



Product Catalog

Retail & Commercial Fueling Products



ABOVE GROUND
PRODUCTS



BELOW GROUND
PRODUCTS



ELECTRONIC FUEL
MANAGEMENT SYSTEMS

LEADING THE WAY IN FLUID HANDLING SOLUTIONS WORLDWIDE



David Crouse | President

Since 1892, OPW has been **Leading the Way** in Fluid Handling Solutions Worldwide. As the preeminent global leader of fluid handling solutions, the OPW brand represents an implicit promise of trust. A promise backed by an unparalleled heritage of innovation, quality, reliability, safety, efficiency and availability.

As an organization, OPW consists of four primary business units, three global operating units, multiple manufacturing facilities throughout North America, Europe, UK, Brazil, China, India, Malaysia and Australia, and an impressive portfolio of highly respected brands.

It is our mission to revolutionize fluid handling operations globally by optimizing safety, efficiency, reliability and environmental sustainability through innovative fluid handling and information management solutions.

The point is not our products but why they exist – to help protect people and the environment.

We are a brand known as much for our character as for our great products. Operators around the world know they can trust OPW to consistently deliver the kind of high-quality fluid handling solutions they need to meet their business requirements and to help them fulfill their individual goals of social and environmental responsibility today and into the future.



Nozzles & Accessories



Underground Storage



Piping & Containment



CleanEnergy



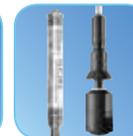
Fuel Control Systems



Vehicle Wash Systems



Tank Gauges



Sensors & Probes

Retail Fueling

OPW Retail Fueling consists of four key areas of operation – Above Ground Storage Tank Equipment, Dispensing Equipment, Underground Storage Tank Products, including piping and containment and CleanEnergy Fueling Products. Specifically designed to optimize fuel transfer efficiency and environmental protection at commercial and retail fueling sites, OPW is the brand specified by more fueling operators worldwide than any other brand.

Electronic Systems

OPW Electronic Systems consists of OPW Fuel Management Systems (FMS) and PDQ Vehicle Wash Systems. FMS designs and manufactures tank gauges and automated fuel control systems to ensure fuel operators know how much fuel they have and where it is going at all times. PDQ is a leading manufacturer of vehicle wash systems and the global leader in touch-free vehicle wash systems.

TABLE OF CONTENTS



BELOW GROUND PRODUCTS

PIPING & CONTAINMENT SYSTEMS

FlexWorks Loop System	6 - 7
FlexWorks Next Generation Supply Piping.....	8 - 9
Flexible Piping Systems.....	10 - 11
Access Pipe	12
Pipe Couplings & Fittings.....	13 - 17
Tank Sumps.....	18 - 24
Sump Mounting Flanges	25
Dispenser Sumps/Pans	26 - 33
Dispenser Sump Accessories	29
Fire Suppression System.....	34
Sump Entry Fittings.....	35 - 37
Test Boots and Testing Equipment	38
Fuel Oil & Generator Piping Systems.....	39
Transition & Special Application Sumps.....	40 - 42
Flexible Piping Installation Tools.....	43 - 44

UNDERGROUND STORAGE TANK EQUIPMENT

Phase I CARB Certified Enhanced Vapor Recovery (EVR) Product Overview	46 - 47
40CFR 63 Compliance Overview.....	48 - 49

Spill Containment Manholes.....	51 - 65
Multi-Port Spill Containment	66 - 74
Manholes and Monitoring Well Equipment	75 - 83
Island Forms and Protective Curbing	84 - 87
Pipe Guards	88
Fill Pipe Connection Equipment	89 - 100
Overfill Prevention Equipment	101 - 113
Tank Venting Equipment.....	114 - 116

EMERGENCY SHUT-OFF VALVES

Emergency Shut-off Valves.....	118 - 121
Vapor Line Shear Valves.....	122 - 123
DEF Shear Valve	124
Flex Connectors	125 - 126

SUCTION SYSTEM EQUIPMENT

Suction System Accessories.....	127 - 128
DEF Solutions.....	131 - 134
Conversion Tables	135 - 142

Fuel Compatibility Matrix.....	294
Approvals, Listings and Certifications.....	295 - 306

TABLE OF CONTENTS (cont.)

ABOVE GROUND PRODUCTS

CONVENTIONAL AUTOMATIC NOZZLES

Automatic Nozzles 144-147
 Extreme Cold Weather Nozzles 146
 Custom Hand Insulator Imprinting 148
 OPW AdMaster™ 149
 VR and Balance ConVRsion Packages 150
 11AF® 3/4" Automatic Nozzles 151
 Heavy-Duty, High-Flow Truck, Bus & Fleet Service Nozzle 152
 OPW NEWGARD™ Hand Insulators 154
 21Gu™ DEF Nozzle 155-157

SWIVELS AND BREAKAWAYS

Swivels and Breakaways 158-167
 Flow Limiters 168

VACUUM-ASSIST SWIVELS AND BREAKAWAYS

12VW Vacuum Assist Nozzle 170-171
 Vapor Recovery Nozzle Accessories 172-173

ABOVEGROUND STORAGE TANK EQUIPMENT

AST Tank Diagrams 204 - 215
 – Non-EVR Direct Fill AST Application 204-205
 – Non-EVR Remote Fill / Remote Dispensing
 AST Application 206-207
 – Non-EVR Remote Fill / Remote Dispensing
 AST Fleet Application 208-209
 – Non-EVR Remote Fill Diesel/Fuel
 Oil/Generator Application 210-211
 – Phase 1 CARB Certified AST EVR Direct Fill
 AST Application 212-213
 – Phase 1 CARB Certified AST EVR Remote Fill / Remote
 Dispensing AST Application 214-215
 Emergency Venting Size Selection Guide 216-217
 Spill Containment 218-219

Vacuum-Assist Swivels, Breakaways and Accessories 174-178

BALANCE VAPOR RECOVERY HANGING HARDWARE

Balance Breakaways and Accessories 180

INDUSTRIAL PRODUCTS

DEF Bulk Nozzle 182
 Automatic Bulk Fueling and Aircraft Nozzles 183-187
 Manual High-Flow Bulk Fill Nozzles 188-192
 Manual Nozzle Accessories 193
 Swivels and Breakaways 195-196

RETRACTORS

Spring Balance Hose Retractors 198-201
 Counterweight Hose Retractors (MPD) 202

Fuel Compatibility Matrix 295

Approvals, Listings and Certifications 295 - 306

Overfill Prevention 220-221

Fuel Delivery Coupler/Accessories 222-223

Mechanical Tank Gauges 224

Tank Alarms 225

Tank Venting 226-231

Anti-Siphon Valves 232

Solenoid Valves 233

Two-Way Ball Valve 234

Emergency Shut-Off Valves 235

Swing Check Valves 236

Dispenser Pedestal 237

Fuel Compatibility Matrix 296

Approvals, Listings and Certifications 295 - 306

ELECTRONIC FUEL MANAGEMENT PRODUCTS

TANK GAUGING

SiteSentinel® Integra 100™ Console 242-243
 SiteSentinel® Integra 500™ Console 244-245
 The VSmart Module 246-247
 SiteSentinel® Nano® Console 248-249
 SiteSentinel® iSite™ Console 250-251
 SiteSentinel® iTouch™ Console 252-253
 Model 924B Probe 254-255
 Model 924B Inventory-Only Probe 256-257
 Density Measurement Sensor 258-259
 Model 7100 AST Flex Probe 260-261
 IntelliSense™ Sensors 262-263
 Model 327 Volumetric Line Leak Detector 264-265

FUEL CONTROL

Petro Vend Fuel Control Systems Overview 266
 Petro Vend 100® 268-269
 FSC3000™ Fuel Site Controller 270-271
 Dispenser Terminal Control 272-273
 FIT500™ 274-275
 C/OPT™ 276-277
 K800™ Hybrid 278-279
 K800™ 280-281
 Phoenix® 282-283
 AFC™ 284-285
 Pulsers 285
 IP Authorization Gateway 286-287

PDQ VEHICLE WASH SYSTEMS

TOUCH-FREE CAR WASH EQUIPMENT

LaserWash® 360 289
 LaserWash® AutoXpress 289
 LaserWash® G5 S-Series 289

FRICITION CAR WASH EQUIPMENT

ProTouch® ICON 290
 ProTouch® Tandem 290

OVERGLOW

OverGlow Hi-Gloss Application System 291

ENTRY PAY STATIONS

Access Series 292

For more information,
 visit us at: <http://www.pdqinc.com/>

Below Ground Products

Environmental Sustainability by Design



Piping & Containment Systems

- FlexWorks Loop System.....6 - 7
- FlexWorks Next Generation Supply Piping.....8 - 9
- Flexible Piping Systems10 - 11
- Access Pipe.....12
- Pipe Couplings & Fittings13 - 17
- Tank Sumps18 - 24
- Sump Mounting Flanges25
- Dispenser Sumps/Pans.....26 - 33
- Dispenser Sump Accessories.....29
- Fire Suppression System.....34
- Sump Entry Fittings35 - 37
- Test Boots and Testing Equipment.....38
- Fuel Oil & Generator Piping Systems39
- Transition & Special Application Sumps.....40 - 42
- Flexible Piping Installation Tools43 - 44

Underground Storage Tank Equipment

- Phase I CARB Certified Enhanced Vapor Recovery (EVR) Product Overview.....46 - 47
- 40CFR 63 Compliance Overview48 - 49
- Spill Containment Manholes51 - 65
- Multi-Port Spill Containment.....66 - 74
- Manholes and Monitoring Well Equipment.....75 - 83
- Island Forms and Protective Curbing.....84 - 87
- Pipe Guards.....88
- Fill Pipe Connection Equipment.....89 - 100
- Overfill Prevention Equipment.....101 - 113
- Tank Venting Equipment.....114 - 116

Emergency Shut-Off Valves

- Emergency Shut-off Valves118 - 121
- Vapor Line Shear Valves122 - 123
- DEF Shear Valve124
- Flex Connectors.....125 - 126

Suction System Equipment

- Suction System Accessories127 - 128
- DEF Solutions131 - 134
- Conversion Tables.....135 - 142



BELOW GROUND PRODUCTS

Piping Layout (Pressure System)

Tank Sumps, Tank Sump Systems and Accessories

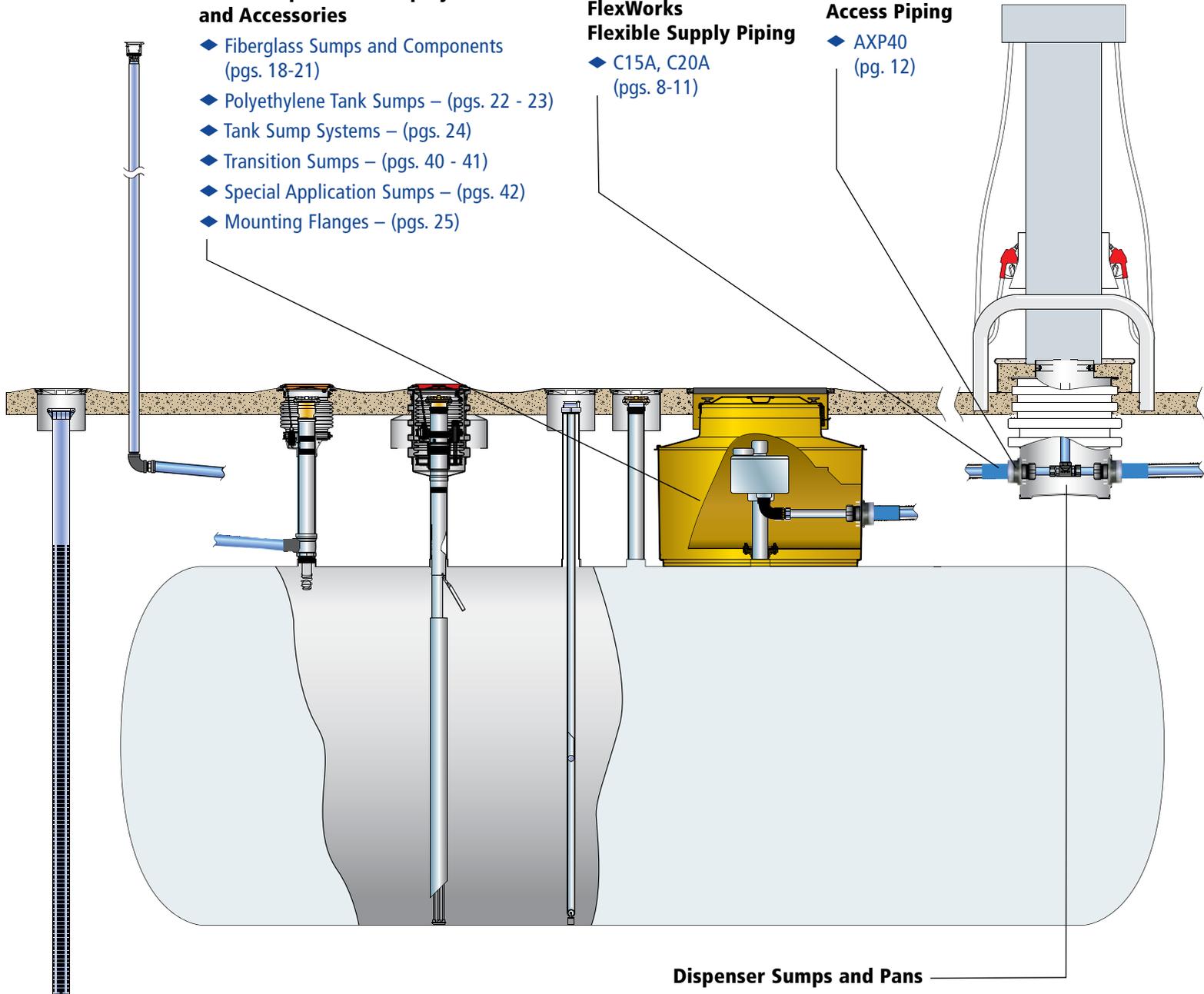
- ◆ Fiberglass Sumps and Components (pgs. 18-21)
- ◆ Polyethylene Tank Sumps – (pgs. 22 - 23)
- ◆ Tank Sump Systems – (pgs. 24)
- ◆ Transition Sumps – (pgs. 40 - 41)
- ◆ Special Application Sumps – (pgs. 42)
- ◆ Mounting Flanges – (pgs. 25)

FlexWorks Flexible Supply Piping

- ◆ C15A, C20A (pgs. 8-11)

Access Piping

- ◆ AXP40 (pg. 12)



Dispenser Sumps and Pans

- ◆ Polyethylene Sumps (pg. 26)
- ◆ Wide Access Polyethylene (pg. 27)
- ◆ Polyethylene Pans (pg. 28)
- ◆ Fiberglass (pg. 30)
- ◆ Wide Access Fiberglass (pg. 31)
- ◆ Dispenser Sump Accessories (pg. 29)
- ◆ Dispenser Sump Selection Chart (pgs. 32-33)



The complete Environmental System for underground fuel transfer and containment for the 21st century.

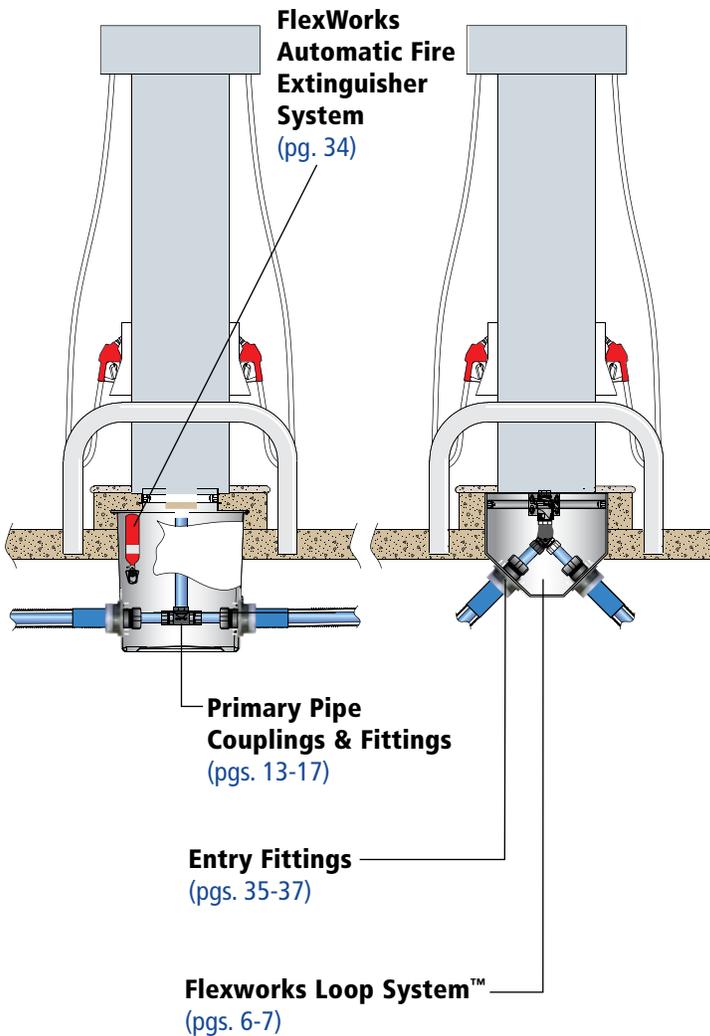
OPW Innovative Fueling Solutions

The heart of FlexWorks is an advanced, flexible piping system that can be installed quickly and easily in a variety of configurations. Flexible piping eliminates the need for buried piping joints, which are notorious leak points in rigid piping systems. In a pressure system, the submersible pump is connected in series directly to the dispensers with a continuous run of flexible pipe. In a suction system, a continuous run of flexible pipe connects the tank to the suction pump dispenser. All piping connections at the tank and dispensers are contained in sumps.

The primary fuel pipe is available with an integral secondary containment pipe, which can be inserted into a dual layer, corrugated access pipe. The crush-resistant access pipe protects the primary pipe from the backfill while serving as an added layer of protection. The access pipe also affords the added advantage of primary pipe retractability. Future inspection, repair or replacement of the primary pipe is achievable without excavation.

The FlexWorks System features highly integrated components that interconnect seamlessly to provide reliable Secondary Containment. FlexWorks dispenser sumps are custom made for each particular dispenser footprint. FlexWorks tank sumps afford raintight containment for and accessibility to submersible pumps and UST equipment. A variety of FlexWorks entry fitting styles and sizes ensure the availability of a custom-designed solution for virtually every piping application.

FlexWorks by OPW is the complete Environmental System for underground fuel transfer and containment for the 21st century.



Listings and
Certifications



Piping Layout (FlexWorks Loop System)

The World's First "Plug & Play" Underground Fuel Delivery & Containment System

FlexWORKS

LOOP SYSTEM™



Prefabricated Quick-Couple Dispenser Sumps

- ◆ Saves time and money – improves installation reliability
- ◆ Provides for easy visual inspection, access to and replacement of under-dispenser components without removal of the dispenser
- ◆ Shallow design reduces potential problems caused by groundwater forces



Double-Wall Pipe Couplings

- ◆ Eliminates the need to trim back secondary jackets
- ◆ Eliminates the need for rubber test boots; improves testing reliability and provides reliable means of isolating the coaxial jacket for vacuum, pressure or liquid testing and/or continuous monitoring of the pipe's interstitial space



Dual-Sided Entry Fittings

- ◆ Provides double containment protection at the sump/entry fitting connection points
- ◆ Prevents groundwater intrusion into the sump and eliminates communication so fluid collected in the sump cannot enter the access pipe



OPW 10 PLUS Emergency Valves

- ◆ Patent-pending technology provides an added level of protection against potential leaks caused by low-impact cracks in the shear valve
- ◆ Eliminates health, environmental contamination and fire hazards that could result from fractured valves leaking into sumps

FlexWORKS

The complete Environmental System for underground fuel transfer and containment for the 21st century.

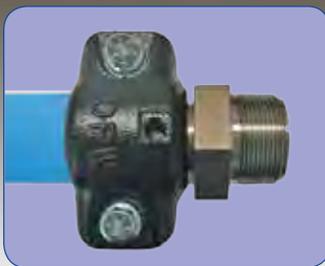
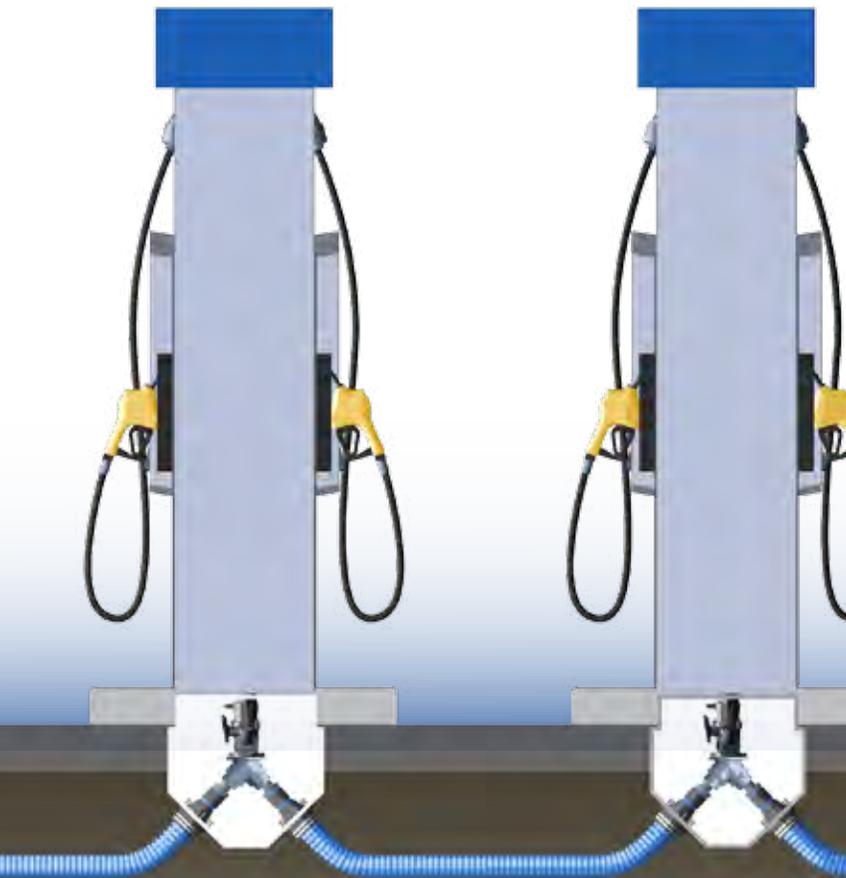
The Loop System™

The Industry's First Plug & Play Underground Fueling System

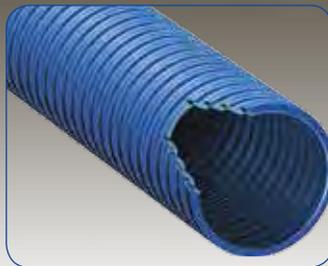
The patented OPW Loop System™, represents the state of the art in a completely integrated, environmentally secure underground fuel delivery system. The system, by design, employs pre-fabricated, factory assembled components, translating into dramatically less field labor and lower associated cost and potential for installation errors. The installed product preserves total underground access to all piping connections, piping runs and containment sumps for hassle-free inspection, maintenance or repair without ever having to excavate or even remove a dispenser. The Loop System™ incorporates field-proven OPW technology into a simplified, completely integrated piping system design that facilitates easy inspection, identification and repair of any problem that may develop and enhances the capability for leak prevention.

The OPW Loop System™: Providing a radically new solution to minimize traditional fuel delivery system problems.

The end result: An exponentially higher level of environmental protection and lower cost of fuel delivery system ownership.



OPW Swivel Bolt-On Coupling



OPW Crush Resistant, Dual Layer Access Pipe



FlexWorks Next Generation Supply Piping

Why a new pipe?

OPW has developed a Next Generation FlexWorks Pipe in response to the voice of the customer. You asked and we delivered! The new pipe is more flexible, lighter and has reduced memory.

UL APPROVAL

- ✓ Motor Vehicle Fuels
- ✓ High Blend Fuels
- ✓ Concentrated Fuels
- ✓ Aviation and Marine

**3rd PARTY
APPROVED
FOR DEF**

50 Years of Unmatched Chemical Resistance Performance Packed into One Unique Pipe - KYNAR® (PVDF) + OPW = 15 Years of Excellence in Underground Pipe Performance.

**Lighter,
More Flexible, Easier
to Install, UL Approved
for All Fuels**



What Makes This Pipe Different?

Lower installation costs

- ◆ **Increased Pipe Flexibility** – the force required to bend the pipe has been reduced to facilitate piping layout. This makes installation quicker and easier, especially in cold weather.
- ◆ **Pipe Weight** – has been reduced to facilitate shipping and handling
- ◆ **Pipe Memory** – Inherent pipe memory has been reduced significantly to facilitate connection of pipes inside sumps
- ◆ **Redesigned Profile** – enhanced leak detection performance
- ◆ **Next Generation** – enhanced Kynar liner

Ordering Specifications - Sizing Matrix

New Pipe Part #	ID	Description
C075A-250		Double Wall Primary Pipe, 250'
C075A-1000		Double Wall Primary Pipe, 1000'
C075A-SB	3/4"	Double Wall Primary Pipe 3/4" I.D. Short Box, 1' - 249'
C075A-SR		Double Wall Primary Pipe 3/4" I.D. Short Reel, 260' - 490'
C075A-MR		Double Wall Primary Pipe, Mega Reel, 2000'
C10A-250		Double Wall Primary Pipe, 250'
C10A-1000		Double Wall Primary Pipe, 1000'
C10A-SB	1"	Double Wall Primary Pipe 1.0" I.D. Short Box, 1' - 249'
C10A-SR		Double Wall Primary Pipe 1.0" Short Reel, 20' - 990'
C10A-MR		Double Wall Primary Pipe, Mega Reel, 2000'
C15A-250		Double Wall Primary Pipe, 250'
C15A-500		Double Wall Primary Pipe, 500'
C15A-1000		Double Wall Primary Pipe, 1000'
C15A-1225		Stick Pipe 1 1/2" 12 Pieces At 25', 12 per box
C15A-1233	1 1/2"	Stick Pipe 1 1/2" 12 Pieces At 33', 12 per box
C15A-1240		Stick Pipe 1 1/2" 12 Pieces At 40', 12 per box
C15A-SB		Double Wall Primary Pipe 1.5" I.D. Short Box, 50' - 240', 10' increments
C15A-SR		Double Wall Primary Pipe 1.5" I.D. Short Reel, Less than 500', 10' increments
C15A-MR		Double Wall Primary Pipe, Mega Reel, 1010' - 1400'
C20A-250		Double Wall Primary Pipe, 250'
C20A-500		Double Wall Primary Pipe, 500'
C20A-1225		Stick Pipe 2.0" Double Wall 12 Pieces At 25', 12 per box
C20A-1233	2"	Stick Pipe 2.0" Double Wall 12 Pc @ 33', 12 per box
C20A-SB		Double Wall Primary Pipe, 2.0" I.D. Short Box, 50' - 240', 10' increments
C20A-SR		Double Wall Primary Pipe, 2.0" I.D. Short Reel, 260' - 490', 10' increments
C20A-MR		Double Wall Primary Pipe, Mega Reel, 800', 510' - 800', 10' increments
C30A-200		Call For Availability. 3" Double Wall Primary Pipe, Lengths up to 200'
C30A-MR	3"	3" Double Wall Primary Pipe, 200' to Max 350'
C30A-SR		Call For Availability. 3" Double Wall Primary Pipe, Lengths up to 200'

FlexWorks Next Generation Supply Piping

OPW's Next Generation FlexWorks Pipe is more flexible, lighter and has reduced memory to aid installation and is UL approved for all fuels.

Flexible Supply Piping

OPW FlexWorks flexible piping utilizes fully bonded, premium PVDF construction throughout to offer complete peace-of-mind protection, performance, installation ease and advantages over rigid and semi-rigid pipe.

Features & Benefits:

- ◆ **Lower installation costs**
 - ◆ **Eliminates the hassles** – installation time and potential leak points of rigid pipe installations
 - ◆ **Easy installation** – results in less installation time
 - ◆ **Eliminates burdensome cutting, fitting, and cleaning**
 - ◆ **No adhesives** – heat assists, curing problems or electrofusion welding of joints
 - ◆ **Easy to bend** – no special fittings to install in order to make bends
- Eliminates potential underground leak points:**
- ◆ **No underground** – fittings or joints
 - ◆ **No hand-built field joints**
 - ◆ **All termination points are contained in sumps**
 - ◆ **Termination joints precision swaged to simulate factory-made assemblies**

Double Wall Flexible Piping:

UL 971 Listed, Integral Primary/Secondary, Normal Vent & Vapor Piping, Gasoline, Aviation & Marina Fuels:

A UL-listed, double-wall, flexible supply piping system designed for installation within Access piping. The outer containment pipe includes inner stand-off ribs to create a small interstitial space which allows for optimum fluid migration, continuous monitoring and easy periodic testing. This piping features an enhanced construction that meets the new UL971 standard. OPW's FlexWorks double-wall piping has both the primary and secondary containment pipe UL-listed and is labeled as follows: INTEGRAL PRIMARY/SECONDARY FOR MOTOR VEHICLE FUELS.

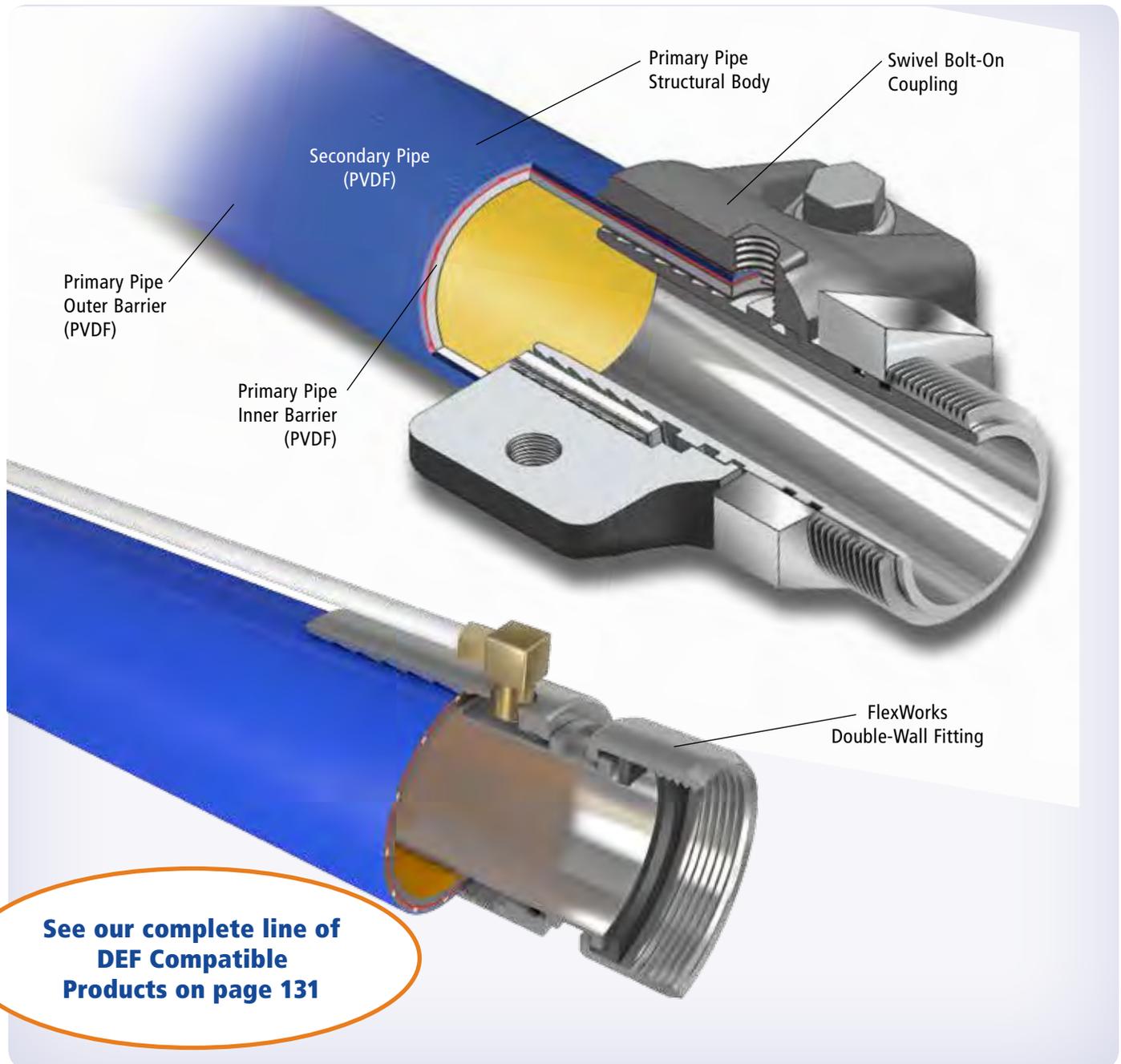
Ordering Specifications* - FlexWorks Dual Layer Access Pipe

Part #	Application	Minimum Bend Radius		Packaging		Dimensions				Box/Reel Size (in.)	Box/Reel Weight	
		in.	mm			I.D.	O.D.	in.	mm		in.	mm
C075A-250	Double-Wall Primary Pipe, ¾"	18	457	Box	250 ft	.75	19	1.18	29	44x44x25	134	61
C075A-1000	Double-Wall Primary Pipe, ¾"	18	457	Reel	1000 ft	.75	19	1.18	29	58x58x48	527	239
C10A-250	Double-Wall Primary Pipe, 1"	18	457	Box	250 ft	1.0	25	1.50	38	44x44x25	169	77
C10A-1000	Double-Wall Primary Pipe, 1"	18	457	Reel	1000 ft.	1.0	25	1.50	38	58x58x48	605	274
C15A-250	Double-Wall Primary Pipe, 1.5"	24	610	Box	250 ft.	1.5	38	2.00	51	38x45x30	240	109
C15A-500	Double-Wall Primary Pipe, 1.5"	24	610	Reel	500 ft.	1.5	38	2.00	51	58x58x48	605	274
C15A-1000	Double-Wall Primary Pipe, 1.5"	24	610	Reel	1000 ft.	1.5	38	2.00	51	58x58x48	980	444
C20A-250	Double-Wall Primary Pipe, 2"	36	914	Box	250 ft	2	51	2.50	63.5	63x63x33	192	87
C20A-500	Double-Wall Primary Pipe, 2"	36	914	Reel	500 ft.	2	51	2.50	63.5	68x68x48	770	349
C30A-200	Double-Wall Primary Pipe, 3"	72	1828	Reel	200 ft	3	76	3.50	88	63x63x33	652	296

* OPW also offers short and custom lengths of pipe, as well as pipe packaged and shipped on Mega Reels. Please contact our Customer Service department at 1-800-422-2525, or visit us on the web at www.opwglobal.com for the most up-to-date information.

Flexible Piping Manual
Order Number: UPM-0001

Flexible Supply Piping



Product #	Size		Description	Working Pressure		Temperature Rating		Burst Pressure
	in.	cm		PSIG	BAR	F	C	
C075A	3/4	1.9	Double-Wall Primary Pipe					
C10A	1	2.54	Double-Wall Primary Pipe					
C15A	1.5	3.8	Double-Wall Primary Pipe	100	6.9 bar	-20° to +120° F	-29° to +49° C	Exceeds 5X Working Pressure
C20A	2	5	Double-Wall Primary Pipe	75	5 bar			
C30A	3	7.6	Double-Wall Primary Pipe	75	5 bar			

Listings and Certifications

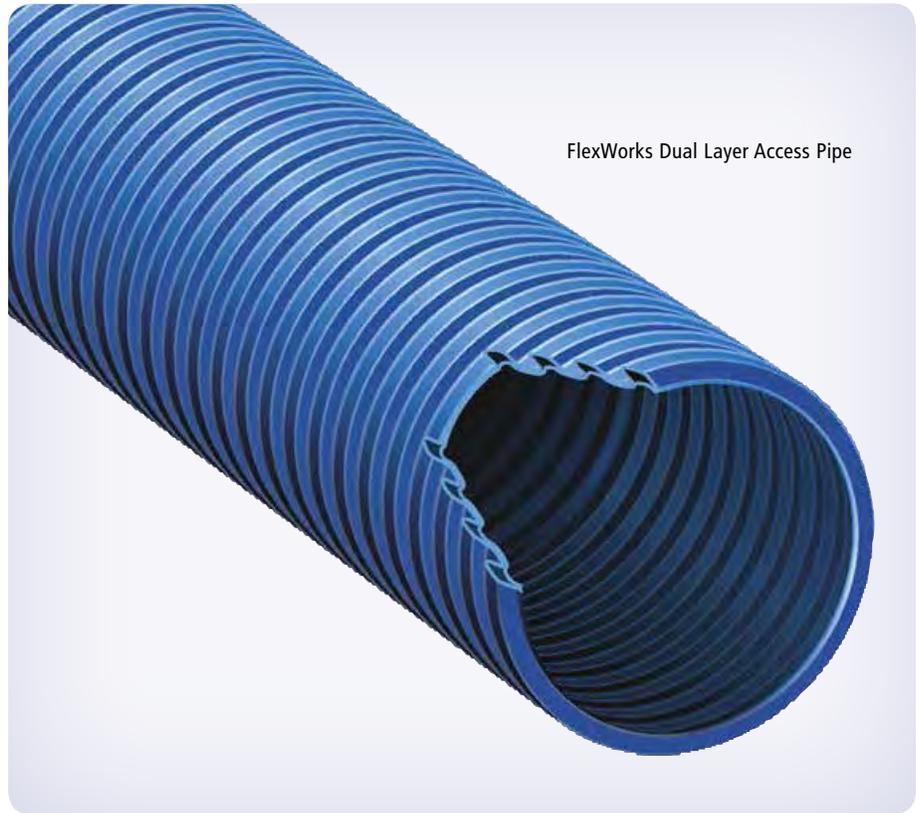


Dual Layer Access Pipe

A 4" diameter corrugated flexible conduit is used to provide access to and permit the future replacement of the Flex piping if desired. This corrugated pipe is strong enough to withstand H-20 loading requirements when properly buried and thick enough to minimize damage from shipping and jobsite handling. Access pipe can accommodate the 3/4", 1", 1-1/2", 2" and 3" FlexWorks supply pipe.

Features & Benefits:

- ◆ Crush and puncture-resistant
- ◆ Semi-smooth liner facilitates ease of installation
- ◆ Saves you time and money
- ◆ No buried joints



Ordering Specifications - FlexWorks Dual Layer Access Pipe

Part #	Application	Minimum Bend Radius		Packaging	Dimensions				Box Size	Weight	
		in.	mm		I.D.		O.D.			in.	lbs.
AXP40-100	4" Dual Layer Access Pipe	18"	457	Box 100 ft.	4	102	4.760	121.0	42x42x32	115	52
AXP40-250	4" Dual Layer Access Pipe	18"	457	Box 250 ft.	4	102	4.760	121.0	60x60x32	218	99

Access Pipe Installation Instructions Sheet Order Number: **API-0001**



FlexWorks Double Wall Pipe Coupling (DPC Model)

Swivel Elbow Fitting (SEF Model)

Swivel Male Adaptor (SMA Model)

Swivel Tee Fitting (STF Model)

Swivel Couplings and Fittings for Primary Pipe

FlexWorks swivel couplings and fittings are used to interconnect flexible piping. These UL/ULC-listed stainless steel couplings must be contained within containment sumps and not directly buried. The pipe connection system includes an internally expanded stainless steel coupling attached to the end of a flexible pipe section.

Double-Wall Couplings

Double-wall swivel couplings eliminate the need for cutting back the secondary jacket and rubber test boots. They have an integral interstitial access port for connector and test tubes.

These double-wall couplings permit higher interstitial testing pressures and eliminate added parts and labor costs.

Features & Benefits:

- ◆ UL/ULC-listed for use with Flex piping
- ◆ Quick, easy to install
- ◆ All stainless steel couplings
- ◆ Internally expanded couplings

Double-Wall Swivel Pipe Couplings

Double-Wall Swivel Pipe Couplings are a proven coupling and fitting system designed exclusively for use with FlexWorks Piping.

Double-Wall swivel couplings and fittings are of a double-wall design and are used to interconnect FlexWorks flexible piping. These UL/ULC-listed stainless steel couplings must be contained within containment sumps and not directly buried.

This pipe connection system includes an internally expanded stainless steel coupling attached to the end of a FlexWorks pipe section. The swivel coupling has a smooth sealing face fitted with a Viton® ring gasket.

Double-wall swivel couplings eliminate the need for cutting back the secondary jacket and rubber test boots. They have an integral interstitial access port for connector and test tubes.

These double-wall couplings permit higher interstitial testing pressures and eliminate added parts and labor costs.



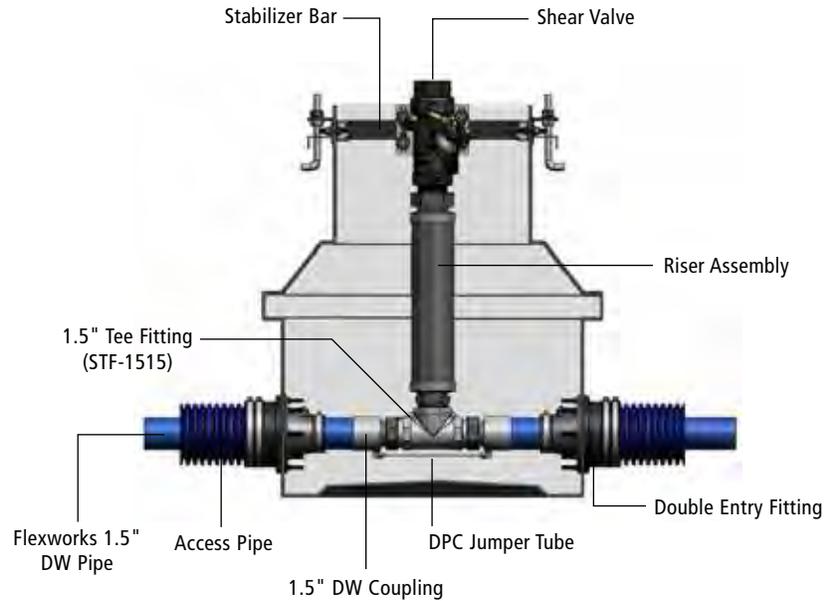
Double Wall Pipe Coupling (DPC Model)

Double-wall pipe couplings require the use of an OPW Retail Fueling coupling machine to internally expand the stainless steel fitting onto the end of a FlexWorks pipe section.

Internally expanded couplings have a long, successful history of reliable performance.

Features & Benefits:

- ◆ Crush and puncture-resistant
- ◆ Semi-smooth liner facilitates ease of installation
- ◆ Saves you time and money
- ◆ No buried joints



Ordering Specifications - FlexWorks Double Wall Swivel Couplings and Fittings

Part #	Application	Packaging
DPC-2150A	1.5" Double-Wall Swivel Pipe Coupling, Flat Gasket	EA
DPC-2200A	2" Double-Wall Swivel Pipe Coupling, Flat Gasket	

Ordering Specifications* - FlexWorks Swedge-On Couplings and Fittings

Model	Application
SPC-0075	3/4" Pipe Coupling, Male NPT*
SPC-0100	1" Pipe Coupling, Male NPT
SPC-0150A	1.5" Swivel Coupling, Flat Gasket
SGP-0150	1.5" Swivel Gasket Pack for SPC-0150 (6 ea)
SGP-0200	2" Swivel Gasket Pack for SPC-0200 (6 ea.)
SGP-0300	3" Swivel for SPC-0300 (6 ea)
SPC-0200A	2" Swivel Coupling, Flat Gasket
SPC-0300	3" Swivel Coupling, Flat Gasket
STC-0150	1.5" Swivel Test Coupling
STC-0200	2" Swivel Test Coupling
STC-0300	3" Swivel Test Coupling
DPC-2150A	1.5" Double Wall Swivel Pipe Coupling, Flat Gasket
DPC-2200A	2" Double Wall Swivel Pipe Coupling, Flat Gasket
SFA-7575	3/4" Adaptor, 3/4" Female NPT to 3/4" Female NPT
SMA-7575	3/4" Adaptor, 3/4" Female NPT to 3/4" Male NPT
SFA-1010	1" Adaptor, 1" Female NPT to 1" Female NPT
SMA-1010	1" Adaptor, 1" Male NPT to 1" Female NPT
SMA-1515	1.5" Adaptor, 1.5" NPSH to 1.5" NPT
SMA-1520	1.5" Adaptor, 1.5" NPSH to 2" Male NPT
SMA-2020	2" Adaptor, 2" NPSH to 2" Male NPT
SMA-3030	3" Adaptor, 3" NPSH to 3" NPT
STF-1515	1.5" Tee, 1.5" NPSH x 1.5" NPSH x 1.5" NPT
STF-2020	2" Tee, 2" NPSH x 2" NPSH x 2" NPT
STF-2215	2" Tee, 2" NPSH x 2" NPSH x 1.5" NPT
STF-3030	3" Tee, 3" NPSH x 3" NPSH x 3" NPT
SEF-1515	1.5" Elbow, 1.5" NPSH x 1.5" NPT
SEF-2020	2" Elbow, 2" Female NPT to 2" Male NPSH*
SEF-3030	3" Elbow, 3" NPSH x 3" NPT
SRE-2015	2" Elbow Reducer, 2" NPSH x 1.5" NPT
SCC-2015	2" Reducer, 2" NPSH to 1.5" NPSH
SRT-2151	2" Reducer, 2" NPSH x 1.5" NPSH x 1.5" NPT
SCC-1515	1.5" Connector, 1.5" NPSH to 1.5" NPSH
SCC-2020	2" Connector, 2" NPSH to 2" NPSH
SCC-3030	3" Connector, 3" NPSH to 3" NPSH

*British Fittings are available in Europe. Please contact OPW-EMEA Customer Service at +420-474-624-025.



Single Wall Pipe Coupling (SPC Model)



Double Wall Pipe Coupling (DPC Model)



Adaptor (SMA Model)



Tee (SEF Model)



Elbow (SEF Model)

OPW Retail Fueling Introduces a New Generation of Swivel Bolt-On Couplings

Announcing our revolutionary new SBC Swivel Bolt-On Double Wall Pipe Coupling. The new patent pending technology gives users the same great features as our revolutionary DPC swage on double wall fittings in a Bolt-on design. The SBC eliminates the need to trim back the secondary jacket – and eliminates the need for rubber test boots!

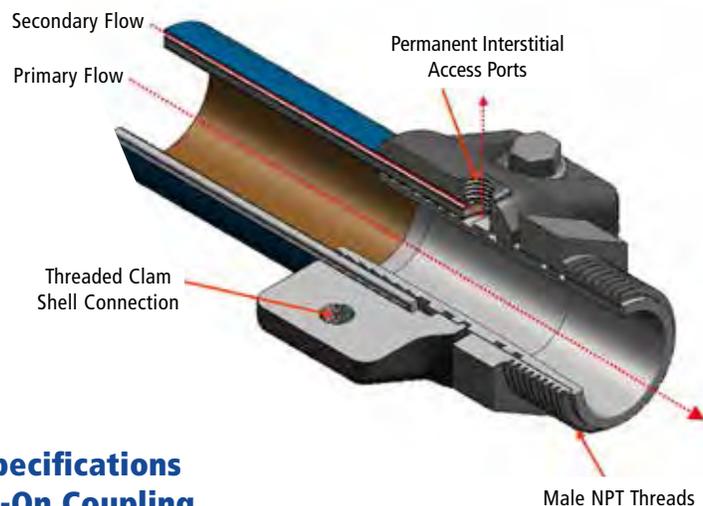
Features and Benefits

- ◆ All Stainless Steel Wetted Surfaces
- ◆ No Jacket Stripping
- ◆ No Test Boots
- ◆ Male NPT Thread allows this coupling to be used with standard plumbing Tees and Elbows
- ◆ Decreased Installation Time
- ◆ Provides quick and effective means to monitor or retest secondary containment
- ◆ State-of-the-Art Clam Shell Interlock Design only available through OPW
- ◆ Double O-Ring Swivel Design for easy and secure connections



New patent-pending Swivel Bolt-On Coupling system simplifies the interstitial connection process for FlexWorks Flexible Piping.

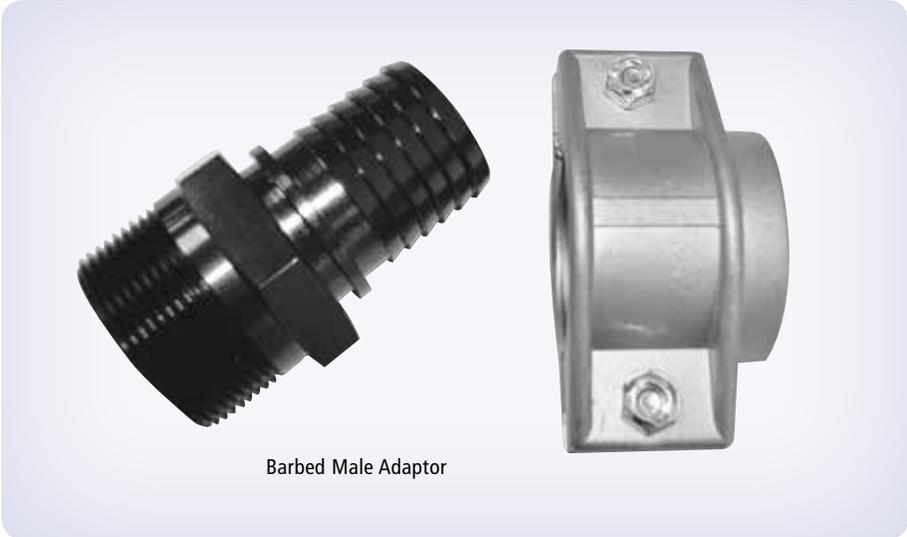
Our new FlexWorks Swivel Bolt-On Coupling features a double wall design that eliminates the need to trim back the secondary jacket. The need for rubber test boots is eliminated. Permanent access to the pipes interstice allows for future integrity testing or continuous interstitial monitoring. Swivel Bolt-On Couplings have an integral interstitial fluid path and a threaded access port located directly on the coupling collar. This state of the art method of connection is a cost effective solution that allows rapid system integrity testing as well as interstitial monitoring capability, at installation and in the future to accommodate new monitoring regulations.



Ordering Specifications Swivel Bolt-On Coupling

Model	Description
SBC-2075	Swivel Bolt-On Coupling, 3/4" NPT
SBC-2100	Swivel Bolt-On Coupling, 1" NPT
SBC-2150	Swivel Bolt-On Coupling, 1.5" NPT
SBC-2200	Swivel Bolt-On Coupling, 2" NPT

Model	Description
SST-1515	Tee Fitting, 1.5" NPT
SST-2020	Tee Fitting, 2" NPT
SSE-1515	Elbow Fittings, 1.5" NPT
SSE-2020	Elbow Fittings, 2" NPT



Barbed Male Adaptor

Barbed Male Adaptors

An adaptor is designed to connect one end of a flexible pipe section to a female NPT threaded coupling or fitting. There is a barbed insert with clamp assembly on one end and male NPT threads on the other. When used with double-wall FlexWorks piping, it is recommended that a reducer test boot be installed. These adaptors are required to be secondarily contained.

Ordering Specifications

Part #	Description
BMA-1515	NPT 1 1/2" to 1 1/2" Flex Pipe Barbed Male Adaptor
BMA-2020	2" Barbed Male Adaptor
BMA-3030	3" Barbed Male Adaptor

Barbed Fittings and Adaptors for FlexWorks Primary Pipe

OPW Retail Fueling’s barbed fittings are a single-wall design and are used to connect Flex or Vent piping. This piping connection system does not require the use of pipe couplings or the OPW Retail Fueling coupling machine. These fittings should be contained within containment sumps or protected in direct bury application.

Features & Benefits:

- ◆ For use with FlexWorks piping
- ◆ No coupling machine required
- ◆ All stainless steel clamps
- ◆ Barbs are offset
- ◆ Interlock design

OPW Offers a Variety of Tank Sump Models Made From Both Polyethylene and Fiberglass

OPW tank sumps function as a liquid-tight isolation container providing secondary containment for the tanks fittings, valves, pumps and FlexWorks pipe fittings.

They also provide surface access to the tank itself, as well as a clean, dry environment for future services and maintenance. All tank sump models have height-adjustable risers to accommodate different tank burial depths. Each sump model has its own specific range of height adjustability and are fabricated and assembled at the job site.

Tank Sump Manual
Order Number: TSM-0001



Polyethylene Tank Sump with Mechanically Fastened Cover



Fiberglass Tank Sump with Latched Lid



Fiberglass Tank Sump with Mechanically Fastened Covers

Complete Fibrelite
Fiberglass Tank Sump Systems



Features & Benefits:

- ◆ Watertight – structure will not deform under water pressure
- ◆ Tank Sump bury depths 40" to 60". For depths greater than 60", see extensions below.
- ◆ Anti-static surface
- ◆ Vacuum testable – during and after installation
- ◆ Available for both new and retrofit applications



Fibrelite Tank Sumps

OPW Fibrelite tank sumps function as a liquid-tight isolation container providing secondary containment for tank fittings including valves, pumps and Flexworks or Fiberglass pipe fittings.

They also provide surface access to the tank itself, as well as a clean, dry environment for future service and maintenance. The height - adjustable risers to accommodate different tank bury depths.

Ordering Specifications - Complete Tank Sump Kits

Part #	Dia.	Overall Height	Base	Reducer Opening	Cover	Weight (lbs)
S8SB-390WT-KIT	45"	39"	Solid	33"	33"	138
S8SBD-390WT-KIT	45"	48"	Solid	33"	33"	146
S8CR-390WT-KIT	45"	48"	Collar Ring	33"	33"	116
S8CRD-390WT-KIT	45"	63"	Collar Ring	33"	33"	93
S14CR-390WT-KIT	52"	48"	Collar Ring	33"	33"	138
S15CR-390WT-KIT	57"	51"	Collar Ring	33"	33"	165

Kit's include Base, Reducer and Cover.
Resin Kit must be ordered separately.

Ordering Specifications - Sump Base



Part #	Application	Dia.	Height	Base	Weight (lbs)
S45	18" Dia. X 18" Deep FRP Solid Base Sump	18"	18"	Solid	33
S8SB	45" Dia. X 24" Deep FRP Sump W/ Solid Structural Base	45"	24"	Solid	90
S8SBD	45" Dia. X 33" Deep FRP Sump W/Solid Structural Base	45"	33"	Solid	98
S8CR	45" Dia. X 33" Deep FRP Sump W/ 42" Collar Ring Attachment	45"	33"	Collar Ring	68
S8CRD	45" Dia. X 45" Deep FRP Sump W/ 42" Collar Ring Attachment	45"	45"	Collar Ring	45
S14CR	52" Dia. X 33" Deep FRP Sump W/48" Collar Ring Attachment	52"	33"	Collar Ring	75
S15CR	57" Dia. X 36" Deep FRP Sump W/54" Collar Ring Attachment	57"	36"	Collar Ring	100

Tank SUMP BASE, TOP-HAT, COVER and RESIN KIT must be ordered separately.

Ordering Specifications - Optional Extensions for Deep Bury



Part #	Application	Dia.	Reducer Opening	Weight (lbs)
S8-EX12	12" Deep Yellow FRP Extension For S8 Sump	45"	12"	18
S14-EX12	12" Deep Yellow FRP Extension For S14 Sump	52"	12"	21
S15-EX12	12" Deep Yellow FRP Extension For S15 Sump	57"	12"	23

Ordering Specifications - Top-Hat



Part #	Application	Dia.	Reducer Opening	Weight (lbs)
S42-3100-TH	42" Dia. Round Sump - 37" Dia. Reducer Opening Other FRP Sumps	42"	37"	36
S8-390-TH	S8 Sump system includes retaining ring	45"	33"	35
S8-3100-TH	S8 Sump system includes retaining ring	45"	37"	37
S14-390-TH	S14 Sump system includes retaining ring	52"	33"	40
S14-3100-TH	S14 Sump system includes retaining ring	52"	37"	49
S15-390-TH	S15 Sump system includes retaining ring	57"	33"	50
S15-3100-TH	S15 Sump system includes retaining ring	57"	37"	52

Ordering Specifications - Turbine Sump Watertight Cover Lids



Part #	Application	Dia.	Weight (lbs)
WT-31	31" Dia. Watertight, Structural Spill Platform	31"	11
WT-33	33" Dia. Watertight, Structural Spill Platform	33"	13
WT-37	37" Dia. Watertight, Structural Spill Platform	37"	17

Ordering Specifications - Sump Accessories

Part #	Application
SL-1100	Urethane Sealant
S-CS-SEALANT	2 Part Self Leveling Sealant - Used to Seal Gap Between the Top-Hat and Skirt
S-CR-FGK	Kit for Bonding Collar Ring to Tank Collar - Includes Resin, Catalyst and Glass Tape.
RK-5000	Epoxy Resin Kit Bonding Collar Ring Sump to Fiberglass Tank Collar
PLEX-TUBE	1 Tube Of Plexus Adhesive
PlexisApplicator	Single Barrel Manual Applicator
WSP-CRK	2 Part Clamping Ring Kit to Clamp P711 Spill Bucket to Internal Watertight Lid

Contact OPW for Tank Fittings and Manway Adaptors - 1-800-422-2525

Ordering Specifications - Sump Accessories

Part #	Application
WSP-WTS-OPC	6" Nitrile Observation Port Cap for WSP
WTS-CAP-14	14" Nitrile Container Port Cap for WSP
WS-RING-31	31" Stainless Steel Retaining Ring for Top-Hat
WS-RING-33	33" Stainless Steel Retaining Ring for Top-Hat
WS-RING-37	37" Stainless Steel Retaining Ring for Top-Hat
S-TH-RISER-31	10" Deep Top-Hat Riser for All 31" Dia. Opening
S-TH-RISER-33	10" Deep Top-Hat Riser for All 33" Dia. Opening
S-TH-RISER-37	10" Deep Top-Hat Riser for All 37" Dia. Opening



New Latched Fiberglass Tank Sump Lids

Our new specially designed latched Fiberglass Tank Sump Lid is now available on our Fiberglass Sump Models. Our new lid can also be ordered as a replacement Lid for our Polyethylene Sumps.

This lid is available to replace the "Mechanically Fastened" lids with knobs on retrofit applications.

Features & Benefits:

- ◆ Six latch and cover design to ensure even sealing.
- ◆ Holes in the lid to allow installation on 33" Fiberglass or Polyethylene Tank Sumps.
- ◆ Lid strength is three times stronger than our previous lid.
- ◆ Retrofitable to existing OPW Polyethylene and Fiberglass Tank Sumps that have the Mechanically Fastened Lid.

Ordering Specifications - New Latched Fiberglass Tank Sump Lids

Part #	Description
CLC-33	Latched Fiberglass Tank Sump Lid
LRK-CLC	Latch Replacement Kit for the CLC-33



Fiberglass Two-Piece Tank Sumps and Resin Kits

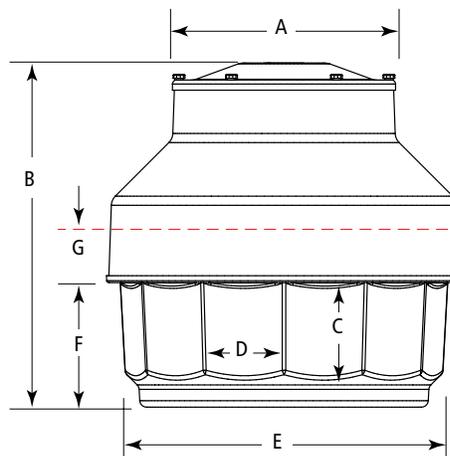
Injection Molded Fiberglass (FRP) Tank Sumps

Features & Benefits:

- ◆ **Structural Integrity** – engineered with thick walls and a structurally efficient geometry to withstand backfill and high water table forces. Precise glass/resin metering throughout the molding process ensures material consistency and maximizes the strength-to-weight ratio.
- ◆ **Smooth/Flat Sealing Surfaces for Leak-Tight Sump Entry Fittings** – male/female mold halves produce a uniform wall thickness while eliminating air entrapment. The result is a flat, smooth finish, both inside and out, which changes the integrity of the pipe entries.
- ◆ **Full Access Working Area** – two-piece design allows full access until top is attached after plumbing is complete.
- ◆ **Flexibility in Mounting** – sump can be mounted directly to a 42" FRP containment collar or with OPW Retail Fueling Sump Mounting Flanges.

Replacement Parts & Accessories

Part #	Description
H13257M	Knob
D02238	Cover
H13214M	Seal
D02223	Sump Top Assembly for TSMF-4536
D02229	Sump Top Assembly for TSDF-4536
E00779	Sump Bottom Assembly
CLC-33	Latched Fiberglass Tank Sump Lid



Ordering Specifications - Fiberglass Two-Piece Tanks Sumps & Resin Kits

Part #	Application	Dimensions										Sump Base Burial Depth				Weight			
		A Cover		B Height		C x D Panel		E Base		F Bottom Sump		G Max. Cutoff		max.				min.	
		in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	lbs.	kg
TSMF-4536	Fiberglass Two-Piece Medium Bury Tank Sump, 36" x 45"	33	838	39	991	14x12	356 x 305	45	1,143	19	483	8.5	216	44	1,118	36	914	104	47
TSMF-4536CL	Fiberglass Medium Bury Tank Sump – Cover Latch	33	838	39	991	14x12	356 x 305	45	1,143	19	483	8.5	216	44	1,118	36	914	109	49
TSDF-4536	Fiberglass Two-Piece Deep Bury Tank Sump, 36" x 45"	33	838	50	1,270	14x12	356 x 305	45	1,143	19	483	10.5	267	55	1,397	45	1,143	108	49
TSDF-4536CL	Fiberglass Deep Bury Tank Sump – Cover Latch	33	838	50	1,270	14x12	356 x 305	45	1,143	19	483	10.5	267	55	1,397	45	1,143	113	51
RK-5000	Fiberglass Resin Kit (qt. size) – One Kit Required to Join Sump Base to Sump Top; One Kit Required to Join Sump Base to 42" FRP Tank Containment Collar.																		

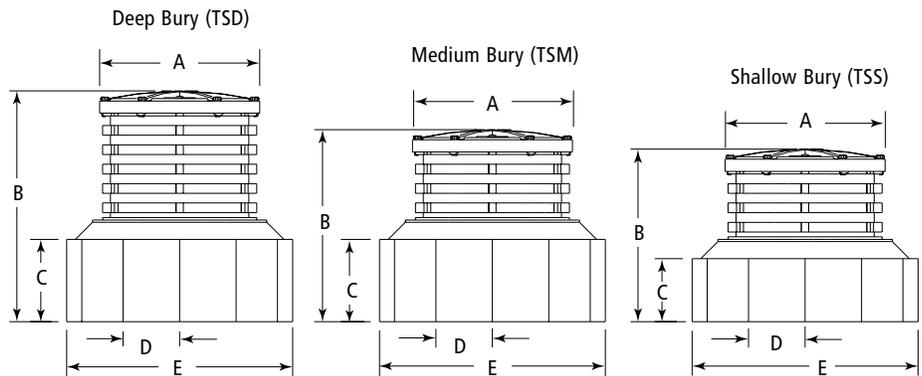
Polyethylene Tank Sumps with Mechanically Fastened Covers

Features & Benefits:

- ◆ **Long-Term Watertight Performance/Strength & Rigidity** – one-piece design provides reliable watertight integrity and long product life. Designed to resist deformation under burial and high water table forces.
- ◆ **Installation Flexibility** – multiple flats provide maximum area for locating pipe entries.
- ◆ **Easy Field Height Adjustability** – the special ribbed height adjustment design makes adjustments to finished grade, if necessary, quick and easy.

Replacement Parts & Accessories

Part #	Description
H13257M	Knob
H13213M	Bracket
H13214M	Seal 33" (838 mm)
H13215M	Seal 39" (991 mm)
C04420M	Ring 33" (838 mm)
C04432M	Ring 39" (991 mm)
D02025M	Cover 33" (838 mm)
D02034M	Cover 39" (991 mm)
CLC-33	Latched Fiberglass Tank Sump Lid



Ordering Specifications - Polyethylene Tank Sumps (with Mechanically Fastened Covers)

Part #	Application	Dimensions								Sump Base Burial Depth				Weight				
		Manway Dia.		A Cover		B Height		C x D Panel		E Base		max.		min.		lbs.	kg	
		in.	mm	in.	mm	in.	mm	in.	mm	No. of Panels	in.	mm	in.	mm				
TSS-4536	Tank Sump Shallow Bury, 36" x 45"	36	914	33	838	34	864	12 x 12	305 x 305	12	45	1,143	39	991	28	711	84	38
TSM-4536	Tank Sump Medium Bury, 36" x 45"	36	914	33	838	39	991	17 x 12	432 x 305	12	45	1,143	44	1,118	33	838	86	40
TSM-4842	Tank Sump Medium Bury, 42" x 48"	42	1,066	39	991	39	991	17 x 11	423 x 279	14	48	1,219	44	1,118	33	838	88	40
TSD-4536	Tank Sump Deep Bury, 36" x 45"	36	914	33	838	51	1,295	17 x 11	423 x 279	14	48	1,219	56	1,422	33	838	90	41
TSD-4842	Tank Sump Deep Bury, 42" x 48"	42	1,067	39	991	51	1,295	17 x 11	432 x 279	14	48	1,219	56	1,422	33	838	92	42

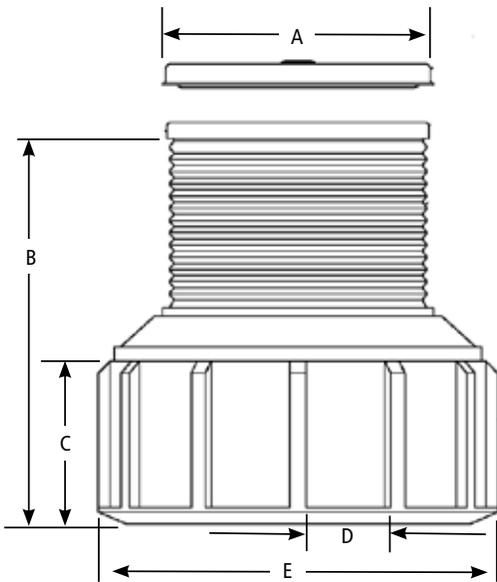


Medium Burial Sumps

A one-piece polyethylene containment sump designed for standard tank burial depths between 24" and 44". Available in sizes to install under 36" and 42" diameter street manholes. (MBS-3645H)

Shallow Burial Sumps

A one-piece polyethylene containment sump designed for shallow tank burial depths between 21" and 37". Available in sizes to install under 36" and 42" diameter street manholes.



Polyethylene Tank Sumps with Compression Fit Covers

OPW one-piece polyethylene tank sumps are listed with Underwriters Laboratories, Inc., (UL), and have passed the requirements for Canada at Underwriters Laboratories of Canada (ULC), KIWA and IP.

Features & Benefits:

- ◆ Liquid-tight covers
- ◆ Liquid-tight riser/base joints and pipe entries
- ◆ Chemically compatible
- ◆ Structurally strong
- ◆ Height adjustable

Replacement Parts & Accessories

Part #	Description
SCS-0030-HW	Sump Cover Seal
TSC-0030	Tank Sump Cover
SCS-0036-HW	Sump Cover Seal
TSC-0036	Tank Sump Cover
SCS-0042-H	Sump Cover Seal
TSC-0042	Tank Sump Cover
WIP-HK-8000	Sump Cover Handle

Ordering Specifications - Polyethylene Tank Sumps (with Compression Fit Covers)

Part #	Application	Manway Dia.		Dimensions						Sump Base Burial Depth				Weight				
				A Cover		B Height		C x D Panel		E Base		max.				min.		
				in.	mm	in.	mm	in.	mm	in.	mm	in.	mm			in.	mm	lbs.
MBS-3645H	Tank Sump Medium Bury 36" x 45"	36	914	33	838	39	990	16 x 9	406 x 229	12	45	1,143	44	1,118	24	610	90	40.8
DBS-3645H	Two-Piece Deep Bury 36" x 45"	36	914	46	1168	48.5	1231	18 x 10	457 x 254	12	49	1,244	55	1,397	33	838	140	63.5
CHK-1000	Cover Hold Down Kit																	

Fibrelite Tank Sump Systems

OPW Fibrelite tank sumps function as a liquid-tight isolation container providing secondary containment for tank fittings valves, pumps and Flexworks or Fiberglass pipe fittings.

They also provide surface access to the tank itself, as well as a clean, dry environment for future service and maintenance. The height adjustable risers accommodate different tank bury depths.

Materials:

Sump: Fiberglass

Resin Kit must be ordered separately. See the Ordering Specifications Chart below.



Features & Benefits:

- ◆ Watertight – structure will not deform under water pressure
- ◆ For depths greater than 60", use S8CRD "deep bury" sumps or extensions on page 19.
- ◆ Anti-static surface
- ◆ Vacuum testable – during and after installation
- ◆ Available for both new and retrofit applications
- ◆ Sump extensions available; extend sump height by 12" per extension
- ◆ Guaranteed uniform 3/8" wall thickness

Ordering Specifications - Tank Sump Systems

Tank Sump Systems Include: Tank Sump Base, Top-hat with Stainless Steel Retaining Ring, Water Tight Internal Tank Sump Lid, Manhole Cover and Frame, Skirt Bonded to Frame, Polyurethane Sealant

Part #	Application	Tank Collar	Dia.	Height	Sump		Bonded Manhole	
					Base	WT Cover	Skirt I.D	Color
S8CR-390BL-WT33	45" x 33" Tank Sump with Black MH Cover	42"	45"	33"	Collar Ring	33"	36" FL90	Black
S8CR-390G-WT33	45" X 33" Tank Sump with Gray MH Cover	42"	45"	33"	Collar Ring	33"	36" FL90	Gray
S8CRD-390BL-WT33	45" x 45" Tank Sump with Black MH Cover	42"	45"	45"	Collar Ring	33"	36" FL90	Black
S8CRD-390G-WT33	45" x 45" Tank Sump with Gray MH Cover	42"	45"	45"	Collar Ring	33"	36" FL90	Gray
S8SB-390BL-WT33	45" x 33" Solid Tank Sump with Black MH Cover	N/A	45"	33"	Solid	33"	36" FL90	Black
S8SB-390G-WT33	45" X 33" Solid Tank Sump with Gray MH Cover	N/A	45"	33"	Solid	33"	36" FL90	Gray
S14CR-3100BL-WT33	52" X 33" Tank Sump with Black MH Cover	48"	52"	33"	Collar Ring	33"	40" FL100	Black
S14CR-3100G-WT33	52" X 33" Tank with Gray MH Cover	48"	52"	33"	Collar Ring	33"	40" FL100	Gray
S15CR-3100BL-WT33	60" x 33" Tank Sump with Black MH Cover	54"	52"	33"	Collar Ring	33"	40" FL100	Black
S15CR-3100G-WT33	60" X 33" Tank Sump with Gray MH Cover	54"	52"	33"	Collar Ring	33"	40" FL100	Gray

Ordering Specifications - Tank Sump Resin Kits

Part #	Application
S-CR-FGK	FRP Kit Used For Bonding Collar Ring Sump to FRP Tank Collar And Top Hat To Sump Base
RK-5000	Fiberglass Epoxy Kit (Qt. Size)
S-TH-FGK	FRP Kit used for Top Hat to Sump

Tank Sump Resin Kit Matrix

Tank Sump Part #	Collar Ring Attachment to Tank		Top Hat Attachment to Sump Base
	S-CR-FGK (1 gal)	RK-5000	S-TH-FGK (1 qt)
S8SB / S8SBD	n/a	n/a	1
S8CR / S8CRD	1	1	n/a*
S14CR	1	2	n/a*
S15CR	2	3	n/a*

* S-CR-FGK kit covers both Collar Ring and Top Hat application



Tank Sump Mounting Flanges

FlexWorks tank sump mounting flanges are used to mount FlexWorks tank sumps to 4" and 6" underground storage tank bung fittings. Flange top models (SMF-6) provide added flexibility in positioning of pump or extractor outlets. First, the riser or extractor is threaded into the top flange. The top flange is then oriented and bolted to the mounting flange.

Our No-Bolt style mounting flange, model TFA-4090, is also used to mount FlexWorks tank sumps to 4" underground storage tank bung fittings and attaches to the bottom of the sump base to provide a secure and liquid tight connection. This model has compression studs for added stability and fast and easy installation with a socket wrench.

Tank Manway Adaptors

FlexWorks Tank Manway Adaptors are used to mount tank sumps to a tank's outward flanged manway. This adaptor attaches to the tank's manway and compresses the fabricated sump base and gasket between two steel compression rings.

Sump Inspection Ports

FlexWorks optional sight glass kits include urethane sealant (SL-1100).

Ordering Specifications - Tank Fitting Adaptor

Part #	Application
TFA-4090	4" Tank Fitting Adaptor, No Bolt Style
SMF-4E	4" Tank Fitting Adaptor, Bolt Style
SMF-4EFT	4" Tank Fitting Adaptor, Bolt Style, Extended Flange
SMF-6	6" Tank Fitting Adaptor, Bolt Style

Ordering Specifications - Tank Manway Adaptor

Part #	Application
TMA-2224	Tank Manway Adaptor (22 inch)
TMA-2424	Tank Manway Adaptor (24 inch)

Ordering Specifications - Sump Inspection Port

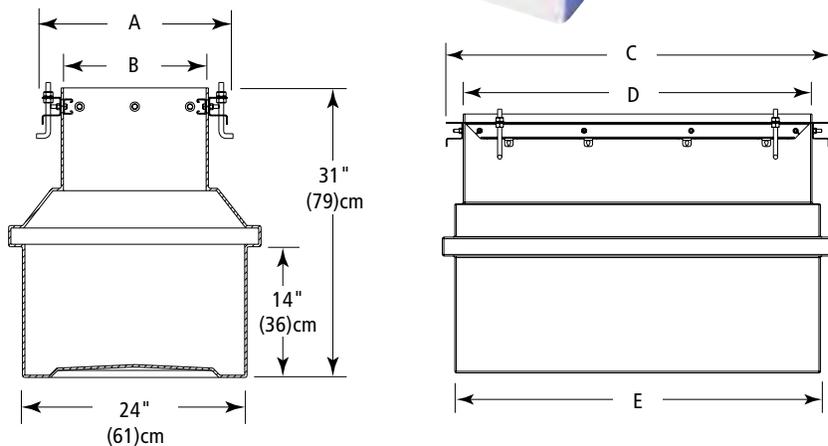
Part #	Application
SIP-4	4" Sump Inspection Port

One-Piece Polyethylene Dispenser Sumps

FlexWorks Dispenser Sumps are installed beneath fuel dispensers to provide access to and secondary containment of dispenser plumbing, emergency shear valves and underground piping connections. Stabilizer Bar Kits are installed in FlexWorks Dispenser Sumps to provide reliable support for boss-mounted emergency shear valves.

Features & Benefits:

- ◆ **Multiple Models** – ensure a custom fit.
- ◆ **Structural Reinforcing on Large MPD Models** – prevents sump deformation from backfill and high water table forces.
- ◆ **Light Color** – preserves rigidity in sunlight before backfill and provides maximum visibility after installation.
- ◆ **Full Perimeter Liquid Collection Channel** – facilitates quick leak detection and allows flexibility in locating leak sensors.
- ◆ **Integral Rain Lip** – protrudes into the dispenser frame to prevent surface water entry.
- ◆ **Easy Installation** – field height adjustment capability and large pipe entry area ensures installation flexibility.
- ◆ **Available in a Conduitless Model** eliminates conduit entry fittings and prevents a notorious leak point inside dispenser sumps.



Ordering Specifications* - One-Piece Polyethylene Dispenser Sumps

Model #	A		B		C		D		E		Weight	
	in.	cm	in.	cm	in.	cm	in.	cm	in.	cm	lbs.	kg.
DS-1036	14	36	10	25	40	102	36	91	38	97	65	65
DS-1117F**	14.5	37	10.5	27	20.5	52	16.5	42	18.5	47	32	15
DS-1120	15	38	11	28	24	61	20	51	25	64	33	15
DS-1123	15	38	11	28	27	69	23	58	25	64	33	15
DS-1123B	18.5	47	11	28	27	69	23	58	25	64	33	15
DS-1123F **	15	38	11	28	27	69	23	58	25	64	33	15
DS-1229	15.5	39	11.5	29	33	84	29	74	31	79	49	22
DS-1242	15.5	38	11.5	29	46	117	42	107	44	112	84	38
DS-1543A***	19	48	15	38	43	109	39	99	41	104	84	38
DS-1630***	20	51	16	41	34	86	30	76	32	81	52	23
DS-1642	20	51	16	41	46	117	42	107	44	112	84	38
DS-1836***	21.5	55	17.5	44	40.5	103	36.5	93	39	99	70	32
DS-1928***	18	46	14.8	38	30	76	26	66	28.5	72	50	23
DS-1741***	21	53	17	43	44.7	114	40.6	103	42.6	108	80	36

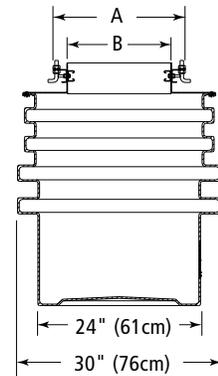
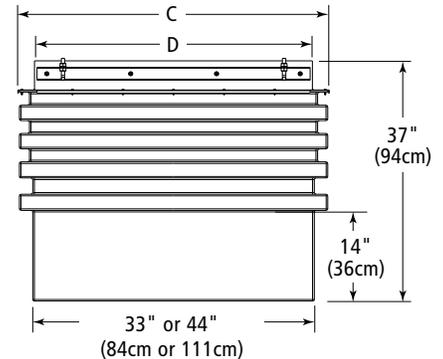
* Refer to FlexWorks Dispenser Sump Selection Chart to select sumps for particular dispensers (See pages 32 and 33 of this catalog)

** Flush mount model supplied without rain lip due to dispenser frame clearance limitations; Frame gasket included. Anchor bolts provided, Stabilizer Bar Kits ordered separately; One kit required for each emergency and vapor shear valve.

*** These sumps are designed for Conduitless applications.



Wide Access Polyethylene Dispenser Sumps



Features & Benefits:

- ◆ **Contractor-Friendly Installation** – open top provides unrestricted access to the inside of the containment chamber to facilitate entry fitting and piping installation. Dispenser mounting frame is attached after plumbing is complete.
- ◆ **Deeper Burial Capability** – 37" burial depth allows piping slope requirements to be met more easily in layouts with long piping runs.
- ◆ **Simple Field Height Adjustment** – the top portion of the chamber can be

quickly and easily trimmed along the ribs to ensure maximum installation flexibility.

- ◆ **Full Perimeter Liquid Collection Channel** – facilitates quick leak detection and allows flexibility in locating leak sensors.
- ◆ **Convenient Shipping and Storage** – sump boxes are partially nestable. Two chamber sizes accept multiple frames to accommodate all common dispensers.
- ◆ **Polyethylene Top** – polyethylene Top will not corrode.

Ordering Specifications - Wide Access Polyethylene Dispenser Sumps

Sump Model #	Dimensions								Weight with Top		Box Part #	Top Assembly Part #
	A	B	C		D		lbs.	kg				
	in.	cm	in.	cm	in.	cm	in.	cm				
DSW-1117F *	14½	37	10½	27	37	94	16½	42	94	43	E00590M	D02209
DSW-1120	15	38	11	28	37	94	20	51	94	43	E00590M	D02210
DSW-1123	15	38	11	28	37	94	23	58	94	43	E00590M	D02212
DSW-1123F *	15	38	11	28	37	94	23	58	94	43	E00590M	D02213
DSW-1229	15½	39	11½	29	37	94	29	74	94	43	E00590M	D02215
DSW-1242	15½	38	11½	29	46	117	42	107	95	43	E00591M	D02532
DSW-1543	18½	47	14¾	37	46	117	42½	108	95	43	E00591M	D02550
DSW-1543C	18½	47	14¾	37	46	117	36¾/10	92	95	43	E00590M	201491
DSW-1630	20	51	16	41	37	94	30	76	87	40	E00590M	D02536
DSW-1642	20	51	15½	39	46	117	42	107	95	43	E00591M	D02535
DSW-1836	21	53	17	43	46	117	36	91	95	43	E00591M	D02511
DSW-1836C	21	53	17	43	46	117	36	91	95	43	E00591M	D02511
DSW-1836CL	21.1	53.5	16.7	42.4	41	104	37	94	95	43	206725	206726

SL-1100 Urethane Sealant - One Tube required per Sump (Packaged 12 tubes/case)

* Flush Mount model supplied without rain lip due to dispenser frame clearance limitations; Frame Gasket Included.

Anchor bolts provided, Stabilizer Bar Kits ordered separately; One kit required for each emergency & vapor valve.

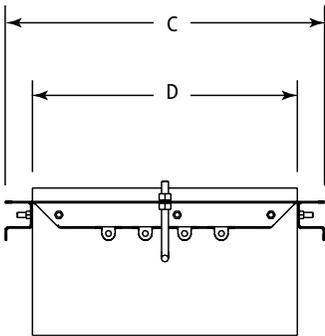
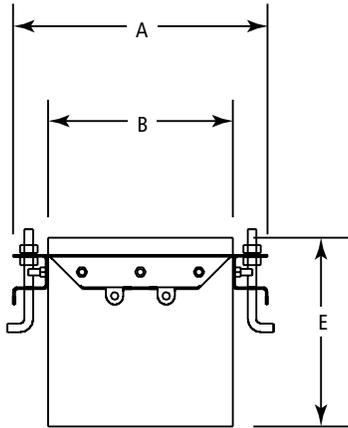
Refer to FlexWorks Dispenser Sump Selection Chart (See Pages 32 - 33 of this catalog) to select sumps for particular dispensers.

Yellow indicates metal top model.

** These sumps are designed for Conduitless applications.

FlexWorks Polyethylene Dispenser Pans

FlexWorks Dispenser Pans are installed beneath fuel dispensers to provide secondary containment of dispenser plumbing and emergency shear valves. Dispenser pans are commonly used with rigid fuel pipe and to retrofit existing dispensers.



Ordering Specifications FlexWorks Polyethylene Dispenser Pan

Model *	Dimensions										Weight	
	A		B		C		D		E		lbs.	kg
	in.	cm	in.	cm	in.	cm	in.	cm	in.	cm		
DP-1117F	14 ¹ / ₂	37	10 ¹ / ₂	27	20 ¹ / ₂	52	16 ¹ / ₂	42	11	28	20	9
DP-1123	15	38	11	28	27	69	23	58	11	28	23	10
DP-1123F	15	38	11	28	27	69	23	58	11	28	23	10
DP-1543	19	48	15	38	41 ¹ / ₂	105	43	109	11	28	44	20
DP-1630	20	51	16	41	34	86	30	76	11	28	38	17
DP-1836	21 ¹ / ₂	55	17 ¹ / ₂	44	40	102	36	91	11	28	50	23

*Flush Mount Model (F) Supplied without Rain Lip Due to Dispenser Frame Clearance Limitations; Supplied with Frame Gasket. Anchor Bolts Provided, Stabilizer Bar Kits Ordered Separately; One Kit Required for each Emergency Shut-Off Valve.



Dispenser Pan Fittings and Accessories

FlexWorks Dispenser Pan fittings are installed in the bottom of FlexWorks Dispenser Pans to accommodate Pipe and Flex Connector Entries. "The FIT-3530 is used to isolate and contain Flex Connectors".

Ordering Specifications - Dispenser Pan Fittings & Accessories

Model	Application	Nominal Boot I.D.		Hole Saw Required	Weight	
		in.	cm		lbs.	kg
PEF-3520R	Pan Entry Fitting, 2" (5 cm) FRP Pipe Entry	2 ^{3/8}	6	3" (8 cm)	2.5	1
PEF-3515R	Pan Entry Fitting, 1.5" (4 cm) Pipe Entry	2	5	3" (8 cm)	2.5	1
PEF-3515X	Pan Entry Fitting, 1.5" (4 cm) Flex Connector (Hex Seal)	2 (Hex)	5	3" (8 cm)	2.5	1
FIT-3530	Flexible Isolation Jacket, 30" (76 cm) Long x 3.5" (9 cm) I.D.				2	1
ITR-3015	Isolation Tube Reducer, 3" x 0.5"				1	.5
ITR-3020	Isolation Tube Reducer, 3" x 2"				1	.5

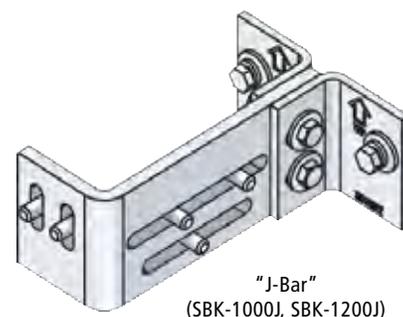
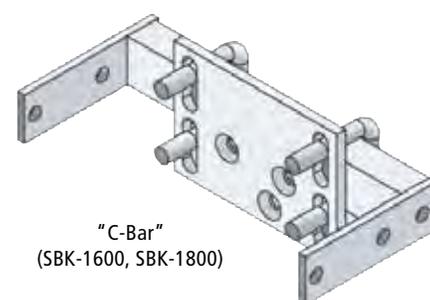
Dispenser Sump Accessories

FlexWorks pipe Stabilizer Bar Kits provide reliable support inside dispenser sumps/pans for boss-mounted emergency shear valves. One kit is required for each emergency valve and vapor shear valve.

Ordering Specifications - Stabilizer Bar Kit

Model #	Application (for Sump/Pan) DS-, DSW, DSF, FDS	Weight	
		lbs.	kg
SBK-1000J	1036	5	2.3
SBK-1100J	1117F, 1123, 1123F, 1120	5	2.3
SBK-1200J	1229, 1242	6	2.8
SBK-1500	Ovation Product Line (DSW-1543, DSF-1543, 1543C)	7	3
SBK-1500A	Ovation Product Line for DS-1543A, DS-1928	7	3
SBK-1500AV	Ovation Product Line For 1543A Vapor	7	3
SBK-1500V	Ovation Vapor Line (DSW-1543, DSF-1543, 1543C)	7	3
SBK-1600	1630, 1642	7	3
SBK-1800	1836, FDS-4021	7	3
SBO-0250	Ovation FDS-4319	6	2.8
SBO-0300	Advantage, FDS-4721	6	2.8
MPK-10*	Extra Mounting Plate Kit	2	1

* Stabilizer bar is installed widthwise in dispenser sump. One valve mounting plate is included. Additional MPK-10 mounting plate kit is required for additional valves.

