


Product Description	The Veeder-Root HydrX Fuel Conditioning System combats in-tank corrosion by providing continuous water removal within diesel storage tanks. HydrX unique design removes water from the lowest point in the tank, preventing water from stagnating on the tank bottom and breeding microbial contaminants. The integrated filtration removes entrained water, rust, sand, and microbial particulate from the fuel, polishing it before returning clean fuel back to the tank.			
System Features	System Description			
	The Fuel Conditioning System shall be of coalescing type with integrated filtration and provide continuous water removal. The Fuel Conditioner shall install in the Submersible Turbine Pump (STP) sump, mounted to a 4" riser that houses the Guide Tube and Water Intake Device.			
	Fuel Conditioner		Water Intake Device (WID)	
	The Fuel Conditioner is a fully integrated system that effectively removes water and maintains fuel cleanliness. The Fuel Conditioner includes two automatic solenoid valves that control the flow of water removed from the bottom of the diesel storage tank and the flow of clean fuel returning back to the tank. Integrated sensors enable predictable maintenance for the site operator. The Fuel Conditioner comes in two models: HydrX 250D with a 2.5-gallon waste water capacity and HydrX 500D with a 5.0-gallon waste water capacity.		The WID contains 1-6 fluid transfer tubes (depending on the configuration of the tank) that extend along the tank bottom to the lowest point of the tank. The WID operates in multiple modes and is powered by the STP to circulate fluids through the Fuel Conditioner in the sump. Vacuum mode uses suction from the STP port to pull fuel, water and particulate into the Fuel Conditioner. Sweep mode uses clean fuel to push water and particulate to the lowest point in the tank where it is then extracted using vacuum mode. Polishing mode is activated when the vacuum and sweep modes are complete (i.e., no more water is being collected).	
	Guide Tube		STP Adapter	
	The Guide Tube is a reinforced composite tube that extends vertically into the tank below the Fuel Conditioner through a custom riser. The Guide Tube provides mounting and precise orientation of the WID. A stainless steel elbow at the distal end guides the WID along the tank bottom.		The STP Adapter is a stainless steel connector that links an STP port through a standard hose fitting that connects to the Fuel Conditioner. An integrated ball valve on the STP Adapter allows for maintenance on the Fuel Conditioner without shutting down the STP.	
	HydrX Software Enhancement Feature		Filters	
The HydrX Software Feature Enhancement allows for full system control through a TLS-450PLUS or TLS4 Automatic Tank Gauge (ATG), and remote access to settings, system status, reporting, and alarms through the Web UI.		Two filters are installed in the Fuel Conditioner housing. The inlet filter is a two-stage particle and coalescing type filter. The outlet filter is a single stage fine water separating element that provides a fine polish for optimal fuel quality.		
Specifications	System Specifications			
	Operating Temperature	-4°F (-20°C) to 122°F (50°C)	Fuel Compatibility	100% Diesel
	Storage Temperature	-40°F (-40°C) to 158°F (70°C)		Biodiesel (B100)
	Installation Location	STP Sump and Diesel Storage Tank		Biodiesel Blends
	Relative Humidity	0-100% (Condensing)		
	Waste Water Capacity	2.5-gallons or 5.0-gallons		
	Filtration	25 microns		
	Water Removal	Multi-port water removal throughout the tank bottom and from the lowest point in the tank.		
	Intelligent Operation	Pump utilization is optimized based on water removal. HydrX gives the user complete control over how much time is allotted per day to polish the fuel. Logic is built-in to prevent freezing under extreme temperature conditions.		
	Fuel Conditioner External Dimensions			
	HydrX 250D (2.5-Gallons)	23" (H) x 15" (W) x 12" (D)		
	HydrX 500D (5.0-Gallons)	30" (H) x 15" (W) x 12" (D)		

