

LIMITED WARRANTY

Underground Petroleum Storage Tanks

Xerxes Corporation ("Xerxes") warrants to owner ("Owner") that our underground petroleum storage tanks, if installed, used, and maintained in the United States or Canada in accordance with Xerxes' published specifications, installation instructions and operating guidelines, applicable supplemental materials, all applicable laws and regulations, and limited to storage of the products listed below at ambient temperatures or fuel oils, used in oil burning equipment, at temperatures not to exceed 150°F (65° C):

- 1) Will not fail for a period of thirty (30) years from date of original delivery by Xerxes due to natural external corrosion.
- 2) Will not fail for a period of thirty (30) years from date of original delivery by Xerxes due to internal corrosion, provided the tank is used solely, with or without tank water bottoms, to store the following products:
 - a. gasoline, jet fuel, aviation fuels, motor oils, motor vehicle waste oils, kerosene, diesel fuel, or fuel oils
 - gasoline with up to 20%, by volume, of methyl tertiary butyl ether (MTBE), ethyl tertiary butyl ether (ETBE), di-isopropyl ether (DIPE), tertiary butyl alcohol (TBA), tertiary amyl methyl ether (TAME), or tertiary amyl ethyl ether (TAEE)
 - b. gasoline and ethanol blended motor fuels (per applicable ASTM fuel standards)
 - E10 (90% gasoline and 10% ethanol)
 - E15 (85% gasoline and 15% ethanol)
 - E85 (85% ethanol and 15% gasoline)
 - other ethanol blends up to and including 100% ethanol
 - c. gasoline and methanol blended motor fuels (per applicable ASTM fuel standards)
 - M85 (85% methanol and 15% gasoline)
 - other methanol blends up to and including 100% methanol
 - Oxinol-50 waiver (90.5% gasoline and 9.5% Oxinol-50 comprised of a 4.75% methanol and 4.75% gasoline-grade tertiary butyl alcohol (GTBA) mixture)
 - Dupont EPA waiver (gasoline with 5% methanol and a minimum of 2.5% cosolvent – the blend may contain a maximum concentration of up to 3.7%, by weight, oxygen in the final fuel)
 - d. biodiesel fuel blends up to 100% biodiesel (per applicable ASTM fuel standards)
- 3) Will not fail for a period of thirty (30) years from date of original delivery by Xerxes due to structural failure (defined as spontaneous breaking or collapse caused by material defects in materials or workmanship).
- 4) Will meet Xerxes' published specifications and will be free of material defects in materials and workmanship for a period of one (1) year following the date of original delivery by Xerxes.

Xerxes warrants to Owner that all Xerxes-manufactured tank accessories, if installed, used and maintained in Canada or the United States in accordance with Xerxes' published specifications, installation instructions and operating guidelines, applicable supplemental materials, and all applicable laws and regulations, will be free of material defects in materials and workmanship for a period of one (1) year following the date of original delivery by Xerxes.

If any tank or accessory is to be removed from an installation, moved and reinstalled at Owner's new location and is intended for active service at the new location, the tank and accessories must be recertified by Xerxes to continue the balance of the limited warranty as originally extended.

The foregoing limited warranty does not extend to tanks or accessories ("individually and collectively Goods") damaged due to acts of God, war, terrorism, or failure of Goods caused, in whole or in part, by misuse, unlawful use, improper installation, storage, servicing or maintenance, or operation in excess of their rated capacity or contrary to their recommended use, whether intentional or otherwise, or any other cause or damage of any kind not the fault of Xerxes. Xerxes only warrants repairs or alterations performed by Xerxes or its authorized contractors performing work authorized in advance, in writing, by Xerxes. Xerxes does not warrant any product, components or parts manufactured by others. All consumable components including but not limited to o-rings and gaskets are excluded from this limited warranty.

Owner's sole and exclusive remedy for breach of warranty is limited at Xerxes' option to: (a) repair of the defective tank or accessory, (b) delivery of a replacement tank or accessory to the point of original delivery, or (c) refund of the original purchase price. No warranty claim will be considered without removing the tank and any accessory from the ground if Xerxes deems it necessary to evaluate a warranty claim. In the event of a breach of warranty claim, a claimant must give Xerxes the opportunity to observe and inspect the installation prior to the removal of any backfill below the tank top, and the removal of the tank and any accessory from the ground, or the claim will be forever barred. All claims must be made in writing within one (1) year after tank or accessory failure or be forever barred. ALL RIGHTS, OBLIGATIONS AND CLAIMS UNDER THIS LIMITED WARRANTY SHALL BE EXCLUSIVELY MADE AND DETERMINED IN THE COURTS OF, AND GOVERNED BY THE LAWS OF, THE STATE OF MINNESOTA, U.S.A., EXCLUDING ITS CONFLICT OF LAW PRINCIPLES.

THE FOREGOING WARRANTY CONSTITUTES XERXES' EXCLUSIVE OBLIGATION AND XERXES MAKES NO OTHER WARRANTY OR REPRESENTATION, EXPRESS OR IMPLIED, WITH RESPECT TO THE GOODS, OR ANY SERVICE, ADVICE, OR CONSULTATION, IF ANY, FURNISHED TO OWNER BY XERXES OR ITS REPRESENTATIVES, WHETHER AS TO MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR OTHERWISE. THE SELLER (XERXES) UNDERTAKES NO RESPONSIBILITY FOR THE QUALITY OF THE GOODS, EXCEPT AS OTHERWISE PROVIDED IN THIS CONTRACT. THE SELLER (XERXES) ASSUMES NO RESPONSIBILITY THAT THE GOODS WILL BE FIT FOR ANY PARTICULAR PURPOSE FOR WHICH YOU (OWNER) MAY BE BUYING THESE GOODS, EXCEPT AS OTHERWISE PROVIDED IN THE CONTRACT. THE REMEDIES SET FORTH IN THE ABOVE WARRANTY ARE THE ONLY REMEDIES AVAILABLE TO ANY PERSON OR ENTITY FOR BREACH OF WARRANTY OR FOR BREACH OF ANY OTHER COVENANT, DUTY, OR OBLIGATION ON THE PART OF XERXES. XERXES SHALL HAVE NO LIABILITY OR OBLIGATION TO ANY PERSON OR ENTITY FOR BREACH OF ANY OTHER COVENANT, DUTY, OR OBLIGATION UNDER THIS WARRANTY EXCEPT AS EXPRESSLY SET FORTH HEREIN. IT IS EXPRESSLY AGREED THAT THIS WARRANTY DOES NOT FAIL OF ITS ESSENTIAL PURPOSE. XERXES SHALL HAVE NO LIABILITY FOR COSTS OF INSTALLATION OR REMOVAL OF GOODS, ENVIRONMENTAL CONTAMINATION, FIRES, EXPLOSIONS, OR ANY OTHER CONSEQUENCES ALLEGEDLY ATTRIBUTABLE TO A BREACH OF WARRANTY, OR INCIDENTAL, CONSEQUENTIAL, PUNITIVE OR OTHER DAMAGES OF ANY DESCRIPTION, WHETHER ANY SUCH CLAIM OR DAMAGES BE BASED UPON WARRANTY, CONTRACT, NEGLIGENCE, STRICT LIABILITY OR OTHER TORT, OR OTHERWISE. IN NO EVENT SHALL XERXES' TOTAL LIABILITY HEREUNDER EXCEED THE ORIGINAL PURCHASE PRICE OF THE GOODS WHICH GAVE RISE TO SUCH LIABILITY.