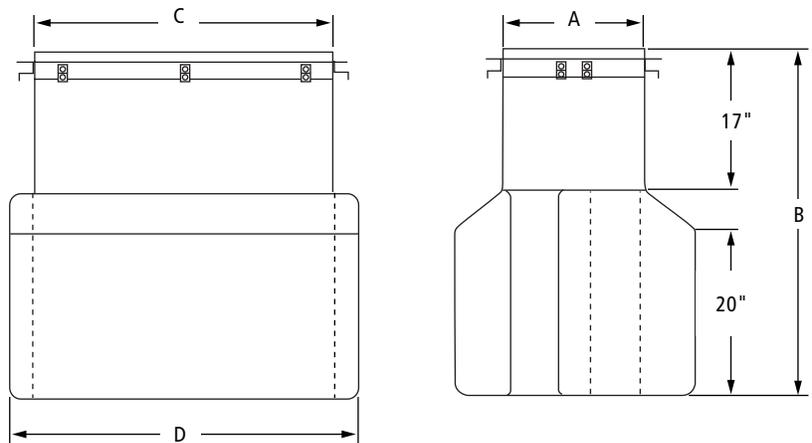


Fiberglass Dispenser Sumps

FlexWorks Fiberglass Dispenser Sumps allow the supply piping to enter and/or exit out of the sidewall of the containment sump at a very low elevation. Ideal for pressure piping systems requiring indirect slope back to the tank.

Features & Benefits:

- ◆ **Structural Integrity** – engineered with thick side walls to withstand backfill and high water table forces.
- ◆ **Full Access Working Area** – frame is attached after plumbing is complete.
- ◆ All three models have an external conduit channel.

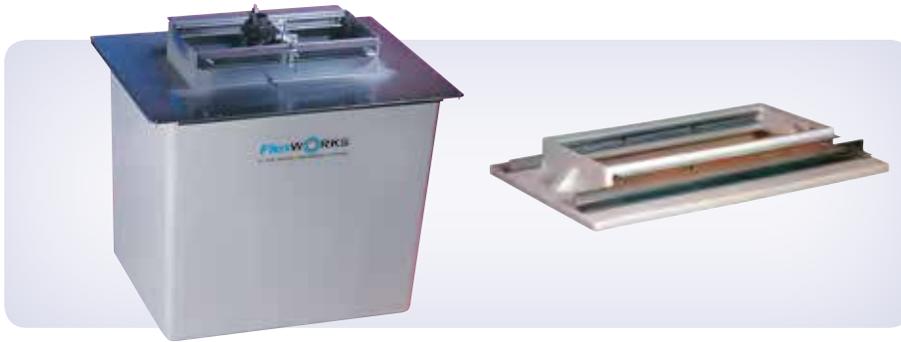


Ordering Specifications* - Fiberglass Dispenser Sumps

Model #	A		B		C		D		Weight	
	in.	cm	in.	cm	in.	cm	in.	cm	lbs.	kg
FDS-4021	17	43	42	106	36	91	42	106	102	46.27
FDS-4319	15	38	42	106	39	99	39	99	107	48.53
FDS-4721	15	38	42	106	41	104	48	121	125	56.70

Refer to FlexWorks Dispenser Sump Selection Chart (See Pages 32 - 33 of this catalog) to select sumps for particular dispensers.

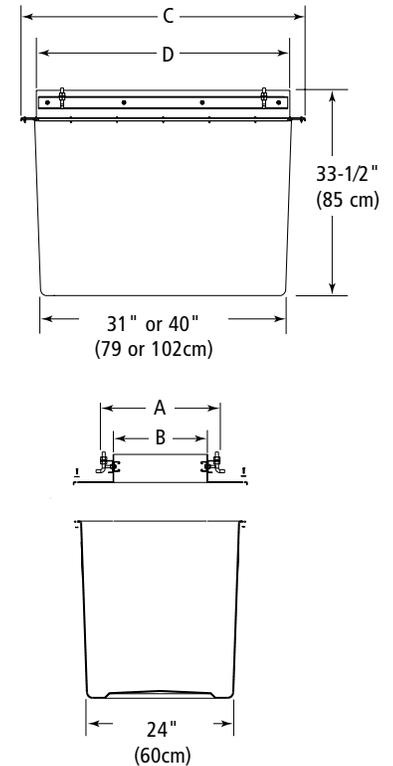
*All models are designed with conduit-less frames. All models have an external conduit channel.



Features & Benefits:

- ◆ **Structural Integrity** – engineered with thick side walls to withstand backfill and high water table forces. Precise glass/resin metering throughout the molding process ensures material consistency and maximizes the strength-to-weight ratio.
- ◆ **Smooth Sealing Surfaces For Leak-Tight Sump Entry Fittings** – male/female mold halves produce a uniform wall thickness while eliminating air entrapment. The result is a flat, smooth finish, both inside and out, which provides leak-tight pipe entries.
- ◆ **Full-Perimeter Liquid Collection Channel** – facilitates quick leak detection and allows flexibility in locating leak sensors.
- ◆ **Convenient Shipping and Storage** – sump boxes are nestable. Two sizes accept multiple frames to accommodate all common dispensers.
- ◆ **Full-Access Working Area** – frame is attached after plumbing is complete.
- ◆ **Mounting Flange** – sump rests on island form crossbars for support during installation.

Wide-Access Fiberglass Dispenser Sumps



Ordering Specifications - Wide Access Polyethylene Dispenser Sumps

Sump Model #	Dimensions								Weight with Top		Box Part #	Top Assembly Part #
	A		B		C		D		lbs.	kg		
	in.	cm	in.	cm	in.	cm	in.	cm				
DSF-1117F *	14 1/2	37	10 1/2	27	37	94	16 1/2	42	87	40	D02198M	D02209
DSF-1120	15	38	11	28	37	94	20	51	87	40	D02198M	D02210
DSF-1123	15	38	11	28	37	94	23	58	87	40	D02198M	D02212
DSF-1123F *	15	38	11	28	37	94	23	58	87	40	D02198M	D02213
DSF-1229	15 1/2	39	11 1/2	29	37	94	29	74	87	40	D02198M	D02215
DSF-1242	15 1/2	39	11 1/2	29	46	117	42	107	90	41	D02197M	D02532
DSF-1543	18 1/2	47	14 3/8	37	46	117	42 1/2	108	90	41	D02197M	D02550
DSF-1543C**	18 1/2	42	14 3/8	37	46	117	36 3/10	92	87	40	D02198M	201491
DSF-1630	20	51	16	41	37	94	30	76	80	36	D02198M	D02536
DSF-1642	20	51	16	41	46	117	42	107	90	41	D02197M	D02535
DSF-1836	21 1/2	55	17 1/2	44	46.5	118	36 1/2	93	90	41	D02197M	D02511
DSF-1836C**	21 1/2	55	17 1/2	44	37	94	44 1/2	113	87	40	D02198M	201339
DSFE-4612	FRP Dispenser Sump Extension (LG)											
DSFE-3712	FRP Dispenser Sump Extension (SM)											

SL-1100 Urethane Sealant - One Tube required per Sump (Packaged 12 tubes/case)

* Flush Mount model supplied without rain lip due to dispenser frame clearance limitations; Frame Gasket Included. Anchor bolts provided, Stabilizer Bar Kits ordered separately; One kit required for each emergency & vapor valve. Refer to FlexWorks Dispenser Sump Selection Chart (See Pages 32 - 33 of this catalog) to select sumps for particular dispensers. **Yellow indicates metal top model.**

** These sumps are designed for Conduitless applications.

Ordering Specifications - FlexWorks Dispenser Sump Selection Chart

Dispenser Manufacturer & Model	Dispenser Footprint Dimensions		FlexWorks One-Piece Polyethylene Sump	FlexWorks Wide-Access Polyethylene Sump	FlexWorks One-Piece Polyethylene Pan	FlexWorks One-Piece Fiberglass Sump	FlexWorks Wide-Access Fiberglass Sump	Stabilizer Bar Kit
	in.	cm						
GILBARCO								
Commercial 625, 650, 684 Series (21" / 53" cm Frame)	15 ¹¹ / ₁₆ " x 21"	40 x 53	DS-1117F	DSW-1117F	DP-1117F	---	DSF-1117F	SBK-1100J
Salesmaker-2 Series (21" / 53 cm Frame)	15 ¹¹ / ₁₆ " x 21"	40 x 53	DS-1117F	DSW-1117F	DP-1117F	---	DSF-1117F	SBK-1100J
Highline 11B Series (21" Frame / 53 mm)	15 ¹¹ / ₁₆ " x 21"	40 x 53	DS-1117F	DSW-1117F	---	---	DSF-1117F	SBK-1100J
Highline 111B Series (27" / 69 cm Frame)	15 ¹¹ / ₁₆ " x 27"	40 x 53	DS-1123F	DSW-1123F	DP-1123F	---	DSF-1123F	SBK-1100J
Trimline 251, 252, 261, 262 (27" / 69 cm Frame)	15 ¹¹ / ₁₆ " x 27"	40 x 69	DS-1123F	DSW-1123F	DP-1123F	---	DSF-1123F	SBK-1100J
Trimline 154, 164, 251, 262 (27" / 69 cm Frame)	15 ¹¹ / ₁₆ " x 21"	40 x 69	DS-1117F	DSW-1117F	---	---	DSF-1117F	SBK-1100J
Commercial 650 Series (27" / 69 cm Frame)	15 ¹¹ / ₁₆ " x 27"	40 x 69	DS-1123F	DSW-1123F	DP-1123F	---	DSF-1123F	SBK-1100J
Highline Salesmaker Series	15 ¹¹ / ₁₆ " x 21"	40 x 69	DS-1117F	DSW-1117F	DP-1117F	---	DSF-1117F	SBK-1100J
Highline Salesmaker Series (27" / 69 cm Frame)	15 ¹¹ / ₁₆ " x 27"	40 x 69	DS-1123F	DSW-1123F	DP-1123F	---	DSF-1123F	SBK-1100J
Salesmaker-4 Series (27" / 69 cm Frame)	15 ¹¹ / ₁₆ " x 27"	40 x 69	DS-1123F	DSW-1123F	DP-1123F	---	DSF-1123F	SBK-1100J
Legacy Series	15 ¹¹ / ₁₆ " x 27"	40 x 69	DS-1123F	DSW-1123F	DP-1123F	---	DSF-1123F	SBK-1100J
Encore Series 	23 ¹ / ₂ " x 40 ⁹ / ₁₆ "	60 x 103	DS-1836	DSW-1836 DSW-1836CL	DP-1836	FDS-4021	DSF-1836 DSF-1836C	SBK-1800**
Advantage (36" / 91 cm Frame Models)	21 ¹ / ₂ " x 36"	55 x 91	DS-1630	DSW-1630	DP-1630	---	DSF-1630	SBK-1600
Quad or Dual	---	---	---	---	---	---	---	---
Blender X + O (36" / 91 cm)	---	---	---	---	---	---	---	---
Advantage (48" / 122 cm Frame Models)	21 ¹ / ₂ " x 48"	55 x 122	DS-1642	DSW-1642	---	FDS-4721	DSF-1642	SBK-1600*
Blender Six-Hose	---	---	---	---	---	---	---	---
Blender Single-Hose	---	---	---	---	---	---	---	---
Blender X + O (48" / 122 cm) or X + 1 (48" / 122 cm)	---	---	---	---	---	---	---	---
MPD-1, MPD-2, MPD-3	16" x 48"	41 x 122	DS-1036	---	---	---	---	SBK-1000J
MPD Fixed Blender	16" x 48"	41 x 122	DS-1036	---	---	---	---	SBK-1000J
	---	---	---	---	---	---	---	---
BENNETT								
Bennett Pacific 	19 ¹ / ₂ " x 43 ¹ / ₂ "	49 x 110	DS-1543A	---	---	---	---	SBK-1500A
Bennett 3000 Series	20" x 30"	51 x 76	DS-1123B	---	---	---	---	SBK-1100J
PD MCLAREN								
RDR HSx (Single Product, Single Hose)	21" x 17.75"	53 x 45	---	DSW-1922	DSF-1922	---	---	SBK-1900
RDR HSx-D1 (Single Product, Dual Hose)	21" x 17.75"	53 x 45	---	DSW-1922	DSF-1922	---	---	SBK-1900
RDR HSx-D2 (Dual Product, Dual Hose)	21" x 17.75"	53 x 45	---	DSW-1922	DSF-1922	---	---	SBK-1900
RDR HSx-SAT (Master Unit and Satellites)	21" x 17.75"	53 x 45	---	DSW-1922	DSF-1922	---	---	SBK-1900
RDR HSx-X2 (Single Product, Dual Hose, One at a Time)	21" x 17.75"	53 x 45	---	DSW-1922	DSF-1922	---	---	SBK-1900

* For FDS-4721 Models, use Stabilizer Bar SBO-0300.

** For FDS-4021 Models, use Stabilizer Bar SBK-1800.

Ordering Specifications - FlexWorks Dispenser Sump Selection Chart

Dispenser Manufacturer & Model	Dispenser Footprint Dimensions		FlexWorks One-Piece Polyethylene Sump	FlexWorks Wide-Access Polyethylene Sump	FlexWorks One-Piece Polyethylene Pan	FlexWorks One-Piece Fiberglass Sump	FlexWorks Wide-Access Fiberglass Sump	Stabilizer Bar Kit
	in.	cm						
GASBOY								
0215A, 216A (19 ⁷ / ₈ " Frame / 50.5 mm)	17 ¹ / ₄ " x 19 ⁷ / ₈ "	49 x 50.5	DS-1117F	DSW-1117F	DP-1117F	----	DSF-1117F	SBK-1100J
52 and 53 Series	17" x 19 ⁷ / ₈ "	44 x 50.5	DS-1117F	DSW-1117F	DP-1117F	----	DSF-1117F	SBK-1100J
8700, 8800, 9100, 9800 Series	17 ¹ / ₄ " x 25"	44 x 63.5	DS-1120	----	----	----	----	SBK-1100J
25" Frame 63.5 mm	17 ¹ / ₄ " x 25"	44 x 63.5	----	----	----	----	----	----
8700, 8800, 9100, 9800 Series (28 ¹ / ₄ " Frame / 72 mm)	17 ¹ / ₄ " x 28"	44 x 71	DS-1123	DSW-1123	DP-1123	----	DSF-1123F	SBK-1100J
9850A	15 ¹ / ₁₆ " x 21"	40 x 69	DS-1120	DSW-1120	----	----	DSF-1120	SBK-1100J

* Stabilizer bar is installed widthwise in dispenser sump

DRESSER / WAYNE

350, 357, 358, 360, 370 Series	15" x 25 ⁷ / ₈ "	30 x 66	DS-1123F	DSW-1123F	DP-1123F	----	DSF-1123F	SBK-1100J
Vista 380 Series (387, 389)	20" x 35"	51 x 89	DS-1229	DSW-1229	----	----	DSF-1229	SBK-1200J
Vista 590 Series (590, 595)	20" x 48"	51 x 122	DS-1242	DSW-1242	----	----	DSF-1242	SBK-1200J
Vista 390 Series (395, 399)	20" x 48"	51 x 122	DS-1242	DSW-1242	----	----	DSF-1242	SBK-1200J
Vista 490 Series	20" x 48"	51 x 122	DS-1242	DSW-1242	----	----	DSF-1242	SBK-1200J
DL390, 395, 399 Series	20" x 48"	51 x 122	DS-1242	DSW-1242	----	----	DSF-1242	SBK-1200J
HS1 Satellite / 287 Series	20" x 35"	51 x 89	DS-1229	DSW-1229	----	----	DSF-1229	SBK-1200J
Ovation 	19 ¹ / ₂ " x 43 ¹ / ₂ "	50 x 110	DS-1543A**	DSW-1543 DSW-1543C	----	FDS-4319*	DSF-1543 DSF-1543C	SBK-1500**
Select	19 ³ / ₈ " x 32 ⁵ / ₁₆ "	49 x 82	DS-1928***	----	----	----	----	SBK-1600***
Global Century	19 ³ / ₈ " x 32 ⁵ / ₁₆ "	49 x 82	DS-1928***	----	----	----	----	SBK-1600***
Reliance	19 ³ / ₈ " x 32 ⁵ / ₁₆ "	49 x 82	DS-1928***	----	----	----	----	SBK-1600***
HS3 / Vista	19 ³ / ₈ " x 32 ⁵ / ₁₆ "	49 x 82	DS-1630	DSW-1630	DP-1630	----	DSF-1630	SBK-1600
Helix 2000	20" x 33"	51 x 84	DS-1630	----	----	----	----	SBK-1600
Helix 4000 and 5000	26" x 44"	51 x 112	DS-1741	----	----	----	----	SBK-1800

TOKHEIM

1200, 1248, 1250 Series	17 ¹ / ₄ " x 25"	44 x 64	DS-1120	DSW-1120	----	----	DSF-1120	SBK-1100J
330B, 333B Series	17 ¹ / ₄ " x 44"	44 x 112	DS-1642	DSW-1642	----	----	DSF-1642	SBK-1600

* For FDS-4319 Model use Stabilizer Bar SBO-0250.

** For DS-1543A and DSF/DSW-1543 Models use Stabilizer Bar SBK-1500.

*** For DS-1928 and DSF/DSW-1630 Models use Stabilizer Bar SBK-1600.

Automatic Fire Extinguisher System

The FlexWorks Automatic Fire Extinguisher System is a small, non-rechargeable fire extinguisher designed specifically to be installed in a containment sump underneath an above-ground fuel dispenser, and to automatically extinguish a fuel fire in the event of a dispenser knock-over. The FlexWorks Fire Extinguisher System will automatically activate and discharge its extinguishing agent when the surrounding temperature reaches 175°F (79°C). The fire extinguisher comes with its own mounting bracket and can be mounted to a variety of surfaces. The fire extinguisher contains enough extinguishing agent to protect dispenser containment sumps up to a maximum capacity of 50 cubic feet.

Features

- ◆ Charged with a clean agent – HFC-227ea
- ◆ Operating temperatures of 0°F to 130°F
- ◆ One-year replacement warranty
- ◆ Low-cost solution to a potentially expensive problem

Benefits

- ◆ Extinguishes fuel fires quickly
- ◆ Provides year-round fire protection
- ◆ No certified annual testing required
- ◆ May reduce fire insurance premiums



Fire Prevention

Dispenser and UST containment sumps offer significant environmental protection by providing secondary containment and corrosion protection of valves and pipe fittings. Under certain conditions, a potential fire hazard could develop. Should a fire occur inside the containment chamber, the FlexWorks Automatic Fire Extinguisher System automatically extinguishes the fire in a matter of seconds, protecting patrons, underground piping, shear valves and sump.

Application	Dispenser Containment Sump
Agent	HFC-227ea
Coverage Area:	50 ft. ³ (1.42m ³)
Atmospheric Life	Less than one day
Activation Temp:	175°F (79°C)
Operating Temp Range:	0°F to 130°F (-17.7°C to 54.4°C)

Ordering Specifications - FlexWorks Automatic Fire Extinguisher System

Model	Description
FSS-50	FlexWorks Automatic Fire Extinguisher System



The "REF" Rigid Entry Fitting

As a result of OPW's all inclusive development program to bring Next Generation Solutions to the market, OPW is proud to announce the release of our new state-of-the-art Rigid Entry Fitting.

How is this fitting different than other fittings in the industry? Our new Rigid Entry Fitting has minimal exposed rubber, yet still accommodates ground movement. The sealing redundancy throughout the fitting provides maximum containment and unmatched protection from water intrusion.

Features & Benefits:

- ◆ Sealing redundancy throughout – Maximum containment and unmatched protection from water intrusion
- ◆ Preserves total accessibility – For monitoring, maintenance, testing and repair
- ◆ Maintains flexibility to accommodate pipe and ground movement
- ◆ Hard shell exterior – To weather the elements and abuse of the underground environment

Ordering Specifications - REF Rigid Entry Fitting

Model #	Description	Weight	
		lbs.	kg
REF-0075C	Rigid Entry Fitting, ¾" Rigid Conduit, Nylon	.90	0.40
REF-0100C	Rigid Entry Fitting, 1.0" Rigid Conduit, Nylon	.95	0.43
REF-0150	Rigid Direct Bury Entry Fitting for 1.5" Flexworks	2.35	1.06
REF-0200	Rigid Direct Bury Entry Fitting for 2" Flexworks	2.45	1.11
REF-0200F	Rigid Direct Bury Entry Fitting for 2.0" Smith SW FRP	2.45	1.11
REF-0200X	Rigid Direct Bury Entry Fitting for 2" LCX DW FRP	2.45	1.11
REF-0300	Rigid Direct Bury Entry Fitting for 3" Flexworks or 3" Smith SW FRP	2.85	1.30
REF-4015	Rigid Entry Fitting 4" x 1.5"	2.75	1.25
REF-4020	Rigid Entry Fitting 4" x 2.0"	2.85	1.29

Hole Saw Size Table

Entry Fitting Model #	Hole Saw Dimension
REF-4015	4"
REF-4020	4"
REF-0200F	4"
REF-0075C REF-0100C	2.5"

Flexible Entry Boots

FlexWorks Flexible Entry Boots are reliable, safe seals for pipe and conduit entries into underground containment sumps. These entry boots allow for angled pipe entries and have no exposed metal parts to the underground environment. These entry boots are available in a variety of sizes and designs to accommodate rigid and flexible piping, ducting and access pipe.

Features & Benefits:

- ◆ Watertight pipe and conduit entries
- ◆ Installation on flat or round surface
- ◆ Added flexibility permitting angled entries up to 15 degrees
- ◆ Third-Party testing approved

Sump Entry

Flexible entry boots have been tested to withstand a minimum of 6' of liquid head pressure. These seals provide a studded flange connection to create a positive and secure seal where the rubber contacts the sump wall and also around the pipe or conduit. Tightening down on a series of stud fasteners with a compression ring provides a high compression mechanical seal compared to screw on type bulkhead seals.



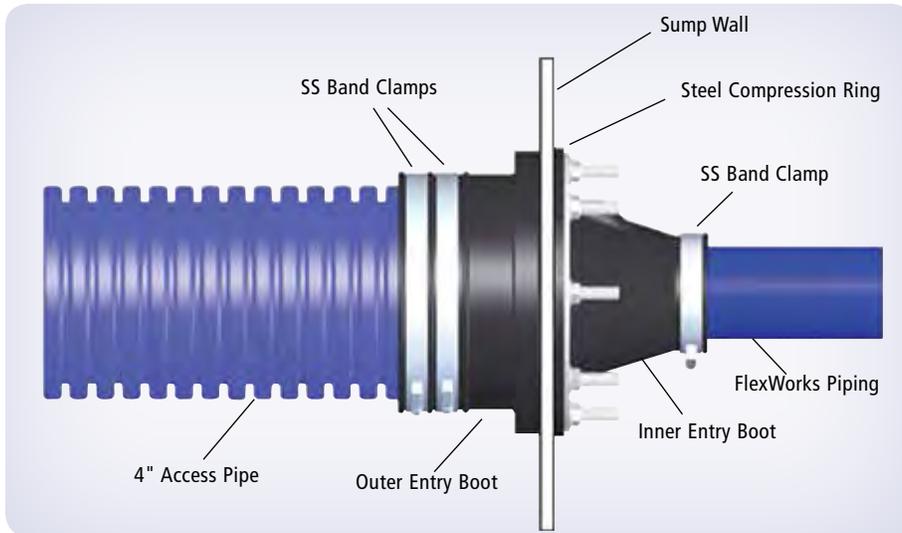
Angled Entries

Primary pipe and access pipe entering the containment sumps may not be perpendicular with the sump wall. Angled entries are generally a result of directional plumbing restrictions on the inside of the containment chamber due to space limitations. Flexible entry boots are flexible enough to permit angled pipe or conduit entries (on two axes) into the sidewall of a containment chamber. All flexible entry boots permit angled entries up to a 15-degree angle off the perpendicular center line in any direction without leaking or putting undue stress on the pipe or conduit seal.

Ordering Specifications - Single Flexible Entry Boot & Fitting

Model #	Application	Weight		Hole Saw	
		lbs.	kg	in.	cm
EBF-0751	1/2", 3/4" and 1" Conduit Entry Boot Fitting	1.2	0.5	2 3/8"	6.03
EBF-0150	1.5" Entry Boot Fitting for 1.5" DW FlexWorks Pipe	1.5	0.7	3 3/4"	9.52
EBF-0200	2" Entry Boot Fitting for 2" DW FlexWorks Pipe or 2" LCX	1.8	0.8	3 3/4"	9.52
EBF-0200F	2" Entry Boot Fitting for 2" Rigid Pipe	1.3	0.6	3 3/4"	9.52
EBF-0300	3" Entry Boot Fitting for 3" DW FlexWorks Pipe or 3" Rigid Pipe/LCX	1.8	0.8	5"	12.7
EBF-0400	4" Entry Boot Fitting for 4" Rigid Pipe/AXP Pipe	2.0	0.9	5 1/2"	13.97
EBF-0600	6" Entry Boot Fitting for 6" Rigid Pipe	Saber Saw			
SAB-7400	4" Sump Access Boot	2.0	0.9	5"	12.7

Flexible Entry Boot Manual Order Number: EBM-0001



Double Flexible Entry Boots

FlexWorks Double Flexible Entry Boots are designed to seal the sump penetration. These entry boots incorporate both internal and external band clamps to provide additional sealing in harsh environments. Boots firmly fasten and seal to the sump wall using steel studs, fasteners and a galvanized compression ring. These entry boots are available in a variety of sizes and designs to accommodate rigid and flexible piping, ducting and conduit.

Features & Benefits:

- ◆ Watertight pipe and conduit entries
- ◆ Installation on flat or round surface
- ◆ Added flexibility permitting angled
- ◆ Provides clean dry environment
- ◆ Accommodates various site installations
- ◆ Allows for easy field adjustments
- ◆ Can be repaired if damaged
- ◆ Third-party tested and approved
- ◆ Internal and external clamps for positive seal off

Ordering Specifications - Double Flexible Entry Boot & Fitting

Model #	Application	Hole Saw		Weight	
		in.	cm	lbs.	kg
DEB-0751	1/2", 3/4" and 1" Conduit Double Entry Boot Fitting	2 3/8"	6.03	1.45	0.66
DEB-0150	1.5" Double Entry Boot Fitting for 1.5" DW FlexWorks Pipe	4 1/4"	10.79	2.50	1.13
DEB-0200	2" Double Entry Boot Fitting for 2" DW FlexWorks Pipe or 2" Rigid Pipe	4 1/4"	10.79	2.50	1.13
DEB-0200X	2" LCX Double Entry Boot Fitting for 2" Ameron LCX / MCX Pipe	5 1/2"	13.97	3.90	1.77
DEB-0300	3" Double Entry Boot Fitting for 3" DW FlexWorks or 3" Rigid Pipe	5 1/2"	13.97	3.05	1.38
DEB-0300X	3" LCX Double Entry Boot Fitting for 3" Ameron LCX / MCX Pipe	5 1/2"	13.97	3.50	1.59
DEB-0400	4" Double Entry Boot Fitting for 4" Rigid Pipe/AXP Pipe	5 1/2"	13.97	3.20	1.45
DEB-4015(A)	4" to 1.5" Double Entry Boot Fitting for 4" FlexWorks Access Pipe to 1.5" DW FlexWorks Pipe - (A) with Air Stem	4"	10.79	3.15	1.43
DEB-4020(A)	4" to 2" Double Entry Boot Fitting for 4" FlexWorks Access Pipe to 2" DW FlexWorks Pipe - (A) with Air Stem	4"	10.79	3.20	1.45

Test Boots

FlexWorks Test Boots are used to isolate and air-test the interstitial space between the primary and secondary pipe. One test boot is required for each pipe end.



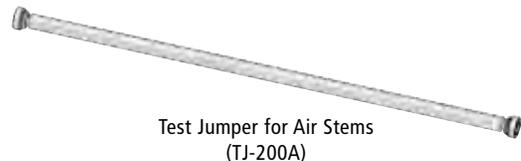
Models TBA-3015,
TBA-3020, TBA-4015 and TBA-4020



Models TBA-0075,
TBA-0100, TBA-0150, TBA-0200 and TBA-0300



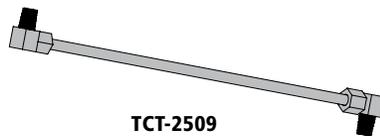
Test Gauge Assembly (TGA-15)



Test Jumper for Air Stems
(TJ-200A)



Test Line Termination Kit for Air Stems
(TLT-36A)



TCT-2509



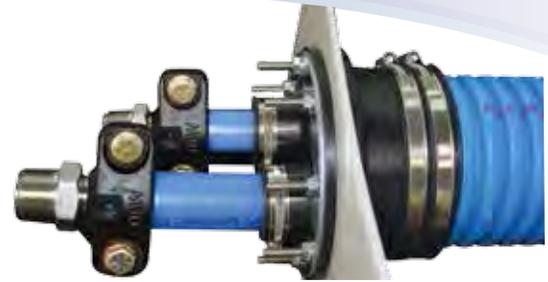
TTT-2536

Ordering Specifications - Test Boot & Testing Equipment

Model #	Application	Weight	
		lbs.	kg
TBA-0075	3/4" Test Boot with Air Stem	0.20	0.09
TBA-0100	1" Test Boot with Air Stem	0.20	0.09
TBA-0150	1.5" Test Boot with Air Stem	0.35	0.16
TBA-0200	2" Test Boot with Air Stem	0.40	0.18
TBA-0300	3" Test Boot with Air Stem	0.70	0.32
TBA-3015	3" to 1.5" Test Boot with Air Stem	0.35	0.16
TBA-3020	3" to 2" FRP Test Boot with Air Stem	0.40	1.18
TBA-4015	4" to 1.5" Test Boot with Air Stem	0.75	0.34
TBA-4020	4" to 2" Test Boot with Air Stem	0.75	0.34
TBA-4030	4" to 3" FRP Test Boot with Air Stem	0.70	0.32
TJ-200A	Test Jumper for Air Stems		
TLT-36A	Test Line Termination Kit for Air Stems		
TGA-15	Test Gauge Assembly		
TCT-2509	Test Jumper for Double-Wall Coupling (DPC and SBC Series)		
TTT-2536	Test Tube Termination Kit for Double-Wall Coupling (DPC and SBC Series)		

Flexible Piping Systems for Fuel Oil & Generator Applications

The FlexWorks Fuel Oil Piping System is designed to provide a reliable fuel supply system to generators and boilers from remote fuel tanks. Typical applications include both a 3/4" supply and a 1" overflow return line running from a remote AST or UST to a generator engine or boiler day tank. Both lines are typically inserted into a common FlexWorks Access Pipe to provide retractable access to the fuel lines. See page 10 for fuel oil pipe. OPW will cut fuel oil pipe to length at no charge.



DEB-4175 Double Entry Boot Fitting



3/4" Primary Pipe with SBC Fitting



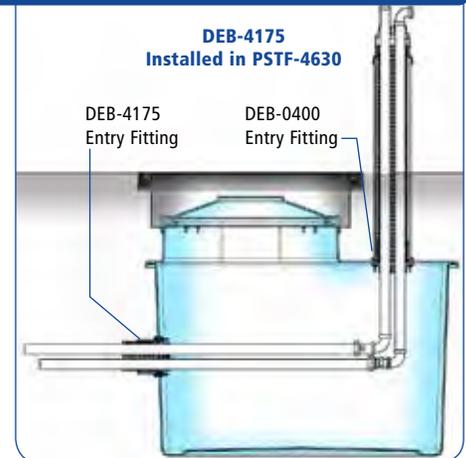
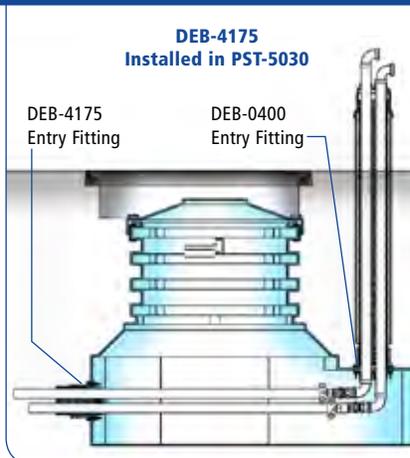
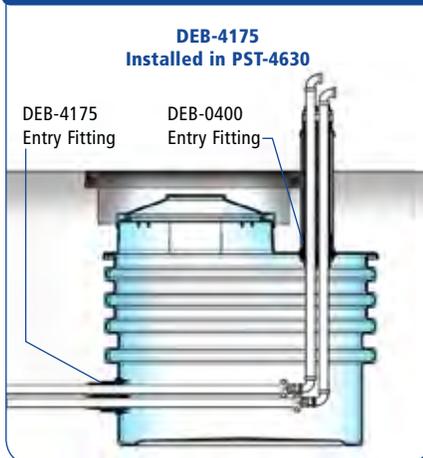
1" Primary Pipe with SBC Fitting

Ordering Specifications Specialty Fittings

Model #	Application	Weight	
		lbs.	kg
PDT-411	4" x 1" x 1" Double Tap Bushing	12	5
PJK-4175	4" x 1" x 3/4" Pipe Joining Kit	10	4.5
PTA-4175	Transition Assembly	8	3.5
TBA-4175	4" Fuel Oil Boot Transition Assembly	1	0.5
TBA-4175A	4" Fuel Oil Boot Transition Assembly with Air Stem	1	0.5

Model #	Application	Weight	
		lbs.	kg
SBC-2075	Swivel Bolt-On Coupling 3/4" NPT		
SBC-2100	Swivel Bolt-On Coupling 1" NPT		
DEB-4175	3/4" and 1" Double Entry Boot Fitting	3.25	1.47

AST APPLICATIONS



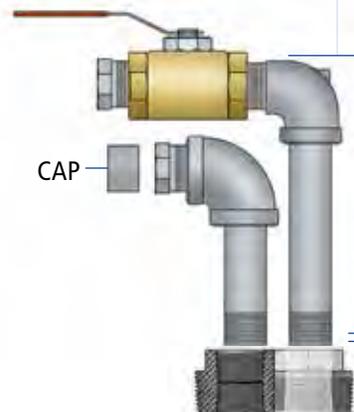
Transition Assembly Specialty Fittings - 3/4" and 1"



TBP-100
Plug for the Port on TBA-4175 Series Test Boots: For use when running only one fuel line inside AXP Pipes.



PTA-4175
FlexWorks Fuel Oil Piping Pipe Above/Below Ground Transition Assembly –
For slab penetration of 4" (10 cm) access pipe with 3/4" (2 cm) or 1" (3 cm) Fuel Oil Pipes



PDT-411 FlexWorks Double-Tapped Tank Bung Fitting, 4" (10 cm) MNPT w/Dual 1" (3 cm) FNPT Taps - Used in 4" (10 cm) Tank Bung to accommodate FOP Supply and Return Lines

PJK-4175 FlexWorks Fuel Oil Piping Pipe Joint Kit – includes nipples, ball valve and fittings used to connect 3/4" (2 cm) or 1" (3 cm) FOPs to PDT-411 Tank Bung Fitting

Transition Sumps

FlexWorks Above-Grade / Below-Grade Transition Sumps

Model PSTF-4630 Transition Sump (Fiberglass Sump/Fiberglass Top)

- ◆ Large, injection-molded FRP containment chambers are stackable for convenient shipping and storage
- ◆ Removable FRP top allows maximum access during installation of fittings and equipment, and provides a rigid entry fitting area adjacent to the cover for vertical entry of above-grade piping
- ◆ The PSTF-4630 is not adjustable, but FRP Sump Height Extenders (DFSE-4612) are available for the PSTF-4630 to accommodate deeper bury applications

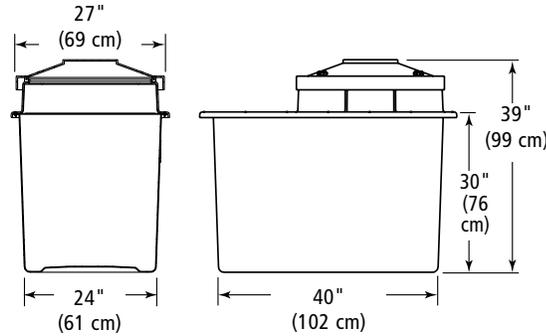
Model PST-4630 Transition Sump (Polyethylene Sump/Fiberglass Top)

- ◆ Large, heavily ribbed polyethylene containment chamber provides structural rigidity
- ◆ Adjustable to a minimum of 26"

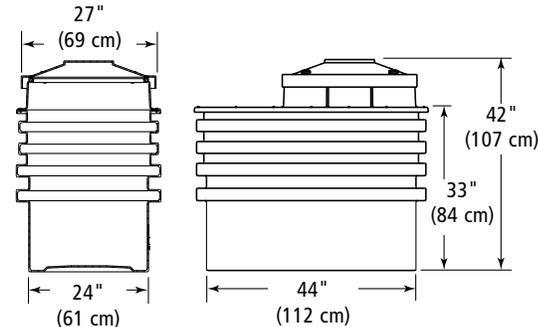
Model PST-5030 One-Piece Polyethylene Transition Sump

- ◆ Flat entry fitting area extending from the sump base accommodates vertical pipe entries
- ◆ Heavily ribbed riser provides strength and rigidity
- ◆ Adjustable to a minimum of 29"

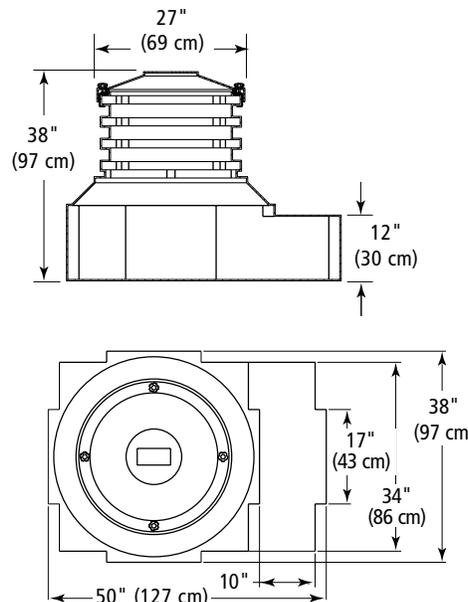
Model PSTF-4630 Transition Sump (Fiberglass Sump/Fiberglass Top)



Model PST-4630 Transition Sump (Polyethylene Sump/Fiberglass Top)

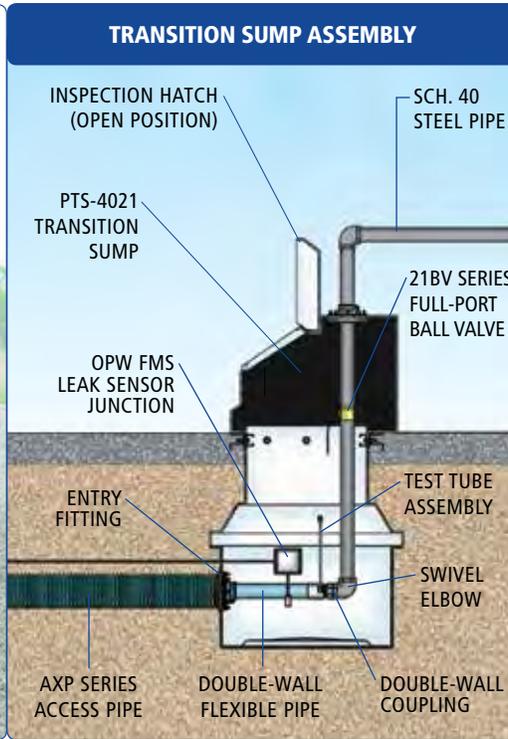


Model PST-5030 One-Piece Polyethylene Transition Sump



Ordering Specifications - Specialty Fitting

Model #	Application	Height		Weight	
		in	cm	lbs	kg
PSTF-4630	Fiberglass Transition Sump with Fiberglass Top	39	99	90	41
PST-4630	Poly Transition Sump with Fiberglass Top	42	107	100	45
PST-5030	One-Piece Poly Transition Sump with Poly Top, 38" x 50"	38	97	100	45
PST-4021	Two-Piece Poly Transition Sump with Poly Top	46.5	118	110	49



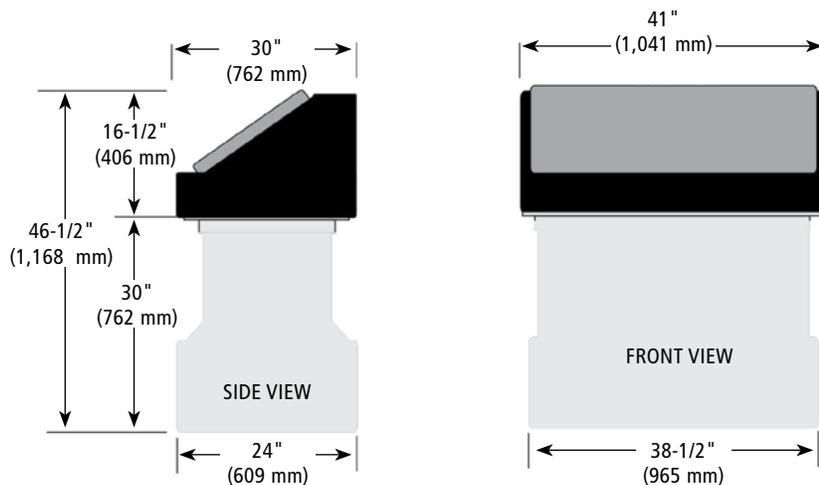
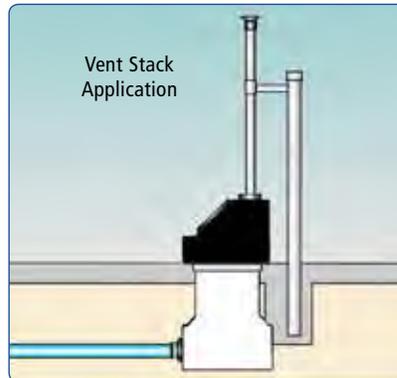
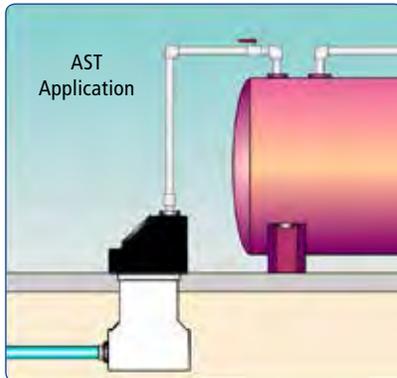
Transition Sumps

Model PTS-4021 Transition Sump
 (2 Piece - Polyethylene Sump/ Polyethylene Top)

- ◆ Non-corroding, polyethylene sump container
- ◆ Weatherproof lockable cover
- ◆ Exterior anchoring system

AST Application: Provides secondary containment and accessibility to the fittings that connect the underground supply piping to the rigid supply piping that leads from an above ground storage tank.

Vent Stack Application: Transition sump is used for containment and accessibility to the fittings. At the vent stack, where the underground vent piping connects to the rigid vent stack piping.



The complete Environmental System for underground fuel transfer and containment for the 21st century.

Special Application Sumps & Extensions

FlexWorks Special Application Sumps are installed below-grade and provide a convenient means of housing a multitude of underground piping connections and equipment, including valves, filters, meters and pumps. The PSL-3830 Line Connection Sump has large horizontal flats to accommodate multiple piping entries. The PSL-3630 Tall Mini-Sump has long vertical flats to accommodate applications with varying pipe entry heights. The PSL-2430 Mini Sump is ideal for connecting long pipe runs in a contained area.



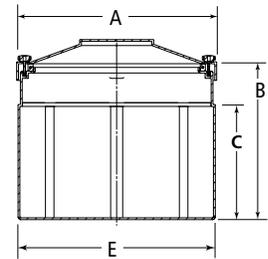
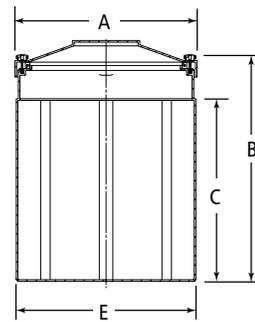
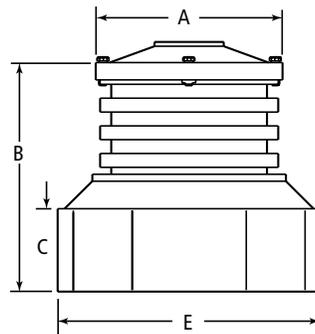
PSL-3830



PSL-3630



PSL-2430

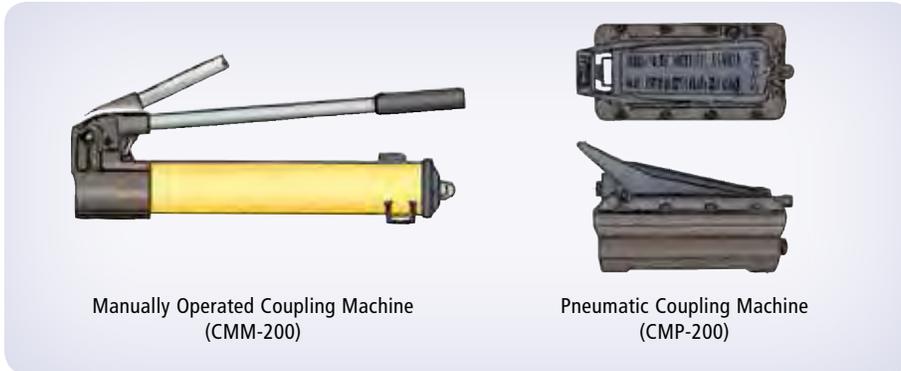


Ordering Specifications - Polyethylene Tank Sumps (with Compression Fit Covers)

Model #	Application	Dimensions								# of Panels	Burial Depth				Weight			
		Manway Dia.		A Cover		B Height		Dimesions CXE			E Base		max.		min.		lbs.	kg
		in.	mm	in.	mm	in.	mm	in.	mm		in.	mm	in.	mm	in.	mm		
PSL-2430	Special Application Sump, 24" x 30"	30	762	27	686	24	914	16 x 10	406 x 254	8	26	660	36	914	26	660	36	16
PSL-3830	In-Line Sump, 38" x 30"	30	762	27	686	63	914	12 x 38	305 x 965	12	38	965	41	1041	29	737	85	38
PSL-3630	Special Application Sump, 36" x 30"	30	762	27	686	36	914	28 x 20	711 x 254	8	26	660	48	1219	40	1016	42	19

Installation Tools Coupling Machines

The OPW Coupling Machine is required for the installation of both coax and swivel pipe couplings. The Coupling Machine is designed to internally expand the metal pipe insert installed at the end of a flexible pipe section. Coupling machines are available in both 110 and 220 volt models. Coupling swage kits are available to couple both coax and swivel couplings for a variety of pipe sizes.

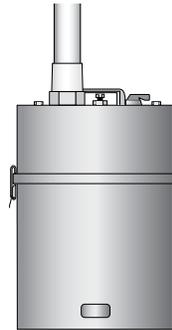


Manually Operated Coupling Machine (CMM-200)

Pneumatic Coupling Machine (CMP-200)

Electronic Coupling Machine (CME-0110, CME-0220 and CME-0110R)

The OPW Electronic Coupling Machine can couple the entire swivel and coax fitting line. Swage kits are required. The CME-0110R model is our Remote Electronic Coupling Machine. This machine comes with the hydraulics on the outside of the machine so pipe can be coupled in tight areas like inside a sump. All of the functions of the CME-0110 apply to this unit as well.



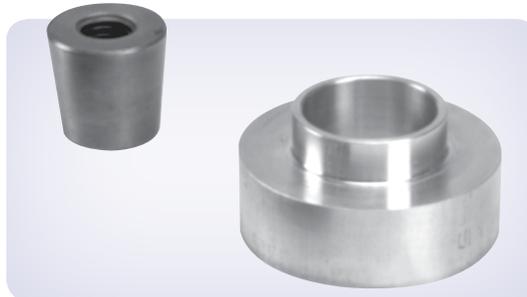
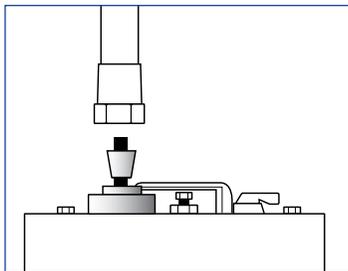
Electronic Coupling Machine
220 Volt: (CME-0220)
110 Volt: (CME-0110)
110 Volt, Remote (CME-0110R)

Manually Operated and Pneumatic Coupling Machines (CMM-200 and CMP-200)

The OPW Manually Operated and Pneumatic Coupling Machines can couple Stainless Steel (SSPFC), Swivel (SPC) and Double-Wall (DPC) fittings for 1.5" and 2" only. Swage kits are required.

Ordering Specifications Coupling Machine

Model	Application
CME-0110R	Coupling Machine, 110 Volt, Remote
CME-0110	Coupling Machine, 110 Volt
CME-0220	Coupling Machine, 220 Volt
CMM-200	Coupling Machine, Manual
CMP-200	Coupling Machine, Pneumatic



Swage Kits

Swages are used with the OPW Coupling Machine to internally expand the coupling onto the end of the flexible pipe section. There are a variety of coupling swage kits available to accommodate a variety of coupling types and sizes. NOTE: 3/4" and 1" swage kits adapt to the 1-1/2" swivel faceplate that comes standard with each coupling machine.

Ordering Specifications - Swage Kit

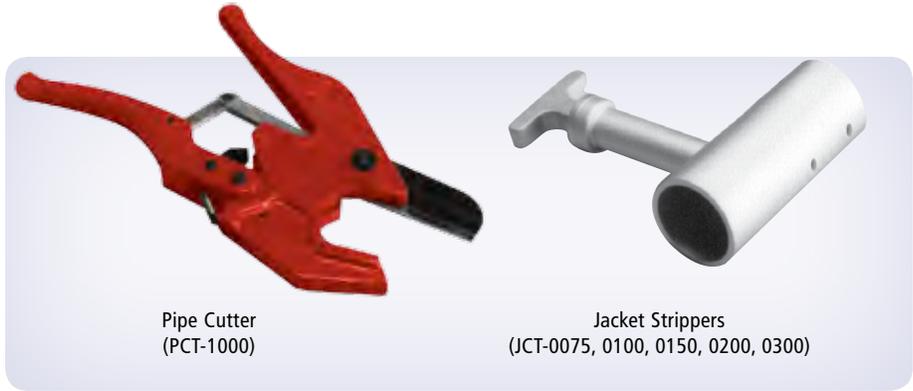
Fitting Type & Model #	Coupling Machine Model				
	CME-0110	CME-0110R	CME-0220	CMM-200	CMP-200
3/4" Swivel (SPC-0075) *	CSK-0075S	CSK-0075S	CSK-0075S	N/A	N/A
1" Swivel (SPC-0100) *	CSK-0100S	CSK-0100S	CSK-0100S	N/A	N/A
1.5" Swivel (SPC-0150A)	CSK-0150S	CSK-0150S	CSK-0150S	SBA2-0150	SBA2-0150
1.5" DW Swivel (DPC-2150A)	CSK-0150S	CSK-0150S	CSK-0150S	SBA2-0150	SBA2-0150
1.5" SS Fittings (SSPFC2-150)	SSSBE-150	SSSBE-150	SSSBE-150	SSSBA-150	SSSBA-150
2" Swivel (SPC-0200A)	CSK-0200S	CSK-0200S	CSK-0200S	SBA2-0200	SBA2-0200
2" DW Swivel (DPC-2200A)	CSK-0200S	CSK-0200S	CSK-0200S	SBA2-0200	SBA2-0200
2" SS Fittings (SSPFC2-200)	SSSBE-200	SSSBE-200	SSSBE-200	SSSBA-200	SSSBA-200
3" Swivel (SPC-0300)	CSK-0300S	CSK-0300S	CSK-0300S	N/A	N/A

***IMPORTANT:** When coupling 3/4" and 1" pipe, use the faceplate for the CSK-0150S swage kit as a base for the CSK-0075S and the CSK-0100S swage kits.

Pipe Cutters & Jacket Strippers

The FlexWorks pipe cutter is designed to produce a clean and even pipe cut, which is necessary for proper coupling attachment. The FlexWorks Jacket Stripper is a tool used to remove a section of the secondary outer jacket of the FlexWorks Double-Wall piping. This is required for installation of swivel pipe couplings.

NOTE: When using double wall pipe couplings, do not trim piping secondary.



Pipe Cutter
(PCT-1000)

Jacket Strippers
(JCT-0075, 0100, 0150, 0200, 0300)

Ordering Specifications - Pipe Cutter and Jacket Stripper

Model #	Application
SPC-400	4" Access Pipe Cutter
PCT-1000	Pipe Cutter
PCB-2000	Pipe Cutter Blade for PCT-1000
JCT-0075	3/4" Jacket Cutter
JCT-0100	1" Jacket Cutter
JCT-0150	1.5" Jacket Cutter
JCT-0200	2" Jacket Cutter
JCT-0300	3" Jacket Cutter
JCB-1000	Jacket Cutter Blades for JCT-0075, JCT-0100, JCT-0150, JCT-0200 and JCT-0300

Fishing Bull Nose

An attachment for the end of a flexible pipe section, used to aid in fishing the flexible pipe section through the access pipe. There are a variety of bullnoses available to connect to swivel couplings.

NOTE: 3/4" and 1" fishing bullnose are female threaded to accommodate 3/4" or 1" couplings.



Ordering Specifications - Fishing Bull Nose

Model #	Application	Model #	Application
FBN-2075	3/4" Fishing Bull Nose	FBN-2200	2" Fishing Bull Nose
FBN-2100	1" Fishing Bull Nose	FBN-3200	2" Bull Nose Plug
FBN-2150	1.5" Fishing Bull Nose		

Urethane Sealant

An all-purpose sealant. Can be used as an entry fitting sealant as well as to bond dispenser tops.

Ordering Specifications - Urethane Sealant

Model #	Application
SL-1100	Urethane Sealant (10.3 oz. Cartridge)

Underground Storage Tank Equipment



- Phase I CARB Certified Enhanced Vapor Recovery (EVR) Product Overview46 - 47
- 40CFR 63 Compliance Overview.....48 - 49
- Spill Containment Manholes51 - 65
- Multi-Port Spill Containment66 - 74
- Manholes and Monitoring Well Equipment75 - 83
- Island Forms and Protective Curbing.....84 - 87
- Pipe Guards..... 88
- Fill Pipe Connection Equipment.....89 - 100
- Overfill Prevention Equipment 101 - 113
- Tank Venting Equipment..... 114 - 116
- Emergency Shut-off Valves..... 118 - 121
- Vapor Line Shear Valves..... 122 - 123
- DEF Shear Valve..... 124
- Flex Connectors 125 - 126
- Suction System Accessories..... 127 - 128
- DEF Solutions..... 131-134
- Conversion Tables..... 135 - 142



Listings and Certifications

CARB
California Air Resources Board



Look for this label for Authentic OPW EVR Approved products.



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kiwa

OPW Underground Storage Tank Equipment

Tank Venting Equipment

- ◆ Pressure Vacuum – 523V and 623V Series (pgs. 114 & 115)
- ◆ Open Atmospheric – 23 Series (pg. 116)

Spill Containment Manholes

1-2200 Series 1-2100-EVR, EDGE™, EDGE 1™ and 101BG Series (pgs. 52-83)

- ◆ Thread-On
- ◆ Slip-On
- ◆ Below Grade
- ◆ Sealable Cover
- ◆ Secondary Contained
- ◆ Replaceable Direct Bury
- ◆ Multiport

Monitoring Well Manholes

- ◆ 104AOW (pg. 83)

Vapor Recovery Caps and Adaptors

- ◆ 1711T (pg. 97)
- ◆ 61VSA (pg. 95)
- ◆ 1611AV (pg. 96)
- ◆ 633TC (pg. 91)
- ◆ 1711LPC (pg. 97)

Tight-Fill Caps and Adaptors

- ◆ 634TT (pg. 92)
- ◆ 633T (pg. 90)
- ◆ 61SALP (pg. 90)
- ◆ 634LPC (pg. 93)
- ◆ 634TE (pg. 93)

Small Diameter Manholes

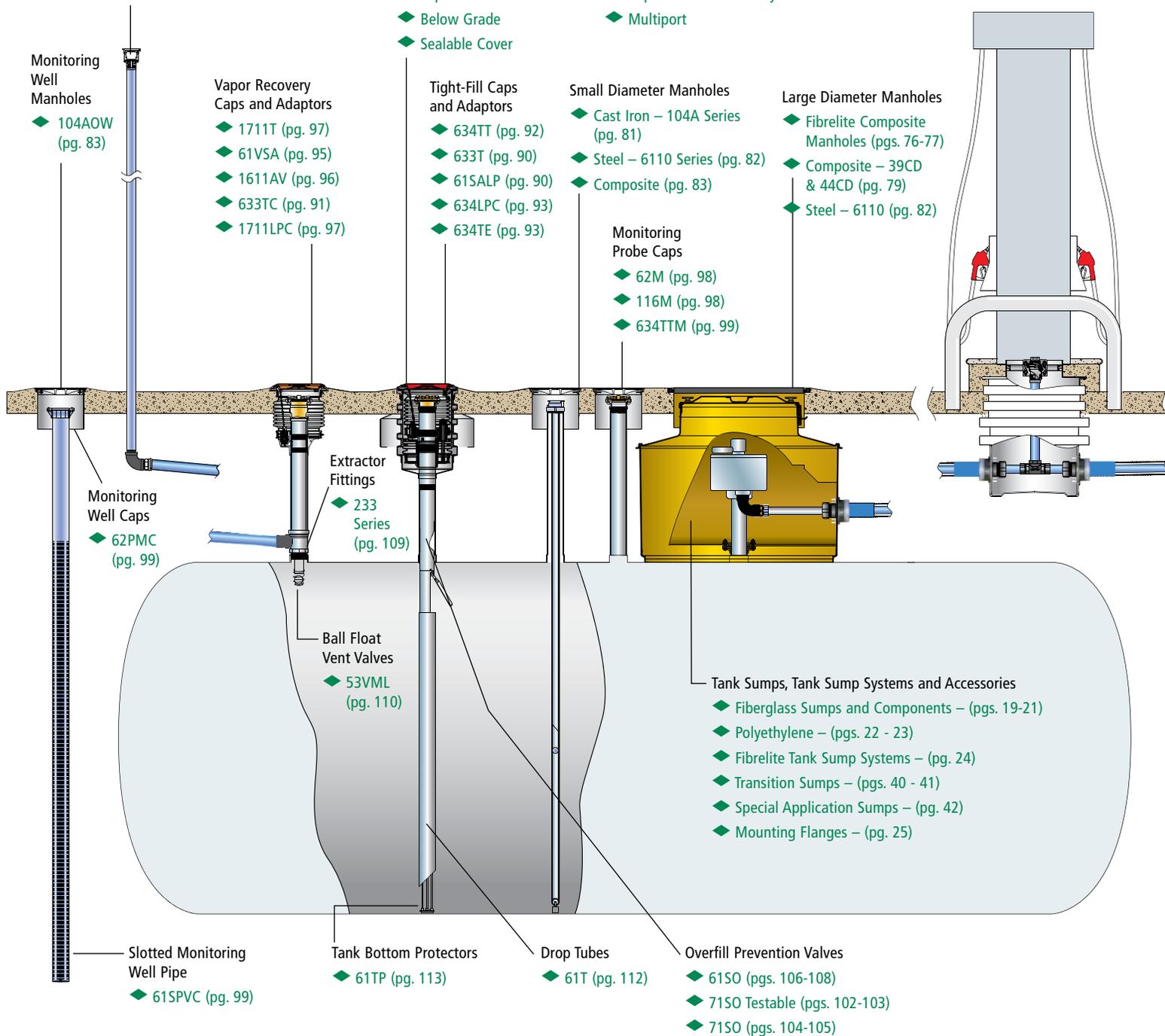
- ◆ Cast Iron – 104A Series (pg. 81)
- ◆ Steel – 6110 Series (pg. 82)
- ◆ Composite (pg. 83)

Large Diameter Manholes

- ◆ Fibrelite Composite Manholes (pgs. 76-77)
- ◆ Composite – 39CD & 44CD (pg. 79)
- ◆ Steel – 6110 (pg. 82)

Monitoring Probe Caps

- ◆ 62M (pg. 98)
- ◆ 116M (pg. 98)
- ◆ 634TTM (pg. 99)



Listings and Certifications

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California Air Resources Board



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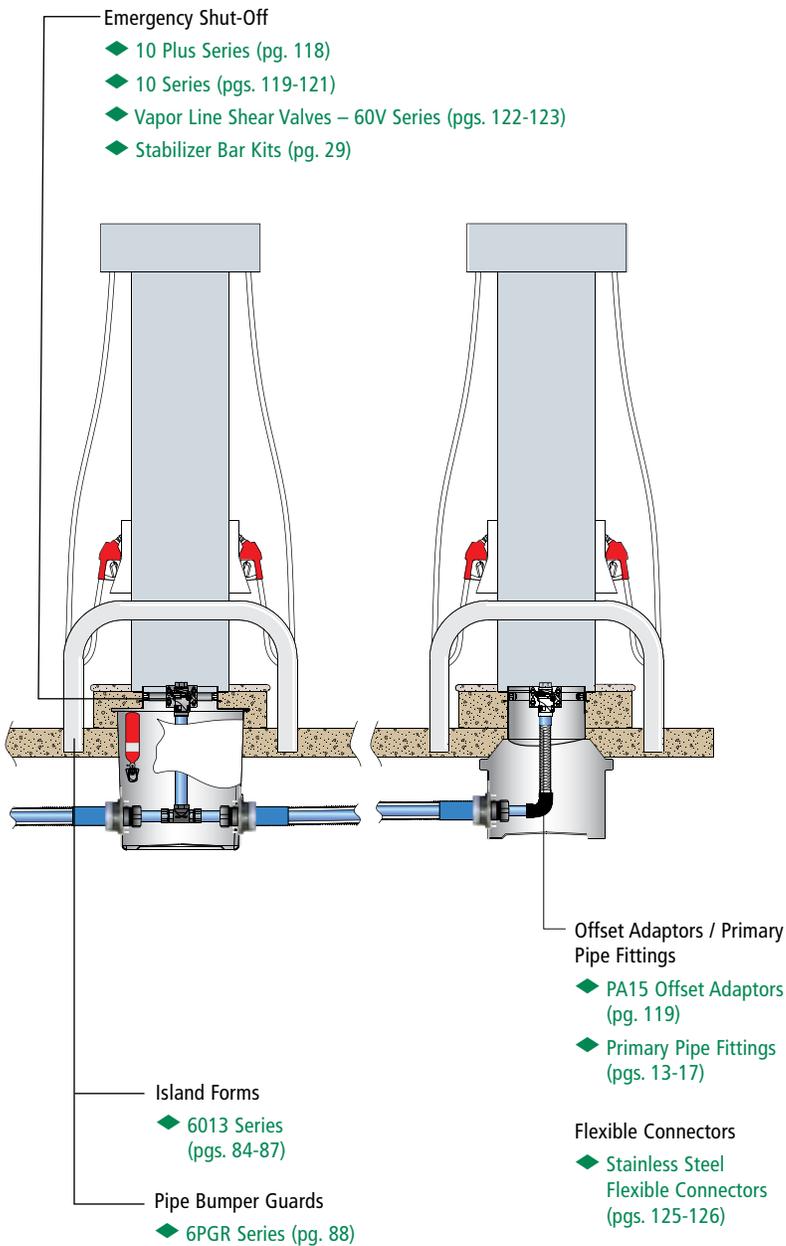
OPW Underground and Aboveground Storage Tank Fuel Transfer and Containment Systems

OPW offers a wide selection of underground storage tank equipment. This equipment is designed to help protect the environment by providing fuel operations with spill containment manholes, manholes and monitoring equipment, fill pipe connection equipment, overfill prevention equipment and tank venting equipment.

OPW offers a wide variety of different spill containment products, including innovative double-wall spill containment and Phase 1 Enhanced Vapor Recovery (EVR) products, designed to prevent spilled product from entering the soil near the fill and vapor return riser connections on USTs during normal tank filling operation, or in the event of tank overfill. OPW spill containers are designed to catch spillage to help prevent soil contamination and groundwater pollution.

OPW manholes provide access from grade level to underground equipment including tank sumps, tank riser pipes, monitoring equipment, submersible pumps, valves and piping connections. OPW also offers a wide selection of tight-fill adaptors and caps, Stage 1 adaptors and caps and monitoring probe and well caps.

OPW overfill prevention valves are designed to help prevent the overfill of USTs during product drops. OPW offers a wide selection, including 6150 and vaportight and testable 7150 positive shut-off valves, and ball float vent valves.



DEF Piping, Containment and Filling Solution

(pgs. 131-134)

NOTE: See OPW's Website at www.opwglobal.com for product instruction sheets, trouble-shooting guides, how-to-use guide and to view the Do's & Don'ts at the Gas Pump video.

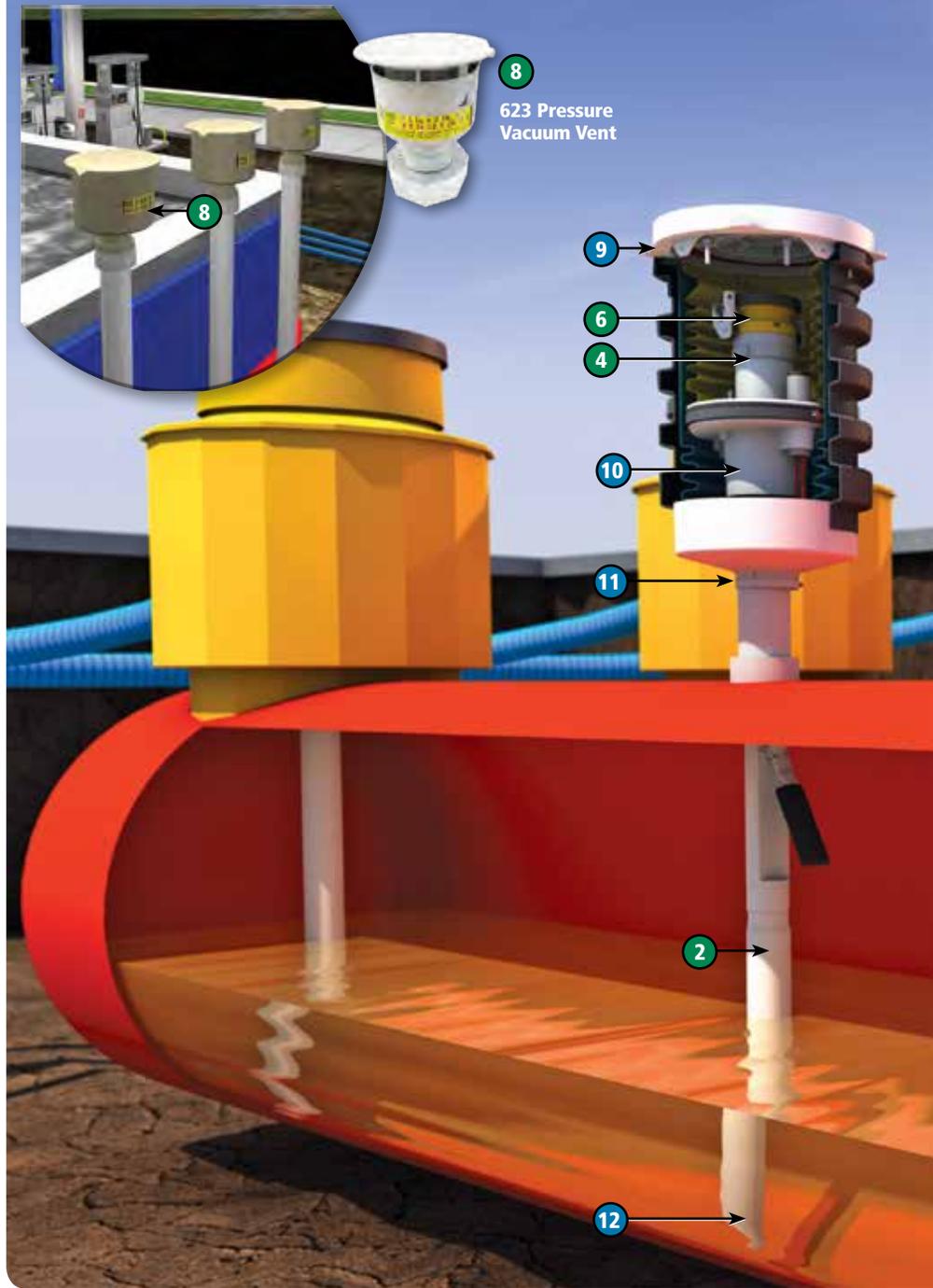
Leading the Way in 40 CFR 63-Compliant

The U.S. Environmental Protection Agency (EPA) created 40 CFR 63 to establish national emission limitations and management practices for hazardous air pollutants (HAP) emitted from the loading of gasoline storage tanks at gasoline-dispensing facilities (GDFs). These new standards went into effect on Jan. 10, 2008.

All of OPW's standard-setting UST equipment meets the 40 CFR 63 requirements for GDFs, from spill containment and pressure/vacuum vents to overfill protection. This enables OPW to offer retail petroleum marketers the most complete solution for meeting the new EPA standards for reducing and eliminating HAPs at GDFs.

The 40 CFR 63 EPA rule applies to existing or new GDFs that have a monthly throughput of 100,000 gallons of gasoline or more. In order to meet the 40 CFR 63 requirements, these facilities must demonstrate that their underground connections and lines are equipped with seal closures; demonstrate no leak in the vapor line between storage and cargo tanks; keep cargo-tank pressure below a specified setting; prevent over-tight or loose fittings; gauge wells with a submerged drop tube extending a specified distance from the tank bottom; use vapor-tight caps for liquid fill connections; install pressure/vacuum vent valves on tank vent pipes at specified settings and test initially and every three years thereafter; install a vapor-balance system that passes a static-pressure test every three years; and install dual-point (no coaxial) vapor-balance systems in new facilities or tanks and reconstructed facilities.

To meet these stringent EPA regulations, OPW offers the industry's most complete line of 40 CFR 63-compliant UST products. Site operators around the world are incorporating these products into their UST systems as they look to comply with the 40 CFR 63 regulations.



REQUIRED PRODUCTS

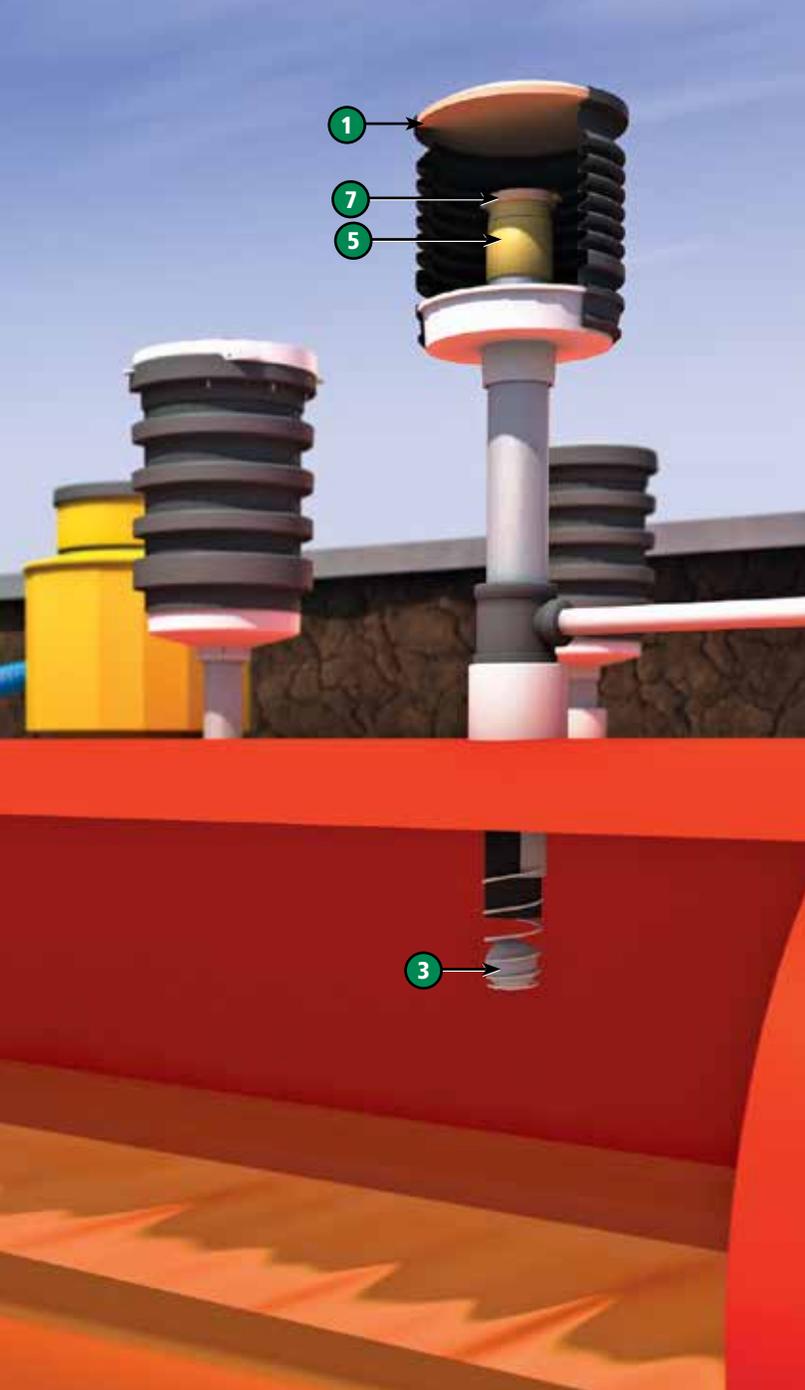
- 1** **2100 Series Spill Containers (Fill)** – Certified for installation on gasoline-dispensing systems that must meet the EPA's 40 CFR 63 requirements. Product fill containers feature an enhanced vapor-tight drain valve. Vapor recovery containers feature a permanent plug in the drain port as per requirements.
- 2** **7150 Overfill Prevention Valve** – This dual-point valve is certified for installation on gasoline-dispensing systems that must meet the EPA's 40 CFR 63 requirements. The vapor-tight 7150 provides positive shutoff of product delivery before an overfill condition occurs.
- 3** **61T Drop Fill Tube, Ball Float and 233 Extractor Configuration*** – The OPW 53VML Ball Float, 233 Extractor and 61T Fill Drop Tube configuration can be installed as an alternative to the 7150 Overfill application on gasoline-dispensing systems that must meet the EPA's 40 CFR 63 requirements.
- 4** **5** **Rotatable Swivel Adaptors (Fill and Vapor)** – Certified for installation on the fill and vapor ports on gasoline-dispensing systems that must meet the EPA's 40 CFR 63 requirements. The adaptors mate with 4" top-seal delivery elbows and feature a top section that rotates with hose movement while the bottom section remains securely in place, maintaining seal integrity.

- 6** **7** **Vapor-Tight Caps (Fill & Vapor)** – Certified for installation on OPW Rotatable Adaptors and feature enhanced ribbed seals and increased sealing forces to provide a bubble-tight seal, per EPA requirements.
- 8** **623 Pressure Vacuum Vent** – Certified for installation on the top of vent pipes on USTs or ASTs. Designed to minimize hydrocarbons from leaking into the air and to control tank pressure, it has a maximum allowable vapor-leak rate of 0.05CFH at 2.0 inches of water.

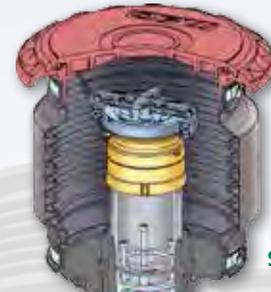
RECOMMENDED PRODUCTS

- 9** **EDGE™ Double Wall Spill Container** – A Double-Wall Spill Container that installs into the same space as a Single-Wall Spill Container. Thread-on base for both primary and secondary spill buckets.
- 1-2200 Single Wall Spill Container** – Never break concrete again with our new EPA Compliant UST Solution for today, tomorrow and the future.
- 10** **61JSK Jack Screw** – Connects the 7150 to the base of the spill container, allowing liquid in the spill container to drain directly into the drop tube. This isolates the drain valve from tank ullage, eliminating a notorious leak point in previous systems.

Underground Storage Tank Equipment



REQUIRED PRODUCTS



1
OPW 1-2100 Series
Spill Containers



4
OPW 61SA- Rotatable
Swivel Adaptor - Fill Port
USA Patent No. 5,664,951



6
OPW 634TT - 634LPC
Vapor-tight product fill cap



5
OPW 61VSA- Rotatable
Swivel Adaptor - Vapor Port
USA Patent No. 5,664,951



7
OPW 1711T - 1711LPC
Vapor-tight vapor recovery fill cap



2
OPW 7150
Series overfill prevention valve
USA Patent No. 5,564,464; 5,472,012; 5,850,849

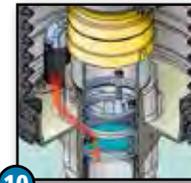


- 11** **Threaded Riser Adaptor (Face Seal Adaptor)** – An OPW FSA-400 Threaded Riser Face Seal Adaptor provides a flat, true sealing surface on threaded pipes for the drop-tube flange on the 7150 Overfill Prevention Valves. This Face Seal Adaptor is not needed for the EDGE™ Double-Wall Spill Container.
- 12** **6111-1400 Tank Bottom Protector** – Installed at the bottom of the overfill prevention valve drop tube to keep the UST from sustaining damage from erosion or tank-gauging sticks.
- 13** **62M Monitoring Probe Cap** – OPW 62M Monitor Probe Cap & Adaptor Kit is installed on tank riser pipes to prevent vapors from escaping or water from entering the tank.
- 14** **Monitoring/Observation Well Manhole** – Designed to be installed at grade level over a slotted PVC monitoring well where limited access and clear identification are essential. (Not shown)
- 15** **Conquistador™ Composite Cover Manhole** – Lightweight and extremely durable, this composite cover manhole makes sump accessibility safer and easier than ever before. (Not shown)

RECOMMENDED PRODUCTS



9
EDGE™
Double-wall spill
container



10
OPW 61JSK
Jack Screw
USA Patent No. 6,523,581



11
OPW FSA
Threaded riser
adaptor



13
OPW 62M
Monitor probe cap
& adaptor kit

1-2200
Single-wall spill
container

OPW Phase 1 Enhanced Vapor Recovery / Torque Specifications

In March 2000, The California Air Resources Board adopted new, more stringent vapor recovery requirements for gasoline dispensing facilities. The new program, titled "Enhanced Vapor Recovery" (EVR), was developed to promote enhanced vapor recovery system reliability and to seek further reductions to meet both California and Federal Air Quality Requirements. Phase I EVR is now enforced in California.

On September 17, 2003, OPW received a second EVR certification for the Phase I Enhanced Vapor Recovery System. The new approval provides the option of using the ball float with a straight drop tube or the positive shut-off overfill prevention valve. OPW can offer the flexibility for installing an appropriate certified EVR system to meet the regulations in any jurisdiction for virtually any Phase I UST application. To review the EVR requirements visit: www.arb.ca.gov/vapor/vapor.htm

For the purpose of reducing fugitive vapor emissions at gasoline dispensing facilities, the California Air Resources Board has formally adopted new compliance requirements and certification procedures for vapor recovery equipment. These new requirements, know as Enhanced Vapor Recovery (EVR), define the most stringent and comprehensive performance and reliability requirements for Phase I Vapor Recovery Systems. Some important new requirements for a certified EVR Phase I system include:

- ◆ **EVR System Certification Test Protocol** – all components must now be installed and tested as a complete integral Phase I system.
- ◆ **EVR System Efficiency** – must now exceed 98% versus 95% previously allowed.
- ◆ **EVR System Performance** – allowable leak rates for components such as spill container drain valves, overfill valves, and pressure vacuum vents have been cut by 50%.
- ◆ **EVR System Reliability** – operating test period for a complete system increased from 90 days to 180 days.

EVR Phase I Components Installation Torque Specifications (Oct 26, 2004)

Component	Torque Specification Foot Pounds (Inch Pounds)
All 4" NPT pipe See note 1	125 to 250 ft.lb.
FSA-400, FSA-400-S See note 1	125 to 250 ft.lb.
Spill containment bucket See note 1	125 to 250 ft.lb.
Spill bucket cover perimeter bolts/nuts	20 to 25 ft.lb.
Drain valve retaining bolts/nuts	11 to 13 ft.lb.
61SO Inlet adaptor	11 to 13 ft.lb.
61JSK-4400	3 to 4 ft.lb. (36 to 52 in.lb.)
61JSK-4410	3 to 5 ft.lb. (42 to 60 in.lb.)
61JSK-44CB	3 to 5 ft.lb. (42 to 60 in.lb.)
61VSA Swivel Vapor Adaptor	90 to 110 ft.lb.
61SALP Low Profile Swivel Fill Adaptor	90 to 110 ft.lb.
623V Pressure Vacuum Vent base	30 to 35 ft.lb.
233V Extractor Fitting. See note 1	125 to 250 ft.lb.
3" NPT	125 to 300 ft.lb.
2" NPT	100 to 150 ft.lb.
53VML Ball Float Vent Valve and extractor cage - 3 3/4" threads	75 to 150 ft.lb.

Note 1: All 4" NPT threads are to be torqued progressively lower from the tank up.

Listings and Certifications



NOTE: See OPW's Website at www.opwglobal.com for product instruction sheets, trouble-shooting guides, how-to-use guide and to view the Do's & Don'ts at the Gas Pump video.

OPW Spill Containment Manholes

OPW Spill Containment Manholes are designed to prevent spilled product from entering the soil near the fill and vapor return riser connections on underground storage tanks during normal tank filling operation, or in the event of tank overflow. The spill containers catch spillage to help prevent soil contamination and groundwater pollution.

Single-Wall Spill Containment Manholes

The new OPW 1-2200 Series Single-Wall Spill Containers are advanced, rugged, easier to install and service, upgrades to a double-wall and is more reliable than current single-wall spill containers available today. Never break concrete again with our new EPA Compliant UST Solution for today, tomorrow and the future.

Double-Wall Spill Containment Manholes

The new OPW EDGE™ 3100 Series Double-Wall Spill Container is leading-edge spill containment technology. Designed to help prevent spilled product from entering the backfill in the event the primary spill container is damaged, the new OPW EDGE™ is dimensionally identical to single-wall spill buckets (from riser to grade), making single-to-double-wall upgrades quick, easy and affordable. No need to break concrete or replace riser pipes. Florida and North Carolina compliant.

Thread-On Spill Containment Manholes

OPW Thread-On Spill Containment Manholes are generally used on new tank or riser pipe installations. The spill bucket is threaded directly onto 4" NPT fill and vapor return riser pipes. An integral drain valve allows contained product to be drained into the tank. OPW Thread-On Spill Containers are available in 5, 10 and 15-gallon capacities. Thread-On Double-Wall spill containers are also available in 5-gallon capacities.

Sealable Cover Spill Containment Manholes

OPW Sealable Cover Spill Containment Manholes are designed to eliminate problems associated with water entering grade level spill containers, and are ideal for areas with poor drainage, areas subject to tropical rain and standing water, and cold regions where melting snow and road salt can enter standard spill containers. An expandable cover seal is latched down, sealing against the I.D. of the mounting ring and preventing ingress of surface water. Sealable spill containers are available in thread-on and slip-on configurations in 5 and 15-gallon capacities.

Slip-On Spill Containment Manholes

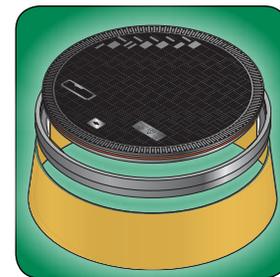
OPW Slip-On Spill Containment Manholes are used on new or existing UST riser pipes. The spill bucket slides onto 3" or 4" fill and vapor return riser pipes and is then secured in place. Slip-on spill containers provide a fast, economical way to replace uncontained manholes or fill boxes. An optional suction hand pump allows contained product to be evacuated into the tank. OPW Slip-On Spill Containers are available in 5, and 15-gallon capacities.

Below-Grade Spill Containment Manholes

OPW Below-Grade Spill Containment Manholes are used in new tank or riser pipe installations. The watertight spill containment chamber is installed completely below grade level. A grade level manhole cover lies flush with the driveway grade to reduce a tripping hazard and the potential for damage from snow plows and traffic. Surface water drains into the backfill between the manhole skirt and the exterior of the containment bucket. Below-grade spill containers are available in thread-on and slip-on configurations in 5 and 15-gallon capacities.

Multi-Port Spill Containment Manholes

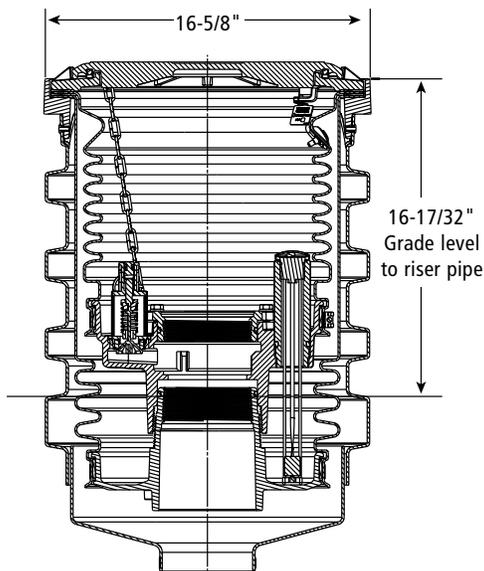
OPW Multi-Port Spill Containment Manholes provide spill containment for UST fill pipes and vapor recovery risers in a completely integrated, single-manhole package. Multi-ports are used in conjunction with tank sumps to preserve future access to the tank top and to facilitate secondary containment of fill and vapor return riser pipes.



