
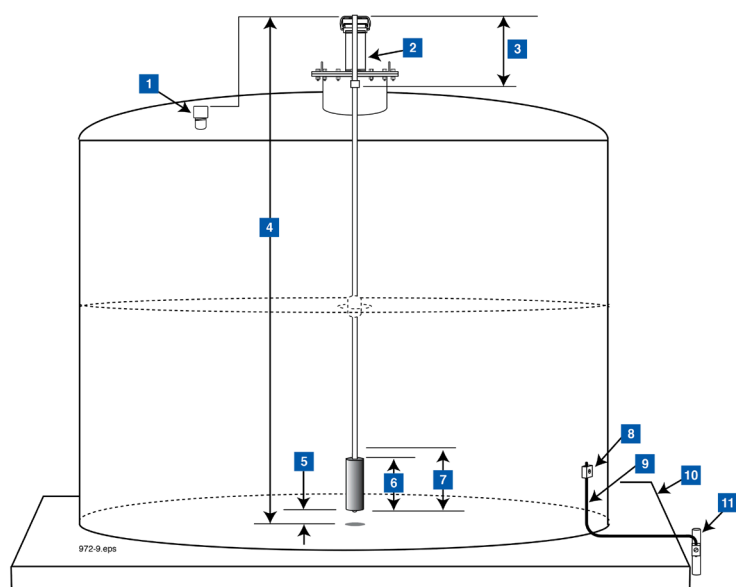


Probe Description & Product Application	Mag-FLEX In-Tank Probes for Monitoring Gas, Diesel, & Alternative Fluids in both USTs and ASTs	
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Specific Products Monitored / Product Compatibility	Part # & Description	Approved Products	Monitoring Functionality Options
		1. 0889591-4XX Mag-FLEX probe with gasoline & water floats, wired, UL/cUL 2. 0889591-5XX Mag-FLEX probe with diesel & water floats, wired, UL/cUL 3. 0889591-6XX Mag-FLEX probe with no water float, wired, UL/cUL 4. 0889591-8XX Mag-FLEX probe for methanol tanks with no water float, wired, UL/cUL 5. 0889591-1XX Mag-FLEX probe with gasoline & water floats, wireless, UL/cUL 6. 0889591-2XX Mag-FLEX probe with diesel & water floats, wireless, UL/cUL 7. 0889591-3XX Mag-FLEX probe with no water float, wireless, UL/cUL 8. 0889591-7XX Mag-FLEX probe for methanol tanks with no water float, wireless, UL/cUL 9. 0889561-4XX Mag-FLEX probe with gasoline & water floats, wired, ATEX 10. 0889561-5XX Mag-FLEX probe with diesel & water floats, wired, ATEX 11. 0889561-6XX Mag-FLEX probe with no water float, wired, ATEX 12. 0889561-8XX Mag-FLEX probe for methanol tanks with no water float, wired, ATEX 13. 0889561-1XX Mag-FLEX probe with gasoline & water floats, wireless, ATEX 14. 0889561-2XX Mag-FLEX probe with diesel & water floats, wireless, ATEX 15. 0889561-3XX Mag-FLEX probe with no water float, wireless, ATEX 16. 0889561-7XX Mag-FLEX probe for methanol tanks with no water float, wireless, ATEX	Gasohol (<=15% Ethanol) Gasoline with <=7% Methanol and 8% TBA Gasoline with <=15% MTBE Gasoline with <=17% TAME Leaded Gasoline Mineral Spirits Premium Unleaded Gasoline Regular Unleaded Gasoline Gasoline with <=15% ETBE Gasoline with <=12% TBA Diesel (Fuel Oil #2) Kerosene (Fuel Oil #1) Bio Diesel (Low Density) Methanol *
* Applicable to 0889591-8XX, 0889561-8XX, 0889591-7XX, and 0889561-7XX part numbers only			