Consumer Notice: This warranty gives you (Owner) specific legal rights. You (Owner) may also have other rights which vary from state to state.

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XERXES[®]
a zcl company

Effective: June 1, 2015
United States



Below Ground Products Fuel Compatibility Matrix

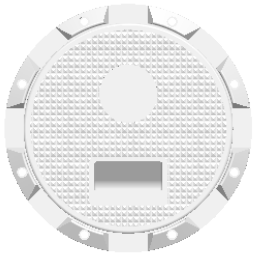
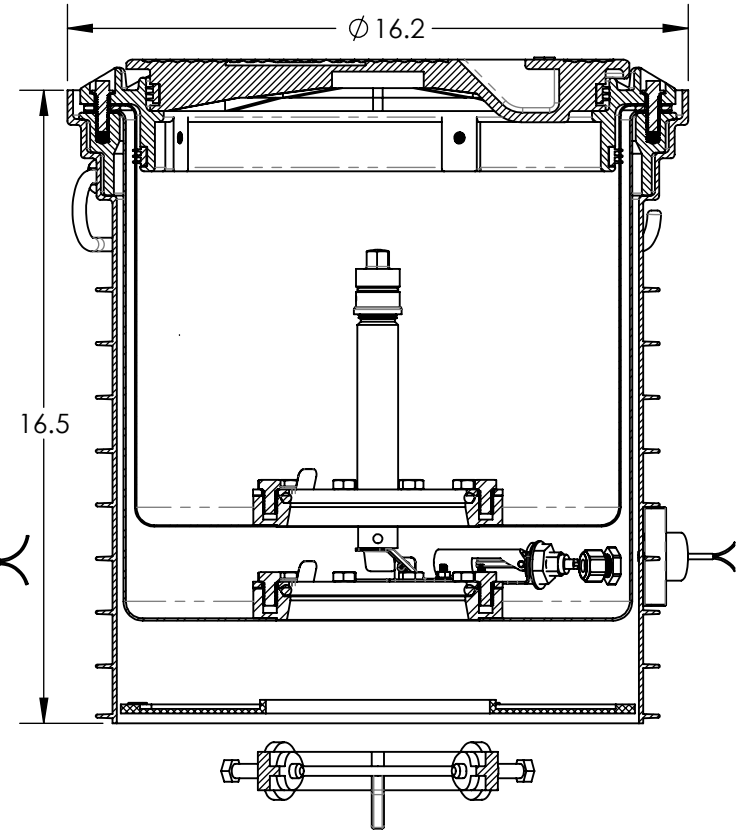
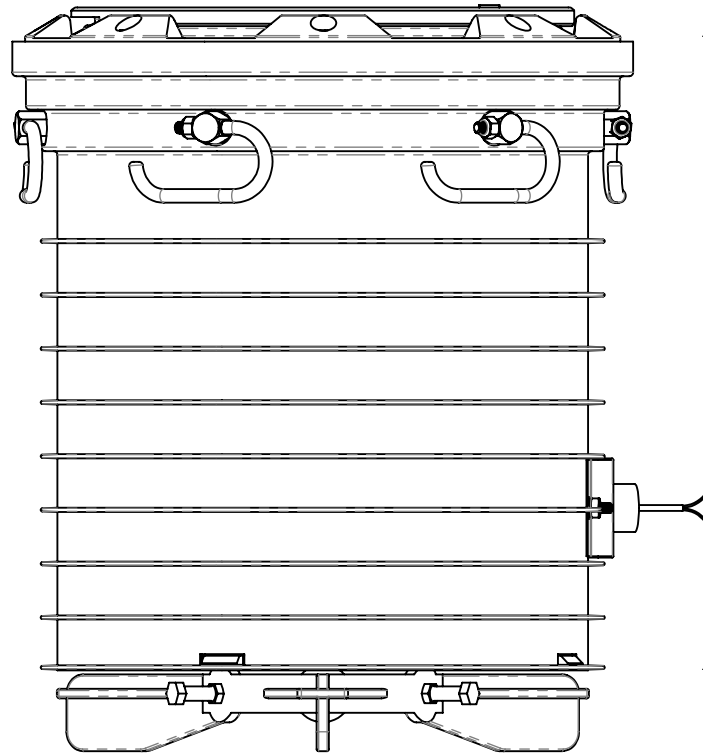
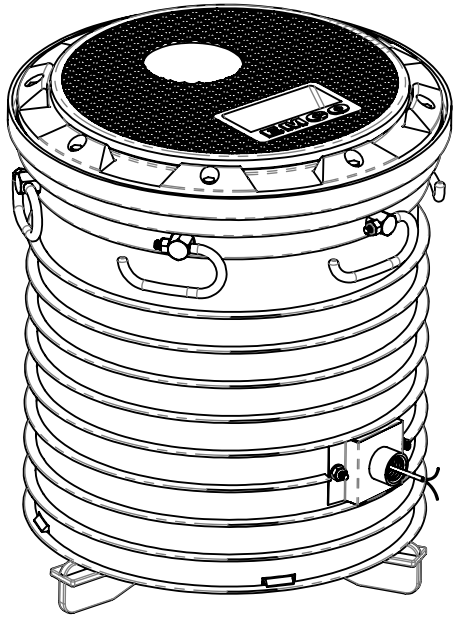
Updated 12/2018