OPW EDGE™ Double-Wall Spill Containers

Designed in collaboration with contractors and end-users, the OPW EDGE™ Double-Wall Spill Container installs in the same space as single-wall buckets. The EDGE™ delivers best-in-class features that significantly improve reliability, installation, testing and ease of serviceability. The EDGE™ exceeds the performance levels of all other double-wall spill containers.

- ◆ Unbeatable installation ease
- ◆ Uses existing riser pipe
- ◆ Unparalleled serviceability
- ◆ Superior quality
- ◆ Significantly reduces installation time and labor costs



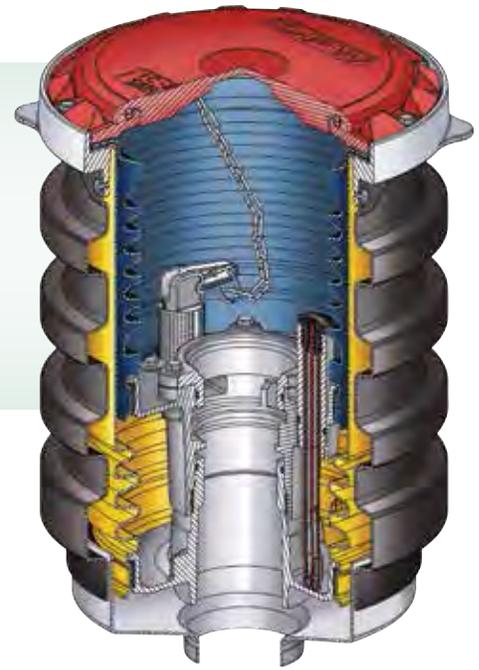
Weight: 120 lbs. (54.5 kg.)

Materials

- Cover:** Cast iron
- Mounting Ring:** Duragard® coated ductile iron
- Bellows:** Polyethylene
- Base:** Cast iron E-coating
- Clamps:** Stainless steel
- Seals:** Buna-N

Features

- ◆ **Top Mounted Vacuum Test Port**
 - For quick and easy access
- ◆ **Superior Visual Gauge**
 - No messy dipsticks to contend with
 - Significantly simplifies and reduces testing time
- ◆ **Ease of Access to the Electronic Sensor for Testing**
 - Easy access for testing
 - Located to eliminate damage potential during product drops
- ◆ **Roto-Molded Primary & Secondary Buckets**
 - Thicker walls for greater durability and reliability
- ◆ **Ribbed Polyethylene Skirt Design**
 - Roto-molded for long-life durability
 - Provides rigidity for added durability
 - Provides handles on all sides for ease of installation
- ◆ **Patent-Pending Socket Design**
 - Enables the EDGE™ to install into the space of a single-wall spill container
 - Helps to align bucket on riser
- ◆ **Patent-Pending Ledge Design**
 - Provides machined sealing face for drop tube
 - Improves overall drop tube sealing integrity
 - Eliminates face seal adaptors or de-burring of the riser pipe to obtain a flat surface for the drop tube
- ◆ **Patent-Pending Removable Adaptor**
 - Allows for quick and easy access to drop tube
 - Eliminates the need for cumbersome chain wrenches
- ◆ **Bellow Seals**
 - Improves overall sealing integrity
 - Eliminates mess and curing time found in sealants
 - Reduces service time and costs



Listings and Certifications



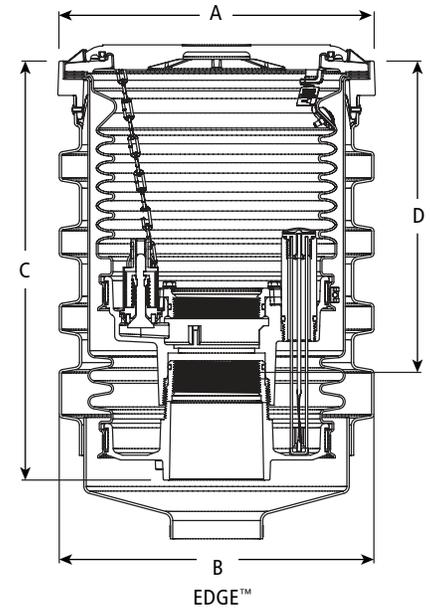
Ordering Specifications

The Edge™ Double-Wall Models - Fill Ports with Drain Valves

Part #	Gal.	liter	Cover	Gauge	lbs	kg.
1C-3112D	5	19	Cast Iron	Float	127	58
1C-3122D	5	19	Cast Iron	Port Only	127	58
1C-3132D	5	19	Cast Iron	Electronic Sensor	127	58
1C-31512D	15	57	Cast Iron	Float	185	84
1C-31532D	15	57	Cast Iron	Electronic Sensor	185	84
1SC-3112D	5	19	Seable	Float	127	58
1SC-3122D	5	19	Seable	Port Only	127	58
1SC-3132D	5	19	Seable	Electronic Sensor	127	58
1SC-31512D	15	57	Seable	Float	185	84
1SC-31532D	15	57	Seable	Electronic Sensor	185	84

The Edge™ Double-Wall Models - Vapor Ports with Plug

Part #	Gal.	liter	Cover	Gauge	lbs	kg.
1C-3112P	5	19	Cast Iron	Float	127	58
1C-3122P	5	19	Cast Iron	Port Only	127	58
1C-3132P	5	19	Cast Iron	Electronic Sensor	127	58
1C-31512P	15	57	Cast Iron	Float	185	84
1C-31532P	15	57	Cast Iron	Electronic Sensor	185	84
1SC-3112P	5	19	Seable	Float	127	58
1SC-3122P	5	19	Seable	Port Only	127	58
1SC-3132P	5	19	Seable	Electronic Sensor	127	58
1SC-31512P	15	57	Seable	Float	185	84
1SC-31532P	15	57	Seable	Electronic Sensor	185	84



Dimensions 5-gallon EDGE™

	in.	cm
A	16 ⁵ / ₈	42
B	16 ¹⁹ / ₃₂	42
C	22 ¹ / ₈	56
D	16 ⁷ / ₁₆	42

Dimensions 15-gallon EDGE™

	in.	cm
A	24 ⁷ / ₈	63
B	24 ¹ / ₂	62
C	24 ¹ / ₂	62
D	18	46

Replacement Parts/Accessories

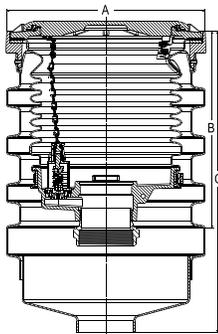
Part #	Description	Part #	Description	Part #	Description
1-21CC	5 Gallon Cast Iron RT cover	SCR Series	15 Gallon Sealable Cover Replacement Snow-Plow Ring	202135-KIT	5 Gallon Primary Bucket with Drain Valve
1-21AC	5 Gallon Aluminum RT Cover	206016	Float Gauge S/A	202136-KIT	5 Gallon Primary Bucket with Plug
H12229M	5 Gallon Cover Seal for 1-21AC and 1-21CC	206017	Sensor Adaptor S/A (Primary)	205987-KIT	15 Gallon Primary Bucket with Drain Valve
201530	5 Gallon Snow-plow Ring	201971	Visigauge	206215-KIT	15 Gallon Primary Bucket with Plug
201689	5 gallon Seal for Snow-Plow Ring	201972	O-Ring, Visigauge Adaptor	202137-KIT	5 Gallon Secondary Replacement Kit for Float Gauge
RTR Series	15 Gallon Rain Tight Rings	202013	O-Ring, Visigauge	206010-KIT	5 gallon Secondary Replacement for Sensor Buckets
H15187M	15 gallon RT Cover Seal	1DK-2100-EVR	Drain Valve Sub Assembly	206011-KIT	5 Gallon Secondary Replacment for Electronic Sensor
SC-XXXX (XXX =Color)	5 or 15 Gallon Sealable Covers powder Coated	201692	O-ring Nipple Adaptor	205988-KIT	15 Gallon Secondary Bucket Assembly
203035	5 Gallon Sealable Cover Replacement Snow-Plow Ring	C05446M	15 Gallon Main cover Seal		

Float Gauge & Sensor Adaptor not included with replacement buckets

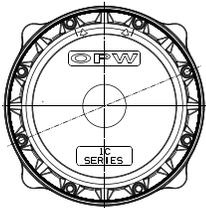
OPW EDGE 1™ Single-Wall Spill Container

Introducing an advanced single-wall spill container – the new EDGE 1™ by OPW. The new EDGE 1™ is rugged, easier to install and service, upgrades to a double-wall and is more reliable than current single-wall spill containers available today. Leading-EDGE design features and superior materials of construction combine with expert spill containment engineering excellence to deliver more benefits than any other single-wall spill container, making the EDGE 1™ number one in:

- ◆ Installation & upgradeability ease
- ◆ Serviceability ease
- ◆ Durability & long-life reliability



A = 16 5/8"
B = 16 15/32"
C = 25 1/4"



Replacement Parts/Accessories

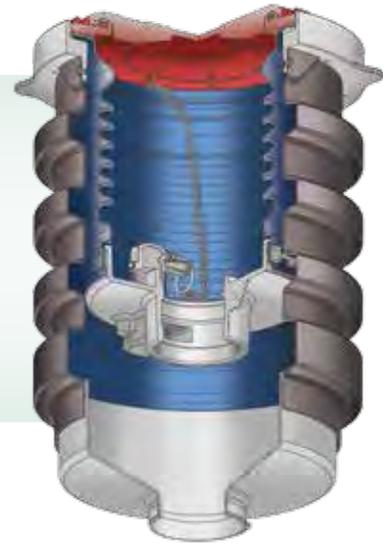
Part #	Description
201689	Mounting ring seal
201530	Snow-plow ring
201692	O-ring, nipple adaptor
1-21CC	Cover
203035	Sealable Cover Ring
H12229M	Cover seal
SC-xxxx	(xxxx=color) Sealable Cover
1DK-2100-EVR	Drain valve sub assembly
203193-KIT	Replacement 5-gallon with Drain Valve
203194-KIT	Replacement 5-gallon with Drain Plug

Materials

- Cover:** Cast aluminum or cast iron
- Mounting Ring:** Duragard® coated ductile iron
- Bellows:** Polyethylene
- Base:** Cast iron E-coating
- Clamps:** Stainless steel
- Seals:** Buna-N

Features

- ◆ Upgradeable to a double-wall bucket without breaking concrete
- ◆ Quick, easy replacement of spill bucket and mounting ring without breaking concrete – significantly reduces labor time and cost
- ◆ High-quality materials of construction
 - Roto-molded technology - provides for thicker, more robust bellows
 - Heavy-duty ductile iron mounting ring - provides superior long-term reliability and damage protection against traffic drive-over and snow plows
 - The integral pull-to-open drain valve uses non-corrosive and stainless-steel materials, unlike our



competitors, which have corrosive materials in their design (a drain plug version is also available)

- ◆ Thread-on bucket design - ensures leak-free integrity, especially in the event of ground movement
- ◆ Corrosion-resistant polyethylene skirt – increased rigidity and durability, superior reliability over corrosive metallic skirts
- ◆ Unique concrete anchoring ring – wide-lip and four (4) convenient anchoring ears provide for better anchoring and longevity

Ordering Specifications

Model #	Description	Weight	
		lbs.	kg
1C-3101D	The EDGE 1™ SW Spill Container, 5 gallon capacity, with Cast Iron Cover and Drain Valve	117	53
1C-3101P	The EDGE 1™ SW Spill Container, 5 gallon capacity, with Cast Iron Cover and Drain Plug	117	53

NOTE: Any model can be purchased with a sealable cover option by using part number 1SC-XXXXD or 1SC-XXXXP.

NOTE: FSA-400-S must be installed with the EDGE 1™ to be upgraded to a double-wall spill bucket.

Installation Tool

Model #	Description
61SA-TOOL	Wrench for Installation of the EDGE 1™ SW Spill Container

Listings and Certifications

CARB
California Air Resources Board



Materials

Cover: Black Epoxy Coated Cast Iron

Mounting ring: Duragard® coated ductile iron

Bellows: Polyethylene

Base: Cast iron E-coating

Seals: Buna-N



OPW 1-2200 Series Replaceable Single-Wall Spill Container

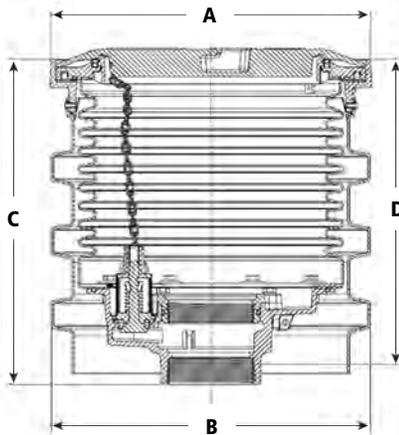
Introducing an affordable, all-accessible, all-replaceable and all-maintainable spill container from OPW. Never break concrete again with our new EPA Compliant UST Solution for today, tomorrow and the future.

Features

- ◆ **Designed for proposed 2014 EPA Regulations and beyond**
- ◆ **Prepares you for future compliance**
- ◆ Removable Bellows and Ring
- ◆ **Unique Flange Adaptor Feature-**
Allows quick and easy removal of overfill valve without torquing base
- ◆ Built-In Face Seal Adaptor
- ◆ Innovative Snowplow Ring-less, Liquid-Tight Cover with Integrated Lift Handle design
- ◆ Easy access for overfill prevention valve testing and inspection
- ◆ Replaceable bucket without breaking concrete
- ◆ **ULC Approved**

Ordering Specifications

Model #	Description
1C-2200D	Single-Wall, Field Replaceable Spill Container with Drain Valve
1C-2200P	Single Wall, Field Replaceable Spill Container with Drain Plug
1-3100-TOOL	Installation Tool, Used for Edge and 1-2200 Spill Containers



Dimensions

	in.	cm	lbs.	kg
A	16 ⁵ / ₈	42	77	34.9
B	16 ¹⁹ / ₃₂	42	77	34.9
C	17 ² / ₃	45	77	34.9
D	16 ⁷ / ₁₆	42	77	34.9

Listings and
Certifications



Replace Bellows in 3 Easy Steps



1 Remove Upper Bolts and Ring



2 Remove Lower Bolts and Ring and Remove Bellows

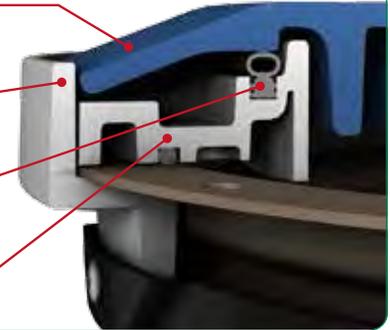


3 Replace Bellows, Reinstall Upper and Lower Rings

No Need to Remove Base in order to Replace Bellows

Liquid-Tight Cover

- Special Cover and Ring Design
Seals Out Water and Debris
- Eliminates Need for Snow Plow Ring
Flush with Finish Grade
- Proven "Bubble Seal"
- Removable Compression Ring

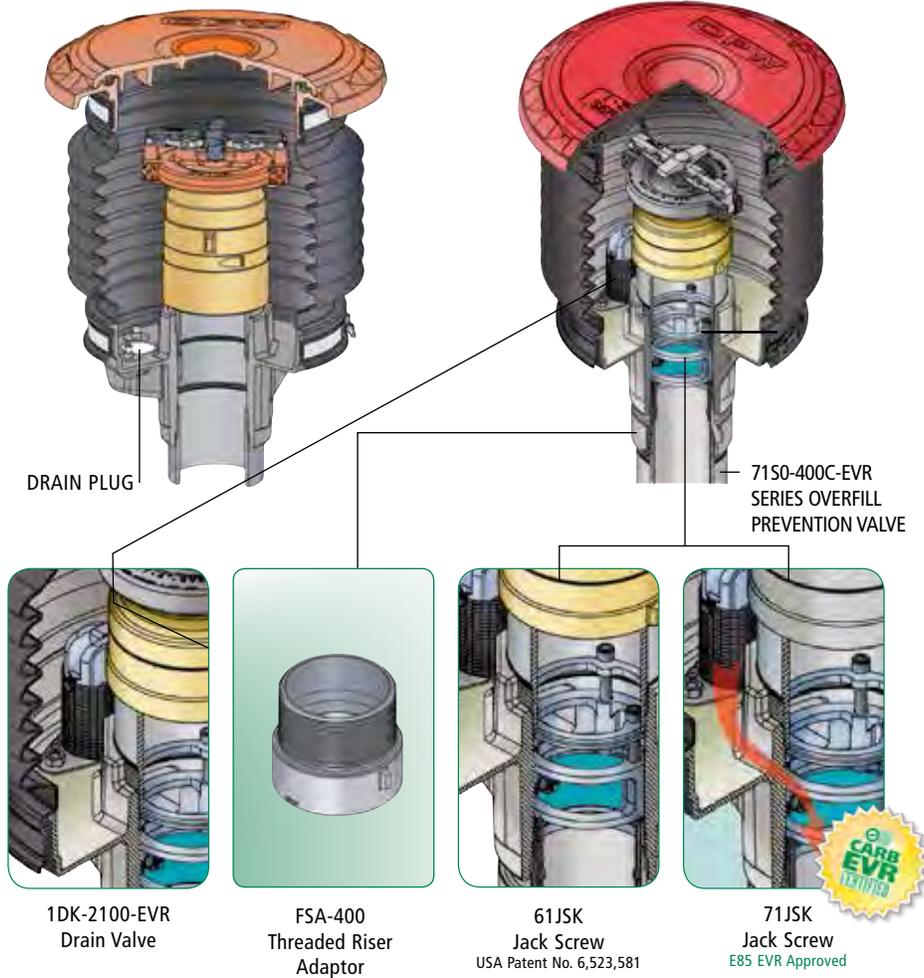


1-2200 Series Replacement Parts

Part/Kit Number	Description
1	207235 Cover
2	H12229M Cover Seal
3	201739 Flange Adaptor
4	201692 Flange Adaptor O-ring
5	1DK-2100-EVR Drain Valve Sub Assembly
6	1DP-2100 Drain Plug Kit
7	208951 Upper Ring Replacement Kit (Includes; O-ring and Hardware)
8	207243 Upper Ring O-ring
9	208952 Bellows Replacement Kit (Includes; O-rings, Split Rings, and Hardware)
10	207212 Lower Split Ring, Each (2 Required per Spill Container)
11	207211 Lower Bellows O-ring
208197	Installation Instructions

**1-2100-PEVR Series
Vapor Recovery Spill Container**

**1-2100-DEVR Series
Product Fill Spill Container**



**OPW 1-2100-EVR
Series Direct Bury
Spill Containment
For CARB/EVR**

The OPW Thread-On 1-2100-EVR Series Spill Containers are certified for installation on OPW Phase I EVR Systems. All Fill Port Spill Containers feature an enhanced 1DK-2100-EVR vapor tight drain valve (DEVR Models). The Vapor Return Spill Containers (PEVR Models) feature a permanent plug in the drain port as per EVR requirements. The 1-2100-EVR Series Thread-On Spill Containers are available in Composite or Cast Iron bases with either 5 or 15-gallon buckets.

The FSA-400 Threaded Riser Face Seal Adaptor is installed on the fill pipe below the spill container to provide a true sealing surface for the drop tube flange on the 61SO and 71SO overfill prevention valve. The 61SO and 71SO series valves are installed in the base of the OPW EVR spill container with the patent-pending 61JSK Jack Screw device. This configuration allows liquid in the spill container to be drained directly into the drop tube thereby isolating the drain valve from the tank ullage, eliminating a notorious leak point in previous systems.

OPW Threaded Riser Adaptor (Face Seal Adaptor)

An OPW FSA-400 Threaded Riser Face Seal Adaptor provides a flat, true sealing surface on threaded pipes where a gasket seal exists per EVR requirements. The FSA-400 is installed on the fill pipe riser below the spill container to provide a true sealing surface for the drop tube flange on the overfill prevention valves. The FSA-400 is also required on tank gauging risers and optional on vapor risers and rotatable adaptors.

**61JSK, 71JSK (Jack Screw Device)
Ordering Specifications**

Product #	Description
FSA-400	4" Face Seal Adaptor
FSA-400-S	4" Short Face Seal Adaptor for Cast Iron Base Only
61JSK-4410	Jack Screw Kit for Composite Base Spill Bucket
61JSK-44CB	Jack Screw Kit for Cast Iron Base Spill Bucket
71JSK-4RMT	Remote Fueling Jack Screw Kit E85 EVR Approved
71JSK-44M4	Jack Screw Kit for Cast Iron Base Spill Buckets E85 EVR Approved

OPW 1-2100 Series Thread-On Spill Containers

OPW Spill Containment Manholes are designed to prevent spilled product from entering the soil near the fill and vapor return riser connections on underground storage tanks during normal tank filling operation, or in the event of tank overflow. The spill containers catch spillage to help prevent soil contamination and groundwater pollution. OPW Thread-On Spill Containment Manholes are generally used on new tank or riser pipe installations.

Materials

- Cover:** Cast aluminum or cast iron
- Mounting Ring:** Cast iron E-coating
- Bellows:** Polyethylene
- Base:** Cast iron E-coating or Duratuff II
- Clamps:** Stainless steel
- Seals:** Nitrile

1-2115,
15-Gallon



Features

- ◆ **Easy Installation** – reduces job-site time and installation costs. OPW Thread-On Spill Containers screw directly onto 4" NPT riser. No external connections to make; adjust the final grade height and support the unit with backfill.
- ◆ **Integral Pull-to-Open Drain Valve** – allows high-speed drainage of excess product into the tank. Designed with a convenient self-cleaning seal and removable screen for easier component cleaning.
- ◆ **Capacity** – available in a true 5-gallon capacity as well as 15-gallon capacity.
- ◆ **Rain-Shedding Cover** – available in either cast aluminum or cast iron, this unique design incorporates a seal in the underside of the cover. The seal seats between two dams on the mounting ring to prevent surface water from entering the spill container.
- ◆ **Fuel Compatibility** – designed to accommodate the fuels of the future, including methanol, ethanol and fuels with MTBE additives.
- ◆ **Product Identification Tags** – available for both the cover and bucket to positively identify the product contained in the UST with standard API symbols. (See product I.D. tag specification page for more information: page 74.)
- ◆ **Heavy-Duty Mounting Ring** – the angled ramp design offers superior protection against snow plow and traffic damage, and provides for secure concrete anchoring.
- ◆ **Corrugated Bellows** – can be adjusted +/- 1 inch for desired grade level.
- ◆ **Duratuff® II or Cast Iron Base** – composite Duratuff® II material is lightweight, durable, and conductive. A rugged, optional, cast-iron base is also available.
- ◆ **Highway 20 Rated (H20)** – all OPW spill containers and manholes exceed the requirements of the Highway 20 rating.

Listings and Certifications



Look for this label for authentic OPW EVR Approved products.

DEVR Models – Fill Port with Drain Valve

Duratuff® II Base with Drain Valve Models

Model #	Gal.	Liter	Cover	lbs.	kg
1-2100-DEVR	5	19	Aluminum	40	18
1C-2100-DEVR	5	19	Cast Iron	53	24
1-2115-DEVR	15	57	Aluminum	47	21
1C-2115-DEVR	15	57	Cast Iron	60	27

Cast Iron Base with Drain Valve Models

Model #	Gal.	Liter	Cover	lbs.	kg
1-2100C-DEVR	5	19	Aluminum	40	18
1C-2100C-DEVR	5	19	Cast Iron	53	24
1-2115C-DEVR	15	57	Aluminum	47	21
1C-2115C-DEVR	15	57	Cast Iron	60	27

PEVR Models – Vapor Port with Plug

Duratuff® II Base with Plug Models

Model #	Gal.	Liter	Cover	lbs.	kg
1-2100-PEVR	5	19	Aluminum	40	18
1C-2100-PEVR	5	19	Cast Iron	53	24

Cast Iron Base with Plug Models

Model #	Gal.	Liter	Cover	lbs.	kg
1-2100C-PEVR	5	19	Aluminum	40	18
1C-2100C-PEVR	5	19	Cast Iron	53	24



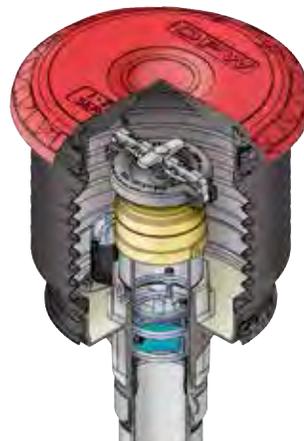
4" Threaded Nipples for Mating Spill Bucket to Adaptor

Part #	Description
TC-400	4" Torque Cap
H15144M	4" NPT Nipple, 4" Length
H12806M	4" NPT Nipple, 5" Length
VPN4X7	4" NPT Nipple, 7" Length
H15271M	4" NPT Nipple, 8" Length
H15268M	4" NPT Nipple, 10" Length

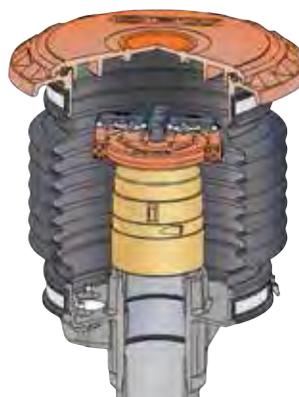
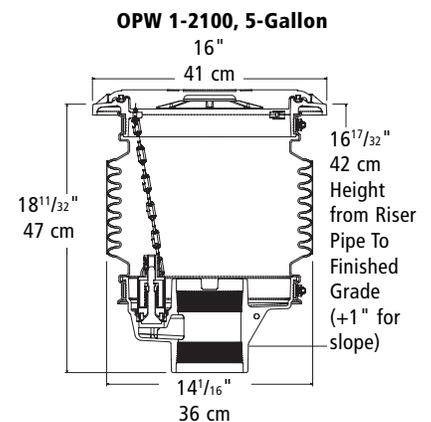
Replacement Parts

Part #	Description
1DK-2100-EVR	Drain Valve Kit
1-21AC	Aluminum Cover w/ Seal
1-21CC	Cast Iron Cover w/ Seal
H12229M	Cover Seal
1PPK-2100	Hand Pump & Plug Kit for 1-2100
1DP-2100	Replacement Drain Plug Kit for 1-2100

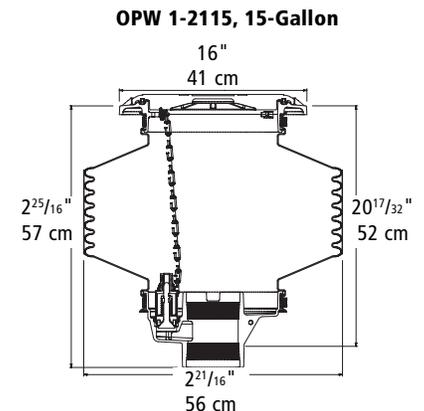
The following products are in compliance with California Water Resources Control Board (W.R.C.B.) for coating of buried metal components, such as stainless steel clamps or entire Spill Containment Bucket bottoms.



1-2100-DEVR Series
Product Fill Spill Container

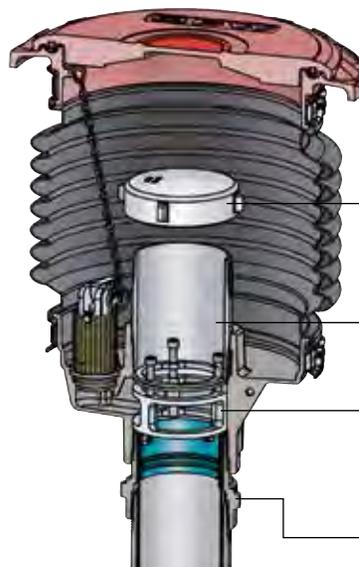


1-2100-PEVR Series
Vapor Recovery Spill Container



*Subtract 2" from height dimension for Cast Iron Base Models.

NOTE: 20¹⁷/₃₂" dimension is height from riser pipe to finish grade (+1" for slope)



TC-400 Torque Cap

Provides an easy means of threading a 4" NPT nipple into a spill container. The OPW TC-400 coupled with the OPW 61SA-TOOL can provide the necessary torque requirements for installing adaptor nipples for spill containers. The TC-400 can easily be removed without disturbing the installed threaded nipple. The TC-400 also eliminates the need for a strap or chain wrench.

4" Threaded Pipe Nipple

OPW pipe nipples are CNC machined, providing a smooth sealing surface where a gasket seal exists. Available in various lengths to custom fit the necessary height requirements for Fill and Vapor Adaptors.

61JSK Jack Screw Device

See page 57 for detailed information.

FSA-400 Face Seal Adaptor

See page 57 for detailed information.

Part #	Description
SL-1100	Urethane Sealant (10.3 oz.)
H15002M	Black Rubberized Undercoating (19.75 oz.)
W.R.C.B. approved CCR Title 23, Div. 16, Sec. 1631 & 2636	

OPW 1SC-2100-EVR Series Sealable Cover Spill Containers

OPW Spill Containment Manholes are designed to prevent spilled product from entering the soil near the fill and vapor return riser connections on underground storage tanks during normal tank filling operation, or in the event of tank overflow. The spill containers catch spillage to help prevent soil contamination and groundwater pollution. The OPW 1SC-2100-EVR Series Sealable Cover Spill Containers are designed to eliminate the problems associated with water entering grade level spill containers. The operation of the cover is similar to that of a "plumbers plug." When the lever is latched down, the plates are drawn together, expanding the seal against the machined mounting ring wall. The 1SC-2100-EVR spill containers are ideal for areas with a high water table, areas subject to tropical rain and standing water, and cold regions where melting snow and road salt can enter standard spill containers.

Materials

- Cover:** Cast aluminum
- Cover Seal:** Low swell nitrile
- Lever:** Bronze
- Mounting Ring:** Teflon® plasma-coated cast iron
- Bellows:** Polyethylene
- Base:** Duratuff® II or cast iron E-coating
- Clamps:** Stainless steel
- Seals:** Low swell nitrile



Lid Features

- ◆ **Simple "Plumbers Plug" Operation** – cover seal is expanded against mounting ring wall.
- ◆ **Vertical Sealing Surface** – prevents gravel and debris from damaging or interfering with the cover seal.
- ◆ **Machined Sealing Surface** – ensures watertight seal. Teflon coated stainless steel.
- ◆ **Field Replaceable Seal** – designed for all-weather performance.
- ◆ **Clear Anodized Aluminum Top Plate** – deters cover theft.
- ◆ **Potted Hinge Mechanism** – prevents ice and debris from hindering lever operation.

Additional Features

- ◆ **Product Identification Tags** – available for both the spill container cover and bucket to positively identify the product contained in the UST with standard API symbols. (See product I.D. tag specification page for more information: page 74.)
- ◆ **Capacities** – 5 and 15-gallon
- ◆ **Fuel Compatibility** – designed to accommodate all fuels, including methanol, ethanol and MTBE.
- ◆ **Highway 20 Rated (H20)** – all OPW spill containers and manholes exceed the requirements of the Highway 20 rating.

Listings and Certifications



Look for this label for authentic OPW EVR Approved products.

Ordering Specifications

Plug or Drain Valve Models

Model	Gal.	Liter	Base	Drain Valve or Drain Plug	Cover	lbs.	kg
1SC-2100-DEVR	5	19	Composite	Drain Valve	Aluminum	47	21
1SC-2115-DEVR	15	57	Composite	Drain Valve	Aluminum	47	21
1SC-2100-PEVR	5	19	Composite	Drain Plug	Aluminum	47	21
1SC-2115-PEVR	15	57	Composite	Drain Plug	Aluminum	47	21
1SC-2100C-DEVR	5	19	Cast Iron	Drain Valve	Aluminum	53	24
1SC-2115C-DEVR	15	57	Cast Iron	Drain Valve	Aluminum	53	24
1SC-2100C-PEVR	5	19	Cast Iron	Drain Plug	Aluminum	53	24
1SC-2115C-PEVR	15	57	Cast Iron	Drain Plug	Aluminum	53	24

Dimensions

Slip-On Models (see drawing on right)

	1SC-2105		1SC-2155	
	in.	cm	in.	cm
A	16	41	16 ⁷ / ₃₂	41
B	14	36	22	56
C	1 ⁵ / ₃₂	3	1 ⁵ / ₃₂	3
D*	10 ¹ / ₁₆	26	14 ¹ / ₈	36
E*	17	43	21	53

*Subtract 2" from "E" dimension for Cast Iron Base Models.

Thread-On Models (see drawing on right)

	1SC-2100		1SC-2115	
	in.	cm	in.	cm
A	16	40	16 ⁷ / ₃₂	41
B	14 ¹ / ₁₆	36	22	56
C	1 ⁵ / ₃₂	3	1 ⁵ / ₃₂	3
D	16 ³ / ₈	42	20 ¹ / ₂	52
E*	18 ⁵ / ₁₆	47	22 ¹ / ₂	57

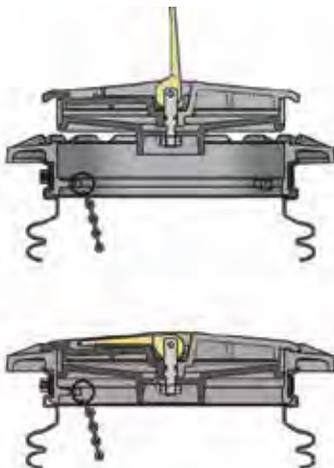
Replacement Parts

Part #	Description
SC-PLAIN	Replacement Cover
H13931M	Cover Gasket
C04101B	Bronze Lever Arm
D01874M	Lower Plate
C04141M	Rubber Insert
H12927M	Adjustment Nut
1SC-TOOL	Optional Easy Opening Tool
1DK-2100-EVR	Drain Valve Kit

4" Threaded Nipples for Mating Spill Bucket to Adaptor

Part #	Description
TC-400	4" Torque Cap
H15144M	4" NPT Nipple, 4" Length
H12806M	4" NPT Nipple, 5" Length
VPN4X7	4" NPT Nipple, 7" Length
H15271M	4" NPT Nipple, 8" Length
VPN4X9	4" NPT Nipple, 9" Length
H15268M	4" NPT Nipple, 10" Length

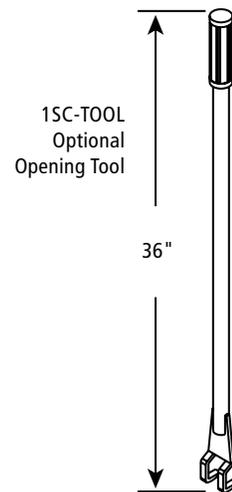
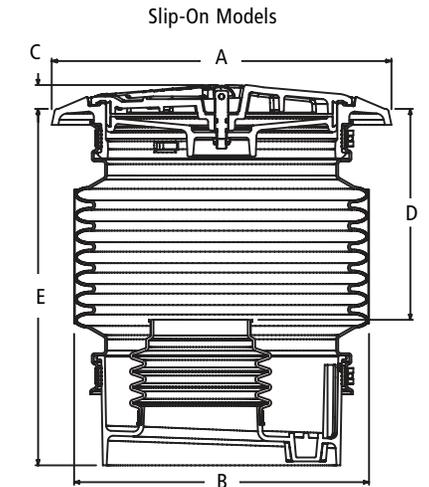
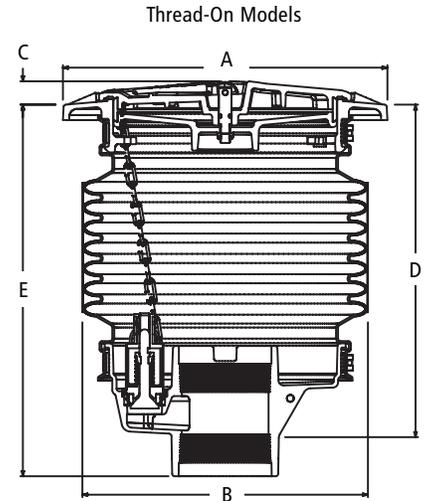
Sealable Cover Operation



Lid in Closed Position



1DK-2100 Drain Valve Kit
Instruction Sheet Order
Number: **H11471M**



OPW 1-2105 Series Slip-On Spill Containers

OPW Slip-On Spill Containment Manholes are used on new or existing UST riser pipes. The spill bucket slides onto 3" or 4" fill and vapor return riser pipes and is then secured in place. Slip-on spill containers provide a fast, economical way to replace uncontained manholes or fill boxes.

Materials

Cover: Cast aluminum or cast iron

Mounting Ring: Duragard® coated cast iron

Bellows: Polyethylene

Base: Duratuff®

Clamps: Stainless steel

Seals: Nitrile

1-2105, 5-Gallon
Slip-On Spill Container



Features

- ◆ Easy Installation – clamps directly onto a 4" riser pipe. Reduces job-site time and installation costs; no need to remove, cut or thread riser pipe.
- ◆ Capacity – available in a true 5-gallon capacity as well as a 15-gallon capacity.
- ◆ Rain-Shedding Cover – available in either cast aluminum or cast iron, this unique design incorporates a seal in the underside of the cover. The seal seats between two dams on the mounting ring to prevent surface water from entering the spill container.
- ◆ Fuel Compatibility – designed to accommodate the fuels of the future, including methanol, ethanol and fuels with MTBE additives.
- ◆ Optional Suction Hand Pump – 8 oz. per stroke capacity for high-speed evacuation of excess liquid. Allows user to pump product back into the tank or out of the spill container for proper disposal.
- ◆ Product Identification Tags – available for both the spill container cover and bucket to positively identify the product contained in the UST with standard API symbols. (See product I.D. tag specification page for more information: page 74.)
- ◆ Offset Base Pipe Entry – 1" offset allows for proper clearance with close fill/vapor riser spacing on tanks.
- ◆ Heavy-Duty Mounting Ring – the angled ramp design offers superior protection against snow plows and provides for secure concrete anchoring.
- ◆ Highway 20 Rated (H20) – all OPW spill containers and manholes exceed the requirements of the Highway 20 rating.

Spill Container Slip-on Model
Instruction Sheet Order Number:
H12262M

Listings and Certifications



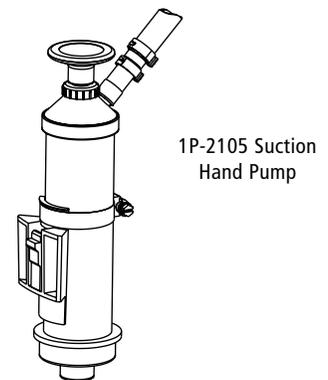
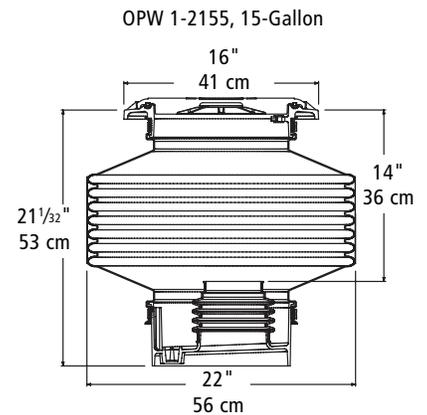
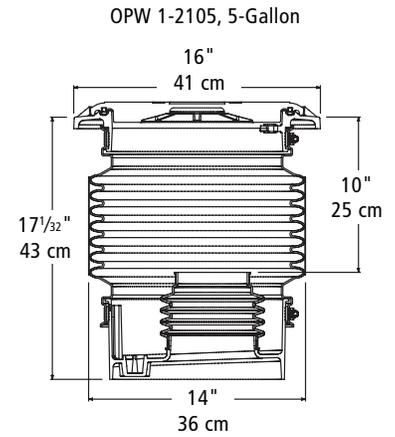
Ordering Specifications

Model	Gal.	Liter	Cover	lbs.	kg
1-2105	5	19	Aluminum	39	18
1C-2105	5	19	Cast Iron	53	24
1-2155	15	56	Aluminum	45	21
1SC-2105	5	19	Sealable	39	18
1SC-2105	15	56	Sealable	45	21

Replacement Parts/Accessories

Part #	Description	Part #	Description
1-21AC	Aluminum Cover w/ Seal	H12229M	Cover Seal
1-21CC	Cast Iron Cover w/ Seal	201567	Inner Bellows
1P-2105	Optional Hand Pump Kit	201759	4 x 3 Reducer Insert

OPW 1-2105 Series Slip-On Spill Containers



OPW 101BG-2100 Series Below-Grade Spill Containers

OPW Below-Grade Spill Containment Manholes are used in new tank or riser pipe installations. The watertight spill containment chamber is installed completely below grade level. A grade level manhole cover lies flush with the driveway grade to reduce a tripping hazard and the potential for damage from snow plows and traffic. Surface water drains into the backfill between the manhole skirt and the exterior of the containment bucket. Below-grade spill containers are available in thread-on and slip-on configurations in 5 and 15-gallon capacities.

101BG Slip-on Model Instruction Sheet Order Number: **H12579M**

101BG-2100 Instruction Sheet Order Number: **H12260M**

Important Notice: The OPW101BG-2100 Spill Container Series does not prevent contamination of the soil or backfill resulting from spills flowing between the spill container and the outer shell. Ground contamination may result if the spill container is filled beyond capacity, or if a spill occurs outside the spill containment cell.

- ◆ Highway 20 Rated (H20) – all OPW spill containers and manholes exceed the requirements of the Highway 20 rating.

Materials

Grade Cover: Fiberglass reinforced composite (steel optional)
Lid: Glass reinforced composite
Lever, top case: Polyethylene
Outer shell: Polyethylene, powder-coated steel
Containment cell: Polyethylene
Base: Duratuff® II or cast iron



Features

- ◆ Pull-to-Open Drain Valve – allows high-speed drainage of excess product into the tank. Designed with a convenient self-cleaning seal and removable screen for easier component cleaning. (CARB Approved)
- ◆ Capacity – 5-gallon and 15-gallon capacities.
- ◆ Outer Shell – the outer shell isolates the containment vessel from the surrounding concrete and gravel. This high-density polyethylene shell is designed to provide space between the outer shell and the containment vessel to allow any surface water that enters to flow into the backfill, not the containment vessel. Elimination of water in the spill container reduces product contamination and ice formation during cold winter months.
- ◆ Vapor-Tight Lid – a unique, hinged and sealed containment vessel lid provides a vapor-tight seal, designed to prevent vapors from escaping at ground level while eliminating the accumulation of dirt and water that contaminate fuel. Incorporating a special lid interlock design, the grade level cover cannot be replaced on the outer shell without the lever being in the closed and locked position.
- ◆ Composite Grade Level Cover – made of sturdy fiberglass-reinforced composite, the grade cover is less prone to theft than aluminum covers, and lighter in weight than cast iron. In addition, the cover lies flush with the actual grade so no ramps are required to support the cover, eliminating snow plow hazards and “speed bumps.” (Optional steel plate cover is also available)
- ◆ Fuel Compatibility – designed to accommodate the fuels of the future, including methanol, ethanol and fuels with MTBE additives.
- ◆ Easy Installation – reduces job-site time and installation costs. Simply thread the Duratuff® II base (cast iron base is optional) onto a standard 4" schedule 40 pipe. Guides are provided to assure proper positioning of the spill container. The hinged lid orientation is adjustable during installation for site-specific placement.
- ◆ Product Identification Tags – available for both the spill container cover and bucket to positively identify the product contained in the UST with standard API symbols. (See product I.D. tag specification page for more information: page 74.)

Listings and Certifications

CARB Certifications and Listings

101BG(S)-2100
101BG(S)-2115

Approval Letter #93-26



Ordering Specifications

Duratuff® II Base Models

Model	Gal.	Liter	Drain Valve	lbs.	kg
101BG-2100	5	19	Pull	60	27
101BG-2105**	5	19	None	60	27
101BG-2115	15	57	Pull	65	29

**Slip-on Base

Cast Iron Base Models

Model	Gal.	Liter	Drain Valve	lbs.	kg
101BG-2100C	5	19	Pull	72	33
101BG-2115C	15	57	Pull	77	35

Dimensions

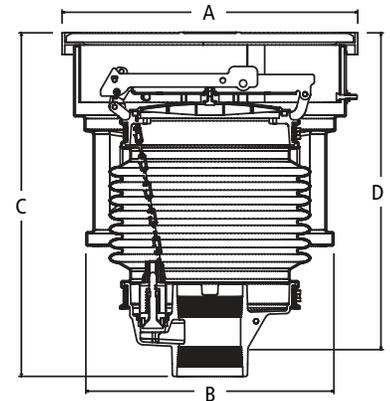
	101BG-2100		101BG-2115	
	in.	cm	in.	cm
A	20 ⁹ / ₁₆	52	20 ⁹ / ₁₆	52
B	17 ¹ / ₄	44	25 ¹ / ₂	65
C*	23 ²⁹ / ₃₂	76	27 ³¹ / ₃₂	71
D	22 ¹ / ₁₆	56	26 ⁵ / ₃₂	66

*Subtract 2" from "C" dimension for Cast Iron Base Models.

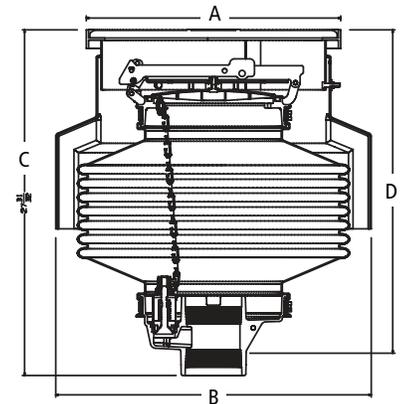
Replacement Parts/Accessories

Part #	Description	Part #	Description
1DK-2100-EVR	Pull Drain Valve	101BG-COVER	Composite Manhole Cover
101BG-21AR	Inside Hatch Height Extender	E00491	Complete Replacement Top Assembly
101BG-21LA	Red Lever & Crossarm Assembly	H11671M	Steel Manhole Cover
101BG-LATCH	Latch Kit; Yoke, Cotterpin & Spring	H12280M	Ring Seal
101BG-BUCKET	5 Gallon Replacement Spill Container	H12620	Inside Hatch
C04785M	5 Gallon Insert Support	P110-20LID	Steel Manhole Cover w/ID Tag System
C04476M	15 Gallon Insert Support		

101BG-2100, 5-Gallon

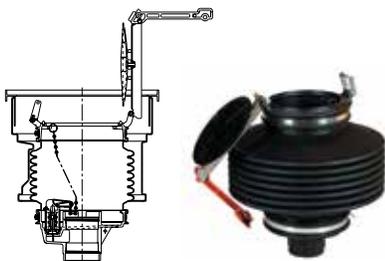


101BG-2115, 15-Gallon

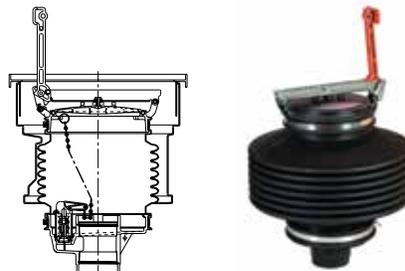


NOTE: "D" dimension is height from riser pipe to finish grade (+1" for slope)

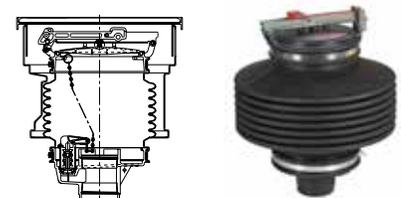
Operation of 101BG Lid



Lid and lever in open position.



Lid down, but not closed. Lever still in upright position preventing replacement of grade cover.



Lid and lever in closed and locked position. Grade cover now easily replaced on rim.

1DK-2100 Drain Valve Kit Instruction Sheet Order Number: H11471M

Fibrelite Multi-Port Spill Containment

OPW "Fibrelite" Multi-Port Spill containment manholes provide spill containment for underground storage tank (UST) fill pipes and vapor recovery risers.

Multi-Ports are installed over the top of tank sumps to preserve future access to the tank top and to facilitate containment of tank bung fittings.

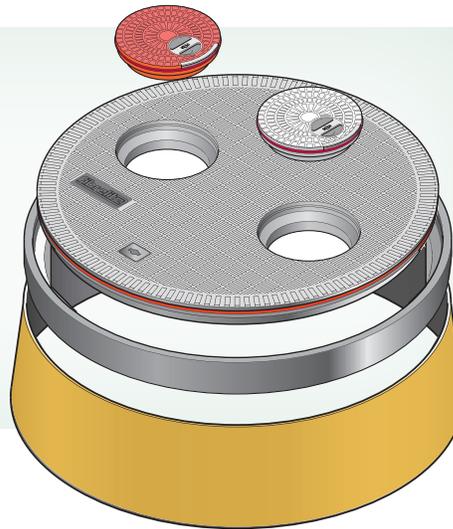
Fibrelite's watertight covers are easy to remove composite manhole covers are available with center or offset port for access to fill risers. Spill Containers and water shroud covers are sold separately.

Materials:

Cover: Fiberglass

Frame: Fiberglass

Skirt: Fiberglass



Features & Benefits:

- ◆ Lightweight - reduce risk of back, foot and hand injuries.
- ◆ UV resistant
- ◆ Standard duty (20 ton load rating)
- ◆ No bolts required
- ◆ Anti-slip surface
- ◆ Anti-static - fully conductive
- ◆ Will not corrode
- ◆ Watertight, sealed design
- ◆ Ergonomic, single person removal and replacement with Fibrelite lifting handle
- ◆ Monolithic structure eliminates delaminating

Ordering Specifications

Part Number	Description	FRP Cover Color	Skirt I.D.	Cover O.D.	Skirt Length	Riser Spacing	Fill Port Cover	Vapor Cover	Weight (lbs)
FL90GRAY-MP-SK12-G	36" Gray Comp. Dual Multi-port Bonded All Gray- Multipurpose	Gray	36"	38.5"	12"	16" Centers	Gray	Gray	112
FL90GRAY-MP-SK12-W	36" Gray Dual Multi-port Bonded Regular Unleaded White	Gray	36"	38.5"	12"	16" Centers	White	Orange	112
FL90GRAY-MP-SK12-BU	36" Gray Comp. Dual Multi-port Bonded Mid-Grade Blue	Gray	36"	38.5"	12"	16" Centers	Blue	Orange	112
FL90GRAY-MP-SK12-R	36" Gray Comp. Dual Multi-port Bonded Premium Red	Gray	36"	38.5"	12"	16" Centers	Red	Orange	112
FL90GRAY-OF-SK12-G	36" Gray Comp. Single Port Bonded All Gray	Gray	36"	38.5"	12"	16" Centers	Gray	Orange	112
FL90GRAY-OF-SK12-Y	36" Gray Single Port Bonded Yellow Diesel	Gray	36"	38.5"	12"	16" Centers	Yellow	N/A	148
FL100GRAY-MP16-SK12-G	40" Gray Comp. Dual Multi-port Bonded All Gray- Multipurpose	Gray	40"	44"	12"	16" Centers	Gray	Gray	148
FL100GRAY-MP16-SK12-W	40" Gray Dual Multi-port Bonded Regular Unleaded White	Gray	40"	44"	12"	16" Centers	White	Orange	148
FL100GRAY-MP16-SK12-R	40" Gray Comp. Dual Multi-port Bonded Mid-Grade Blue	Gray	40"	44"	12"	16" Centers	Red	Orange	148
FL100GRAY-MP16-SK12-BU	40" Gray Comp. Dual Multi-port Bonded Premium Red	Gray	40"	44"	12"	8" Offset	Blue	Orange	148
FL100GRAY-OF8-SK12-G	40" Gray Comp. Single Port Bonded All Gray	Gray	40"	44"	12"	8" Offset	Gray	N/A	148

BONDED - Assembled Cover, Ring and Skirt.

Spill Buckets are sold separately.

Contact OPW for custom Multi-Ports or colored covers.

If you require Black Multiports, substitute BLACK for GRAY in the Part Number.

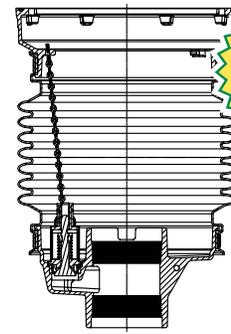
See Tank Sump page 19 for complete assembly.



Look for this label for authentic OPW EVR Approved products.

Replacement Parts/Accessories

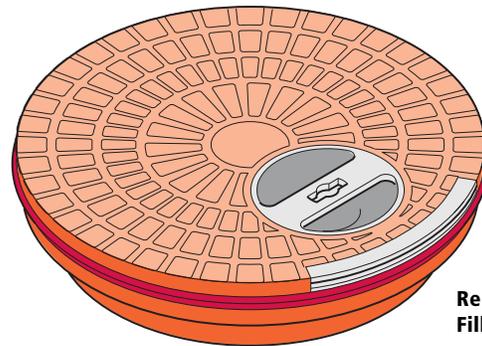
Part Number	Description
P711-EVRDV	5 Gal. Spill Bucket, Composite Base, Drain Valve
P711-EVRPL	5 Gal. Spill Bucket, Composite Base, Plug
P761C-EVRDV	5 Gal. Spill Bucket, Cast Iron Base, Drain Valve
P761C-EVRPL	5 Gal. Spill Bucket, Cast Iron Base, Plug
P511-15-EVRDV	15 Gal. Bucket W/Drain Valve, Composite Base
ID-D	ID Plate-Diesel
ID-M	ID Plate-MidGrade
ID-P	ID Plate-Premium
ID-R	ID Plate-Regular
ID-E85	ID Plate-E85
ID-U	ID Plate-Unleaded
ID-T	ID Plate-Turbine
ID-MW	ID Plate-Monitoring Well
FC-10-BLACK	10" Black Fill Cover
FC-10-BLUE	10" Blue Fill Cover
FC-10-GRAY	10" Gray Fill Cover
FC-10-ORANGE	10" Orange Fill Cover
FC-10-RED	10" Red Fill Cover
FC-10-WHITE	10" White Fill Cover
FC-10-YELLOW	10" Yellow Fill Cover
FC-10-SEAL	Replacement Gasket For FC -10 Covers
FL90GRAY-MP16	36" Gray Replacement Cover 2 Ports, with 16" Centers
FL90GRAY-OF	36" Gray Replacement Cover 1 Port, with 8" Offset
FL100GRAY-MP16	40" Gray Replacement Cover 2 Ports, with 16" Centers
FL100GRAY-OF8	40" Gray Replacement Cover 1 Port, with 8" Offset



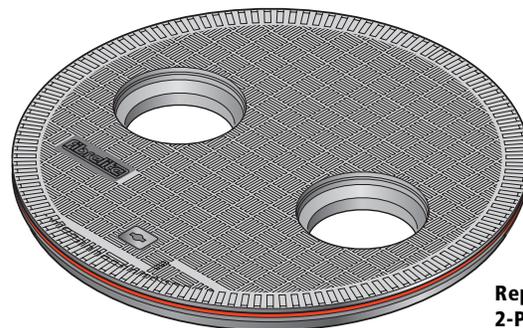
5 Gallon Fill or Vapor Spill Bucket



ID Plate
6" square fiberglass, adhesive backed product ID plates to fit into the cover recess area.



Replacement Fill-Port Covers



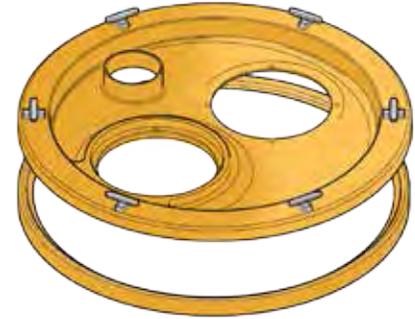
Replacement 2-Port Covers

Ordering Specifications

Multi-Port Watertight Spill Platform

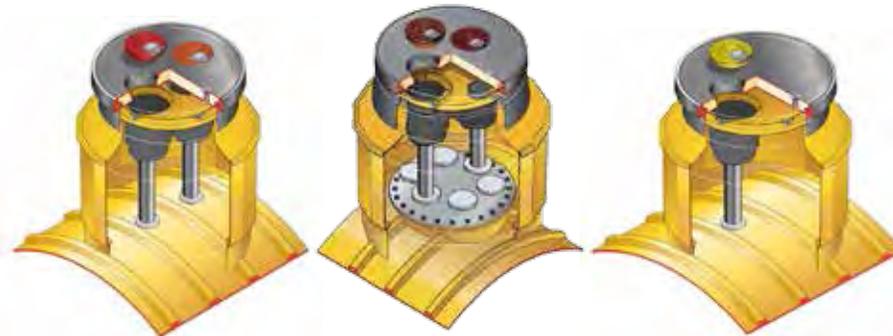
Part #	Application	Dia.	Height	Base	Weight (lbs)
WSP33-16	Dual Access Ports 16" Centers Slope to Fill bucket	33"	(2) 5 Gallon	16" Center	13
WSP33-8	Single Access Port At 8" Off Center Slope to Fill bucket	33"	(1) 5 Gallon	8" Offset	13
WSP37-16	Dual Access Ports At 16" Center Slope to Fill bucket	37"	(2) 5 Gallon	16" Center	17
WSP37-8	Single Access Port At 8" Off Center Slope to Fill bucket	37"	(1) 5 Gallon	8" Offset	17
WTS37-16	Dual Access Ports At 16" Center No Slope to Fill bucket	37"	(2) 5 Gallon	16" Center	17
WTS37-8	37" Dia Single Access Port At 8" Center No Slope to Fill bucket	37"	(1) 5 Gallon	8" Offset	17
WSP37-550	Dual Access Ports At 21.5" Center Slope To Fill Bucket	37"	(2) 15 Gallon	21.5" Center	17
WSP37-275	Single Access Port At 11" Off Center Slope To Fill Bucket	37"	(1) 15 Gallon	11" Offset	17

All Multi-Port Platforms include WSP/CRK bucket clamping Kits



Multiport and Offset Fill Sump System Kits

Multiport Systems Include: Tank Sump Base, Top Hat with Stainless Steel Retaining Ring, Water Tight Sump Lid, Multiport Cover and Frame, Skirt Bonded to Frame, Clamping Rings, Fill and Vapor Port Covers



Ordering Specifications

Part Number	Application	Tank Collar	Sump				Bonded Manhole		
			Dia.	Height	Base	WT Cover	Skirt I.D	FRP Cover	Fill & Vapor Covers
S8CR-3100G-MP3716-W	5 Gallon Regular Gasoline Multiport System	42"	45"	33"	Collar Ring	WSP33-16	40"	Gray	White / Orange
S8CR-3100G-MP3716-R	5 Gallon Premium Gasoline Multiport System	42"	45"	33"	Collar Ring	WSP33-16	40"	Gray	Red / Orange
S8CR-3100G-OF378-Y	5 Gallon Diesel Offset Multiport System	42"	45"	33"	Collar Ring	WSP33-8	40"	Gray	Yellow
S14CR-3100G-MP3716-W	5 Gallon Regular Gasoline Multiport System	48"	52"	33"	Collar Ring	WSP33-16	40"	Gray	White / Orange
S14CR-3100G-MP3716-R	5 Gallon Premium Gasoline Multiport System	48"	52"	33"	Collar Ring	WSP33-16	40"	Gray	Red / Orange
S14CR-3100G-OF378-Y	5 Gallon Diesel Offset Multiport System	48"	42"	33"	Collar Ring	WSP33-8	40"	Gray	Yellow
S15CR-3100G-MP3755-W	15 Gallon Regular Gasoline Multiport System	54"	60"	33"	Collar Ring	WSP33-16	40"	Gray	White / Orange
S14CR-3100G-MP37555-R	15 Gallon Premium Gasoline Multiport System	54"	60"	33"	Collar Ring	WSP33-16	40"	Gray	Red / Orange
S14CR-3100G-OF3727-Y	15 Gallon Diesel Offset Multiport System	54"	60"	33"	Collar Ring	WSP33-16	40"	Gray	Yellow

Spill Containers, Resin Kits, and Fiberglass Mounting Kits Are Ordered Separately

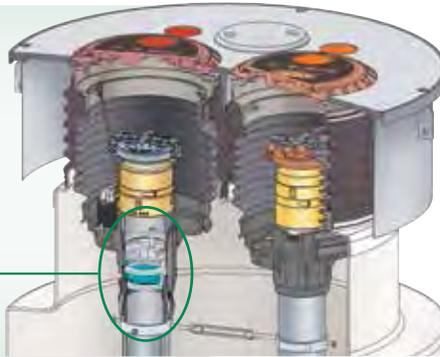


FSA400



61JSK

See page 57 for ordering specifications on the FSA-400 & 61JSK



OPW 400 and 500 Series Multi-Port Spill Containment Manholes

OPW Multi-Port Spill Containment Manholes provide spill containment for underground storage tank (UST) fill pipes and vapor recovery risers in a completely integrated single manhole package. Multi-ports are installed over the top of tank sumps to preserve future access to the tank top and to facilitate containment of tank bung fittings. OPW offers a vast array of standard multi-port configurations and options, in addition to an almost unlimited ability to provide custom solutions for virtually any spill containment application.

Model Descriptions

- ◆ **OPW 411 Series** – features a flush-mounted manhole lid and raised dual dam and groove spill container rings, with P2105 Buckets using OPW 1-2105 Style Slip-On 5-gallon containers. Base is standard 1" offset from center and can be used for 12", 14", 16" or wider riser spacing. Optional 1P-2105 Hand Pump available.
- ◆ **OPW 500 Series (511 / 521) EVR Multi-Port** – features a flush-mounted manhole lid and raised dual dam and groove spill container ring, with P511-EVR Buckets using OPW 1-2100 Style Thread-On Spill Containers. All Fill Ports in these spill containers feature an enhanced 1DK-2100-EVR vapor tight drain valve. The Vapor Return Spill Container features a permanent plug in the drain port as per EVR requirements. EVR

Multi-Port Thread-On Spill containers are available in Composite or Cast Iron bases with 5 gallon buckets. Drain Valve Spill Bucket & Plug Spill Bucket standard on Dual Ports, Drain Valve Spill Bucket standard on Single Port.

- ◆ **Required for EVR APPLICATIONS** – the FSA-400 Threaded Riser Face Seal Adaptor is installed on the fill pipe below the spill container to provide a true sealing for the drop tube flange on the 7150 overflow prevention valve. The 6150 and/or 7150 series valve is installed in the base of the OPW EVR spill container with the patent pending 61JSK jack screw device. This configuration allows liquid in the spill container to be drained directly into the drop tube, thereby isolating the drain valve from the tank ullage, eliminating a notorious leak point in previous systems.

- ◆ **Spill Container Cover Options** – standard spill container options include the patented OPW dam and groove raintight (RT) design and the watertight Sealable Cover (SC) "plumber's plug" design. The raintight cover features a finger-grip lifting facility and an integral seal. The sealable cover features a cam-operated mechanism that expands the seal against the vertical wall of the mounting ring. Both of these water-shedding covers are protected by raised mounting rings.
- ◆ **Fastener Options** – two types of fasteners are available to secure the manhole lid and monitoring port to mounting rings. Standard are 5/16"-18 hex head bolts. Optional are OPW Roto-Lock Fasteners. The OPW Roto-Lock system enables a secure, watertight connection without the need to locate threaded bolt holes on the mounting ring.
- ◆ **Powder Coated Rings & Covers** – available upon request.
- ◆ **Replacement Covers** – see Part Number Configurations at www.opwglobal.com.

Features

- ◆ **Contractor-Friendly Installation** – studded mounting ring simply bolts together inside the spill containment bucket. No need to align bolt holes in the manhole cover.
- ◆ **Raintight Service** – nitrile gaskets on the manhole and spill bucket mounting rings help prevent contamination of the sump area from surface water intrusion.
- ◆ **Highway 20 Load Rating** – the rugged diamond plate steel manhole covers, as well as the ductile iron (RT) or aluminum (SC) spill container covers meet H20 Load Rating requirements.
- ◆ **Spill Container and Manhole Positive I.D. System** – special recesses cast into spill container covers allow product I.D. tags to be attached to the lids. Matching bucket tags can be affixed to the inside of the spill container to prevent covers from getting switched.

- ◆ **Fill/Vapor Ports** – configurations are available to accommodate a single fill riser, dual ports for both a fill and vapor riser, and triple and quad ports for multiple fill and vapor risers. Ports can be supplied with or without containment buckets.
- ◆ **Port Configurations** – standard port locations match the popular riser spacings (16" or 24") and bung configurations on underground storage tanks. Custom port locations are easily accommodated. For riser spacings less than 16", old style buckets must be used.
- ◆ **CARB Certified** – 500 Series CARB EVR Approved Executive Order #VR-102
- ◆ **Manhole Cover Sizes** – standard bolt-down manhole cover diameters of 30" (76 cm), 37" (94 cm), 42" (107 cm) and 48" (122 cm) allow ample access to the sump area. Heavy-duty reinforced lid options are also available upon request.

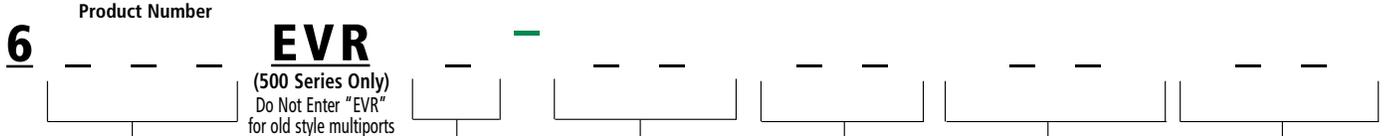
Listings and Certifications



Look for this label for authentic OPW EVR Approved products.

CARB EVR Executive Order #VR-102
NYCFD Certified (6571 Series) #5053
Florida EQ-145

OPW Multi-Port Spill Containment Ordering Specifications



Bolt Down Model Number

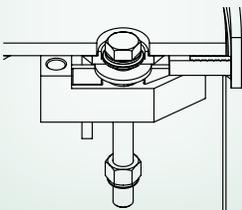
- 511EVR - HDPE Bellows, Thread-On Composite Base, Bolt-Down
- 561EVR - HDPE Bellows, Thread-On Cast Iron Base, Bolt-Down
- 411- HDPE Bellows, Slip-On Composite Base

Roto-Lock Model Number

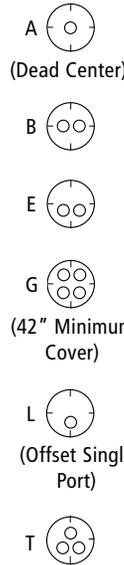
- 521EVR - HDPE Bellows, Thread-On Composite Base, Roto-Lock
- 571EVR - HDPE Bellows, Thread-On Cast Iron Base, Roto-Lock
- 421- HDPE Bellows, Slip-On Composite Base with Roto-Lock Fasteners

Optional Roto-Lock Fastener System

The OPW Roto-Lock system enables a secure raintight connection without the need to locate threaded bolt holes on the mounting ring.



Fill/Vapor Port Configurations



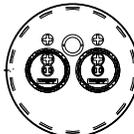
NOTE: 43 or 49 style Gauge Port must be used if a water shroud is to be used with L style

Replacement / Retrofit Manhole RP* - (No Ring / Skirt)

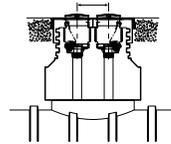
*RP cover orders must be accompanied by an up-to-date OPW field survey form.

Riser Spacing

- 00 - Single Port (A Configurations)
- 16 - 16" Centers
- 24 - 24" Centers (42" Minimum Cover)

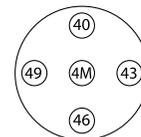


Riser Spacing



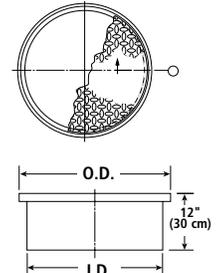
Gauge Port Location

- 00 - No Gauge Port
- 40 - Port at 12 o'clock
- 43 - Port at 3 o'clock
- 46 - Port at 6 o'clock
- 49 - Port at 9 o'clock
- 4M - Port in Center
- 7X - Flush Mount



Port Location Example

NOTE: 3M Style gauge port must be used with port in the center of "G" Style



Dimensions

O.D.		I.D.		Thickness	
in.	cm	in.	cm	in.	cm
30	76	26 ⁵ / ₈	68	³ / ₈	0.952
37	94	34 ⁵ / ₈	88	³ / ₈	0.952
42	107	39 ⁵ / ₈	101	¹ / ₂	1.27
48	122	44 ⁵ / ₈	113	¹ / ₂	1.27

EVR Multi-Ports

Thread-On Spill Containers are available in composite or cast iron bases with either 5 or 15-gallon buckets. (1) Drain Valve Spill Bucket & (1) Plug Spill Bucket standard on Dual Ports. Drain Valve Spill Bucket standard on Single Port.

Optional Accessories

Part #	Description
6511ROS-4X2	Offset Vapor Riser 4" Threaded, 2" Offset
6511-RB16	12" to 18" Riser Spacer
6511-RB24	20" to 26" Riser Spacer
H15144M	4" NPT Nipple, 4" Length
H12806M	4" NPT Nipple, 5" Length
VPN4X7	4" NPT Nipple, 7" Length
VPN4X9	4" NPT Nipple, 9" Length
H15271M	4" NPT Nipple, 8" Length
H15268M	4" NPT Nipple, 10" Length
TC-400	4" Torque Cap for 4" Nipples
6521-XAR37	36", 37" OR 38" Roto-Lock Adaptor Ring to convert from Bolt Down
6521-XAR42	39" OR 42" Roto-Lock Adaptor to convert from Bolt Down
6521-XAR48	48" OR 52" Roto-Lock Adaptor to convert from Bolt Down



6511-RB16 Riser Spacer



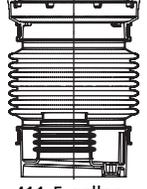
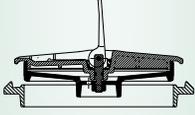
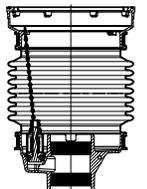
Offset Adaptor



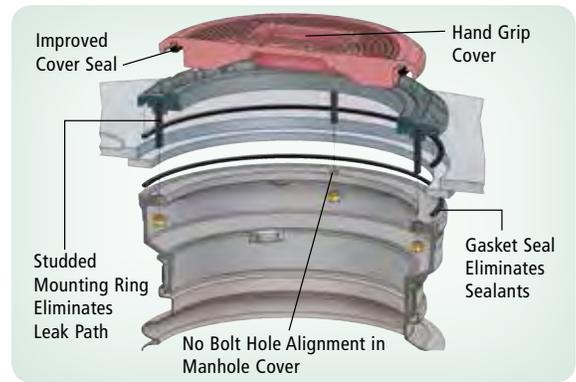
Torque Cap



4" Nipple

Spill Container Cover Style**	Spill Container Capacity***	# Of Ports With Containment	Powder Coated Manhole Covers
RT - Raintight SC - Sealable Cover 00 - No Ring or Cover	00 - No Containment 05 - 5-Gallon 15 - 15-Gallon *** 5-Gallon bucket is standard	0 1 2 3 4	R - (1) Red (1) Orange W - (1) White (1) Orange Y - (1) Yellow
 RT - Raintight	 411-5-gallon (Slip-On)		
 SC - Sealable Cover (Lid in open position)	 511-5-gallon (Thread-On)		

** Raintight cover is standard



Current Replacement Parts

For New 500 Series EVR Multi-Ports 6511/6521, 6561/571 made post 11/2003

Part #	Description
P711-EVRDV	Replacement 5-Gallon Bucket, w/ Drain Valve
P711-EVRPL	Replacement 5-Gallon Bucket, w/Plug (Vapor)
P761C-EVRDV	Replacement 5-Gallon Bucket, C.I. Base w/Drain Valve
P761C-EVRPL	Replacement 5-Gallon Bucket, C.I.
P411-EVRPL	Replacement 5-Gallon Slip-On Bucket
P511-15-EVRDV	Replacement 15-Gallon Bucket, Comp Base, W/ Drain Valve
C05170M	Gasket, Spill Bucket & Mounting Ring
H15187M	Replacement Seal for New Rain Tight Cover

Note: New P711 & P761 EVR buckets will only work with New "EVR" Multi-Port covers. (made post 11/2003)

See page 53 for replacement rings and covers part numbers.

Old Style Replacement Parts

311/411/511/521 Series Multi-Ports

Note: 511/521 parts are for Multi-Ports made prior to Nov. 2003

Part #	Description
1DK-2100-EVR	511/521 Series Drain Valve
H13931M	Replacement Seal for SC Cover
P110-37G	34"-37" Manhole Gasket
P110-42G	42" Manhole Gasket
P110-48G	48" Manhole Gasket
PROTO-LOCK	(1) Roto-Lock
P40-ROTOLID	Replacement 40 Style Gauge Port Roto-Lock Lid
H15240M	Replacement Gasket for 40 Style Gauge Port
P511-BK	Steel Cover Bolt & Gasket Kit, (4 each) for complete cover
P-30L	Replacement 30 Style Bolt Down Gauge Port Lid
P311-G	Bucket Top Flange Gasket
P511BUCKETBOLT	Spill Bucket RT Ring Kit (4) Bolts, Washers & Gaskets
H15238M	Replacement Gasket, 30 Style (Bolt Down)
1-2100-DSH	5 Gallon Fill Bucket with Composite Base & Drain Valve
1-2100-PSH	5 Gallon Vapor Bucket with Composite Base & Plug

Part #	Description
411 P2105BUCKET	411 Replacement Bucket 5-Gallon
Parts 1P-2105	H& Pump Kit for 411/P2105
P111-WTL	Replacement Cover (RT)
P111WTL-S	Replacement Seal for RT Cover
P311-1R	Replacement RT Ring
P311-14	RT Ring for 14" Riser
P511YBUCKET	Replacement Waste Oil Bucket
P511-DEVRBUCKET	Replacement 5-Gallon Bucket with Drain Valve
P511-G14	Bucket Top Flange Gasket for Notched Gasket Set
P511-PEVRBUCKET	Replacement 5-Gallon Bucket with Plug
P511C-DEVRBUCKET	Replacement 5-Gallon Bucket With C.I. Base & Drain Valve
511/521 P511C-PEVRBUCKET	Replacement 5-Gallon Bucket With C.I. Base & Plug
Parts P511-DEVRB-14	Replacement 5-Gallon Bucket with Drain Valve 12" & 14" Risers
P511-PEVRB-14	Replacement 5-Gallon Bucket with Plug - 12" & 14" Risers
P511C-DEVRB-14	Replacement 5-Gallon Bucket W/ C.I. Base, Drain Valve for 12" & 14" Risers
P511C-PEVRB-14	Replacement 5-Gallon Bucket W/ C.I. Base, Plug, for 12" & 14" Risers
P521-GKIT	521 Multi-Port Complete Gasket Kit
P511-GKIT	511 Multi-Port Complete Gasket Kit

Multi-Port Manhole Water Shroud System Option

The new OPW Multi-Port Manhole Water Shroud System (MPWS) is designed to completely isolate surface water and condensation from the tank sump. The MPWS features an injection-molded fiberglass Water Shroud lid that mates to a standard tank sump top hat reducer. This new bolt down design allows even compression to facilitate water-tight sump access. Shroud Boots isolate the spill container buckets using stainless steel band clamps, which provide a tight seal between the water shroud top hat and the underside of the spill container mounting rings. A 6" Sump Inspection Port is provided on each FRP Cover, allowing full inspection access through the Multi-Port Gauge Port. The OPW Water Shroud system is available in 33" and 36" models. The MPWS Water Shroud is sold separately.



Rubber Shroud Cap



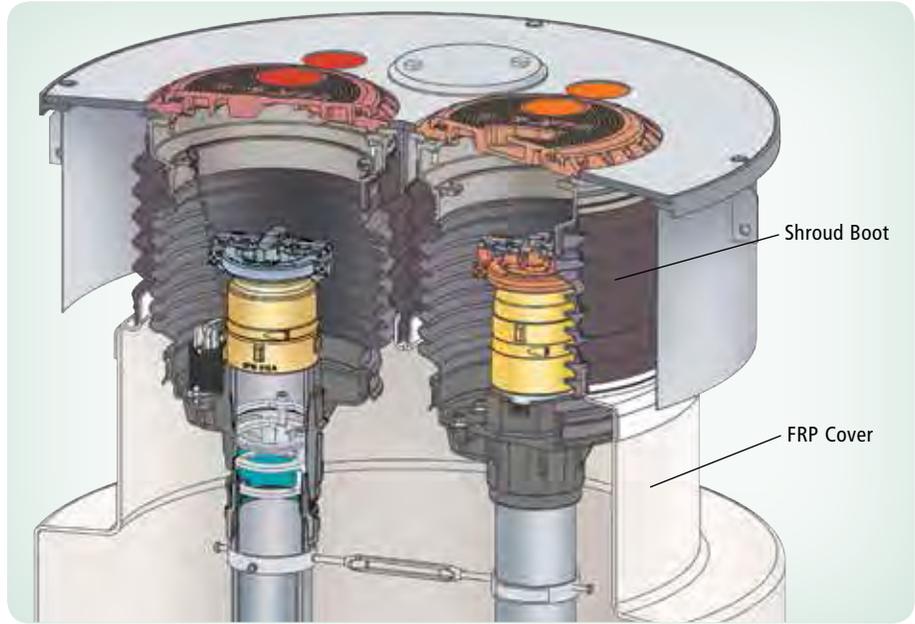
Shroud Boots Vinyl Plastisol



Sump Inspection Port (SIP) – Clear ABS Construction Inspection Port



FRP Cover Injection Molded Fiberglass Cover



Ordering Specifications

Part #	Description
MPWS-33	33" FRP Cover with (2) 5-gallon Water Shroud Boots & Clamps
MPWS-33BD	33" Bolt Down Water Shroud
MPWS-33BDD	33" Bolt Down Water Shroud for Diesel
MPWS-36	36" FRP Cover with (2) 5-gallon Water Shroud Boots & Clamps
MPWS-39BD	39" Bolt Down Water Shroud

Replacement Parts

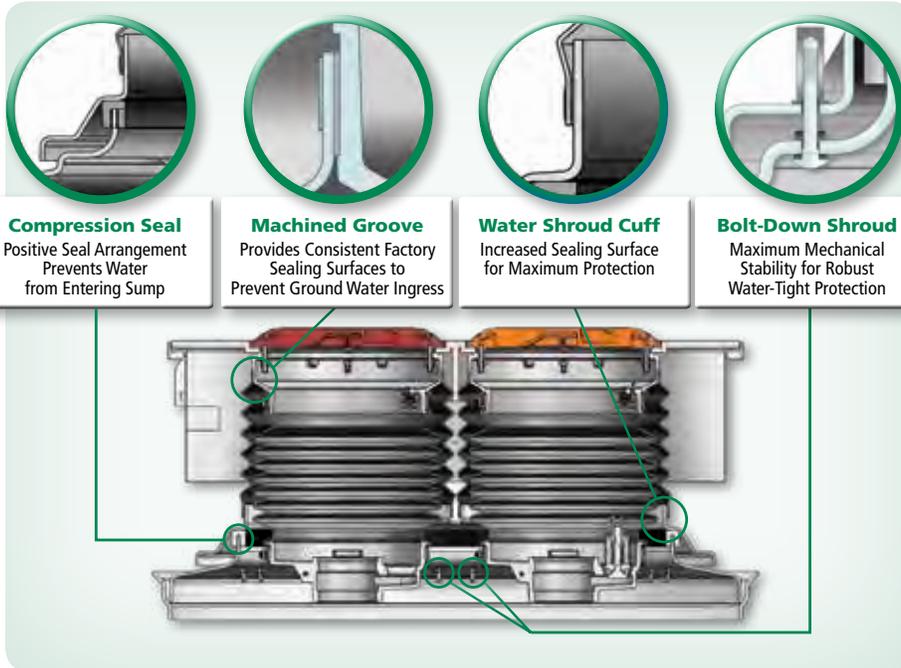
Part #	Description
C05223M	Shroud Boot Cap to Isolate One FRP Cover Port
D02571M	33" FRP Replacement Cover
D02586M	36" FRP Replacement Cover
D02575M	5-gallon Shroud Boot
H15188M	Lower Clamp for 5-gallon Shroud Boot
H15190M	Upper Clamp for 5 or 15-gallon Shroud Boot
SIP-6	6" Sump Inspection Port Sight Glass
SLPK	Gasket and Sealant Kit for Shroud
205181	Lower Clamp for 5 Gallon Shroud
205183	Upper Clamp for 5 Gallon Shroud

Listings and Certifications

Florida EQ-145 NY Approval



NOTE: Part numbers do not include rings or covers. Rings and Covers must be ordered separately.



Compression Seal
Positive Seal Arrangement
Prevents Water
from Entering Sump

Machined Groove
Provides Consistent Factory
Sealing Surfaces to
Prevent Ground Water Ingress

Water Shroud Cuff
Increased Sealing Surface
for Maximum Protection

Bolt-Down Shroud
Maximum Mechanical
Stability for Robust
Water-Tight Protection

Bolt Down Manhole Water Shroud System Option

The Bolt Down Multi-Port Water Shroud (MPWS-BD) is designed to mate with the OPW Multi-Port. The MPWS-BD isolates surface water and condensation from Tank Sumps.

Shroud boots isolate the spill container buckets using stainless steel band clamps, providing a tight seal between the water shroud top hat and the underside of the spill container-mounting ring. Bolts on the outer edge of the shroud cover secure it to the top hat. Available in 33" and 39" Diameter Covers.

Ordering Specifications

Part #	Description
Bolt-Down FRP Top Hat Options	
203246	42" x 33" FRP Bolt-Down Top Hat
203272	42" x 39" FRP Bolt-Down Top Hat

Replacement Parts

Part #	Description
C05223M	Shroud Boot Cap to Isolate One FRP Cover Port
D02571M	33" FRP Replacement Cover
D02586M	36" FRP Replacement Cover
D02575M	5-gallon Shroud Boot
H15188M	Lower Clamp for 5-gallon Shroud Boot
H15190M	Upper Clamp for 5 or 15-gallon Shroud Boot
SIP-6	6" Sump Inspection Port Sight Glass
SLPK	Gasket and Sealant Kit for Shroud
205181	Lower Clamp for 5 Gallon Shroud
205183	Upper Clamp for 5 Gallon Shroud

OPW 106 Identification Marker

OPW 106 Identification Markers are used to identify the grade product stored in underground tanks. These markers are easily set in concrete, and once set, are permanent. The letter plate is recessed into the face of the base and fastened with two screws. The raised letters are easy to change when the product is changed. Letters available are P, R, U, SU, X, DL. Numbers 1, 2, 3, 4.

OPW 107 Nameplate Holder

OPW 107 Nameplate Holders, when secured to storage tank fill pipes, provide a method to permanently identify the product in the tanks.

Spill Container Product Identification Tags

OPW Color-Coded Spill Container Tags positively and conspicuously identify tanks, preventing costly and dangerous product drop mistakes. Simply "peel and stick" the high-visibility color inserts into the special recesses cast into the spill container cover.

Matching bucket tags, supplied with tie wraps, are permanently affixed inside the spill container to help prevent covers from getting switched.

Materials

Base and anchor shank: Aluminum
Letter Plate: Cast aluminum
Screws (2): Brass



Ordering Specifications

Product #	Fuel Type	lbs.	kg
106DL-0095	Diesel	.43	.20
106FL-0100	Fuel Line	.44	.20
106P-0150	Premium	.41	.19
106R-0175	Regular	.44	.20
106SU-0185	Super Unleaded	.43	.20
106U-0125	Unleaded	.44	.20

Product #	Fuel Type	lbs.	kg
106UP-0125	Unleaded "Plus"	.44	.20
106X-0200	Extra or Blended	.44	.20
106N-1100	I.D. Marker #1	.44	.20
106N-2200	I.D. Marker #2	.44	.20
106N-3300	I.D. Marker #3	.44	.20
106N-4400	I.D. Marker #4	.44	.20

Replacement Parts

Part #	Description
H01629M	Screw
H02211M	106DL Letter Plate
H11775M	106FL Letter Plate
H01780M	106P Letter Plate
H01781M	106R Letter Plate

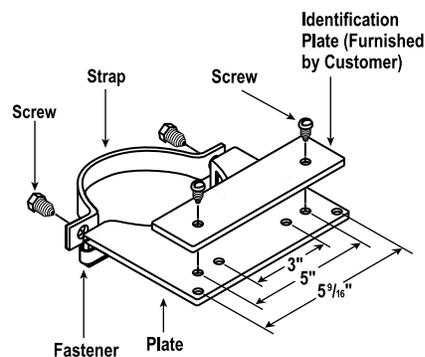
Part #	Description
H10122M	106SU Letter Plate
H07084M	106U Letter Plate
H10899M	106UP Letter Plate
H01614M	106X Letter Plate

Materials

Plate: Plated steel
Straps: Plated steel

Ordering Specifications

Product #	in.	mm	lbs.	kg
107-0300	4	102	.39	.18



Features

- ◆ Unique Fiberglass Embedment Process - ensures that the color identifiers won't scratch, crack, peel, weather or fade, even in gasoline and the harshest of environments.
- ◆ Compatible - with all OPW 1-2100 Series Spill Containers, including aluminum, cast iron, sealable cover and 101BG Composite Cover models. Also compatible with 111 Series, Multi-Port Spill Containers and OPW 104FG/104C Manhole Covers.
- ◆ Available in All API Product I.D. Designations.



Product	Product Designations	Cover I.D. Tag Product #	Bucket I.D. Tag Product #
Regular Unleaded	White w/Black Cross	1TAG-1000	1TAG-1010
Mid-Grade Unleaded	Blue w/White Cross	1TAG-2000	1TAG-2010
Premium Unleaded	Red w/White Cross	1TAG-3000	1TAG-3010
Diesel	Yellow Hex	1TAG-4000	1TAG-4010
Vapor Recovery	Solid Orange	1TAG-7000	1TAG-7010
85% Ethanol (E85)	Bronze Diamond Black letters (E85)	1TAG-CE85	1TAG-BE85
Ultra Low Sulfur	Yellow Hex/Black letter (U)	1TAG-4200	1TAG-4210

Fibrelite Composite Access Covers

Fibrelite manufactures the widest range of composite manhole covers for the Retail Fueling industry. After 30 years Fibrelite remains number one in the market, supplying globally innovative new designs.

Manholes & Monitoring Well Equipment

OPW Manholes are designed for use in a wide variety of service station, commercial and industrial driveway applications. They provide access from grade level to underground equipment including tank sumps, tank riser pipes, monitoring equipment, submersible pumps, valves and piping connections.

Composite Manholes

Lightweight and extremely durable, composite cover manholes make sump accessibility safer and easier than ever before. Designed for use in many service station, commercial and industrial driveway applications, these manholes offer a wide variety of features to ensure the ultimate in safety, user-friendly convenience and long-lasting performance.