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) with TLS-XB installed (3 max per system)	64	0332812-001	Universal Sensor Module (USM) Interface for Probes, Sensors, and DPLLD	Up to 4	16	Sold Separately (either Factory Installed or as a Spare Module)
TLS4 (8601 Series)	12	No module required, probe input capability factory installed				
TLS4B (8601 Series)	6					
TLS-350/R/PLUS	16	0329356-002	4-Input Probe Interface Module	4	4	Sold Separately (either Factory Installed or as a Spare Module)
TLS-300i	4	No module required, probe input capability factory installed				
TLS-300C	2					

	Part # & Description	Float Size	Special Instructions	Min/Max Probe Length
Float Installation Kits	0330020-776 Kit – Low Level Water Float (1.9" for Gasoline)	4" (10.16cm)	Low level water float kits require a 4" tank opening and connect directly to the existing water float. Wall guide included.	5' (1.5m) - 72.1' (22m)
	0330020-777 Kit – Low Level Water Float (1.9" for Diesel)	4" (10.16cm)		
	0330020-824 Kit – Low Level Water Float (1.9" for Bio-Diesel)	4" (10.16cm)		
Other Installation Accessories	0848100-004 Over voltage protection device 1 per probe recommended 0576008-708 2" (5.08cm) NPT Adapter for installation of Mag-FLEX AST probes (req'd 1/probe)			
Specifications	Product	Water		
Measurement Accuracy	+/- 0.0800" (2.032mm)	+/- 0.12" (3.048mm)		
Resolution – One Sample Reading	+/- 0.02" (0.508mm)	+/- 0.02" (0.508mm)		
Minimum Measurement	+/- 7.3" (18.542cm) probe; 1.5" (3.81cm) float	+/- 5.5" (13.97cm) Std; 1.9" (4.826cm) low level		
Operating (Working) Temperature Range	-40 to +140°F (-40 to +60°C)			
Thermistors	5 Thermistors			
Product	Material			
Probe Canister	Stainless Steel 303			
Rigid Shaft Sections	Stainless Steel 304			
Corrugated Flexible Shaft & Floats	Stainless Steel 316 Ti			
Weight	Stainless Steel 303			
Magnet Casing	Conductive Plastic			
Third Party Evaluation / Agency Listings	http://www.nwglde.org/evals/veeder_root_j.html			
Product Installation Guide	https://www.veeder.com/us/technical-document-library			

Example Installation


1. Insertion measuring point for 2" (5.08cm) pipe cap installations (top of pipe cap to tank bottom)
2. Insertion measuring point for 4" (10.16cm) riser pipe installations (top of riser pipe to tank bottom). Add 2" (5.08cm) for brass ring/and riser cap.
3. Null zone - typical all probes
4. Measured insertion length (always order smaller probe if measured insertion length falls between two probes in table)
5. Clearance off bottom
6. Weight length
7. Dead zone
8. Tank grounding bracket
9. Grounding cable
10. Concrete tank pad
11. Earth grounded electrode with cable bracket

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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>



MAG-FLEX TALL TANK MONITORING SYSTEM

► MAG-FLEX TALL TANK PROBE

A practical and cost-effective solution for accurately monitoring aboveground fuel storage tanks

Mag-FLEX is an ideal solution for fuel distribution depots, marine terminals, aviation fueling installations and many other facilities where fuels are stored in bulk. It utilizes the proven Veeder-Root magnetostrictive probe technology installed in over 500,000 tanks globally. This solution, paired with any Veeder-Root Automatic Tank Gauge (ATG), creates a powerful, affordable inventory management system backed by the support network and reliability of Veeder-Root. It delivers accurate reconciliation of your most expensive on-site assets, while eliminating the safety hazard of scaling formidable heights to determine inventory levels of Aboveground Storage Tanks (ASTs).



► KEY FEATURES & BENEFITS

- **Single point of monitoring:** Automate product level, water level and temperature monitoring of storage tanks with a Veeder-Root fuel monitoring system.
- **Water detection:** Identify possible water intrusion and ensure fuel quality with a water float system. The standard water float included detects water at the 5.5" (14cm) level. An optional low-level water float is also available for water detection at the 1.9" (4.8cm) level, which requires 4" (10.2cm) tank opening.
- **Wireless & Wired applications:** Save installation time and cost with wireless technology, which eliminates wiring from the tank to the ATG. Where wireless is not practical, Mag-FLEX accommodates traditional wired installation as well.
- **Scalable solution to various site profiles:** The Veeder-Root ATG portfolio offers a wide range of consoles to best suit various site configurations.
- **Flexible, corrugated probe design:** Provides for easy transportation and installation.
- **Stainless steel probe shaft:** Provides increased protection of the mag wire and probe durability.