OPW FCS Products	Description	Standard Fuels: ≤15% Ethanol Gasoline ≤5% Bio-Diesel*	High Ethanol Content Gasoline: 15-100% Ethanol	High Biodiesel Content 5-20% Biodiesel*	High Biodiesel Content 5-100% Biodiesel*	Av-Gas/ Jet Fuel	Kerosene/ Fuel Oil	DEF (Diesel Exhaust Fluid)
CXXA Double Wall Piping	Double Wall Primary Piping	X	X	X	X	X	X	X
DPC Series	Double Wall Pipe Couplings	X	X	X	X	X	X	
SPC Series	Single Wall Pipe Coupling	X	X	X	X	X	X	
SBC Series	Stainless Steel Swivel Bolt On Coupling	X	X	X	X	X	X	X
SMA-1515, SMA-1520, SMA-2020, SMA-3030	E-Coated Male Adaptors	X	X	X	X	X	X	
SMA-7575, SMA-1010	Swivel Male Adaptor (Brass or Zinc Plated)	X						X
STF-1515, STF-2020, STF-2215, STF-2020	E-Coated Swivel Tees	X	X	X	X	X	X	
SFA-7575, SFA-1010	Swivel Female Adaptor (Brass or Zinc Plated)	X						X
SEF-1515, SRE-2015, SEF-2020, SEF-3030	E-Coated Swivel Elbows	X	X	X	X	X	X	
Polyethylene and Fiberglass Sumps	Dispenser, Tank, Loop, and Transition Sumps	X	X	X	X	X	X	X
REF Series Entry Fittings	Entry Fittings	X	X	X	X	X	X	X
DEB and EBF Series	Entry Boots	X	X	X		X	X	X
1-2100 Series / Multiports / 1-2200 Series	Spill Containers	X	X	X	X	X	X	***
FibreTite Multiports	Spill Containers	X	X	X	X	X	X	***
101BG-Series	Spill Containers	X	X	X	X	X	X	***
1-3100 Series (Edge)	Double Wall & Single Wall Spill Container Series	X	X	X	X	X	X	***
60V Series	Vapor Line Shear Valve	X	X	X	X	X	X	
10 Series	Emergency Shut Off Valve	X	X	X	X	X	X	
10 Plus Series	Emergency Shut Off Valve	X	X	X	X	X	X	
60V-DEF	DEF Series Shear Valve							X
61SALP Series	Fill Swivel Adaptor	X	X	X	X	X	X	
633T-8076	Fill Adaptor	X	X	X	X	X	X	
61VSA Series	Vapor Swivel Adaptor	X	X	X	X	X	X	
1611AVB-1625	Vapor Adaptor	X	X	X	X	X	X	
634TT-7085-EVR	Fill Cap	X	X	X	X	X	X	
1711T-7085-EVR	Vapor Cap	X	X	X	X	X	X	
634LPC-040	Low Profile Fill Cap	X	X	X	X	X	X	
1711LPC-0300	Low Profile Vapor Cap	X	X	X	X	X	X	
62M Series	Monitoring Probe Cap	X	X	X	X	X	X	X
61SO & 71SO Series	Overfill Valve	X				X	X	
61SOM Series	Overfill Valve Anodized	X	X			X	X	
71SOM Series	Overfill Valve Anodized	X	X	X	X	X	X	
71SO-B Series	High BioDiesel Overfill Valve	X		X	X	X	X	
6111 & 61TP Series	Tank Bottom Protectors	X				X	X	
61T Series	Drop Tubes	X				X	X	
61T-SS Series	Stainless Steel Drop Tube	X	X	X	X	X	X	
61T-DEF Series	Stainless Steel DEF Drop Tube							X
233 Series	Extractor Valve	X	X	X	X	X	X	X
FCXX Series	Stainless Flex Connectors	X	X	X	X	X	X	X
53VML/30MV Series	Ball Floats	X	X	X	X	X	X	
523V Series	Pressure Vacuum Vent	X	X	X	X	X	X	X
623V Series	Pressure Vacuum Vent	X	X	X	X	X	X	X
723V Series	EVR Pressure Vacuum Vent	X	X	X	X	X	X	X

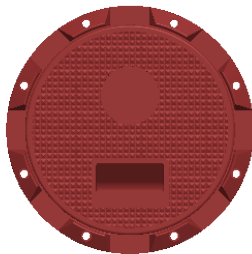
* Bio-Diesel must meet ASTM Standard for fuel quality to maintain compatibility with products above

*** Drain plug versions compatible with DEF if installed with Stainless Steel Drop Tube between Nipple and Fill Adaptor

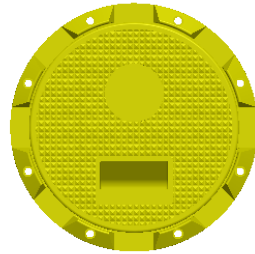
≤ Refers to less than or equal to the fuel standard rating for percentage of content



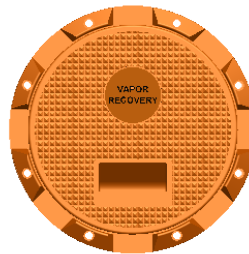
REGULAR/WHITE
A1005-517GCM-1Z



ULTRA/RED
A1005-517GCM-2Z



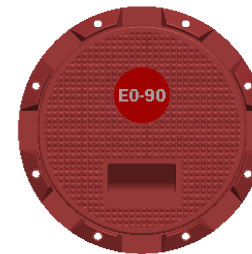
DIESEL/YELLOW
A1005-517GCM-3Z



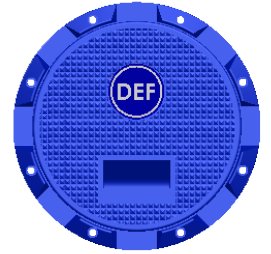
VAPOR/ORANGE
A1005-517GCM-4Z



E85/COPPER
A1005-517GCM-6Z



E0-90/RED
A1005-517GCM-CZ



DEF/BLUE
A1005-517GCM-9Z

DESCRIPTION:

Double Wall Spill Containment, Replaceable, Slip-on, SST Primary/SST Secondary, No Drain, Cast Iron Rim & Lid Powdercoated to API Colors, +Sensor, +Riser ID Tag, +Grounding Hardware



EMCO WHEATON RETAIL CORP.
2300 INDUSTRIAL PARK DRIVE
WILSON, N.C. 27893
emcoretail.com

DO NOT SCALE DRAWING-WORK TO DIMENSIONS SHOWN
DIMENSIONS ARE IN INCHES (DIMENSIONS IN BRACKETS ARE IN MILLIMETERS)

UNLESS OTHERWISE SPECIFIED
DECIMALS .X ± .030 .XX ± .015 .XXX ± .005 ANGLES ± 1°
CASTING TOLERANCES TO INDUSTRY STANDARDS
MACHINED SURFACES 125 RMS REMOVE ALL BURRS

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PART DESCRIPTION

DW 5GL SPILL CONTAINER
SST PRIMARY/ SST SECONDARY

SIZE	DRAWING NUMBER.	PAGE	REV.
A	A1005-517GCM-0Z	1/1	C

DRAWN BY	DATE	USED ON	CASTING NUMBER
CMB	1/7/2021		

GEMS LS-7 LEVEL SWITCH

FLOAT DIAMETER: 11/16"

WIRE LENGTH: 30'

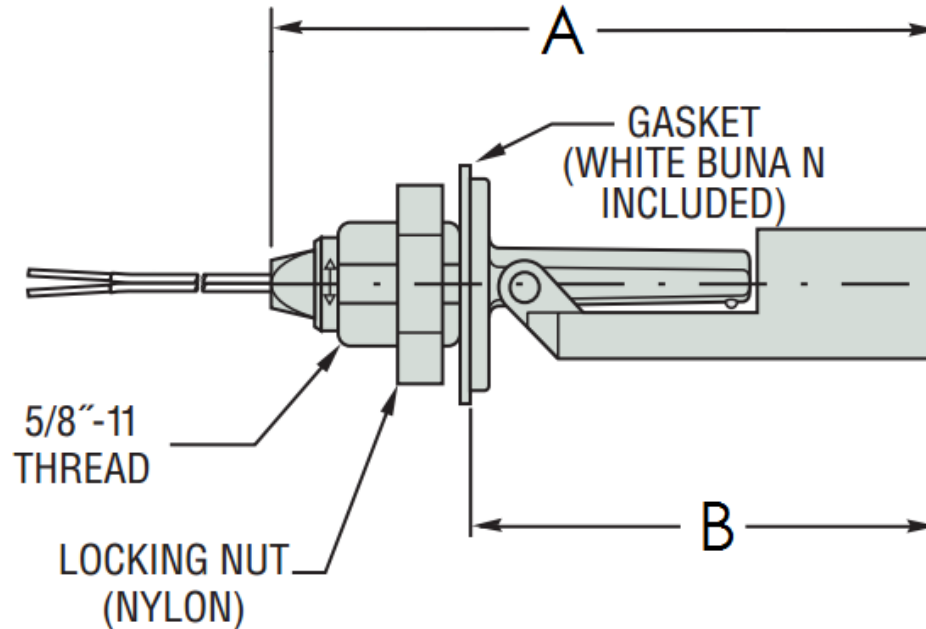
BRIDGE RESISTOR: 100kΩ

GEMS PART #: 607215

BODY MATERIAL: STAINLESS STEEL

A: 3.73"