Cast Iron Manholes and Fill Boxes

Heavily ribbed cast iron covers and body rings ensure maximum load-bearing capacity on cast iron manholes and fill boxes. These manholes are ideal for connecting underground tank lines directly to the surface without sump enclosures. A variety of features available on cast iron manholes and fill boxes make them the perfect choice for many applications.

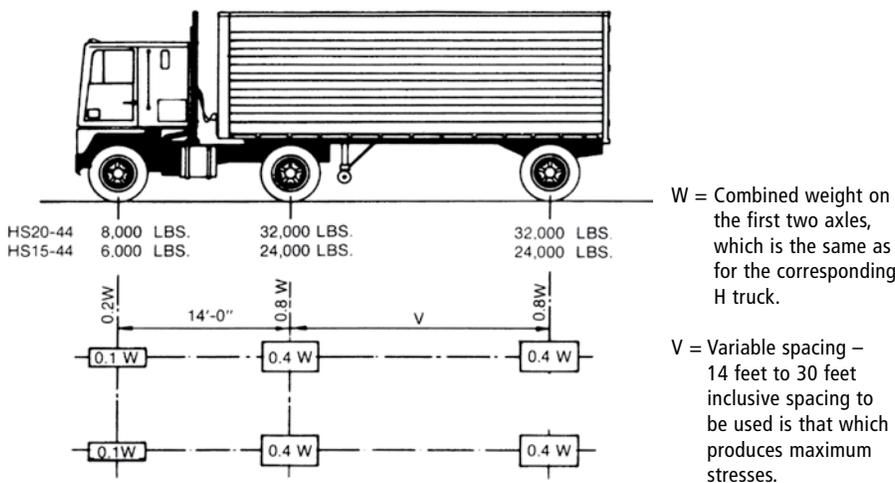
Steel Manholes

Steel manholes are designed for use in a variety of service station driveway, industrial and commercial applications, and are used to provide access to all types of underground equipment, including vapor recovery connections, UST monitoring equipment, submersible pumps and tank gauging equipment.

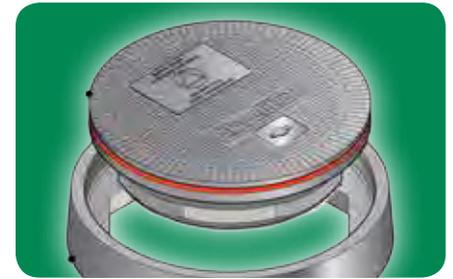
Monitoring Well Manholes

OPW Monitoring Well Manholes are designed for monitoring and observation well applications where limited access and clear identification are essential. Rugged cast iron covers meet H20 load rating requirements for long-lasting and reliable performance. The covers feature a permanently cast-in "Do Not Fill" warning statement and a black equilateral triangle inset into a white background in accordance with API Recommended Practice 1615.

OPW Manhole Covers Exceed Highway Specification-20 (H20)



Manholes & Monitoring Well Equipment



Highway Specification-20 (H20) is contained in the "Standard Specifications for Highway Bridges" and is intended to serve as a standard or guide of preparation of state specifications.

H20 incorporates rear axle loading of 32,000 lbs. over rear axle (4 wheel or single axle) or wheel loading of 8,000 lbs. per tire.

Fibrelite Composite Manholes

Fibrelite offers the retail petroleum industry's leading watertight, easy to remove, non-bolted composite manhole covers in a large selection of shapes and sizes. From general tank sump access to multiport and single port fill sump applications to interstitial sumps and monitoring wells, Fibrelite has every application covered.

Multiple colors are available – Contact OPW Customer Service for pricing, availability, and lead times.

Materials:

Cover: Fiberglass

Frame: Fiberglass

Skirt: Fiberglass

Cover Includes Frame and Skirt



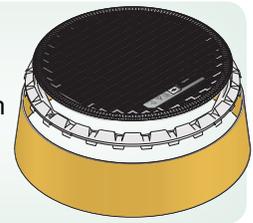
Materials:

Cover: Fiberglass

Frame: Aluminum

Skirt: Fiberglass

Cover Includes Frame and Skirt



Features & Benefits:

- ◆ UV resistant
- ◆ Round, square and rectangular (wide range of sizes)
- ◆ Anti-slip surface - no costly injury claims
- ◆ Anti-static - fully conductive
- ◆ Will not corrode
- ◆ Watertight, sealed design
- ◆ No bolts required
- ◆ Ergonomic, single person removal and replacement with Fibrelite lifting handle
- ◆ Monolithic structure eliminates delaminating
- ◆ Locks available for all covers
- ◆ Available in any color
- ◆ Heavy Duty (HD40) covers available for truck stops, bus depots and industrial applications

Complete Cover Assemblies Ordering Specifications - Complete Grade Level "Flat" Composite Manholes

Part #	Description	Color	Skirt I.D.	Cover O.D.	Skirt Length	Wt.
FL120BLACK-SK12	12" Black Flat Composite Manhole Cover Bonded	Black	12"	15"	12"	26 lbs
FL180BLACK-SK12	18" Black Flat Composite Manhole Cover Bonded	Black	18"	21.2"	12"	40 lbs
FL180GRAY-SK12	18" Gray Flat Composite Manhole Cover Bonded	Gray	18"	21.2"	12"	40 lbs
FL600BLACK-SK12	24" Black Flat Composite Manhole Cover Bonded	Black	24"	27"	12"	76 lbs
FL760BLACK-SK12	30" Black Flat Composite Manhole Cover Bonded	Black	30"	33"	12"	89 lbs
FL90BLACK-SK12	36" Black Flat Composite Manhole Cover Bonded	Black	36"	38.5"	12"	109 lbs
FL90GRAY-SK12	36" Gray Flat Composite Manhole Cover Bonded	Gray	36"	38.5"	12"	109 lbs
FL100BLACK-SK12	40" Black Flat Composite Manhole Cover Bonded	Black	40"	44"	12"	142 lbs
FL100GRAY-SK12	40" Gray Flat Composite Manhole Cover Bonded	Gray	40"	44"	12"	142 lbs
Complete Raised Composite Manholes (Not Bonded Ring and Skirt, Not Water Tight)						
FL36BLACK-SK12	36" Black Raised Composite Manhole Cover	Black	36"	40"	12"	128 lbs
FL42BLACK-SK12	42" Black Raised Composite Manhole Cover	Black	42"	46.5"	12"	164 lbs
FL42GRAY-SK12	42" Gray Raised Composite Manhole Cover	Gray	42"	46.5"	12"	164 lbs

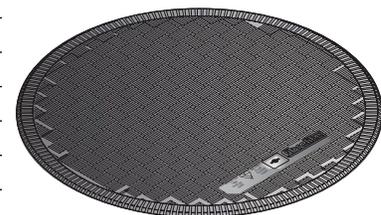
Contact OPW for custom length skirts, heavy duty or colored covers 1-800-422-2525.



Replacement Parts - Replacement Covers

Part #	Description	Color	Skirt I.D.	Cover O.D.	Cover Ht.	Wt.
FL120BLACK	12" Dia. Black Flat Sealed Composite Cover	Black	12"	15"	3.91"	13 lbs
FL180BLACK	18" Dia. Black Flat Sealed Composite Cover	Black	18"	21.2"	3.84"	22 lbs
FL600BLACK	24" Dia. Black Flat Sealed Composite Cover	Black	24"	27"	3.84"	46 lbs
FL760BLACK	30" Dia. Black Flat Sealed Composite Cover	Black	30"	33"	3.84"	59 lbs
FL90BLACK	36" Dia. Black Flat Sealed Composite Cover	Black	36"	38.5"	3.84"	75 lbs
FL100BLACK	40" Dia. Black Flat Sealed Composite Cover	Black	40"	44"	3.84"	110 lbs
FL100GRAY	40" Dia. Gray Flat Sealed Composite Cover	Gray	40"	44"	3.84"	110 lbs
FL36BLACK	36" Dia. Black Raised Composite Cover	Black	36"	40"	3.84"	66 lbs
FL36GRAY	36" Dia. Gray Raised Composite Cover	Gray	36"	40"	3.84"	66 lbs
FL42BLACK	42" Dia. Black Raised Composite Cover	Black	42"	46.5"	3.84"	93 lbs

* Add HD to Part Numbers above to specify Heavy-Duty H40 Rated Covers



Ordering Specifications

Frames "Mounting Frame"

Part #	Description	Skirt I.D.	Manhole Type	Weight (lbs)
FL120F	12" Composite Frame For FL120 Covers	12"	Flat	7.7
FL180F	18" Flat Composite Frame For FL180 Covers	18"	Flat	11
FL600F	24" Flat Composite Frame For FL600 Covers	24"	Flat	17
FL760F	30" Flat Composite Frame For FL760 Covers	30"	Flat	18
FL90F	36" Flat Composite Frame For FL90 Covers	36"	Flat	20
FL100F	40" Composite Frame For FL100 Covers	40"	Flat	26
FL36F	36" Raised Aluminum Frame For FL36 Covers	36"	Raised	46
FL42F	42" Raised Aluminum Frame For FL42 Covers	42"	Raised	55

Ordering Specifications

Skirts

Part #	Description	Skirt I.D.	Manhole Type	Skirt Length	Weight (lbs)
FL120-SK12	12" Deep FRP Skirt To Fit FL120	12"	Flat	12"	5
FL180-SK12	12" Deep FRP Skirt To Fit FL180	18"	Flat	12"	7
FL600-SK12	12" Deep FRP Skirt To Fit FL600	24"	Flat	12"	10
FL760-SK12	12" Deep FRP Skirt To Fit FL760	30"	Flat	12"	12
FL90-SK12	12" Deep FRP Skirt To Fit FL90 Flat	36"	Flat	12"	14
FL100-SK12	12" Deep FRP Skirt To Fit FL100	40"	Flat	12"	16
FL100-SK10-16	10" Deep FRP Skirt to Fit FL100	40"	Flat	10"	15
FL36-SK12	12" Deep FRP Skirt To Fit FL36 Raised Manhole	36"	Raised	12"	15
FL42-SK12	12" Deep FRP Skirt To Fit FL42- Raised Manhole	42"	Raised	12"	16

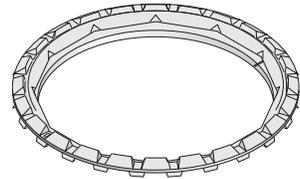
Ordering Specifications

Cover Accessories

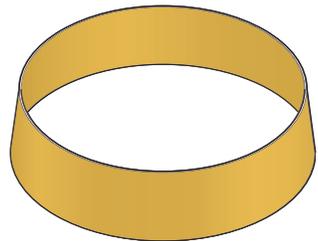
Part #	Description
FL7	Lifting Handle For Raised Covers - FL42/FL36
FL7A	Lifting Handle With Foot Pedal For Watertight Covers - FL100/FL90/FL180
FL7A-ENCL	Enclosure To House FL7A Handles
KEY-HREP-10-76-90	Key Housing Repair Kit & Compound
FIB-KHB	Replacement Rubber Bung
FIB-KHP	Rubber Key Housing Plug
FIB2-RL-KEY	Key For FIB2-RL Cover Lock
FL120-SEAL	12" Replacement Gasket For FL120
FL180-SEAL	18" Replacement Gasket For FL180
FL600-SEAL	24" Replacement Gasket For FL600
FL760-SEAL	30" Replacement Gasket For FL760
FL90-SEAL	36" Replacement Gasket For FL90
FL100-SEAL	40" Replacement Gasket For FL100



Frames - Flat Fiberglass Mounting Ring



Frames - Raised Aluminum Mounting Ring



Skirt

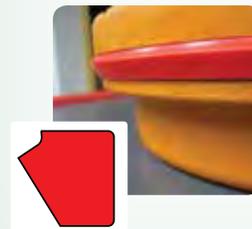


FL7A Keylift



FL7 Keylift

Replacement Gasket



FL7A-ENCL Enclosure

OPW Conquistador™ Plus Composite Cover Manholes

Lightweight and extremely durable, composite cover manholes make sump accessibility safer and easier than ever before. Designed for use in many service station, commercial and industrial driveway applications, these manholes offer a wide variety of features to ensure the ultimate in user-friendly convenience and long-lasting performance.

The Conquistador™ Duratuff® helps put an end to the risk of back, foot and hand injuries with a slip-resistant tread pattern and lightweight, low-profile construction for easier and safer access to tank sumps and other underground equipment.



Replacement Parts

Product #	Description
New Recessed Handle Replacement Parts	
205749	Handle
203174	Screw
Recessed Handle Replacement Parts	
RPHK	Replacement Handle Kit
H13439M	Handle
H13441M	Weld Nut
H14462M	Screw
H11620M	Washer
Key-Lift Kit Replacement Parts	
203541	Keylift
203569	Screw
Key-Lift Kit 2 Replacement Parts	
RPKLK	Replacement Key-Lift Kit
D02677M	Key Lift Plate
H13441M	Weld Nut
H14463M	Screw



Features

- ◆ Slip-resistant tread pattern
- ◆ Easy removal and replacement
- ◆ Two lifting options; stainless steel recessed handle or key-lift provision
- ◆ Reduced risk of back, foot and hand injuries
- ◆ Unmatched deflection performance
- ◆ Outstanding long-term durability in rigorous cycle tests
- ◆ Three mounting options
- ◆ Unique structural fiberglass reinforcement matrix
- ◆ Water-resistant models available
- ◆ Roto-Lock and Bolt-down models available
- ◆ Interchangeable with other manufacturers' covers
- ◆ Powder-coated ring and brass bolts help to prevent rust and corrosion
- ◆ Ribbed gasket peel and stick design for easy replacement
- ◆ Roto-Lock Models – for securing a raintight connection without the need to locate threaded bolt holes on the mounting ring. The Roto-Lock offers quick and easy access, while maintaining a secure sump application.
- ◆ H20 Rating – Exceeds Highway Specification - 20 (H20) Rating.

Lifting Options



NEW Recessed Handle
203666



Recessed Handle
RPHK



Key-Lift
203541



Key-Lift
RPKLK

Key-Lift Provision (90K-KLS Stick Not Included)

Replacement Handles and Keylifts by Model Year

Item	Part #	Conquistador Model Years	Description
Replacement Handle	RPHK	2000-2008	2 Thru Hole Bolt Pattern Design Handle
Replacement Handle	203666	2009-Present	2 Threaded Hole Bolt Pattern Design Handle
Replacement Keylift	RPKLK	2000-2008	4 Thru Hole Bolt Pattern Design Keylift
Replacement Keylift	203667	2009-Present	2 Threaded Hole Bolt Pattern Design Keylift

Materials

Cover: Fiberglass
Ring: Painted steel
Skirt: Galvanized steel
Key Lift / Recessed Handles: Stainless steel
Bolts: Stainless steel
Roto-lock: Brass



Dimensions

Cover	A (Ring I.D.)		B (Skirt I.D.)		Cover Wt.		Assembly Wt.	
39 1/2"	36 1/8"	92 cm	38 5/8"	98 cm	65 lbs.	29.5 kg	125 lbs.	56.7 kg
44 1/4"	40 29/32"	104 cm	43 3/8"	110 cm	85 lbs.	38.5 kg	157 lbs.	71.2 kg

Ordering Specifications

Plain Cover-Grey

Product #	Description	Cover Only
39CD-PL10	39 1/2" Plain Cover w/Recess Handle	E00618
39CD-PLKL	39 1/2" Plain Cover w/Key-Lift Provision	E00620
44CD-PL10	44 1/4" Plain Cover w/Recess Handle	E00626
44CD-PLKL	44 1/4" Plain Cover w/Key-Lift Provision	E00628

Bolt-Down Cover-Grey

Product #	Description	Cover Only
39CD-WT10	39 1/2" Bolt Down Cover w/Recess Handle	E00622
39CD-WTKL	39 1/2" Bolt Down w/Key-Lift Provision	E00624
44CD-WT10	44 1/4" Bolt Down Cover w/Recess Handle	E00630
44CD-WTKL	44 1/4" Bolt Down w/Key-Lift Provision	E00632

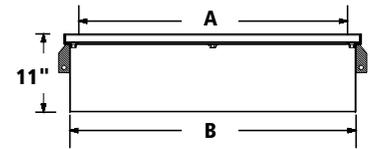
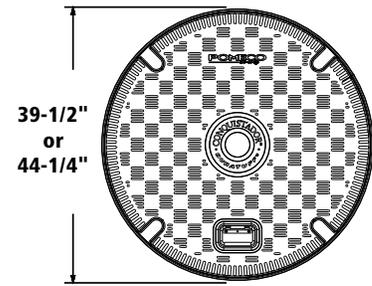
Roto-Lock Cover-Grey

Product #	Description	Cover Only
39CD-RL10	39 1/2" Roto-Lock w/Recess Handle	E00714
39CD-RLKL	39 1/2" Roto-Lock w/Key-Lift Provision	E00715
44CD-RL10	44 1/4" Roto-Lock w/Recess Handle	E00713
44CD-RLKL	44 1/4" Roto-Lock w/Key-Lift Provision	E00712

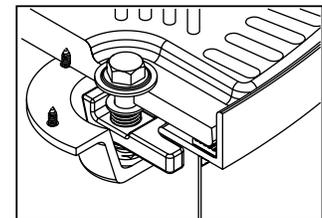
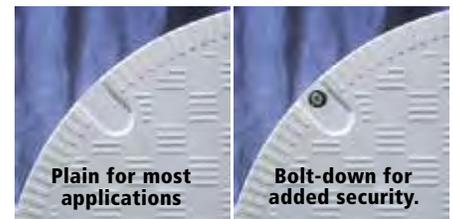
Steel Cover Only

Product #	Description
P110-3950L	39 1/2" Plain Cover Only
P110-4425L	44 1/4" Plain Cover Only

OPW Conquistador™ Plus Composite Cover Manholes

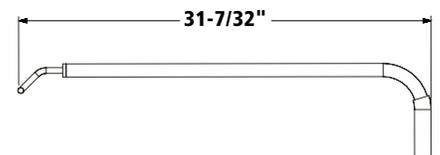


Mounting Options:



Roto-Lock Fastening System

Key Lift Provision Stick

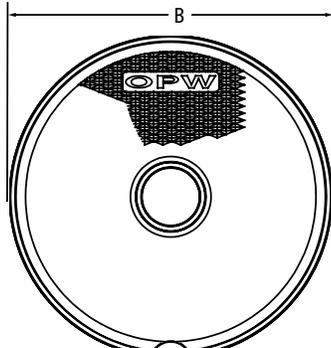


Replacement Parts

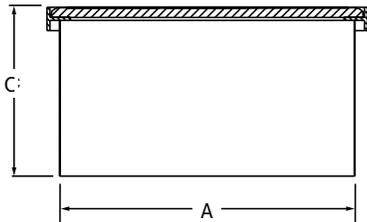
Product #	Description
90K-KLS	Key-Lift Provision Stick
H14858	Replacement Gasket for 39CD and 44CD
H14460M	Replacement Bolts
H14461M	Replacement Washers
1RL-KIT	Replacement Roto-Lock Kit

OPW 104C Composite Cover Manholes

The OPW 104C 20" (500mm) Composite Cover Manholes allow easy access to UST monitoring equipment and provide additional space for electrical junction boxes.

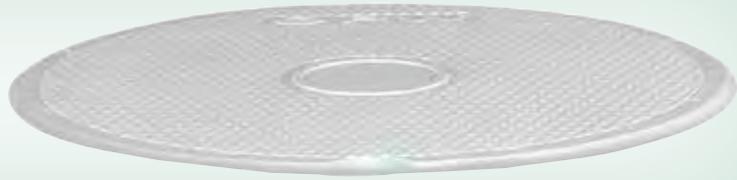


OPW 104C Cover



OPW 104C Composite Cover Manholes

20" Cover



Features

- ◆ **Lightweight Cover** – provides safe, easy removal and replacement.
- ◆ **Durable Composite Construction** – never rusts, fades or needs to be painted.
- ◆ **Spark-Free Cover Design** – fiberglass construction eliminates the possibility of sparks caused by replacing cover on mounting ring.
- ◆ **Flush-Mount, Rolled Steel Mounting Ring** – eliminates the need for sloping concrete to reduce snow plow and traffic hazards.
- ◆ **Highway 20 Rated (H20)** – all OPW spill containers and manholes exceed the requirements of the Highway 20 rating.

Ordering Specifications

Product #	ID (in.)	ID (mm)	lbs.	kg
104C-2000	20	500	22	10.0

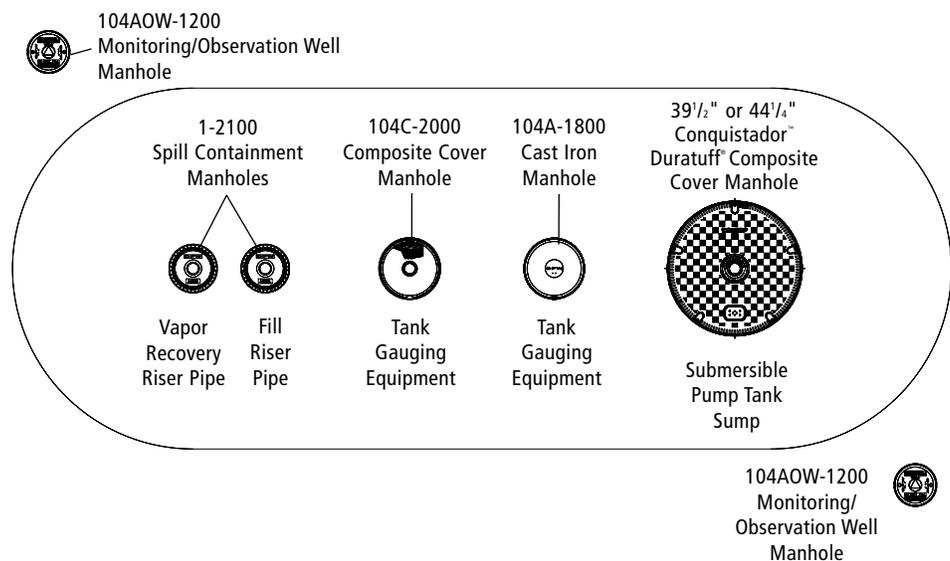
Replacement Parts

Part #	Description
101BG-Cover	Cover for 104C-2000

Dimensions

Product #	A		B		C	
	in.	cm	in.	cm	in.	cm
104C-2000	19	48.26	20 ³ / ₄	52.7	11	27.9

Typical Underground Storage Tank Manhole Layout



Materials

Body Ring: Cast iron
Cover: Cast iron
Skirt: Galvanized steel



OPW 104A Cast Iron Manhole

A sturdy steel skirt on the standard 104A extends nearly a foot below grade to ensure trouble-free installation in deep concrete, and optional skirts that extend a full 19-1/4" below grade are available in 12" and 18" diameters for sandy soil locations.

OPW 104FG Cast Iron Manhole

The 104FG provides a convenient finger grip feature on the cover to facilitate cover removal.

Features

- ◆ Full-size internal diameters for maximum access and working area
- ◆ Highway 20 Rated (H20) – All OPW spill containers and manholes exceed the requirements of the Highway 20 rating
- ◆ Rugged cast iron covers and body rings
- ◆ Cast-in, non-skid finish on covers
- ◆ Sturdy, extra long steel skirts
- ◆ Individually boxed for ease of handling

Ordering Specifications

Product #	ID (in.)	ID (mm)	lbs.	kg
104A-0800	8	203	15	6.8
104A-0800WT	8	203	15	6.8
104A-1200	12	305	28	12.7
104A-1200WT	12	305	33	15.0
104A-1219	12	305	33	15.0
104FG-1200*	12	305	28	12.7
104FG-1219*	12	305	33	15.0
104A-1800	18	457	50	22.7
104A-1800WT	18	457	50	22.7
104A-1819	18	457	57	25.9
104A-1819WT	18	457	57	25.9
104A-12WT	12	305	28	12.7

* Finger Grip Cover Manhole

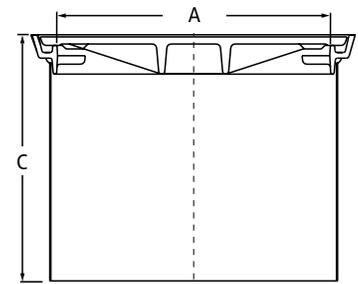
Replacement Parts

Part #	Description
E00508M	Cover for 8" 104A-0800
E00510M	Cover for 12" 104A-1200
E00584M	Cover for 12" 104FG-1200
E00512M	Cover for 18" 104A-1800
DO1747M	Cover for 20" 104C-2000

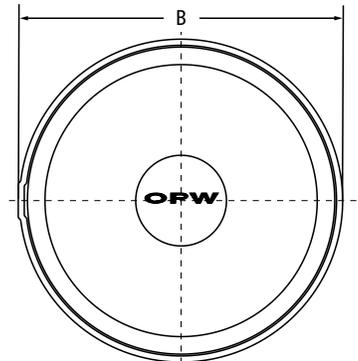
Obsolete Bucket	Replacement Lid	Cover O.D.
104A-1022	C00115M	8.44"
104A-1066	D00173M	13.125"
104AC-1586	D00173I	13.125"

OPW 104 Series Cast Iron Manholes

Heavily ribbed cast iron covers and body rings ensure maximum load bearing capacity on cast iron manholes and fill boxes. These manholes are ideal for connecting underground tank lines directly to the surface without sump enclosures. A variety of features available on cast iron manholes and fill boxes make them the perfect choice for many applications.



OPW 104A/FG Cast Iron Cover Manholes



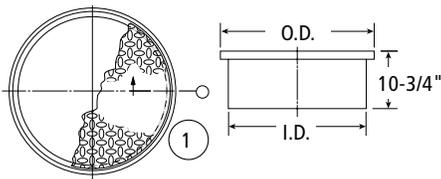
OPW 104A & 104FG Cover

Dimensions

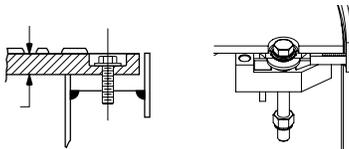
Product #	A		B		C	
	in	cm	in	cm	in	cm
104A-0800	8	20.3	10 ¹ / ₈	25.7	11 ¹ / ₄	28.6
104A/FG-1200	12	30.5	14 ¹ / ₄	36.2	11 ¹ / ₄	28.6
104A/FG-1219	12	30.5	14 ¹ / ₄	36.2	19 ¹ / ₄	48.9
104A-1800	18	45.7	20 ¹ / ₈	51.1	11 ¹ / ₄	28.6
104A-1819	18	45.7	20 ¹ / ₈	51.1	19 ¹ / ₄	48.9

OPW 110/120 Series Steel Round Manholes

OPW 110/120 Series Round Manholes are designed for use in a wide range of service station driveway, industrial and commercial applications. The 110s and 120s are used to provide access to all types of underground equipment, including vapor recovery connections, UST monitoring equipment and submersible pumps. The 120 Series includes Roto-Lock fasteners on 24" and larger manholes.



Section 1
(See Lid Thickness Dimensions)



Hex Head Detail
5/16" Bolt

Roto-Lock Detail
3/4" Hex

Replacement Parts

Part #	Description
P110-8G	8" Replacement Gasket
P110-12G	12" Replacement Gasket
P110-16G	16" Replacement Gasket
P110-18G	18" Replacement Gasket
P110-24G	24" Replacement Gasket
P110-30G	30" Replacement Gasket
P110-37G	37" Replacement Gasket
P110-40G	40" Replacement Gasket
P110-42G	42" Replacement Gasket
P110-48G	48" Replacement Gasket
PROTO-LOCK	(1) Replacement Roto-Lock
P110-8L	Replacement Cover 8"
P110-12L	Replacement Cover 12"
P110-16L	Replacement Cover 16"
P110-18L	Replacement Cover 18"
P110-24L	Replacement Cover 24"
P110-37L	Replacement Cover 37"
P110-40L	Replacement Cover 40"
P110-42L	Replacement Cover 42"
P110-48L	Replacement Cover 48"
P120-36L	Replacement Cover 36" Roto-Lock
P120-37L	Replacement Cover 37" Roto-Lock
P120-42L	Replacement Cover 42" Roto-Lock
RPHK	Replacement Handle

Materials

Skirt: Galvanized steel
Cover: Steel diamond plate
Ring: Cast iron or fabricated steel
Gasket: Nitrile



Features

- ◆ **Standard and Raintight Models Available** – raintight models include Buna-N gaskets and recessed hex-head bolts or Roto-Lock fasteners to help prevent water intrusion.
- ◆ **Wide Range of Sizes** – sizes range from 24" to 48" (61 to 122 cm) to accommodate a wide range of applications. Custom sizes and configurations are also available.
- ◆ **Easy Cover Removal** – an integral recessed handle is included on all raintight and plain manholes 24" and larger. Manholes 42" and larger include dual recessed handles and provision for centered 1/2" - 13 threaded allen head blind plug for easy removal so that a 1/2" - 13 eyebolt can be threaded into the hole for easier removal of covers.
- ◆ **Highway 20 Rated (H20)** – all OPW spill containers and manholes exceed the requirements of the Highway 20 rating.

Ordering Specifications

Model #	Description	Cover O.D.		Skirt I.D.		Thickness		Weight		Ring
		in.	cm	in.	cm	in.	cm	lbs.	kg	
6110-24WT	Raintight*	24	61	21 ⁵ / ₈	55	³ / ₈	9	88	40	Fab. Steel
6110-2410	Standard*	24	61	21 ⁵ / ₈	55	³ / ₈	9	88	40	Fab. Steel
6110-30WT	Raintight*	30	76	27 ⁵ / ₈	70	¹ / ₂	13	160	73	Fab. Steel
6110-3010	Standard*	30	76	27 ⁵ / ₈	70	³ / ₈	9	160	73	Fab. Steel
6110-37WT	Raintight*	37	94	34 ⁵ / ₈	88	¹ / ₂	13	178	81	Fab. Steel
6110-3710	Standard*	37	94	34 ⁵ / ₈	88	³ / ₈ **	9	178	81	Fab. Steel
6110-4010	Standard*	40	102	37 ⁵ / ₈	96	³ / ₈	9	198	90	Fab. Steel
6110-42WT	Raintight*	42	107	39 ⁵ / ₈	101	¹ / ₂ **	13	290	132	Fab. Steel
6110-4200	Standard	42	107	39 ⁵ / ₈	101	¹ / ₂ **	13	290	132	Fab. Steel
6110-48WT	Raintight*	48	122	45 ⁵ / ₈	116	¹ / ₂ **	19	390	177	Fab. Steel
6120-24WT	Roto-Lock Raintight 24WT*	24	61	22 ⁵ / ₈	55	³ / ₈	9	88	40	Fab. Steel
6120-30WT	Roto-Lock Raintight 30WT*	30	76	28 ⁵ / ₈	70	¹ / ₂	13	160	73	Fab. Steel
6120-37WT	Roto-Lock Raintight 37WT*	37	94	35 ⁵ / ₈	88	³ / ₈	13	178	81	Fab. Steel
6120-42WT	Roto-Lock Raintight 42WT*	42	107	40 ⁵ / ₈	101	¹ / ₂ **	13	290	132	Fab. Steel
6120-48WT	Roto-Lock Raintight 48WT*	48	122	46 ⁵ / ₈	116	¹ / ₂ **	19	390	177	Fab. Steel

* Recessed Handle

** Reinforced Cover

Standard - Plain No Bolts

Raintight - Bolt Down

Deep skirts available upon request

Materials:

Cover: Fiberglass
Frame: Fiberglass
Skirt: Fiberglass

Cover Includes Frame and Skirt

Monitoring Well Manholes



Fibrelite Composite Monitoring Manholes

Fibrelite offers the retail petroleum industry's leading watertight, easy to remove, non-bolted composite manhole covers in a large selection of shapes and sizes. From general tank sump access to multiport and single port fill sump applications to interstitial sumps and monitoring wells, Fibrelite has every application covered.

Multiple colors are available – Contact OPW Customer Service for pricing, availability, and lead times.

Features & Benefits:

- ◆ UV resistant
- ◆ Round, square and rectangular (wide range of sizes)
- ◆ Anti-slip surface - no costly injury claims
- ◆ Anti-static - fully conductive
- ◆ Will not corrode
- ◆ Watertight, sealed design
- ◆ No bolts required
- ◆ Ergonomic, single person removal and replacement with Fibrelite lifting handle

Ordering Specifications - Monitoring Well Manholes

Part #	Description	Color	Skirt I.D.	Cover O.D.	Skirt Length	Wt.
FL120BLACK-MW	Flat Sealed Composite Cover - Labeled	Black	12"	15"	3.91"	13 lbs
FL120BLACK-MW-SK12	Bonded	Black	12"	15"	12"	26 lbs

Bonded - Assembled Cover, Ring And Skirt

Replacement Covers

FL120BLACK-MW
 Sealed - Labeled Monitoring Well Cover

Color	Skirt I.D.	Cover O.D.	Cover Ht.	Wt.
Black	12"	15"	3.91"	13 lbs



Brine Monitoring Reservoir

Deep solid base sump, with a spill container, integrated drainback system to the tank

Ordering Specifications

Part #	Description	Weight (lbs)
S45-1180BL	18" dia. x 18" DP FRP Sump w/ FL180F & FL180BLACK Cover	76
S45-1180G	18" dia. x 18" DP FRP Sump w/ FL180F & FL180GRAY Cover	76

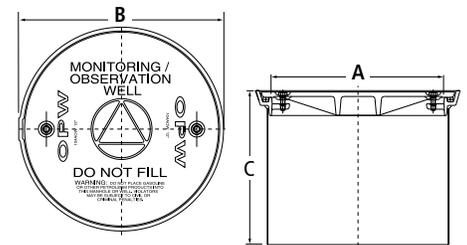
OPW Monitoring/Observation Well Manholes

Designed to be installed at grade level over a slotted PVC monitoring well where limited access and clear identification are essential. Ring gasket prevents water contamination.

Materials

Body Ring: Cast iron
Cover: Cast iron
Skirt: Steel (104 AOW)
Gasket: Neoprene

104AOW-1200



Ordering Specifications

Product #	ID (in.)	ID (mm)	lbs.	kg
104AOW-0800	8	203	15	6.8
104AOW-1200	12	305	28	12.7
104AOW-1219	12	305	33	15.0
104AOW-1800	18	457	50	22.7
104AOW-1819	18	457	57	25.9

Replacement Parts

Part #	Description
E00514I	Cover for 8" 104AOW-0800
E00515I	Cover for 12" 104AOW-1200
E00514I	Cover for 8" 104MW-0800
E00516I	Cover for 18" 104AOW-1800
H12872M	Gasket for 104AOW 8"
H12873M	Gasket for 104AOW 12"
H12874M	Gasket for 104AOW 18"

Dimensions

Product #	A		B		C	
	in.	mm	in.	mm	in.	mm
104AOW-0800	8	203	10 ¹ / ₈	257	11 ¹ / ₄	286
104AOW-1200	12	305	14 ¹ / ₄	362	11 ¹ / ₄	286
104AOW-1219	12	305	14 ¹ / ₄	362	19 ¹ / ₄	489
104AOW-1800	18	457	20 ¹ / ₈	511	11 ¹ / ₄	286
104AOW-1819	18	457	20 ¹ / ₈	511	19 ¹ / ₄	489

OPW Island Forms and Protective Curbing

OPW is the world leader in commercial and industrial protective curbing products. The company designs, engineers and manufactures island forms, curb fascia, pipe and bumper guards to meet virtually any protective curbing application.

OPW Island Forms Feature:

- ◆ **Variety of End Sections, Lengths, Widths and Styles** – allows for a customized fit to site constraints and requirements.
- ◆ **Spacious Mid-Section** – provides ample room to install standard and wide-access dispenser sumps from the top of the island.
- ◆ **Unique Sump Mounting System** – ensures the dispenser sump is anchored to the Island Form and adjustable to accommodate various width sumps.
- ◆ **Convenient Shipping and Storage** – revolutionary threaded-stud bracing system allows forms to stack together and enables boxing of the island assembly.
- ◆ **Easy Installation** – cross braces bolt onto threaded studs. Field welding is not required.
- ◆ **Attractive Appearance** – link plates impart a crisp, clean exterior joint between sections for a smooth, finished presentation.
- ◆ **Material** – Standard models are steel and stainless steel models are 304 stainless.

OPW Island Forms

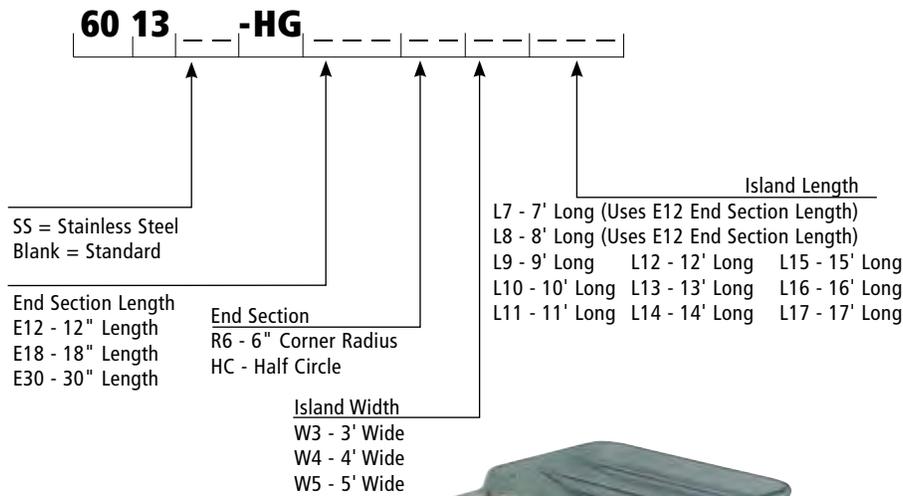
Designed to protect gasoline dispensers, electronic equipment, kiosks, bank teller and ATM equipment, as well as to restrict or route material handling equipment in warehouses, OPW Island Forms and Protective Curbing streamline traffic flows in toll booths and quick-serve restaurants and various other commercial traffic management applications.



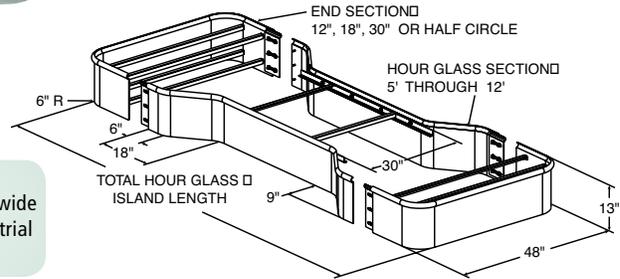
Listings and Certifications 

2005 UL Standard for safety for non-metallic underground piping for flammable liquids, UL971.

Hour Glass Island Form Specification/Ordering Guide



Specify Standard Island Form configurations designed by OPW for a wide variety of retail, commercial and industrial traffic management applications.



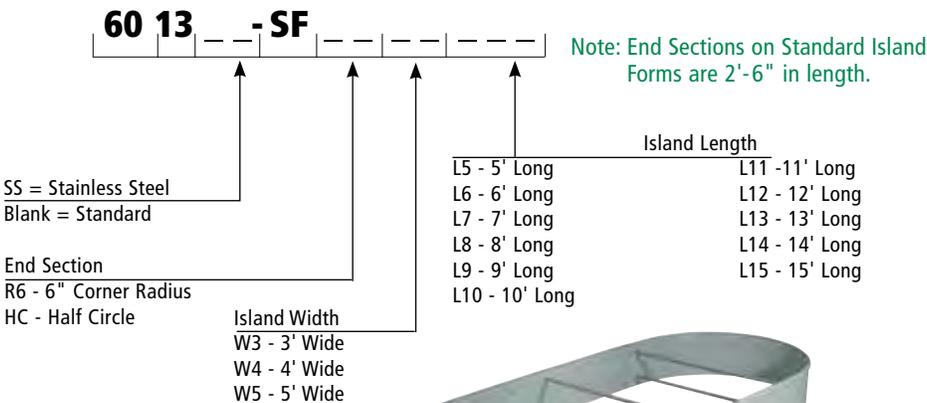
OPW Standard Island Forms

Specify Standard Island Form configurations designed by OPW for a wide variety of retail, commercial and industrial traffic management applications. Standard models are steel and stainless steel models are 304 stainless.

Hour Glass Island Forms

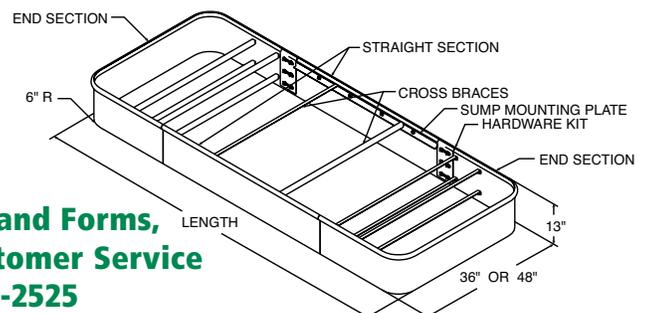
Hour Glass Island Forms are designed with side sections integrating a double-reverse 9" taper to provide easy access to multi-product gasoline dispensers while protecting expensive electronic equipment. Ends of these islands can be extended to wrap around canopy columns, hose bibs or trash receptacles by simply adding straight sections.

Standard (Straight) Island Form Specification/Ordering Guide



Standard (Straight) Island Forms

Straight Island Forms are designed with straight side sections to provide a convenient means of installing multiple dispensers on a single island. Straight Island Forms are also used to protect teller and ATM equipment at banks, restrict or route material handling equipment in warehouses, streamline traffic flows in toll booths and quick-serve restaurants and various other commercial traffic routing applications. Standard models are steel and stainless steel models are 304 stainless.



**For Custom Island Forms,
Contact OPW Customer Service
1-800-422-2525**

Build Your Own Island Form Or Curbing From Individual Sections

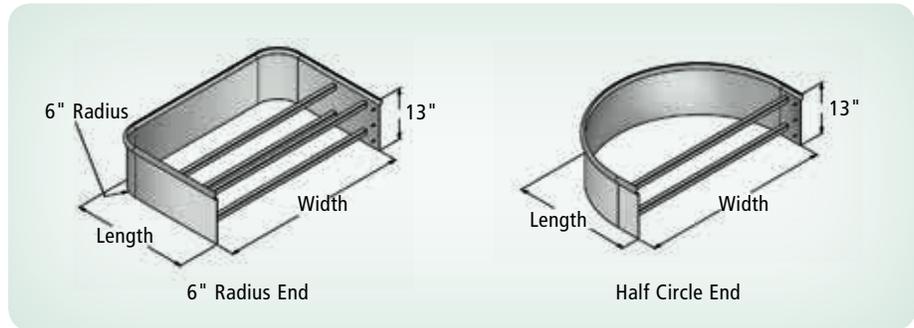
Build your own Island Forms and Protective Curbing to fit your particular application from standard sections. Standard models are steel and stainless steel models are 304 stainless.

Standard Island Form End Sections

End Sections are available to build customized Island Forms from standard OPW Island Form components. Sections are available in Half Circle or 6" Radius configurations. Each End Section is pre-braced and includes all required hardware for assembly.

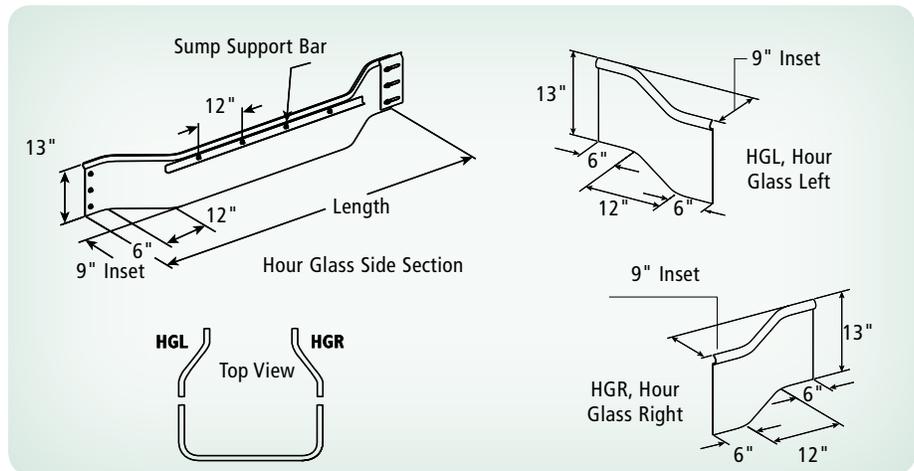
Hour Glass Sections

Hour Glass Sections are designed with double-reverse 9" tapers to provide easy access to multi-product gasoline dispensers. One-piece Hour Glass Sections are available from 5' through 9'. Sump Support Bars are included with individual Hour Glass Sections. HGL and HGR sections can be used in conjunction with Straight Sections when designing longer Hour Glass Islands, or for use in Protective Curbing applications.



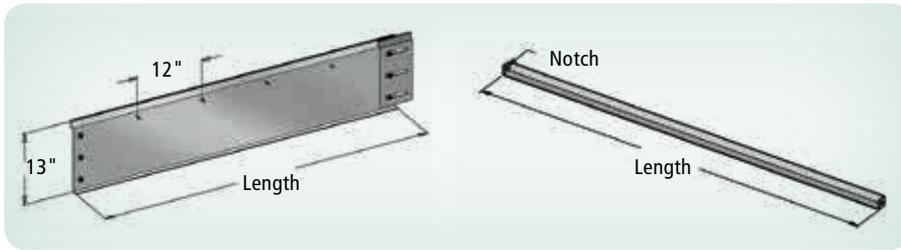
Ordering Specifications (Standard End Sections)

Model #	Radius (in.)	Width (ft)	Length	Weight
6013P-EHCW3L30	Half Circle	3	2' 6"	37 lbs.
6013P-EHCW4L30	Half Circle	4	2' 6"	40 lbs.
6013P-ER6W3L18	6	3	1' 6"	37 lbs.
6013P-ER6W3L30	6	3	2' 6"	45 lbs.
6013P-ER6W4L12	6	4	1'	35 lbs.
6013P-ER6W4L18	6	4	1' 6"	40 lbs.
6013P-ER6W4L30	6	4	2' 6"	52 lbs.



Ordering Specifications (Hour Glass)

Model #	Length	Comments	Wgt (lbs.)
6013P-HGL	2'	Hour Glass Left Side Section	13
6013P-HGR	2'	Hour Glass Right Side Section	13
6013P-HG05	5'	Hour Glass Side Section	35
6013P-HG06	6'	Hour Glass Side Section	40
6013P-HG07	7'	Hour Glass Side Section	45
6013P-HG08	8'	Hour Glass Side Section	50
6013P-HG09	9'	Hour Glass Side Section	56
6013P-HG10	10'	Hour Glass Side Section	62
6013P-HG11	11'	Hour Glass Side Section	68
6013P-HG12	12'	Hour Glass Side Section	74



Straight Sections

Straight Sections are designed with a 1" bottom flange to add rigidity for accurate alignment of sections. Island Form End Sections are easily extended with various-length Straight Sections. Sump Support Bars are not included with individual Straight Sections. Straight Sections are key to the design of Protective Curbing.

Ordering Specifications

Model #	Length	Weight
6013P-S01	1'	6 lbs.
6013P-S015	1' 6"	9 lbs.
6013P-S02	2'	12 lbs.
6013P-S025	2' 6"	15 lbs.
6013P-S03	3'	18 lbs.
6013P-S035	3' 6"	21 lbs.
6013P-S04	4'	24 lbs.
6013P-S05	5'	30 lbs.
6013P-S06	6'	36 lbs.
6013P-S07	7'	42 lbs.
6013P-S08	8'	48 lbs.
6013P-S09	9'	54 lbs.
6013P-S10	10'	60 lbs.

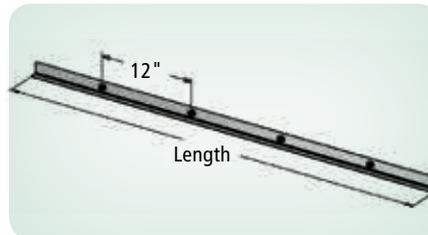
C04651M 13" Mounting Plate
(Includes Hardware)

Cross Braces

Cross Braces are notched on both ends for use with Sump Support Bars. Holes punched in both ends slide over threaded studs to bolt the brace to the island. Bracing is recommended every 2 feet along the inside of Hour Glass and Straight Sections.

Ordering Specifications

Model #	Length (in.)	Weight
6000P-B24	24	1 lbs.
6000P-B30	30	2 lbs.
6000P-B36	36	2 lbs.
6000P-B42	42	2 lbs.
6000P-B48	48	3 lbs.
6000P-B60	60	3 lbs.



Sump Support Bars

Sump Support Bars are designed to allow OPW Island Forms to accept various-width sumps. The bars are positioned to locate the top of OPW Dispenser Sump Frames 1/2" above finished island grade to direct water drainage away from the sump. Sump Support Bars must be specified when designing Island Forms from individual Straight Sections.

Ordering Specifications

Model #	Length (in.)	Weight
6000P-SMP	54	3 lbs.

Build Your Own Island Form Or Curbing

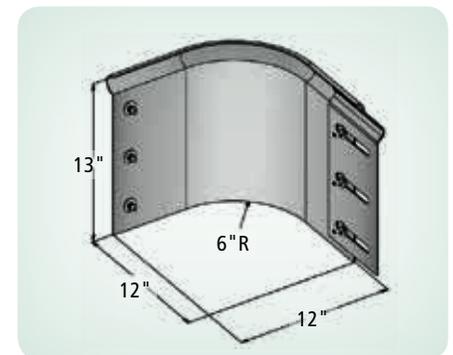
Build your own Island Forms and Protective Curbing to fit your particular application from standard sections. Standard models are steel and stainless steel models are 304 stainless.

Corner Sections

Corner Sections are designed for use in various Island Form widths, or for use in Protective Curbing applications.

Ordering Specifications

Model #	Length (in.)	Weight
6013P-R6C	12	10 lbs.



Curb Fascia Brackets

Curb Fascia Brackets replace cross braces and are designed to brace sections when utilized as protective curb fascia. The brackets are hole-punched for bolting to threaded studs, and allow for 1/2" diameter #4 reinforcement bars to secure the sections in place.

Ordering Specifications

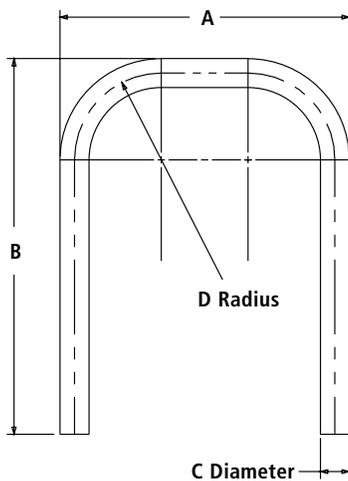
Model #	Length (in.)	Weight
6000P-CFB	11	1 lbs.
6013P-Link Steel (12K Plate)		
6013SSP-Link Stainless Steel Link		

OPW Pipe Guards

Pipe Guards help protect gasoline dispensers, light poles and other equipment or property from damage.

Features:

- ◆ **Choice of Styles** – OPW Pipe Guards are available in straight, half circle and double radius bends.
- ◆ **Variety of Sizes Available** – 28", 36", 40" and 48" widths for mounting inside or outside of island forms.
- ◆ **Various Lengths Available** – for deeper, more secure anchors in islands and concrete slabs.
- ◆ **Sturdy Construction** – OPW Pipe Guards are manufactured from 4" O.D. and 3.5" O.D. schedule 40 steel pipe.
- ◆ **Aesthetically-Pleasing Appearance** – OPW Pipe Guards are primer-finished.



Double Radius Pipe Guards



Ordering Specifications

Double Radius Pipe Guards

Model #	Material	Units (inches)			
		A	B	C	D
6PGR3-4153	Steel	41	53	3.5	14
6PGR3-4850	Steel	48	50	3.5	15.75
6PGR3-4859	Steel	48	59	3.5	15.75
6PGR3SS-3672	Stainless	36	72	3.5	14
6PGR3SS-4350	Stainless	43	50	3.5	19.5
6PGR3SS-5445	Stainless	54	45	3.5	19.5
6PGR4-4153	Steel	41	53	4	14
6PGR4-4174	Steel	41	74	4	14
6PGR4-4951	Steel	49	51	4	16
6PGR4-4972	Steel	49	72	4	16

For more information contact OPW Customer Service at 1-800-422-2525; International call 1-513-870-3315.

UST Fill Pipe Connection Equipment

Tight-Fill Adaptors and Caps

Tight-Fill Adaptors are installed in spill containment manholes on the fill riser pipe from an underground fuel storage tank. They mate with the gravity drop delivery elbow on the transport truck. Tight-Fill Caps are installed on adaptors, when not in use, to prevent gasoline vapors from escaping and to prevent water, dust and debris from entering the tank.

Stage 1 Vapor Recovery Adaptors and Caps

Stage I Vapor Recovery Adaptors are installed in spill containment manholes on the vapor recovery riser pipe from an underground gasoline storage tank. They mate with the vapor recovery elbow on the delivery transport truck when recovery of gasoline vapors is required. Stage I Caps are installed on adaptors, when not in use, to prevent gasoline vapors from escaping and to prevent water, dust and debris from entering the tank.

Monitor Probe and Monitoring Well Caps

Monitoring Probe Caps are installed on tank riser pipes to help prevent vapors from escaping or water from entering the tank. Monitoring Probe Caps include a wire grommet fitting to accommodate the electric tank gauge probe. Lockable Monitoring Well Caps are installed on slotted PVC pipe monitoring wells to help prevent contamination from surface water intrusion or inadvertent fuel deliveries.

OPW Adaptor & Cap Height Profiles

The adaptor and cap dimensions below reflect the overall height and installed height of OPW adaptors and adaptor and cap combinations. The installed height is from the gasket seal to the top of the component. For example, the 61VSA height is 6 1/2", but only adds 4-7/8" to the overall height when added to the riser.



61VSA Vapor Recovery Swivel Adaptors

Overall Height Installed Height
6-1/2" 4-7/8"



1611AV Standard Vapor Adaptors

Overall Height Installed Height
5 7/16" 4-3/4"



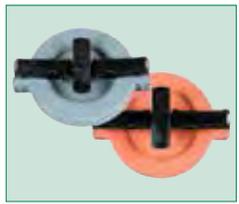
61SALP Fill Swivel Adaptor

Overall Height Installed Height
4-3/8" 2-7/8"



633T Standard Fill Adaptor

Overall Height Installed Height
3" 2"



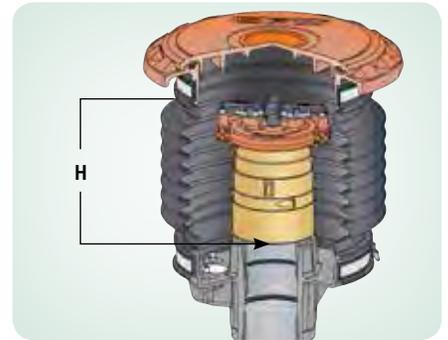
634TT Fill and 1711T Vapor Caps

Overall Height Installed Height
2-9/16" 1-1/2"



634LPC Fill and 1711LPC Low Profile Caps

Overall Height Installed Height
7/8" 1/2"



Dimensions

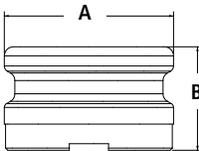
Product Combinations	H = Total Installed Height	
	in	mm
61VSA & 1711T	6 ³ / ₈	162
61VSA & 1711LPC	5 ³ / ₈	137
1611AV & 1711T	6 ¹ / ₄	159
1611AV & 1711LPC	5 ³ / ₈	133
61SALP & 634TT	4 ³ / ₈	111
61SALP & 634LPC	4 ⁷ / ₈	124
633T & 634TT	4 ¹ / ₂	114
633T & 634LPC	3 ¹ / ₂	89

OPW Tight-Fill Top-Seal Adaptors

Tight-Fill Top-Seal Adaptors are installed in spill containment manholes on the fill riser pipe from an underground fuel storage tank. They mate with the gravity drop delivery elbow on the transport truck.



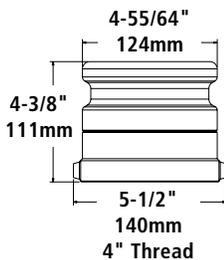
633T-8076



61SALP-1020-EVR



61SALP-MA
E85 EVR Approved



OPW 633T

OPW 633T Top-Seal Adaptors thread onto the fill pipe of underground storage tanks, and are designed to mate with top-seal delivery elbows. Use OPW 634TT, 634TE or 634TTP Top-Seal Caps with 633T Adaptors.

Features

- ◆ **Easy Installation** – integral internal wrenching lugs are provided for installing in the confined space of spill containers.
- ◆ **Accommodate 633LC Lock Clamp** – 4" x 4" 633T (E) models incorporate dual notches in the base to accept 633LC clamps.
- ◆ **Manufactured from Durable, Corrosion-Resistant Materials** – bronze and hardcoat aluminum.

Ordering Specifications

Product #	Elbow Size	Riser Thread	A		B		Weight		Material
			in.	mm	in.	mm	lbs.	kg	
633T-8060	3"	3"	3 ¹⁹ / ₃₂	41	1 ⁵ / ₈	92	0.96	.44	Bronze
633T-8070	3"	4"	3 ¹⁹ / ₃₂	68	2 ¹¹ / ₁₆	92	0.71	.32	Hardcoated Al.
633T-8075	4"	4"	4 ⁵⁵ / ₆₄	75	2 ³¹ / ₃₂	124	0.82	.37	Hardcoated Al.
633T-8076	4"	4"	4 ⁵⁵ / ₆₄	75	2 ³¹ / ₃₂	124	2.70	1.23	Bronze

Note: Maximum height of adaptor is 2¹¹/₁₆" (68mm).

Replacement

Parts

Part #	Description
H05289M	Gasket
H04150M	Gasket
H04150M	Gasket
H04150M	Gasket

OPW 61SA Swivel Adaptor

Pressure decay testing of underground storage tank systems has identified the joint between the tight-fill adaptor and the nipple or tank riser as a persistent leak point. Considerable movement takes place along the hose while the fill elbow is connected. Walk-downs and changes from one compartment to another move the hose across the pavement, rotating the elbow along with it. The result can be a loosening of the adaptor. As the adaptor backs off, the seal between it and the nipple is relaxed and a leak path is created allowing vapors to escape to the atmosphere. Vacuum-assist dispensing systems can aggravate this situation due to the slight pressurization of the UST.

The 61SA Swivel Adaptor mates with 4" top-seal delivery elbows and features a top section that rotates with hose movement while the bottom section remains securely in place maintaining seal integrity.

Features

- ◆ **Dual Seals** – ensure a vapor and liquid-tight seal.
- ◆ **Conductive, Self-Lubricating Retaining Rod** – ensures maintenance-free, reliable service life.
- ◆ **Same Internal Dimension as Standard 633T Adaptors** – to minimize pressure drop and maximize flow rates for quick product delivery.
- ◆ **61SALP-MA – EVR Approved for E85**

Ordering Specifications

Product #	Base Material	Adaptor Material	Weight	
			lbs.	kg
61SALP-1020-EVR*	Bronze	Bronze	7.1	3.2
61SALP-MA	Nickel	Nickel	7.1	3.2
61SA-Tool**	Wrench		11.0	5.0
H09039M	Replacement Gasket			

*Low Profile Fill Adaptor **See description on page 91.

Materials

Retaining Ring: Conductive nylon

Set Screws: Stainless steel

Seals: Buna-N

Listings and Certifications

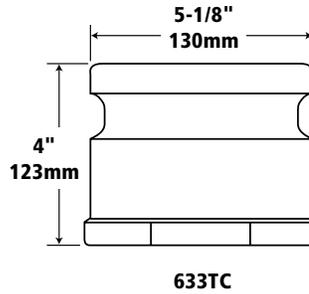


Look for this label for authentic OPW EVR Approved products.
61SALP-1020 & 61SALP-MA are EVR Approved for E85
USA Patent No. 5,664,951

Materials

Available in bronze or anodized aluminum for corrosion and wear resistance

633TC



633TC

Ordering Specifications

Product #	Elbow Size		Riser Thread		lbs.	kg	Description
	in.	mm	in.	mm			
633TC-8090	4	102	4	102	1.45	.66	Anodized Aluminum
633TC-8095	4	102	4	102	4.74	2.15	Bronze
633TCP-3803	4	102	4	102	1.26	.57	Anodized Aluminum

Matching Adaptors & Caps

	Description	Adaptor Part #	Seal	Cap Part #
Fill	3" Fill Elbow	633T, 633TE	Top	634TE
	4" Fill Elbow	633T, 633TE, 61SA, 61SALP	Top	634TT, 634LPC
	4" Coaxial Fill Elbow	633TC, 633TCP	Top	634TT, 634LPC
	3" Fill Elbow	61AS-3"	Side	62
	4" Fill Elbow	61AS-4"	Side	62, 62TT
Vapor	3" Vapor Elbow	1611AV, 1611AVB, 1611VR	Top	1711T, 1711LPC
Monitoring	Monitoring Well Pipe Caps	62M, 116M, 116, 634TTM, 62PMC	Complete Adaptor & Cap Kit	
Loose-Fill	Loose-Fill Pipe Caps 83, 269		Complete Adaptor & Cap Kit	

* Any variation of desired Adaptors will mate with corresponding Caps

OPW Tight-Fill Top-Seal Adaptors

Coaxial Adaptors OPW 633TC

OPW coaxial vapor recovery fittings provide an easy, inexpensive means to convert existing conventional 4" underground storage tank fill pipes to coaxial vapor recovery installations when Stage I Vapor Recovery is required. Normally, little or no digging or breaking of concrete is necessary. Simply remove existing tight-fill adaptor and drop tube (if installation is so equipped), and insert an OPW 61TC Coaxial Drop Tube and the 633TC Adaptor. The OPW 633TC Adaptor is designed to mate with a coaxial delivery elbow.

OPW 633TCP

The OPW 633TCP Coaxial Adaptor features a popped vapor return path that opens only when connected to a fill elbow. When not in use, the vapor path is sealed, preventing fugitive emissions. The 633TCP is a replacement adaptor for the 61TCP Coaxial Drop Tube, and is designed to mate with a coaxial delivery elbow.

NOTE: Poppeted fittings are certified by California Air Resources Board (CARB).

OPW 633LC

OPW 633LC Lock Clamp is designed to lock the OPW adaptor onto the riser pipe, preventing any potential vapor leaks from pressurized systems. The locking clamp slips over the riser pipe. The 633T, 633TE, or 1611 Adaptor is then threaded onto the riser pipe. Next, the lock clamp should be slid up the riser until the protrusions in the lock clamp line up with the notches in the adaptor. Once the adaptor and clamp are engaged, the lock clamp can be tightened and the adaptor will be locked onto the riser pipe, preventing it from being loosened by a delivery elbow.

Additionally, the lock clamp can be turned upside down on the riser pipe to lock the riser into the base of all OPW spill containers, which have notches in them similar to the adaptors. Using the lock clamp in this manner will lock the riser pipe into the spill container.

633TC & 633TCP Instruction Sheet Order Number: **H10013PA**

Materials

Clamp: Stainless steel
Bolt: Zinc plated steel
Set Screw: Stainless steel



633LC

Ordering Specifications

Part #	in.	cm	Description
633LC-1000	4"	10.16	Stainless Steel Locking Clamp



OPW 61SA-TOOL

OPW 61SA-TOOL

The 61SA-TOOL is a wrench designed to thread on the 61SA Fill and 61VSA Vapor Adaptors. The OPW 61SA-TOOL Adaptor installation tool is required to insure proper installation of OPW rotatable swivel adaptors, thread-on spill containers, fill and vapor adaptors, TC-400 torque cap for pipe nipples and threaded riser adaptors as per EVR requirements. The 61SA-TOOL includes provisions for the use of a torque wrench to facilitate accurate installation and testing.

OPW 634 Series Tight-Fill Top-Seal Caps

Tight-Fill Top-Seal Caps are installed on top-seal adaptors, when not in use, to prevent gasoline vapors from escaping and to prevent water, dust and debris from entering the tank.



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EVR Approved for E85

Materials

Cap & Links: Duratuff®
Pins: Stainless steel
Gasket: Nitrile
Color: Grey

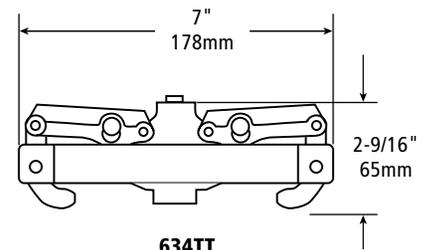


Ordering Specifications

Product #	in.	mm	lbs.	kg
634TT-7085-EVR	4	102	1.01	.46

Replacement Parts

Part #	Description
H15005M	Nitrile Gasket



NOTE: Effective height above adaptor: 1-19/32"

OPW 634TT

The OPW 634TT is designed to mate with 4" 633T, 633TE, 61SA, 633TC, and 633TCP Top-Seal Adaptors. Heavy duty and corrosion resistant, the body is made of Duratuff® to help eliminate rust and oxidation for a long, maintenance-free life. The toggle lever distributes downward pressure to compress its Buna-N gasket evenly, ensuring a positive, water and vapor-tight seal. The 634TT can be locked with a padlock or wire seal.

The OPW 633TE adaptor is similar to the 633T, except it does not have internal wrenching lugs.

OPW 634TT - Metal

The 634TT-4000 is a metal top-seal cap with the same dimensions as the 634TT-7085.

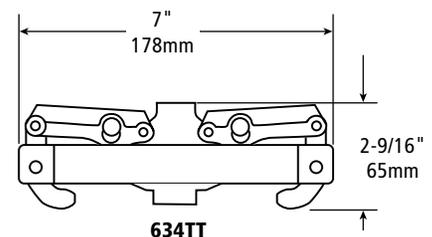
Materials

Cap: Die cast zinc (powder coated black)
Lever: Duratuff®
Pins: Stainless steel
Gasket: Nitrile



Ordering Specifications

Product #	in.	mm	lbs.	kg
634TT-4000	4	102	1.01	.46



Listings and Certifications



Look for this label for authentic OPW EVR Approved products.
OPW 634TT & 634LPC are EVR Approved for E85

Materials

Cap: Cast zinc alloy
(powder coated yellow)

Lever: Ductile iron

Gasket: Nitrile

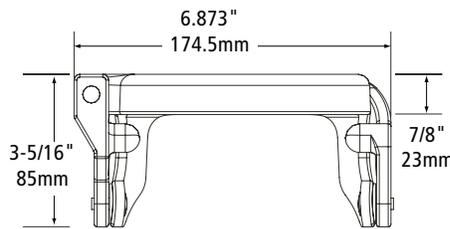


Ordering Specifications

Product #	in.	mm	lbs.	kg
634LPC-0400	4	102	3.5	1.59
634LPC-0400D	4	102	3.5	1.59

Replacement Parts

Part #	Description
H15005M	Buna-N Gasket



634LPC

Note: Effective height above adaptor: 1/2"

OPW 634LPC Low Profile Top-Seal Fill Cap

The OPW 634LPC Low Profile Top-Seal Fill Cap is designed for tight installations where the clearance between the top of the fill adaptor and the underside of the spill container cover is limited. The rugged iron lever provides a positive cam-action that seats the cap firmly in the adaptor groove for a water and vapor-tight seal. When engaged, the lockable cap adds only 1/2" to the final height of the adaptor. The 634LPC can be used with the 4" OPW 633T, 633TE, 633TC, and 61SA series top-seal fill adaptors.



Look for this label for authentic OPW EVR Approved products. EVR Approved for E85

Materials

Cap: Duratuff®

Lever: Brass

Gasket: Nitrile

Pivot pin: Stainless steel

Color: Grey

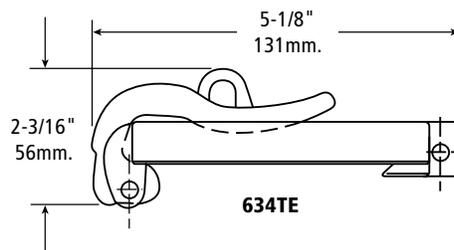


Ordering Specifications

Product #	in.	mm	lbs.	kg
634TE-7085	3	76	1.11	.50

Replacement Parts

Part #	Description
C01094RB	Lever
H10765M	Gasket
H10731RE	Pivot Pin



634TE

OPW 634TE Single Lever Action Top-Seal Cap

The OPW 634TE is a Single Lever Action Top-Seal Cap designed to mate with 3" OPW 633T Top-Seal Adaptors.

The locking lever seats in the groove in the adaptor, providing a cam-down action on the cap for a positive water and vapor-tight seal. The 634TE can be locked with a padlock or wire seal. Patent #3,118,561.

OPW Tight-Fill Side-Seal Adaptors

OPW 61AS Side-Seal Adaptors thread onto the fill pipe of underground storage tanks, and are designed to mate with side-seal delivery elbows.

Materials

Body: Bronze
Gasket: Nitrile

61AS



Ordering Specifications

Part #	Elbow Size		Riser Thread		lbs.	kg
	in.	mm	in.	mm		
61AS-2477	4	102	4	102	1.99	.90

NOTE: Maximum height of adaptor is 2" (51 mm).

Replacement Parts

Part #	Size		Description
	in.	mm	
H04145M	3 x 3	76 x 76	Gasket
H09039M	4 x 4	102 x 102	Gasket

OPW Tight-Fill Side-Seal Caps

Tight-Fill Side-Seal Caps are installed on side-seal adaptors, when not in use, to prevent gasoline vapors from escaping and to prevent water, dust and debris from entering the tank.

OPW 62TT

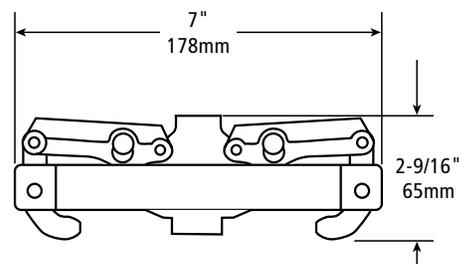
The OPW 62TT Side-Seal Cap is designed to mate with the 61AS Side-Seal Adaptor. The cap has a lever and gasoline-resistant Buna-N gasket to help assure a positive seal. The 62TT is constructed of Duratuff®, a high-impact composite that helps eliminate rust and oxidation to assure a long, maintenance-free life.

Materials

Cap & Links: Duratuff®
Pins: Stainless steel
Color: Black



62TT



Ordering Specifications

Product #	in.	mm	lb.	kg
62TT-7085	4	102	1.15	.52

Replacement Parts

Part #	Description
C03485M	Gasket

Materials

Adaptor: Bronze
Base: Bronze
Retaining Ring:
 Conductive nylon
Set Screws:
 Stainless steel
Seals: Nitrile



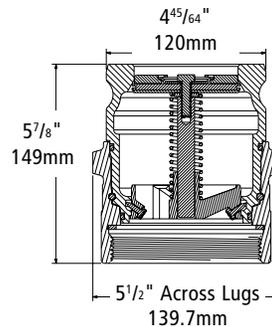
61VSA-1020-EVR
 USA Patent No. 5,664,951

Features

- ◆ **Dual Seals** – ensure a vapor and liquid-tight seal.
- ◆ **Conductive, Self-Lubricating Retaining Rod** – ensures maintenance-free, reliable service life.
- ◆ **Same Internal Dimension as Standard 633T Adaptors** – to minimize pressure drop and maximize flow rates for quick product delivery.
- ◆ **Self Guiding Poppet** – for consistent tight seal.

Ordering Specifications

Product #	Base Material	Adaptor Material	Weight	
			lbs.	kg
61VSA-1020-EVR	Bronze	Bronze	10.5	4.8
61SA-TOOL	Wrench		11.0	5.0
H09039M	Replacement Gasket			



OPW Stage I Vapor Recovery Adaptors and Caps

Stage I Vapor Recovery Adaptors are installed in spill containment manholes on the vapor recovery riser pipe from an underground gasoline storage tank. They mate with the vapor recovery elbow on the delivery transport truck when recovery of gasoline vapors is required.

OPW 61VSA Vapor Swivel Adaptor

The OPW 61VSA Vapor Swivel Adaptor is a poppeted adaptor, designed to mate with a vapor recovery elbow, featuring a top section that rotates with hose movement while the bottom section remains securely sealed to the 4-inch tank riser.



61SA-TOOL

OPW 61VSA-MA Vapor Recovery Swivel Adaptor

Adaptor: Nickel coated brass
Base: Nickel coated brass
E85 EVR Approved

Ordering Specifications

Product #	Base Material	Adaptor Material	Weight	
			lbs.	kg
61VSA-MA	Nickel Coated Brass	Nickel Coated Brass	10.5	4.8
H09039M	Replacement Gasket			



OPW 61SA-TOOL

The 61SA-TOOL is a wrench designed to thread on the 61SA Fill and 61VSA Vapor Adaptors. The OPW 61SA-TOOL Adaptor installation tool is required to insure proper installation of OPW rotatable swivel adaptors, thread-on spill containers, fill and vapor adaptors, TC-400 torque cap for pipe nipples and threaded riser adaptors as per EVR requirements. The 61SA-TOOL includes provisions for the use of a torque wrench to facilitate accurate installation and testing.

Listings and Certifications



Look for this label for authentic OPW EVR Approved products.
OPW 61VSA Series Adaptors are EVR Approved for E85

OPW 1611 Series Vapor Recovery Adaptor

The OPW 1611AV and 1611AVB are poppeted adaptors, designed to mate with a vapor recovery elbow, for returning gasoline vapor to the tank truck during a fuel delivery to an underground tank.

Materials

- Body:** Clear anodized aluminum or cast bronze
- Stem:** Chrome-plated steel
- Stem Guide:** Acetal resin
- Spring:** Stainless steel
- Gasket:** Nitrile



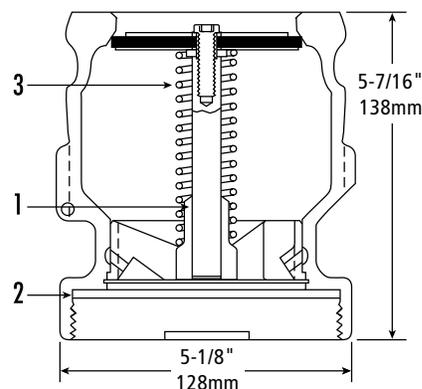
1611AV 3" x 4"
(76 x 102mm)

Ordering Specifications

Product #	Elbow Size		Riser Thread		lbs.	kg	Body Material
	in.	mm	in.	mm			
1611AV-1605	3	76	3	76	2.91	1.32	Clear Anodized Aluminum
1611AV-1620	3	76	4	102	3.25	1.48	Clear Anodized Aluminum
1611AVB-1625	3	76	4	102	7.97	3.62	Cast Bronze

Replacement Parts

Key	Part #	Description
1	C02642M	Bridge Guide
Not Shown	H15294M	Screw (3") (76mm)
2	H04145M	Gasket (3") (76mm)
	H04150M	Gasket (3" x 4") (76 x 102mm)
3	H08989M	Spring
61VSA-KIT Complete Replacement Kit		



Materials

Body: Duratuff®
 Pins: Stainless steel
 Links: Duratuff®
 Gasket: Nitrile
 Color: Orange

1711T Cap

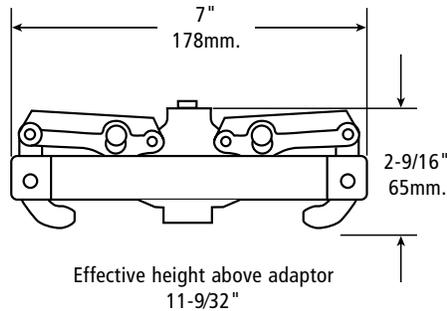


Ordering Specifications

Product #	in.	mm	lbs.	kg
1711T-7085-EVR	3	76	1.1	.50

Replacement Parts

Part #	Description
H10886M	Nitrile Gasket



Materials

Cap: Cast zinc alloy (powder-coated orange)
 Lever: Ductile iron
 Gasket: Nitrile

1711LPC Cap

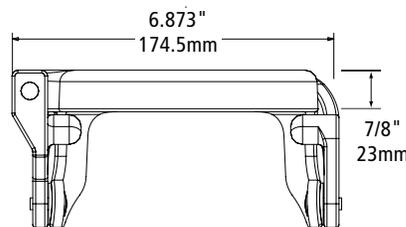
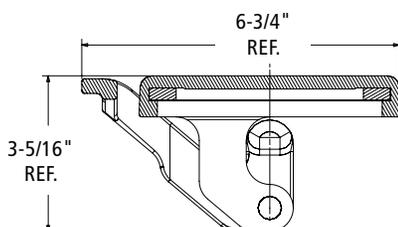
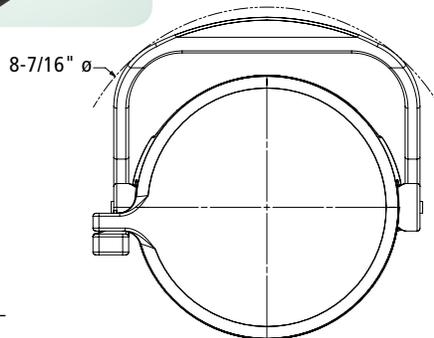


Ordering Specifications

Product #	in.	mm	lbs.	kg
1711LPC-0300	3	76	3.5	1.59

Replacement Parts

Part #	Description
H15005M	Nitrile Gasket



OPW Stage 1 Vapor Recovery Caps

OPW 1711T

The OPW 1711T Vapor Recovery Cap is for use with the OPW 1611AV, 61VSA, 1611AVB and 1611VR Adaptors. The 1711T is installed on the vapor recovery adaptor, when not in use, to prevent vapors from escaping and to prevent water, dust and debris from entering the tank. Constructed of Duratuff® to help prevent corrosion, the OPW 1711T will couple to Civacon/OPW 4" Kamlocks, and features a center post that allows an even distribution of force when coupling to the adaptor. The 1711T can be locked with a padlock.

OPW 1711LPC Low Profile Vapor Cap

The OPW 1711LPC Low Profile Top-Seal Vapor Cap is designed for tight installations where the clearance between the top of the vapor adaptor and the underside of the spill container or manhole cover is limited. The rugged iron lever provides a positive cam-action that seats the cap firmly in the adaptor groove for a water and vapor-tight seal. When engaged, the lockable cap adds only 1/2" to the final height of the adaptor. The cap is powder-coated API Orange to signify vapor recovery. The 1711LPC can be used with the OPW 3" 1611AV, 1611AVB and 61VSA series vapor adaptors.

Listings and Certifications



Look for this label for authentic OPW EVR Approved products.
OPW 1711 Series Caps are EVR Approved for E85

OPW Monitoring Well/Pipe/ Probe Caps

Monitoring Probe Caps are installed on tank riser pipes to help prevent vapors from escaping or water from entering the tank. Monitoring Probe Caps include a wire grommet fitting to accommodate the electronic tank gauge probe.

OPW 62M Monitor Probe Cap & Adaptor Kit

The 62M Monitoring Probe & Adaptor Kit includes a 4" side-sealing adaptor, 4" side-sealing cap (tapped), and a 3/8" or 1/2" wire grommet to secure the cable from an electronic tank gauge probe in the tank riser pipe. A bracket, located on the underside of the cap, is provided to install a tension wire to relieve strain on probe cables. The 62M is gasketed to seal against water and debris entering, or vapors from escaping the tank. The cap includes provisions for a padlock to secure entry.

OPW 116M

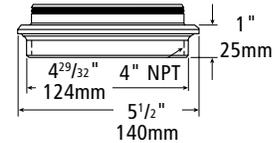
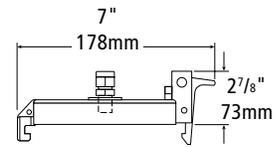
The OPW 116M Monitor Probe Cap is a standard 116 4" threaded pipe cap, drilled and tapped to accept a 3/8" or 1/2" wire grommet to secure an electronic tank gauge probe in a tank riser pipe. The 116M is gasketed for vapor and watertight service.

OPW 116

The OPW 116 Pipe Cap threads onto 4" riser pipes and provides access to ball float extractor fittings and underground storage tank bung openings. The 116 is constructed of composite Duratuff® to prevent rusting or corroding of steel riser pipes.

62M Monitor Probe Cap

Body: Cast aluminum
Cap: Cast aluminum
Seals: Nitrile
Latch: Duratuff®



62M-MA Monitor Probe Cap

Body: Anodized aluminum
Cap: Anodized aluminum
E85 EVR Approved



Ordering Specifications

Product #	Body	Cap	Grommet		Riser Thread		lbs.	kg	
			in.	mm	in.	mm			
62M-0375	Alum.	Alum.	3/8	9.5	4	102	1.3	.59	Accepts .069" - .178" diameter wire
62M-0500	Alum.	Alum.	1/2	13	4	102	1.3	.59	Accepts .170" - .470" diameter wire
62M-MA	Nickel	Nickel	3/8	9.5	4	102	1.3	.59	Accepts .170" - .470" diameter wire

116M Cap



116-7085



Materials

OPW 116M

Body: 4" Duratuff®
Cross bar: Zinc-plated steel

OPW 116

Body: 4" Duratuff®
Seal: Nitrile

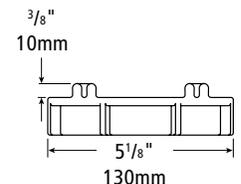
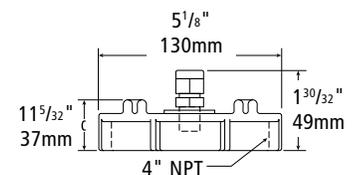
Ordering Specifications

OPW 116M

Product #	Description	Riser Thread	lbs.	kg
116M-0375	3/8" grommet	4" (102mm)	.45	.2
Accepts .069" - .178" diameter wire				
116M-0500	1/2" grommet	4" (102mm)	.45	.2
Accepts .170" - .470" diameter wire				

OPW 116

116-7085			.40	.18
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62M Series Instruction Sheet Order Number: H14491PA

Materials

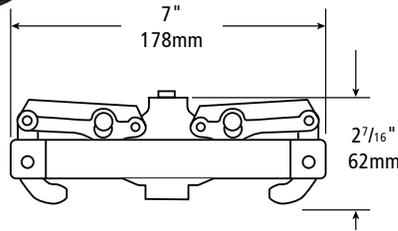
Cap: Duratuff®
 Adaptor Ring:
 Cast aluminum



634TTM

Ordering Specifications

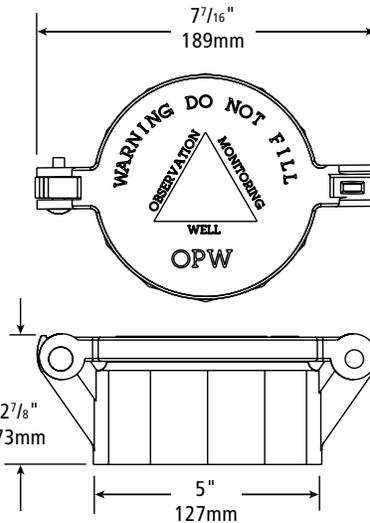
Product #	lbs.	kg
634TTM-7087	1.42	.65



62PMC

Ordering Specifications

Product #	Description	lbs.	kg
62PMC-0400	Monitoring Cap	1.3	.59



61SPVC

Ordering Specifications

Product #	Description	Length		Slotted Section		Weight	
		ft.	m	ft.	m	lbs.	kg
61SPVC-4000	4" x 13' Slotted PVC Pipe	13	3.96	10	3.04	26.5	12.0
61SPVC-4015	4" x 15' Slotted PVC Pipe	15	4.97	12	3.65	30.5	13.8
61SPVC-4020*	4" x 20' Slotted PVC Pipe	20	6.09	18	5.48	41.0	18.6

*20 ft. Models come in two (2) 10 ft. pieces.

OPW Monitoring Well / Pipe Caps

OPW 634TTM Well Cap Kit

The OPW 634TTM Well Cap Kit is designed to install onto a 4" slotted PVC monitoring well. The cap is marked "Do Not Fill" to clearly identify the monitoring well. A cast aluminum adaptor ring is set-screwed to the top of the slotted PVC well, and the cap mates with the ring. The 634TTM can be locked with a padlock or a wire seal.

OPW 62PMC Lockable Monitoring Cap

The OPW 62PMC is designed to thread or solvent-weld to a 61SPVC 4" slotted PVC monitoring well pipe. The 62PMC is constructed of durable PVC with a stainless steel hinge pin for resistance to rust and corrosion. An API warning statement, "Monitoring Well...Do Not Fill," is permanently molded into the cap. The 62PMC can be locked with a long-shank padlock.

OPW 61SPVC Slotted PVC Pipe

The OPW 61SPVC Slotted PVC Pipe is designed for monitoring well applications. The 61SPVC is constructed of durable schedule 40 PVC pipe, PVC bottom plug with slot thickness of .020".

634TTM-7087 Instruction Sheet Order Number: H10772PA

OPW Loose-Fill Pipe Cap Assemblies

Loose-Fill Pipe Cap Assemblies are installed in spill containment manholes on fill riser pipes from an underground fuel storage tank. They are used when a tight-fill connection is not required.

OPW 83

The OPW 83 Fill Cap Assembly threads onto the fillpipe of an underground or aboveground tank. The screw-on cap is gasketed to ensure a tight seal against air, water, dust and debris. The 83 can be locked with a padlock or wire seal.

Materials

Body: ZA alloy
Cap: Cast iron
Gasket: Nitrile



83 Fill Cap

Ordering Specifications

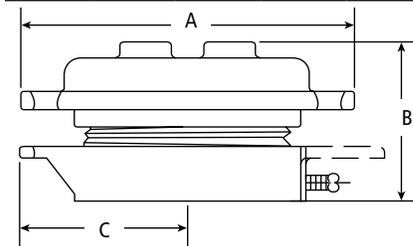
Product #	Riser Thread		lbs.	kg
	in.	mm		
83-0022	2	51	2.46	1.12
83-0066	4	102	7.80	3.54

Replacement Parts

Part #	in.	mm	Description
H04898M	2	51	Cap
H01608M	2	51	Gasket
C00181M	4	102	Cap
H04150M	4	102	Gasket

Dimensions

	2" (51mm)		4" (102mm)	
	in.	mm	in.	mm
A	4 ⁵ / ₈	118	6 ¹³ / ₁₆	173
B	2 ⁷ / ₁₆	62	3 ¹ / ₂	89
C	2 ¹¹ / ₃₂	60	3 ¹ / ₂	89



OPW 269 Sanitary Tank Hatch

The OPW 269 Sanitary Tank Hatch threads onto the fill pipe of an underground sanitary waste disposal tank. The 269 is foot-operated and quick-opening/closing for clean emptying of sanitary waste from RVs, campers and travel trailers. The non-recessed design provides straight-through flow to eliminate entrapment of waste materials.

