
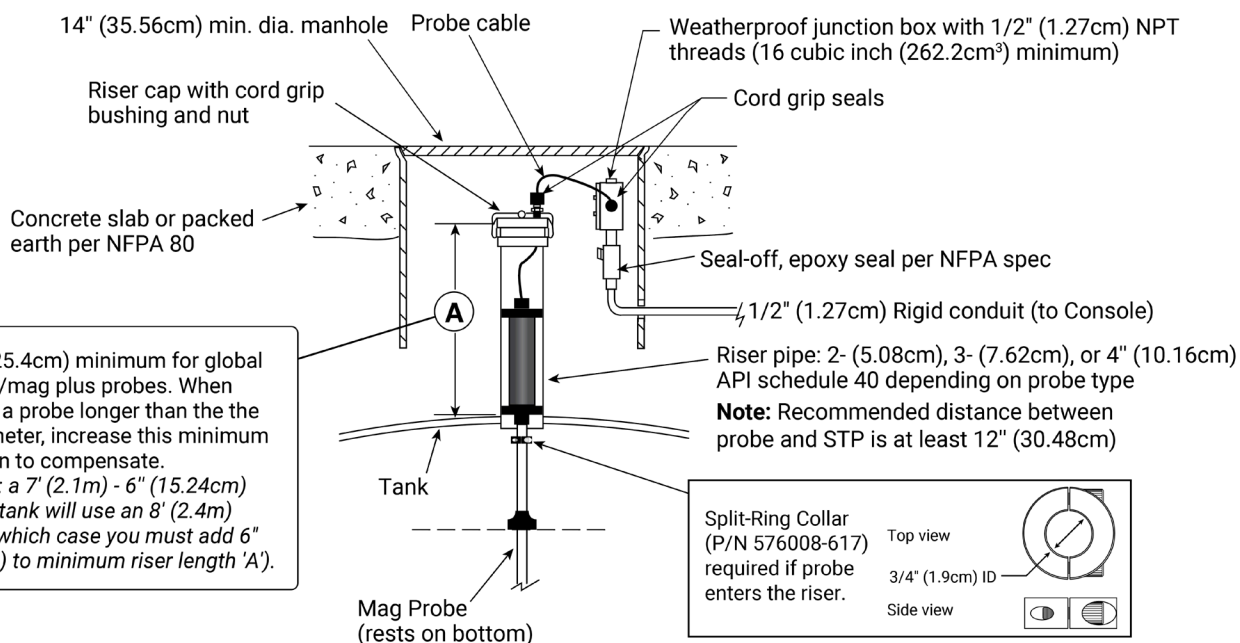


Probe Description & Product Application	Density Mag Plus In-Tank Probe for Monitoring Gasoline & Diesel Products in both USTs and ASTs					
Specific Products Monitored / Product Compatibility	Part # & Description	Approved Products	Monitoring Functionality			
	Leak Detection / BIR - AccuChart Probes 1. 846396-7XX Aluminum (AL) In-Tank Probe with High Grade Polymer (HGP) Canister with Water Detection & 0.1 GPH Testing Capability, UL 2. 846396-8XX AL with HGP Canister with Water Detection & 0.2 GPH Testing Capability, UL 3. 846397-7XX Stainless Steel (SS) with HGP Canister with Water Detection & 0.1GPH Testing Capability, UL 4. 846397-8XX SS with HGP Canister with Water Detection & 0.2 GPH Testing Capability, UL No Leak Detection/Inventory Only Probes 1. 846397-9XX SS with HGP Canister with Water Detection & No Leak Detection/ Inventory Only, UL	Leaded Gasoline	0.1 GPH static in-tank testing			
		Gasoline with <=7% Methanol and 8% TBA	0.2 GPH static in-tank testing			
		Gasoline with <=15% MTBE	0.2 GPH Continuous Statistical Leak Detection (CSLD)			
		Gasoline with <=17% TAME	No Leak Detection / Inventory Only			
		Regular Unleaded Gasoline	BIR – AccuChart			
		Premium Unleaded Gasoline	Density Range = 700 - 800 kg/m ³			
		Gasoline with <=15% ETBE				
Gasoline with <=12% TBA						
Console Compatibility	Maximum Probes / Console	Probe Interface Modules				
		Module Part #	Module Description	# of Modules per Console	# of Probe Inputs per Module	Availability
TLS-450PLUS (8600 Series) - Minimum Software Version 5B with TLS-XB installed (3 max per system)	64	332812-001	Universal Sensor Module (USM) Interface for Probes, Sensors, and DPLLD	Up to 4	16	Sold Separately (either Factory Installed or as a Spare Module)
TLS4i (8601 Series) - Minimum Software Version 5B	4	No module required, probe input capability factory installed				
TLS4c (8601 Series) - Minimum Software Version 5B	2					