► MAG-FLEX SPECIFICATIONS

PRODUCT MEASUREMENT

Height Accuracy	±0.08" (±0.2cm)
Repeatability	±0.02" (±0.05cm)
Minimum Product Level Reading	7.3" (18.5cm)
Float Size	1.7" (4.3cm)

WATER MEASUREMENT

	Standard	Optional
Height Accuracy	±0.12" (±0.3cm)	±0.12" (0.3cm)
Repeatability	±0.02" (±0.05cm)	±0.02" (0.05cm)
Minimum Water Level Reading	5.5" (14cm)	1.9" (4.8cm)
Float Size	1.7" (4.3cm)	4" (10.2cm)

TEMPERATURE MEASUREMENT

Operating Range	-40°F to 140°F (-40°C to 60°C)
Accuracy	±0.36°F (±0.2°C) @ -40°F (-40°C) to 185°F (85°C) ±0.18°F (±0.1°C) @ -4°F (-20°C) to 131°F (55°C)
Repeatability	±0.5°F (±0.5°C)
Resolution	0.1°F (0.1°C)
Thermistors	5 Thermistors

INSTALLATION DETAILS

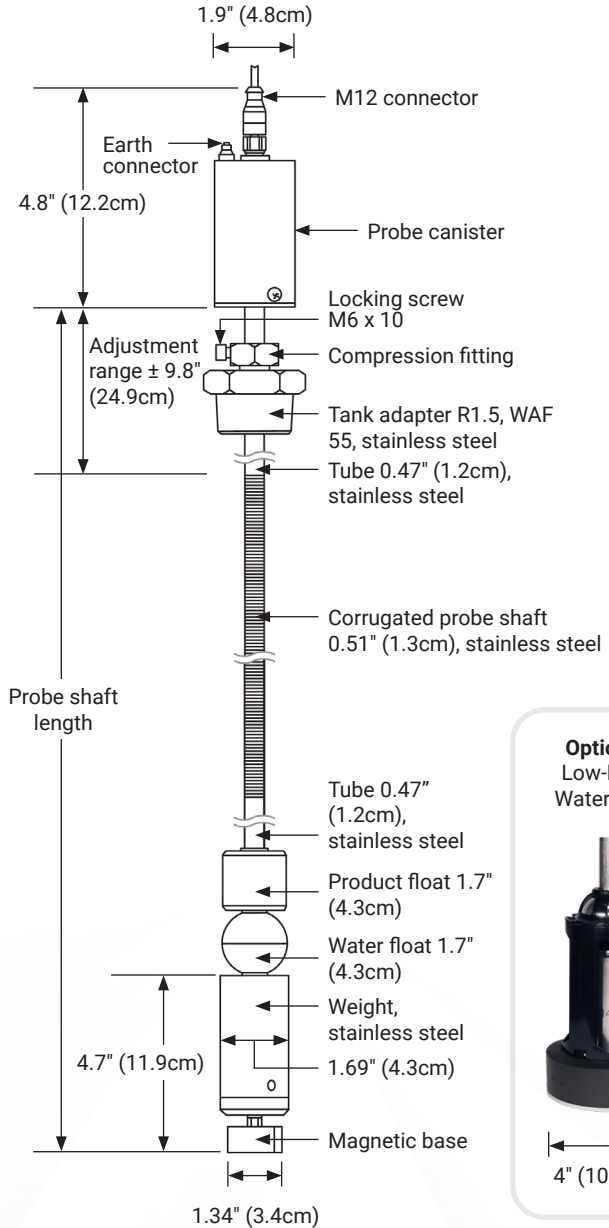
Probe Shaft Length	Up to 72' (22m) tank height
Tank Adapter/Tank Entry	R 1.5" (3.8cm) screw-in unit
Height Adjustment Range	±9.8" (24.9cm)
Electrical Connection	M12 plug-in connection
Protection Class	IP68