Materials

Body: Coated ductile iron
Cap: Zinc

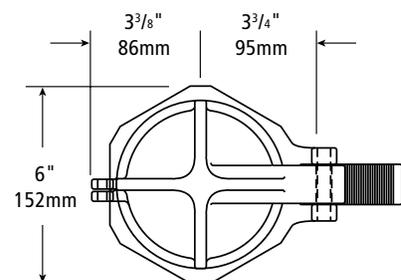
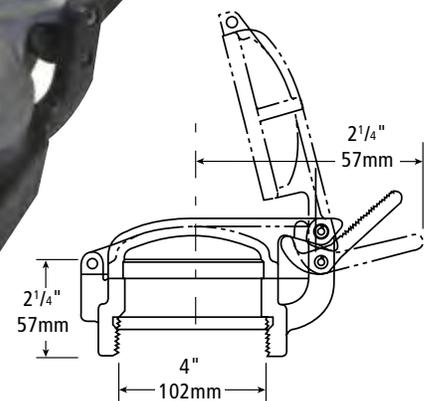


Ordering Specifications

Product #	Riser Thread		lbs.	kg
	in.	mm		
269-0085	4	102	10.92	4.91

Replacement Parts

Part #	Description
D00800B	Cap
H05783DI	Treadles
H05784M	Pin



Overfill Prevention and Venting Equipment

7150 Testable Overfill Valve

The OPW new patent-pending Testable 7150-T Overfill Prevention Valve is the easiest, quickest and most cost efficient way to ensure that your overfill valves will operate when called upon - verifiable without removing them from the tanks. The OPW 7150-T Testable Overfill Prevention Valve is the only UST Overfill Prevention Valve that is testable from the surface without removal from the tank.

6150 & 7150 Overfill Prevention Valves

The OPW 6150 and 7150 vapor-tight Overfill Prevention Valves are two-stage shut-off valves designed to prevent the overfill of underground storage tanks by providing a positive shut-off of product delivery. Models of the 6150 and 7150 are available to meet virtually any UST application, including two-point, coaxial, poppeted coaxial and remote fill. The 7150 vapor-tight model is designed for enhanced vapor recovery (EVR) applications. Both the 6150 and 7150 are designed for use on tight-fill gravity drop applications only, and can be installed in the fill riser of both new and existing underground storage tanks.

Ball Float Vent Valves and Extractor Fittings

OPW Ball Float Vent Valves protrude into underground storage tanks from the Stage I vapor return riser pipe. As the tank becomes full during a product drop, the ball seats – restricting the flow of vapors back to the transport truck or through the tank vent. As the vapors are compressed in the tank, product flow into the tank is severely restricted.

OPW ball floats are mounted in OPW extractor fittings to maintain access through grade-level manholes.

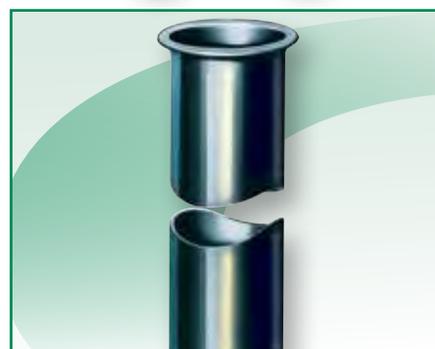
Drop Tubes and Accessories

OPW drop tubes are installed inside tank fill risers to prevent fuel from contacting riser joints. Drop tubes extend close to the bottom of the tank to minimize turbulence and vapor production. Tank bottom protectors are installed on the bottom of drop tubes to prevent tank erosion at the fill point.

Pressure Vacuum Vents and Adaptors

Pressure Vacuum Vents are installed on the top of vent pipes from underground or aboveground fuel storage tanks. The vent cap and internal wire screen are designed to protect the tank vent lines against intrusion and blockage from water, debris or insects. A normally closed poppet in the valve opens at a predetermined pressure or vacuum setting to allow the tank to vent.

NEW



Patent Pending

Testable 7150 Overfill Prevention Valve

Are you Prepared
for New EPA
Overfill Valve Test
Requirements?

*Spend 60 Seconds vs
60 Minutes per Tank!*



NEW!

**Now you can be with the
New OPW Testable 7150
Overfill Prevention Valve**

*The easiest, most affordable way
to ensure overfill compliance*

- ◆ UST systems (drop tube, overfill prevention valve, spill containers) must be tested for vapor tightness
- ◆ Overfill prevention valves shut off devices must be manually inspected

Testable 7150 Overfill Prevention Valve

Patent Pending



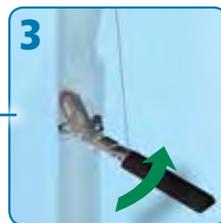
Testing & Verification Easy as 1·2·3



Loosen test plug



Lift float with cable to simulate fill



Validate proper poppet operation

The OPW Testable 7150 helps you prepare for these regulations

- ◆ The Only UST Overfill Prevention Valve that is testable without removal from the tank
- ◆ A testable feature is attached to a sealed plug in the inlet Adaptor
- ◆ The plug is easily accessed with a standard socket extension
- ◆ Attached to the extension, the testable feature can be raised and lowered, allowing the user to inspect the valve operation from the inside of the tube
- ◆ The plug is then easily reinstalled to the inlet Adaptor from grade
- ◆ No fill components, overfill valves, or vapor tight seals have to be removed - avoids compromising vapor tight compliance
- ◆ The Testable 7150 uses the same industry leading overfill prevention technology for strong vapor tight compliance

NOTE: The OPW 7150 is designed for use on tight-fill gravity drop applications only. Do not use for pressure fill applications.

Ordering Specifications

Product #	Description	A- Upper Tube Length		B- Lower Tube Length		C- Overall Length		Max. Riser Length		Max. Nominal Tank Dia.		Max. Actual Tank Dia.		Weight	
		in.	m	in.	m	in.	m	in.	m	in.	m	in.	m	lbs.	kg
7150-400CT	Testable Vapor-Tight Overfill Valve, 5 Ft. Bury, 8 Foot Tank	60	1.5	83	2.1	154 ³ / ₄	3.9	53 ¹ / ₂	1.4	96	2.4	107	2.7	16	7
7150-410CT	Testable Vapor-Tight Overfill Valve, 10 Ft. Bury, 10 Foot Tank	120	3.1	102	2.6	234 ³ / ₄	5.9	113 ¹ / ₂	2.9	120	3.1	126	3.2	25	11
7150-420CT	Testable Vapor-Tight Overfill Valve, 10 Ft. Bury, 12 Foot Tank	120	3.1	126	3.2	258 ³ / ₄	6.5	113 ¹ / ₂	2.9	144	3.7	150	3.8	26	12

Listings and Certifications



Look for this label for authentic OPW EVR Approved products.

OPW 7150 Overfill Prevention Valves

The CARB-certified OPW 7150 vapor-tight Overfill Prevention Valve is designed to prevent the overfill of underground storage tanks by providing a positive shut-off of product delivery. The shut-off valve is an integral part of the drop tube used for gravity filling. The OPW 7150 allows easy installation (without breaking concrete) and requires no special manholes.

The OPW 7150 is a vapor-tight two-stage shut-off valve. When the liquid level rises to about 95% of tank capacity, the valve mechanism is released, closing automatically with the flow. This reduces the flow rate to approximately 5 gpm through a bypass valve. The operator may then stop the filling process and disconnect and drain the delivery hose. As long as the liquid exceeds the 95% level, the valve will close automatically each time delivery is attempted.

If the delivery is not stopped and the liquid rises to about 98% of tank capacity, the bypass valve closes completely. No additional liquid can flow into the tank until the level drops below a reset point.

NOTE: The 7150 Overfill Prevention Valve can be adjusted to shutoff at any desired tank capacity. Please contact the Authority Having Jurisdiction (AHJ) and review local, state, and national codes to determine the regulatory requirements governing shut-off capacity in your region, as well as take into account other considerations such as extreme tank tilt. In all cases, the upper tube must protrude into the tank at least 6 1/2" to ensure that the valve can shut off flow into the tank completely before the top of the tank is wetted as per EPA requirements.

7150 Instruction Sheet Order Number: H15524PA

Listings and Certifications



Materials

- Valve Body:** Cast aluminum
- Float:** Nitrile rubber, closed cell foam
- Valve:** Aluminum
- Seals:** Viton®
- Upper & lower Drop Tube:** Aluminum
- Plastic parts:** Acetal
- Hardware:** Stainless steel

Features

- ◆ **Simple, Easy and Quick Installation** – no excavation or special manholes required.
- ◆ **Economical** – costs a fraction of expensive, complicated and difficult-to-install valves.
- ◆ **Furnished Complete** – supplied with new upper and lower drop tubes, mounting hardware and thorough instructions for quick job site time.
- ◆ **Completely Automatic Operation** – no prechecks to perform, no resets and no overrides to be broken or abused.
- ◆ **No Pressurization of the Tank** – operates directly from liquid level.
- ◆ **Will Accept a Dipstick for Gauging**
- ◆ **Retrofits Directly** – for both new and existing tanks with 4" fill risers.
- ◆ **Quick Drain Feature** – automatically drains hose when head pressure is relieved.
- ◆ **Best Flow Rate in The Industry***

* OPW Test Lab results

Advantages of Overfill Prevention Compared to Overfill Warning Systems:

- ◆ **Completely Automatic Operation** – does not rely on the alertness or speed of response of the delivery attendant for certainty of overfill prevention.
- ◆ **Keeps the Top of UST "Dry," per EPA Requirements** – eliminating possible leaks at loose bung fittings and the need for double containment on vent lines.
- ◆ **Does Not Rely on Pressure in the UST to Stop Flow** – allowing faster fill times and reducing spill risk.
- ◆ **Speeds Delivery Operations** – product flows unimpeded into the tank until the hose "kick" that accompanies the valve shut-off provides a clear signal that the liquid has reached the shut-off level.
- ◆ **Simple and Inexpensive Installation** – in both two-point and coaxial fill applications, no additional excavation, manholes or vent piping are required.



Look for this label for authentic OPW EVR Approved products.
OPW 7150 is EVR Approved for E85



Important

In order to prevent product spillage from the Underground Storage Tank (UST), properly maintained delivery equipment and a proper connection at the tight-fill adaptor are essential. Delivery personnel should be managed and trained to inspect delivery elbows and hoses for damaged and missing parts. They should always make certain there is a positive connection between the adaptor and elbow. If delivery equipment is not properly maintained, or the elbow is not securely coupled to the adaptor, a serious spill may result when the OPW 7150 closes, causing a hazard and environmental contamination.

NOTE: The OPW 7150 is designed for use on tight-fill gravity drop applications only. Do not use for pressure fill applications.

Raising The Standard In Overfill Prevention

From the company that brought you the industry standard OPW 6150, OPW raises the standard with the introduction of the **7150 Overfill Prevention Valve** – breakthrough innovation that takes overfill prevention to a whole new level of overfill perfection.

- **Eliminates curing issues due to hot or cold temperatures**
- **Easier, quicker, installation**
- **Higher quality, more reliable installation**
- **Lower costs**
- **Greater protection against fugitive emissions and pressure decay**
- **Fastest flow rate in the industry**

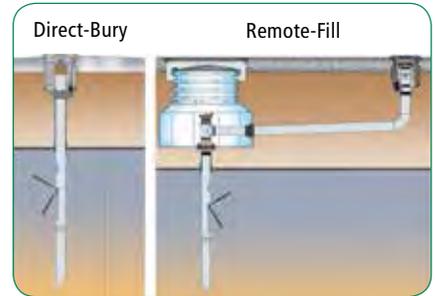
The new 7150 is a two-stage, positive shut-off valve, providing completely automatic operation with no pre-checks to perform, no resets, and no overrides to be broken or abused. The valve closes when the tank level rises to 95% capacity and provides a special bypass valve so the tank can be filled to a maximum capacity of 98%. The 7150 is available for direct-bury and remote applications.



All Vapor-Tight Overfill Valves are CARB EVR Certified



No Epoxy Sealants Required!



Replacement Parts

Part #	Description
61SOK-0001	Replacement Float Kit
H11931M	Drop Tube Seal
H14840M	Lower Tube Seal

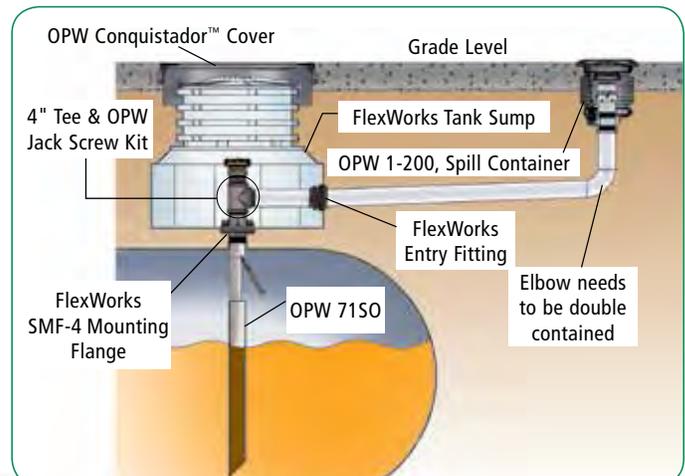
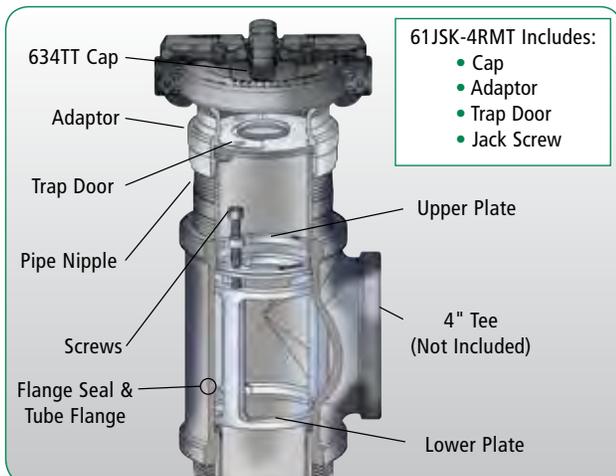
7150 Ordering Specifications

Product #	Description	Bury Depth		Tank Diameter		Upper Tube Length		Lower Tube Length		Overall Length		Max. Riser Length		Max. Nominal Tank Dia.		Max. Actual Tank Dia.		Weight	
		ft.	m	ft.	m	in.	m	in.	m	in.	m	in.	m	in.	m	in.	m	lbs.	kg
7150-400C	Vapor-Tight Overfill Valve	5	1.5	8	2.4	60	1.5	83	2.1	155 ³ / ₄	3.9	53 ¹ / ₂	1.4	96	2.4	107	2.7	16	7
7150-410C	Vapor-Tight Overfill Valve	10	3.0	10	3.0	120	3.1	102	2.6	234 ³ / ₄	5.9	113 ¹ / ₂	2.9	120	3.1	126	3.2	25	11
7150-420C	Vapor-Tight Overfill Valve	10	3.0	12	3.6	120	3.1	126	3.2	258 ³ / ₄	6.5	113 ¹ / ₂	2.9	144	3.7	150	3.8	26	12
7150-4000	Non Vapor-tight Overfill Valve	5	1.5	8	2.4	60	1.5	83	2.1	155 ³ / ₄	3.9	53 ¹ / ₂	1.4	96	2.4	107	2.7	16	7
7150-4010	Non Vapor-tight Overfill Valve	10	3.0	10	3.0	120	3.1	102	2.6	234 ³ / ₄	5.9	113 ¹ / ₂	2.9	120	3.1	126	3.2	25	11
71SOM-412C	E85 Vapor-tight Overfill Valve	10	3.0	10	3.0	120	3.1	102	2.6	234 ³ / ₄	5.9	113 ¹ / ₂	2.9	120	3.1	126	3.2	38	17.3
7150-TOOLCT	7150 Installation Tool																	2.5	1
61JSK-4RMT	Jack Screw Kit For Vapor-Tight Remote Applications																	1.5	0.7
61JSK-4410	Jack Screw Kit For Composite Base Spill Bucketst																	1	0.5
61JSK-44CB	Jack Screw Kit For Cast Iron Base Spill Buckets																	1	0.5
71JSK-4RMT	E85 Jack Screw for Remote-Fill Applications																	1	0.5
71JSK-44MA	E85 Jack Screw for Direct-Fill Applications																	1.5	0.7

61JSK-4410 AND 61JSK-44CB Instruction Sheet Order Number: **H15289M**

7150 Vapor-Tight Remote Fill

The OPW Vapor-Tight Remote Fill is designed for two-point vapor-tight remote-fill applications, where the fill point is not directly over the UST. A CARB approved vapor-tight 7150 overfill valve is installed in the sump through a riser pipe directly over the tank.



OPW 6150 Overfill Prevention Valves

The OPW 6150 Overfill Prevention Valve is designed to prevent the overfill of underground storage tanks by providing a positive shut-off of product delivery. The shut-off valve is an integral part of the drop tube used for gravity filling. The OPW 6150 allows easy installation (without breaking concrete) and requires no special manholes.

The OPW 6150 is a two-stage shut-off valve. When the liquid level rises to about 95% of tank capacity, the valve mechanism is released, closing automatically with the flow. This reduces the flow rate to approximately 5 gpm through a bypass valve. The operator may then stop the filling process and disconnect and drain the delivery hose. As long as the liquid exceeds the 95% level, the valve will close automatically each time delivery is attempted.

If the delivery is not stopped and the liquid rises to about 98% of tank capacity, the bypass valve closes completely. No additional liquid can flow into the tank until the level drops below a reset point.

The 6150 Overfill Prevention Valve can be adjusted to shutoff at any desired tank capacity. Please contact the Authority Having Jurisdiction (AHJ) and review local, state, and national codes to determine the regulatory requirements governing shut-off capacity in your region, as well as take into account other considerations such as extreme tank tilt. In all cases, the upper tube must protrude into the tank at least 6-1/2" to ensure that the valve can shut off flow into the tank completely before the top of the tank is wetted as per EPA requirements.

Models of the 6150 are available to meet virtually any UST application including two-point, coaxial, poppeted coaxial and remote fill. Methanol approved models are also available.

The OPW 6150 is approved by the New York City Fire Department. (Approval #4902).

Materials

- Valve Body:** Cast aluminum
- Float:** Nitrile rubber, closed cell foam
- Valve:** Aluminum
- Seals:** Viton®
- Upper & lower Drop Tube:** Aluminum
- Plastic parts:** Acetal
- Hardware:** Stainless steel

Features

- ◆ **Simple, Easy and Quick Installation** – no excavation or special manholes required.
- ◆ **Economical** – costs a fraction of expensive, complicated and difficult-to-install valves.
- ◆ **Furnished Complete** – supplied with new upper and lower drop tubes, mounting hardware and thorough instructions for quick job site time.
- ◆ **Completely Automatic Operation** – no prechecks to perform, no resets and no overrides to be broken or abused.
- ◆ **No Pressurization of the Tank** – operates directly from liquid level.
- ◆ **Will Accept a Dipstick for Gauging**
- ◆ **Retrofits Directly** – for both new and existing tanks with 4" fill risers.
- ◆ **Quick Drain Feature** – automatically drains hose when head pressure is relieved.
- ◆ **Best Flow Rate in The Industry***

* Test-witnessed by Bowser-Morner, Inc., an independent laboratory. Results available upon request.

Advantages of Overfill Prevention Compared to Overfill Warning Systems:

- ◆ **Completely Automatic Operation** – does not rely on the alertness or speed of response of the delivery attendant for certainty of overfill prevention.
- ◆ **Keeps the Top of UST "Dry," per EPA Requirements** – eliminating possible leaks at loose bung fittings and the need for double containment on vent lines.
- ◆ **Does Not Rely on Pressure in the UST to Stop Flow** – allowing faster fill times and reducing spill risk.
- ◆ **Speeds Delivery Operations** – product flows unimpeded into the tank until the hose "kick" that accompanies the valve shut-off provides a clear signal that the liquid has reached the shut-off level.
- ◆ **Simple and Inexpensive Installation** – in both two-point and coaxial fill applications, no additional excavation, manholes or vent piping are required.

Listings and Certifications



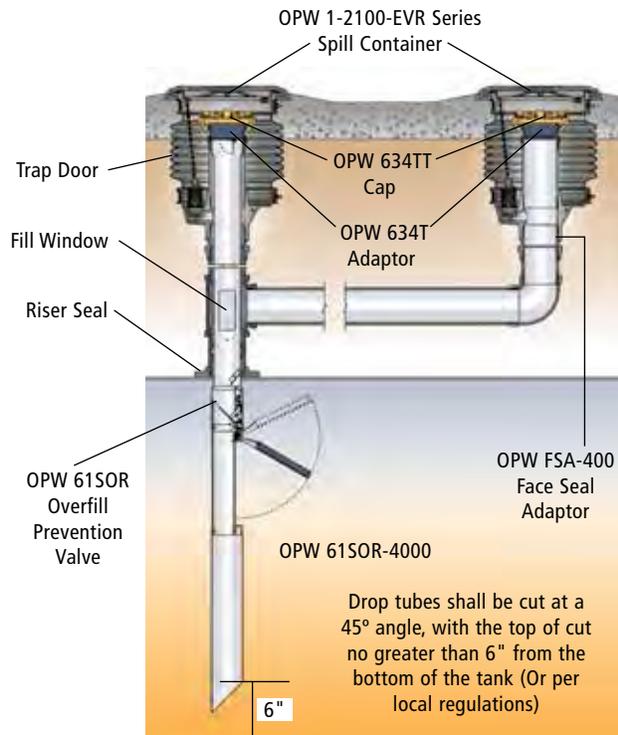
Look for this label for authentic OPW EVR Approved products.



Important

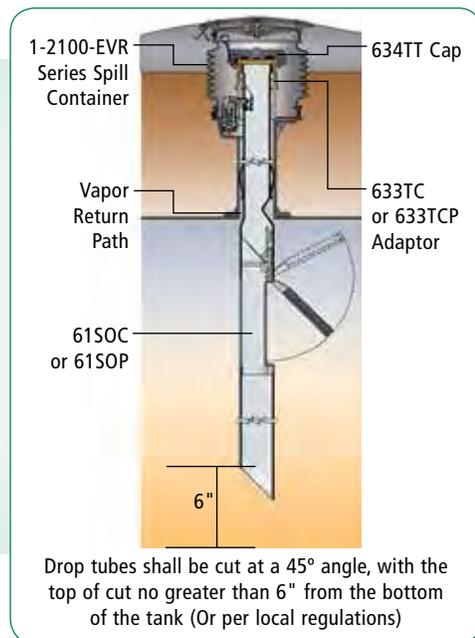
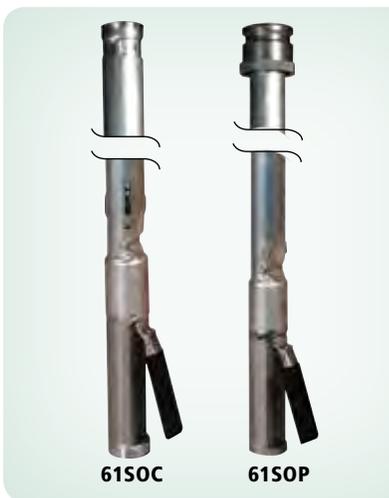
In order to prevent product spillage from the Underground Storage Tank (UST), properly maintained delivery equipment and a proper connection at the tight-fill adaptor are essential. Delivery personnel should be managed and trained to inspect delivery elbows and hoses for damaged and missing parts. They should always make certain there is a positive connection between the adaptor and elbow. If delivery equipment is not properly maintained, or the elbow is not securely coupled to the adaptor, a serious spill may result when the OPW 6150 closes, causing a hazard and environmental contamination.

NOTE: The OPW 6150 is designed for use on tight-fill gravity drop applications only. Do not use for pressure fill applications.



61SOR Remote-Fill

The OPW 61SOR is designed for two-point remote-fill applications, where the fill point is not directly over the UST. The valve is installed in the tank through a riser pipe directly over the tank. A window in the drop tube is aligned with the entrance of the fill pipe from the remote-fill location to allow product to flow into the drop tube and down through the valve. A riser seal prevents product from flowing into the tank from outside the drop tube. A "trap door" assembly installed in the riser above the tank provides access for a gauging stick. Trap door, adaptor and cap are included with 61SOR.



61SOC Coaxial

The OPW 61SOC is used for coaxial fill applications, tanks equipped with a single product/vapor return connection. The 61SOC replaces the standard coaxial fill drop tube in a 4" riser fill pipe.

61SO-4000 Series Instruction Sheet Order Number: **H11764M**

61SOC Coaxial Fill Tube Instruction Sheet Order Number: **C03634PA**

61SOR Remote Fill Tube Instruction Sheet Order Number: **H11964M**

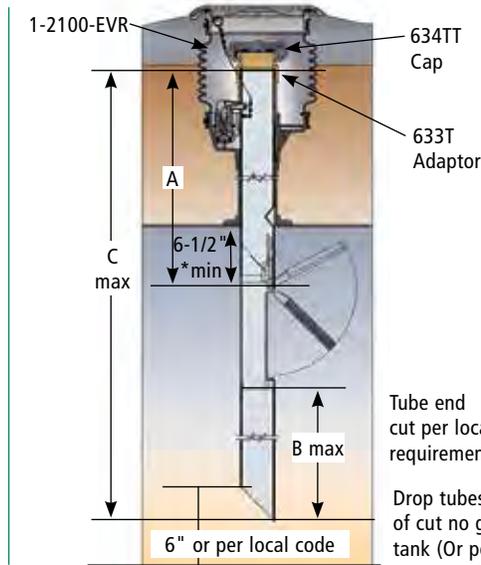
Typical Application Assembly

Installation schematic typical; exact dimensions will vary with tank configuration.

61SO-4000

* From inside wall of tank to bottom of upper tube

61SOK Float Kit Instruction Sheet Order Number: **H11403PA**



Replacement Parts

Part #	Description
61SOK-0001	Float Kit
C03899M	Two-Point Inlet Tube
C03632M	Coaxial Inlet Tube
D01756	Inlet Tube/Adaptor Assy. for 61SOP
H11931M	Drop Tube O-Ring
C03749	Trap Door Assy. (Remote)

Tube end cut per local requirements

Drop tubes shall be cut at a 45° angle, with the top of cut no greater than 6" from the bottom of the tank (Or per local regulations)

Ordering Specifications

Product/ Suffix #	Description	A-Upper Tube Length		B-Lower Tube Length		C-Overall Length		Max. Riser Length		Max. Nominal Tank Dia.		Max. Actual Tank Dia.		Weight	
		in.	m	in.	m	in.	m	in.	m	in.	m	in.	m	lbs.	kg
61SOM-412C-EVR*‡	CARB 4", two-point, ethanol/methanol	120	3.1	not included		233 ³ / ₈	5.9	113 ¹ / ₂	2.9	120	3.1	126	3.2	25	11
61SOC-4001	Coaxial	60	1.5	83	2.1	154 ³ / ₈	3.9	53 ¹ / ₂	1.4	96	2.4	107	2.7	16	7
61SOC-4011	Coaxial	120	3.1	102	2.6	233 ³ / ₈	5.9	113 ¹ / ₂	2.9	120	3.1	126	3.2	25	11
61SOP-4002	CARB, pop. coaxial	60	1.5	83	2.1	154 ³ / ₈	3.9	53 ¹ / ₂	1.4	96	2.4	107	2.7	20	9
61SOP-4012	CARB, pop. coaxial	108	2.7	102	2.6	221 ³ / ₈	5.6	101 ¹ / ₂	2.6	120	3.1	126	3.2	27	12
61SOCM-4000*‡	Coaxial, ethanol/methanol	60	3.1	not included		233 ³ / ₈	5.9	113 ¹ / ₂	2.9	120	3.1	126	3.2	25	11
61SOR-4000**	Remote	72	1.8	83	2.1	166 ³ / ₈	4.2	65 ¹ / ₂	1.7	96	2.4	107	2.7	19	9

* For use with M85 & M100 methanol fuels

**Remote fill applications

‡ Methanol (M85) and Ethanol (E85) models do not include lower drop tube. Adaptor for 3" A.O. Smith Fiberglass Pipe (Drop Tube) is included. Appropriate length of 3" A.O. Smith Fiberglass Pipe is required for lower Drop Tube (not furnished).

Materials

Body: Duragard®
Coated Cast Iron

Cage Assembly: ZA12 Zinc/Alloy

(TEE)



Features

- ◆ **Duragard® Coated Cast Iron Body** – helps prevent rust and corrosion for long service life.
- ◆ **ZA12 Zinc/Alloy Cage Assembly** – eases installation and removal of ball float vent valves and test plugs.
- ◆ **Precision Machined Threads** – help prevent cross threading of the ball float or tank riser pipe.
- ◆ **Compatible with 85% Ethanol (E85) or Methanol (M85)**



CROSS



233 VP Test Plug



(H11930 2" CAGE SA)

Ordering Specifications

Product #	Top Thread		Outlet Thread		Bottom Thread		Weight	
	in.	mm	in.	mm	in.	mm	lbs.	kg
233-4420 (Tee)*	4	102	2	51	4	102 Ext.	13.89	6.31
233-4430 (Tee)*	4	102	3	76	4	102 Ext.	14.06	6.39
233-4422 (Cross)*	4	102	2 x 2	51 x 51	4	102 Ext.	15.18	6.90
233-4433 (Cross)*	4	102	3 x 3	76 x 76	4	102 Ext.	15.54	7.06
233-4432 (Cross)*	4	102	3 x 2	76 x 51	4	102 Ext.	17.29	7.86

* Without cage assembly NOTE: Use OPW89 Extractor Wrenches (See page 111)

Replacement Parts

OPW 233V and 233VM

Part #	Description
H11930	2" Cage SA
233VP-6046	Test Cap

OPW 233 Series Extractor Fittings

OPW 233 Series Extractor Fittings thread into 4 NPT openings on underground storage tanks. A 4" riser pipe threads into the top of the 233 for use in Stage I Vapor Recovery or to access a ball float. The 233 Extractor Fittings have threaded single-outlet connections for attaching tank vent lines or multiple outlets used to manifold tank vents or accommodate Stage II vapor return lines from dispensers. Internal threads on the 233 are designed to install a ball float or test plug in the extractor.

OPW 233

The OPW 233 Extractor Fittings are designed for use with all OPW 53VML Ball Float Vent Valves that include an extractor cage (the OPW 233 does not include an extractor cage). The 233 Extractor incorporates either single-outlet or multiple-outlet threads.

OPW 233VP Extractor Test Plug

The OPW 233VP Extractor Fitting Test Plug is used on all OPW 233 Series Extractor Fittings. The 233VP incorporates an O-Ring above the threads (on the plug) to isolate the tank from the vent piping systems during a tank test.

Listings and Certifications



Look for this label for authentic OPW EVR Approved products.

OPW 233 Series Extractor Fittings are EVR Approved for E85

OPW 53VML (30MV) Ball Float Vent Valves

The OPW 53VML Ball Float Vent Valves protrude into underground storage tanks from OPW 233 Series Extractor Fittings at the Stage I vapor return riser pipe or tank vent line. During a product delivery, as the tank level rises, a counterweight stainless steel ball seats on the valve body and restricts flow of vapors back to the transport truck. As the vapors become compressed in the tank (ullage), product flow into the tank is severely restricted. The 53VML Series Ball Float meets the U.S. EPA 90% requirement for product flow restriction into underground storage tanks. The 53VML-0060 and 53VML-0065 are designed as "back-up" overfill protection for overfill prevention valves, and to minimize product mixing with underground manifold vent lines.

Ordering Specifications and Dimensions

Product #	Pipe Dia.	Length (A)		Weight	
		in.	mm	lbs.	kg
53VML-0060	2*	6 ¹ / ₈	157	2	0.9
53VML-2070	2	7	178	3	1.5
53VML-0120	2	12	305	4	1.8
53VML-0160	2	16	407	5	2.3
53VML-0180	2	18	457	6	2.7
53VML-3050	3	5	127	5	2.3
53VML-3110	3	11	279	7.6	3.5
53VML-3120	3	12	305	7.7	3.5

* 1/16" Vapor Flow Orifice

30MV-KIT Ordering Specifications

Part #	Description
30MV-KIT	O-Ring 1/16" Brass orifice insert

Materials

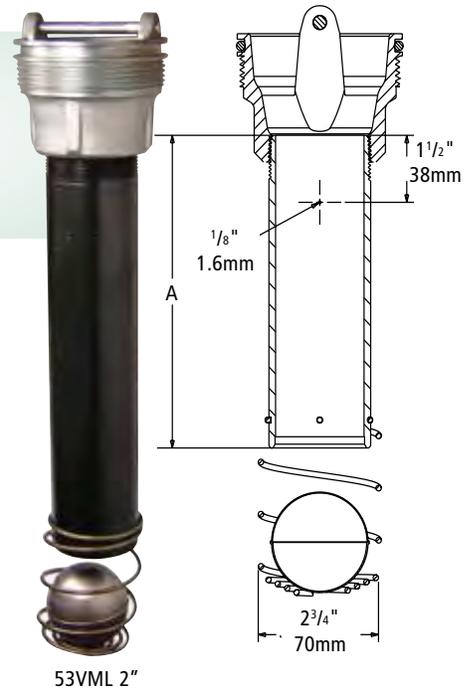
- Pipe Nipple:** Steel
- Coating:** Black Duragard®
- Basket:** Stainless steel
- Ball:** Stainless steel

Features

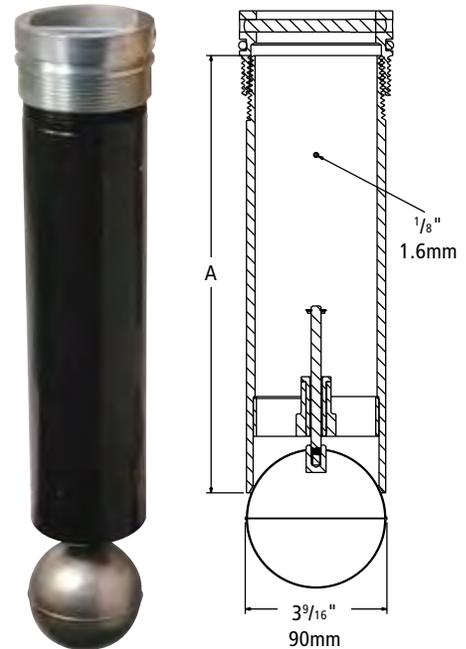
- ◆ Stainless Steel Counterweight Ball Float – corrosion-resistant for a long service life. Counterweight ensures proper seating of the ball for precision "slow-down" of product flow into the tank.
- ◆ Vapor Flow Orifice – a "bleed" hole machined into the body of the valve, sized to properly "slow-down" the delivery flow rate.
- ◆ Duragard® Body Coating – helps prevent rust and corrosion build-up for a smooth seating surface and long service life.
- ◆ Various Body Lengths – accommodate virtually any size tank.
- ◆ 2" and 3" Body Sizes – 3" size increases vapor flow to reduce product delivery time.
- ◆ Easy Installation, Service and Testing – both 2" and 3" valves install in OPW 233 Series Extractor Fittings and are easily removed for inspection or tank testing with OPW 89 Extractor Wrench.
- ◆ Compatible with 85% Ethanol (E85) or Methanol (M85)

Convert your 53VML into the 30MV Ball Float

The 30MV Series ball float has the same function as the 53VML, but allows for higher storage capacity in larger volume tanks. The 30MV meets the U.S. EPA 30-minute warning requirement for product flow restriction in the underground storage tank. Using the Tank Ullage calculation on page 111, convert your desired length 53VML by adding the 30MV-KIT.



53VML 2"



53VML 3"

53VML/30MV Instruction Sheet
Order Number: H14111PA

Warning OPW Overfill Warning Systems should only be used on submerged pumping systems, not suction pump systems. For special applications, contact OPW Fueling Components. OPW Overfill Warning Systems should only be used on gravity drop systems. DO NOT use where Pump-Off Unloading or coax fills are used.

Specifying the Proper Length 53VML or 30MV Series Ball Float

Step 1: Determine Dimension "X": Consult the tank chart (provided by the tank manufacturer) to determine the distance that corresponds to 10% of the total tank capacity for 53VML or 308 gallons for 30MV.

Step 2: Determine Dimension "Y": Measure the dimension from the inside top of the tank to the top of the 4" threaded tank "bung" fitting.

Step 3: Add measurements "X" and "Y". Then subtract 1/4" and round up to the nearest length ball float.

Tank Ullage Calculator

- ◆ 30 minutes x 5GPM = 150 gallons
- ◆ Ullage compression rate* is 27% after the ball seats
- ◆ 150 gallons ÷ .73 (1- ullage compression rate) = 205.48 gallons
- ◆ 205.48 x 1.5 (OPW recommended safety factor) = 308.22 gallons
- ◆ Approximately 308 gallons required ullage

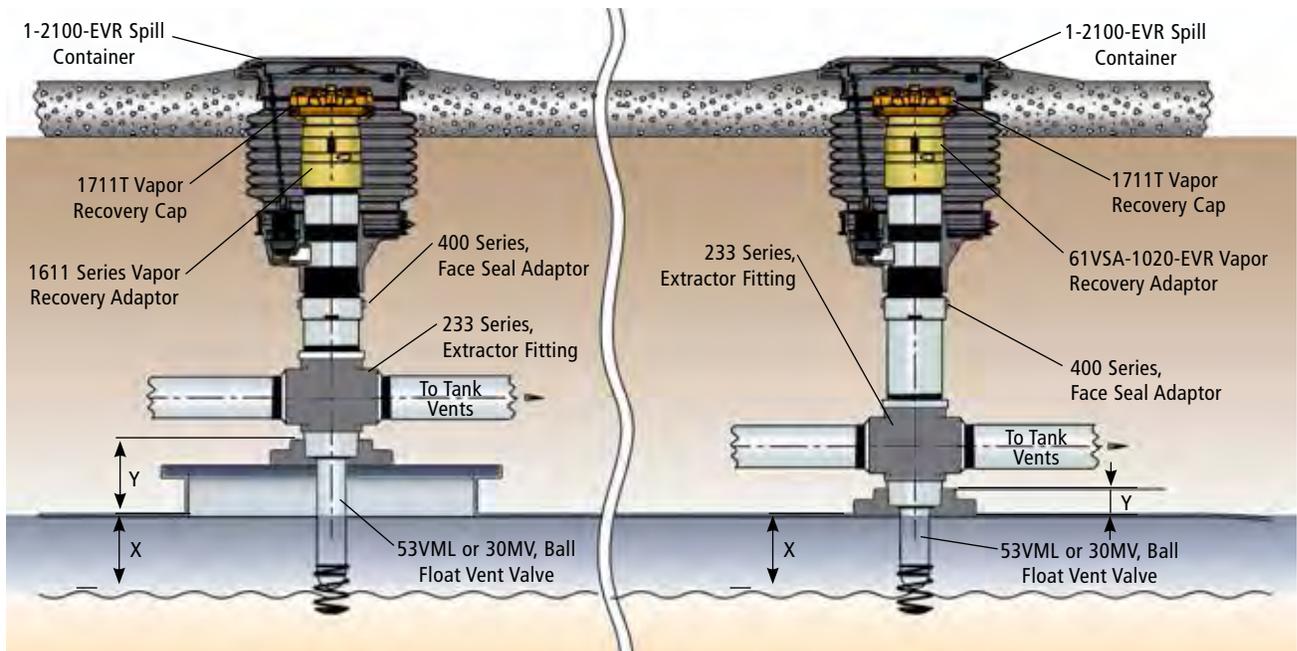
*Ullage compression rate will vary with head pressure.

OPW 53VML and 30MV Ball Float Sizing / OPW 89 Extractor Wrench

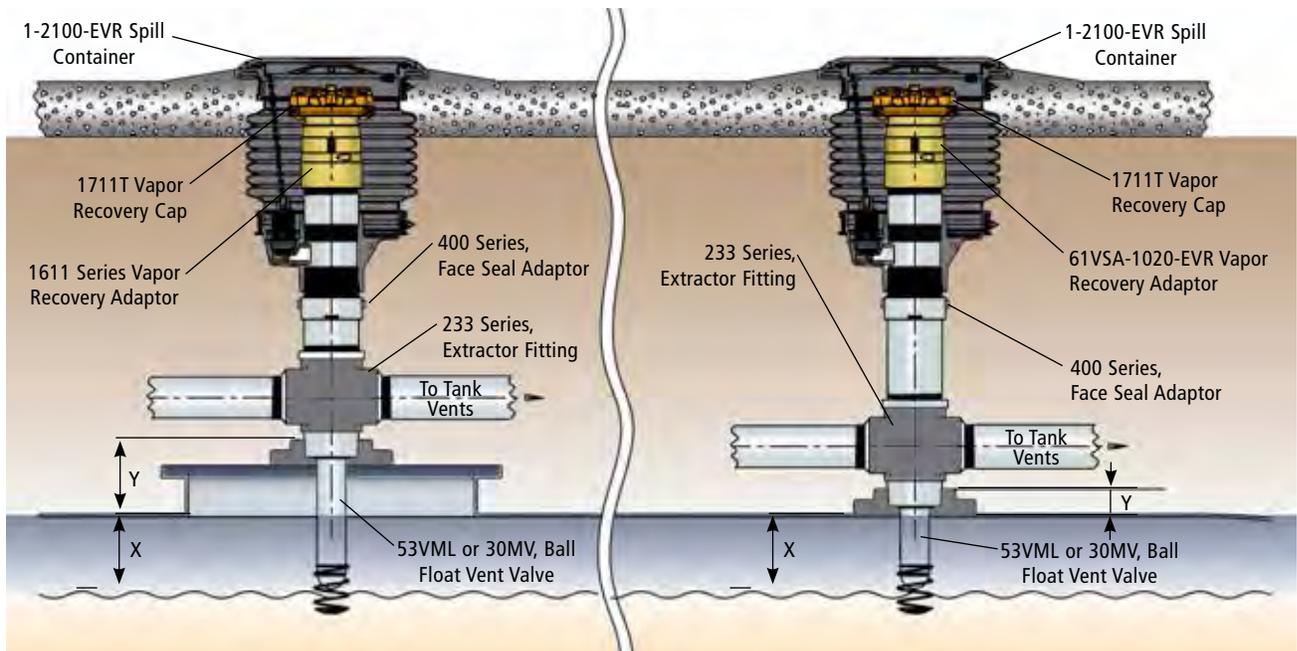
IMPORTANT:

Installing the incorrect length OPW 53VML or 30MV Ball Float Vent Valve for your specific application may result in delivery flow restriction at unacceptable levels. Always consult the appropriate tank charts and determine the specifics of your tank installation to determine the appropriate length OPW 53VML or 30MV. The illustration and instructions below are intended to serve as a guide in this determination.

Tank Manway Mounted Extractor

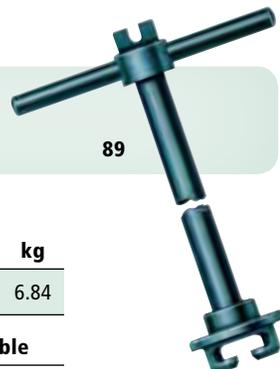


Tank Top Mounted Extractor



Materials

Pipe: Extra heavy black iron
Handle and Hook: Ductile iron



Ordering Specifications

Product #	in.	mm	lbs.	kg
89-0044	2	51	3	6.84

Size	Wrench	Product Compatible
2"	89-0044	233E, 88E Series

OPW 89 Extractor Wrench

The OPW 89 Extractor Wrench is designed to install or remove OPW 53VML and 30MV Ball Float Vent Valves or OPW 233VP and 233VMP Test Plugs in OPW 233, 233V, and 233VM Extractor Fittings. The 89 is also designed to work with the cage assemblies on the 233E Suction Tube Extractor Fitting and 88E Extractable Angle Check Valve in suction system applications. The 89 wrench consists of a 4 foot section of pipe welded to a "T" handle with either 1-1/2" or 2" hook section. Both the 1-1/2" and 2" hook sections mate current OPW ball floats and extractable cages; the 1-1/2" model is designed for some discontinued OPW products.

OPW 61T Drop Tube

The OPW 61T Drop Tube is installed in the fill riser pipe to an underground storage tank. It is designed to transfer product from the fill connection point (between the delivery drop elbow and tight-fill adaptor) to within 6" (or per local requirements) of the bottom of the tank. This allows for submerged filling of the tank, resulting in a more efficient delivery flow rate while reducing the build-up of vapors or foam in the tank.

OPW 61TC Coaxial Fill Drop Tubes

The OPW 61TC Coaxial Drop Tube is designed to replace an OPW 61T Conventional Drop Tube when Stage I Vapor Recovery is required and a vapor recovery riser pipe is not available on the tank or would require excavation to the top of the tank. The 61TC is used in conjunction with OPW 633TC Coaxial Vapor Recovery Adaptors to return vapors to the tank truck through one riser pipe during a fuel delivery to an underground storage tank. The upper section of the 61TC is tapered to allow vapors to return to the tank truck through the interstitial space between the riser pipe and outside wall of the drop tube. Simultaneously, product is delivered to the tank through the center of the 61TC.

OPW 61TCP Poppeted Coaxial Fill Drop Tubes

The OPW 61TCP Poppeted Coaxial Fill Drop Tube is similar to the 61TC, but is spring-loaded. When used in conjunction with the OPW 633TCP, the 61TCP acts as a poppet to close off the vapor return side of the coaxial fill tube.



Features

- ◆ **.062" Thick Drop Tube Walls** – deter denting and damage to the tube upon installation or removal for long service life.
- ◆ **Various Lengths and Diameters** – accommodate a variety of tank diameters and fill riser pipe sizes.

Ordering Specifications

Product #	Drop Tube Length		lbs.	kg	ft.	m
	in.	mm				
61T-7268	4	102	6.18	2.80	12	3.66
61T-7368	4	102	7.65	3.48	15	4.57
61T-7468	4	102	13	5.9	17	5.19
E85 EVR Approved:						
61T-SS-0412	4	102	6.18	2.80	12	3.66
61T-SS-0417	4	102	13	5.9	17	5.19

Replacement gaskets for the 61T-4" and the 61SO Series are available. Order the OPW 61TG (4000).

Features

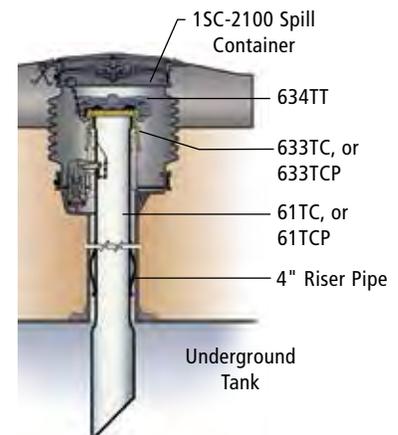
- ◆ **.052" Thick Drop Tube Walls** – deter denting and damage to the tube upon installation or removal for long service life.
- ◆ **Various Lengths and Diameters** – accommodate a variety of tank diameters and fill riser pipe sizes.
- ◆ **Fully Welded Retaining Brackets** – ensure a secure installation in the riser pipe.
- ◆ **Three Centering Springs** – enable even flow of vapors back to the tank truck.

Ordering Specifications

Product #	Diameter		Length		Weight	
	in.	mm	ft.	m	lbs.	kg
61TC-7270	4	102	13	3.05	8.64	3.93
61TC-7272	4	102	16	4.88	13.82	6.28
61TCP-3800	4	102	13	3.96	8.96	4.07

61T Drop Tube Instruction Sheet Order Number: **200652**

61TCP-3800 Instruction Sheet Order Number: **H12064M**

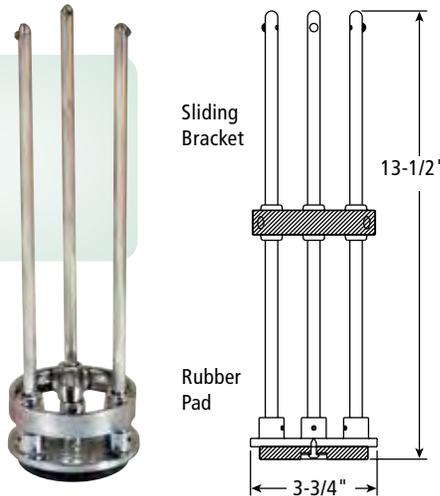


Materials

Aluminum and stainless steel components.

Viton Base Pad

6111-1400



Features

- ◆ **Viton® Base Pad** – ensures compatibility with current fuel formulations and absorbs impact of wooden gauge sticks to protect the bottom of the tank from punctures.
- ◆ **Corrosion-Resistant** – aluminum and stainless steel components provide for a long service life.
- ◆ **Unencumbered Vertical Movement** – assures the pad rests on the bottom of the tank and absorbs shock evenly.
- ◆ **CARB Approved** – approval Letter #98-12.
- ◆ **EVR Approved**

Ordering Specifications

Product #	Height		Diameter		Weight	
	in.	mm	in.	mm	lbs.	kg
6111-1400	13½	333	¾	96	3	1.4

OPW Tank Bottom Protectors

OPW Tank Bottom Protectors are installed at the bottom of overflow prevention valves or drop tubes to help prevent the underground storage tank from damage or leakage at the fill point due to manual tank gauging with wooden sticks and erosion from dirt or debris.

OPW 6111-1400 Tank Bottom Protector

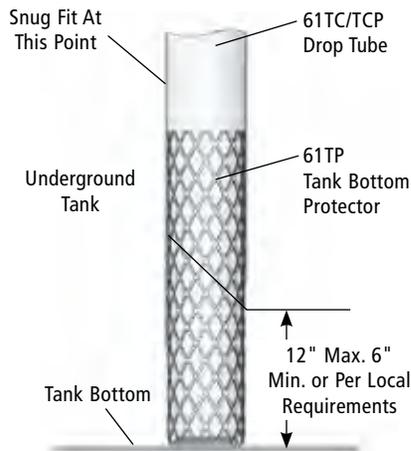
The OPW 6111-1400 incorporates a sliding bracket that is pop-riveted to the bottom of the drop tube. This secures the tank bottom protector to the drop tube for easy, reliable installation and removal for servicing the tank.

Features

- ◆ **Zinc-Plated Steel Cage** – ensures corrosion resistance for a long service life.
- ◆ **Mesh Screen Design** – helps prevent debris or other foreign matter from obstructing the submersible pump or suction line foot valve.

Ordering Specifications

Product #	Height		Weight	
	in.	mm	lbs.	kg
61TP-2398	4	102	1.02	.46



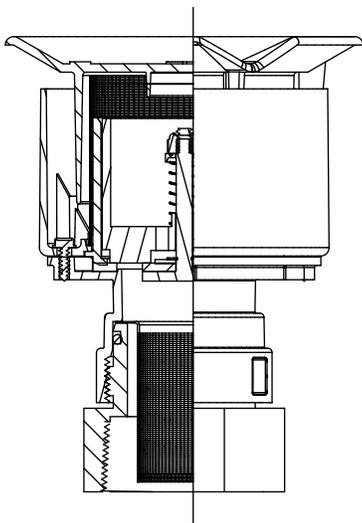
OPW 61TP Tank Bottom Protector

The OPW 61TP is a flanged, mesh screen design that slides to the bottom of the drop tube. The 61TP is held in place by the flanged spring action of the mesh screen. The mesh screen helps keep debris or other foreign matter from obstructing the submersible pump or suction line foot valve.

6111-1400 Tank Bottom Protector Instruction Sheet
Order Number: **H14977PA**

OPW 623V Pressure Vacuum Vent

Pressure Vacuum Vents are installed on the top of vent pipes from underground or above ground fuel storage tanks. The vent cap and internal wire screen are designed to protect the tank vent lines against intrusion and blockage from water, debris or insects. A normally closed poppet in the valve opens at a predetermined pressure or vacuum setting to allow the tank to vent.



Materials

- Top/Body:** Polypropylene
- Base:** Anodized aluminum
- Poppet:** Anodized aluminum
- Screen:** Stainless steel mesh
- Gasket:** Closed cell foam



623V
Vent Must Be Mounted Vertically

Features

- ◆ **Pressure/Vacuum Setting** – 2.5" to 6" water column pressure settings and -6" to -10" water column vacuum settings are factory preset and tested.
- ◆ **Reliable Service** – cycle tested to the equivalent of 80 years of service in the most severe environment without leakage problems.
- ◆ **Corrosion-Resistant Construction** – a Duratuff® composite body ensures a long service life.
- ◆ **Easy Installation** – the 623V is available in 2" and 3" threaded versions.
- ◆ **Complies with NFPA 30 Requirements** – for venting gasoline vapors upward.
- ◆ **Manifold Vent Pipes** – vent pipes may be manifolded to produce a single Pressure Vacuum Vent line. The 623V is designed to exceed California's requirements of a maximum vapor leak rate of 0.17 SCFH at 2.00 inches H2O.
- ◆ **High Maximum Flow Rate** – 6450 SCFH at 2 psi (0.1 bar) pressure drop.
- ◆ **Leak Rate** – multiple pressure vacuum vents may be installed on a single site. The 623V exceeds California standards with a leak rate of 0.05 SCFH or less at 2.00 inches H2O.
- ◆ **Maintenance** – no tools required. A removable snap fit top allows for easy maintenance (recommended yearly).
- ◆ **100-Mesh Stainless Steel Wire Screens** – helps prevent debris and insects from entering the tank vent lines. An added screen installed at the base prevents debris from intruding from the vent stack.
- ◆ **Adaptor Bushing** – removable hex threaded bushing designed for easy installation on NPT threaded risers. Allows easy access to lower screen.
- ◆ **ATEX Approved** – for flame arrestor applications

Ordering Specifications

Product #	Description	Identification Label Color	lb.	kg
623V-2203	2.5" to 6" WC Pres., -6" to -10" WC Vac. Thread-On	Yellow	1.55	.70
623V-3203	2.5" to 6" WC Pres., -6" to -10" WC Vac. Thread-On	Yellow	2.20	1.00

Replacement Parts

Part #	Description
C05086M	Lower Screen
H14895M	Upper Screen
C05089	2" Threaded Base Adaptor
C05122	3" Threaded Base Adaptor

Conversion Table						
Measurement Units		Oz.	PSI	In H2O (WC)	In Hg (Merc)	Bar
Bar	=					
	x	236.0	14.5	401.4	29.53	
In. Hg (Mercury)	x	7.843	0.49	13.6		0.034
	x					
In H2O (WC)	x	0.578	0.04		0.074	0.002
	x					
PSI	x	16.00		27.68	2.04	0.069
	x		0.063	1.73	0.128	0.004

623V Instruction Sheet
Order Number: **H14898M**

Listings and Certifications



OPW 623V & 523V



ATEX Approved

Patent No.
WO2004/036096AZ

Features

- ◆ **A Variety of Pressure/Vacuum Settings** – 3" water column, 1 oz., 8 oz., 12 oz. pressure settings and 8" water column or 1/2 oz. vacuum settings are factory preset and tested.
- ◆ **Reliable Service** – self-guided poppet assembly ensures consistent seating of the pressure/vacuum valve.
- ◆ **Corrosion-Resistant Construction** – Duratuff® composite body assures a long service life.
- ◆ **Easy Installation** – 523V is available in 2" and 3" threaded versions or slip-on models that provide for attachment to the vent line with allen head screws and radial sealing O-ring.



- ◆ **Complies with NFPA 30 Requirements** – for venting gasoline vapors upward.
- ◆ **High Maximum Flow Rate** – 7000 SCFH at 2 psi pressure drop.
- ◆ **40-Mesh Stainless Steel Wire Screen** – helps prevent debris and insects from entering the tank vent lines.

Ordering Specifications

Product #	Description	Identification Label Color	lb.	kg
523V-1100	2" 8 oz Pres., 1/2 oz. vac. thread-on	Red	1.65	.75
523V-1150	2" 8 oz Pres., 1/2 oz. vac. slip-on	Red	1.65	.75
523V-3100	3" 8 oz Pres., 1/2 oz. vac. thread-on	Red	3.2	1.45
523V-3150	3" 8 oz Pres., 1/2 oz. vac. slip-on	Red	3.2	1.45
523V-2300	2" 12 oz Pres., 1/2 oz. vac. thread-on	Blue	1.65	.75
523V-2350	2" 12 oz Pres., 1/2 oz. vac slip-on	Blue	1.65	.75
523V-2200	2" 1 oz Pres., 1/2 oz. vac. thread-on	Silver	1.65	.75
523V-2250	2" 1 oz Pres., 1/2 oz. vac. slip-on	Silver	1.65	.75
523V-3200	3" 1 oz Pres., 1/2 oz. vac. thread-on	Silver	3.2	1.45
523V-2203	2" 3" WC Pres., 8" WC vac. thread-on	Yellow	1.65	.75
523V-2253	2" 3" WC Pres., 8" WC vac. slip-on	Yellow	1.65	.75
523V-3203	3" 3" WC Pres., 8" WC vac. thread-on	Yellow	3.2	1.45
523V-3253	3" 3" WC Pres., 8" WC vac. slip-on	Yellow	3.2	1.45

Materials

Body: Aluminum
O-Ring: Nitrile



523SA
(Bottom View)

523SA
(Top View)

Ordering Specifications

Product #	Description	in.	mm	lb.	kg
523A-1003	3" Thread-On Adaptor for use with 523V Pressure / Vacuum Vents	2x3	51x76	.47	.213
523SA-1003	3" Slip-On Adaptor for use with 523V Pressure / Vacuum Vents	2x3	51x76	.63	.286
523SA-1002	2" Slip-On Adaptor for use with 523V Pressure / Vacuum Vents	2x2	51x51	.31	.141

OPW 523V Pressure Vacuum Vent

Pressure Vacuum Vents are installed on the top of vent pipes from underground or above ground fuel storage tanks. The vent cap and internal wire screen are designed to protect the tank vent lines against intrusion and blockage from water, debris or insects. A normally closed poppet in the valve opens at a predetermined pressure or vacuum setting to allow the tank to vent.

Conversion Table

Measurement Units		Oz.	PSI	In H ₂ O (WC)	In Hg (Merc)	Bar
Bar In. Hg (Mercury)	=					
	x	236.0	14.5	401.4	29.53	
In H ₂ O (WC)	x	7.843	0.49	13.6		0.034
	x	0.578	0.04		0.074	0.002
PSI Oz.	x	16.00		27.68	2.04	0.069
	x		0.063	1.73	0.128	0.004

Replacement Parts

Part #	Description
H11432M	O-Ring for 2" Thread
H11456M	O-Ring for 3" Thread

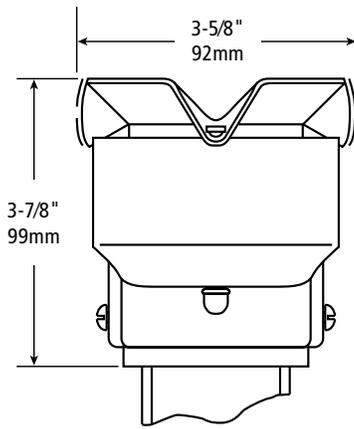
523V Instruction Sheet
Order Number: **H11972M**

OPW 523V Series Adaptor Bushings

The 523V Series Adaptor Bushings are designed to thread into the base of 2" threaded 523V vents. The adaptor bushings convert a 2" 523V to 3" threaded, 2" slip-on or 3" slip-on connection.

OPW 23 Series Open Atmospheric Vent

Open Atmospheric Vents are installed on the top of vent pipes from underground or above ground fuel storage tanks. The vent cap and internal wire screen are designed to protect the tank vent lines against intrusion and blockage from water, debris or insects. These vents are always open to atmosphere and allow any pressure or vacuum in the tank to vent. The OPW 23 Series is a perfect choice for many applications.



Materials

Body: Aluminum
Screen: 40-mesh brass
Set Screws: Brass



23

Features

- ◆ **Reliable Service** – vent cap drain spouts extend outward to deter rainwater entry.
- ◆ **Corrosion-Resistant Construction** – aluminum body and cap assure a long service life.
- ◆ **Easy Installation** – the 23 is available in 2" and 3" slip-on models that provide for attachment to the vent line with set screws.
- ◆ **Complies with NFPA 30 Requirements** – for venting gasoline vapors upward.
- ◆ **High Maximum Flow Rate** – 7000 SCFH at 2 psi (0.1 bar) pressure drop.
- ◆ **40-Mesh Brass Wire Screen** – helps prevent debris and insects from entering the tank vent lines.

Ordering Specifications

Product #	Description	in.	mm	lbs.	kg
23-0044	Open Vent	1½	38	.25	.11
23-0033	Open Vent	2	51	.25	.11
23-0055	Open Vent	3	76	1.6	.73

Replacement Parts

Part #	Description
H00122M	Screw
H01967M	Nut
H01969M	Screen

Emergency Shut-Off & Vapor-Line Shear Valves



- Emergency Shut-off Valves..... 118-121
- Vapor Line Shear Valves..... 122-123
- DEF Shear Valve..... 124
- Flex Connectors..... 125-126

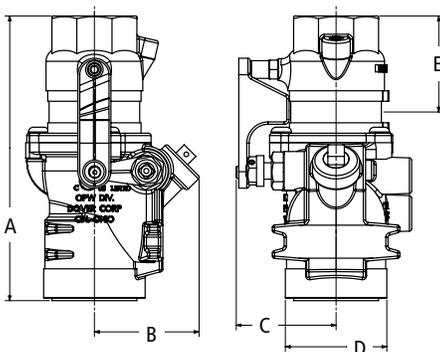
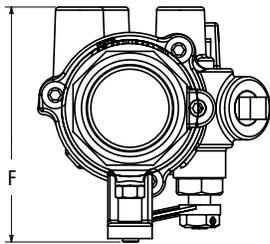


10 Plus Series Emergency Shut-Off Valves

OPW raised the protection standard in emergency valves when it introduced the first double-poppet valve back in 1989. This industry-changing OPW innovation helped to significantly reduce the risk of fire, explosion, personal injury, property damage and environmental contamination at sites around the world. Major oil companies and jobbers agreed that providing added protection for their customers, investments and the environment were the three most convincing reasons for switching to the innovative new valves.

Dimensions

	in.	cm
A	7 ⁹ / ₁₆	4
B	2 ²⁵ / ₃₂	4
C	2 ²¹ / ₃₂	4
D	2 ¹¹ / ₁₆	4
E	2 ⁹ / ₁₆	4
F	4 ²¹ / ₃₂	4



Materials

Top: Cast iron
Body: Cast iron



10 PLUS

Features

- ◆ The ONLY emergency shut-off valve in the world designed to protect your customers, investments, and the environment against the potential hazards of undetected shear groove leaks caused by low-impact incidents.
- ◆ The patent-pending SmartGuard™ design contains shear groove leaks, preventing fuel from leaking into sumps to help reduce the risk of fire, explosion, personal injury, property damage, environmental contamination, product loss and costly clean-up.
- ◆ Superior shear groove design and engineering results in reliable valve shut-off in the event of a pull-over or dislodged dispenser. The 10 Plus utilizes the same time-tested field-proven design of the OPW 10 Series Emergency Shut-off Valve – the most specified emergency shut-off valve in the world.
- ◆ Fusible link releases to automatically close the valve to reduce fire hazard.
- ◆ Rigorously tested to meet OPW's rigid quality standards.

Ordering Specifications

Model #	Body Size		Body Weight		Connection Threads	Poppet Configuration	Application	Mounting System
	in.	cm	lb.	kg				
10P-0150	1 1/2	4	6.7	3.05	NPT	Single	Pressure	Combination
10P-0152	1 1/2	4	6.8	3.10	NPT	Double	Pressure	Combination
E85 10P-0152E85	1 1/2	4	6.8	3.10	NPT	Double	Pressure	Combination



10 Plus Replacement Parts

Part #	Description
10RPLUS-0150	10 Plus Single Poppet Replacement Top
10RPLUS-0152	10 Plus Double Poppet Replacement Top
202950	Tetraseal
200143	Safety Hub/Fusible Link

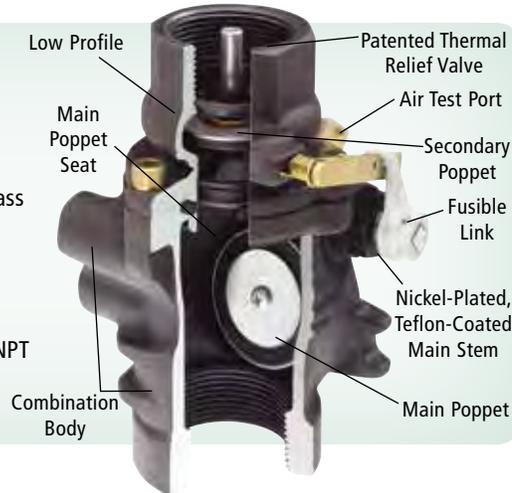
Listings and Certifications



10 Plus Series Instruction Sheet Order Number: 201614

Materials

Top: Cast iron
Body: Cast iron
Disc: M-19
Carrier: Zinc-plated steel
Stem: Copper-nickel-chrome-plated brass
Poppet Spring: Stainless steel
Seal: M-19 O-Ring
Packing nut: Brass, Teflon®-coated
 Inlet and outlet thread: 1-1/2" (4 cm) NPT
 (British threads available)
 *With black Duragard® E-Coating



Features

- ◆ **High Flow Capacity** – the primary poppet is held out of the flow stream while the secondary poppet is held normally open to minimize head loss across the valve and to protect the poppet seals from damage and erosion. True 1-1/2" (4 cm) and 2" (5 cm) body sizes ensure maximum flow.
- ◆ **Fire Protection** – a fusible link trips the valve closed at 165° F to shut off fuel supply to the dispenser.
- ◆ **Main Poppet Seat Integral to the Top Assembly** – having the main poppet seat as an integral part of the valve top ensures a new, clean seating surface is installed each time the top is replaced. This design also ensures that the integrity of the seal between the valve top and bottom is verified during line testing and allows full inspection of the main poppet when the top is removed.
- ◆ **Duragard®-Coat Finish** – provides superior corrosion resistance.
- ◆ **Reliable Shut-off** – a stainless steel main spring, a teflon-coated brass packing nut and a copper/nickel/ chrome-plated brass stem are designed to prevent tar build-up and corrosion from interfering with poppet operation after long periods of normal service without activation.
- ◆ **Integral Test Port** – a 3/8" (9.5 mm) test port allows the piping system to be air-tested without breaking any piping connections.
- ◆ **Patented Thermal Relief Valve** – relieves excessive pressure over 25 psi caused by thermal expansion of fuel in the dispenser piping system in the event of fire (double-poppet models only).
- ◆ **Low-Profile Tops** – female and union-top double-poppet valves have a low-profile top to allow upgrading from OPW single-poppet valves without changing existing piping.
- ◆ **Multiple Mounting Options** – valves are boss-mounted to stabilizer bars in sumps and pans or mounted to bars embedded in the island with optional U-Bolt kits 10UBK-015 (not included). Versatile Combination Body (boss mount/ U-Bolt mount) models are available to accommodate most mounting applications with one valve style.
- ◆ **Underwriters Laboratories** –  listed for use with gasoline and 85% and 100% methanol. All OPW 10 Emergency Shut-Off Valves meet requirements of UL STANDARD 842.
- ◆ **Compatible with 85% ethanol (E85)**

10 Series Emergency Shut-Off Valves

OPW 10 Series Emergency Shut-off Valves are installed on fuel supply lines beneath dispensers at grade level to minimize hazards associated with collision or fire at the dispenser. If the dispenser is pulled over or dislodged by collision, the top of the valve breaks off at the integral shear groove, activating poppets and shutting off the flow of fuel. Single-poppet models shut off supply flow, while double-poppet models shut off supply as well as prevent release of fuel from the dispenser's internal piping. The base of the emergency valve is securely anchored to the concrete dispenser island through a stabilizer bar system within the dispenser sump or pan to ensure proper shearing action. The valve base is secured to the stabilizer bar using a three-point boss mount system or a U-Bolt Kit (not included) 10UBK-015 (1-1/2") and 10URK-0200 (2 sold separately). Valve inlet (bottom) connections are female pipe threads and outlet (top) connections are available with female threads, male threads or a union fitting. Other options include suction system models with a normally closed secondary poppet which maintains prime, and models with external threads on the inlet body which connect to secondary containment systems.

PA15 Offset Adaptor

The OPW PA15 Offset Adaptor is designed for adjusting misalignment of pipe in dispenser sumps and suction stubs. The PA15 has a low profile feature, and is designed for maximum flow.



Materials

Ductile Iron
 Zinc Chromate

Ordering Specifications

Part #	Thread Size		Offset		Height		Width	
	in.	mm	in.	mm	in.	mm	in.	mm
PA15-10	1 1/2	38.1	1	25	2 1/4	57.2	3 5/8	92.1
PA15-15	1 1/2	38.1	1 1/2	38.1	2 1/4	57.2	4 1/8	104.8
PA15-20	1 1/2	38.1	2	51	2 1/4	57.2	4 5/8	117.5

OPW 10 Series Emergency Shut-Off Valves

Ordering Specifications

Female Threaded Top (Outlet) Connection Valves

Model #	Body Size		Connection Threads	Poppet Configuration	Application	Replacement Top
	in.	cm				
10BF-5725	1½	4	NPT	Single	Pressure	10RFT-5750
10BFP-5726	1½	4	NPT	Double	Pressure	10FTP-5701
10RF-2001	2	5	NPT	Single	Pressure	10RFT-5742
10RFP-2002	2	5	NPT	Double	Pressure	10RFTP-5752

Male Threaded-Top (Outlet) Connection Valves

Model #	Body Size		Connection Threads	Poppet Configuration	Application	Replacement Top
	in.	kg				
10BM-5825	1½	4	NPT	Single	Pressure	10RMT-5850
10BHMP-5830	1½	4	NPT	Double	Pressure	10RMTP-5851
10SBHMP-5830	1½	4	NPT	Double	Suction	10SHMTP-5811
10RM-2003	2	5	NPT	Single	Pressure	10RMT-5842
10RMP-2004	2	5	NPT	Double	Pressure	10RMTP-5852

Union-Top (Outlet) Connection Valves

Model #	Body Size		Connection Threads	Poppet Configuration	Application	Replacement Top
	in.	kg				
10BU-5925	1½	4	NPT	Single	Pressure	10RUTC-5975
10BUP-5926	1½	4	NPT	Double	Pressure	10UTCP-5901
10SBUP-5926	1½	4	NPT	Double	Suction	10SUTCP-5911
10RU-2005	2	5	NPT	Single	Pressure	10RUTC-5962
10RUP-2006	2	5	NPT	Double	Pressure	10RUTCP-5972

NOTE: All BSPP Thread Shear Valves must be ordered through OPW's Europe or Asia office.

IMPORTANT NOTICE:

When mounting the OPW 10 Series Emergency Shut-off Valves, the anchoring system employed must withstand a force greater than 650 ft. pounds per valve. NFPA Code 30A, Automotive and Marine Service Station Code, requires that the automatic closing feature of emergency shut-off valves be checked at least once per year by manually tripping the hold-open linkage. OPW recommends the use of Flexworks Stabilizer Bar Support System for proper mounting of 10 Series Valves.

NOTICE:

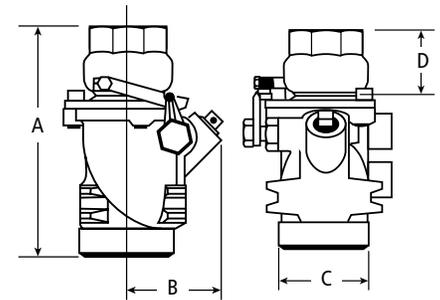
As per NFPA 30A, electrical supply to the submersible pump must always be disconnected before servicing meters, dispensers or emergency shut-off valves.

Replacement Valve Tops

Model #	Body Size		Connection Threads	Poppet Configuration	Application	Top Connection	Profile
	in.	cm					
10RFT-5750	1½	4	NPT	Single	Pressure	Female	
10RFTP-5751	1½	4	NPT	Double	Pressure	Female	
10FTP-5701	1½	4	NPT	Double	Pressure	Female	Low Profile
10RMT-5850	1½	4	NPT	Single	Pressure	Male	
10RMTP-5851	1½	4	NPT	Double	Pressure	Male	
10SHMTP-5811	1½	4	NPT	Double	Suction	Male	
10RUTC-5975	1½	4	NPT	Single	Pressure	Complete Union	
10UTCP-5901	1½	4	NPT	Double	Pressure	Complete Union	Low Profile
10RFT-5742	2	4	NPT	Single	Pressure	Female	
10RFTP-5752	2	5	NPT	Double	Pressure	Female	
10RMT-5842	2	5	NPT	Single	Pressure	Male	
10RMTP-5852	2	5	NPT	Double	Pressure	Male	
10RUTC-5962	2	5	NPT	Single	Pressure	Complete Union	
10RUTCP-5972	2	5	NPT	Double	Pressure	Complete Union	

1½" Dimensions

	10BF		10BFP 10SBFP		10BM		10BHMP 10SBHMP		10BU		10BUP 10SBUP	
	in.	mm										
A	6 ²¹ / ₆₄	161	6 ²¹ / ₆₄	161	6 ¹³ / ₁₆	173	7 ¹¹ / ₁₆	195	7 ¹ / ₄	184	7 ¹ / ₄	184
B	2 ³ / ₄	70										
C	2 ¹¹ / ₁₆	69										
D	1 ³ / ₄	44	1 ³ / ₄	44	2 ¹ / ₄	57	3 ¹ / ₈	79	2 ¹¹ / ₁₆	69	2 ¹¹ / ₁₆	69



2" Dimensions

	10RF 10RFS		10RM 10RMS		10RU 10RUS		10RFP 10RFSP		10RMP 10RMSP		10RUP 10RUSP	
	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm
A	8 ³ / ₈	213	9 ²⁷ / ₃₂	250	9 ¹³ / ₃₂	239	8 ³ / ₈	213	9 ²⁷ / ₃₂	250	9 ¹³ / ₃₂	239
B	3 ⁷ / ₆₄	79	3 ⁷ / ₆₄	79	3 ⁷ / ₆₄	79	3 ⁷ / ₆₄	79	3 ⁷ / ₆₄	79	3 ⁷ / ₆₄	79
C	3 ¹ / ₄	83	3 ¹ / ₄	83	3 ¹ / ₄	83	3 ¹ / ₄	83	3 ¹ / ₄	83	3 ¹ / ₄	83
D	3 ¹ / ₁₆	78	4 ⁹ / ₁₆	116	3 ⁷ / ₈	98	3 ¹ / ₁₆	78	4 ⁹ / ₁₆	116	3 ⁷ / ₈	98

Other Replacement Parts

Part #	Description
202950	Tetra Seal
H07659M	Link Spring
H07643RB	Link Retaining Screw
H04788M	Hold-Open Link (Brass)
H05361	Safety Hub S/A-Fusable Link
10UBK-015	U-Bolt Kit for 1½"
10URK-020	U-Bolt Kit for 2"

OPW 60VS Series Vapor Line Shear Valves

OPW 60 Series Vapor Line Shear Valves are installed on vapor return lines beneath dispensers at grade level to minimize hazards associated with collision or fire at the dispenser. If the dispenser is pulled over or dislodged by collision, the top of the valve breaks free at the integral shear groove to minimize damage to the dispenser piping. Poppeted models afford additional protection by preventing the release of vapors from the dispenser's internal piping and the vapor line to the tank. The base of the Vapor Line Shear Valve is securely anchored to the concrete dispenser island through a stabilizer bar system within the dispenser sump or pan while the valve top is secured to the dispenser structure to ensure proper shearing action. OPW Vapor Line Shear Valves are designed to meet the requirements of NFPA-30A Section 4-3.7. Poppeted models are UL and CARB-approved.

Materials

Body: Cast iron with black Duragard® E-Coating

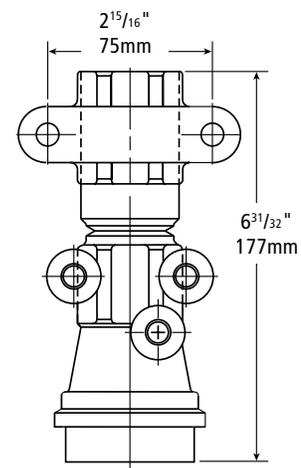
Discs: M -19 Viton®

60VSPC-1001



Features

- ◆ 1-1/2" female connection to underground piping.
- ◆ 1" female connection to dispenser piping.
- ◆ Air-test port to enable vapor line testing without breaking pipe connections.
- ◆ Choice of top or side inlet connection.
- ◆ Three-Point Boss Mount stabilizer bar lower mounting connection; U-Bolt upper mounting connection.



Ordering Specifications

Product #	Connections	Poppeted	Containment Threads
60VS-1000	1" x 1 1/2" (3 x 4 cm) FNPT		
60VSP-1001	1" x 1 1/2" (3 x 4 cm) FNPT	•	
60VSPC-1001	1" x 1 1/2" (3 x 4 cm) FNPT	•	•
60VSK-1002	Mounting Kit Includes: (2) Lockwashers, (2) Nuts, (3) Hex Screws, (3) Washers		

60VS Instruction Sheet
Order Number: H12291M

**Listings and
Certifications**



Materials

Body: Cast iron with black Duragard® E-coating

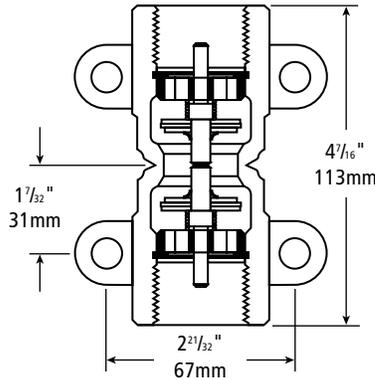
Discs: M-19 Viton®

60VP-1001



Features

- ◆ **1" Female Connection to Both Dispenser and Underground Piping**
- ◆ **Multiple Mounting Methods** – mounting Boss accepts either U-Bolt or Straight Bolt mounting kits.
- ◆ **Duragard® E-Coat Finish** – provides superior corrosion resistance.



Ordering Specifications

Product #	Connections	Poppeted
60V-1000	1" x 1" (3 x 3 cm) FNPT	
60VP-1001	1" x 1" (3 x 3 cm) FNPT	•
60VK-1002	U-Bolt Mounting Kit Includes: (2) 3/8" (9.5 mm) U-bolts, (4) washers, (4) nuts	
60VK-1003	Straight Bolt Mounting Kit Includes: (4) 3/8" (9.5 mm) 16 bolts, (4) washers, (4) nuts	

OPW 60VS-1000 Line Saver

- ◆ Shear section breaks on impact to minimize damage to underground piping.

OPW 60V-1000 Line Saver

- ◆ Shear section breaks on impact to minimize damage to underground piping.

OPW 60V Series Vapor Line Shear Valves

OPW 60VP-1001

Poppeted Vapor Save

- ◆ Double-poppeted design incorporated to help prevent vapor loss in the event dispenser is toppled
- ◆ CARB approved
- ◆ UL-listed 

OPW 60VSP-1001

Poppeted Vapor Saver

- ◆ Double-poppeted design incorporated to help prevent vapor loss in the event the dispenser is toppled
- ◆ CARB approved
- ◆ UL listed 
- ◆ 60VSPC-1001 features additional external threads on valve outlet for connection to a secondary containment system

60V Instruction Sheet
Order Number: **H12133M**

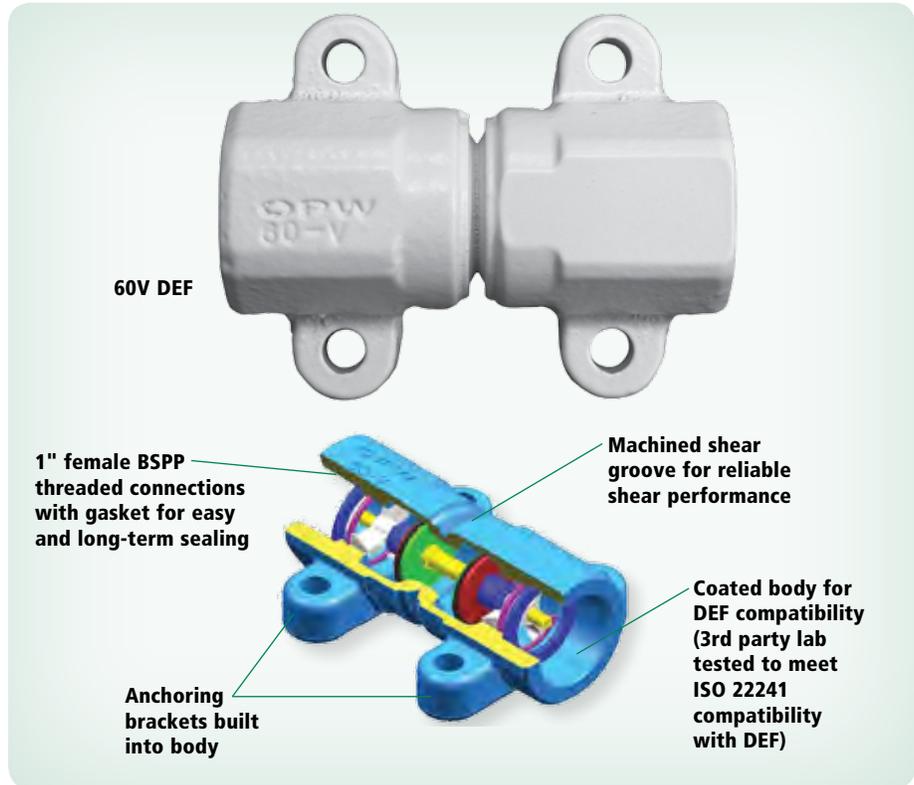
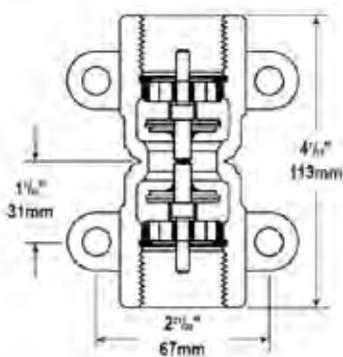
60V-DEF Shear Valve

Starting with 2010 Models, DEF was required in diesel-powered trucks utilizing Selective Catalytic Reduction (SCR) to meet federal emissions standards. The dispensing infrastructure at travel centers and fleet refueling sites continues to evolve as DEF compatible equipment is installed.

OPW's 60V-DEF Shear Valve has a unique coating that allows for DEF compatibility while maintaining the reliable shear performance of cast iron. Third-party tested to ensure compatibility with the ISO 22241 Standard, our new 60V-DEF Shear Valve provides peace of mind and minimizes damage to your DEF Dispensing Equipment in the case of impact collision while preventing product loss.

Features & Benefits:

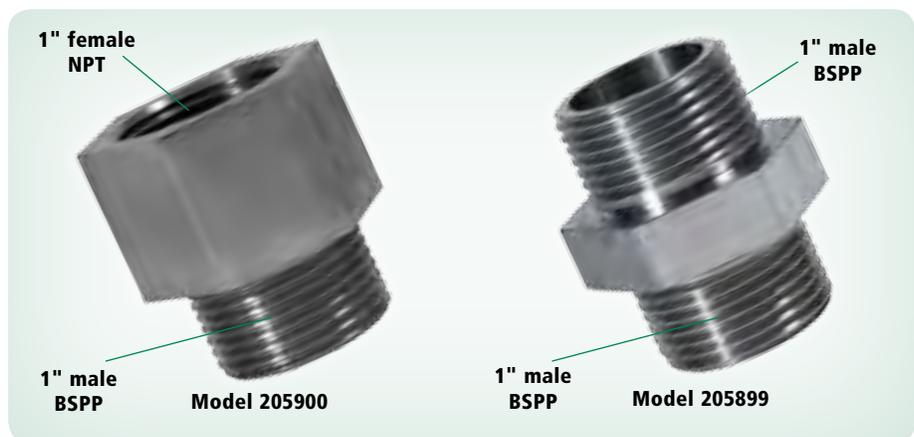
- ◆ Utilizes DEF Industry Standard BSPP Connections for Easy and Long-Term Sealing
- ◆ Machined Shear Groove for Reliable Shear Performance
- ◆ Versatile to other tread types with DEF compatible stainless steel adaptors
- ◆ Anchoring Brackets Built into Body



Ordering Specifications - 60V-DEF Shear Valve

Model #	Description
60V-DEF	60V DEF Shear Valve
205900	1" Female NPT Adaptor
205899	1" Male BSPP Adaptor

Adaptors Available For Installation Flexibility



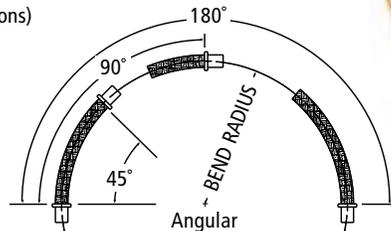
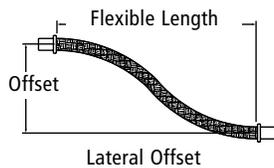
Materials:

Hose: 322 Stainless Steel
Wire Braid: 304 Stainless Steel
Pipe Nipples: SCH. #80 Stainless Steel
Swivel: Viton®/Buna Seals

Features:

- ◆ Maximum working pressure: 150 PSIG (10 bar)
- ◆ Service temperature range: -320° F to 1500° F
- ◆ Minimum burst pressure 750 PSIG (52 bar)
- ◆ Inherent hoop strength of convoluted hose allows full vacuum service

ULC/ORD-C536-1998 and UL2039
 (underground and above ground installations)



OPW Stainless Steel Flexible Connectors

Stainless Steel Flexible Connectors provide flexibility in the installation and operation of fuel piping systems. Flexible Connectors can be used as a convenient means of connecting piping to pumps and dispensers and throughout the piping systems where connections and changes of direction are necessary. Flexible Connectors dampen the effect of ground and/or piping movement. All stainless steel construction ensures long service life and corrosion protection. Flexible Connectors are rated for 150 psig (10 bar) working pressure, as well as for full vacuum service. Compatible with diesel, gasoline, methanol, ethanol and MTBE. Available as Male by Male and Male Swivel by Male, Male 90° and Easy Clamp Connectors.