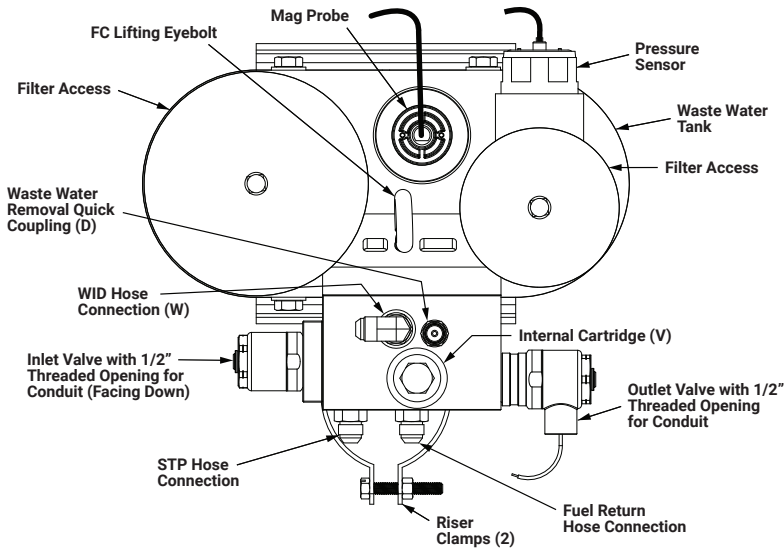
System Construction		
Fuel Conditioner		
Lifting Eyebolt	Stainless Steel	
Waste Water Tank		
Water Removal Fitting		
WID Hose Connection		
Filter Housing & Access Caps	Anodized Aluminum	
Solenoid Manifold		
Guide Tube		
Elbow	Stainless Steel	
Guide Tube Flange		
Tube	Fiberglass Reinforced Composite	
Water Intake Device (WID)		
Body	Stainless Steel	
Fittings		
Vacuum Tip Sled		
WID Manifold		
Intake Lines	Fluorinated Ethylene Propylene (FEP)	
Sleeve	Polyethylene/Polyester	
Approvals & Manuals		
Component Approvals	Solenoid Valve: UL/cUL recognized components, reference UL/cUL E37780 Intrinsically Safe Sensors: UL/cUL listed, reference UL/cUL MH11766	
	HydrX Fuel Conditioning System Installation Manual	577014-446
	HydrX Fuel Conditioning System Quick Help – ATG Control	577014-493
Manuals	HydrX Fuel Conditioning System Setup & Operation Manual – ATG Control	577014-492
	HydrX Fuel Conditioner Inlet/Outlet Filter Replacement Instructions	577014-473
	HydrX Fuel Conditioner Waste Water Tank Draining Instructions	577014-474
	HydrX Fuel Conditioner Mag Probe Replacement Instructions	577014-469
	HydrX Fuel Conditioner Siphon Cartridge Service/Installation Guide	577014-478
	HydrX Fuel Conditioner Offset Mounting Bracket Installation Guide	577014-476
	HydrX Fuel Conditioner Pressure Sensor Replacement Instructions	577014-470
Site Requirements	System Requirements	
	Equipment Requirements	
	<ul style="list-style-type: none">TLS-450PLUS or TLS4 ATG with TLS-XB Expansion Box with software version 10.F or higherCompatible with 4" STPs only, up to 4 HPVeeder-Root Compatible STP Models: The Red Jacket®, The Red Jacket AG, and The Red Armor®FE Petro® Compatible STP Models: MagShell™ fixed speed and variable speed STPs with MagVFC™Universal Sensor Module (USM) with 2 unused inputs and a Universal Input/Output Module (UIOM) with 3 unused relay outputs and 1 unused high-voltage inputIntelligent Pump Control (IPC) must be disabled on the diesel line and the ATG Pump Control must be used for diesel productSTP must have a spare pressure portSiphon manifolded tanks without STPs are not supported <p>Note: Sump sensors are recommended with HydrX and may be required by local jurisdictions having authority</p>	

