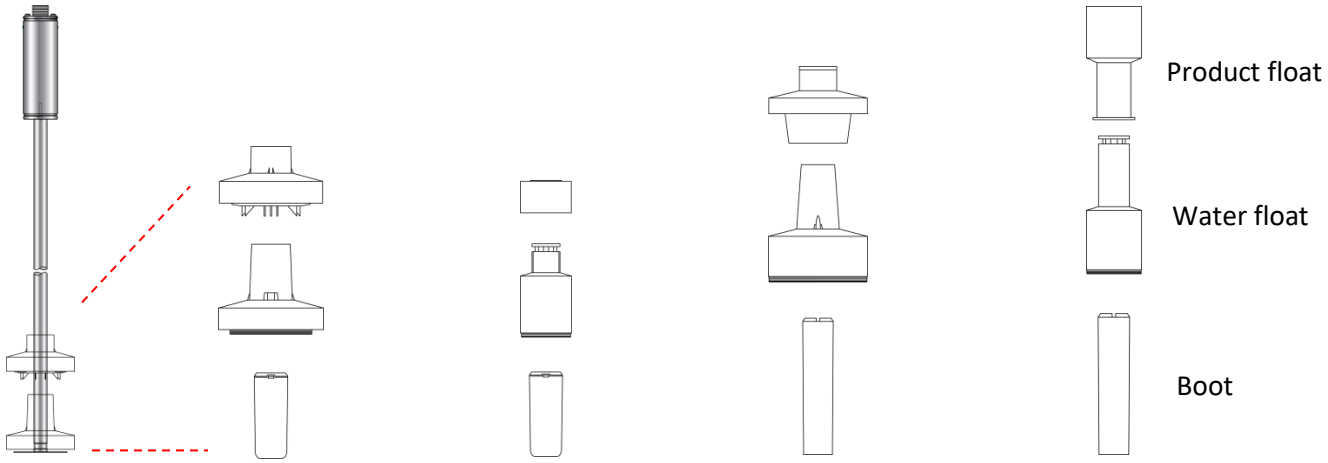
This manual can only provide samples of typical installations. It is the installer's responsibility to ensure that their installation complies with all state, local and federal regulations.

Assembling the Probe

Before proceeding with the probe installation, ensure that you have everything you need to complete a reliable installation. This might include the following items, not included with the probe:

- Proper floats
- Probe Cable
- Probe spacers
- Epoxy packs
- Riser cap
- Wire nuts

1. Slide the floats on to the probe shaft starting with the Product Float. Note: The floats and boot set will vary by the probe type and application. Make sure they are installed in the proper orientation and sequence. The illustration below is a quick reference for the most common float combinations and proper orientation:



2. Slide the boot on to the bottom of the probe. You should hear or feel a "click" when the boot is secure. You may need to twist the boot in-order to get it to latch. Failure to secure the boot may result in lost floats in the tank.

3. Attach the cable to the threaded connector on the probe.

4. Carefully lower the probe into the riser until it rests on the bottom of the tank. Take care not to let the probe fall to the bottom.

5. Inspect the riser cap and look for obvious damage that would prevent the cap from sealing properly.

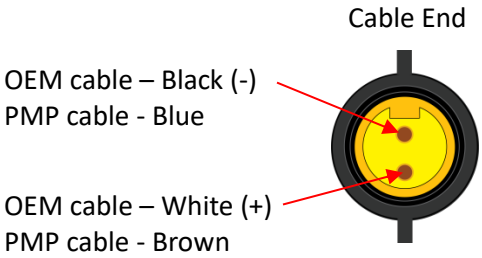
6. If you are installing a new probe cable, thread the probe cable through the cord grip on the riser cap and tighten (it must be water tight).

7. Return the riser cap to the riser and secure.

8. Route the probe cable to minimize physical damage and interference with potential noise sources such as AC wiring.

9. Thread the probe cable through the cord grip and into the junction box.

10. Terminate the probe wires in accordance with applicable codes using the wire nuts and epoxy packs. Note: If you are replacing an OEM cable with a PMP cable, the wire colors are different. Refer to the illustration for the correct polarity.