B: 3.00"



http://www.gemssensors.com/level/Single-Point-Level-Switches/Float/Side-Mount/Engineered-Plastic/~media/Files/Gems/NorthAmerica/A_LS-7_2-7-13.pdf

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DO NOT SCALE DRAWING-WORK TO DIMENSIONS SHOWN
 DIMENSIONS ARE IN INCHES (DIMENSIONS IN BRACKETS ARE IN MILLIMETERS)

UNLESS OTHERWISE SPECIFIED
 DECIMALS ANGLES
 .X ± .030 .XX ± .015 .XXX ± .005 ± 1°
 CASTING TOLERANCES TO INDUSTRY STANDARDS MACHINED SURFACES 125 RMS REMOVE ALL BURRS

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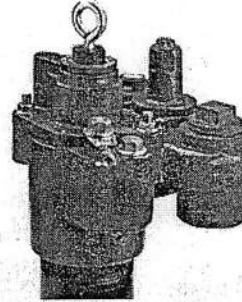
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CHECKED BY	DATE	PROJECT NUMBER
APPROVED BY	DATE	SCALE
		N/A
MATERIAL	WEIGHT	CASTING NUMBER
SEE NOTE		

50	PROPOSED	10/15/15	NPC
SYM	REVISIONS	DATE	BY
PART NAME			
LEVEL SWITCH # 607215			
A1004-001SEN			
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Pumps and ATGs

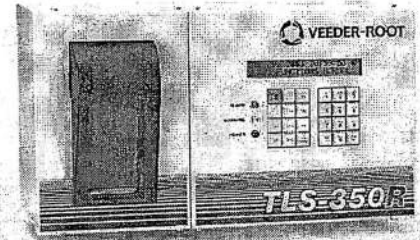
Red-Jacket Pumps

All Red-Jacket submersible turbine pump models including AG can be used for flexible fuels blended in conventional petroleum fuel. Capacities of 3/4 to 2 horsepower and lengths of 3'6" to 19'1/2" are available to accommodate various customer needs.



TLS Series of ATG

Compatible with flexible fuels, the TLS series of Automatic Tank Gauges has an integrated, modular design that allows station operators to choose the exact set of compliance and fuel management features needed. As regulatory requirements change, new features can be easily added to this flexible platform.



PRODUCT	DESCRIPTION	E85	BIODIESEL
VEEDER-ROOT © AUTOMATIC TANK GAUGES			
Veeder-Root TLS-300C 848590-521	ATG/TLS 1-2 UST configurable console with inventory monitoring and leak detection for non-retail applications	X	X
Veeder-Root TLS-350 Plus 848290-022	ATG/TLS UST monitoring console with magnetorestrictive probe capability, CSLD, site fax option, integral printer	X	X
Veeder-Root TLS-350 R 848290-122	ATG/TLS UST monitoring console with automatic inventory capability, BIR, CSLD, Accu-Chart tank calibration, integral printer	X	X
Gilbarco EMC	ATG/TLS UST Environmental Management Console with automatic inventory capability, BIR, CSLD, integral printer	X	X
Red Jacket ProMax	ATG/TLS UST console with integral printer, PLLD, CSLD, sensor input interface, and up to 4 probes / floats	X	X
Red Jacket ProPlus	ATG/TLS UST console with integral printer, CSLD, sensor input interface, and up to 4 probes / floats	X	X
VEEDER-ROOT © TANK PROBES AND SENSORS			
Mag Plus Stainless Steel Probe 846391-4xx to -6xx	PROBE Stainless steel alternative fuel probe (consult factory for biodiesel float kits)	X	X
Mag Plus Probe 847390-xxx	PROBE Regular magnetorestrictive probe (consult factory for biodiesel float kits)	X	X
794380-323	SENSOR Stainless Steel Position Sensitive Pan/Sump Sensor	X	X
794380-344	SENSOR Microsensor	X	X
794380-345	SENSOR Stainless Steel Interstitial Solid State Sensor for Fiberglass Tanks	X	X
794380-430	SENSOR Stainless Steel Interstitial Sensor for Steel Tanks	X	X
RED-JACKET © SUBMERSIBLE TURBINE PUMPS AG			
AGP75S1 RJ2	STP 102" - 162", PN# 410140-019	X	
AGP150S1 RJ2	STP 104.5" - 165", PN# 410141-020	X	
AGP200-S1-3 RJ2	STP 108.5" - 168.5", PN# 410142-020	X	

Call today to learn more.

If you are interested in learning more about the full range of products to support flexible fuels or if you have any specific questions please contact Veeder-Root today: 888.561.7942.

Toll free 888.561.7942
125 Powder Forest Drive
Simsbury, CT 06070



Ordering Information continued

Variable Speed Submersible Turbine Pumps

Variable speed, variable length.

Model	Description	Model Length Range Number	Model Length Range*
STPMVS2-VL1	2 hp variable speed with MagShell™	VL1	59" - 87"
STPMVS2-VL2	2 hp variable speed with MagShell™	VL2	90" - 151"
STPMVS2-VL3	2 hp variable speed with MagShell™	VL3	122" - 213"
STPMVS4-VL1	4 hp variable speed with MagShell™	VL1	64" - 92"
STPMVS4-VL2	4 hp variable speed with MagShell™	VL2	95" - 156"
STPMVS4-VL3	4 hp variable speed with MagShell™	VL3	127" - 218"

Variable Speed Intelligent Submersible Turbine Pumps

Variable speed, variable length, and AG compatible.

Model	Description	Model Length Range Number	Model Length Range*
ISTM-1	2 hp variable speed with MagShell™	VL1	59" - 87"
ISTM-2	2 hp variable speed with MagShell™	VL2	90" - 151"
ISTM-3	2 hp variable speed with MagShell™	VL3	122" - 213"
ISTMVS4-VL1	4 hp variable speed with MagShell™	VL1	64" - 92"
ISTMVS4-VL2	4 hp variable speed with MagShell™	VL2	95" - 156"
ISTMVS4-VL3	4 hp variable speed with MagShell™	VL3	127" - 218"

Notes:

- Remove "M" from model number for non-MagShell™ pump motor assembly.
- All STP models are UL and cUL listed for compatibility with fuel mixtures containing up to 10% ethanol with gasoline, up to 5% biodiesel with diesel fuels, and 20% MTBE, 20% ETBE or 17% TAME with gasoline.
- All IST models are compatible with fuel mixtures containing diesel fuel with up to 20% biodiesel, 100% biodiesel, up to 85% ethanol with gasoline, and 20% MTBE, 20% ETBE or 17% TAME with gasoline.
- All models are supplied with a standard check valve unless factory option "R" or "W" is specified.
- All above models can only be powered by a MagVFC™. 4 hp models require three-phase incoming power supply, 2 hp models can be supplied with single- or three-phase incoming power.
- 4" riser pipe, if supplied locally, must be 4½" OD by 3/16" WT tubing.
- For riser pipe length 31" to 60", additional charge applies.