NAFTA approved, can be used in any country.

Ordering Specifications and Dimensions

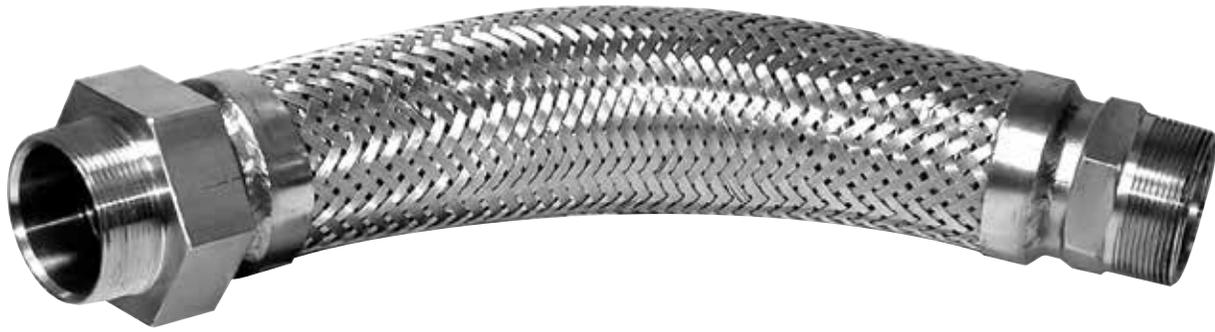
MALE x MALE	NPT Thread Size		Length		Hose O.D.		Max. Angular Bending (Degree)		Max. Lateral Offset				Min. Bend Radius			
	Model #	in.	mm	in.	mm	in.	mm	Static Position	Intermittent Flexing	Static Installation in.	Static Installation mm	Intermittent Flexing in.	Intermittent Flexing mm	Static Installation in.	Static Installation mm	Intermittent Flexing in.
FC075-MM12	.75	19.1	12	304.8	1.0	25.4	100°	55°	2.0	50.8	1.2	30.5	4.5	114.3	8	203.2
FC10-MM12	1	25.4	12	304.8	1.3	33.0	70°	45°	1.4	35.6	0.9	22.9	5.5	139.7	9	228.6
FC10-MM18	1	25.4	18	457.2	1.3	33.0	135°	85°	4.5	114.3	2.1	53.3	5.5	139.7	9	228.6
FC10-MM24	1	25.4	24	609.6	1.3	33.0	180°	125°	8.6	218.4	2.1	53.3	5.5	139.7	9	228.6
FC15-MM12	1.5	38.1	12	304.8	2.25	57.2	90°	35°	1.5	38.1	.75	19.1	4	101.6	11	279.4
FC15-MM14	1.5	38.1	14	355.6	2.25	57.2	90°	35°	1.5	38.1	.75	19.1	4	101.6	11	279.4
FC15-MM18	1.5	38.1	18	457.2	2.25	57.2	150°	55°	4.0	101.6	1.5	38.1	4	101.6	11	279.4
FC15-MM24	1.5	38.1	24	609.6	2.25	57.2	180°	85°	8.0	203.2	2.75	69.9	4	101.6	11	279.4
FC15-MM30	1.5	38.1	30	762.0	2.25	57.2	180°	115°	12.0	304.8	2.75	69.9	4	101.6	11	279.4
FC20-MM12	2	50.8	12	304.8	2.72	69.1	75°	30°	1.5	38.1	0.60	15.2	5	127.0	12	304.8
FC20-MM14	2	50.8	14	355.6	2.72	69.1	75°	30°	1.5	38.1	0.60	15.2	5	127.0	12	304.8
FC20-MM18	2	50.8	18	457.2	2.72	69.1	120°	50°	3.0	76.2	1.5	38.1	5	127.0	12	304.8
FC20-MM24	2	50.8	24	609.6	2.72	69.1	180°	75°	7.0	177.8	3.0	76.2	5	127.0	12	304.8
FC20-MM36	2	50.8	36	914.4	2.72	69.1	180°	105°	12.0	304.8	3.0	76.2	5	127.0	12	304.8
FC30-MM18	3	76.2	18	457.2	3.97	100.8	70°	35°	2.0	50.8	1.0	25.4	8	203.2	16	406.4
FC30-MM24	3	76.2	24	609.6	3.97	100.8	110°	55°	4.8	121.9	2.5	63.5	8	203.2	16	406.4

Approvals and Listings

The UL and ULC rating for the OPW Flex Connectors are rated for both UST and AST applications. Refer to the summary chart on the right.

OPW Product	US Classification	UL Approval	ULC Approval Testing std. ORD536, ASME & CSA B51
FC075	MVTV	UST ONLY	UST & AST
FC10	MVTV	UST ONLY	UST & AST
FC15 (1 1/2")	QLWV	UST & AST	UST & AST
FC20 (2")	QLWV	UST & AST	UST & AST
FC30	MVTV	UST ONLY	UST & AST





Integral Swivel Flex Connector

Ordering Specifications and Dimensions

Model #	MALE SWIVEL x MALE		NPT Thread Size				Length		Hose O.D.		Max. Angular Bending (Degree)		Max. Lateral Offset				Min. Bend Radius			
	in. mm		in. mm		in. mm		Static Position		Intermittent Flexing		Static Installation		Intermittent Flexing		Static Installation		Intermittent Flexing			
	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm		
FC15-SWM12	1.5	38.1	12	304.8	2.25	57.2	90°	35°	1.5	38.1	0.75	19.1	4	101.6	11	279.4				
FC15-SWM14	1.5	38.1	14	355.6	2.25	57.2	90°	35°	1.5	38.1	0.75	19.1	4	101.6	11	279.4				
FC15-SWM18	1.5	38.1	18	457.2	2.25	57.2	150°	55°	4.0	101.6	1.50	38.1	4	101.6	11	279.4				
FC15-SWM24	1.5	38.1	24	609.6	2.25	57.2	180°	85°	8.0	203.2	2.75	69.9	4	101.6	11	279.4				
FC20-SWM12	2	50.8	12	304.8	2.72	69.1	75°	30°	1.5	38.1	0.60	15.2	5	127.0	12	304.8				
FC20-SWM14	2	50.8	14	355.6	2.72	69.1	75°	30°	1.5	38.1	0.60	15.2	5	127.0	12	304.8				
FC20-SWM18	2	50.8	18	457.2	2.72	69.1	120°	50°	3.0	76.2	1.50	38.1	5	127.0	12	304.8				
FC20-SWM24	2	50.8	24	609.6	2.72	69.1	180°	75°	7.0	177.8	3.0	76.2	5	127.0	12	304.8				

Contact customer service for special sizes or other applications such as female threads, swivels and elbow fittings.

In North America call 800-422-2525.
International call 513-870-3315.

Stainless Steel Flexible Connector models listed above are for use in NAFTA Countries only, such as Canada and Mexico.

Suction System Accessories

OPW 70 Vertical Check Valves (with Shear Groove)

Materials

Body: Cast iron with black Duragard® E-coating

Disc: M-19 Viton

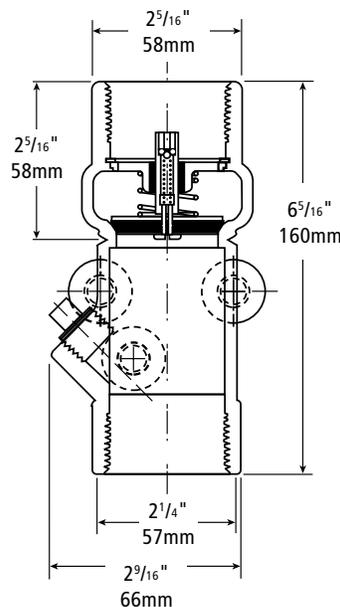
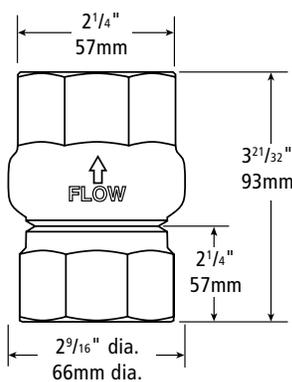
Features

- ◆ **Low Pressure Drop**
- ◆ **M-19 Viton Seals** – on main poppet for compatibility with methanol- blended fuels and reliable sealing.
- ◆ **Protective Shear Groove** – designed to reduce the possibility of damage to buried piping in the event the dispenser is knocked over.
- ◆ **Thermal Relief Valve** – to reduce pressure build-up in suction pumps. Opens between 25 & 35 PSI (1.7 & 2.4 bar).
- ◆ **Compatible with 85% Ethanol (E85) or Methanol (M85)**



Additional Features (70S Model)

- ◆ **Stabilizer Mounting Bosses** – three bosses in the lower portion of the valve body allow for rigid mounting to stabilizer bars. Use FlexWorks mounting plate with appropriate stabilizer bar kit.
- ◆ **Built-In Air-Test Port** – allows air testing of the entire pumping system without breaking the line. Also allows line to be drained from the valve to the tank (assuming there are no other check or foot valves below the 70S).



OPW Vertical Check Valves

OPW Vertical Check Valves are installed on suction system fuel lines directly below the inlet to the pump in the dispenser island to maintain prime. The 70 Series Valves feature a built-in shear groove, which helps minimize piping damage if the dispenser is pulled over or dislodged by collision. The single-poppet provides redundant protection from losing prime and are also available without shear grooves. OPW Vertical Check Valves are recommended for use on suction lines where the pressure does not exceed 34 feet of head (approximately 15 psi [1 bar]). 70 Series valves need 1/2" of mercury to activate the poppet.

Ordering Specifications

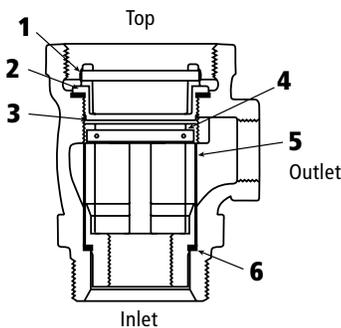
Model #	in.	mm	lbs.	kg
70-0070	1 1/2" NPT	38 mm	1.80	.8
70S-0075	1 1/2" NPT	38 mm	2.9	1.3

70 and 70S Vertical Check Valve Instruction Sheet
Order Number: H11055PA

Warning: The valve body must be rigidly anchored to a structural member within the island to ensure breakage at the shear groove in the event of severe impact. The shear groove must be at the same level or a maximum of 1/2" above or below the top of the pedestal island. Failure to provide rigid mounting or install the shear groove at the proper level may result in a failure of the valve to close or shear, resulting in an excessive loss of product and a hazardous condition.

OPW 233E Suction Tube Extractor Fittings

The OPW 233E is installed on top of fuel storage tanks to facilitate the extraction of the suction tube/foot valve assembly from the tank in a suction system. The OPW 233E is for use with any foot valve with a maximum outside diameter of 2 1/2", and has a 4" male thread for connection to a 4" tank bung fitting.



Materials

Body: Zinc-plated cast iron
Cap and suction stub adaptor: Bronze
Gasket: Nitrile



233E

Ordering Specifications

Model #	Top Thread	Outlet Thread	Inlet Male Thread	Inlet Female Thread	Max. Clear I.D. Through Valve	Weight lbs.	kg
233E-4040	4" (102 mm)	1 1/2" (38 mm)	4" (102 mm)	1 1/2" (38 mm)	2 7/8" (73 mm)	20.2	9.2
233E-4240	4" (102 mm)	2" (51 mm)	4" (102 mm)	1 1/2" (38 mm)	2 7/8" (73 mm)	12.7	5.8

Replacement Parts

Key	Part #	Description
1	H07071M	Cap Lift Pin
Not Shown	H04981M	Cotter Pin
2	H11961M	Gasket
3	H01500B	Cap
4	H00390RS	Cage Lift Pin
5	C01566B	Cage
6	H11960M	Gasket

OPW 53 Bushings

OPW 53 Bushings are general-purpose bushings for use on tank vent lines, fill lines, suction lines or other lines where it is necessary or desirable to bush up or bush down.

Materials

Bushing: Iron

53



Ordering Specifications

Model #	Threads (MNPT x FNPT)	lbs.	kg
53-0012	2" x 1 1/2" (51 x 38 mm)	.9	.4
53-0020	3" x 2" (76 x 51 mm)	1.9	.9
53-0034	4" x 1 1/2" (102 x 38 mm)	2.5	1.1
53-0036	4" x 2" (102 x 51 mm)	2.5	1.1
53-0038	4" x 3" (102 x 76 mm)	3.4	1.5
53-0062	6" MNPT x 2" FNPT (152 x 51 mm)	4.75	2
53-0063	6" MNPT x 2" FNPT (152 x 51 mm)	4.75	2

Replacement Spill Container Covers (Old & New)

Product #	Replacement Cover	Cover O.D.
84D-4000	Obsolete - No Replacement	N/A
1-4000, 1C-4000 C.I.	E00355I	13 ¹ / ₄ "
1-4500, 1C-4500 C.I.	E00355I	13 ¹ / ₄ "
501 SERIES	E00355I	13 ¹ / ₄ "
1-2100 Alum.	1-21AC	13 ²⁷ / ₃₂ "
1C-2100 C.I.	1-21CC	13 ²⁷ / ₃₂ "
1SC-2100	SC-PLAIN	12 ⁷ / ₁₆ "
1-0561	Obsolete - No Replacement	—
1-0563	Obsolete - No Replacement	—
6111- Series New	P211-L	13 ³ / ₁₆ "
6111- Series Old pre-1994	P111-L	12 ¹ / ₄ "

OPW Reference Guide Replacement Covers



Replacement Spill Container Cover Assemblies

Replacement Covers	Description	Color	Key Lift or Recessed Handle	Plain / Bolt Down / Roto-Lock	Diameter (inches)
E00618	Plain-Cover, Recessed-Handle, Ring Assembly	Grey	Recessed Handle	Plain	39 ¹ / ₂
E00620	Plain-Cover, Key-Lift, Ring Assembly	Grey	Key Lift	Plain	39 ¹ / ₂
E00714	Replacement Cover, 39 ¹ / ₂ " Roto Lock with Recessed Handle	Grey	Recessed Handle	Roto-Lock	39 ¹ / ₂
E00715	39 ¹ / ₂ " Roto Lock with Key Lift, Ring & Skirt	Grey	Key Lift	Roto-Lock	39 ¹ / ₂
E00622	Bolt-Down Cover, Recessed-Handle, Gasket & Ring Assembly	Grey	Recessed Handle	Bolt-Down	39 ¹ / ₂
E00624	Bolt-Down Cover, Key-Lift, Gasket & Ring Assembly	Grey	Key Lift	Bolt-Down	39 ¹ / ₂
E00626	Plain-Cover, Recessed-Handle, Ring Assembly	Grey	Recessed Handle	Plain	44
E00628	Plain-Cover, Key-Lift Provision, Ring Assembly	Grey	Key Lift	Plain	44
E00713	44 ¹ / ₄ " Roto Lock with Recess Handle Ring & Skirt	Grey	Recessed Handle	Roto-Lock	44
E00712	44 ¹ / ₄ " Roto Lock with Key Lift Ring & Skirt	Grey	Key Lift	Roto-Lock	44
E00630	Bolt-Down Cover, Recessed-Handle, Ring & Gasket Assembly	Grey	Recessed Handle	Bolt-Down	44
E00632	Bolt-Down Cover, Key-Lift Handle, Ring & Gasket Assembly	Grey	Key Lift	Bolt-Down	44



Replacement Manhole Covers (Old & New)

Product #	Replacement Cover	Cover O.D.
104A-1066	D00173M	13 ¹ / ₈ "
104A-0800	E00508M	9 ¹ / ₂ "
104A-1200 & 1219	E00510M	13 ¹ / ₂ "
104A-1800 & 1819	E00512M	19 ¹ / ₂ "
104AOW-0800	E00514M	9 ¹ / ₂ "
104AOW-1200 & 1219	E00515I	13 ¹ / ₂ "
104AOW-1800 & 1819	E00516I	19 ¹ / ₂ "
104AOW-1218	Obsolete E00319I – No Replacement	13"
104MW-0018	Obsolete C03436RS – No Replacement	16 ⁷ / ₈ "
6310-37" COMPOSITE	Obsolete – Pomeco can make Steel	37"
6310-42" COMPOSITE	Obsolete – Pomeco can make Steel	42"
39CD-39"	P110-3950L	39 ¹ / ₂ "
44CD-44"	P110-4425L	44 ¹ / ₄ "

Replacement Fill Boxes (Old & New)

Product #	Replacement Cover	Cover O.D.
122-0033	Obsolete – No Replacement	NA
122-0055	Obsolete – No Replacement	NA
122-0077	Obsolete – No Replacement	NA
126A-1044	Obsolete – No Replacement	4 ⁷ / ₈ "

LEADING THE WAY IN DEF PIPING, CONTAINMENT & FILLING SOLUTIONS

From one end to
the other we've
got you covered:

- ◆ The industry's most complete DEF-filling solution
- ◆ Unique mis-filling prevention device (MFPD)
- ◆ Industry-leading piping & containment
- ◆ Emergency shut-off
- ◆ Remote fill spill containment
- ...and more

OPW 
A **DOVER** COMPANY

THE MOST COMPREHENSIVE DEF-

As diesel fleets rapidly adopt Diesel Exhaust Fluid (DEF), OPW is leading the way in providing you the most reliable, efficient and comprehensive DEF filling solution in the industry. Beginning with our unique Mis-Filling Prevention Device that provides affordable insurance against the risks of DEF mis-filling to our revolutionary, industry-standard DEF nozzle, hose, swivel/breakaways, secondary containment, emergency shear valve and DEF transfer piping – we've got you covered from one end to the other.

Unique Mis-Filling Prevention Device (MFPD)

The heart of the 21Gu DEF Mis-Filling Prevention System

DEF mis-filling can be expensive. The OPW 21Gu MFPD offers the industry's most effective and affordable insurance policy against mis-filling mishaps – actually stopping them before they happen. There is no better way to protect your investment and the environment.

NOTE: MFPD sold separately. Some models will not function without it. MFPD may be required for testing W & M or other testing.

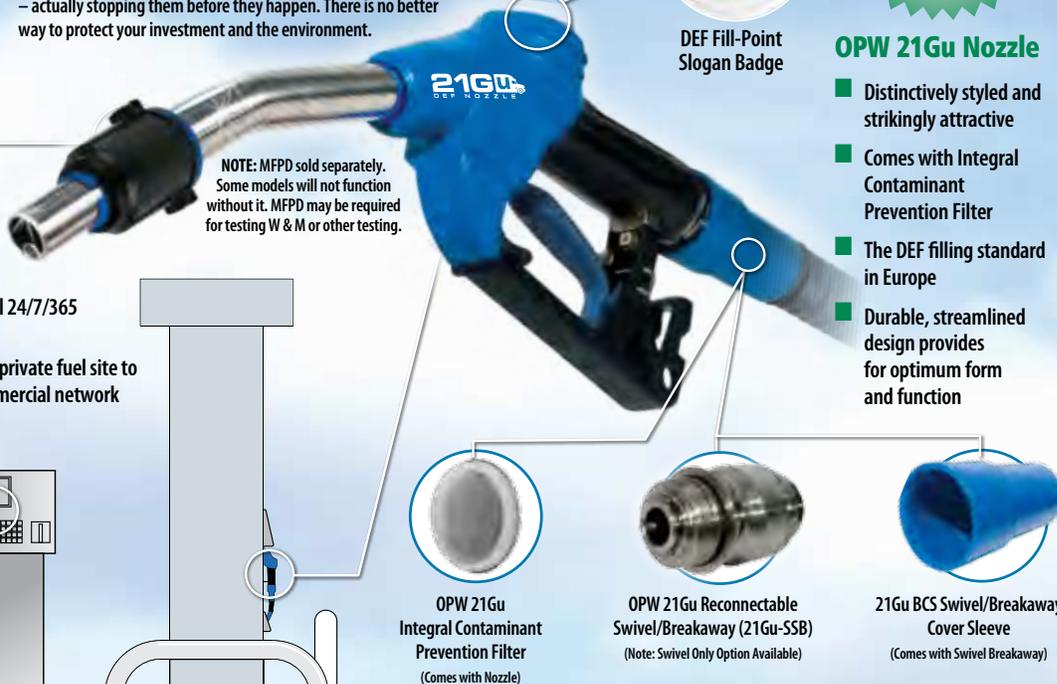


DEF Fill-Point Slogan Badge

Meets ISO 22241 Compatibility Testing for DEF Contamination

OPW 21Gu Nozzle

- Distinctively styled and strikingly attractive
- Comes with Integral Contaminant Prevention Filter
- The DEF filling standard in Europe
- Durable, streamlined design provides for optimum form and function



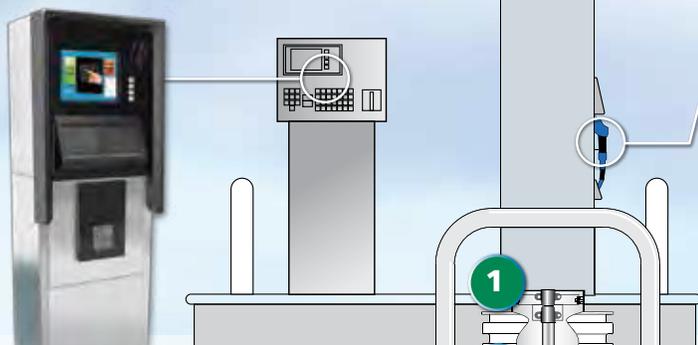
OPW 21Gu Integral Contaminant Prevention Filter (Comes with Nozzle)

OPW 21Gu Reconnectable Swivel/Breakaway (21Gu-SSB) (Note: Swivel Only Option Available)

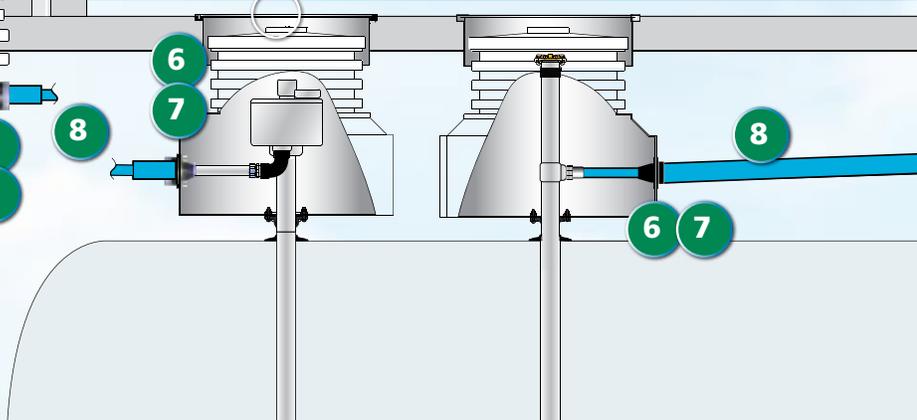
21Gu BCS Swivel/Breakaway Cover Sleeve (Comes with Swivel Breakaway)

OPW Fuel Control Solutions

- Provides for accurate accounting of fuel 24/7/365
- Helps eliminate fuel theft
- Solutions for everything from a single, private fuel site to a multi-truck or complex national commercial network



OPW Conquistador™ Composite Cover Manholes



1 OPW 60V DEF Shear Valves

- Double-poppeted design incorporated to help prevent DEF loss in the event dispenser is toppled
- 1" Female connection to both dispenser and underground piping
- BSPP to NPT thread adaptors available



2 OPW Stainless Steel Flexible Connectors

- All stainless-steel construction
- No coated or plated end connectors or swivels (also no Teflon™)
- 25% thicker wall on ribbed hose
- Rated for 150 psig (10 bar) working pressure



3 OPW FlexWorks Dispenser Sumps

- Available in fiberglass and polyethylene, one and two-piece models
- Multiple Models – ensure a custom fit
- Structural Reinforcing on Large MPD Models – prevents sump deformation from backfill and high water table forces
- Integral Rain Lip – protrudes into the dispenser frame to prevent surface water entry



HANDLING SOLUTION IN THE INDUSTRY

OPW 21Gu Reconnectable Swivel/Breakaway

- Ensures a smooth nozzle rotation for easy customer handling and reduced hose wear
- Featuring premium seals and all stainless steel construction to provide long-life durability
- Reconnectable – minimize downtime after an event

OPW 21Gu Hose Assembly



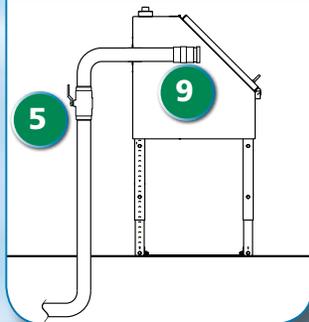
- Specially designed for DEF-flow applications
- Lightweight and highly flexible for easy customer handling
- Smooth bore, seamless fluoropolymer lining for exceptional flow performance
- Swivel end couplings provide for easy installation

OPW 623V Emergency Vent

- Reliable Service – vent cap drain spouts extend outward to deter rainwater entry
- Corrosion-Resistant Construction – Duratuff composite body ensures long service life



4 Stainless-Steel Remote-Fill Storage Tank Spill Container



Pomeco/OPW 211-RMOT Stainless-Steel Remote-Fill Storage Tank Spill Container

- Accommodates various fill pipe configurations – available in 15, 20 and 30-gallon container capacity. Custom sizes available upon request.
- 12-Gauge stainless steel construction, compatible with DEF for long service life

Optional Remote-Fill Storage Tank Spill Container



OPW FlexWorks Transition Sumps

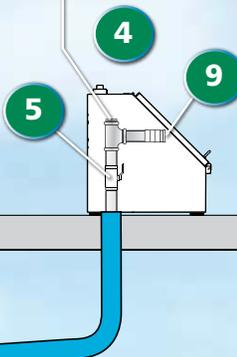
- Two-piece, non-corroding, polyethylene sump container
- Weatherproof lockable cover
- Exterior anchoring system



OPW 144/444TA Tank Alarm

- Protection against costly overfills
- Provides liquid level sensing of one to four tanks
- Long life (10-Year) lithium battery (Located inside facility or near the remote spill container)

21BV Full Port, Stainless Steel Two-Way Ball Valve



OPW FlexWorks Double Flexible Entry Boots

- Watertight pipe and conduit entries
- Installation on flat or round surface
- Added flexibility permitting angled pipe entries
- Provides clean, dry environment



OPW FlexWorks "REF" Rigid Entry Fitting

- Sealing redundancy throughout – maximum containment and unmatched protection from water intrusion
- Preserves total accessibility – for monitoring, maintenance, testing and repair
- Maintains flexibility to accommodate pipe and ground movement
- Hard shell exterior – to weather the elements and abuse in the underground environment



OPW FlexWorks Crush Resistant Access Pipe & Retractable Primary Pipe

- Fully-bonded, premium PVDF primary pipe construction
- Stainless steel couplings
- Complete peace-of-mind protection, performance and installation or replacement ease
- Improves testing reliability and eliminates the need for rubber test boots



OPW Poppeted Kamvalok® Couplers & Fill Adaptors

- 1672AN SS20, 2" and 1672AN SS30, 3" Stainless Steel Kamvalok® Adaptors – designed to mate with OPW Kamvalok® Dry Disconnect Couplings
- Internal spring-loaded valve assembly automatically closes to help prevent spillage of DEF

NOTE: For the hose end, OPW also offers the 1772DL-SS20, 2" and 1772DL-SS30, 3" Stainless Steel Kamvalok® Dry Disconnect Couplings to enable dry connection and disconnection to prevent accidental spillage of DEF

OPW DEF Solution – Key Points of Value

Need / Want	Benefit / Value	OPW DEF Solution
Eliminate the Risk of Accidental DEF Filling	<ul style="list-style-type: none"> Affordable insurance in the prevention of costly engine damage due to mis-filling 	<ul style="list-style-type: none"> Mis-Filling Prevention Device (MFPD)
Reduce the Chances of Environment Contamination and Fines	<ul style="list-style-type: none"> Reliable means of ensuring environmental compliance; keeps the environment safe and clean <p style="text-align: center;">ISO 22241 Compliant</p>	<ul style="list-style-type: none"> FlexWorks sumps, entry fittings, primary and secondary piping Overfill prevention valves, remote spill containers, and tank alarms Tight-fill Kamvalok™ connectors
Reliable, Durable Filling Method Customers can Count on	<ul style="list-style-type: none"> Problem-free performance ensures customer satisfaction and repeat business 	<ul style="list-style-type: none"> OPW 21Gu Nozzle OPW 21Gu Hose
Provides for Maximum Customer and Equipment Safety	<ul style="list-style-type: none"> Time-tested, field-proven means of protecting customers and equipment investments in the event of accidents 	<ul style="list-style-type: none"> OPW Swivel Breakaway and 60V Emergency Valves
Compliance and /or Compatibility Assurance	<ul style="list-style-type: none"> Certified OPW DEF products designed to work in unison DEF compatible, CARB certified AST products 	<ul style="list-style-type: none"> The industry's most complete DEF liquid transfer and handling system designed to provide affordability, reliability from a single source

Product Specifications - For a complete list of OPW DEF products, please visit www.OPWDEF.com

Part #	Description
21GU-0400	Wayne® / Bennett® Pump WITHOUT Mis-Filling Technology
21GU-040G	Gilbarco® / Gasboy® Pump WITHOUT Mis-Filling Technology
21GU-0500	Wayne® / Bennett® Pump WITH Mis-Filling Technology
21GU-050G	Gilbarco® / Gasboy® Pump WITH Mis-Filling Technology
21GU-MFPD	21Gu Mis-Filling Prevention Device (MFPD) - Sold Separately
21GU-SSB	DEF Stainless Steel Reconnectable Breakaway/Swivel (1 per nozzle required, or equivalent)
21GU-HXX	DEF Hose Assembly (XX= ft. required. Contact OPW Customer Service for available lengths)
6211SS	211-RMOT Stainless Steel, Remote Fill Above Ground Spill Container
144TA-0100 or 444TA-0100	Single Channel Liquid Level Tank Alarm or Four Signal Tank Alarm
44TA-LLFS	36" Liquid Level Float Switch Sub-Assembly
1772DL-SS20 and 1772DL-SS30	2" and 3" Stainless-steel Poppeted Kamvalok® Dry Disconnect Couplings
1672AN SS20 and 1672AN SS30	2" and 3" Stainless-steel Kamvalok® Adaptors
FIT500, C/OPT or K800 Hybrid	OPWFMS Fuel Control System (OPWFMS Fuel Site Controller sold separately)
FDS, DEF, DS, DSW or PST	FlexWorks Dispenser and Transition Sumps in Fiberglass or Polyethylene, one and two-piece models
C10, C15A and C20A	FlexWorks Double-Wall Primary Supply Piping (1", 1.5" and 2")
AXP40	FlexWorks Double-Layer Access Pipe 4"
REF-4015 and 4020	Rigid Entry Fitting (4" x 1.5" and 4" x 2")
DEB Series	Double Flexible Entry Boots (1.5" to 4" and 1/2" Conduit Double Entry Boots)
60V-DEF	Shear Valve 1" x 1" BSPP Female
205900	1" Female NPT 60V Shear Valve Adaptor
205899	1" Male BSPP 60V Shear Valve Adaptor
FCXX-XXXX Series	Stainless Steel Series Flex Connectors
39CD-XXXX or 44CD-XXXX Series	Conquistador™ Composite Cover Manholes
21BV-XXXXSS Series	Full Port Stainless Steel Two-Way Ball Valves
623V-2203 or 623V-3203	Pressure Vacuum Vents



BENNETT®, SEPARATION BY DESIGN®, WAYNE® GUARD (STANDARD)



Gilbarco® Guard

Metric Conversion Chart

When you know Length	Multiply by	To find
millimeters (mm)	0.04	inches (in)
inches (in)	25.4	millimeters (mm)
centimeters (cm)	0.4	inches (in)
inches (in)	2.54	centimeters (cm)
meters (m)	3.3	feet (ft)
feet (ft)	0.304 8	meters (m)
meters (m)	1.1	yards (yd)
yards (yd)	0.914 4	meters (m)
kilometers (km)	0.6	miles (mi)
miles (mi)	1.609 344	kilometers (km)
Area		
square centimeters (cm ²)	0.16	square inches (in ²)
square meters (m ²)	1.2	square yards (yd ²)
square kilometers (km ²)	0.4	square miles (mi ²)
hectares (ha) (10,000 m ²)	2.5	acres
Mass		
grams (g)	0.035	ounces (oz)
ounces (oz)	28.349 523 125	grams (g)
kilograms (kg)	2.2	pounds (lb)
pounds (lb)	.453 592 37	kilograms (kg)
metric ton(1,000 kg) (t)	1.1	short tons
Volume		
milliliters (mL)	0.03	fluid ounces (fl oz)
milliliters (mL)	0.06	cubic inches (in ³)
liters (L)	2.1	pints (pt)
liters (L)	1.06	quarts (qt)
liters (L)	0.26	gallons (gal)
cubic meters (m ³)	35.0	cubic feet (ft ³)
cubic meters (m ³)	1.3	cubic yards (yd ³)
Temperature (exact)		
degrees Celsius(°C)	multiply by 9/5 (1.8), add 32	degrees Fahrenheit (°F)
degrees Fahrenheit (°F)	divide by 1.8, subtract 32	degrees Celsius(°C)
Pressure		
psia	.0689476	bar
psia	6,984.76	pascal
psia	.068046	atmosphere
psia	51.71496	torr
bar	14.50376	psia
pascal	.000146	psia
atmosphere	14.69594	psia
torr	.0193367	psia

Conversion Data

The following pages provide Engineering Data for:

- ◆ Metric Conversion
- ◆ Volume and Capacity Equivalents
- ◆ Pressure Equivalents
- ◆ Head Equivalents of Various Liquids
- ◆ Pressure of Water at Different Heads
- ◆ Pressure Conversion Table for 60 Degree Gasoline
- ◆ Specific Gravity and Viscosity Table
- ◆ Approximate Weights of Petroleum Oil
- ◆ Flow vs. Velocity vs. Pressure Loss
- ◆ Friction Loss in Pipe Fittings
- ◆ Standard Pipe Data
- ◆ Circumferences and Areas of Circles
- ◆ Standard Pipe Thread
- ◆ Loss in Pounds pressure per 100 feet of Smooth Bore Rubber Hose

Volume and Capacity Equivalents

U.S. Gallons	Imperial Gallons	Cubic Inches	Cubic Feet	Cubic Meters	Liters
1.000000	0.832700	231.00	0.1337000	0.00378500	3.78500
1.201000	1.000000	277.41	0.1605000	0.00454500	4.54500
0.004329	0.003603	1.00	0.0005787	0.00001639	0.01639
7.481000	6.229000	1728.00	1.000000	0.02832000	28.32000
264.200000	220.000000	61023.00	35.3140000	1.00000000	1000.00000
0.264200	0.220000	61.02	0.0353100	0.00100000	1.00000

Conversion Tables Pressure Equivalents

Ozs. per Sq. In.	Lbs. per Sq. In.	Atmospheres	Cols. of Mercury at 32 degrees Farenheit		Cols. of Water at 60 degrees Farenheit		
			Meters	Inches	Meters	Inches	Feet
1.0000	0.06250	0.004253	0.003232	0.12730	0.4403	1.734	0.14450
16.0000	1.00000	0.06805	0.051720	2.03600	0.7045	27.74	2.31100
235.1000	14.70000	1	0.760000	29.92000	10.3500	407.60	33.97000
309.4000	19.34000	1.316	1.000000	39.37000	13.6200	536.40	44.70000
7.8590	0.49120	0.03342	0.025400	1.00000	0.3460	13.62	1.13500
22.7100	1.41900	0.09658	0.073400	2.89000	1.0000	39.37	3.28100
0.5768	0.03605	0.002453	0.001864	0.07340	0.0254	1.00	0.08333
6.9220	0.43260	0.02944	0.022370	0.8309	0.3048	12.00	1.00000

Mercury at 32 degrees Farenheit = 13.5951 grams per cubic centimeter = .491156 pounds per cubic inch.

Water at 60 degrees Farenheit = 62.2994 pounds per cubic foot in air.

1 Atmosphere = 760.0 millimeters of mercury at 32 degrees Farenheit.

Head Equivalents of Various Liquids

Inches of Mercury	Pounds Per Sq. In.	FT. OF LIQUID	Water SG - 1.0	Gasoline SG - .72	Kerosene SG - .82	FUEL OILS SG - .85	SG - .9	SG - .95
1	0.49	1.13	1.57	1.38	1.30	1.25	1.19	
2	0.98	2.26	3.14	2.66	2.66	2.51	2.38	
3	1.47	3.39	4.70	3.98	3.98	3.76	3.57	
4	1.95	4.52	6.28	5.31	5.31	5.02	4.76	
5	2.40	5.65	7.85	6.65	6.65	6.28	5.95	
6	2.93	6.78	9.41	7.97	7.97	7.53	7.14	
7	3.42	7.91	10.98	9.30	9.30	8.79	8.32	
8	3.91	9.04	12.55	10.63	10.63	10.04	9.51	
9	4.40	10.17	14.12	11.96	11.96	11.30	10.70	
10	4.89	11.30	15.69	13.29	13.78	12.55	11.89	

Pressure of Water at Different Heads

Feet Head of Water and Equivalent Pressure

Pressure and Equivalent Feet Head of Water

Feet Head	Lbs. per Sq. In.	Feet Head	Lbs. per Sq. In.	Feet Head	Lbs. per Sq. In.	Lbs. per Sq. In.	Feet Head	Lbs. per Sq. In.	Feet Head	Lbs. per Sq. In.	Feet Head
1	0.43	60	25.99	200	86.62	1	2.31	40	92.36	170	392.52
2	0.87	70	30.32	225	97.45	2	4.62	50	115.45	180	415.61
3	1.30	80	34.65	250	108.27	3	6.93	60	138.54	190	438.90
4	1.73	90	38.98	275	119.10	4	9.24	70	161.63	200	461.78
5	2.17	100	43.31	300	129.93	5	11.54	80	184.72	225	519.51
6	2.60	110	47.64	325	140.75	6	13.85	90	207.81	250	577.24
7	3.03	120	51.97	350	151.58	7	16.16	100	230.90	275	643.03
8	3.40	130	56.30	400	173.24	8	18.47	110	253.98	300	692.69
9	3.90	140	60.63	500	216.55	9	20.78	120	277.07	325	750.41
10	4.33	150	64.96	600	259.85	10	23.09	150	288.62	350	808.13
20	8.66	160	69.29	700	303.16	15	34.63	130	300.16	375	865.89
30	12.99	170	73.63	800	346.47	20	46.18	140	323.25	400	922.58
40	17.32	180	77.96	900	389.78	25	57.72	150	346.34	500	1154.48
50	21.65	190	82.29	1000	433.09	30	69.27	160	369.43	1000	2308.00

Flow Rate vs. Velocity Rate vs. Pressure Loss

Flow US Gal. per Min.	2 in. 2.067" inside dia.			Flow US Gal. per Min.	2 1/2 in. 2.469" inside dia.			Flow US Gal. per Min.	3 in. 3.068" inside dia.			Flow US Gal. per Min.	4 in. 4.026" inside dia.			Flow US Gal. per Min.	6 in. 6.065" inside dia.		
	Veloc. ft. per sec.	Veloc. Head ft.	Head Loss ft. per 100 ft.		Veloc. ft. per sec.	Veloc. Head ft.	Head Loss ft. per 100 ft.		Veloc. ft. per sec.	Veloc. Head ft.	Head Loss ft. per 100 ft.		Veloc. ft. per sec.	Veloc. Head ft.	Head Loss ft. per 100 ft.		Veloc. ft. per sec.	Veloc. Head ft.	Head Loss ft. per 100 ft.
5	0.48	0.00	0.120	8	0.54	0.00	0.120	10	0.43	0.00	0.063	20	0.50	0.00	0.061	50	0.56	0.00	0.045
6	0.57	0.01	0.167	10	0.67	0.01	0.182	15	0.65	0.01	0.134	30	0.76	0.01	0.128	60	0.67	0.01	0.063
7	0.67	0.01	0.223	12	0.80	0.01	0.254	20	0.87	0.01	0.227	40	1.01	0.02	0.219	70	0.78	0.01	0.084
8	0.77	0.01	0.285	14	0.94	0.01	0.338	25	1.09	0.02	0.344	50	1.26	0.03	0.330	80	0.89	0.01	0.107
9	0.86	0.01	0.355	16	1.07	0.02	0.433	30	1.30	0.03	0.481	60	1.51	0.04	0.463	90	1.00	0.02	0.133
10	0.96	0.01	0.431	18	1.21	0.02	0.538	35	1.52	0.04	0.640	70	1.76	0.05	0.615	100	1.11	0.02	0.162
12	1.15	0.02	0.60	20	1.34	0.03	0.654	40	1.74	0.05	0.820	80	2.02	0.06	0.788	120	1.33	0.03	0.227
14	1.34	0.03	0.80	22	1.47	0.03	0.780	45	1.95	0.06	1.020	90	2.27	0.08	0.980	140	1.56	0.04	0.302
16	1.53	0.04	1.030	24	1.61	0.04	0.917	50	2.17	0.07	1.240	100	2.52	0.1	1.190	160	1.78	0.05	0.387
18	1.72	0.05	1.280	26	1.74	0.05	1.060	55	2.39	0.09	1.470	110	2.77	0.12	1.420	180	2	0.06	0.481
20	1.91	0.06	1.550	28	1.88	0.05	1.220	60	2.60	0.11	1.740	120	3.02	0.14	1.670	200	2.22	0.08	0.584
22	2.10	0.07	1.850	30	2.01	0.06	1.390	65	2.82	0.12	2.010	130	3.28	0.17	1.930	220	2.44	0.09	0.697
24	2.29	0.08	2.180	35	2.35	0.09	1.840	70	3.04	0.14	2.310	140	3.53	0.19	2.220	240	2.67	0.11	0.819
26	2.49	0.10	2.520	40	2.68	0.11	2.360	75	3.25	0.16	2.620	150	3.78	0.22	2.530	260	2.89	0.13	0.950
28	2.68	0.11	2.890	45	3.02	0.14	2.930	80	3.47	0.19	2.960	160	4.03	0.25	2.840	280	3.11	0.15	1.090
30	2.87	0.13	3.290	50	3.35	0.17	3.560	85	3.69	0.21	3.310	170	4.29	0.29	3.180	300	3.33	0.17	1.240
35	3.35	0.17	4.370	55	3.69	0.21	4.240	90	3.91	0.24	3.670	180	4.54	0.32	3.530	320	3.56	0.2	1.390
40	3.82	0.23	5.600	60	4.02	0.25	4.990	95	4.12	0.26	4.060	190	4.79	0.36	3.900	340	3.78	0.22	1.560
45	4.30	0.29	6.960	65	4.36	0.3	5.790	100	4.34	0.29	4.470	200	5.05	0.40	4.290	360	4	0.25	1.730
50	4.78	0.36	8.460	70	4.69	0.34	6.640	110	4.77	0.35	5.330	220	5.55	0.48	5.120	380	4.22	0.28	1.920
55	5.26	0.43	10.10	75	5.03	0.39	7.550	120	5.21	0.42	6.260	240	6.05	0.57	6.010	400	4.44	0.31	2.110
60	5.74	0.51	11.90	80	5.36	0.45	8.500	130	5.64	0.49	7.260	260	6.55	0.67	6.970	450	5	0.39	2.620
65	6.21	0.60	13.70	85	5.70	0.5	9.510	140	6.08	0.57	8.320	280	7.06	0.77	8.000	500	5.56	0.48	3.190
70	6.69	0.70	15.80	90	6.03	0.57	10.600	150	6.51	0.66	9.480	300	7.51	0.89	9.090	550	6.11	0.58	3.800
75	7.17	0.80	17.90	95	6.37	0.63	11.700	160	6.94	0.75	10.700	320	8.07	1.01	10.200	600	6.66	0.69	4.460
80	7.65	0.91	20.20	100	6.70	0.70	12.800	180	7.81	0.95	13.200	340	8.58	1.14	11.500	650	7.22	0.81	5.170
85	8.13	1.03	22.60	110	7.37	0.84	15.300	200	8.68	1.17	16.100	360	9.08	1.28	12.700	700	7.78	0.94	5.930
90	8.61	1.15	25.10	120	8.04	1.00	18.000	220	9.55	1.42	19.200	380	9.59	1.43	14.100	750	8.34	1.08	6.740
95	9.08	1.28	27.70	130	8.71	1.18	20.900	240	10.40	1.70	22.600	400	10.10	1.6	15.500	800	8.9	1.23	7.600
100	9.56	1.42	30.50	140	9.38	1.37	23.900	260	11.30	2.00	26.200	420	10.60	1.7	16.900	850	9.45	1.39	8.500
110	10.5	1.7	36.40	150	10.00	1.60	27.300	280	12.20	2.30	30.100	440	11.10	1.90	18.500	900	10.1	1.6	9.440
120	11.5	2.1	42.70	160	10.70	1.80	30.700	300	13.00	2.60	34.100	460	11.60	2.10	20.000	950	10.5	1.7	10.200
130	12.4	2.4	49.60	170	11.40	2.00	34.300	320	13.90	3.00	38.400	480	12.10	2.30	21.700	1000	11.1	1.9	11.500
140	13.4	2.8	56.90	180	12.10	2.30	38.100	340	14.80	3.40	43.000	500	12.60	2.50	23.400	1100	12.2	2.3	13.700
150	14.3	3.2	64.70	190	12.70	2.50	42.100	360	15.60	3.80	47.800	550	13.90	3.00	27.900	1200	13.3	2.7	16.100
160	15.3	3.6	72.80	200	13.40	2.80	46.300	380	16.50	4.20	52.800	600	15.10	3.50	32.800	1300	14.4	3.2	18.600
170	16.3	4.1	81.40	220	14.70	3.40	55.300	400	17.40	4.70	58.000	650	16.40	4.20	38.000	1400	15.6	3.8	21.400
180	17.2	4.6	90.50	240	16.10	4.00	66.400	420	18.20	5.10	63.500	700	17.60	4.80	43.600	1500	16.7	4.3	24.300
190	18.2	5.1	100.00	260	17.40	4.70	75.300	440	19.10	5.70	69.200	750	18.90	5.60	49.500	1600	17.8	4.9	27.400
200	19.1	5.7	110.00	280	18.80	5.50	86.300	460	20.00	6.20	75.300	800	20.20	6.30	55.800	1700	18.9	5.6	30.600
220	21	6.8	131.00	300	20.10	6.30	98.100	480	20.80	6.70	81.300	850	21.40	7.10	62.400	1800	20	6.2	34.000
240	22.9	8.2	154.00	350	23.50	8.60	130.000	500	21.70	7.30	87.700	900	22.70	8.00	69.300	1900	21.1	6.9	37.600
260	24.9	9.6	179.00	400	26.80	11.20	167.000	550	23.90	8.90	105.000	950	24.00	9.00	76.600	2000	22.2	7.7	41.400
280	26.8	11.2	205.00	450	30.20	14.20	208.000	600	26.00	10.50	123.000	1000	25.20	9.90	84.300	2200	24.4	9.3	49.400
300	28.7	12.8	233.00	500	33.50	17.40	252.000	650	28.20	12.40	143.000	1100	27.70	11.90	101.000	2400	26.7	11.1	58.000

Pressure Conversion Table for 60 Degree Gasoline

Head of Gasoline and Pounds Per Square Inch (SP. GR - .72)

Head Gasoline in Ft.	Lbs. per Sq. In.	Lbs. per Sq. In.	Head Gasoline In Ft.	Head Gasoline In In.	Lbs. per Sq. In.
1	0.31155	1	3.20976	1	0.02596
2	0.62310	2	6.41952	2	0.05192
3	0.93465	3	9.62928	3	0.07788
4	1.24620	4	12.83904	4	0.10384
5	1.55775	5	16.04880	5	0.1298
6	1.86930	6	19.25856	6	0.15576
7	2.18085	7	22.46832	7	0.18172
8	2.49240	8	25.67808	8	0.20768
9	2.80395	9	28.88784	9	0.23364
10	3.11550	10	32.09760	10	0.25960
				11	0.28556
				12	0.31152

Specific Gravity and Viscosity Table

Liquid	Specific Gravity	VISCOSITY S. S. U. 60 degrees F.	100 degrees F.	160 degrees F.
WATER	1.00	31.5	30.5	-
GASOLINE	.71 - .74	30.9	30.4	-
JET FUEL	.74 - .85	31.5 to 36	30.9 to 33.3	-
KEROSENE	.78 - .82	36	33	-
NO. 1 FUEL OIL	.82 - .95	34 - 37	33	-
NO. 2 FUEL OIL	.82 - .95	37 - 52	33 - 40	-
NO. 3 FUEL OIL	.82 - .95	52 - 69	40 - 45	34 - 45
NO. 5A FUEL OIL	.82 - .95	600 - 5600	150 - 850	55 - 140
NO. 5B FUEL OIL	.82 - .95	600 - 5600	150 - 850	55 - 140
NO. 6 FUEL OIL	.82 - .95	8000 - 100000	1050 - 8400	165 - 650
S.A.E. 10	.88 - .94	630 - 860	170 - 220	60 - 67
S.A.E. 20	.88 - .94	860 - 3000	220 - 550	67 - 115
S.A.E. 30	.88 - .94	3000 - 4400	550 - 800	115 - 155
S.A.E. 60	.88 - .94	11000 - 17000	1850 - 2500	285 - 370

Approximate Weights of Petroleum Oil

Deg. Baum	Specific Gravity	Lbs. in 1 Gal.	Deg. Baum	Specific Gravity	Lbs. in 1 Gal.	Deg. Baum	Specific Gravity	Lbs. in 1 Gal.	Deg. Baum	Specific Gravity	Lbs. in 1 Gal.
10	1.0000	8.33	27	0.8927	7.42	44	0.8046	6.70	60	0.7368	6.13
11	0.9929	8.27	28	0.8861	7.38	45	0.8000	6.66	61	0.7330	6.10
12	0.9859	8.21	29	0.8805	7.33	46	0.7954	6.62	62	0.7292	6.07
13	0.9790	8.16	30	0.875	7.29	47	0.7910	6.58	63	0.7254	6.04
14	0.9722	8.10	31	0.8696	7.24	48	0.7865	6.55	64	0.7216	6.01
15	0.9655	8.04	32	0.8642	7.20	49	0.7821	6.51	65	0.7180	5.98
16	0.9589	7.99	33	0.8589	7.15	50	0.7778	6.48	66	0.7143	5.94
17	0.9523	7.93	34	0.8537	7.11	51	0.7735	6.44	67	0.7137	5.92
18	0.9460	7.88	35	0.8485	7.06	52	0.7692	6.40	68	0.7071	5.89
19	0.9396	7.82	36	0.8434	7.03	53	0.7650	6.37	69	0.7035	5.86
20	0.9333	7.77	37	0.8383	6.98	54	0.7609	6.33	70	0.7000	5.83
21	0.9272	7.72	38	0.8333	6.94	55	0.7568	6.30	75	0.6829	5.68
22	0.9210	7.67	39	0.8284	6.90	56	0.7527	6.27	80	0.6667	5.55
23	0.9150	7.62	40	0.8235	6.86	57	0.7487	6.23	85	0.6512	5.42
24	0.9091	7.57	41	0.8187	6.82	58	0.7447	6.20	90	0.6364	5.30
25	0.9032	7.52	42	0.814	6.78	59	0.7407	6.17	95	0.6222	5.18
26	0.8974	7.47	43	0.8092	6.74						

Friction Loss in Pipe Fittings in Terms of Equivalent Feet of Straight Pipe

Nominal Pipe Size Inches	Actual Inside Diameter Inches	Gate Valve FULL OPEN	45 degree Elbow	Long-Sweep Elbow or Run of Tee Reduced 1/2	Standard Elbow or Run of Tee Reduced 1/2	Standard Tee Thru Side Outlet	Close Return Bend	Swing Check Valve FULL OPEN	Angle Valve FULL OPEN	Global Valve FULL OPEN
Resistance Factor	0.20	0.42	0.60	0.9	1.8	2.2	2.3	5	10	
1/2	0.662	0.36	0.77	1.11	1.70	3.3	4.1	4.3	9.2	18.6
3/4	0.824	0.45	0.96	1.41	2.10	4.1	5.1	5.3	11.5	23.1
1	1.049	0.57	1.22	1.80	2.70	5.3	6.6	6.9	14.7	29.3
1 1/4	1.380	0.75	1.59	2.32	3.50	7.2	8.5	8.9	19.4	38.6
1 1/2	1.610	0.87	1.89	2.70	4.10	8.1	10.0	10.4	22.6	45.1
2	2.067	1.11	2.40	3.48	5.30	10.4	12.8	13.5	29	58
2 1/2	2.469	1.33	2.91	4.20	6.20	12.5	15.3	15.9	35	69
3	3.068	1.62	3.60	5.20	7.70	15.5	18.9	19.8	44	85
4	4.026	2.11	4.70	6.30	10.20	20.3	24.8	26	57	113
5	5.047	2.71	5.90	8.40	12.60	25.4	31	33	70	143
6	6.065	3.20	7.20	10.20	15.30	32	37	40	85	170
7	7.024	3.71	8.30	11.80	17.80	35	42	45	98	197
8	7.981	4.31	9.40	13.40	20.20	40	49	53	114	224
10	10.020	5.30	11.70	16.90	25.20	52	61	65	140	281
12	12.000	6.40	14.00	20.20	30	61	75	78	168	336

Standard Pipe Data

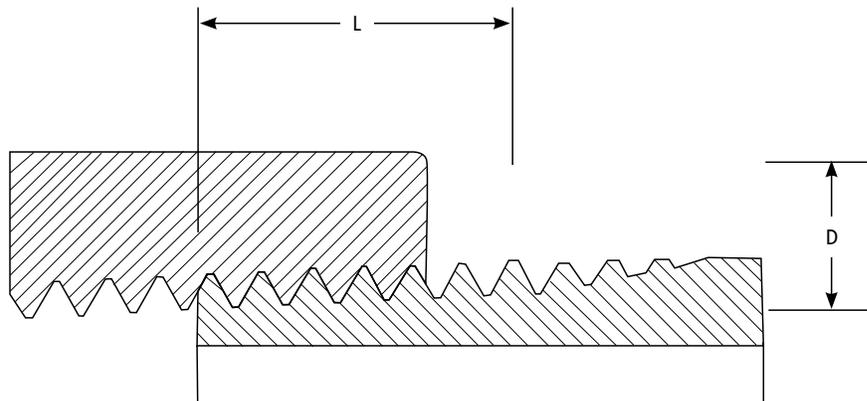
Nominal Dia., In.	Actual Outside Dia., In.	Actual Inside Dia., In.	Inside Area, Sq. In.	Weight Per Ft., Lbs.	Length in Ft. Containing One U.S. Gal.	Length in Ft. Containing 1 Cubic Ft.	U.S. Gal. in 1 Lineal Ft.	Lbs. of H2O in 1 Lineal Ft.
1/2	0.840	0.622	0.304	0.850	63.322	473.910	0.0158	0.1316
3/4	1.050	0.824	0.533	1.130	36.116	270.030	0.0277	0.2309
1	1.315	1.049	0.864	1.678	22.28	166.620	0.0449	0.3742
1 1/4	1.660	1.38	1.496	2.272	12.867	96.275	0.0777	0.6477
1 1/2	1.900	1.61	2.036	2.717	9.454	70.733	0.1058	0.8816
2	2.375	2.067	3.356	3.652	5.736	42.913	0.1743	1.4530
2 1/2	2.875	2.469	4.788	5.790	4.02	30.077	0.2487	2.0732
3	3.500	3.068	7.393	7.570	2.593	19.479	0.3840	3.2012
3 1/2	4.000	3.548	9.887	9.110	1.947	14.565	0.5136	4.2812
4	4.500	4.026	12.73	10.790	1.512	11.312	0.6613	5.5125
5	5.563	5.047	20.006	14.620	0.962	7.198	1.0398	8.6629
6	6.625	6.065	28.89	18.970	0.666	4.984	1.5008	12.5101
8	8.625	7.981	50.027	28.550	0.384	2.878	2.5988	21.6627

Circumferences and Areas of Circles

Dia.	Circum.	Area	Dia.	Circum.	Area	Dia.	Circum.	Area	Dia.	Circum.	Area	Dia.	Circum.	Area
1/64	0.0491	0.0002	15/16	2.9452	0.6903	3/4	8.6394	5.9396	5/8	14.5299	16.800	10	31.4159	78.540
1/32	0.0982	0.0008	31/32	3.0434	0.7371	13/16	8.8357	6.2126	11/16	14.7262	17.257	1/4	32.2013	82.516
1/16	0.1964	0.0031	1	3.1416	0.7854	7/8	9.0321	6.4918	3/4	14.9226	17.721	1/2	32.9867	86.590
3/32	0.2945	0.0069	1/16	3.3379	0.8866	15/16	9.2284	6.7771	13/16	15.1189	18.190	3/4	33.7721	90.763
1/8	0.3927	0.0123	1/8	3.5343	0.9940	3	9.4248	7.0686	7/8	15.3153	18.665	11	34.5575	95.033
5/32	0.4909	0.0192	3/16	3.7306	1.1075	1/16	9.6211	7.3662	15/16	15.5116	19.147	1/4	35.3429	99.402
3/16	0.5890	0.0276	1/4	3.9270	1.2272	1/8	9.8175	7.6699	5	15.7080	19.635	1/2	36.1283	103.870
7/32	0.6872	0.0376	5/16	4.1233	1.3530	3/16	10.0138	7.9798	1/8	16.1007	20.629	3/4	36.9137	108.430
1/4	0.7854	0.0491	3/8	4.3197	1.4849	1/4	10.2102	8.2958	1/4	16.4934	21.648	12	37.6991	113.100
9/32	0.8836	0.0621	7/16	4.516	1.6230	5/16	10.4065	8.6179	3/8	16.8861	22.691	1/4	38.4845	117.860
5/16	0.9817	0.0767	1 1/2	4.7124	1.7671	3/8	10.6029	8.9462	1/2	17.2788	23.758	1/2	39.2699	122.720
11/32	1.0799	0.0928	9/16	4.9087	1.9175	7/16	10.7992	9.2806	5/8	17.6715	24.850	3/4	40.0553	127.680
3/8	1.1781	0.1105	5/8	5.1051	2.0739	1/2	10.9956	9.6211	3/4	18.0642	25.967	13	40.8407	132.730
13/32	1.2763	0.1296	11/16	5.3014	2.2365	9/16	11.1919	9.9678	7/8	18.4569	27.100	1/4	41.6261	137.890
7/16	1.3745	0.1503	3/4	5.4978	2.4053	5/8	11.3883	10.3210	6	18.8496	28.274	1/2	42.4115	143.140
15/32	1.4726	0.1726	13/16	5.6941	2.5802	11/16	11.5846	10.6800	1/4	19.3650	30.680	3/4	43.1969	148.490
1/2	1.5708	0.1964	7/8	5.8905	2.7612	3/4	11.7810	11.0450	1/2	20.4204	33.183	14	43.9823	153.940
17/32	1.6690	0.2217	15/16	6.0868	2.9483	13/16	11.9773	11.4160	3/4	21.2058	35.785	1/4	44.7677	159.480
9/16	1.7672	0.2485	2	6.2832	3.1416	7/8	12.1737	11.7930	7	21.9911	38.485	1/2	45.5531	165.130
19/32	1.8653	0.2769	1/16	6.4795	3.3410	15/16	12.3700	12.1770	1/4	22.7765	41.282	3/4	46.3385	170.870
5/8	1.9635	0.3068	1/8	6.6759	3.5466	4	12.5664	12.5660	1/2	23.5619	44.179	15	47.1239	176.710
21/32	2.0617	0.3382	3/16	6.8722	3.7583	1/16	12.7627	12.9620	3/4	24.3473	47.173	1/4	47.9093	182.650
11/16	2.1598	0.3712	1/4	7.0686	3.9761	1/8	12.9591	13.3640	8	25.1327	50.265	1/2	48.6947	188.690
23/32	2.2580	0.4057	5/16	7.2649	4.2000	3/16	13.1554	13.7720	1/4	25.9181	53.456	3/4	49.4801	194.830
3/4	2.3562	0.4418	3/8	7.4613	4.4301	1/4	13.3518	14.1850	1/2	26.7035	56.745	16	50.2655	201.060
25/32	2.4544	0.4794	7/16	7.6576	4.6664	5/16	13.5481	14.6070	3/4	27.4889	60.132	1/4	51.0509	207.390
13/16	2.5525	0.5185	1/2	7.8540	4.9087	3/8	13.7445	15.0330	9	28.2743	63.617	1/2	51.8363	213.820
27/32	2.6507	0.5591	9/16	8.0503	5.1572	7/16	13.9408	15.4660	1/4	29.0597	67.201	3/4	52.6217	220.350
7/8	2.7489	0.6013	5/8	8.2467	5.4119	1/2	14.1372	15.9040	1/2	29.8451	70.882			
29/32	2.8471	0.6450	11/16	8.4430	5.6727	9/16	14.3335	16.3490	3/4	30.6305	74.662			

Standard Pipe Thread

Nominal Pipe Size In.	Threads Per In.	Outside Diameter of Pipe (D) In.	Effective External Thread Length (L) In.	Thds.	Handtight Engagement In.	Thds.	Top Drill or Bore In.	Tight Joint Engagement In.
1/8	27	0.405	0.2639	7.12	0.1615	4.36	0.345	1/4
1/4	18	0.540	0.4018	7.23	0.2278	4.10	0.442	3/8
3/8	18	0.675	0.4078	7.34	0.24	4.32	0.578	3/8
1/2	14	0.840	0.5337	7.47	0.32	4.48	0.715	1/2
3/4	14	1.050	0.5457	7.64	0.339	4.75	0.937	4/7
1	11 1/2	1.315	0.6828	7.85	0.4	4.60	1.171	2/3
1 1/4	11 1/2	1.660	0.7068	8.13	0.42	4.83	1.510	2/3
1 1/2	11 1/2	1.900	0.7235	8.32	0.42	4.83	1.750	2/3
2	11 1/2	2.375	0.7565	8.70	0.436	5.01	2.218	3/4
2 1/2	8	2.875	1.1375	9.10	0.682	5.46	2.614	1
3	8	3.500	1.2000	9.60	0.766	6.13	3.272	1
4	8	4.500	1.3000	10.40	0.844	6.75	4.272	1 1/8
6	8	6.625	1.5125	12.10	0.958	7.66	6.381	1 5/16



Loss in Pounds Pressure Per 100 Feet of Smooth Bore Rubber Hose

Multiply pounds pressure by 2.31 to obtain friction loss in feet

U.S. Gallons Per Minute	Actual Inside Diameter In Inches							
	3/4	1	1 1/4	1 1/2	2	2 1/2	3	4
15	30.0	8.9	2.5	1.1	0.4	0.1		
20	53.0	14.0	4.3	1.8	0.7	0.2		
25	79.0	22.0	6.5	2.9	1.0	0.3		
30	112.0	31.0	9.2	4.0	1.4	0.4	0.1	
40		53.0	15.0	6.7	2.4	0.6	0.3	
50		80.0	24.0	10.0	3.6	1.0	0.5	
60		101.0	35.0	14.0	5.1	1.4	0.6	
70			45.0	19.0	6.6	1.8	0.8	
80			58.0	24.0	8.6	2.3	1.1	
90			71.0	30.0	11.0	3.0	1.4	0.3
100			88.0	37.0	12.5	3.5	1.7	0.4
125			132.0	55.0	20.0	5.3	2.5	0.6
150			183.0	78.0	27.0	7.5	3.5	0.7
175				100.0	37.0	10.0	4.6	1.1
200				133.0	46.0	13.0	5.9	1.4
250					70.0	19.0	9.1	2.1
300					95.0	27.0	12.0	2.9
350					126.0	36.0	17.0	4
400						46.0	21.0	5.1
500						70.0	32.0	7.4
600						105.0	46.0	10.0
700						148.0	62.0	13.0
800						190.0	79.0	17.0
900							97.0	22.0
1000							116.0	27.0
1250							170.0	43.0
1500							226.0	61.0
1750								80.0
2000								100.0

Above Ground Products

Setting the Industry Standard for More Than 120 Years

Conventional Automatic Nozzles

- Automatic Nozzles 144-147
- Extreme Cold Weather Nozzles 146
- Custom Hand Insulator Imprinting 148
- OPW AdMaster™ 149
- VR and Balance ConVRsion Packages 150
- 11AF® 3/4" Automatic Nozzles 151
- Heavy-Duty, High-Flow Truck, Bus & Fleet Service Nozzle 152
- OPW NEWGARD™ Hand Insulators 154
- 21Gu™ DEF Nozzle 155-157

Swivels and Breakaways

- Swivels and Breakaways 158-167
- Flow Limiters 168

Vacuum-Assist Swivels and Breakaways

- 12VW Vacuum Assist Nozzle 170-171
- Vapor Recovery Nozzle Accessories 172-173
- Vacuum-Assist Swivels, Breakaways and Accessories 174-178

Balance Vapor Recovery Hanging Hardware

- Balance Breakaways and Accessories 179-180

Industrial Products

- DEF Bulk Nozzle 182
- Automatic Bulk Fueling and Aircraft Nozzles 183-187
- Manual High-Flow Bulk Fill Nozzles 188-192
- Manual Nozzle Accessories 193
- Swivels and Breakaways 195-196

Retractors

- Spring Balance Hose Retractors 198-201
- Counterweight Hose Retractors (MPD) 202

OPW NEWGARD™ Two-Piece Hand Insulator

OPW 11A®, 11B® and 21Ge™ nozzles are furnished complete with NEWGARD™ 2-piece hand insulators. 2-Piece NEWGARD™ Hand Insulator is the most comfortable nozzle in the industry to use.



OPW NEWGARD™ Full Hand Insulator

All OPW 7 Series, Astro Series, and 1A Series nozzles are furnished complete with NEWGARD™ one-piece hand insulators. Available in a variety of colors.



OPW AUTOMATIC NOZZLE FEATURES – MULTIPLE SOLUTIONS FOR MULTIPLE CUSTOMERS

No Pressure No Flow Device

- ◆ Safety feature to prevent spills when system is not pressurized

Durable Spout

- ◆ Highest flow rates in industry
- ◆ Quick/easy replacement
- ◆ Stainless steel tip (11B only)

Automatic Shut-Off Sensing Port

- ◆ Highly accurate sensing port ensures nozzle shut-off reliability

Flow Lock™

- ◆ Shuts off nozzle automatically when spout is tipped up, limiting spillage

Blocker on the Lever Guard

- ◆ Prevents use of foreign objects to jam nozzle open in pre-pay applications

Trigger Spring

- ◆ Great durability & service life
- ◆ Improves clip disengagement at shut-off

Accu-Stop™ Flow Control

- ◆ Allows customer to top off tank to exact amounts
- ◆ Easily stops the flow of gasoline precisely

Hand Insulator

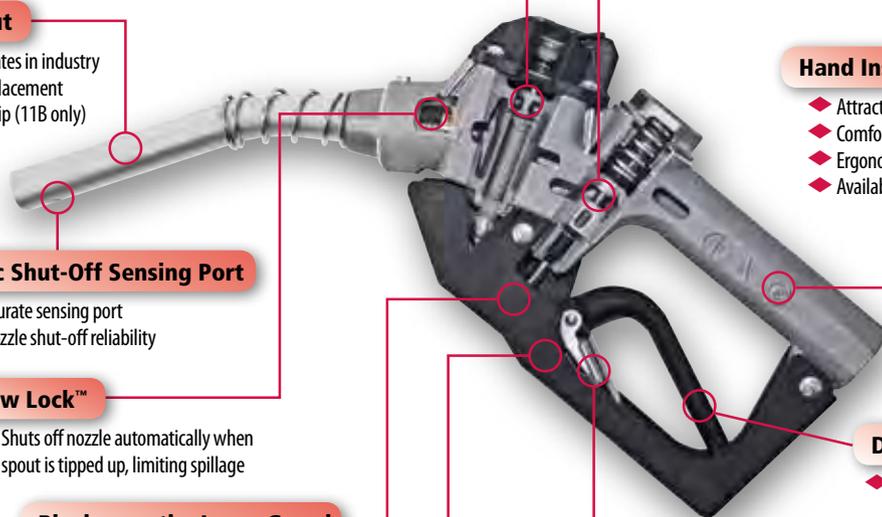
- ◆ Attractive visual appeal
- ◆ Comfortable to the touch in cold or hot weather
- ◆ Ergonomic for smaller hands
- ◆ Available in a variety of colors

Low Profile Aluminum Body

- ◆ Lightweight and durable
- ◆ Attractive design

Duratuff® Lever & Guard

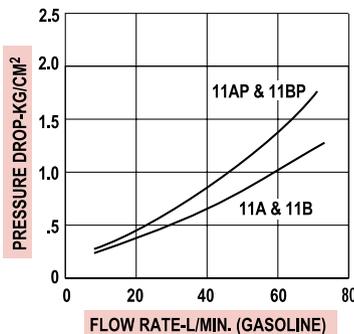
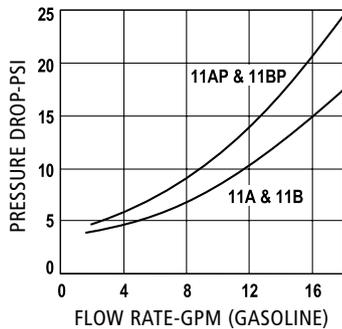
- ◆ Toughest, most durable handguard & lever in the industry
- ◆ Comfortable to the touch in hot or cold weather



OPW 11B Nozzle
"How it Works"
video.

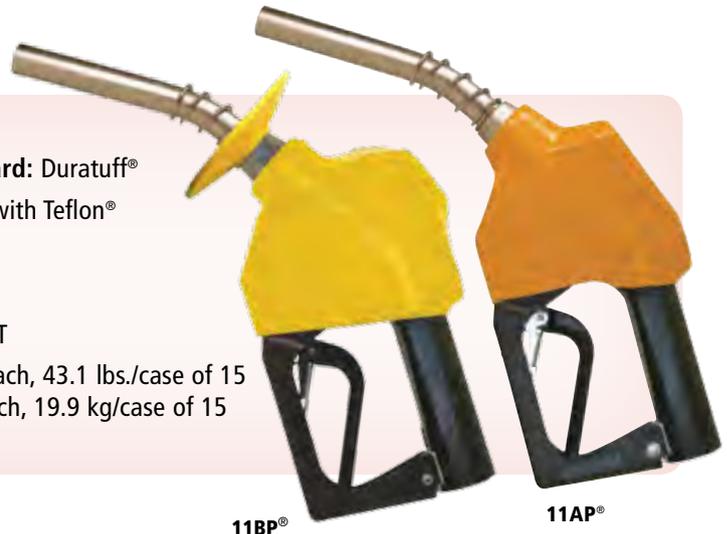
OPW 11A® and 11B® Automatic Nozzles

The OPW 11 Series automatic nozzles are OPW's premium conventional nozzles for safe retail and commercial petroleum filling. The OPW 11® Series is the most trusted conventional nozzle in the world for full service use. The OPW 11B® Series is designed for use in retail and commercial filling applications including prepay, self and full-service, credit/debit card readers or card-lock systems to help prevent gasoline spills. The OPW 11B® will not open until the pumping system is pressurized, and closes automatically when the pressure is removed.



Materials

Body: Aluminum
Lever & Lever Guard: Duratuff®
Packing: Graphite with Teflon®
Disc: Viton®
Spout: Aluminum
Inlet Size: 3/4" NPT
Weight: 2.73 lbs. each, 43.1 lbs./case of 15
 1.25 kg each, 19.9 kg/case of 15



Shown with Optional FILLGARD™

Features

Safe for Use

- ◆ UL and ULC listed for use in gasoline, diesel, and up to 10% ethanol blends. Specific listings available at www.opwglobal.com.
- ◆ Prevents gasoline spills in prepay or card lock systems utilizing OPW's unique No Pressure – No Flow Device. – The nozzle cannot be opened until the pumping system is pressurized, and closes automatically when the pressure is removed (11B Series only).
- ◆ Prevents consumer from jamming the nozzle in an open position – blocker on lever guard.
- ◆ FlowLock™ allows nozzle to shut-off when falling out of a vehicle, and is tipped up, limiting spillage and unsafe conditions.

Durable and Long Lasting Design

- ◆ Cycle tested and proven to last longer than 1 million cycles – better than any other nozzle available on the market today*.

- ◆ Durable lever guard that won't scratch your customers' vehicles – made from Duratuff®.
- ◆ New hold-open clip spring lasts longer than previous designs.

Appealing to Customers

- ◆ Easy to use – utilizing Accu-Stop® to-the-penny Flow Control Technology.
- ◆ Attractive 2-Piece NEWGARD™ Hand Insulator is the most comfortable nozzle in the industry to use.
- ◆ Convenient – one-finger hold-open clip that is easy to set the flow rate (not on all models).

Design working pressure

- ◆ 50 psi (3.45 bar) maximum pressure.

* OPW internal lab testing results as of August 2010.

NOTE: 11A and 11B nozzle models are available with 1- or 2-piece Hand Insulators.

Per UL2586 Standards – 11A Series nozzles will be sold without hold open racks.

Listings and Certifications



See page 299 for certification number

⚠ WARNING

In order to be UL2586 approved effective April 30, 2015, the use of a Hold-Open device is only permitted on dispensing nozzles equipped with a "B-Cap" (no pressure - no flow) or interlock feature. The use of foreign objects to hold open automatic nozzles could result in shut-off failure and personal injury.

Ordering Specifications

Automatic Nozzles with Hold-Open Devices

	11AP*	11BP	11A*	11B
New Two-Piece Standard Hand Insulator Colors	Unleaded Spout (13/16" O.D.) For standard gasoline service up to 10% Ethanol	Unleaded Spout (13/16" O.D.) For standard gasoline service up to 10% Ethanol	Leaded Spout (15/16" O.D.) For standard Auto Diesel service	Leaded Spout (15/16" O.D.) For standard Auto Diesel service
 Green	11AP-0100	11BP-0100	11A-0100	11B-0100
 Silver	11AP-0200	11BP-0200	11A-0200	11B-0200
 Red	11AP-0300	11BP-0300	11A-0300	11B-0300
 Black	11AP-0400	11BP-0400	11A-0400	11B-0400
 Blue	11AP-0500	11BP-0500	11A-0500	11B-0500
 Yellow	11AP-0900	11BP-0900	11A-0900	11B-0900
 Gold	11AP-0750	11BP-0750	11A-0750	11B-0750
 Orange	11AP-0800	11BP-0800	11A-0800	11B-0800
Bare	11AP-0009	11BP-0009	11A-0009	11B-0009

* Beginning April 30, 2015; nozzles with Hold-Open clips must have a B-Cap no-pressure no-flow device or an Interlock feature to be UL2586 approved.

Accessories

Name	Product #	Description	Used For:
3/4" to 1" Bushing	28S-0350	3/4" MNPT to 1" FNPT Bushing	Converting an 11 Series nozzle for use on a 1" hose
1" to 3/4" Bushing	28R-2404	1" Male x 3/4" Female	Converting an 11 Series nozzle for use on a 1" hose

Replacement Parts

Name	Product #	Description	Used For:
11A Leaded Spout Kit	5BS-2110	11A, 15/16" O.D. Leaded Spout	11A Spout Replacement
11AP Unleaded Spout Kit	5BPS-2117	11AP, 13/16" O.D. Unleaded Spout	11AP Spout Replacement
11B Leaded Spout Kit	5BBS-2135	11B, 15/16" O.D. Leaded Spout	11B Spout Replacement
11BP Unleaded Spout Kit	5BBPS-2137	11BP, 13/16" O.D. Unleaded Spout	11BP Spout Replacement
NEWGARD Kits	See pg. 154	Replacement Hand Insulators	11A, 11AP, 11B, 11BP NEWGARD Replacements
Instruction Sheet	H15985M	Installation and Instruction Sheet	11A, 11AP, 11B, 11BP Instruction Sheet

Custom Colors

With minimum quantities. Contact OPW customer service.

<input type="checkbox"/> White
<input checked="" type="checkbox"/> Light Red
<input checked="" type="checkbox"/> Azure Blue
<input checked="" type="checkbox"/> Dark Blue
<input checked="" type="checkbox"/> Brown



**28S-0350
Bushing Adaptor**



**28R-2404
Bushing Adaptor**



OPW 5BS and 5BBS
Leaded, Diesel, Kerosene



OPW 5BBPS and OPW 5BPS
Unleaded

NOTE: See OPW's Website at www.opwglobal.com for product instruction sheets, trouble-shooting guides, how-to-use guide and to view the Do's & Don'ts at the Gas Pump video.



OPW 11A® AND 11B® Automatic Nozzles

The OPW 11® Series automatic nozzles are OPW's premium conventional nozzles for safe retail and commercial petroleum filling. The OPW 11® Series is the most trusted conventional nozzle in the world for full service use. The OPW 11B® Series is designed for use in retail and commercial filling applications including prepay, self and full service, credit/debit card readers or card-lock systems to help prevent gasoline spills. The OPW 11B® will not open until the pumping system is pressurized, and closes automatically when the pressure is removed

OPW 7H® AND 7HB® Automatic Shut-OFF Nozzles

For Heavy-Duty, High-Flow Truck, Bus and Fleet Service

If you operate a full-service truckstop, refuel your own fleet or manage a cardlock refueling location, the low cost, long life and durability of the OPW 7H® high flow nozzle can help increase your productivity, sales and profits. The OPW 7HB® will not open until the pumping system is pressurized, and closes automatically when the pressure is removed.

Listings and Certifications



See page 299 for certification number

Materials

- Body: Aluminum
- Lever & Lever Guard: Duratuff®
- Packing: Graphite with Teflon®
- Disc: Viton®
- Weight: 2.73 lbs. each, 43.1 lbs./case of 15
1.25 kg each, 19.9 kg/case of 15



7HB-0100-XC

11BP-0100-XC
Shown with Optional FILLGARD™

Nozzles (above) shown with optional hand insulator. Hand insulator not included.

Features

Safe for Use

- ◆ UL and ULC listed for use in gasoline, diesel, and up to 10% ethanol blends. Specific listings available at www.opwglobal.com
- ◆ Prevents gasoline and/or diesel spills in prepay or card lock systems utilizing OPW's unique No Pressure – No Flow Device. – The nozzles cannot be opened until the pumping system is pressurized, and close automatically when the pressure is removed. (OPW 11B® and 7HB® Series Only)
- ◆ Prevents consumer from jamming the nozzle in an open position – Blocker on lever guard.
- ◆ FlowLock™ allows nozzle to shut-off when falling out of

a vehicle, and tipped up limiting spillage and unsafe conditions.

Durable & Long Lasting Design

- ◆ Compatible to -54°C [-65°F]*
- ◆ Cycle tested and proven to last longer than 1 million cycles - Better than any other nozzle available on the market today*
- ◆ Durable lever guard that won't scratch your customers' vehicles – Made from Duratuff®.
- ◆ New hold open clip spring lasts longer than previous designs. (OPW 11B® and 7HB® Series Only)
- ◆ Easy to use – Utilizing Accu-Stop® to-the-penny Flow Control Technology.

* OPW internal lab testing results as of August 2010.

Ordering Specifications

Product #	Description
11B-0100-XC	Extreme Cold Weather, 3/4" NPT Auto-Diesel Nozzle, 11B, Green
11B-0400-XC	Extreme Cold Weather, 3/4" NPT Auto-Diesel Nozzle, 11B, Black
11B-0900-XC	Extreme Cold Weather, 3/4" NPT Auto-Diesel Nozzle, 11B, Yellow
11BP-0100-XC	Extreme Cold Weather, 3/4" NPT Gasoline Nozzle, 11BP, Green
11BP-0300-XC	Extreme Cold Weather, 3/4" NPT Gasoline Nozzle, 11BP, Red
11BP-0400-XC	Extreme Cold Weather, 3/4" NPT Gasoline Nozzle, 11BP, Black
7HB-0100-XC	Extreme Cold Weather, 1" NPT Diesel Nozzle, 7HB, Green
7HB-0400-XC	Extreme Cold Weather, 1" NPT Diesel Nozzle, 7HB, Black
7HB-0900-XC	Extreme Cold Weather, 1" NPT Diesel Nozzle, 7HB, Yellow
66 REC-1000	Cold Weather Breakaway – See page 165
20S Series	Cold Weather Swivel – See page 161

Replacement Parts

Name	Product #	Description	Used For:
11AK Leaded Spout Kit	5BS-2110XC	11A, 1 1/16" O.D. Leaded Spout	11AK Spout Replacement
11AKP Unleaded Spout Kit	5BPS-2117XC	11AP, 1 3/16" O.D. Unleaded Spout	11AKP Spout Replacement
11B Leaded Spout Kit	5BBS-2135XC	11B, 1 5/16" O.D. Leaded Spout	11B Spout Replacement
11BP Unleaded Spout Kit	5BBPS-2137XC	11BP, 1 3/16" O.D. Unleaded Spout	11BP Spout Replacement

*Beginning April 30, 2015; nozzles with Hold-Open clips must have a B-Cap no-pressure no-flow device or an Interlock feature to be UL2586 approved.

Materials

Body: Aluminum w/ nickel plating
Lever & Lever Guard: Duratuff®
Packing: Graphite with Teflon®
Seals: Viton®
Spout: Aluminum w/ nickel plating
Inlet Size: 3/4" NPT
Weight: 2.73 lbs. each
 1.25 kg each



21Ge-0992

Features

Safe for Use

- ◆ UL Listed for up to 85% Ethanol.
- ◆ Prevents gasoline spills in prepay or card – lock systems utilizing OPW's unique No Pressure – No Flow Device. It cannot be opened until the pumping system is pressurized, and closes automatically when the pressure is removed.
- ◆ Prevents consumer from jamming the nozzle in an open position – blocker on lever guard.
- ◆ FlowLock™ allows nozzle to shut-off when falling out of a vehicle, and is tipped up, limiting spillage and unsafe conditions.

Durable and Long Lasting Design

- ◆ Cycle tested and proven to last longer than 1 million cycles – Better than any other nozzle available on the market today*.

- ◆ Durable lever guard that won't scratch your customers' vehicles – made from Duratuff®.
- ◆ New hold-open clip spring lasts longer than previous designs.

Appealing to Customers

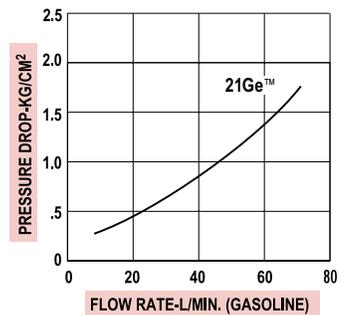
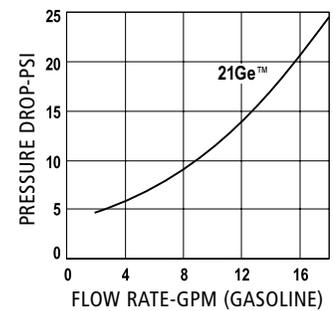
- ◆ Easy to use – utilizing Accu-Stop® to-the-penny Flow Control Technology.
- ◆ Attractive 2-Piece NEWGARD™ Hand Insulator is the most comfortable nozzle in the industry to use.
- ◆ Convenient – one-finger hold-open clip that is easy to set the flow rate (not on all models).

Design working pressure

- ◆ 50 psi (3.45 bar) maximum pressure.
- * **OPW internal lab testing results as of August 2010.**

OPW 21Ge™ Series Ethanol Nozzles

The OPW 21Ge Series nozzles are designed and rigorously tested for use in today's alternative fuels. It's the first nozzle of its kind to be UL listed for use in Ethanol blended fuels up to 85%.



21Ge Ordering Specifications

NEWGARD™ Two-Piece Hand Insulator Color*	21Ge13/16" O.D. Spout
■ Black	21Ge-0492
■ Yellow	21Ge-0992

Replacement Parts

Product	Product #	O.D.		Length		Weight	
		in.	mm	in.	mm	lbs.	kg
21Ge spout replacement kit	5BBPI-0492	13/16"	21	7"	178	.47	.22

NEWGARD™ Kits See page 154. 21Ge™ Instruction Sheet Order Number: **H15889PAE**

241TPS Ordering Specifications E85 Approved

Product #	Inlet/Outlet	Length A	Depth B
241TPS-0492	3/4" F x 3/4" M (NPT)	4 7/8"	2 3/16"
	19 mm x 19 mm	124 mm	56 mm

66V Ordering Specifications E85 Approved

Product #	Size	Weight		Pull Force
		lbs.	kg	
66V-0492	3/4" F x 3/4" F (NPT)	0.60	0.27	300 lbs.

66V Series 3/4" Instruction Sheet Order Number: **H10993PA**

Listings and Certifications



UL Listed for up to 85% Ethanol

Customize and Colorize



Imprint
your company
logo or custom
message
here!

Side of
Nozzle



Imprint your company logo or custom message to any color hand insulator

OPW can help you enhance your brand image, drive traffic into your store, and deliver important messages to your customers with its new Enhanced Nozzle Program.

Now you can imprint company names, logos and/or special promotional messages on to your nozzles!

Differentiate your store from all others. Choose from a wide array of standard hand insulator colors or create your own custom color hand insulator.

We Offer You The Convenience of Choice.

Simply provide high-resolution PDF your Logo Artwork.

Top and Side of Nozzle



Hundreds of Hand Insulator Colors to Choose From





OPW AdMaster™

A highly effective and affordable way of advertising that drives traffic from the island to your in-store profit centers.