11. Place the field wiring in the Connector Sealing Pack provided. See instructions below on how to use the Connector Sealing Pack (refer to "How to use the sealing pack" if you are unfamiliar with the process).

12. Enclose the wiring and seal kit in the junction box.

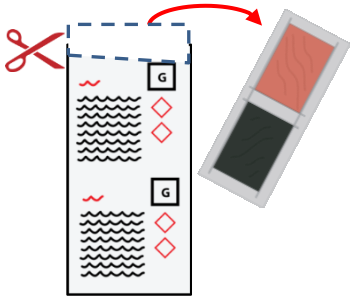
13. Re-install the junction box cover.

14. Check to be sure all of the cord grips have been tightened to ensure they are water tight.

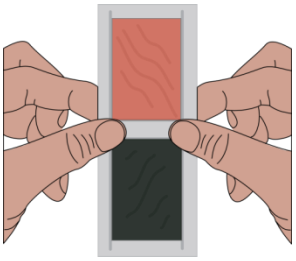
15. Restore power to the console and proceed with the setup process.

How to use the Connector Sealing Kit

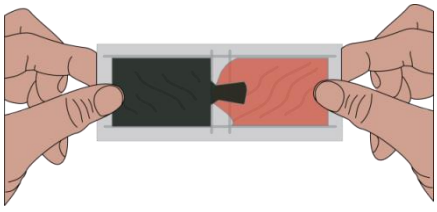
1. Carefully cut the bag and remove the seal pack.
2. Remove the two part seal pack.



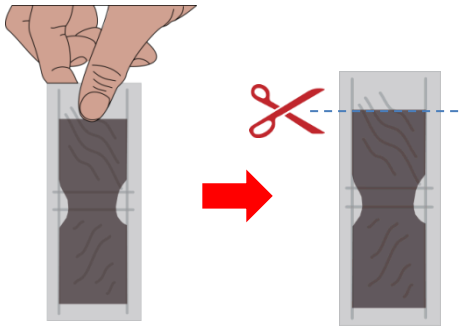
3. Grip the edges of the seal pack at the center and vigorously wiggle the plastic bag to weaken the barrier between the two halves.

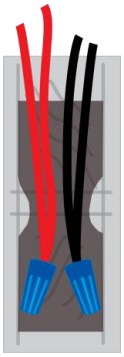


4. Squeeze the resin back and forth 25-30 times to thoroughly mix the two parts.

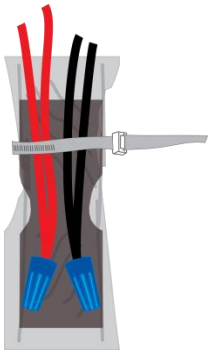


5. Squeeze the mixed resin to one side of the packet and cut off the other side.





6. Insert the connections made above. **Be sure the connections are inserted to the full depth of the seal pack to ensure a watertight connection.**



7. Use the wire tie provided to cinch the packet, where shown, to secure the wires in the epoxy pack during the curing process.

   Cure time is approximately 8-12 min @ 73°F.

Troubleshooting

Here are a few installation parameters that should be checked if you experiencing communications problems:

Inspect:

- The probe cable and connector pins for corrosion.
  - If any damage or corrosion is found, replace the cable.
- The probe connections in the junction box.
  - Was an epoxy pack used?
  - Is there water ingress?
  - Is the cord grip sealing properly?

Confirm:

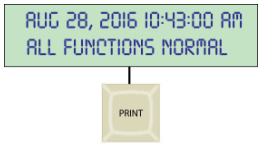
- That the TLS is properly grounded. The ground point for the TLS should be 1Ω or less to the source.
- That the polarity of the probe wires are correct all the way back to the TLS.
- That the probe field wiring going back to the TLS is shielded and that the shield is only grounded at the TLS end of the run.
- That the probe field wiring going back to the TLS is less than 1000 feet.
- That the TLS power feed is on its own circuit breaker.
- That the probe field wiring does not share any conduit with any other field wiring and that the intrinsically safe wiring is isolated from AC voltage.
- That the probe riser is not magnetized.