*Model length (A) defined as the dimension from turbine manifold bottom to pump motor inlet.

Factory Installed Options

Specified in model number at time of STP order.

Model	Description
F	Floating suction adapter, 1½" NPT female, must be factory installed
K	IFS (intake filter screen) factory assembled to pump motor assembly
R	Model R check valve, factory installed, for Veeder-Root™ PLLD Line Leak
W	Model W check valve, factory installed, for Red Jacket PPM4000 Line Leak

Field Installed Options

Intelligent submersible turbine pump specific accessories.

Model	Description
5874202800	MagVFC™, 2 hp or 4 hp variable frequency controller, one required per STPM VS2 or VS4
400137908	Syphon check valve, alcohol-gasoline compatible (when ordered with STPM VS2 or VS4)
402459931	Model 65 psi check valve (for slave of manifolded STPM VS2 or VS4 with Veeder-Root™ PLLD)
402507930	Secondary syphon kit (when two syphon primes are required for one STPM VS2 or VS4)
5800300100	STP-DHI dispenser hook isolation for 110 Volt dispenser handle switches, up to eight each

Specifications and Compatible Fluids Requirements

The table below lists Veeder-Root Line Leak Detector specifications.

SPECIFICATION	PLLD	WPLLD
OPERATING TEMP:	-25 TO +130°F	-25 TO +130°F
COMPATIBLE FUELS:	UNLEADED GASOLINE LEADED GASOLINE 5% METHANOL / 95% UNLEADED 0 - 100% ETHANOL 10% ETHANOL / 90% UNLEADED 15% MTBE / 85% UNLEADED DIESEL KEROSENE JET FUEL AVIATION GASOLINE	UNLEADED GASOLINE LEADED GASOLINE 5% METHANOL / 95% UNLEADED 10% ETHANOL / 90% UNLEADED 15% MTBE / 85% UNLEADED DIESEL KEROSENE JET FUEL AVIATION GASOLINE
LINE FLOW RATE:	120 GPM MAX. W/SWIFTCHECK VALVE	120 GPM MAX. W/SWIFTCHECK VALVE
OPERATING RANGE:	0 - 70 PSI	0 - 70 PSI
PROOF PRESSURE:	200 PSI	200 PSI
MAX. VERTICAL PIPELINE HEIGHT ABOVE TRANSDUCER:	11 FEET	11 FEET
MINIMUM PUMP OUTPUT PRESSURE*	23 psi	23 psi

*Pump output pressure should be a minimum of 4 psi above the check valve's relief pressure.

All Veeder-Root Line Electronic Leak Detectors require a TLS-350 and TLS-4XX Console with installed system software versions shown in the table below.

LINE LEAK DETECTOR TYPE	TLS-350 REQUIRED SYSTEM SOFTWARE	TLS-4XX REQUIRED SYSTEM SOFTWARE
PLLD	VERSION 7 OR HIGHER	VERSION 1 OR HIGHER
WPLLD	VERSION 12 OR HIGHER	NOT AVAILABLE

Veeder-Root recommends that system software for the console be upgraded to the latest version when installing any new hardware. For TLS-350 Consoles, when installing Version 19 software and subsequent releases, PLLD or WPLLD must be specified and customer must upgrade to ECPU2 if not already installed. See Accessories/Upgrades section of price book or your local Veeder-Root authorized distributor for details.

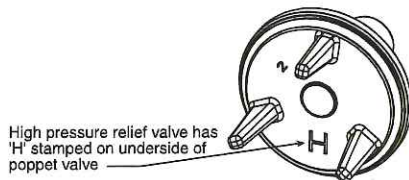
Check Valve Requirements

DPLLD, PLLD and WPLLD require certain check valves or Pressurstat assemblies to be installed on the pump. Use of non-compatible check valves can result in loss of leak detection performance.

SUPPORTED PUMPS	CHECK/RELIEF VALVE TYPE	3.0 GPH ONLY TESTING (REQ'D. KIT)	3.0, 0.2, 0.1 GPH TESTING (REQ'D. KIT)	ADDITIONAL REQ'D. PARTS FOR MANIFOLDED LINES (SINGLE TANK W/ 2 STPs, OR 2 OR MORE TANKS W/ STP IN EACH)
DPLLD/PLLD Applications				
The Red Jacket	None Required	848480-001 (TLS-350) 859080-001 (TLS-450)	848480-001 (TLS-350) 859080-001 (TLS-450)	Check Valve for Each Slave Pump P/N 410153-002 (See illustration in Note 1 below)
Quantum (All Models) (See Note 2 below)	Red Jacket SpikeCheck Valve (Factory Installed)	848480-001 (TLS-350) 859080-001 (TLS-450)	848480-001 (TLS-350) 859080-001 (TLS-450)	Red Jacket Quantum SpikeCheck Valve, Non-PSI Relief Valve, Required for Each Slave Pump, P/N 388-081-5 (Field Installed Only)
	Red Jacket SpikeCheck Valve (Field Only Installed) P/N 388-080-5	848480-001 (TLS-350) 859080-001 (TLS-450)	848480-001 (TLS-350) 859080-001 (TLS-450)	
	Red Jacket Pressurstat Assembly.	848480-001 (TLS-350) 859080-001 (TLS-450)	----- Not supported -----	Non-Vented SwiftCheck Valve for Each Slave Pump kit, P/N 330020-416
Standard (All Models)	SwiftCheck	848480-003 (TLS-350) 859080-002 (TLS-450)	848480-003 (TLS-350) 859080-002 (TLS-450)	Non-Vented SwiftCheck Valve for Each Slave Pump kit, P/N 330020-416
	Red Jacket Functional Element Assembly	848480-001 (TLS-350) 859080-001 (TLS-450)	----- Not supported -----	
	Red Jacket SpikeCheck Valve (Field Installed Only) P/N 410557-001	848480-001 (TLS-350) 859080-001 (TLS-450)	848480-001 (TLS-350) 859080-001 (TLS-450)	Red Jacket Standard SpikeCheck Valve, Non-PSI Relief Valve, Required for Each Slave Pump, P/N 410557-002 (Field Installed Only)
Maxxum	None Required	848480-001 (TLS-350) 859080-001 (TLS-450)	848480-001 (TLS-350) 859080-001 (TLS-450)	See Note 4 below.
Big-Flo	Pressurstat Kit P/N 144-314-5		(See Note 3 below)	
FE Petro	FE Petro Model R P/N 400988932 and Replacement O-ring for the Valve Housing (See Note 4 below)	848480-001 (TLS-350) 859080-001 (TLS-450)	848480-001 (TLS-350) 859080-001 (TLS-450)	Non-Vented SwiftCheck Valve for Each Slave Pump kit, P/N 330020-416 ---- OR ---- FE Petro 65 psi Relief Check Valve (FE P/N 402459931) (See Note 5 below)
	FE Petro Model R Relief Valve P/N 401330902			
Tokheim & Bennett	SwiftCheck	848480-003 (TLS-350) 859080-002 (TLS-450)	848480-003 (TLS-350) 859080-002 (TLS-450)	Non-Vented SwiftCheck Valve for Each Slave Pump kit, P/N 330020-416
WPLLD Applications				
The Red Jacket	None Required	849490-006	849490-006	High Pressure Check Valve for Each Slave Pump, P/N 410153-002 (See illustration in Note 1 below)
Quantum (All Models) (See Note 2 below)	Red Jacket SpikeCheck Valve (Factory Installed)	849490-005 (Except CPT)	849490-005 (Except CPT)	Non-Vented SwiftCheck Valve for Each Slave Pump kit, P/N 330020-416
	Red Jacket Pressurstat Assembly	849490-005 (Except CPT)	----- Not supported -----	
Standard (All Models)	SwiftCheck	849490-002 (Except CPT)	849490-002 (Except CPT)	
	Red Jacket Functional Element Assembly	849490-003 (Except CPT)	----- Not supported -----	
FE Petro	FE Petro Model R P/N 400988932 and Replacement O-ring for the Valve Housing (See Note 5 below)	849490-001	849490-001	Non-Vented SwiftCheck Valve for Each Slave Pump kit, P/N 330020-416 ---- OR ---- FE Petro 65 psi Relief Check Valve (FE P/N 402459931) (See Note 5 below)