- ◆ Installs quickly and easily on your OPW nozzle!
- ◆ Increase In-store Sales - Get Customers from the Island into Your Profit Centers
- ◆ Puts Your Message Right in Your Customer's Hand
- ◆ Replaceable - Easily Updated to Current Promotions
- ◆ Available on New Nozzles or Can Be Installed Quickly on Existing Nozzles
- ◆ Available in a Variety of Colors

Ordering Specifications

Part #	Description
11AP-0100-AD	11A Unleaded Nozzle with GREEN Advertising Hand Insulator & Clear Cover
11AP-0300-AD	11A Unleaded Nozzle with RED Advertising Hand Insulator & Clear Cover
11AP-0400-AD	11A Unleaded Nozzle with BLACK Advertising Hand Insulator & Clear Cover
11AP-0500-AD	11A Unleaded Nozzle with BLUE Advertising Hand Insulator & Clear Cover
11AP-0900-AD	11A Unleaded Nozzle with YELLOW Advertising Hand Insulator & Clear Cover
11A-0100-AD	11A Leaded Nozzle with GREEN Advertising Hand Insulator & Clear Cover
11A-0400-AD	11A Leaded Nozzle with BLACK Advertising Hand Insulator & Clear Cover
11A-0900-AD	11A Leaded Nozzle with YELLOW Advertising Hand Insulator & Clear Cover
11BP-0100-AD	11B Unleaded Nozzle with GREEN Advertising Hand Insulator & Clear Cover
11BP-0300-AD	11B Unleaded Nozzle with RED Advertising Hand Insulator & Clear Cover
11BP-0400-AD	11B Unleaded Nozzle with BLACK Advertising Hand Insulator & Clear Cover
11BP-0500-AD	11B Unleaded Nozzle with BLUE Advertising Hand Insulator & Clear Cover
11BP-0900-AD	11B Unleaded Nozzle with YELLOW Advertising Hand Insulator & Clear Cover
11B-0100-AD	11B Leaded Nozzle with GREEN Advertising Hand Insulator & Clear Cover
11B-0400-AD	11B Leaded Nozzle with BLACK Advertising Hand Insulator & Clear Cover
11B-0900-AD	11B Leaded Nozzle with YELLOW Advertising Hand Insulator & Clear Cover
12VW-0100-AD	12VW Vac-Assist Nozzle with GREEN Advertising Hand Insulator & Clear Cover
12VW-0300-AD	12VW Vac-Assist Nozzle with RED Advertising Hand Insulator & Clear Cover
12VW-0400-AD	12VW Vac-Assist Nozzle with BLACK Advertising Hand Insulator & Clear Cover
21GE-0492-AD	21Ge E-85 Nozzle with BLACK Advertising Hand Insulator and Cover
21GE-0992-AD	21Ge E-85 Nozzle with YELLOW Advertising Hand Insulator and Cover
NTK11-0100	11 Series/21GE GREEN Advertising Insulator and Clear Cover Kit
NTK11-0300	11 Series/21GE RED Advertising Insulator and Clear Cover Kit
NTK11-0400	11 Series/21GE BLACK Advertising Insulator and Clear Cover Kit
NTK11-0500	11 Series/21GE BLUE Advertising Insulator and Clear Cover Kit
NTK11-0900	11 Series/21GE YELLOW Advertising Insulator and Clear Cover Kit
NTK12-0100	12VW GREEN Advertising Insulator and Clear Cover Kit
NTK12-0300	12VW RED Advertising Insulator and Clear Cover Kit
NTK12-0400	12VW BLACK Advertising Insulator and Clear Cover Kit
207852	Clear Cover



Clear Cover

OPW Quick and Easy ConVRsion Package

Use the OPW quick and easy ConVRsion package when converting or decommissioning your Stage II Vapor Recovery System.



Features

- ◆ Factory Assembled
- ◆ 100% Tested and Certified
- ◆ Quick, Easy Conversion
- ◆ Reduced Dispenser Downtime

Ordering Specifications

Balance Conversion

BA-PK0100-075	11BP Nozzle, GREEN Hand Insulator
BA-PK0300-075	11BP Nozzle, RED Hand Insulator
BA-PK0400-075	11BP Nozzle, BLACK Hand Insulator

Vac-Assist Conversion

VA-PK0100-075	11BP Nozzle, GREEN Hand Insulator with Standard Hose
VA-PK0300-075	11BP Nozzle, RED Hand Insulator with Standard Hose
VA-PK0400-075	11BP Nozzle, BLACK Hand Insulator with Standard Hose
VA-PK0100-075-LP	11BP Nozzle, GREEN Hand Insulator with Low Permeation Hose
VA-PK0300-075-LP	11BP Nozzle, RED Hand Insulator with Low Permeation Hose
VA-PK0400-075-LP	11BP Nozzle, BLACK Hand Insulator with Low Permeation Hose

Contact OPW Customer Service for custom models.



Each Package Includes

A	11BP Nozzle	3/4" Nozzle	
B	241TPS-0241	3/4" 2-Plane Swivel	
C	66H-0975	3/4" Whip Hose, 9 inch long, 3/4" NPT	
D	66REC-1000	3/4" Reconnectable Breakaway	
E	66H-08575	3/4" Hose, 8-1/2" feet long, 3/4" NPT	
F	VAR75	Vac-Assist to Conventional Adaptor	
	28C-0028	Balance to Conventional Adaptor	
G	FILLGARD™	Splash Guard Color will match Hand Insulator	

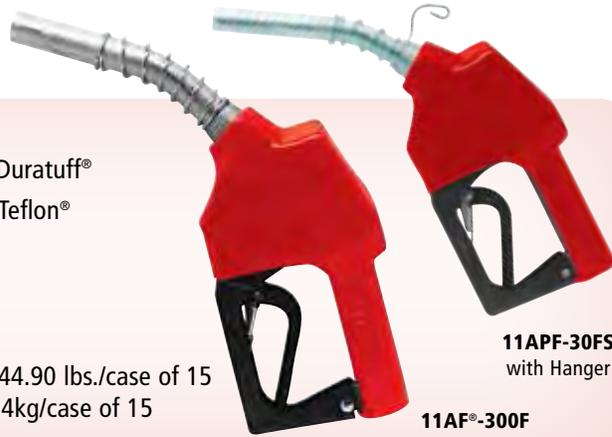


Listings and Certifications



Materials

- Body:** Aluminum
- Lever & Lever Guard:** Duratuff®
- Packing:** Graphite with Teflon®
- Disc:** Viton®
- Spouts:** Aluminum
- Inlet Size:** 3/4" NPT
- Weight:** 2.85 lbs. each, 44.90 lbs./case of 15
1.3kg each, 20.4kg/case of 15



Features

- ◆ UL and ULC listed for use in gasoline, diesel and up to 10% ethanol blends. Specific listings available at www.opwglobal.com.
- ◆ New bleeder poppet orifices allow for use in transfer pumps with or without air elimination systems.
- ◆ Prevents consumer from jamming the nozzle in an open position – blocker on lever guard.
- ◆ Durable lever guard that won't scratch your customers' vehicles – made from Duratuff®.
- ◆ Easy to use – utilizing Accu-Stop® to-the-penny Flow Control Technology.
- ◆ Easy to open, even at high pressures utilizing Dual Poppets.
- ◆ Convenient – one-finger hold-open clip that is easy to set the flow rate. (not on all models)
- ◆ Works with self-priming and non self-priming pumps.

Design working pressure

- ◆ 50 psi (3.45 bar) maximum pressure.
- ◆ When bushing from 1" hose on the 1A nozzle, use a 28S Bushing Adaptor

Ordering Specifications

Full Hand Insulator Color	Includes 3/4" spout, hanger, spring and hold-open rack		Includes 3/4" spout, standard spring and hold-open rack		Includes 3/4" spout, hanger, spring and no hold-open rack	
	For Unleaded Service	For Diesel Service	For Unleaded Service	For Diesel Service	For Leaded Service	For Unleaded Service
Green		11AF-10FS				
Red	11APF-30FS		11AF-300F	11APF-300F		
Black	11APF-40FS	11AF-40FS			11AF-4FSC	11APF-4FSC

*Beginning April 30, 2015; nozzles without a no-pressure no-flow or interlock device may not be ULC listed with Hold-Open Clips.

Replacement Spout Kits

Product #	O.D.		Length		Weight		Used On
	in.	mm	in.	mm	lbs.	kg	
5BF-0112	15/16	24	7	178	.59	.27	11AF®-No Hook
5BFS-0113	15/16	24	7	178	.59	.27	11AF® w/ Farm Hook
5BPF-0172	13/16	21	7	178	.59	.27	11APF-No Hook
5BPFS-0173	13/16	21	7	178	.59	.27	11APF w/ Farm Hook

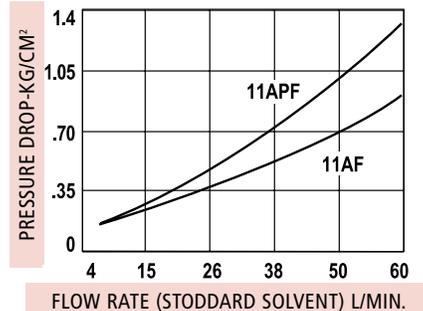
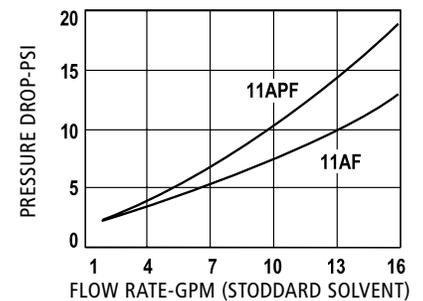
NEWGARD™ Kits See page 154.

OPW 11AF® 3/4" Automatic Nozzles

The OPW 11AF® Nozzle is a sturdy industry-proven standard used primarily for fueling up to 15 gallons per minute. The 11AF® is an automatic dispensing nozzle designed for use in transfer pump. This nozzle should not be used for retail applications, and does not include a No Pressure – No Flow or Interlock Device.

WARNING

Do not use OPW 11AF Nozzles for any retail application. It is only intended for use in non-retail applications. Use of foreign objects to hold open automatic nozzles could result in failure to shut off and personal injury.



28S-0350
Bushing Adaptor



28R-2404
Bushing Adaptor

Listings and Certifications

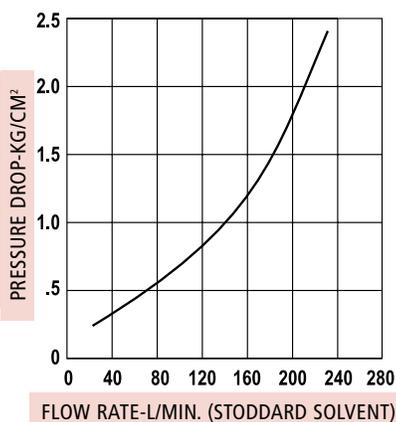
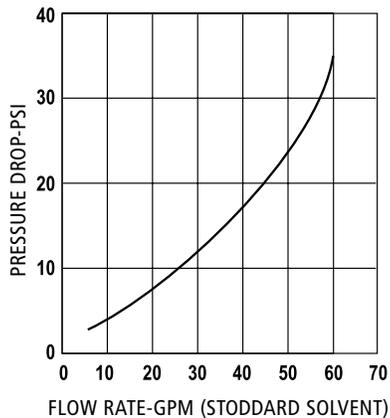


See page 299 for certification number

OPW 7H® and 7HB® Automatic Shut-off Nozzles

For Heavy-Duty, High-Flow Truck, Bus and Fleet Service

If you operate a full-service truckstop, refuel your own fleet or manage a card lock refueling location, the low cost, long life and durability of the OPW 7H® high-flow nozzle can help increase your productivity, sales and profits.



Materials

- Body:** Aluminum
- Lever & Lever Guard:** Duratuff®
- Packing:** Graphite with Teflon®
- Disc:** Viton®
- Spout:** Aluminum
- Inlet Size:** 1" NPT
- Weight:** 3.35 lbs. each, 52.05 lbs./case of 15
1.51 kg each, 23.6 kg/case of 15



Features

Safe for Use

- ◆ UL and ULC listed for use in gasoline, diesel and up to 10% ethanol blends. Specific listings available at www.opwglobal.com.
- ◆ Prevents gasoline spills in prepay or card lock systems utilizing OPW's unique No Pressure – No Flow Device. The nozzle cannot be opened until the pumping system is pressurized, and closes automatically when the pressure is removed. (7HB Series only)
- ◆ Prevents consumer from jamming the nozzle in an open position – blocker on lever guard.
- ◆ FlowLock™ allows nozzle to shut-off when falling out of a fill pipe, and is tipped up, limiting spillage and unsafe conditions.
- ◆ Low reliable shut-off – specifically designed to ensure proper automatic shut-off as low as 5 gallons per minute.

Durable and Long Lasting Design

- ◆ Cycle tested and proven to last longer than 1 million cycles – better than any other nozzle available on the market today.*

- ◆ Durable lever guard that won't scratch your customers' vehicles – made from Duratuff®.
- ◆ New hold-open clip spring lasts longer than previous designs.

Appealing to Customers

- ◆ Easy to use – utilizing Accu-Stop® to-the-penny Flow Control Technology.
- ◆ Easy to open, even at high pressures, utilizing Dual Poppets.
- ◆ Even, smooth spray pattern – minimizes diesel foaming and false shut-offs.
- ◆ Smooth closing action and reduced line shock from incorporated Dash-pot technology.
- ◆ Convenient – one-finger hold-open clip that is easy to set the flow rate. (not on all models)
- ◆ Spout Retaining ring – adds extra measure in securing nozzle spout in fill pipe where required. (not on all models)

Design working pressure

- ◆ 50 psi (3.45 bar) maximum pressure.
- * **OPW internal lab testing results as of August 2010.**

Listings and Certifications



See page 299 for certification number

⚠ WARNING

In order to be UL2586 approved effective April 30, 2015, the use of a Hold-Open device is only permitted on dispensing nozzles equipped with a "B-Cap" (no pressure - no flow) or interlock feature. The use of foreign objects to hold open automatic nozzles could result in shut-off failure and personal injury.

Ordering Specifications

Standard Hand Insulator Color	7H® w/ spout ring	7H® w/o Spout Ring
Green	7H-0100	7H-5100
Black	7H-0400	7H-5400
Yellow	7H-0900	7H-5900

Standard Hand Insulator Color	7HB® w/ spout ring	7HB® w/o Spout Ring
Green	7HB-0100	7HB-5100
Black	7HB-0400	7HB-5400
Yellow	7HB-0900	7HB-5900
Bare	7HB-0009	7HB-5009

NOTE: All new 7H and 7HB nozzles now come with FILLGARD™. For replacement FILLGARDs, see page 154.

Custom Colors

With minimum quantities.
Contact OPW customer service.

Blue

Red

Silver

Replacement Parts

Product	Part #	7H® O.D.*		Length		Weight		Used On
		in.	mm	in.	mm	lbs.	kg	
7H Spout Kit w/ spout ring	5BH-0115	1 3/16*	30	7	178	.66	.30	7H®
7H Spout Kit w/o spout ring	5BH-5115	1 3/16	30	7	178	.66	.30	7H® (w/o ring)
12 inch 7H Spout Kit	5BHB-0125	1 3/16	30	12	305			7H®

NEWGARD™ Kits See page 154

Product	Part #	7HB® O.D.*		Length		Weight		Used On
		in.	mm	in.	mm	lbs.	kg	
7HB Spout Kit w/ spout ring	5BBH-0136	1 3/16*	30	7	178	.65	.30	7HB®
7HB Spout Kit w/o spout ring	5BBH-5136	1 3/16	30	7	178	.66	.30	7HB® (w/o ring)

NEWGARD™ Kits See page 154

* Spout end with anchor ring is 1 31/64" O.D.

7H®, 7HB® Series Instruction Sheet Order Number: **H15985M**



OPW 5BH
7H® Spout with ring



OPW 5BBH
7HB® Spout without ring

NOTE: See OPW's Website at www.opwglobal.com for product instruction sheets, trouble-shooting guides, how-to-use guide and to view the Do's & Don'ts at the Gas Pump video.

OPW NEWGARD™ Full Hand Insulator

All OPW 7 Series, Astro Series, and 1A Series nozzles are furnished complete with NEWGARD™ hand insulators. Available in a variety of colors.

OPW NEWGARD™ Two-Piece Hand Insulator

OPW 11A®, 11B® and 21Ge™ nozzles are furnished complete with NEWGARD™ 2-piece hand insulators. For a more unique appearance, try our new two-piece design. OPW NEWGARD™ 2-piece hand insulators make it easy to match new color schemes or replace soiled insulators without removing the nozzle from the hose.

OPW 8 FILLGARD™ Splash Guard

FILLGARD™ also enhances the appearance of your gasoline nozzle, and makes dispensing gasoline more pleasant for your customers. FILLGARD™ won't deform or crack in cold weather. FILLGARD™ are not standard on new 7 Series nozzles.



Ordering Specifications

Hand Insulator Color	NEWGARD™ one-piece				NEWGARD™ two-piece		FILLGARD™	
	11A®	11B®	7H®	7HB®	11A®	11B® / 21Ge™	11A® & 11B® / 21Ge™	7H® / 7HB®
Green	D01246M	C03647M	E00307M	E00325M	D01773M	D01529M	8G-0100	8HG-0100
Silver	D01174M	C03648M			205217	D02078M	8S-0200	
Red	D00907M	E00304M			D01775M	D01789M	8R-0300	
Black	D00909M	E00308M	E00306M	E00324M	D01719M	D01532M	8BL-0400	8HBL-0400
Blue	D00908M	C03649M			D01774M	D01790M	8B-0500	
Yellow	E00917M	C03655M	E00368M	H11923M	D01776M	D01791M	8Y-0900	8HY-0900
Gold	D01295M	C03653M			205219	205206	8GL-0750	
Orange	D01245M	C03656M	205598	205599	205248	205252		
Note: Barrel and Hand Insulator sold separately.					D01530M			

Custom Colors: With minimum quantities. Contact OPW customer service.



Notes:

- 1) OPW may add or delete colors without notice.
- 2) Actual color may vary from production run to production run.
- 3) Custom colors available, minimum quantities applicable.**
- 4) Custom logos available for additional charge.**

** For ordering specifications not listed in this catalog, visit our website at www.opwglobal.com or contact Customer Service at 1-800-422-2525.

Materials

Body: Special resin coated aluminum

Lever & Lever Guard: Duratuff®

Seals: Viton®

Inlet Size: M34
(adaptor required for each nozzle)

Weight: 2.41 lbs. each, 36 lbs./case of 15
1.1 kg each, 16.5 kg/case of 15

Meets ISO 22241
Compatibility
Testing for DEF
Contamination

21Gu-0500



Mis-Filling Prevention Device (MFPD)

Features – Benefits

- ◆ Automatic Shutoff Feature shuts off nozzle when the tank is full
- ◆ Mis-filling prevention device eliminates the risk of accidental DEF filling or environmental contamination.
- ◆ Spout with magnetic interface prevents mis-filling mishaps.
- ◆ Durable streamlined nozzle design for easy, comfortable nozzle handling makes it easy to differentiate DEF products.
- ◆ Total end-to-end affordable solution is a convenient and complete system from the Industry Leader.
- ◆ Comes with Integral Contaminant-Prevention Filter; this replaceable, stainless steel, 40-mesh filter provides an added level of protection against DEF contaminants.
- ◆ Outfitted in that familiar and unmistakable “DEF Blue” with slogan badge for instant product identification.



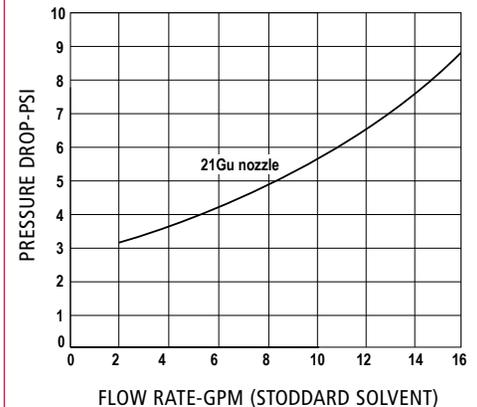
Design working pressure

- ◆ 50 psi (3.45 bar) maximum pressure.

OPW 21Gu™ DEF Nozzle

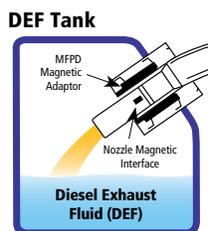
The Industry's Most Comprehensive DEF-Filling Solution

- ◆ End-to-end dispensing hardware solution for reliable, efficient DEF-filling
- ◆ Industry standard DEF-filling solution in Europe
- ◆ Unique Mis-Filling Prevention Device (MFPD) provides unparalleled filling assurance and peace of mind
- ◆ Affordable mis-filling prevention insurance designed to protect your investment against potential mis-filling mishaps

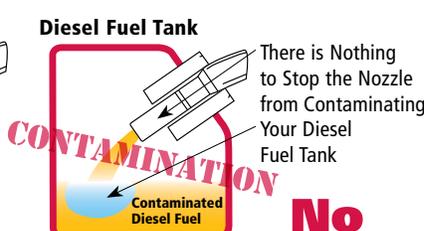
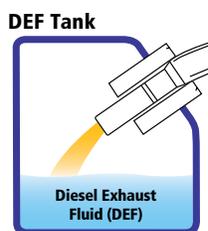


MIS-FILLING PREVENTION

WITH the OPW 21Gu nozzle and Mis-Filling Prevention Device (MFPD), your investment is safe.



WITHOUT the OPW 21Gu nozzle and Mis-Filling Prevention Device (MFPD), your investment is at risk.



Are You Protected?

A fixed magnetic field within the Mis-Filling Prevention Device actuates a magnetic interface in the spout of the 21Gu nozzle to allow the flow of DEF. Without the Mis-Filling Prevention Device, the DEF nozzle will not flow. Put the nozzle in the wrong tank – say, your diesel tank – no problem, the nozzle will not flow. No other DEF-filling nozzle has this DEF mis-filling protection capability.

Listings and Certifications ISO 22241 Compliant

Nozzle Ordering Specifications

Product #	Description
21GU-0400	Wayne® / Bennett® / Gasboy® Nozzle designed for use WITHOUT Mis-Filling Prevention Device
21GU-040G	Gilbarco® Nozzle designed for use WITHOUT Mis-Filling Prevention Device
21GU-0500	Wayne® / Bennett® / Gasboy® Nozzle designed for use WITH Mis-Filling Prevention Device
21GU-050G	Gilbarco® Nozzle designed for use WITH Mis-Filling Prevention Device
21GU-SPOUT	DEF Replacement Spout designed for use WITH Mis-Filling Prevention Device
21GU-SPOUT-N	DEF Replacement Spout WITHOUT Mis-Filling Prevention Device
204133	DEF Replacement Slogan Badge



Bennett®, Separation by Design®, Wayne® Guard (Standard) and Gasboy®



Gilbarco® Guard

NOTE: Each nozzle requires one adaptor fitting to convert from M34 to 1" BSPP threads.

Replacement Parts

Product #	Description
206466	Replacement Blue Hand Warmer
205077	Replacement Black Hand Warmer

CHOOSE YOUR NOZZLE OUTLET STYLE

21GU-SFH
Stainless Steel Fixed Hose Fitting



Features

- ◆ SST construction and compatible with ISO 22241 Standard
- ◆ Converts nozzle from M34 threads to 1" BSPP

21GU-SSS
Stainless Steel Swivel



Features

- ◆ SST construction and compatible with ISO 22241 Standard
- ◆ Converts nozzle from M34 threads to 1" BSPP
- ◆ Long lasting single plane swivel
- ◆ Includes 21GU-SCS for attractive installation and protection of vehicles



21GU-SSB
Stainless Steel Swivel / Reconnectable Breakaway



Features

- ◆ SST construction and compatible with ISO 22241 Standard
- ◆ Converts nozzle from M34 threads to 1" BSPP
- ◆ Integral reconnectable breakaway 175-330 (lbs.) 80-150 (kg)
- ◆ Includes 21GU-BCS for attractive installation and protection of vehicles



21Gu Nozzle Adaptor Ordering Specifications

Product #	Description
21GU-SFH	DEF Stainless Steel Fixed Hose Inlet, 1" BSPP male
21GU-SSS	DEF Stainless Steel Swivel, 1" BSPP male
21GU-SSB	DEF Stainless Steel Reconnectable Breakaway / Swivel - NOTE: One (1) 21GU-SSB is required for each nozzle. Hose connection end is 1" BSPP male thread.
21GU-SCS	Replacement DEF Swivel Cover Sleeve (Comes with 21GU-SSS)
21GU-BCS	Replacement DEF Swivel/Breakaway Cover Sleeve (Comes with 21GU-SSB)

21Gu Mis-Filling Prevention Device

Product #	Description
MFPD	21GU Mis-Filling Prevention Device (MFPD). Order one MFPD or Bulk Packed for OEM sales (420 per case) NOTE: The MFPD is permanently installed in DEF tank fill pipe. Contact your vehicle supplier and specify the OPW DEF Mis-Filling Prevention Device.

Note: Want them individually packaged for retail? Contact OPW customer service at 1-800-422-2525.

OPW MIS-FILLING PREVENTION DEVICE (MFPD)

DEF mis-filling can be expensive. The OPW 21Gu MFPD offers the industry's most effective and affordable insurance policy against mis-filling mishaps – actually stopping them before they happen. There is no better way to protect your investment and the environment.



Materials

Hose:

O.D.: 1" (26 mm)

I.D.: 5/8" (16 mm)

Minimum bend radius: 3-1/2" (90 mm)

Thread connections: 1" BSPP female at both ends

Torque specification: 30-37 ft. lbs (40-50 Nm)



Features

- ◆ Specially designed for DEF-flow applications.
- ◆ Lightweight and highly flexible for easy customer handling.
- ◆ Smooth bore, seamless fluoropolymer lining for exceptional flow performance.
- ◆ Swivel end couplings provide for easy installation.
- ◆ Durable, reliable, long-life performance and maximum flow efficiency.
- ◆ Anti-kinking sleeve at nozzle end to reduce wear on hose during use.

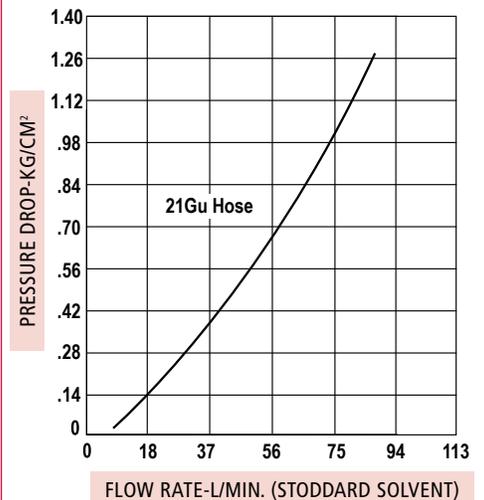
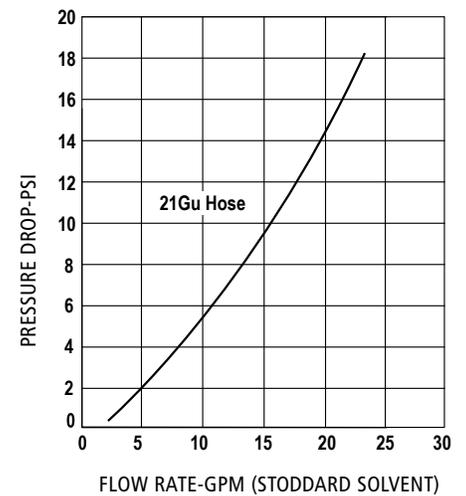
Ordering Specifications

Product #	Description
21GU-H11	DEF Hose Assembly, 11 ft. for Bennett® & Gasboy® Dispensers
21GU-H12	DEF Hose Assembly, 12 ft.
21GU-H15	DEF Hose Assembly, 15 ft. for Separation by Design® Dispensers
21GU-H17G	DEF Hose Assembly, 17.4 ft. for Gilbarco® Retail and Wayne® Dispensers
21GU-H21	DEF Hose Assembly, 21 ft.
21GU-HRS	DEF Hose Replacement Seals (10 per pack)
204128	Bulk DEF Hose, order by foot
204129	DEF Hose Coupling (comes with hose seal)
204130	DEF Anti-kinking Sleeve

Note: Need a different custom length? Contact OPW customer service at 1-800-422-2525.

OPW 21Gu Hose Assembly

The OPW 21Gu Series DEF Hose is the de facto standard for hoses in Europe. Designed with integral swivel couplings and an anti-kinking sleeve, the 21Gu hose is easy to install and use. The OPW 21Gu Hose meets compatibility testing as specified in ISO 22241 so that you can rest assured that your hose will last.



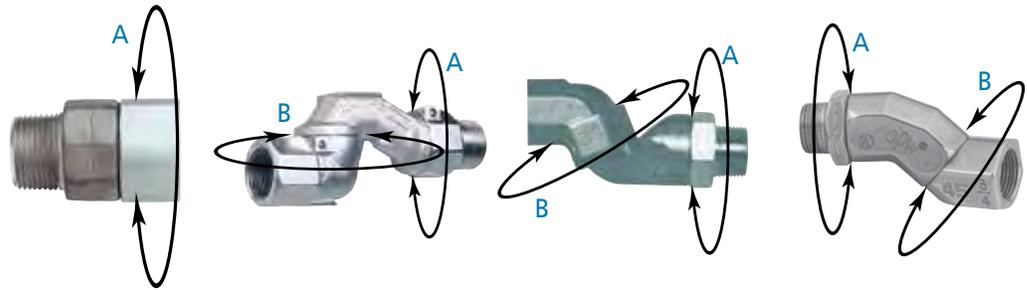
Conventional Swivels & Breakaways



- Swivel Breakaway Selection Chart..... 159
- Hose Swivels 160-162
- Swivel/Breakaways 163
- Reconnectable Breakaways 164-166
- Single Use Breakaways 167
- 66H Series Hose 167



SWIVELS



Model	36S	241TPS	20S	45
Rotation A	360°	360°	360°	360°
Rotation B	N/A	270°	360°	360°
O-Ring Design	Dual O-Ring – Viton®/Buna-N	Dual O-Ring – Viton®/Buna-N	Dual O-Ring/Viton® Fluorocarbon	Dual Seal – Viton®
3/4" Model	Yes	Yes	Yes	Yes
1" Model	Yes	Yes	Yes	Yes
Page	196	162	161	160
Cold Weather Option	No	No	Yes	Yes

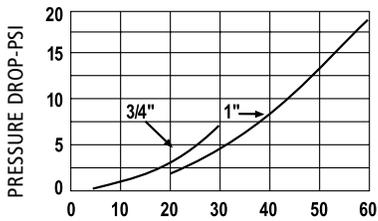
BREAKAWAYS



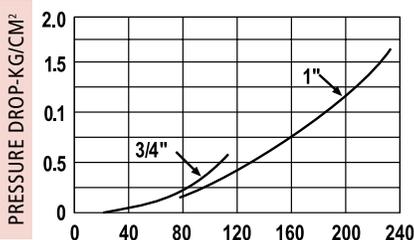
Model	66V	66RB	68EZR	66REC	66SB
Style	Single Use	Reconnectable	Reconnectable	Reconnectable	Reconnectable
Cost	<ul style="list-style-type: none"> • Low Initial Unit Cost • Requires Service Call To Replace 	<ul style="list-style-type: none"> • Higher Initial Unit Cost • No Service Call Required To Reconnect 	<ul style="list-style-type: none"> • Higher Initial Unit Cost • No Service Call Required To Reconnect 	<ul style="list-style-type: none"> • Higher Initial Unit Cost • No Service Call Required To Reconnect 	<ul style="list-style-type: none"> • Higher Initial Unit Cost • No Service Call Required To Reconnect
Application	<ul style="list-style-type: none"> • High Hose Dispensing • Requires Whip Hose 	<ul style="list-style-type: none"> • High Hose Dispensing • Requires Whip Hose 	<ul style="list-style-type: none"> • High Hose Dispensing • Requires Whip Hose 	<ul style="list-style-type: none"> • High Hose Dispensing • Requires Whip Hose 	<ul style="list-style-type: none"> • No Whip Hose Required
3/4" Model	Yes	N/A	Yes	Yes	Yes
1" Model	Yes	Yes	N/A	N/A	Yes
Other Features	Available with a Whip Hose Combination		Audible Click	Audible Click	Combines Swivel & Breakaway
Page	167	166	164	165	163
Cold Weather Option	No	No	Yes	Yes	Yes

OPW 45 Hose Swivel

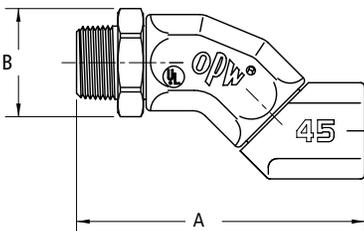
The OPW 45 swivel is designed for gasoline self-service applications where easy nozzle and hose handling is important for customer convenience. The 45 is installed between the nozzle and hose to reduce strain, providing flexibility so fueling hoses last longer.



FLOW RATE-GPM (STODDARD SOLVENT)

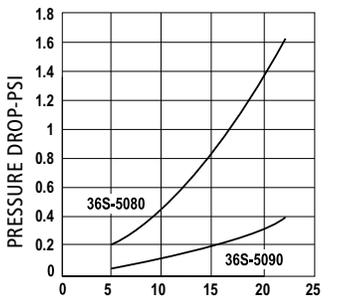


FLOW RATE-L/MIN. (STODDARD SOLVENT)



OPW 36S Hose Swivel

Designed for use with fuel oil nozzles (at inlet only), the OPW 36S provides 360° swivel action. The full-circle swivel reduces the physical strain of aligning the nozzle with the fillpipe.



FLOW RATE-GPM (STODDARD SOLVENT)

Materials

Body: Aluminum
Outlet Adaptor: Zinc
Inlet Adaptor: Zinc
Seals: Buna-N
Weight: 3/4": .65 lbs. each; 30 kg
 1": 1.16 lbs. each; .53 kg



OPW 45

Features

- ◆ UL and ULC listed for use in gasoline, diesel, and up to 10% ethanol blends. Specific listings available at www.opwglobal.com.
- ◆ Compact, attractive profile for a sleek, modern appearance.
- ◆ Secure design not repairable or rebuildable for certainty of operation. Every OPW 45 is factory assembled and tested.
- ◆ Better flow performance less restriction means higher refueling speeds.
- ◆ Unique 2 planes of rotation for easy nozzle positioning and hose life.
- ◆ 50 psi (3.45 bar) maximum pressure.

Ordering Specifications

Product #	Size	Overall Length	Across Corners	Weight	
		A	B	lbs.	kg
45-5060	3/4" F x 3/4" M (NPT)	4 1/8"	1 9/16"	.65	.30
	19 mm x 19 mm	105 mm	40 mm		
45-5075	1" F x 1" M (NPT)	4 3/4"	1 7/8"	1.16	.53
	25 mm x 25 mm	121 mm	48 mm		

Materials

Body: Aluminum
Adaptor: Zinc
 Aluminum
Seals: Buna-N O-Ring,
 Viton® O-Ring
Bearings: Nylon



36S-5080

Ordering Specifications

Product Number	Inlet Thread x Outlet Thread	lbs.	kg
36S-5080	3/4" M x 3/4" F (NPT)	0.30	0.14
	(19 mm x 19 mm)		
36S-5090	1" M x 1" F (NPT)	0.40	0.18
	(25 mm x 25 mm)		

Listings and Certifications



NOTE: See OPW's Website at www.opwglobal.com for product instruction sheets, trouble-shooting guides, how-to-use guide and to view the Do's & Don'ts at the Gas Pump video.

Materials

Body: Aluminum
Outlet Adaptor: Zinc aluminum
Inlet Adaptor: Zinc aluminum
Seals: Fluorosilicone and Viton®
Weight: 3/4": .70 lbs. each; .32 kg
 1": 1.20 lbs. each; .54 kg



3/4" 20S

Features

- ◆ UL and ULC listed for use in gasoline, diesel and up to 10% ethanol blends. Specific listings available at www.opwglobal.com.
- ◆ Compact, attractive profile for a sleek, modern appearance.
- ◆ Secure design – not repairable or rebuildable for certainty of operation. Every OPW 20S is factory assembled and tested.
- ◆ Better flow performance – less restriction means higher refueling speeds.
- ◆ Hi-grade seals for added protection against cold temperature and chemical degradation.
- ◆ Approved for Extreme Cold Weather

Design working pressure

- ◆ 50 psi (3.45 bar) maximum pressure.

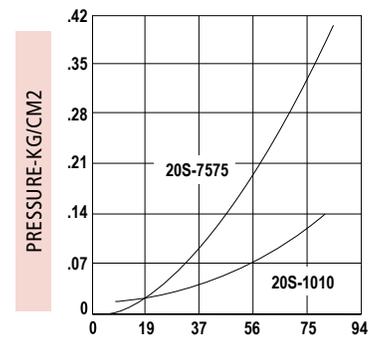
Ordering Specifications

Product #	Size		A		B		Weight	
	in.	mm	in.	mm	in.	mm	lbs.	kg
20S-7575	3/4" F x 3/4" M	19 F x 19 M	4.40	111.76	2.13	54.10	0.70	0.32
20S-1010	1" F x 1" M	25 F x 25 M	5.48	139.19	2.66	67.56	1.20	0.54

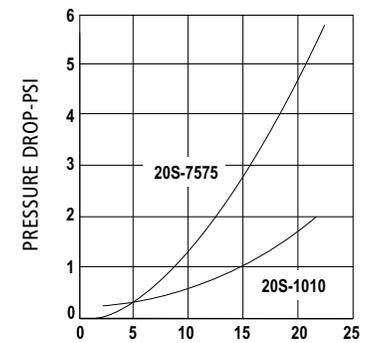


OPW 20S Hose Swivel

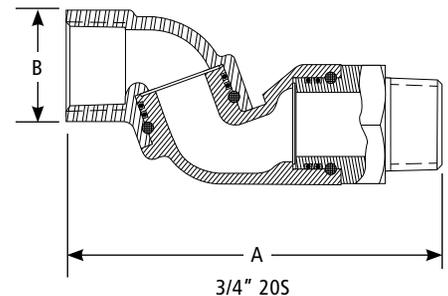
The OPW 20S Swivel has sleek and solid construction as well as superior engineering. The OPW 20S possesses two 360° swivel rotations, reducing hose wear. For low-temperature performance, choose the OPW 20S Swivel.



FLOW RATE-L/MIN.



FLOW RATE-GPM

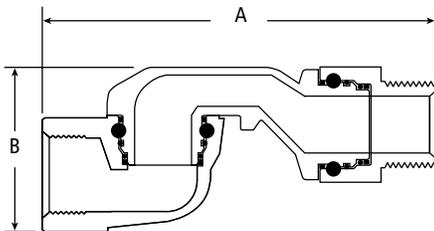
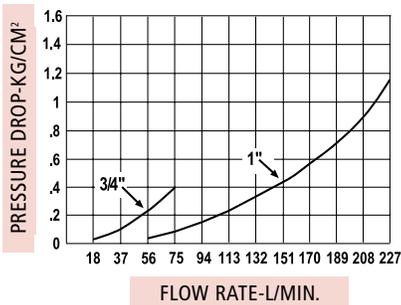
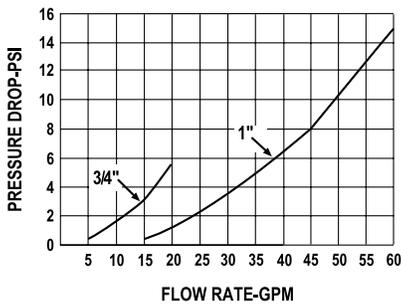


**Listings and
 Certifications**



OPW 241TPS Series Hose Swivels

The OPW 241TPS Series of swivels are designed and rigorously tested for applications where easy nozzle and hose handling is important for customer convenience. Swivels are installed in between the nozzle and the hose to provide flexibility in the system to reduce customer strain, position the nozzle properly and reduce premature hose wear.



Materials

Body: Aluminum
Inlet Adaptor: Zinc
Outlet Adaptor: Zinc
Seals: Buna-N, Viton®
Bearing: Nylon
Weight: 3/4": .65 lbs., .30 kg
 1": 1.55 lbs., .703 kg



Features

- ◆ UL and ULC listed for use in gasoline, diesel, and up to 10% ethanol blends. Specific listings available at www.opwglobal.com.
- ◆ Allows for easy nozzle positioning in fill pipes – utilizing two planes of rotation.
- ◆ Reduces premature hose wear – utilizing two planes of rotation.
- ◆ Added protection vs. thermal and chemical degradation – Dual Seals.
- ◆ 50 psi (3.45 bar) maximum pressure.

Ordering Specifications

Product #	Inlet/Outlet	Length A	Depth B
241TPS-0241	3/4" F x 3/4" M (NPT)	4 7/8"	2 3/16"
241TPS-0492*	19 mm x 19 mm	124 mm	56 mm
241TPS-1000	1" F x 1" M (NPT)	6 1/32"	2 17/32"
	25 mm x 25 mm	153 mm	64 mm

*241TPS-0492 is UL Listed for up to 85% Ethanol.

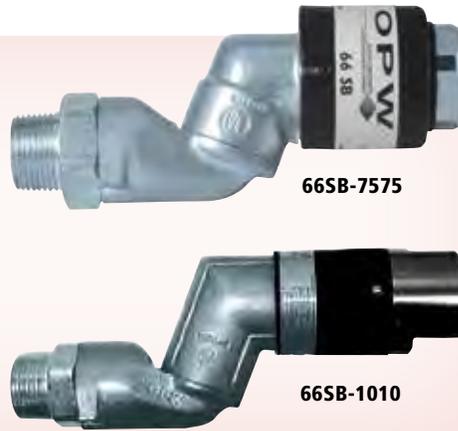
Listings and Certifications



NOTE: See OPW's Website at www.opwglobal.com for product instruction sheets, trouble-shooting guides, how-to-use guide and to view the Do's & Don'ts at the Gas Pump video.

Materials

Body: Aluminum
Sleeve: Nylon, HDPE
Seals: Viton®
Spring: Stainless steel
Poppet: Aluminum

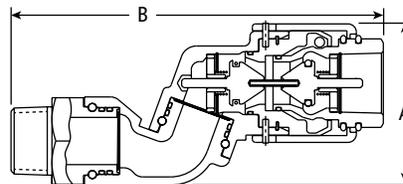


Features

- ◆ UL and ULC listed for use in gasoline, diesel and up to 10% ethanol blends. Specific listings available at www.opwglobal.com.
- ◆ Pull Force – the 66SB will break away with a pull force of no more than 350 lbs.
- ◆ Easily Reconnected at Waist Height – after relieving line pressure, simply push coupling halves together until latched. Reconnection force is approximately 15 lbs.
- ◆ Protected Coupling and Poppet – the breakaway's poppet and sealing surface are protected from impact during separation by a plastic sleeve.
- ◆ Reduces Connections – the single-unit design replaces the standard swivel, breakaway and whip hose, eliminating possible leak points.
- ◆ Double O-Ring Seal – both swivel joints are protected by a double O-Ring design.

Design working pressure

- ◆ 50 psi (3.45 bar) maximum pressure.



Ordering Specifications

Product #	Size	Weight	
		lbs.	kg
66SB-7575	3/4" x 3/4" (NPT)	1	0.45
66SB-1010	1" x 1" (NPT)	1.82	0.83

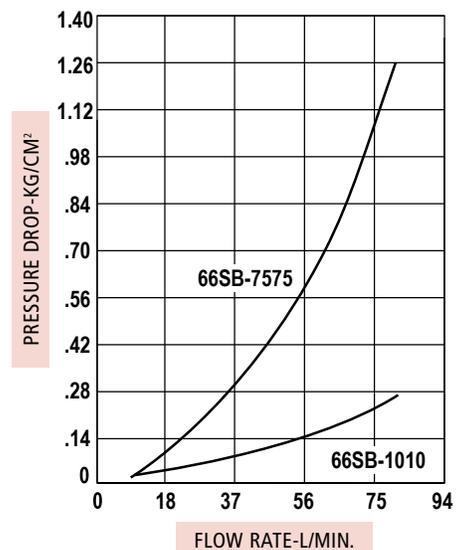
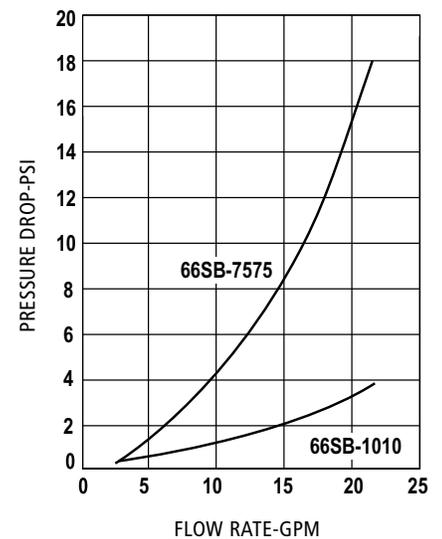
Dimensions

Product #	A		B	
	in.	mm	in.	mm
66SB-7575	2 1/2"	64	5 29/32"	150
66SB-1010	3 11/32"	85	8 1/2"	216

66SB Instruction Sheet Order Number: **F-69**

OPW 66SB Swivel Breakaway

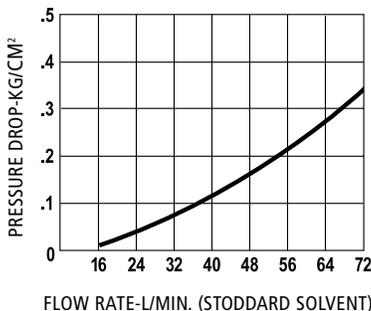
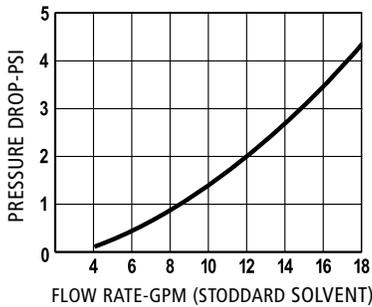
The OPW 66SB Swivel Breakaway is intended for easy installation at the nozzle inlet. The compact, lightweight design incorporates a 360° swivel rotation at both the male end and middle joint, with a simple and easily-reconnectable breakaway on the opposite end.



Listings and Certifications 

OPW 68EZR 3/4" Dry Reconnectable Breakaway

The OPW 68EZR Reconnectable Breakaway has been designed for retail fueling operations to deliver an increased level of security in the event of a drive off. Not only is it the fastest and easiest breakaway in the industry to reconnect, but also the one that delivers the greatest peace of mind that it is securely reconnected. Built on the 66REC breakaway technology platform, the 68EZR delivers trusted OPW quality and proven technology at the lowest cost of ownership. The 68EZR is installed on fuel dispensing hoses and will separate when subjected to a designated pull force. Upon separation, the dual valves seat automatically, stopping the flow of fuel and limiting any fuel spillage, while protecting the dispensing equipment. For proper operation on high-hanging hoses, the OPW 68EZR 3/4" must always be installed with a "straightening" hose with a minimum length of 9", such as the OPW 66H. For low hose applications, the OPW 68EZR should be installed downstream of the retractor cable.



Materials

- Body:** Die-cast zinc, Zamak
- Protective Sleeves:** Zytel
- Main Seals:** Viton®
- Main Spring:** Stainless steel
- Guide and Poppets:** Acetal / Delrin

68EZR



Features

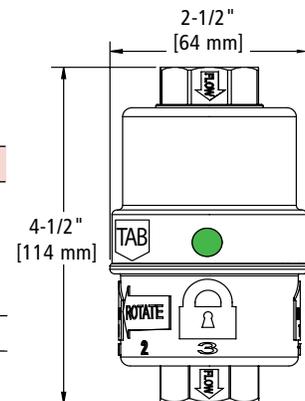
- ◆ UL and ULC listed for use in gasoline, diesel and up to 10% ethanol blends. Specific listings available at www.opwglobal.com.
- ◆ Pull Force – the 68EZR will break away with a pull force of no more than 350 lbs.
- ◆ Unique Double-Poppet Design – features low pressure drop.
- ◆ Coupling Halves – protected by proven plastic sleeves.
- ◆ Easily Reconnected – features "Push-Twist-Click" technology; simply realign the valve, push in and then twist until you hear the audible click.
- ◆ Cold weather compatible
- ◆ Reconnection force of approximately 7 lbs.
- ◆ Line Shock – the OPW 68EZR is able to absorb the effects of normal line shock through the unique design of the disconnecting features.
- ◆ 50 psi (3.45 bar) maximum allowable operating pressure.

Ordering Specifications

Product #	Size	mm	Weight	
			lbs.	kg
68EZR-7575	3/4" (NPT)	19	1.2	0.54

Replacement Parts

Part #	Description
207621	Main Seal
68EZR Series Instruction Sheet Order Number: 208080	



Listings and
Certifications



Materials

- Body:** Die-cast zinc
- Protective Sleeves:** Impact resistant nylon
- Main Seals:** Viton®
- Main Spring:** Stainless steel
- Guide and Poppets:** Acetal

66REC

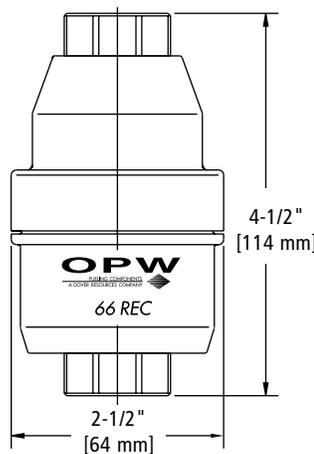
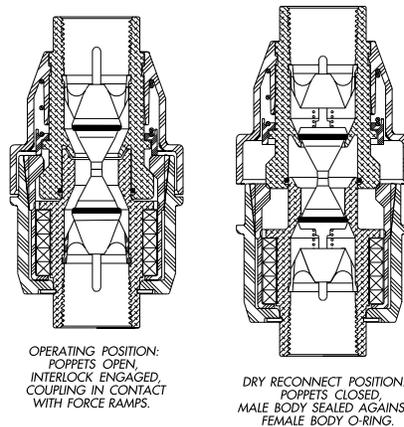


Features

- ◆ UL and ULC listed for use in gasoline, diesel and up to 10% ethanol blends. Specific listings available at www.opwglobal.com.
- ◆ Pull Force – the 66REC-1000 will break away with a pull force of no more than 350 lbs.
- ◆ Unique Double-Poppet Design – features low pressure drop.
- ◆ Coupling Halves – protected by proven plastic sleeves.
- ◆ Easily Reconnected – just “push and twist” until you hear the audible click, signifying the unit has been correctly reconnected. Reconnection force approximately 15 lbs.
- ◆ May be reconnected under wet or dry hose conditions.
- ◆ Cold weather compatible
- ◆ Line Shock – the OPW 66REC is able to absorb the effects of normal line shock through the unique design of the disconnecting features.

Design working pressure

- ◆ 50 psi (3.45 bar) maximum pressure.



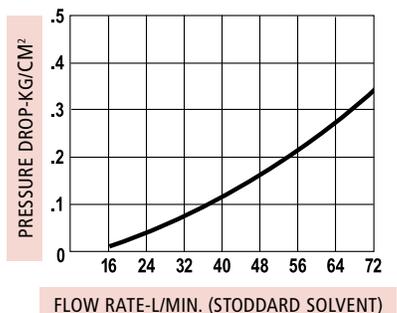
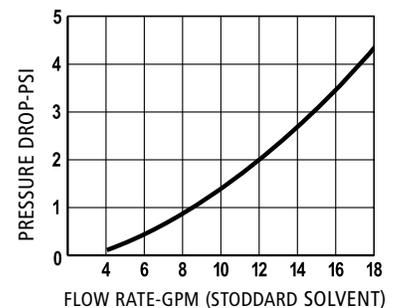
Ordering Specifications

Product #	in.	mm	lbs.	kg
66REC-1000	3/4" (NPT)	19	1.2	.54

NOTE: See OPW's Website at www.opwglobal.com for product instruction sheets, trouble-shooting guides, how-to-use guide and to view the Do's & Don'ts at the Gas Pump video.

OPW 66REC 3/4" Dry Reconnectable Breakaway

The OPW 66REC is the first dry reconnectable breakaway for the conventional dispensing market. It is designed to be installed on fuel dispensing hoses and will separate when subjected to a designated pull force. The dual valves seat automatically, stopping the flow of fuel and limiting any fuel spillage, while protecting the dispensing equipment. When reconnecting the separated halves, the 66REC seals tightly on an O-ring before the poppet stems engage to open the valve. For proper operation on high-hanging hoses, the OPW 66REC 3/4" must always be installed with a “straightening” hose with a minimum length of 9", such as the OPW 66H. For low hose applications, the OPW 66REC should be installed downstream of the retractor cable.

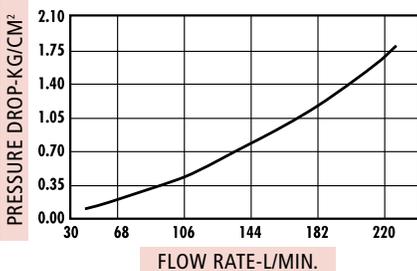
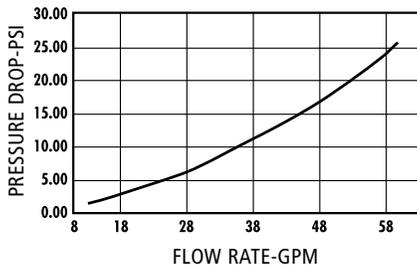


Listings and
Certifications



OPW 66RB 1" Reconnectable Breakaway

The 66RB-2000 Reconnectable Breakaway is designed for use in today's truckstop and high-volume markets. Intended for installation on fuel dispensing hoses, the 66RB will separate at a maximum force of 350 lbs. Upon separation, the integral check valves close, stopping the flow of fuel and limiting any fuel spillage from either hose end. For proper operation on high-hanging hoses, the OPW 66RB must always be installed using a "straightening hose" with a minimum length of 12", such as the OPW 66H. For low hose applications, the 66RB should be installed downstream of the retractor cable.



Materials

- Body: Aluminum
- Sleeve: HDPE
- Seals: Viton®
- Spring: Stainless steel
- Poppet: Aluminum

66RB



Features

- ◆ UL and ULC listed for use in gasoline, diesel and up to 10% ethanol blends. Specific listings available at www.opwglobal.com.
- ◆ Pull Force – the 66RB will break away with a pull force of no more than 350 lbs.
- ◆ Easily Reconnected – after relieving line pressure, simply push coupling halves together until latched. Reconnection force is approximately 15 lbs.
- ◆ Protected Coupling and Poppet – the breakaway's poppets and sealing surfaces are protected from impact during separation by a durable plastic sleeve.
- ◆ Low Pressure Drop – the integral check valve design allows for minimal pressure drop for faster, high-volume fill-ups.

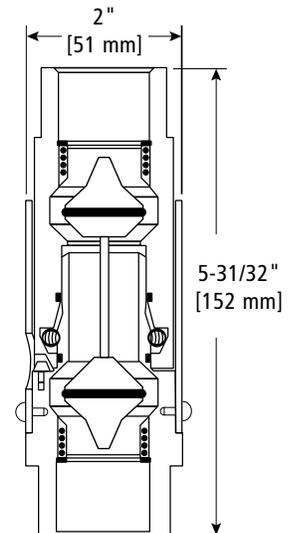
Design working pressure

- ◆ 50 psi (3.45 bar) maximum pressure.

Ordering Specifications

Product #	in.	mm	lbs.	kg
66RB-2000	1" (NPT)	25	1.14	.52

66RB Series Instruction Sheet Order Number: **F-69**



Listings and Certifications



Materials

Body: Aluminum
Seals: Buna-N and Viton®
Weight: See matrix below



66V Breakaway Scuff Guard



66V

Features

- ◆ UL and ULC listed for use in gasoline, diesel and up to 10% ethanol blends. Specific listings available at www.opwglobal.com.
- ◆ Prevents Costly Damage to Dispensers – pulls apart at less the designed pull force during drive-offs.
- ◆ Certainty of Operation – designed for single use, so you know it is replaced instead of re-assembled.
- ◆ Prevents Hazardous and Costly Clean Up – unique double poppet design closes leak path from both dispenser and separated hose side.

Design working pressure

- ◆ 50 psi (3.45 bar) maximum pressure.

NOTE: OPW 66V Series Breakaways must always be installed with a "straightening" hose with a minimum length of 9" for the 3/4" Series and a minimum length of 12" for the 1" Series, such as the 66H Series hoses.

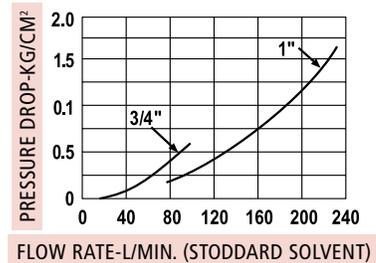
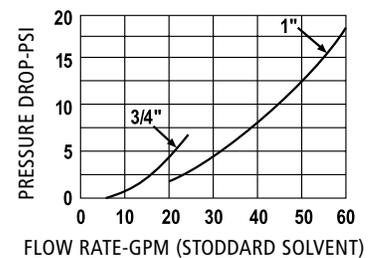
Ordering Specifications

Product #	Connection Size		Weight		Description - Pull Force
	in.	mm	lbs.	kg	
66V-0300	3/4" F x 3/4" F (NPT)	19 F x 19 F	0.60	0.27	Valve / 300 lb.
66V-0492*	3/4" F x 3/4" F (NPT)	19 F x 19 F	0.60	0.27	Valve for up to E85 / 300 lb.
66V-1300	1" F x 1" F (NPT)	25 F x 25 F	0.98	0.45	Valve / 300 lb.
66V-1350	1" F x 1" F (NPT)	25 F x 25 F	0.98	0.45	Valve / 350 lb.
66-0075	3/4" F x 3/4" M (NPT)	19 F x 19 M	1.46	0.66	Valve w/ 9 inch Hose / 300 lb.
66-1300	1" F x 1" M (NPT)	25 F x 25 M	2.50	1.13	Valve w/ 12 inch Hose / 300 lb.
66S-0075	3/4"	19	0.20	0.10	Vinyl Scuff Guard Cover
66S-1300	1"	25	0.20	0.10	Vinyl Scuff Guard Cover

* 66V-0492 is UL Listed for up to 85% Ethanol

OPW 66V Series Breakaways

The OPW 66V Series breakaways are designed and rigorously tested for use in today's fuels. Installed on fuel dispensing hoses, they will separate at the designed pull force, reducing expensive damage to the dispenser and piping system. Internal dual valves close automatically during separation, stopping the flow of fuel from both the dispenser and the separated hose, reducing environmental and health risks of potential spilled fuel.



66V Series 3/4" Instruction Sheet Order Number: **H10993PA**
 66V Series 1" Instruction Sheet Order Number: **H101833PA**
 66S Series Instruction Sheet Order Number: **H11015PA**

Listings and Certifications



OPW 66H Series of Hoses

The OPW 66H Hoses are UL approved, steel reinforced hardwall flexible to -40°F. 3/4 inch inside diameter with 3/4 inch male NPT chrome crimped ends. Compatible with fuel blends up to E-15 & B-20. Maximum working pressure 50PSI. Also available in Low Permeation per UL330.

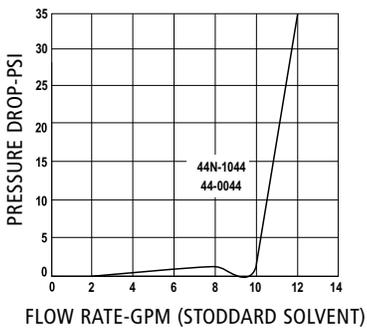


Ordering Specifications

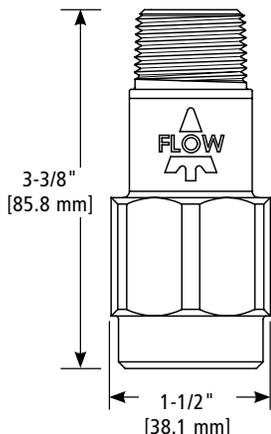
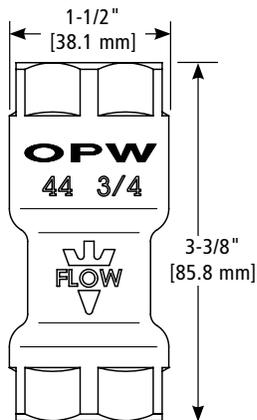
Product #	Length	Connection Size		Weight		Description
		in.	mm	lbs.	kg	
66H-0975	9 inch (23 cm)	3/4" M x 3/4" M (NPT)	19 M x 19 M	0.75	0.34	Straightening Hose
66H-0975-LP	9 inch (23 cm)	3/4" M x 3/4" M (NPT)	19 M x 19 M	0.75	0.34	Straightening Hose LOW PERMEATION per UL330
66H-1300	12 inch (30 cm)	1" M x 1" M (NPT)	25 M x 25 M	1.40	0.63	Straightening Hose
66H-08575	8.5 feet (2.6 m)	3/4" M x 3/4" M (NPT)	19 M x 19 M	4	1.8	Curb Hose
66H-08575-LP	8.5 feet (2.6 m)	3/4" M x 3/4" M (NPT)	19 M x 19 M	4	1.8	Curb Hose LOW PERMEATION per UL330

OPW 44 and 44N Flow Limiters

The OPW 44 and 44N Flow Limiters allow your customers to comply with the EPA 10 gpm maximum flow rate mandate which went into effect July 1, 1996. Both the OPW 44-0044 and 44N-1044 Flow Limiters are designed to control the maximum fuel flow rate to 10 gpm.



44-0044



Materials

Body: Zinc/aluminum
(44) aluminum
nickel-plated (44N)

Spring: Steel

Guide: Ceramic-filled plastic

Adaptor: Steel zinc-plated

Inlet and Outlet Size: 3/4" NPT



Features

- ◆ UL and ULC listed for use in gasoline, diesel and up to 10% ethanol blends. Specific listings available at www.opwglobal.com.
- ◆ Compact, attractive profile – for a sleek, modern appearance.
- ◆ The OPW 44-0044 is designed to be installed at the dispenser outlet or between the dispenser and the breakaway valve, thus removing it from the abusive action sometimes seen at the nozzle.
- ◆ A flow indication arrow – is indicated on the flow limiter for easy installation.
- ◆ 44N-1044 has a 3/4" male thread – for connection at the nozzle inlet or at the swivel inlet.

Design working pressure

- ◆ 50 psi (3.45 bar) maximum pressure.

Ordering Specifications

Product #	Length in.	Weight	
		lbs	kg
44-0044	3/4 F x 3/4 F (NPT)	1.2	.54
44N-1044	3/4 F x 3/4 M (NPT)	1.2	.54

44 Series Instruction Sheet Order Number: **H12918PA**
44N Series Instruction Sheet Order Number: **H13168PA**

Listings and Certifications



See page 299 for certification number

NOTE: See OPW's Website at www.opwglobal.com for product instruction sheets, trouble-shooting guides, how-to-use guide and to view the Do's & Don'ts at the Gas Pump video.

Vacuum-Assist Vapor Recovery Hanging Hardware



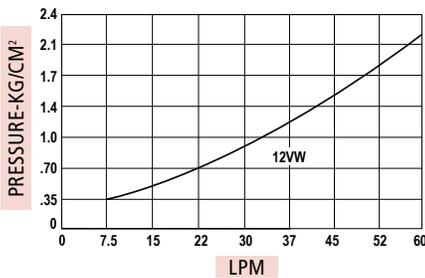
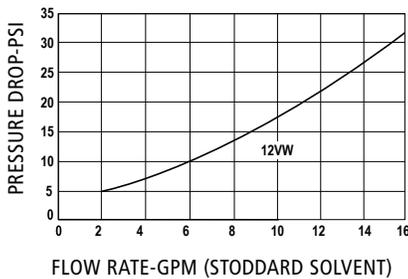
- 12VW Nozzles..... 170-171
- Vapor Recovery Nozzle Accessories and Replacement Parts..... 172-173
- Hose Swivels 174
- Swivel Breakaway Combos 175
- Reconnectable Breakaways 176
- Single-Use Breakaways 177
- Accessories, Adaptors and Converters 178



OPW 12VW Vacuum-Assist Nozzles

The OPW 12VW Series automatic nozzles are one of OPW's premium nozzles for Vacuum-Assist vapor recovery systems. Designed with an integrated vapor-valve, they are certified on the most used vapor recovery systems in the world. The 12VW is the most trusted vapor recovery nozzle in the world for the applications it is certified on including:

- Dresser/Wayne Wayne® Vac
- Gilbarco® VaporVac®
- Schlumberger
- Vacurite



Materials

- Body:** Aluminum
- Lever & Lever Guard:** Duratuff®
- Packing:** Graphite with Teflon®
- Disc:** Viton®
- Spout:** Aluminum w/ Stainless Steel tip
- Inlet Size:** M34 Metric
- Weight:** 3.1 lbs. each; 31.0 lbs./case of 10
1.41 kg each; 14.1 kg/case of 10



12VW

Features

Safe for Use

- ◆ UL listed for use in gasoline, diesel and up to 10% ethanol blends. Specific listings available at www.opwglobal.com.
- ◆ Prevents gasoline spills in prepay or card-lock systems utilizing OPW's unique No Pressure – No Flow Device. – The nozzle cannot be opened until the pumping system is pressurized and closes automatically when the pressure is removed.
- ◆ Prevents consumer from jamming the nozzle in an open position – blocker on lever guard.
- ◆ FlowLock™ allows nozzle to shut off when falling out of a vehicle, and is tipped up, limiting spillage and unsafe conditions.
- ◆ Vapor Escape Guard (VEG) improves vapor collection.
- ◆ Lever-activated vapor valve only opens when product is flowing controlling the amount of vapors collected from the vehicle.

- ◆ Stainless steel insert in spout to last longer than standard aluminum-only spouts.
- ◆ Durable lever guard that won't scratch your customers' vehicles – made from Duratuff®.
- ◆ New hold-open clip spring lasts longer than previous designs.
- ◆ Internal vapor path – no replacement parts needed.

Appealing to Customers

- ◆ Easy to use – utilizing Accu-Stop® to-the-penny Flow Control Technology.
- ◆ Attractive 2-Piece NEWGARD™ Hand Insulator is the most comfortable nozzle in the industry to use.
- ◆ Convenient – one-finger hold-open clip that is easy to set the flow rate (not on all models).

Design working pressure

- ◆ 50 psi (3.45 bar) maximum pressure.
- * **OPW internal lab testing results as of August 2010.**

Durable and Long Lasting

- ◆ Cycle tested and proven to last longer than 1 million cycles – better than any other nozzle available on the market today*.

Listings and Certifications



CARB

California Air Resources Board

Listings and Certifications

Certifications and Listings

Gilbarco® VaporVac®

CARB Initial Certification Date	April 2000	July 2000
CARB Certification Number	G-70-153* / G-70-199**	G-70-150* / G-70-199**

* Latest version.

** Approval for 350ml liquid retention requirement.

Ordering Specifications

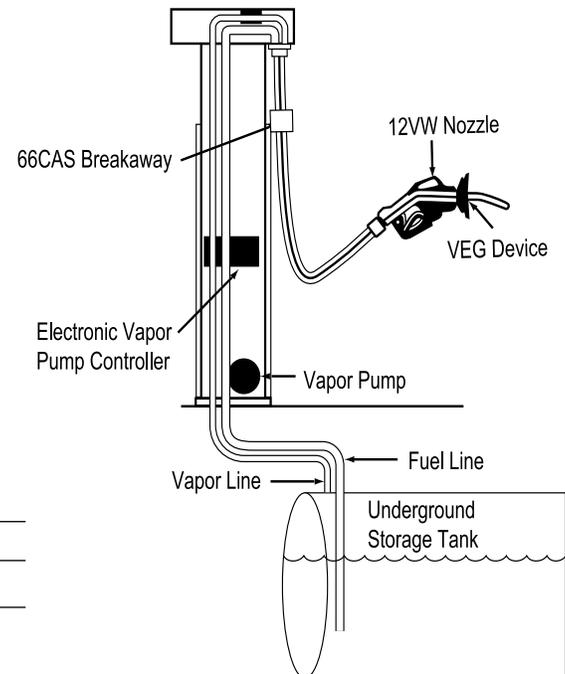
Standard Hand Insulator Color	12VW New Unleaded, with Hold-open Rack
 Green	12VW - 0100
 Silver	12VW - 0200
 Red	12VW - 0300
 Black	12VW - 0400
 Blue	12VW - 0500
 Gold	12VW - 0750
 Yellow	12VW - 0900
Bare	12VW - 0000

Replacement and Repair Parts

Product	Description	Part#
Spout Kit	Replacement aluminum unleaded spout with VEG	5VW-2000
ECD Kit	Replacement ECD and hardware	3VW-0450

12VW Series Instruction Sheet Order Number: **H15890PAE**

Typical Installation



OPW 6 NEWGARD™ Two-Piece Hand Insulator

Ordering Specifications

Hand Insulator Color	12VW New Unleaded, with Hold-Open Rack
 Green	H13964M
 Silver	H14662M
 Red	H13942M
 Black	H13941M
 Blue	H14580M
 Gold	H14661M
 Yellow	H13943M
Hand Insulator Barrel	D02141M



OPW Vapor Recovery Accessories

Kits are for all 11VA, 11VAI and 11VAA Series nozzles. Used to replace worn and dirty hand insulators for improved station image. Kit includes new hand insulator, attaching hardware and instructions.

OPW 11VA Series Replacement Spout Kit

These kits are for OPW's 11VA, 11VAI and 11VAA Series nozzles. Kit includes spout, spout nut, spout adaptor and anchor spring. Specify whether for leaded or unleaded applications.

OPW 11VA Series Hold-Open Rack Kit

Kits are for all 11VA, 11VAI and 11VAA Series nozzles. Converts a self-serve nozzle without hold-open rack to a full-serve nozzle with hold-open rack. Kit includes new racks, attaching hardware, instructions and tools to do 36 nozzles.

Ordering Specifications - Vapor Recovery Accessories

Hand Insulator Color	Amoco 11VAA-61 & Hirt 11VA	Gilbarco® / VACURITE® & MICRO VACURITE® 11VAI-27/37	Wayne, Tokheim, All Others 11VAI-68/69
Green	H11817M	H11744M	H12011M
Silver	H11818M	H11745M	H12583M
Red	H11819M	H11746M	H12013M
Black	DO1717M	DO1718M	DO1785M
Blue	–	H11747M	H12014M
Yellow	–	H11751M	H12018M
Gold	H11829M	H11756M	H12585M

Note: Custom colors available, minimum quantity and extended lead times. Contact customer service for more information.

Note: Hand Insulators for Amoco must request "Amoco" logo, if required.



Ordering Specifications - Replacement Spout Kit

Product #	Description	Nozzle Model
5VSS-2000	Gilbarco®	11VAI-27
5VSS-4000	Tokheim/VaporEZ™	11VAI-68
5VSS-6000	Wayne	11VAI-69
5VSS-7000	Amoco	11VAA-61
5VSS-8000	VACURITE® & MICRO VACURITE®	11VAI-37
5VSS-9000	Hirt	11VA-29

Replacement and Repair Parts

Product #	Description	Nozzle Model
3VT-0400	Replacement ECD Hardware	11VAA
2VXK-0700	Evacuator Tube Kit	11VAA
18KVA-1000	Hold-Open Rack Kit	11VA Series
5VPG-1000	Vapor Path Kit	11VA and 11VAI Series

OPW 6 NEWGARD™



Ordering Specifications

Hand Insulator Color	AstroVac™ Replacement NEWGARD™ Hand Insulators
Green	3043R - G
Silver	3043R - S
Red	3043R - R
Black	3043R - BK

Hand Insulator Color	AstroVac™ Replacement NEWGARD™ Hand Insulators
Blue	3043 - BL
Gold	3043R - GD
Yellow	3043R - Y

11VF Hand Insulator



Ordering Specifications

Hand Insulator Color	11VF Balance Nozzle
Green	CO3595M
Silver	CO3558M
Red	CO3533M

Hand Insulator Color	11VF Balance Nozzle
Black	E00292M
Blue	CO3559M
Gold	CO3563M

OPW ASTROVAC™ One-Piece Hand Insulator Kit

OPW AstroVac™ Series NEWGARD™ one-piece hand insulators. Available in a variety of colors.

Replacement and Repair Parts

Product	Description
5VPG-1000	Vapor Path Kit
3044K	Replacement Spout Kit with ECD
204756	Replacement ECD
18KVA-1000	Replacement Hold Open Rack Kit

OPW 11VF Balance Nozzle One-Piece Hand Insulator Kit

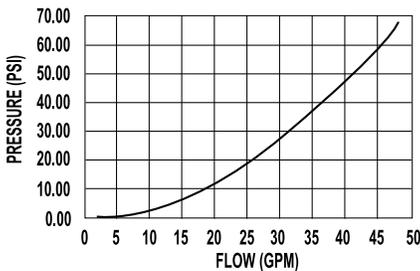
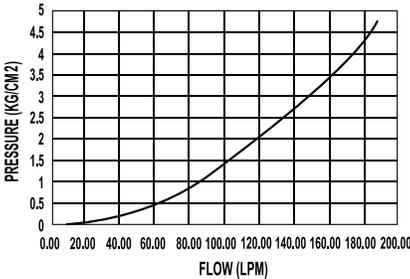
Hand Insulator Kits for 11VF balance nozzles. Available in a variety of colors.

Replacement and Repair Parts

Product	Description
5FP-0300	Replacement Bellows
5FF-0600	Replacement Face Seal
5FBP-4100	Replacement Spout, Bellows and Face Seal
5FFB-0900	Replacement Bellows and Face Seal
45FP-0600	Replacement Unleaded Spout Kit
18KVA-1000	Replacement Hold Open Rack Kit

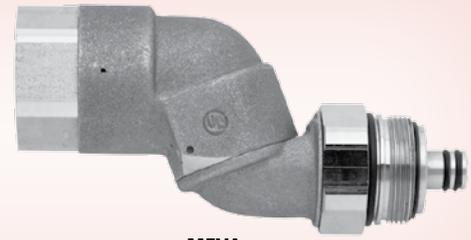
OPW MFVA Inverted Swivel

The OPW MFVA Inverted Swivel is designed for vapor recovery applications where easy nozzle and hose handling is important for customer convenience. When attached between the nozzle and the hose, the OPW MFVA two-plane swivel allows your customer a much fuller range of motion in positioning the nozzle to fill the vehicle. Your customer can access the fillpipe from virtually any angle with minimal effort. The OPW MFVA attaches between the hose and the nozzle to reduce strain, providing flexibility so fueling hoses last longer. The OPW MFVA provides 360° swivel action for easy nozzle positioning into the fillpipe.



Materials

Body: Aluminum
Outlet Adaptor: Aluminum
Inlet Adaptor: Aluminum
Seals: Viton and Buna-N
Weight: 1.5 lbs. each, 0.68 kg



MFVA

Features

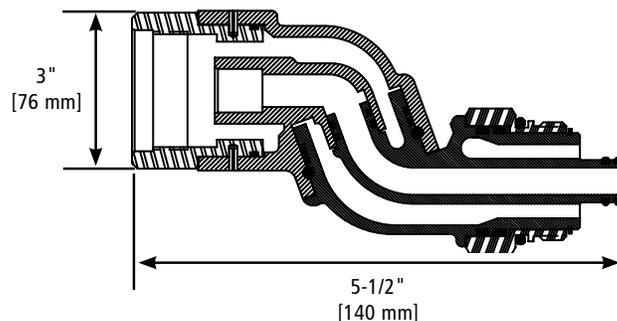
- ◆ **UL listed** for use in gasoline, diesel and up to 10% ethanol blends. Specific listings available at www.opwglobal.com.
- ◆ **Easier Hose Movement** – filling the vehicle is much easier, because hoses do not kink and are much freer to move.
- ◆ **Improved Wear** – reduces stress and wear on hoses.
- ◆ **Two-Plane Rotation** – the first swivel plane allows for 360° of motion perpendicular to the axis of the nozzle.
- ◆ The second swivel plane allows for 360° of motion parallel to the axis of the nozzle for easy nozzle positioning in the fillpipe.
- ◆ **Compact, Attractive Profile** – provides a sleek, modern appearance, allowing hoses to hang straight down instead of at an angle.
- ◆ **Secure Design** – not repairable or rebuildable for certainty of operation. Every MFVA is factory assembled and tested.
- ◆ **Special Swivel Outlet Design** – male adaptor is specially designed so that tightening of the threaded joint will not inhibit swivel rotation.

Design working pressure

- ◆ 50 psi (3.45 bar) maximum pressure.

Ordering Specifications

Product #	Description	Threads
MFVA	Vacuum Assist Swivel	M34 Metric



Listings and Certifications



CARB

California Air Resources Board

Materials

Body: Aluminum
Sleeve: Nylon, HDPE
Seals: Viton®
Spring: Stainless steel
Poppet: Aluminum
Weight: 1.3 lbs., 0.60 kg



66ISB-5100

Features

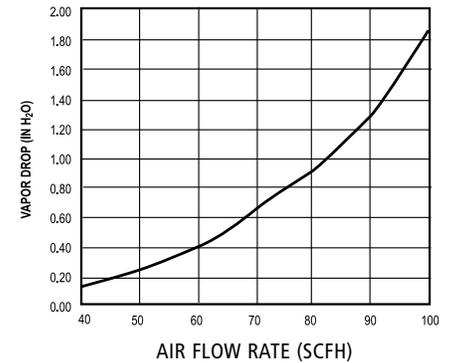
- ◆ UL and ULC listed for use in gasoline, diesel and up to 10% ethanol blends. Specific listings available at www.opwglobal.com.
- ◆ Breakaway separates at 350 pounds of axial force.
- ◆ 66ISB-5100 comes with vapor poppet.
- ◆ Swivel rotation of 360° in both planes.
- ◆ Push-back reconnect style.
- ◆ Easier reconnection at waist height.
- ◆ Extends hose life.
- ◆ Double O-rings at each joint.

Design working pressure

- ◆ 50 psi (3.45 bar) maximum pressure.

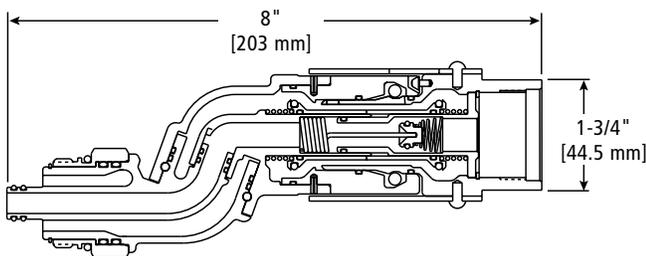
OPW 66ISB Vacuum-Assist Stage II Vapor Recovery Reconnectable Swivel/Breakaways

Reconnectable, vapor poppeted Vacuum-Assist Swivel/Breakaways available. Designed for those who want to provide customers with the convenience of a 2-plane swivel and the added safety of a breakaway.



Ordering Specifications

Product #	Threads
66ISB-5100	M34 Metric Breakaway



Listings and Certifications



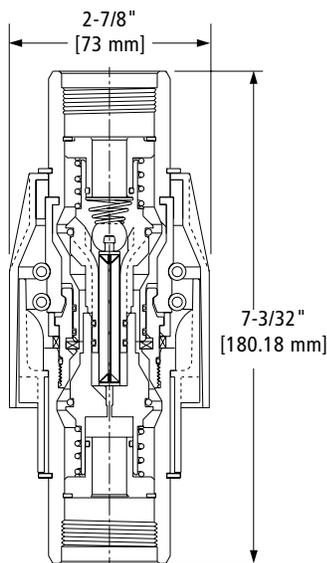
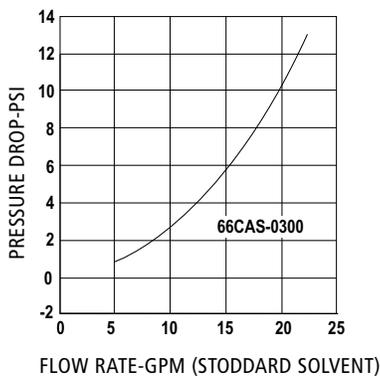
CARB

California Air Resources Board

CARB Certified and UL Listed Per Standard 567.

OPW 66CAS Dry Reconnect Inverted Breakaways

The OPW 66CAS Dual Poppeted, Dry Reconnect Inverted Breakaway is designed to close off the liquid path and the vapor path in the event of a drive-away. Engineered to separate at maximum of 300 pounds of axial pull force, the OPW 66CAS Breakaway is also designed to handle line shock better than a single use breakaway, while protecting your dispensing system from catastrophic damage. The OPW 66CAS is developed for use with inverted coaxial metric hoses and designed to meet today's demanding standards.



Materials

- Body:** Aluminum
- Main Seals:** Viton
- Guide and Poppets:** Acetal
- Protective Sleeves:** Impact Resistant Nylon®
- Main Spring:** Stainless steel
- Weight:** 1.0 lbs., 0.96 kg



66CAS-0300

Features

- ◆ UL listed for use in gasoline, diesel and up to 10% ethanol blends. Specific listings available at www.opwglobal.com.
- ◆ Dual Poppets – close to prevent product spillage and vapor leakage.
- ◆ Dual poppeted breakaways are recommended for use in any vacuum-assist systems, especially nozzles with integral vapor valves.
- ◆ Sleek, Attractive Appearance – to enhance station image.
- ◆ Quick Reconnect – requires only 15 lbs. of force to reconnect.
- ◆ Dry Reconnect – designed to help prevent liquid from spraying the operator during the reconnection operation.
- ◆ Rugged, Durable Construction – outer sleeve to protect coupling and sealing parts from damage for long, trouble-free service life.

- ◆ Nozzle and Hose Compatibility – interfaces with Stage II vapor recovery nozzles by OPW, and with all manufacturers of vapor recovery hoses (features the popular M34 metric thread).

Construction/Design

- ◆ Outer sleeve to protect sealing and coupling parts in a driveaway.
- ◆ Field-proven, double-poppet design that seals both ends of the product line and the dispenser side of the vapor line in a driveaway.
- ◆ Inverted metric coaxial hose fitting for installation into any vacuum-assist dispenser.
- ◆ Easily replaces any inverted breakaway currently in use today.

Design working pressure

- ◆ 50 psi (3.45 bar) maximum pressure.

Ordering Specifications

Product #	Threads
66CAS-0300	M34 Metric Breakaway
66CAS Series Instruction Sheet Order Number: H13008M	

Replacement Parts

Product #	Threads
66SRK-1000	Seal Replacement Kit

Listings and Certifications



CARB

California Air Resources Board

Materials

Body: Aluminum
Main Seals: Viton®
Weight: .53 lbs., 0.24 kg

66ISU-5100



Features

- ◆ UL listed for use in gasoline, diesel and up to 10% ethanol blends. Specific listings available at www.opwglobal.com.
- ◆ Separates at 300 pounds of axial force.
- ◆ Disposable, shear-pin design.

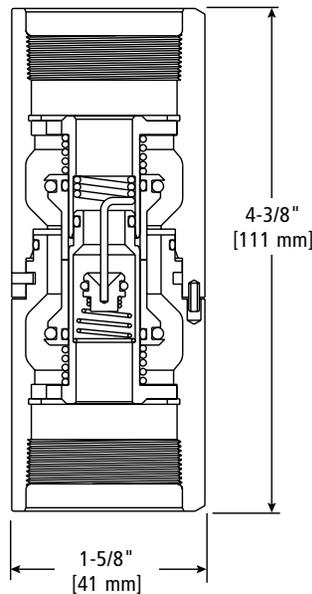
- ◆ Durable, lightweight construction.
- ◆ Minimum vapor pressure drop.

Design working pressure

- ◆ 50 psi (3.45 bar) maximum pressure.

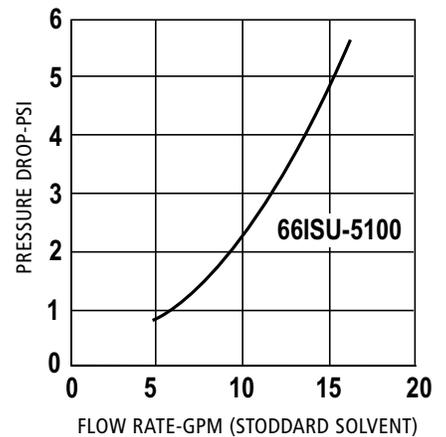
Ordering Specifications

Product #	Threads
66ISU-5100	M34 Metric Breakaway



OPW 66ISU Vacuum-Assist Stage II Vapor Recovery Breakaways

Single use, vapor poppeted Vacuum-Assist Breakaways available. Designed for those who desire single use breakaway protection on vacuum-assist systems. The 66ISU-5100 comes with a vapor poppet which seals the vapor side during separation.



Listings and Certifications

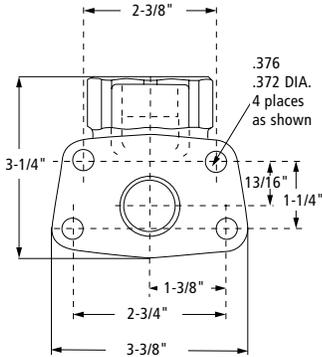


CARB

California Air Resources Board

OPW 38CS Balance Adaptor

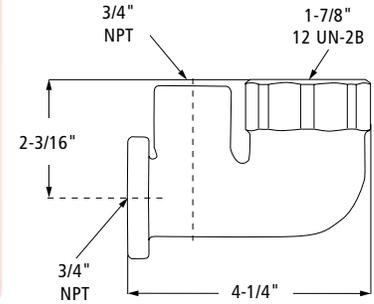
OPW's 38CS Balance Adaptor line makes conversion from standard to balance easier and more user-friendly.



Weight: 2.4 lbs.,
1.08 kg



OPW 38CS



Ordering Specifications

Product #	Description	Application
38CS-0380	Adapts Conventional Dispensers to Balance Vapor Recovery	Low-Hose Single and Dual Dispensers; External Mount

38CS Series Instruction Sheet Order Number: **H10754PA**

Listings and Certifications

CARB

California Air Resources Board

OPW VAR75 Converter Vac-Assist to 3/4" NPT

Converts vacuum-assist nozzle to a conventional hose or a vacuum-assist dispenser for use with a conventional hose.

Materials

Body: Aluminum
Seals: Buna-N
Weight: 0.75 lbs.,
0.34 kg



VAR75

Features

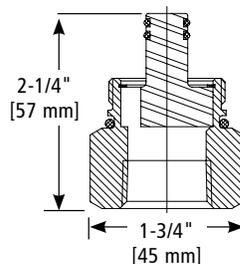
- ◆ Lightweight, maintenance free and easy to install.
- ◆ Adapts M-34 thread to a 3/4" NPT thread.

Design working pressure

- ◆ 50 psi (3.45 bar) maximum pressure.