Diagnostic tips:

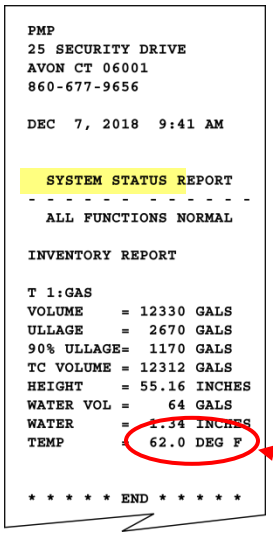
The approach you take to further troubleshoot field issues will depend on the outcome of steps listed above.

- Print an Alarm History report to determine if the Probe Out been consistent or intermittent.
  - If the Probe Out has been consistent, double check the field wiring or look for grounding issues. This may also indicate a faulty probe.
  - If the Probe Outs have been intermittent, check for wiring issues, grounding issues or potential noise sources such as variable speed drives.
  - If there are erratic readings and/or false deliveries, check for a magnetized riser.

- Print an Inventory Report to look for clues in the probe performance. In the example below, you can see that the Temperature Compensated volume is not accurate due to the difference in temperature recorded.



To print an Inventory Report



```
PMP
25 SECURITY DRIVE
AVON CT 06001
860-677-9656

DEC  7, 2018  9:41 AM

   SYSTEM STATUS REPORT
- - - - - - - - - - - - - -
   ALL FUNCTIONS NORMAL

INVENTORY REPORT

T 1:GAS
VOLUME     = 12330 GALS
ULLAGE     =  2670 GALS
90% ULLAGE=  1170 GALS
TC VOLUME  = 12312 GALS
HEIGHT     = 55.16 INCHES
WATER VOL  =    64 GALS
WATER      =  1.34 INCHES
TEMP       =  62.0 DEG F


* * * * * END * * * * *
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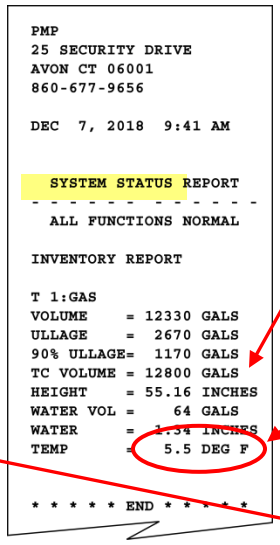
Normal



```
PMP
25 SECURITY DRIVE
AVON CT 06001
860-677-9656

DEC  7, 2018  9:41 AM

   SYSTEM STATUS REPORT
- - - - - - - - - - - - - -
   ALL FUNCTIONS NORMAL

INVENTORY REPORT

T 1:GAS
VOLUME     = 12330 GALS
ULLAGE     =  2670 GALS
90% ULLAGE=  1170 GALS
TC VOLUME  = 12800 GALS
HEIGHT     = 55.16 INCHES
WATER VOL  =    64 GALS
WATER      =  1.34 INCHES
TEMP       =   5.5 DEG F