NOTES:

- The Veeder-Root High Pressure Check Valve (P/N 410153-002) is shown below:



- For Red Jacket Quantum pumps, the SpikeCheck is the preferred check valve type.
- 0.2/0.1 gph testing is supported for the Maxxum pump, but you must select 'User Defined' as the pipe type during DPLLD or PLLD setup.
- If maximum pump pressure is NOT a minimum of 5 psi below the pressurstat relief setting, then a check valve must be installed in the discharge line of the slave pump (see "Manifolded Line Applications" on page 11).
- Veeder-Root does not warrant the performance of FE Petro's Model 'R' check valve or 65 psi relief check valve.

TECHNICAL DATA

2013

Description

A dark green, opaque, viscous, non-hardening, textured paste with PTFE.

Type

Slow-drying, soft-setting, non-toxic, brushable, without grit. Cures by solvent evaporation providing a durable, long-lasting seal that can be easily disassembled.

Typical Uses

Especially designed for ethanol blended gasoline including E10, E20 & E85.

Substrates

Can be used on brass, copper, stainless steel, aluminum, black pipe, tin, galvanized pipe, ABS plastic, CPVC, nylon, PVC, polyethylene, polypropylene and more.

Chemical Resistance

Excellent resistance to ethanol blended gasoline, kerosene, petroleum solvents, diesel fuel, propane, butane, LPG, water, cutting oils. NOT oxygen.

Set Time

None. For immediate service
Dries to the touch 48-72 hour

Packaging

Available in 1/4 pint, 1/2 pint and pint cans with brush-top lids.

For Chemical Emergency, Spill, Leak,
Fire, Exposure or Accident Call:
CHEMTREC - Day or Night. 1-800-424-9300
KEEP OUT OF THE REACH OF CHILDREN

Product Data Sheet

Safety

Contains no lead, is non-toxic, not a skin sensitizer, and is non-corrosive.

Shelf Life: One year in original containers, when stored at room temperature at or below 80°F (27°C)

Wt./Gal.: 11.35 lbs

Color: Medium/Green

Clean Up: Hand cleaner or alcohol.

Temperature Range

-100°F to 600°F (-73°C to 316°C)
Allow to dry thoroughly before exposing to high temperatures. Remains usable in sub-zero weather.

Pressure Range

Up to 10,000 psi when sealing liquids and up to 3,000 psi with gases. Allow to dry, if possible, before subjecting to pressure.

The information presented is in good faith, but no warranty is given, nor are results guaranteed. Federal Process has no control over physical conditions surrounding application conditions. Federal Process disclaims any liability for untoward results.



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MSDS Sheets Available Online

#DS-ES

Magnetostrictive Probes for Alternative Fluids

Certified performance for inventory control and in-tank leak detection in fuel blends up to 100% alcohol

Veeder-Root offers two types of Magnetostrictive Probes for Alternative Fluids to provide highly accurate, trouble-free in-tank leak detection and inventory control in fluids of up to 100% alcohol. The Magnetostrictive Probe for Alternative Fluids with water detection is ideal for fuel blends with less than 20% alcohol. The Magnetostrictive Probe for Alternative Fluids without water detection has been developed for fluids up to 100% alcohol.

Series 8463 0.1 GPH Mag Probe for Alternative Fluids

The 0.1 GPH Mag Probe for Alternative Fluids has been third-party tested and certified to perform far better than the U.S. E.P.A. standards for both 0.1 GPH volumetric tank tightness testing and 0.2 GPH automatic tank gauging. (See the summary of leak test performance on back or call us for a copy of the complete test results.)

0.1 GPH Mag Probe and CSLD — Leak detection without shutting down your tanks!

CSLD, Continuous Statistical Leak Detection, is an advanced tank testing technology that makes full use of the TLS-300 and TLS-350(R)'s in-tank monitoring capabilities. CSLD eliminates the need for tank shutdown to perform a leak test — no lost business, no lost operating time!

The TLS-300 and TLS-350(R) equipped with CSLD use the 0.1 GPH Mag Probe to continuously monitor fuel height and temperature information to detect idle times in the tank. During each idle time, data collected forms a highly accurate leak detection database. Sophisticated statistical analysis techniques in CSLD constantly evaluate the database to discard invalid data and perform leak tests based on only high-quality information in the current database. In fact, a new leak test is performed every time new data from an idle period is added.

Series 8463 0.2 GPH Mag Probe for Alternative Fluids

The 0.2 GPH Mag Probe for Alternative Fluids provides the same reliable inventory control features and fluid compatibility as the 0.1 GPH Mag Probe for Alternative Fluids, but offers 0.2 GPH leak detection at a lower cost.

The 0.2 GPH Mag Probe for Alternative Fluids has also been third-party tested and certified to exceed U.S. E.P.A. standards for 0.2 GPH automatic tank gauging. (See the summary of leak test performance on back or call us for a copy of the complete test results.)

Approved for Aboveground Tank Applications

Veeder-Root Magnetostrictive Probes are approved for use in aboveground storage tanks to monitor fuel inventory. An AST installation Kit (Form Number 312020-984) is required for these applications and is available from Veeder-Root, Customer Service 800-873-3313 or your authorized Veeder-Root distributor.