Form # & Description	Float Size	Cable Lengths	Min/Max Probe Length
Float Installation Kits			
886001-1X0 Mag-D Gasoline Float Kit	2" (5.08cm)	5' (1.5m), 10' (3.05m), 20' (6.1m)	48" (1.2m) - 144" (3.66m)
886001-1X1 Mag-D Diesel Float Kit	2" (5.08cm)		
Other Installation Accessories	312020-952 4" (10.16cm) NPT Riser Cap and Ring Kit for In-Tank Probes 330020-282 4" (10.16cm) Threaded NPT Riser Cap for In-Tank Probes		
Specifications	Product	Water	
Measurement Accuracy	+/- 0.0300" (0.762mm)	+/- 0.0300" (0.762mm)	
Resolution - One Sample Reading	+/- 0.002857" (0.072571mm)	+/- 0.002857" (0.072571mm)	
Minimum Measurement - 2" (5.08cm) Float Kits	8.00" (20.32cm)	0.87" (2.2cm)	
Operating (Working) Temperature Range	-40 to +122°F (-40 to +50°C)		
Third Party Evaluation / Agency Listings & Links	UL, cUL, ATEX, IECEx http://www.nwglde.org/evals/veeder_root_j.html		
Product Installation Guide Link	https://www.veeder.com/us/technical-document-library		

Example Installation


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Example Illustrations

Illustrations used in this guide for example sensor installations may contain components that are customer supplied and not included with the sensor. Please check with your Veeder-Root Distributor for recommended installation accessories.

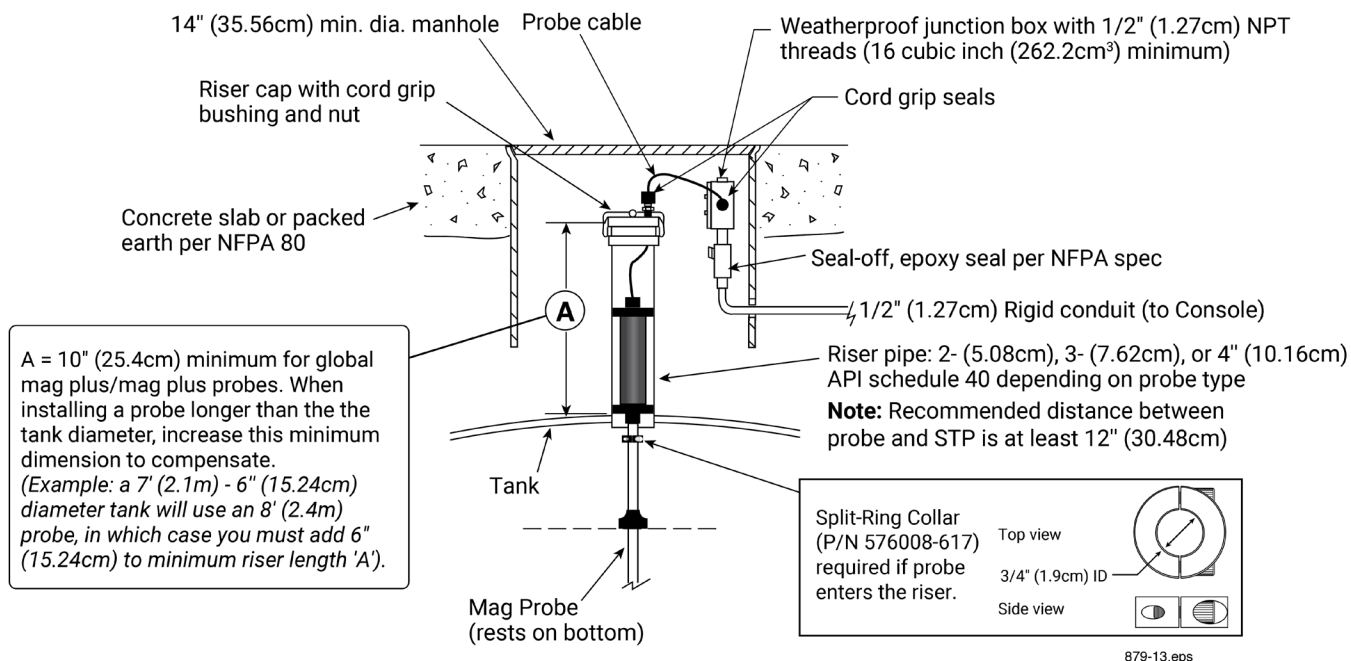
Third Party Evaluations

Third party evaluations of the Veeder-Root sensors contained in this application guide can be found under the Veeder-Root vendor name on the National Work Group on Leak Detection Evaluations (NWGLDE) website:

<http://www.nwglde.org>

Probe Description & Product Application	Density Mag Plus In-Tank Probe for Monitoring Other Products in both USTs and ASTs					
Specific Products Monitored / Product Compatibility	Part # & Description	Approved Products	Monitoring Functionality Options			
	Leak Detection / BIR - AccuChart Probes 1. 846396-7XX Aluminum (AL) In-Tank Probe with High Grade Polymer (HGP) Canister with Water Detection & 0.1 GPH Testing Capability, UL 2. 846396-8XX AL In-Tank Probe with HGP Canister with Water Detection & 0.2 GPH Testing Capability, UL 3. 846397-7XX Stainless Steel (SS) In-Tank Probe with HGP Canister with Water Detection & 0.1 GPH Testing Capability, UL 4. 846397-8XX SS In-Tank Probe with HGP Canister with Water Detection & 0.2 GPH Testing Capability, UL No Leak Detection/Inventory Only Probes 1. 846397-9XX SS In-Tank Probe with HGP Canister with Water Detection & No Leak Detection/Inventory Only, UL	Diesel (Fuel Oil #2)	0.1 GPH static in-tank testing			
		Bio Diesel (Low Density)	0.2 GPH static in-tank testing			
		Bio Diesel (High Density)	0.2 GPH Continuous Statistical Leak Detection (CSLD)			
		Kerosene (Fuel Oil #1)	No Leak Detection / Inventory Only			
		Jet Fuel (Incl JP8)	BIR – AccuChart			
		Fuel Oil #4	Density Range = 700 - 800 kg/m ³			
		Diesel (Fuel Oil #2)				
		Aviation Gas				
Console Compatibility	Maximum Probes / Console	Probe Interface Modules				
TLS-450PLUS (8600 Series)- Minimum Software Version 5B with TLS-XB installed (3 max per system)		Module Part #	Module Description	# of Modules per Console	# of Probe Inputs per Module	Availability
	64 (32 with BIR)	332812-001	Universal Sensor Module (USM) Interface for Probes, Sensors, and DPLLD	Up to 4	16	Sold Separately (either Factory Installed or as a Spare Module)
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Float Installation Kits	Part # & Description	Float Size	Cable Lengths	Min/Max Probe Length
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Minimum Measurement- 2" (5.08cm) Float Kits	6.367" (16.17cm)	1.495" (3.797cm)		
Operating (Working) Temperature Range	-40 to +122°F (-40 to +50°C)			
Third Party Evaluation / Agency Listings & Links	UL, cUL, ATEX, IECEx http://www.nwglde.org/evals/veeder_root_j.html			
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TLS-MAG-D DENSITY MEASUREMENT



RELIABLE AND PRECISE MEASUREMENT OF FUEL DENSITY

The Veeder-Root TLS-MAG-D (density) Probe and float system continuously measures the density of fuel in new and existing installations. Fuel quality issues are receiving significant attention around the world and the TLS-MAG-D system is a cost-effective and practical approach to measuring the density of fuel and detects the disbursement of sub standard fuel.

Open a window to the quality of your fuel

- Continuously monitor the density of product to ensure consistent fuel quality
- Quickly detect contaminated or adulterated fuel and cross-drop deliveries
- Identify a bad fuel delivery before it is dispensed

Accurate reconciliation of fuel delivered and dispensed

Quickly and accurately identify the integrity of your fuel delivery using temperature compensated density measurement. This is achieved by converting fuel measurement from mass to volume using a density factor. You can view the status of your fuel quality in real-time on your Veeder-Root TLS Console.