Site Requirements (Continued)	System Requirements (Continued)		
	Tank Requirements		
	<ul style="list-style-type: none">• Diesel storage tanks less than or equal to 30,000-gallons• Fiberglass and steel tanks are supported• Tank diameters between 4' (48") and 12' (144") are supported• Manifolded tanks are not supported• HydrX is compatible with ASTs, provided the following criteria is met:<ul style="list-style-type: none">- Mount the Fuel Conditioner on top of the tank- Install the Fuel Conditioner inside an enclosure with environmental controls to ensure operating temperatures are met- A containment monitoring device must be used inside the enclosure		
	Sump Requirements		
	<ul style="list-style-type: none">• Spare 4" bung in tank top with clearance for a riser (and space for the Fuel Conditioner required)• Clearance for the Fuel Conditioner footprint around the spare bung (Dimensions can be found on page 5) Note: The True To Size Fit-Test Model or a 1:1 scale template can be used to quickly confirm space available• The Fuel Conditioner comes in two models: HydrX 250D with a 2.5-gallon waste water capacity that is 23" tall and HydrX 500D with a 5.0-gallon waste water capacity that is 30" tall. It requires 10" of clearance above the system to any fixed, immovable portion of the sump to service the filters. If the Fuel Conditioner fits in the center of the sump, directly under the sump lid, a 6" clearance to the sump lid is sufficient.		
	Recommendations for New to Industry (NTI) Sites		
	<ul style="list-style-type: none">• Install 48" diameter sumps and manway lids with 4+ bung openings to maximize HydrX placement options• Route product line and conduit around perimeter of sump, leaving room for the HydrX Fuel Conditioner footprint depicted on page 5• Tank tilted preferably away from STP sump• Size high voltage and low voltage conduit for additional HydrX wiring – Wiring requirements identified below• Pull additional HydrX wiring during site construction		
Wiring Requirements	System Requirements		
	HydrX Solenoid Valve Power Requirements (to the sump)	AC Power Wiring carrying 120 VAC control circuit to power solenoid valves on a separate breaker. Local electrical codes or site requirements may also require a separate Emergency Stop Control. Minimum wire size shall be 14 AWG. 5 wires total: 2 wires for valve control voltage, 2 neutral wires, and 1 ground wire.	
	HydrX Sensor Wiring Requirements	<ul style="list-style-type: none">1. Wire Type – Shielded cable required regardless of conduit material or application. Shielded cable must be rated less than 100 picofarad per foot manufactured with a suitable material such as Carol C2534 or Belden 88760, 8760, or 8770.2. Wire Length – Maximum 1,000' to meet intrinsic safety requirements. Improper system operation could result for runs over 1,000'.3. Wire Gauges – Color coded – shielded cable used in all installations. Wires should be #14 - #18 AWG stranded copper wire and installed as Class 2 circuits. As an alternate method when approved by the local authority having jurisdiction, #22 AWG wire such as Belden 88761 may be suitable with the following requirements: Wire run is less than 750'; Capacitance does not exceed 100 pF/ft; Inductance does not exceed 0.2 uH/ft. <p>Note: 2 Intrinsically Safe (IS) pairs are required</p>	
Fuel Conditioning System Components	First Time Installation Orderable Part Numbers		
	Fuel Conditioner Kit:		
	Part Number	Description	Quantity Required
	0342909-325	HydrX 250D Fuel Conditioner Kit	1 required per system
	0342909-350	HydrX 500D Fuel Conditioner Kit	
	Installation Kit:		
	Part Number	Description	Quantity Required
	0330020-875	The Red Jacket® Installation Kit	1 required per system
	0330020-874	FE Petro® Installation Kit	
	Guide Tube and WID:		
Part Number	Description	Quantity Required	
08608xx-xxx	Water Intake Device (WID)	1 required per system	
0860780-xxx	Guide Tube (produced in 6 inch increments from 050 - 164)	1 required per system	