Features & Benefits

- Non-corrosive, stainless steel tubing for long-life monitoring in fuels up to 100% alcohol
- Highly accurate Magnetostrictive measurement technology
- Fast accurate leak tests
- 0.1 GPH Mag Probe for Alternative Fluids is third-party certified to exceed U.S. E.P.A. performance standards for 0.1 GPH Volumetric Tank Tightness Testing
- 0.1 GPH Mag Probe for Alternative Fluids is compatible with TLS-300 and TLS-350R with CSLD for continuous statistical leak detection
- 0.2 GPH Mag Probe for Alternative Fluids is third-party certified to exceed U.S. E.P.A. performance standards for 0.2 GPH Automatic Tank Gauging
- 2", 3" and 4" Float Kits available

Magnetostrictive Probes for Alternative Fluids are available in 0.1 GPH and 0.2 GPH Versions



Probe Models

Tank I.D.	Mag Plus Probes for Alternative Fluids with Water Detection Part No*			Mag Plus Probes for Alternative Fluids without Water Detection Part No*		
	0.1 GPH Leak Detection	0.2 GPH Leak Detection	Inventory Only	0.1 GPH Leak Detection	0.2 GPH Leak Detection	Inventory Only
4'	846391-101	846391-201	846391-301	846391-401	846391-501	846391-601
5'	846391-102	846391-202	846391-302	846391-402	846391-502	846391-602
5'4"	846391-103	846391-203	846391-303	846391-403	846391-503	846391-603
6'	846391-104	846391-204	846391-304	846391-404	846391-504	846391-604
7'	846391-105	846391-205	846391-305	846391-405	846391-505	846391-605
7'6"	846391-106	846391-206	846391-306	846391-406	846391-506	846391-606
8'	846391-107	846391-207	846391-307	846391-407	846391-507	846391-607
9'	846391-108	846391-208	846391-308	846391-408	846391-508	846391-608
9'6"	846391-117	846391-217	846391-317	846391-417	846391-517	846391-617
10'	846391-109	846391-209	846391-309	846391-409	846391-509	846391-609
10'6"	846391-110	846391-210	846391-310	846391-410	846391-510	846391-610
11'	846391-111	846391-211	846391-311	846391-411	846391-511	846391-611
12'	846391-112	846391-212	846391-312	846391-412	846391-512	846391-612
2.0M	846391-113	846391-213	846391-313	846391-413	846391-513	846391-613
2.5M	846391-114	846391-214	846391-314	846391-414	846391-514	846391-614
2.67M	846391-116	846391-216	846391-316	846391-416	846391-516	846391-616
3.0M	846391-115	846391-215	846391-315	846391-415	846391-515	846391-615
Custom Length	846391-199	846391-299	846391-399	846391-499	846391-599	846391-699

*Float kits must be ordered separately from probes, water floats not recommended for fuel blends with >20% alcohol

Floats Match Table

Product	Probe	Functions	Float Kit
Gasoline (<=20% Alcohol)	Mag Plus Probe for Alternative Fluids with Water Detection P/N 846391-1xx or -2xx	Inventory: Yes Leak Detection: Yes Water detection: Yes	Gasoline Float Kit P/N 846400-xy0* (*see note for definition of xy below)
	Inventory Only Mag Plus Probe for Alternative Fluids with Water Detection P/N 846391-3xx	Inventory: Yes Leak Detection: No Water detection: Yes	
Alcohol / Ethanol (<=100% Alcohol, including E85) Methanol (<=100% Alcohol) ETBE (<=100% Ether) MTBE (<=100% Ether) Used Oil	Mag Plus Probe for Alternative Fluids without Water Detection P/N 846391-4xx or -5xx	Inventory: Yes Leak Detection: Yes Water Detection: No	Alternative Fluids Float Kit P/N 846400-xy4* *Notes: x=0 -> 4" floats x=1 -> 2" floats x=3 -> 3" floats y=0 -> 5' cable y=1 -> 10' cable y=2 -> 20' cable
	Mag Plus Probe for Alternative Fluids without Water Detection P/N 846391-6xx	Inventory: Yes Leak Detection: No Water Detection: No	
Fuel Oil #4 & #6 Fuel Oil #4 & #6 Ethylene Glycol Propylene Glycol Windshield Washer Fluid	Mag Plus Probe for Alternative Fluids without Water Detection P/N 846391-6xx	Inventory: Yes Leak Detection: No Water Detection: No	

Leak Test Performance (Third Party Certified for all TLS-3xx Consoles*)

PROBE	TEST TYPE	P(D)	P(FA)	TEST TIME
0.1 GPH Mag Probe	0.1 GPH	99%	1%	3 Hours
0.1 GPH Mag Probe	0.2 GPH	99%	<.1%	2 Hours
0.1 GPH Mag Probe w/CSLD	0.2 GPH	99%	<.1%	Continuous
0.2 GPH Mag 2	0.2 GPH	99%	<.1%	2 Hours

Veeder-Root reserves the right to change product specifications without advance notice. Please ensure that you are using the latest version of product literature.



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Telephone: 860-651-2700 • Fax : 860-651-2719 • www.veeder.com



Top Adapter

Defender Series™ Overfill Prevention Valve

The Defender Series™ overfill prevention valve (OPV) is a self contained two-stage positive shut-off valve that prevents the overfill of an underground storage tank (UST) during a gravity-fed product delivery. The Defender Series™ OPV employs a revolutionary magnetically-coupled actuator system to provide positive shutoff. This unique method of shutoff eliminates any penetrations in the valve, making it both vapor and leak tight. The Defender Series™ OPV provides safe, rapid, and reliable fuel drops for the broadest range of fuel applications and environmental conditions. Simple to install, service and test remotely, the Defender Series™ OPV is the industry's most versatile overfill prevention valve.