Rely on field-proven digital magnetostrictive technology

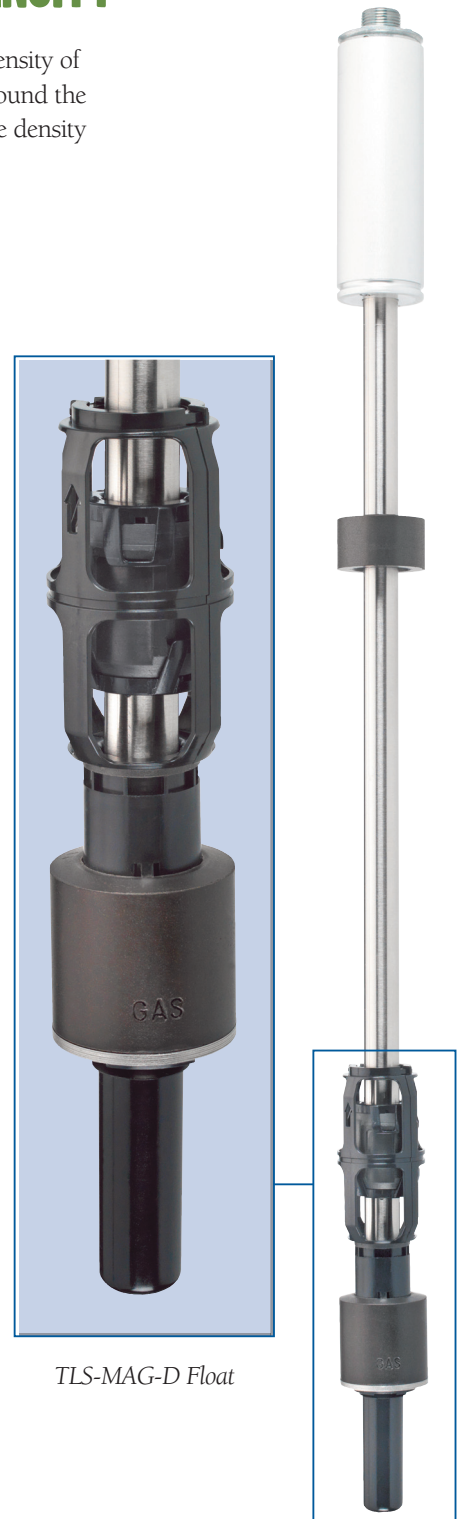
- Maintain inventory control and in-tank leak detection functionality
- Make installation easy as this system fits seamlessly in a 2", 3", 4" tank opening without any modification
- Manage your wet-stock inventory more effectively with the low minimum fuel height feature in the TLS-MAG-D Probe

The TLS-MAG-D System overview

The TLS-MAG-D System consists of a Probe and Float Kit that is based on the same magnetostrictive technology found in Veeder-Root Mag Plus Probes. The TLS-MAG-D System uses the new TLS-MAG-D Float Kit to calculate an accurate measurement of fuel density.

The TLS-MAG-D Float Kit combines a redesigned water float with a new cage and density float calibrated for gas or diesel. The density float is suspended in the middle of the cage when placed in gasoline or diesel. The density of the fuel is calculated by measuring the displacement of the calibrated density float within the density cage. The kit also includes an updated product float (gas or diesel), and other components found in a traditional Veeder-Root Float Kit.

The new TLS-MAG-D system has the comprehensive leak detection approvals that have set Veeder-Root apart from the competition for years. And, it's offered with our TLS family of ATGs which have proven over decades to be extremely reliable based on customer and regulator feedback.

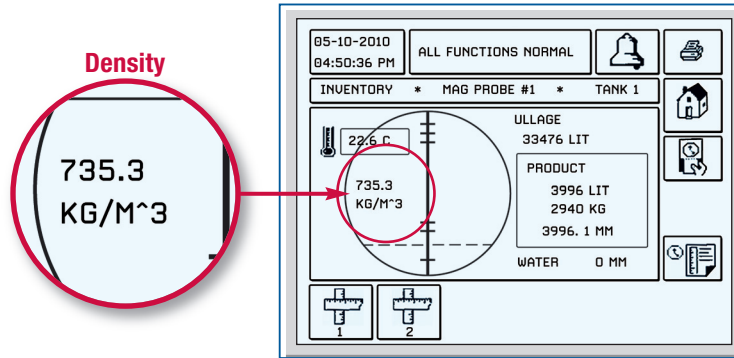


TLS-MAG-D Float

TLS-MAG-D Float and Probe

VEEDER-ROOT TLS-MAG-D SYSTEM

Density is a key indicator of fuel quality, and Veeder-Root's new temperature-compensated TLS-MAG-D System enables stations to differentiate with measured fuel quality.



Density Specifications

Attribute	Metric units	USA (Imperial) units
Density Range (gas)	690 - 800 kg/m ³	43.1 - 50.0 lb/ft ³
Density Range (diesel)	800 - 900 kg/m ³	50.0 - 56.2 lb/ft ³
Accuracy	± 2.0 kg/m ³	± 0.13 lb/ft ³
Resolution	± 0.1 kg/m ³	± 0.01 lb/ft ³
Repeatability (15°C)	± 0.5 kg/m ³	± 0.03 lb/ft ³
Minimum Fuel Height	200 mm	8.0 inches
Minimum Water Height	22 mm	0.87 inches
Temperature Range	-40°C to 50°C	-40°F to 132°F

Compatibility

The TLS-MAG-D Float Kit is not compatible with the Veeder-Root MAG nor MAG PLUS Probes. They must be used with TLS-MAG-D Probes.

The TLS-MAG-D system is compatible with Veeder-Root TLS-2 and TLS-2P Automatic Tank Gauge Consoles. Additional Veeder-Root Console compatibility is in development.

If you have any questions on your system requirements, contact Veeder-Root at marketing-programs@veeder.com.

Ordering Notes

To configure the right Veeder-Root System for your sites, contact a Veeder-Root representative or visit www.veeder.com.

To learn more, contact us at 1-888-561-7942, or visit www.veeder.com