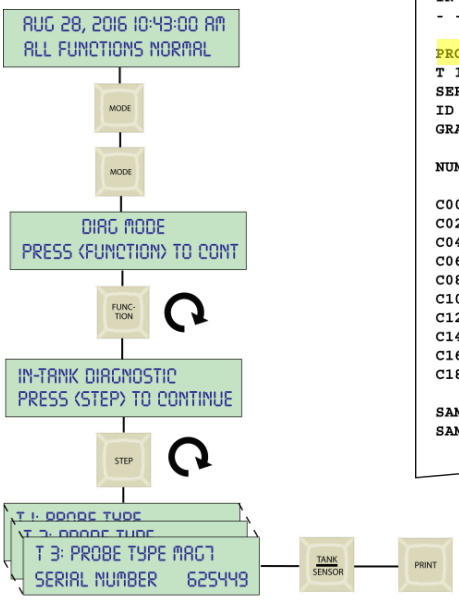

* * * * * END * * * * *
```

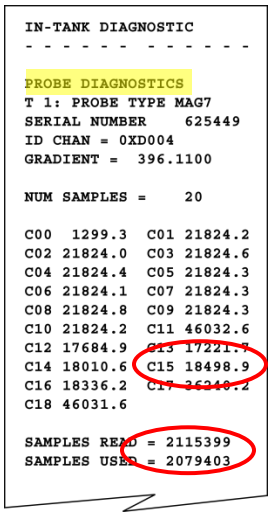
Probably a faulty probe

Note the difference between the TC Volumes reported. Under normal circumstances, you probably won't notice the difference

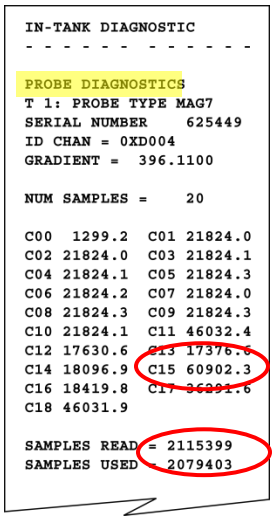
However, look at the difference in temperature reported. This number should be close to ambient temperature

- Print an In-Tank Diagnostics report to look for additional clues:
  - Compare Samples Read with Samples Used
  - Look for outliers Channel counts.





Normal



Further investigation required

Notice how this number is very different from the others surrounding it. This is a good indication that something is wrong with the probe. Zero's anywhere in this area may also be an indication of a probe problem.

- If there is a difference of greater than 1% between the Samples Read and the Samples Used, continue to investigate issues related to the installation.
- If there is a difference of less than 1% between the Samples Read and the Samples Used, refer to the Veeder-Root troubleshooting guides listed earlier in this manual.

- Move the probe wiring to a different input channel in the TLS.
  - If the problem follows the probe, replace the probe.
  - If the problem stays on the previous input channel, refer to the Veeder-Root troubleshooting guides listed earlier in this manual.

- Inspect and test probe cables.
  - Verify resistance values per the chart at right:

Wire gauge	Resistance per 1000 ft
14 AWG	2.52Ω
16 AWG	4.02Ω
18 AWG	6.39Ω

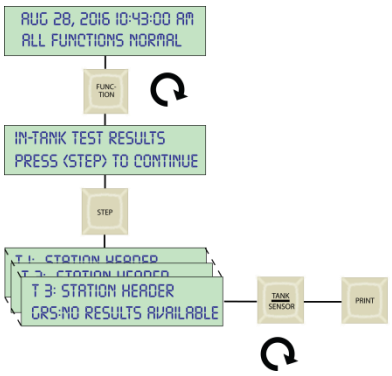
- Swap probe with a another, known good, probe:
  - If the problem follows probe – The probe probably faulty.
  - If the problem follows tank – There is probably a wiring and/or connection problem issue. Isolate a potential wiring by temporarily running a new wire above the ground directly between the probe and the TLS.

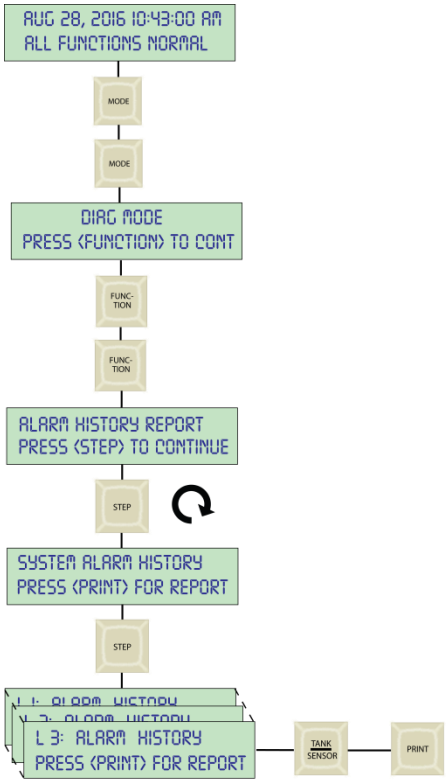
Functional Test Procedure

The TLS systems “self-diagnose” to the extent that they will not complete or report passing leak test results in the event of a component failure such as a probe. Completed test results are an indication that the system was working properly. The console will provide both a visual and audible alarm in the event of tank test failures.

The following graphics illustrate short cuts to obtaining In-Tank Test Results and Alarm History:

TLS-3xx Console

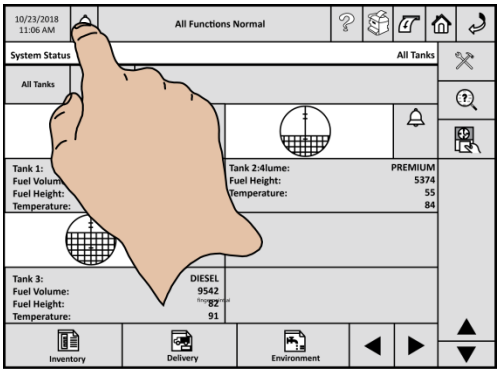




TLS-450 Console

You can press the Bell icon to display an active alarm report. If there are multiple alarms, they will also be displayed in the system status window.

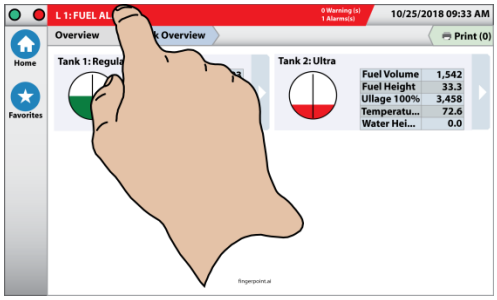
On the alarm history screen, you can select the History tab for a complete history for that alarm.



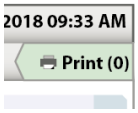
TLS-450 Plus

Veeder-Root recommends that the TLS system be inspected periodically and verify that tests are in compliance with local, state and federal regulations.

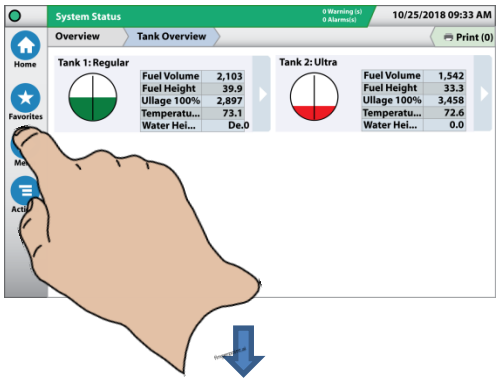
You can press the Status Bar to jump to the Reports> Alarms > Active screen.



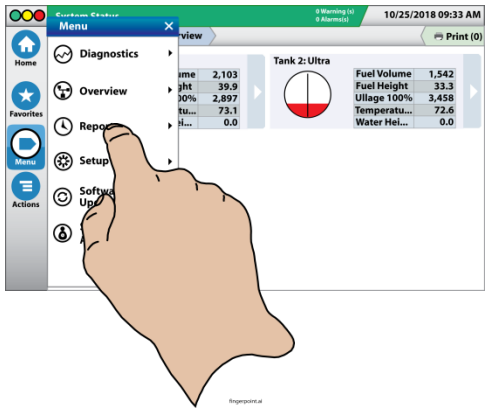
Touching the Print button, at any time, will print reports currently on the screen.



To view history reports from the Home screen, press the Menu icon.



When the Menu appears, select Reports



Quick Reference

Installation and Operation manuals

PMP provides an overview of the sensor installation with each sensor shipped. These installation overviews can also be found on the internet at www.pmp-corp.com. Refer to the OEM manuals listed above for detailed installation instructions.

Equipment Check Guidelines

No vendor specific checklist is provided for the equipment used to monitor these sensors. However, the EPA provides a useful checklist for Underground Storage Tank (UST) owners. This checklist is available on the EPA's website: www.epa.gov

Equipment Calibration

No calibration is required for the sensors discussed in this document.

Maintenance Procedures

There is no periodic maintenance required. However, periodic functional testing may be required by local regulations. Operability test guidelines for each sensor can be obtained from PMP or be found on the internet at www.pmp-corp.com. Sensors should be tested at least annually. However, Federal, State or Local regulations may require more frequent inspections and testing.

Test Results/Reports

Third party evaluations were conducted by Solution Engineering™ Group. Test results can be obtained from PMP.

Technical Contact

Support questions can be directed to the Engineering department at PMP. Refer to the contact information printed at the bottom of this page.

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