Highlights

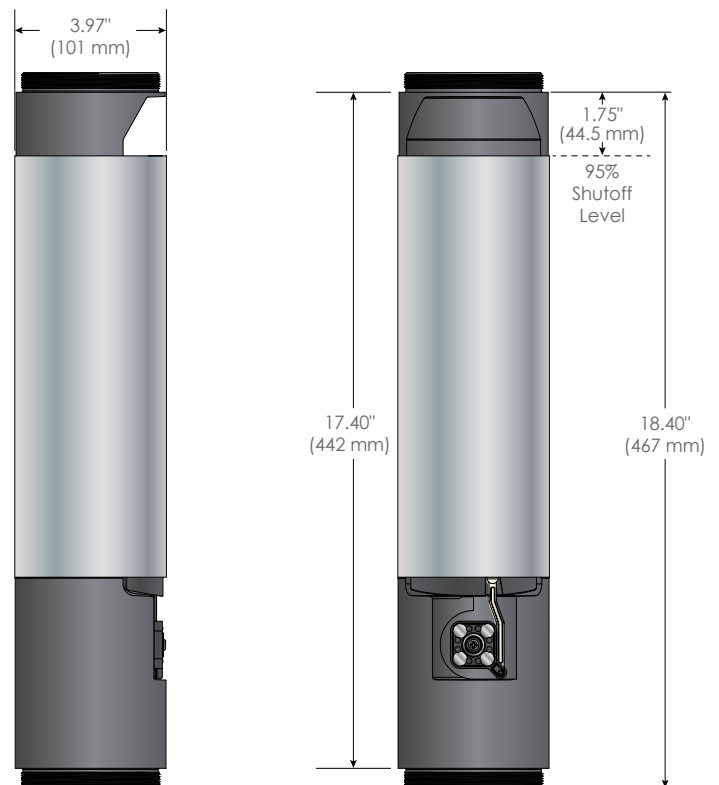
- Magnetic coupler actuates the interior primary flapper assembly and secondary shut-off valve when the float rises outside of the valve, eliminating valve body penetrations and any potential product or vapor leak points.
- After cutting to length in the field, the upper drop tube is roll-cripped onto a top adapter outfitted with two O-rings and then threaded onto the top of the valve body, eliminating the need for drilling, rivets, epoxy, and flaring tools.
- Bottom drop tube is cut in the field and threaded onto the bottom of the valve ensuring straight installation.
- The roll-crimp/thread method of installing drop tubes ensures proper alignment of the drop tubes with the rest of the OPV assembly, making installation and removal of the entire assembly smooth.
- Damaged drop tubes can be easily replaced instead of having to purchase an entire new assembly.
- Fully compatible with gas, gas/alcohol blends, diesel and biodiesel.
- Compatible with industry standard 4" drop tubes allowing retrofit into existing installations.
- The entire OPV assembly remains within the 4" inner diameter of the riser preventing interference with other tank components and also allowing removal even while the tank is full.
- Actuates in both low and high flow applications and functions within a broad range of flow rates from 25 gpm to 370 gpm (95 lpm to 1,400 lpm).
- The remote testing tool allows for remote testing of the primary functionality without having to remove the OPV from the riser.

Specifications

Approvals/Certifications

- ULc listed.
- ATEX approved.

Dimensions



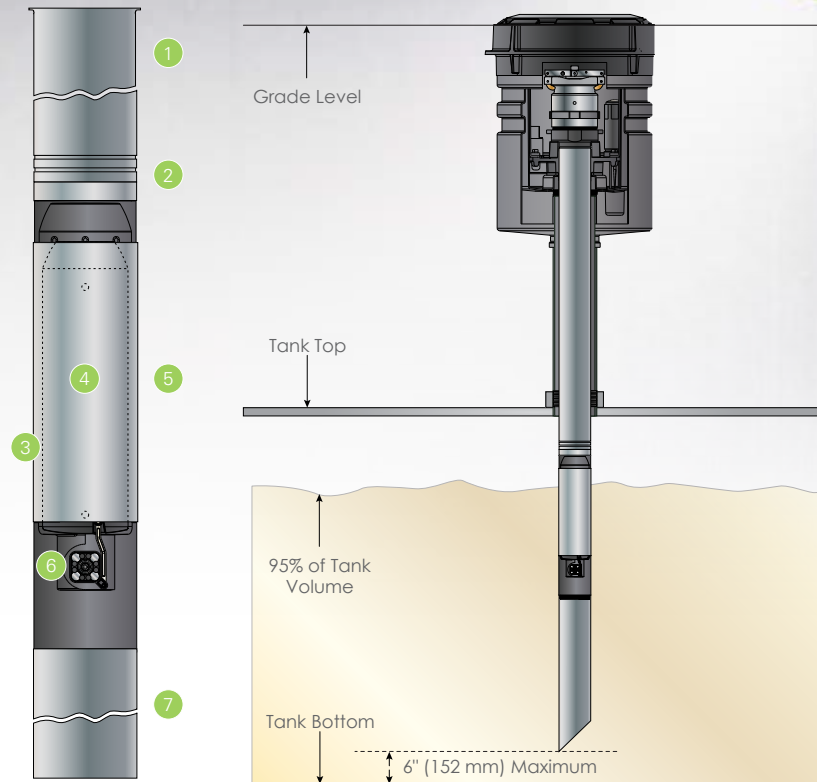
Specifications continued

Components

- 1 Pre-flanged aluminum top drop tube
- 2 Roll-crimped top fitting/drop tube
- 3 Protective float sleeve
- 4 Float (shielded by float sleeve)
- 5 Valve Assembly
- 6 Magnetically-coupled actuator
- 7 Threaded bottom drop tube

Operation

As the liquid level in the UST approaches 95% capacity, the liquid level raises the float. As the float rises it actuates the external/internal magnetic couplers which release the flapper to be closed by the flow of product. As the float continues to rise, the internal mechanism pushes the flapper further into the product flow to allow actuation at high or low flow rates. This sudden reduction in flow caused by the primary flapper closing creates "line shock" to the fill hose which signals the delivery driver that the tank is nearing 95% capacity. As the float continues to rise to the 95% fill level, the secondary closes, completely stopping the flow of fuel.



Ordering Information

Model	Description
708591901	Defender Series™ overfill prevention valve with 5' top drop tube, 8' bottom drop tube
708591902	Defender Series™ overfill prevention valve with 5' top drop tube, 10' bottom drop tube
708591921	Defender Series™ overfill prevention valve with 5' top drop tube, 8' bottom drop tube, AGB compatible*
708591922	Defender Series™ overfill prevention valve with 5' top drop tube, 10' bottom drop tube, AGB compatible*
708592901	Defender Series™ overfill prevention valve with 10' top drop tube, 8' bottom drop tube
708592902	Defender Series™ overfill prevention valve with 10' top drop tube, 10' bottom drop tube
708592921	Defender Series™ overfill prevention valve with 10' top drop tube, 8' bottom drop tube, AGB compatible*
708592922	Defender Series™ overfill prevention valve with 10' top drop tube, 10' bottom drop tube, AGB compatible*
708593901	Defender Series™ overfill prevention valve, coaxial with 6.5' top drop tube, 8' bottom drop tube
708593902	Defender Series™ overfill prevention valve, coaxial with 6.5' top drop tube, 10' bottom drop tube
708593923	Defender Series™ overfill prevention valve, poppeted coaxial with 6.5' top drop tube, 8' bottom drop tube
708593924	Defender Series™ overfill prevention valve, poppeted coaxial with 6.5' top drop tube, 10' bottom drop tube
708594901	Defender Series™ overfill prevention valve only with top adapter, AGB compatible*
708594902	Defender Series™ overfill prevention valve only with coaxial top adapter, AGB compatible*
708535901	Roll crimping tool
708530930	Replacement roll crimper tool roller bit for retrofit with existing tool
708534901	Remote testing tool, 11' long sectional/collapsible

*Alcohol, gas, biofuel compatible (E-85, gasoline and biodiesel) models come with hard coated anodized drop tubes for full compatibility.



A Franklin Fueling Systems Brand

franklinfueling.com

3760 Marsh Rd. • Madison, WI 53718, USA
Tel: +1 608 838 8786 • Fax: +1 608 838 6433
Tel: USA & Canada +1 800 225 9787 • Tel: UK +44 (0)1473 243300
Tel: Mex 001 800 738 7610 • Tel: FR +33 (0)1 69 21 41 41 • Tel: CH +86 10 8565 4566