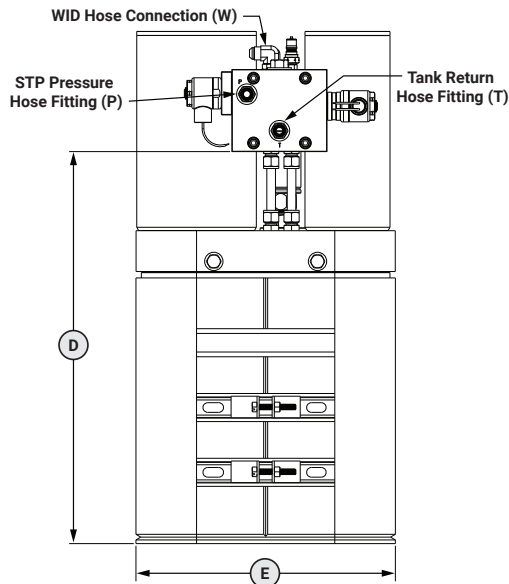
	Replacement Parts & Accessories		
	Part Number	Description	Category
Fuel Conditioning System Parts	0330020-855	Kit – Water Float, Diesel	Replacement
	0330020-868	Kit – Fuel Conditioner Filter Cartridges	Replacement
	0330020-870	Kit – FE Siphon Jet Access Port Adapter Assembly	Replacement
	0330020-871	Kit – RJ Siphon Port Adapter Assembly	Replacement
	0330020-872	Kit – Replacement Pressure Sensor	Replacement
	0330020-873	Kit – Replacement Probe, HydrX 500D	Replacement
	0330020-876	Kit – Tank Return Hose	Replacement
	0330020-878	Kit – Manifold Hose	Replacement
	0330020-879	Kit – Fuel Conditioner O-Rings	Replacement
	0330020-882	Kit – Inlet Valve Service	Replacement
	0330020-883	Kit – Outlet Valve Service	Replacement
	0330020-884	Kit – Water Drain Quick Coupling	Replacement
	0330020-899	Kit – HydrX Siphon Cartridge	Replacement
	0330020-902	Kit – Flaretite Seal	Replacement
	0330020-903	Kit – Replacement Probe, HydrX 250D	Replacement
	0330020-904	Kit – Fuel Conditioner Filter Cartridges – SAE Seals	Replacement
	0330020-905	Kit – Fuel Conditioner O-Rings – SAE Seals	Replacement
	0330020-869	Kit – Alignment Bar	Accessory
	0330020-881	Kit – 90° Hose End Adapter	Accessory
	0330020-893	Kit – Mounting Rail Extension	Accessory

System Overview

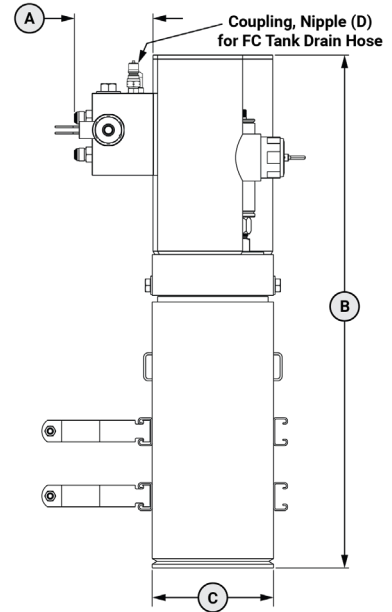
Fuel Conditioner



TOP VIEW



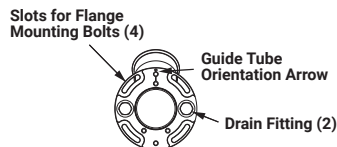
FRONT VIEW



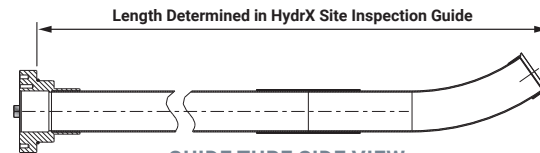
RIGHT VIEW

Dimension	250D	500D
A	4.53" (115.06mm)	4.53" (115.06mm)
B	22.92" (582.17mm)	29.63" (752.60mm)
C	7.00" (177.80mm)	7.00" (177.80mm)
D	15.89" (403.61mm)	22.70" (576.58mm)
E	15.00" (381.00mm)	15.00" (381.00mm)

Guide Tube

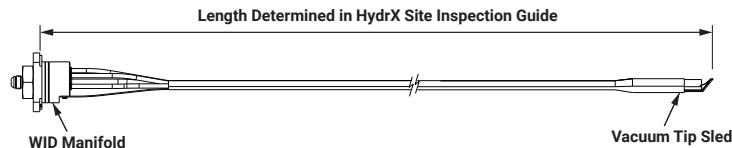


GUIDE TUBE FLANGE



GUIDE TUBE SIDE VIEW

Water Intake Device



SIDE VIEW

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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>