SENSOR MATERIALS

Probe Canister	Stainless steel 303
Rigid Shaft Sections	Stainless steel 304
Corrugated Flexible Shaft & Floats	Stainless steel 316 Ti
Weight	Stainless steel 303
Magnet Casing	Conductive plastic

GENERAL INFORMATION

Options	Tank adapter made of stainless steel. Weight made of stainless steel.
Certifications	ATEX, IECEx, UL, cUL



VEEDER-ROOT AUTOMATIC TANK GAUGES

Maximum Measurable Liquid Height

TLS3* or TLS4 Series**	72' (22m)
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Maximum Volume Capability

TLS3 Series*	999,999 gallons (3,784,996 liters)***
TLS4 Series**	264,172,052 gallons (999,999,999 liters)***

Probe Maximum Capacity per TLS Console

TLS-350R & TLS-350PLUS	16 Probes
TLS-450PLUS	64 Probes
TLS4/TLS4B	12/6 Probes
TLS-300i, TLS4i/TLS-300C, TLS4c	4/2 Probes

* TLS3 Series includes TLS-350/R/PLUS, TLS-300i, TLS-300C
 ** TLS4 Series includes TLS-450PLUS, TLS4, TLS4B, TLS4i and TLS4c

*** Liters may be increased by programming in English units first and switching the console to Metric units.

► COMMERCIAL AND INDUSTRIAL SOLUTIONS

Veeder-Root is a leading global supplier of fuel management solutions with a tradition of excellence in the petroleum industry. Our products improve profitability and abate risk for customers by delivering solutions to manage on-site operations, compliance reporting, fuel procurement, inventory reconciliation, and accounting processes. Veeder-Root products and services are installed in over 500,000 tanks globally and responsible for 22 billion gallons of gasoline and diesel fuel annually.



► PRODUCT RANGE



PUMPS AND DISPENSERS

Gasboy's and Veeder-Root's broad portfolio of dispensers and pumps are proven to deliver profitability for our customers.



AUTOMATIC TANK GAUGING

Innovative tank monitoring and loss detection to automate wet stock management, environmental control and risk management across the network and allows centralized data management to optimize operational profitability.



SUBMERSIBLE TURBINE PUMPS

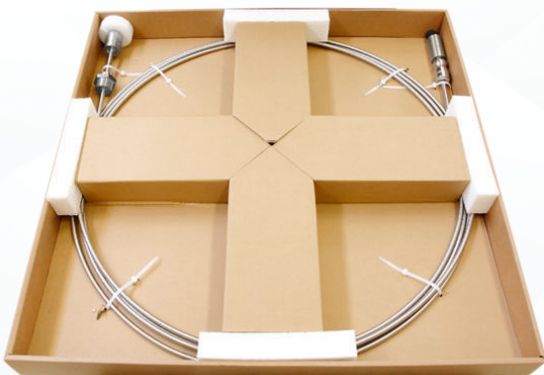
Red Jacket is the world's leader in submersible pressure technology with a diverse product portfolio that pumps motor fuel, diesel jet fuel, aviation gasoline, liquid petroleum gas, ethanol/methanol and kerosene.



METER REGISTERS

Our meter registers have been used successfully throughout a wide range of industries and are the most cost effective register solutions available in today's market.

► FLEXIBLE AND EASY INSTALLATION



The flexible design of the Mag-FLEX probe allows it to be coiled, ensuring it can be packed compactly for low cost shipping and conveniently transported to the tank top, quickly ready for an easy installation.

After the Mag-FLEX probe has been installed, the corrugated steel shaft is oriented vertically and held in its operating position by the integral weight and magnet. The probe floats will precisely follow the level changes in the tank and report the presence of any water. The Mag-FLEX probe utilizes magnetostrictive measuring technology to provide consistently accurate and repeatable data.