Ordering Specifications

Part No.	Description
VAR75	Vac-assist to 3/4" NPT Conventional Converter



Materials

Body: Aluminum
Seals: Buna-N
Weight: 0.75 lbs.,
0.34 kg



28C

Features

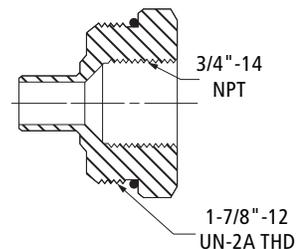
- ◆ Lightweight, maintenance free and easy to install.
- ◆ Adapts 1-7/8 – 12 UN thread to a 3/4" NPT thread

Design working pressure

- ◆ 50 psi (3.45 bar) maximum pressure.

Ordering Specifications

Part No.	Description
28C-0028	Coax Vapor Recovery x 3/4" NPT Bushing



Balance Vapor Recovery Hanging Hardware

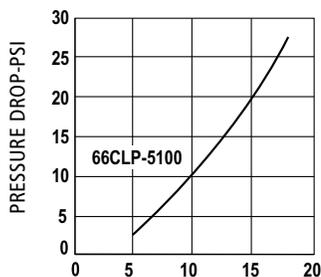
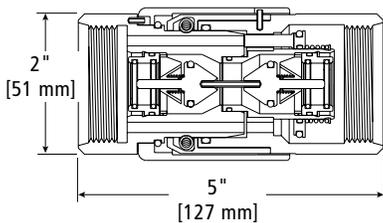


- Reconnectable Breakaways 180
- Single-Use Breakaways 180



OPW 66CLP Balance Phase II Enhanced Vapor Recovery Reconnectable Breakaway

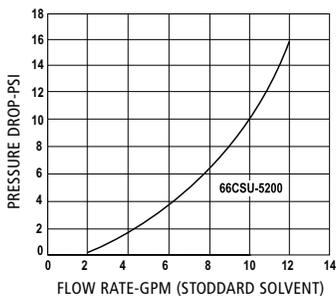
For more than a decade, the 66CLP has earned the reputation as the industry standard in preventing fuel vapors from escaping during a separation incident on balance systems. Its proven design minimizes downtime and allows all hose points to be put back in service as quickly and easily as possible after a separation event. The OPW 66CLP is also approved for VST Phase II Enhanced Vapor Recovery Systems.



FLOW RATE-GPM (STODDARD SOLVENT)

OPW 66CSU Balance Stage II Vapor Recovery Breakaway

Single-use, non-vapor poppeted balance breakaway. Designed for those who desire single-use breakaway protection on balance systems.



Listings and Certifications

CARB
California Air Resources Board



Materials

Body: Die-cast zinc
Protective Sleeves: Impact modified nylon
Main Seals: Viton®
Main Spring: Stainless steel
Guide and Poppets: Acetal
Weight: 0.97 lbs., 0.44 kg



California Air Resources Board Certified – Executive Order VR-203-N & VR-204-N

66CLP-5100

Features

- ◆ UL listed for use in gasoline, diesel and up to 10% ethanol blends. Specific listings available at www.opwglobal.com.
- ◆ Separates at 350 pounds of axial force.
- ◆ Push-back reconnect style.
- ◆ Durable, lightweight construction.
- ◆ Minimal pressure drop.

Design working pressure

- ◆ 50 psi (3.45 bar) maximum pressure.

Ordering Specifications

Product #	Description
66CLP-5100	Vapor Poppeted Reconnectable Balance Breakaway
66CLP Instruction Sheet Order Number: F-70	

Replacement Parts

Product #	Description
204870	O-ring
204872	Spring
204811	Outer Cover

Listings and Certifications

CARB Certification Numbers	Executive Order VR-203-N (for Balance Phase II Enhanced Vapor Recovery (EVR) Systems Not Including In-Station Diagnostics (ISD))
	Executive Order VR-204-N (for Balance Phase II Enhanced Vapor Recovery (EVR) Systems Including In-Station Diagnostics (ISD) Systems)

Materials

Body: Aluminum
Seals: Buna-N and Viton®
Weight: 1.06 lbs., 0.48 kg



66CSU-5200

Features

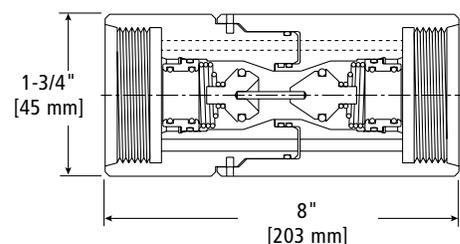
- ◆ UL listed for use in gasoline, diesel and up to 10% ethanol blends. Specific listings available at www.opwglobal.com
- ◆ Disposable, shear pin design.
- ◆ Separates at 300 pounds of axial force.
- ◆ Durable, lightweight construction.
- ◆ Minimal pressure drop.

Design working pressure

- ◆ 50 psi (3.45 bar) maximum pressure.

Ordering Specifications

Product #	Description
66CSU-5200	Single use balance breakaway
66CSU Instruction Sheet Order Number: F-72	



Industrial Products



- DEF Nozzle..... 182
- Automatic Nozzles 183
- Overwing Aircraft Nozzles 184-187
- Manual High-Flow Bulk Fill Nozzles 188-192
- Manual Nozzle Accessories..... 193
- Manual Utility Farm Nozzle..... 194
- Reconnectable Breakaways 195
- Hose Swivels 196



OPW 19DEF Series Industrial Automatic Nozzle

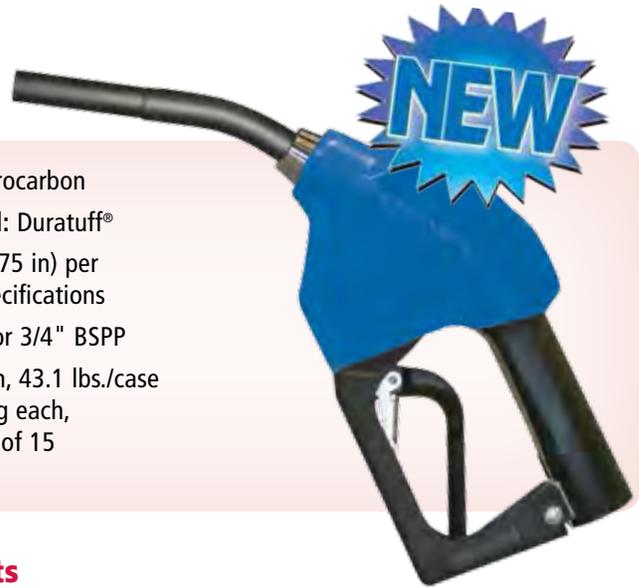
When you're responsible for ensuring the safe, reliable and affordable dispensing of Diesel Exhaust Fluid (DEF) for on-road, off-road, commercial and industrial heavy-duty trucks, farming or other diesel powered vehicles, you rely on the most trusted name in dispensing nozzles – OPW.

As the global standard for more than a century, OPW nozzles are built to perform better and last longer* than any other brand to deliver unprecedented peace-of-mind, ROI, and performance. The NEW OPW 19DEF Series Industrial Automatic Nozzle is specifically designed for your commercial and industrial fleet operations, offering unmatched reliability with the features you want.

*** OPW internal lab cycle testing results with DEF as of August 2013.**

Materials

- Packing & Disc:** Fluorocarbon
- Lever & Lever Guard:** Duratuff®
- Spout:** O.D. 19mm (0.75 in) per ISO 22241 Specifications
- Inlet Size:** 3/4" NPT or 3/4" BSPP
- Weight:** 2.73 lbs. each, 43.1 lbs./case of 15, 1.25 kg each, 19.9 kg/case of 15



Features - Benefits

- ◆ Lowest Overall Cost of Ownership – reliable, long lasting design based on proven OPW quality platform and industry standard-setting technology
- ◆ DEF Compatible – all materials of construction are 100% 3rd party tested and approved for DEF compatibility
- ◆ Ease of Use – sleek, lightweight design with patented Accu-Stop® Flow Control Technology and convenient one-finger hold-open clip to set flow rate
- ◆ User Comfort – attractive 2-Piece NEWGARD™ Hand Insulator is the most comfortable nozzle in the industry in hot or cold weather
- ◆ Vehicle Protection – our Duratuff® lever guard not only provides for rugged durability when dropped but also won't scratch your fleet vehicle
- ◆ Meets ISO 22241 Requirements

Design Working Pressure

- ◆ 50 PSI (3.45 bar) maximum pressure

NOTE: The OPW 19DEF Series Nozzles are for commercial fleet applications only and are not UL Listed for gasoline dispensing facilities.

Ordering Specifications

Product #	Description
19DEF-0500	Nozzle - 19mm spout; 3/4" Female NPT inlet connection, blue hand warmer
19DEF-050L	Nozzle - 19mm spout; 3/4" Female BSPP inlet connection, blue hand warmer
Hose Adaptors (Sold Separately).	
19DM-0100	3/4" MNPT to 1" MNPT - Connecting nozzle to 1" NPT Female hose
19DF-0100	3/4" MNPT to 1" FNPT - Connecting nozzle to 1" NPT Male hose
19DML-0100	3/4" MBSPP to 1" MBSPP - Connecting nozzle to 1" BSPP Female hose
19DFL-0100	3/4" MBSPP to 1" FBSPP - Connecting nozzle to 1" BSPP Male hose
19DML-0075	3/4" MBSPP to 3/4" MBSPP - Connecting nozzle to 3/4" BSPP Female hose

Materials

- Body: Aluminum
- Main stem: Stainless steel
- Packing: Graphite with Teflon®
- Main Disc: Viton®
- Inlet Size: 1-1/2" NPT



1290-0050

Features

- ◆ Venturi-Type Shut-Off Mechanism – for automatic shut-off.
- ◆ Aluminum Body – lighter in weight and easier to maneuver than other nozzles on the market.
- ◆ Two-position hold-open device.
- ◆ One-Hand Control of Hold-Open Mechanism – means easy setting of flow rate.
- ◆ Right Angle Design – provides larger lever area for better grips and easier control, permitting the nozzle to fit into awkward spaces close to walls and into corners.
- ◆ Easily-Replaced Spout – simply remove the spout retainer nut.
- ◆ Built-In Outlet Check Valve – meets all known requirements of the Division of Measurement Standards.
- ◆ Dual Poppets – make nozzle easy to open against high inlet pressure.

Design working pressure

- ◆ 50 psi (3.45 bar) maximum pressure.

Ordering Specifications

Product #	Description	Inlet Thread			
		in.	mm	lbs.	kg
1290-0050	New	1 1/2"	38	6.8	3.1
1290-0055	Rebuilt	1 1/2"	38	6.8	3.1
1290G-0050	New	1 1/2"	38	6.8	3.1

Government National Stock #s:

1290-0050; NSN 4930-01-290-0756

1290G-0050; NSN 4930-01-352-1660 green anodized

1290GS-0050; NSN 4930-01-352-1661 tan anodized

(1290GS-AR50; tan anodized without Kamlok coupler and dust plug)

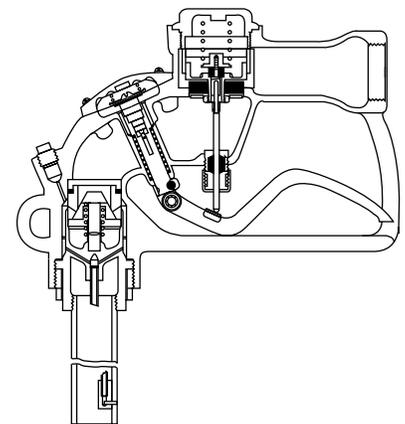
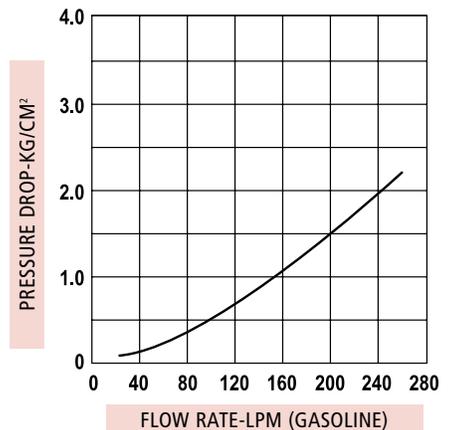
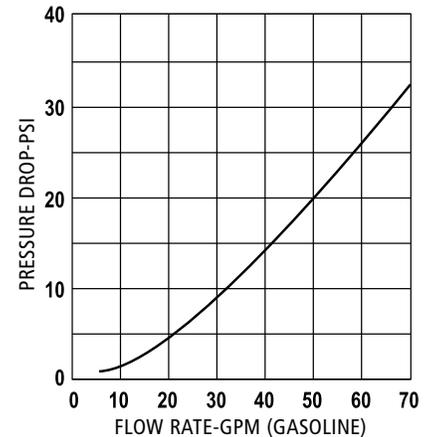
Replacement Spout

Product #	O.D.		Length		Weight	
	in.	mm	in.	mm	lbs.	kg
5D-0125	1 3/8"	35	8 1/2"	215	1.5	0.68
5D-0180	1 3/8"	35	18"	482	2	0.90

1290 Series Instruction Sheet Order Number: **H09238PA**

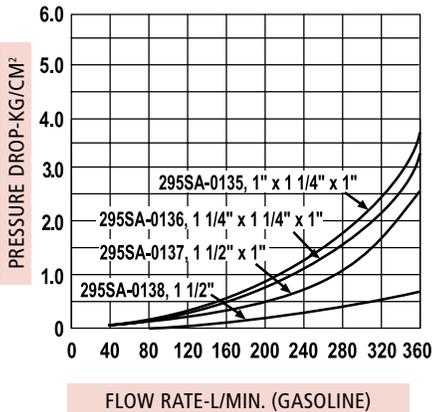
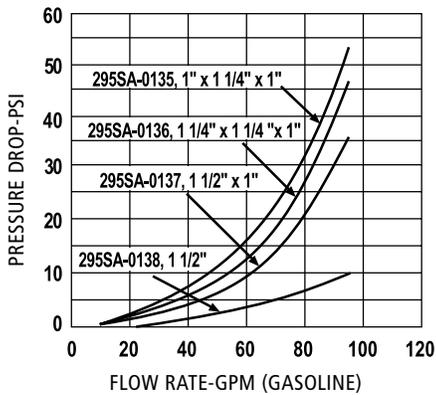
OPW 1290 Automatic Shut-Off Nozzles

For Heavy-Duty, High-Flow Truck, Bus and Home Fuel Oil Delivery Service



OPW 295SA & SAJ Aircraft Nozzles

For Overwing Aircraft Service



Ordering Specifications

Product #	Inlet Thread		Spout O.D		Spout O.D	
	in.	mm	lbs.	kg	in.	mm
295SA-0135	1	25	4.60	2.10	1	25
295SA-0136	1 1/4	32	4.50	2.00	1	25
295SA-0137	1 1/2	38	4.50	2.00	1	25
295SA-0138	1 1/2	38	5.10	2.30	1 5/8	41
295SAJ-0200	1 1/2	38	5.60	2.50	2 2/3	54
295SAC-0156*	1 1/4	32	4.50	2.00	1	25
295SAC-0157*	1 1/2	38	4.50	2.00	1	25
295SAC-0158*	1 1/2	38	5.15	2.30	1 5/8	41
295SACJ-0200*	1 1/2	38	5.65	2.60	2 2/3	54

*Check Valve

Materials

Body: Cast aluminum
Main Stem: Stainless steel
Stem Seal: Buna-N O-Ring
Disc: Viton®
Spout: Aluminum



Features

- ◆ Aluminum Body – lighter weight, easier to maneuver.
- ◆ Dual Poppets – easy-to-open nozzle against high inlet pressures.
- ◆ Color-Coded Composite Lever Guards – helps distinguish between AVGAS and Jet A. Easily replaced in lever guard kit.
- ◆ Right Angle Design – provides larger lever area for better grip and easier control.
- ◆ Vinyl-Coated Lever – insulates fingers against cold.
- ◆ 100 Mesh Strainer – prevents foreign matter from entering fuel tank; easy to remove and clean.
- ◆ Dust Cap – keeps spout free from dirt and stops fuel drippage when connected.
- ◆ Adjustable Dash Pot – permits adjusting the main poppet closure rate over a wide range of flows to overcome line shock with minimum afterflow.
- ◆ Easily replaced spout – the spout is easily threaded into the body. Replacement spouts are readily available from OPW.
- ◆ Built-In Swivel – eliminates twisting and kinking of the hose. This swivel is electroless nickel-plated and has full-bearing surfaces.
- ◆ NPT Female Threads at Inlet End of 295SA – accepts all 1", 1-1/4" or 1-1/2" male connections.
- ◆ NPT Female Threads At Inlet End Of 295SAJ – accepts all 1-1/2" male connections.
- ◆ Unique Jet Aircraft Spout Design of 295SAJ – to help prevent inadvertent fueling of piston engine aircraft with turbine fuel.
- ◆ Ground Wire Assembly – included on all aviation nozzles.

Design working pressure

- ◆ 110 psi (7.58 bar) maximum pressure

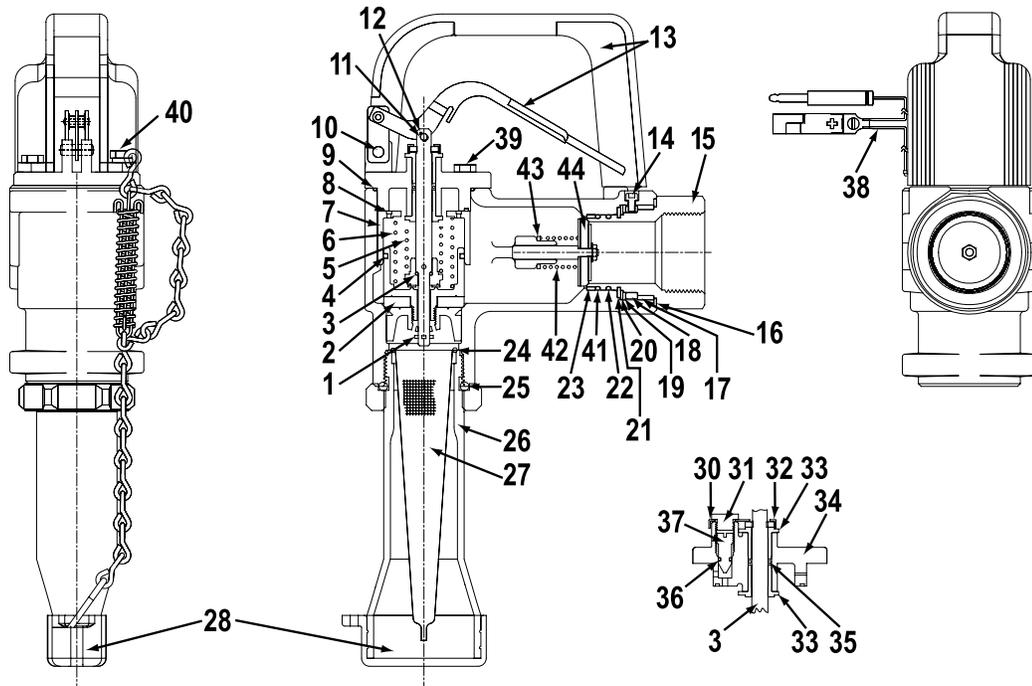
Level Guard Replacement Kits

Product #	Nozzle
295KLG-0300	295SA-0135, 0136, 0137, 295SAC-0156, 0157 Red
295KLG-0350	295SA-0138, 275SAC-0158 Red
295KLG-0400	295SAJ-0200, 295SACJ-0200 Black

All lever guard kits include new lever sub-assembly.
 295 Series Instruction Sheet Order Number: **H09237PA**

NOTE: See OPW's Website at www.opwglobal.com for product instruction sheets, trouble-shooting guides, how-to-use guide and to view the Do's & Don'ts at the Gas Pump video.

Replacement Parts - OPW 295SA/295SAC & 295SAJ



Key	Part #	Description	295SA-0135 inlet/ spout 1" x 1"	295SA-0136 & 295SAC-0156 inlet/ spout 1 1/4" x 1"	295SA-0137 & 295SAC-0157 inlet/ spout 1 1/2" x 1"	295SA-0138 & 295SAC-0158 inlet/ spout 1 1/2" x 1 1/2"	295SAJ-0200 & 295SACJ-0200 inlet/ spout 1 1/2" x 1 1/2"
1	H02477M	Cotter Pin	•	•	•	•	•
2	H07719	Main Poppet S/A	•	•	•	•	•
3	H09420	Stem & Sec. Poppet	•	•	•	•	•
3	H09417	Stem & Sec. Poppet	•	•	•	•	•
4	H12706M	O-Ring	•	•	•	•	•
5	H09367M	Spring	•	•	•	•	•
6	H05064M	Spring	•	•	•	•	•
7	H05088M	Skirt	•	•	•	•	•
8	H05198M	Seal	•	•	•	•	•
9	H04828M	Seal	•	•	•	•	•
10	H03981RE	Pin	•	•	•	•	•
11	H05000M	Cotter Pin	•	•	•	•	•
12	H07580M	Rivet	•	•	•	•	•
13	295KLG-0300	Lever Guard Kit*	•	•	•	•	•
13	295KLG-0350	Lever Guard Kit*	•	•	•	•	•
13	295KLG-0400	Lever Guard Kit*	•	•	•	•	•
14	H13774M	Screw (3 req'd)*	•	•	•	•	•
15	295SWK-0007	Swivel Repair Kit**	•	•	•	•	•
15	295SWK-0009	Swivel Repair Kit**	•	•	•	•	•
15	295SWK-0014	Swivel Repair Kit**	•	•	•	•	•
15	295SWK-0013	Swivel Repair Kit**	•	•	•	•	•
16	H08886M	Dust Seal	•	•	•	•	•
16	H01227M	Dust Seal	•	•	•	•	•
17	H08887M	Bearing	•	•	•	•	•
17	H08879M	Bearing	•	•	•	•	•
18	H09713RS	Retainer	•	•	•	•	•
18	H09712RS	Retainer	•	•	•	•	•

* Replacement part for nozzles built after 08/1998. Part is unavailable for nozzles built before this date.

** Includes 295SRK-0001 or 295SRK-0002 and contact ring.

Replacement Parts-OPW 295SA/SAC & SAJ Aircraft Nozzles

Key	Part #	Description	295SA-0135 inlet/ spout 1" x 1"	295SA-0136 & 295SAC- 0156 inlet/spout 1 1/2" x 1"	295SA-0137 & 295SAC- 0157 inlet/spout 1 1/2" x 1"	295SA-0138 & 295SAC- 0158 inlet/spout 1 1/2" x 1 1/2"	295SAJ-0200 & 295SACJ-0200 inlet/ spout 1 1/2" x 1 1/2"
19	H08881M	Thrust Bearing	•	•	•		
19	H08889M	Thrust Bearing				•	•
20	H08882M	Lock Ring	•	•	•		
20	H08890M	Lock Ring				•	•
21	H09365M	Retaining Ring	•	•	•		
21	H09366M	Retaining Ring				•	•
22	H12319M	O-Ring, Buna-N	•	•	•		
22	H12320M	O-Ring, Buna-N				•	•
23	H08884M	Bearing	•	•	•		
23	H08892M	Bearing				•	•
24	H06026M	O-Ring	•	•	•		
24	H07670M	O-Ring				•	
24	H11499M	O-Ring					•
25	H05297M	O-Ring	•	•	•		
25	H07766M	O-Ring				•	
25	H10458M	O-Ring					•
26	297SA-9050	Spout S/A	•	•	•		
26	297SA-9060	Spout S/A				•	
26	696J-7010	Spout S/A					•
27	1905-7063	Strainer	•	•	•		
27	153-0910	Strainer				•	
27	153J-0100	Strainer					•
28	H10387	Cap & Chain S/A	•	•	•		
28	H10388	Cap & Chain S/A				•	
28	296CJ-0100	Cap & Chain S/A					•
29	H09212	Body Cap S/A**	•	•	•		
29	H09213	Body Cap S/A**				•	•
30	H05135M	Retainer	•	•	•	•	•
31	H08441RS	Screw	•	•	•	•	•
32	H05087M	Felt Wiper	•	•	•	•	•
33	H05063M	Bushing	•	•	•	•	•
34	C02115A	Cap	•	•	•		
34	C02117A	Cap				•	•
35	H12707M	O-Ring	•	•	•	•	•
36	H12705M	O-Ring	•	•	•	•	•
37	H04825M	Adj. Screw	•	•	•	•	•
38	190WM-8001	Ground Wire S/A	•	•	•	•	•
39	H07062M	Screw (4 req'd)	•	•	•	•	•
40	H06045M	Screws (2 req'd)	•	•	•	•	•
41	H13776M	O-Ring, Viton®				•	•
41	H13775M	O-Ring, Viton®	•	•	•		

** Body Cap sub-assembly includes parts 30-37.

Replacement Parts - OPW 295SAC & 295SACJ Only

Key	Part #	Description	295SAC-0156	295SAC-0157	295SAC-0158	295SACJ-0200
42	H07595M	Spring SST	•	•		
42	H07593M	Spring SST			•	•
43	H07613M	Washer, nylon	•	•	•	•
44	H09214	Poppet S/A	•	•		
44	H09215	Poppet S/A			•	•

Materials

- Body:** Cast aluminum
- Main Stem:** Stainless steel
- Stem Seal:** Buna-N O-Ring
- Main Poppet Disc:** Viton®
- Spout:** 297AF-9070



Features

- ◆ Aluminum Body – lighter weight, easier to maneuver.
- ◆ Dual Poppets – easy-to-open nozzle against high inlet pressures.
- ◆ Replaceable Lever Guard – easy, low-cost replacement.
- ◆ Right Angle Design – provides larger lever area for better grip and easier control.
- ◆ Vinyl-Coated Lever – insulates fingers against cold.
- ◆ 100 Mesh Strainer – prevents foreign matter from entering fuel tank; easy to remove and clean.
- ◆ Dust Cap – keeps spout free from dirt and stops fuel drippage when connected.
- ◆ Spout Protector Ring – to protect aircraft tanks and wing surface; adjustable. Furnished as standard.
- ◆ Special Heavy-Duty Spout – knurled to facilitate daily strainer service.
- ◆ NPT Female Threads at Inlet End – standard pipe threads all 1-1/2" male connections.
- ◆ Static Ground Wire – with air force plug meets MS 25384-5.
- ◆ Dash-Pot Action – for smoother closing action and reduced line shock.

Design working pressure

- ◆ 110 psi (7.58 bar) maximum pressure

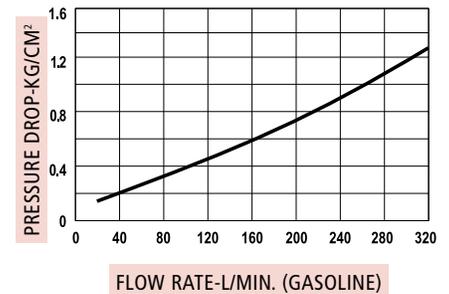
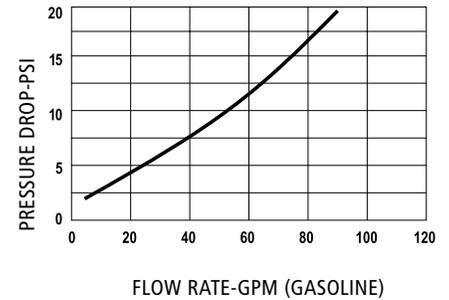
Ordering Specifications

Product #	Inlet Thread			
	in.	mm	lbs.	kg
295AF-0100	1 1/2"	38	6.40	2.90

Gov't. Nat'l. Stock #: 4930-01-293-4472
 295 Series Instruction Sheet Order Number: **H09237PA**

OPW 295AF Aircraft Nozzles

For Overwing Aircraft Service



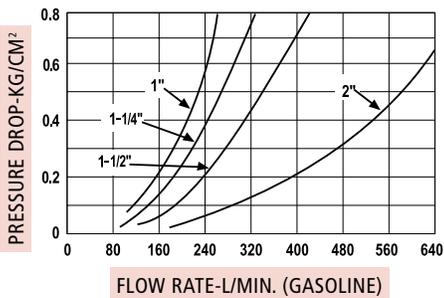
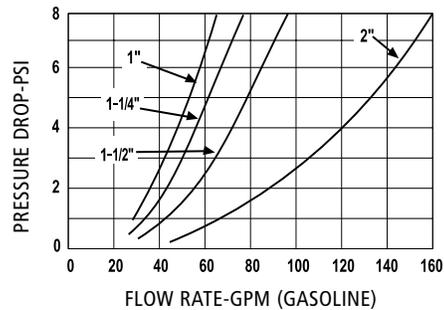
Replacement Parts

Part #	Description
153AF-0100	100 Mesh Strainer
190WF-8002	Ground Wire S/A w/ Dust Cap
C03420AG	Protector Ring
C03422	Dust Cap
297AF-9070	1 1/2" Aluminum Spout for 295AF
E00274AG	Arctic Guard for 295AF

OPW 190 High-Flow Nozzles

For High-Flow, Bulk Fuel Oil Delivery Service

Designed to handle high flow when line pressure is not a critical consideration or otherwise absorbed.



Materials

Body: Cast aluminum

Main Stem: Stainless steel

Stem Seal: Graphite with Teflon®

Disc: Viton®

Spout: OPW 296 brass or 297 aluminum (optional)



190-0115

(Spout optional, see Page 193)

Features

- ◆ Aluminum Body – lighter weight, easier to maneuver.
- ◆ Dual Poppets – allow for low flow metering (this nozzle is not intended for high pressure pump applications).
- ◆ Replaceable Hold-Open Rack – for use when fueling large-capacity tanks. Nozzle must be attended at all times during usage.
- ◆ Right Angle Design – provides larger lever area for better grip and easier control; permits nozzle to fit into awkward spaces close to walls and into corners.
- ◆ Drag Lugs – protect the nozzle when dragged across rough surfaces; enhances long-life durability.
- ◆ Easily Replaced Spout – the spout is easily threaded into the body. Replacement spouts are readily available from OPW.
- ◆ NPT Female Threads at Inlet End – standard pipe threads accept all standard 1", 1-1/4", 1-1/2" and 2" male connections.

Design working pressure

- ◆ 50 psi (3.45 bar) maximum pressure

Ordering Specifications

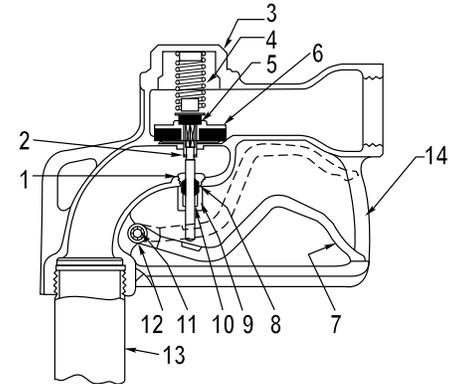
Product #	Inlet Thread		Spout Diameter		lbs.	kg
	in.	mm	in.	mm		
190-0112	1"	25	1 1/4"	32	2.3	1.0
190-0113	1 1/4"	32	1 1/4"	32	2.3	1.0
190-0114	1 1/2"	38	1 1/2"	38	3.0	1.4
190-0115	2"	51	2"	51	5.8	2.6
190G-B104	1 1/2"	38	1 1/2"	38	5.1	2.3

w/ Spout and Ground Wire
Gov't. Nat'l. Stock #: 4930-01-360-5540

NOTE: See OPW's Website at www.opwglobal.com for product instruction sheets, trouble-shooting guides, how-to-use guide and to view the Do's & Don'ts at the Gas Pump video.

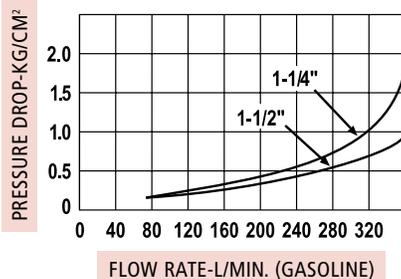
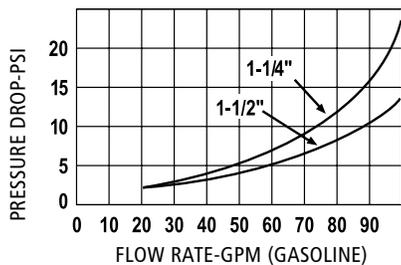
Replacement Parts - OPW 190 Nozzles

Key	Part #	Description	190-0112	190-0113	190-0114	190-0115	190-B104
1	H00195RB	Stuffing Box	•	•	•		•
1	H00250RB	Stuffing Box				•	
2	H00538RE	Stem	•	•	•		
2	H06742RE	Stem				•	
3	H09600AH	Cap	•	•	•		
3	H09601AH	Cap				•	
3	H11592AH	Cap					•
4	H00136M	Spring	•	•	•		•
4	H03666M	Spring				•	
5	190K-0001	Upper Poppet S/A	•	•	•		•
5	H01814	Upper Poppet S/A				•	
6	H01817	Lower Poppet S/A	•	•	•		•
6	H01818	Lower Poppet S/A				•	
7	H11925M	Lever	•	•	•		•
7	H06733M	Lever				•	
8	C04495M	Packing	•	•	•	•	•
9	H07012M	Packing Gland	•	•	•		•
9	H00520RB	Packing Gland				•	
10	H00113RA	Packing Nut	•	•	•		
10	H00252RA	Packing Nut				•	
10	H00113RAG	Packing Nut					•
11	H08163M	Push Nut	•	•	•	•	•
12	H08164RE	Pin	•	•	•		•
12	H08165RE	Pin				•	
13	297-9020	Spout (optional)	•	•			
13	297-9030	Spout (optional)			•		
13	297-9040	Spout (optional)				•	
13	296-0040	Spout, Brass (optional)		•			
13	296-0060	Spout, Brass (optional)			•		
13	296-0080	Spout, Brass (optional)			•		
14	C04698M	Rack	•	•	•	•	•
14	H14105M	Screw	•	•	•	•	•
Not Shown							
	296CA-4000	Dust Cap					•
	153-0910	Strainer					•



OPW 295SC High-Flow Nozzles

For High-Flow, Bulk Fuel Oil Delivery Service



Lever Guard Replacement Kit

Part #	Description
295KLG-0200	Short Grey for 295SC-0139
295KLG-0250	Long Grey for 295SC-0141

295 Series Instruction Sheet Order Number:
H09237PA

Materials

Body: Cast aluminum
Main Stem: Stainless steel
Stem Seal: Buna-N O-Ring
Main Poppet Disc: Viton®
Spout: OPW 297 aluminum (optional)



295SC-0141
(Spout optional, see Page 193)

Features

- ◆ Aluminum Body – lighter weight, easier to maneuver.
- ◆ Dual Poppets – easy-to-open nozzle against high inlet pressures.
- ◆ Replacement Hold-Open Rack – one-hand control of hold-open mechanism means easy setting of flow speed. Nozzle must be attended at all times during usage.
- ◆ Replaceable Composite Lever Guard – easy, low-cost replacement.
- ◆ Right Angle Design – provides larger lever area for better grip and easier control; permits nozzle to fit into awkward spaces close to walls and into corners.
- ◆ Adjustable Dash Pot – permits adjusting the main poppet closure rate over a wide range of flows to overcome line shock with minimum afterflow.
- ◆ Built-In Swivel – eliminates twisting and kinking of the hose. This swivel is hard-coated aluminum and has full-bearing surfaces.
- ◆ Built-In Check Valve – prevents hose drainage after pump is turned off.
- ◆ Vinyl-Coated Lever – insulates fingers against cold.
- ◆ Easily Replaced Spout – the spout is easily threaded into the body. Replacement spouts are readily available from OPW.
- ◆ NPT Female Threads at Inlet End – standard pipe threads accept all 1-1/4" or 1-1/2" male connections.

Design working pressure

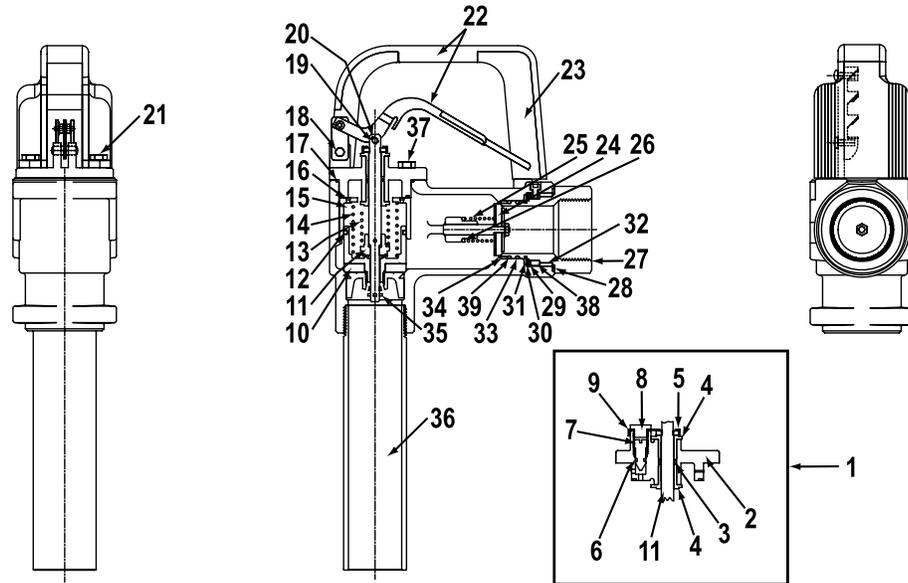
- ◆ 110 psi (7.58 bar) maximum pressure

Ordering Specifications

Product #	Inlet Thread			
	in.	mm	lbs.	kg
295SC-0139	1 1/4"	32	3.75	1.7
295SC-0141	1 1/2"	38	4.33	2.0

NOTE: See OPW's Website at www.opwglobal.com for product instruction sheets, trouble-shooting guides, how-to-use guide and to view the Do's & Don'ts at the Gas Pump video.

Replacement Parts - OPW 295SC High-Flow Nozzles



Key	Part #	Description	1 1/4" 11 1/2" NPT	1 1/2" 11 1/2" NPT
1	H09212	Cap S/A	•	
1	H09213	Cap S/A		•
2	C02115A	Cap	•	
2	C02117A	Cap		•
3	H12707M	O-Ring	•	•
4	H05063M	Bushing (2 req'd)	•	•
5	H05087M	Felt Wiper	•	•
6	H12705M	O-Ring	•	•
7	H04825M	Adjusting Screw	•	•
8	H08441RS	Screw	•	•
9	H05135M	Retainer	•	•
10	H07719	Main Poppet S/A	•	•
11	H09417	Stem & Sec. Poppet	•	
11	H09420	Stem & Sec. Poppet		•
12	H12706M	O-Ring	•	•
13	H09367M	Spring	•	•
14	H05064M	Spring	•	•
15	H05088M	Skirt	•	•
16	H05198M	Seal	•	•
17	H04828M	Seal	•	•
18	H03981RE	Pin	•	•
19	H05000M	Cotter Pin	•	•
20	H07580M	Rivet	•	•
21	H06045M	Screw (2 req'd)	•	•
22	295KLG-0200	Guard Kit	•	
22	295KLG-0250	Guard Kit		•
23	C04698M	Hold-Open Rack	•	•
23	H14105M	Screw	•	•
24	H09214	Poppet S/A	•	

Key	Part #	Description	1 1/4" 11 1/2" NPT	1 1/2" 11 1/2" NPT
24	H09215	Poppet S/A		•
25	H07593M	Spring		•
25	H07595M	Spring	•	
26	H07613M	Washer	•	•
27	295SWK-0009	Swivel Repair Kit**	•	
27	295SWK-0014	Swivel Repair Kit**		•
28	H08886M	Dust Seal		•
28	H01227M	Dust Seal	•	
29	H08881M	Thrust Bearing	•	
29	H08889M	Thrust Bearing		•
30	H08882M	Lock Ring	•	
30	H08890M	Lock Ring		•
31	H09365M	Retaining Ring	•	
31	H09366M	Retaining Ring		•
32	H08879M	Bearing	•	
32	H08887M	Bearing		•
33	H12319M	O-Ring	•	
33	H12320M	O-Ring		•
34	H08884M	Bearing	•	
34	H08892M	Bearing		•
35	H02477M	Cotter Pin	•	•
36	297-9020	Spout	•	
36	297-9030	Spout		•
37	H07062M	Screw (4 req'd)	•	•
38	H09712RS	Retainer	•	
38	H09713RS	Retainer		•
39	H13776M	O-Ring, Viton*		•
39	H13775M	O-Ring, Viton*	•	

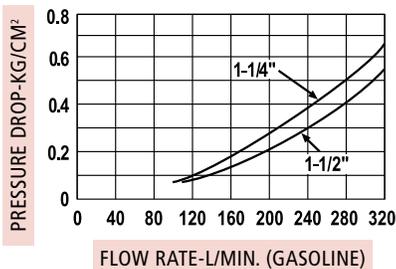
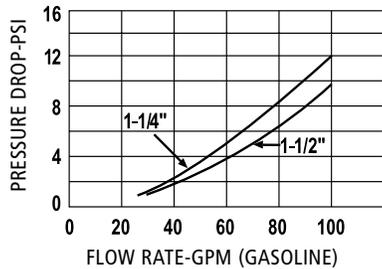
* Replacement part for nozzles built after 08/1998.

Parts are unavailable for nozzles built prior to this date.

** Includes 295SRK-0001 or 295SRK-0002 and contact ring.

OPW 210 High-Flow Nozzles

For High-Flow, Bulk Fuel Oil Delivery Service



Replacement Parts

Key	Part #	Description
1	H00195RB	Stuffing Box
2	C04495M	Packing
3	H07012M	Packing Gland
4	H05719RE	Stem*
5	H00113RA	Packing Nut
6	H01841	Lower Disc S/A*
7	190K-0001	Upper Poppet
8	H01461AH	Cap
9	H00999M	Lever
10	H08165RE	Pin
11	H08163M	Push Nut (2 required)
12	H00136M	Spring
13	297-9020	Spout (optional) - 1 1/4" aluminum
13	297-9030	Spout (optional) - 1 1/2" aluminum
13	296-0040	Spout (optional) - 1 1/4" brass
13	296-0060	Spout (optional) - 1 1/2" brass
14	C04698M	Rack
14	H14105M	Screw

* Replacement part for nozzles built after 04/1998. Part is unavailable for nozzles built before this date.

Materials

- Body:** Cast aluminum
- Main Stem:** Stainless steel
- Stem Seal:** Graphite with Teflon®
- Disc:** Viton®
- Spout:** OPW 296 brass or 297 alum. (optional)



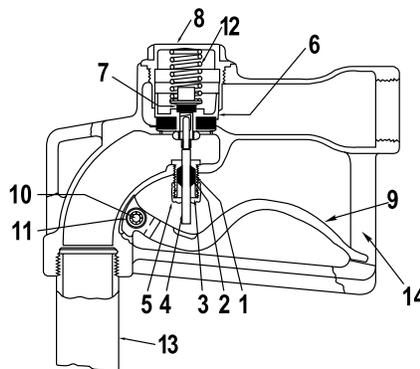
210-0105
(Spout optional, see Page 193)

Features

- ◆ Aluminum Body – lighter weight, easier to maneuver.
- ◆ Dual Poppets – allows for low-flow metering.
- ◆ Replaceable Hold-Open Rack – for use when fueling large-capacity tanks. Nozzle must be attended at all times during usage.
- ◆ Dash Pot – non-adjustable, to minimize closing line shock.
- ◆ Right Angle Design – provides larger lever area for better grip and easier control; permits nozzle to fit into awkward spaces close to walls and into corners.
- ◆ Drag Lugs – protect the nozzle when dragged across rough surfaces; adds to long life with rough usage.
- ◆ Easily Replaced Spout – the spout is simply threaded into the body. Replacement spouts are readily available from OPW.
- ◆ NPT Female Threads at Inlet End – standard pipe threads accept all standard 1 1/4" and 1 1/2" male connections.

Design working pressure

- ◆ 50 psi (3.45 bar) maximum pressure



Ordering Specifications

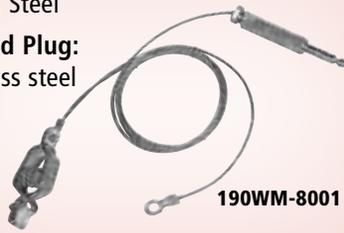
Product #	in.	mm	lbs.	kg
210-0104	1 1/4"	32	3.95	1.8
210-0105	1 1/2"	38	4.40	2.0

NOTE: See OPW's Website at www.opwglobal.com for product instruction sheets, trouble-shooting guides, how-to-use guide and to view the Do's & Don'ts at the Gas Pump video.

Materials

Cable: Steel

Ground Plug:
Stainless steel



190WM-8001

Ordering Specifications

Product #	Length		Used On
	ft.	m	
190WM-8001	6'	1.83	295SA
190WF-8002	6'	1.83	295AF

Manual Nozzle Accessories OPW 190 Ground Wire

The OPW 190 ground wire assembly is designed for use on 295 series aircraft nozzles. The OPW 190WM is designed for use with the 295SA and includes a cable, attaching eyelet, ground plug and clamp. The OPW 190WF is for use with the 295AF aircraft nozzle and includes a cable, eyelet, ground plug and dust cap.

Materials

Screen:

Stainless steel



Strainer

Ordering Specifications

Product #	in.	mm	Used On
153-0910	1 1/2"	38	190G, 295SA
153J-0100	1 1/2"	38	295SAJ
190S-7063	1"	25	295SA Series w/ 1" Spout
153AF-0100	1 1/2"	38	295AF

OPW Strainers

OPW strainers prevent foreign matter from entering fuel tanks. They are held in position by a tube and have a 100-mesh screen.

Materials

Body: Anodized
Aluminum

Spring: Bronze

Stem: Bronze

Disc: Buna-N

Body: Rubber?

Spring: Bronze

Stem: Bronze

Disc: Buna-N



296CA



296CJ

Ordering Specifications

Product #	Size		Spout	Used On
	in.	mm		
296CA-4000	1 3/8"	41	296	190 1"
296CA-4005	1 5/8"	41	296	1 1/4", 1 1/2"
296CJ-0100	1 1/2"	38	696J only	295SAJ 1 1/2"
H10387	1"	26	297SA 1"	295SA
H10388	1 1/2"	38	297SA 1 1/2"	295SA

OPW 296 Protective Caps

OPW 296 Protective Caps are for use with OPW 296 and 297SA nozzle spouts. Each cap also comes with a chain and tension spring. The size ordered should be the same size as the spout O.D.

Spouts Ordering Specifications

Product #	Size		O.D.		Length		Weight		Used On	Description
	in.	mm	in.	mm	in.	mm	lbs.	kg		
296-0040	1 1/4 (NPT)	32	1 3/8	35	9	229	0.90	0.41	190-0113; 210-0104	Brass
296-0060	1 1/2 (NPT)	38	1 3/8	35	9	229	0.98	0.45	190-0114; 210-0105	Brass
296-0080	1 1/2 (NPT)	38	1 5/8	41	9	229	1.05	0.48	190-0114; 210-0105	Brass
297-9020	1 1/4 (NPT)	32	1 21/32	42	8	203	0.50	0.23	190-0113; 210-0104; 295SC-0139	Aluminum
297-9030	1 1/2 (NPT)	38	1 29/32	48	8	203	0.60	0.27	190-0114; 210-0105; 295SC-0141	Aluminum
297-9040	2 (NPT)	51	2 3/8	60	8	203	0.80	0.36	190-0115	Aluminum
297SA-9050	1 1/4 (NPSM)	32	1	25	9	229	0.60	0.27	295SA-0135, 0136, 0137 & 295SAC-0156	Aluminum
297SA-9060	1 1/2 (NPSM)	38	1 3/8	41	7	178	0.80	0.36	295SA-0138, 295SAC-0157, 295SAC-0158	Aluminum
696J-7010	1 1/2 (NPSM)	38	2 2/5	54	7 1/4	184	0.80	0.36	295SAJ-0200	Aluminum



OPW 296



OPW 297



OPW 297SA (9050)



OPW 297SA (9060)

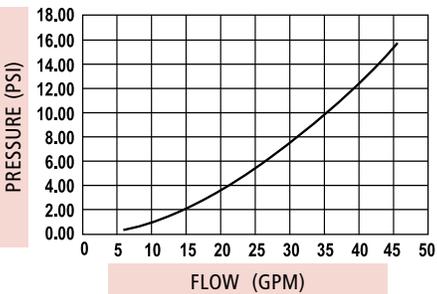
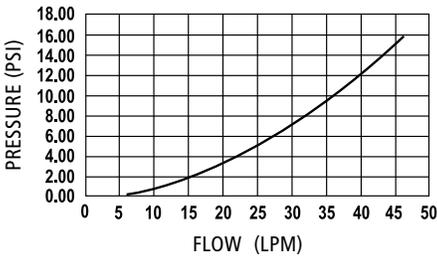


OPW 696J

OPW RF400 Manual Utility Farm Nozzle

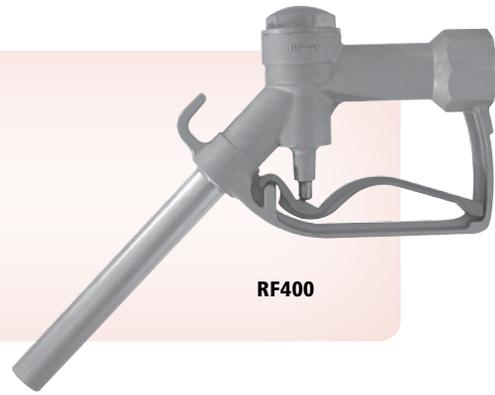
For General Utility Farm Usage

The OPW RF400 nozzle is designed for use in non retail, commercial, industrial and agriculture use where an automatic nozzle is not needed.



Materials

- Body:** Aluminum
- Main Stem:** Aluminum
- Main Poppet Disc:** Viton®
- Spout:** Aluminum
- Weight:** 0.5 lbs, 0.23 kg



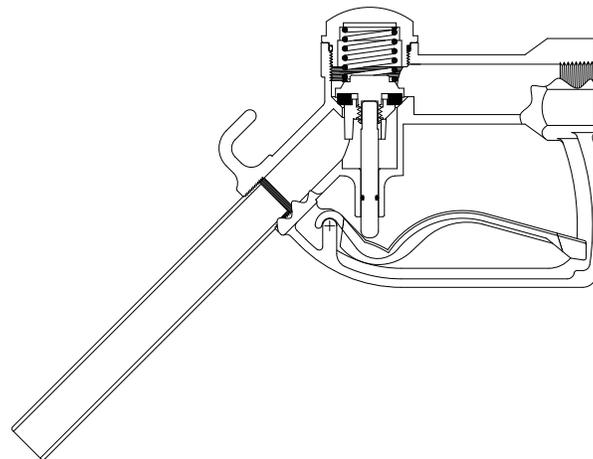
RF400

Features

- ◆ UL listed for use in gasoline, diesel and up to 10% ethanol blends. Specific listings available at www.opwglobal.com
 - ◆ Manual Nozzle – no automatic shut-off.
 - ◆ Built in hanger for quick use in field.
- Design working pressure**
- ◆ 50 psi (3.45 bar) maximum pressure

Ordering Specifications

Product #	Description	Inlet Thread		Spout Diameter	
		in.	mm	in.	mm
RF400-75	3/4", leaded spout	3/4	19	15/16	23
RF400-75P	3/4", unleaded spout	3/4	19	13/16	20
RF400-10	1", leaded spout	1	25	15/16	23
RF400-10P	1", unleaded spout	1	25	13/16	20



Materials

Body: Aluminum
Seals: Viton®, Buna-N and Fluorosilicone
Spring: Stainless steel
Poppet: Aluminum
Weight:
 66SP-5150: 1.93 lbs, .87 kg
 66SP-5200: 3.80 lbs, 1.72 kg

66SP-5150



66SP-5200

Features

- ◆ Pull Force – the 66SP will separate with a maximum pull force of 600 lbs., and limits fuel spillage from either hose end.
- ◆ Easily Repaired – after separation, the 66SP can be repaired and put back in service with the OPW 66PRK Shear Pin Replacement Kit.
- ◆ Heavy-Duty Construction – physically designed for durability in high-volume environments, including a protective, red, anodized-aluminum body.
- ◆ Low Pressure Drop – valve design ensures superior flow rate for high-volume fills.
- ◆ Special Seals – special fluorosilicone (66SP-5200 only) O-rings help protect the valve in harsh, high-volume environments.

Design working pressure

- ◆ 50 psi (3.45 bar) maximum pressure

Ordering Specifications

Product #	Inlet Thread	Weight		A		B	
		lbs.	kg	in.	mm	in.	mm
66SP-5150	1½" (NPT)	1.93	0.87	2¼"	57	7⅜"	194
66SP-5200	2" (NPT)	3.80	1.72	3½"	89	7⅜"	197

Replacement Parts

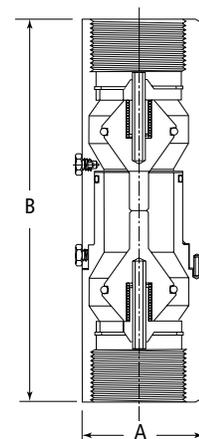
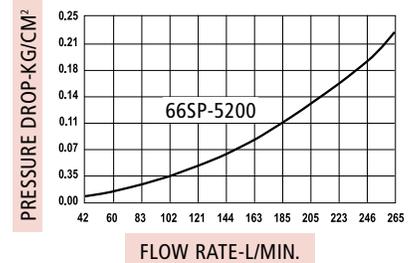
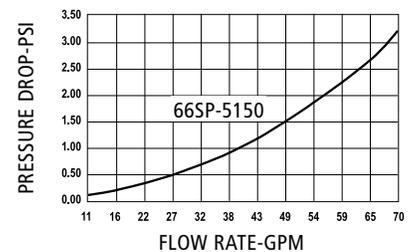
Product #	Description
66PRK-5015	Shear Pin Replacement Kit for 66SP-5150
66PRK-5020	Shear Pin Replacement Kit for 66SP-5200

66SP Series Instruction Sheet Order Number: **H40128M**

OPW 66SP High-Volume Breakaways

The 66SP is designed for installation on fuel dispensing hoses that require a substantial volume of flow, and therefore the potential for a high-volume spill.

The 66SP utilizes shear pin technology to ensure separation at proper pull forces, and limit unwanted valve closures that stop or limit fuel flow. Once separated, a qualified service technician can easily repair the breakaway with an OPW 66PRK Shear Pin Replacement Kit.

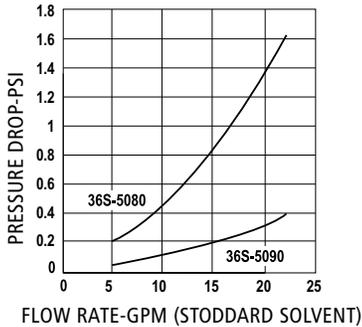


Listings and Certifications



OPW 36S Hose Swivel

Designed for use with fuel oil nozzles (at inlet only), the OPW 36S provides 360° swivel action. The full-circle swivel reduces the physical strain of aligning the nozzle with the fillpipe.



Materials

Body: Aluminum

Adaptor: Zinc
Aluminum

Seals: Buna-N O-Ring,
Viton® O-Ring

Bearings: Nylon  UL Listed MH4542



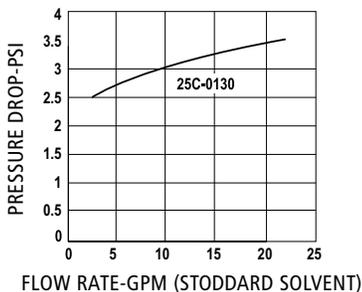
36S-5080

Ordering Specifications

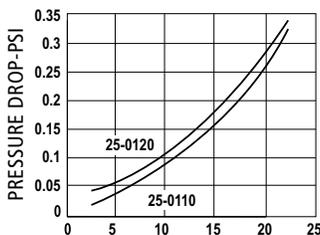
Product Number	Inlet Thread x Outlet Thread	lbs.	kg
36S-5080	3/4" M x 3/4" F (NPT) (19 mm x 19 mm)	0.30	0.14
36S-5090	1" M x 1" F (NPT) (25 mm x 25 mm)	0.40	0.18

OPW 25 Hose Swivel

Designed for use with fuel oil nozzles (at inlet only), the OPW 25 provides 360° swivel action. The full-circle swivel reduces the physical strain of aligning the nozzle with the fillpipe.



FLOW RATE-GPM (STODDARD SOLVENT)



FLOW RATE-GPM (STODDARD SOLVENT)

Materials

Body: Electroless nickel-plated

Bearings: Molded plastic

Seals: Buna-N O-Ring,
felt dust seal, Viton® O-Ring



25-0110

Ordering Specifications

Product #	Inlet Thread		Weight	
	in.	mm	lbs.	kg
25-0110	1 1/4" (NPT)	32	0.95	.43
25-0120	1 1/2" (NPT)	38	1.06	.48
25C-0130*	1 1/4" (NPT)	32	0.95	.43

*With Check Valve

OPW 2" Single-Plane Hose Swivel

Durable brass construction with high flow rate.

Materials

Body: Brass

Seals: Buna-N O-Rings



Product #	in.	mm	lbs.	kg
2-0055	2	50.8	1	.45

OPW 295SRK

Designed for use on 25 Series swivels and 295 nozzles, the OPW 295SRK consists of a dust seal, 2 O-rings, 3 button-head screws, hex key and thread sealant.

Materials

Body: Electroless nickel-plated

Bearings: Molded plastic

Seals: Buna-N O-Ring,
felt dust seal, Viton® O-Ring

Product #	Description
295SRK-0001	25 and 295 Series 1", 1 1/4" NPT
295SRK-0002	25 and 295 Series 1 1/2" NPT

Hose Retractors



- Spring Balance Hose Retractors 198-201
- Counterweight Hose Retractors..... 202



POMECO 102 Spring Balance Single Hose Retractors

POMECO 102 Spring Balance Single Hose Retractors keep excess hose off the ground and out of the way, prolonging hose life and reducing potential hazards. The POMECO 102 is a California Air Resources Board (CARB) certified Stage II component for use with single and dual hose dispensers as per Executive Order G-70-52-AM.



Post Mounted

Materials

Housing: Cast aluminum

Cable: Black polyester

Post: Aluminum



Nozzle Hook
and Hood Kit Not
Sold by OPW.

Features

- ◆ Easy to Use – the spring-loaded reel and stretch-resistant cable provide smooth and steady tension throughout hose extension and return.
- ◆ Easy to maintain – the removable sideplate provides full access to the mechanism for easy tension adjustment and unit maintenance. A convenient safety thumb screw is provided to lock the reel in place during tension adjustment.
- ◆ Field Adjustable for Various Hose, Nozzle, Swivel, Breakaway Combinations – no need for upgrading components if a breakaway or swivel is added to the hose assembly. Simply change the tension setting on the spring-loaded hose reel.
- ◆ Multiple Mounting Options – the POMECO 102 retractor housing is tapped on the top for bolting to overhead crossbars, and on the side for mounting to vertical posts. The 102 is available as a retractor kit (including post, retractor and mounting hardware) or as separate components. Models are also available for aboveground storage tank (AST) applications. AST models include a 44" (112 cm) post with a freestanding base.

102 Spring Balance Hose Retractor
Instruction Sheet Order Number:
H15853PA

NOTE: See OPW's Website at www.opwglobal.com for product instruction sheets, trouble-shooting guides, how-to-use guide and to view the Do's & Don'ts at the Gas Pump video.

Ordering Specifications

Vertical Retractor Kits (Box, Post, Bracket, Foot & Hardware)

Model Number	Mounting Method	Clamp Fits	Weight	
			lbs.	kg
6102-1039P	39" Retractor/Post Kit	(Hose Clamp Not Included)	12	5.4
6102-1078P	78" Retractor/Post Kit	(Hose Clamp Not Included)	14	6.4
6102-1100	78" Retractor/Post Kit	(Hose Clamp Not Included)	14	6.4
6102-AST	AST	(Hose Clamp Not Included)	9	4.1

Ordering Specifications

Separate Retractor Components (Box Only)

Model Number	Mounting Method	Clamp Fits				Weight	
		Hose O.D.		Hose I.D.		lbs.	kg
		in.	mm	in.	mm		
6102-1000	Overhead Crossbar/Verticle Post	(Hose Clamp Not Included)				7	3.2
6102-4000	Overhead Crossbar/Verticle Post	1 $\frac{3}{8}$ "	35	1"	25	7	3.2
6102-6000	Overhead Crossbar	1 $\frac{1}{32}$ "	26	$\frac{5}{8}$ " or $\frac{3}{4}$ "	16 or 19	7	3.2
6102-8000	Overhead Crossbar	1"	25	$\frac{5}{8}$ "	16	7	3.2
6102-CNG	Hose Retractor Kit, CNG						
6102-CNG2	Hose Retractor Kit, CNG2						

*POMEKO recommends using CO5238M, CO5261M or P100-3F/P100-44/P100-2AST for use with 102 Series retractors. Other size tubes and clamps available upon request.



Hose Clamp

Ordering Specifications

Hose Clamps

Model Number	Hose Clamp Size †
PB-1396	Standard 1 $\frac{3}{8}$ " O.D. Hose (1" I.D.)
PB-1394	Standard 1 $\frac{1}{8}$ " O.D. Hose ($\frac{3}{4}$ " I.D.)
PB-1375	Standard 1 $\frac{1}{32}$ " O.D. Hose ($\frac{5}{8}$ " or $\frac{3}{4}$ " I.D.)
PB-1373	Standard 1" O.D. Hose ($\frac{5}{8}$ " I.D.)
PB-1344	Balanced Coaxial, Goodyear Premier

† Other sizes available upon request

Options Replacement Parts

Model Number	Hose Clamp Size
CO5238M	Post Kit, 39" (99 cm), 1 $\frac{1}{8}$ " x 2"
CO5261M	Post Kit, 78" (198 cm), 1 $\frac{1}{8}$ " x 2"
H15212M	10 ft. Replacement Cable
P338SPOOL	Spool of Retractor Cable, 338 ft.
H15210M (P102-02)	Replacement Cable Guide
H15211M	Replacement Reel
P100-3F	AST Replacement Base
P100-2AST	Sliding Bracket (AST)

POMECO 102 Spring Balance MPD Hose Retractor Packages

POMECO 102 Spring Balance MPD Hose Retractors keep excess hose off the ground and out of the way, prolonging hose life and preventing extra length hoses from cluttering the island. The 102 MPD hose retractors are especially well-suited for use on Multiple Product Dispensers (MPD) with Stage II Vapor Recovery hose/nozzle assemblies. The POMECO 102 is a California Air Resources Board (CARB) certified Stage II component for use with MPDs as per Executive Order G-70-52-AM.

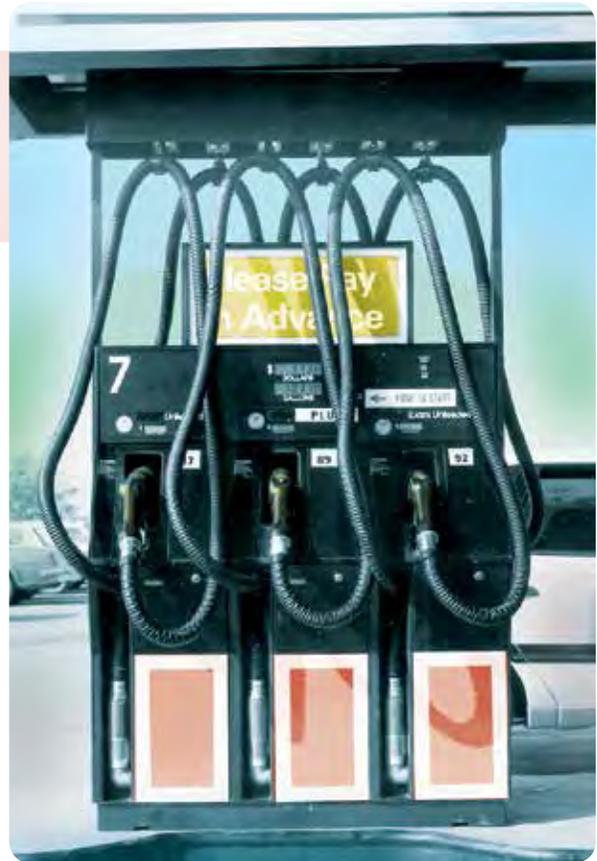


Materials

Housing: Cast aluminum

Cable: Black polyester

Bracket: Steel



Features

- ◆ Easy to Install – each model number designates a custom designed retractor package that mounts in the canopy of a particular manufacturers MPD. Packages are shipped complete with the appropriate number of retractors and all the necessary mounting hardware for a clean, professional installation.
- ◆ Easy to Use – the spring-loaded reels and stretch-resistant cables provide smooth and steady tension throughout hose extension and return.
- ◆ Easy to Maintain – the removable sideplate provides full access to the mechanism for easy tension adjustment and unit maintenance. A convenient safety thumb screw is provided on each retractor to lock the reel in place during tension adjustment.

NOTE: See OPW's Website at www.opwglobal.com for product instruction sheets, trouble-shooting guides, how-to-use guide and to view the Do's & Don'ts at the Gas Pump video.

Ordering Specifications

Model Number	Manufacturer/Dispenser	Hoses Per Side***	Weight	
			lbs.	kg
6102-DW1037	Dresser Wayne (37" Frame)	1	40	18.2
6102-DW1048	Dresser Wayne (48" Frame)	1	50	22.7
6102-DW2037	Dresser Wayne (37" Frame)	2	50	22.7
6102-DW2048	Dresser Wayne (48" Frame)	2	58	26.3
6102-DW3048	Dresser Wayne (48" Frame)	3	72	32.6
6102-GB1N	Gilbarco (Advantage Narrow)	1	46	20.9
6102-GB1W	Gilbarco (Advantage Wide)	1	50	22.7
6102-EC01	Gilbarco (Encore)	1	77	34.9
6102-EC02	Gilbarco (Encore)	2	77	34.9

*Specify dispenser model and serial number when ordering
 *** Hose clamps must be ordered separately for MPD models

NOTE: All 6102 MPDs come with two brackets and the number of hose retractors per side.



Hose Clamp

Ordering Specifications

Hose Clamps

Model Number	Hose Clamp Size †
PB-1396	Standard 1 $\frac{3}{8}$ " O.D. Hose (1" I.D.)
PB-1394	Standard 1 $\frac{1}{8}$ " O.D. Hose ($\frac{3}{4}$ " I.D.)
PB-1375	Standard 1 $\frac{1}{32}$ " O.D. Hose ($\frac{5}{8}$ " or $\frac{3}{4}$ " I.D.)
PB-1373	Standard 1" O.D. Hose ($\frac{5}{8}$ " I.D.)
PB-1344	Balanced Coaxial, Goodyear Premier

† Other sizes available upon request

Options Replacement Parts

Model Number	Hose Clamp Size
H15210M	Replacement Cable Guide
H15212M	Replacement Cable -10 ft.
H15211M	Replacement Reel
D02147M	Replacement Housing
H15265M (P102-2)	Sliding Bracket
C05239M	Foot (Bottom)
D02628M	Bracket Only for 06102-DW3
D02629M	Bracket Only for 06102-DW4

POMECO 100 Counterweight Hose Retractors

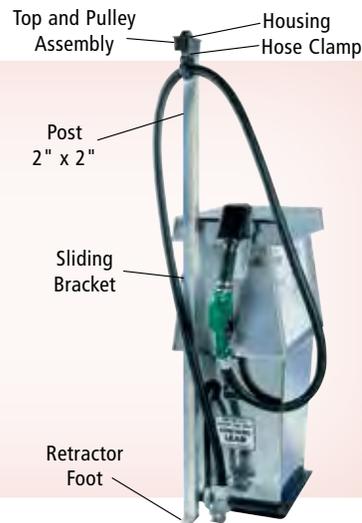
POMECO 100 Counterweight Hose Retractors keep excess hose off the ground and out of the way, prolonging hose life and reducing potential hazards. The POMECO 100 is a California Air Resources Board (CARB) certified Stage II component for use with single and dual hose dispensers as per Executive Order G-70-52-AM.

Features

- ◆ Easy to Use – counterweights are precisely matched to each hose configuration to ensure that a minimal pulling force is needed throughout hose extension.
- ◆ Easy to Maintain – the 100 has just two moving parts, ensuring a long service life with a minimum of maintenance.

Materials

Housing: Impact-resistant plastic
Cable: Black polyester
Post: Aluminum (2" x 2")



Ordering Specifications

Conventional and Vapor Recovery Applications

Model #*	Hose Configuration	Hose Length		Clamp Fits		Hose I.D.		Height		Weight	
		ft.	m	Hose O.D. in.	mm	in.	mm	in.	cm	lbs.	kg
6100-4000	Conventional	12-14	3.7 - 4.3	1 $\frac{3}{8}$	35	1	25	79	201	33	15.0
6100-5000	Conventional	15-18	4.6 - 5.5	1 $\frac{3}{8}$	35	1	25	92	234	38	17.2
6100-6000	Conventional	12-14	3.7 - 4.3	1 $\frac{1}{2}$	26	$\frac{5}{8}$ or $\frac{3}{4}$	16 or 19	79	201	30	13.6
6100-7000	Conventional	15-20	4.6 - 6.1	1 $\frac{1}{2}$	26	$\frac{5}{8}$ or $\frac{3}{4}$	16 or 19	92	234	31	14.1
6100-8000	Conventional	12-14	3.7 - 4.3	1	25	$\frac{5}{8}$	16	79	201	29	13.2
6100-9000	Conventional	15-20	4.6 - 6.1	1	25	$\frac{5}{8}$	16	92	234	30	13.6
6100-AGNV	Inverted Coaxial	11-13	3.4 - 4.0	(Hose Clamp Not Included)				79	201	33	15.0
6100-AGLC	Coaxial	11-13	3.4 - 4.0	(Hose Clamp Not Included)				79	201	26	11.8
6100-AGBR	Coaxial w/ Breakaway	11-13	3.4 - 4.0	(Hose Clamp Not Included)				79	201	31	14.1

100 Series Counterweight Hose Retractor Instruction Sheet
 Order Number: **H15852PA**

See page 201 for hose clamp Ordering Specifications

NOTE: See OPW's Website at www.opwglobal.com for product instruction sheets, trouble-shooting guides, how-to-use guide and to view the Do's & Don'ts at the Gas Pump video.

Options and Replacement Parts

Part #	Description	Counterweight Length		Weight	
		in.	cm	lbs.	kg
H15262	Counterweight for 4000/AGNV Models	27	68.5	24	10.8
H15263	Counterweight for 5000 Model	31	78.7	27	12.2
H15260	Counterweight for 6000, 8000 and AGLC Models	20	50.8	17	7.7
H15261	Counterweight for 7000, 9000, AGBR Models	25	63.5	22	9.9
H15265M	Sliding Bracket, Dispenser Mount				
C05235M	Replacement Tube, 2" x 2" x 75" (191 cm)				
C05236M	Replacement Tube, 2" x 2" x 88" (224 cm)				

Part #	Description
D02671M	Replacement Housing, Plastic
H15266	Top and Pulley Assembly
H15264	12" Replacement Cable
C05239M	Retractor Foot
P100-4STF	Freestanding Retractor Base
P388SPOOL	Replacement Cable Spool, 388 ft.

Aboveground Storage Tank Equipment



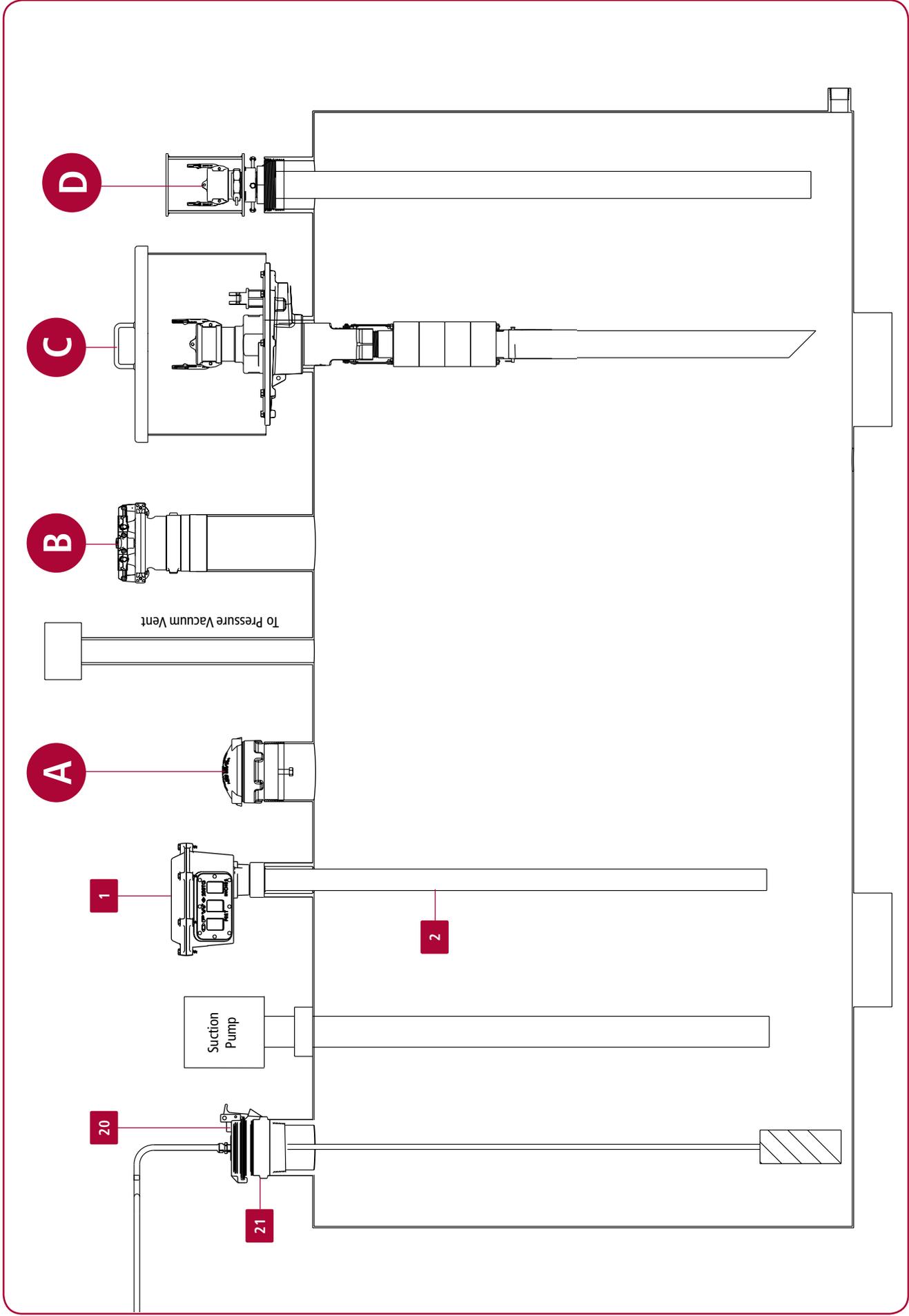
Above Ground Tank Diagrams

- Non-EVR Direct Fill AST Application 204-205
- Non-EVR Remote Fill / Remote Dispensing AST Application 206-207
- Non-EVR Remote Fill / Remote Dispensing AST Fleet Application ... 208-209
- Non-EVR Remote Fill Diesel/Fuel Oil/Generator Application 210-211
- Phase 1 CARB Certified AST EVR Direct Fill AST Application..... 212-213
- Phase 1 CARB Certified AST EVR Remote Fill / Remote
Dispensing AST Application 214-215
- Emergency Venting Size Selection Guide..... 216-217
- Spill Containment..... 218-219
- Overfill Prevention..... 220-221
- Fuel Delivery Coupler/Accessories..... 222-223
- Mechanical Tank Gauges224
- Tank Alarms.....225
- Tank Venting 226-231
- Anti-Siphon Valves232
- Solenoid Valves.....233
- Two-Way Ball Valve.....234
- Emergency Shut-Off Valves235
- Swing Check Valves.....236
- Dispenser Pedestal237



Above Ground Storage Tank - Direct Fill

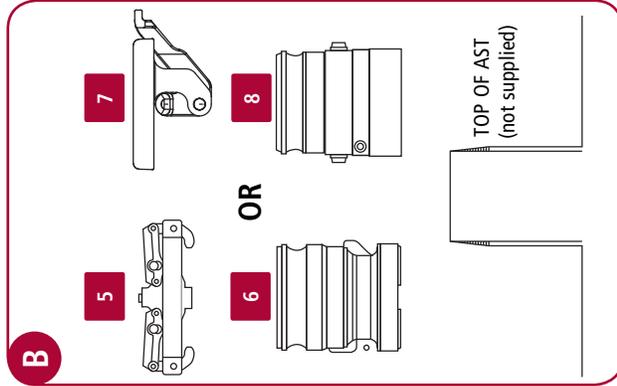
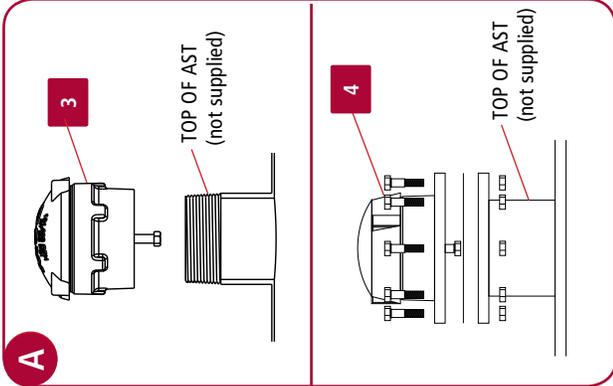
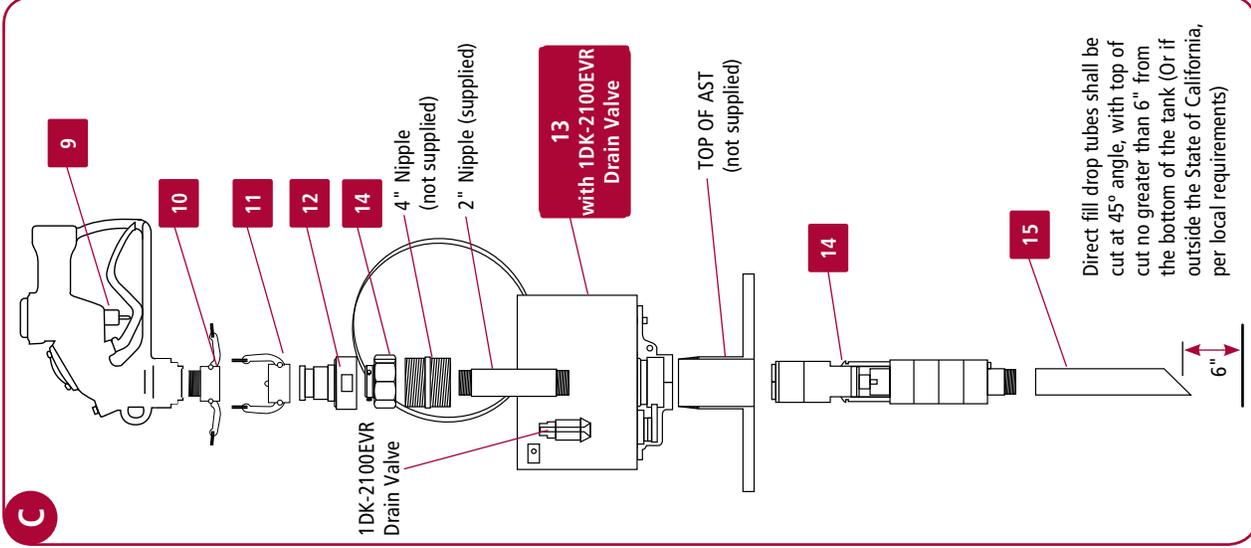
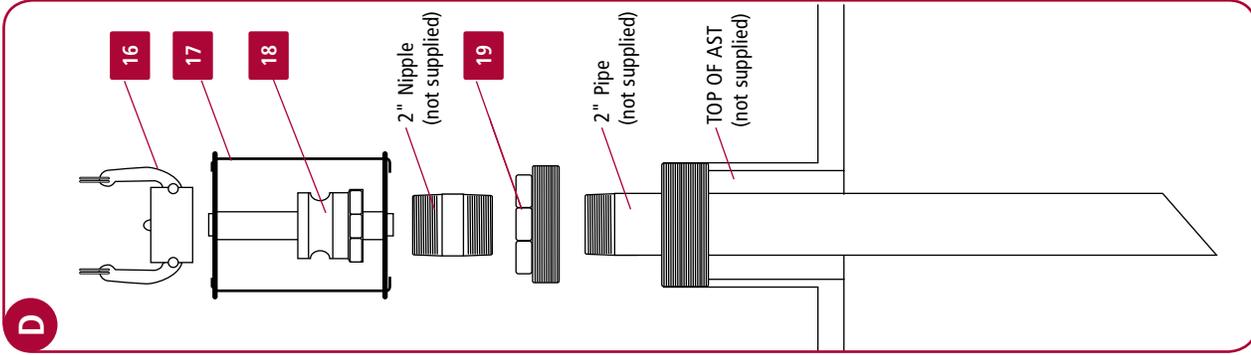
Typical Non-EVR Direct Fill AST Application



PRODUCT KEY

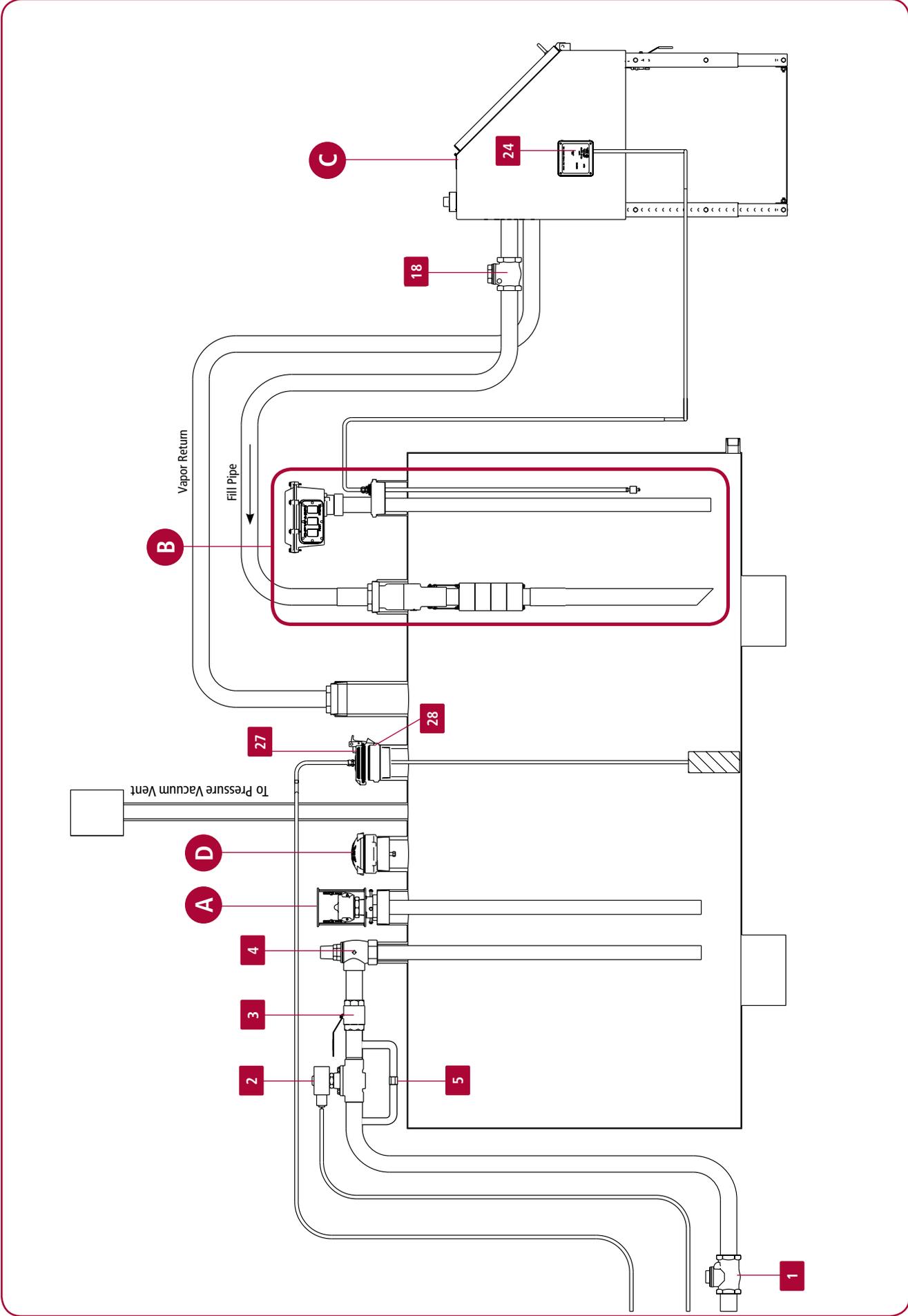
	OPW PART / DESCRIPTION	PAGE
1	200TG-ENG Series Tank Gauge (optional / see Note below)	224
2	61T Series Drop Tube	224
3	301 Series Emergency Vent - NPT Mount (See Vent Size Configuration Guide on page 216)	226
4	301 Series Emergency Vent - Flanged Mount (See Vent Size Configuration guide on page 216)	226
5	1711T-7085-EVR Cap	97
6	1611AV Series Vapor Recovery Adaptor	96
7	1711LPC-0300 Low Profile Cap	97
8	61VSA Series Vapor Recovery Adaptor	95
9	190 or 210 High-Flow Bulk Nozzle	188, 192
10	633BD Kamlok™ Coupler	222
11	A) 634B-0150 Dust Cap or 634BK-0090 Lockable Dust Cap fits 633AST-2061 Spout Adaptor B) 634B-0170 Dust Cap or 634BK-0100 Lockable Dust Cap fits 633AST-3061 Spout Adaptor	222
12	633AST-2061 (2" x 2") or 633AST-3061 (3" x 3") - Tank Inlet Spout Adaptor	222
13	332 Series Spill Container	218
14	61FSTOP-XXXX Series Overflow Prevention Valve	220
15	61FT Series Drop Tube	221
16	634B-0150 or 634BK-0090 Cap	222-223
17	204247 Fill Prevention Cage	222
18	633AST Series Adaptor	222
19	53-00XX Series Double Tapped Bushing	128
20	62M Series Monitoring Probe Cap & Adaptor	98
21	FSA-400 Face Seal Adaptor	57

NOTE: The OPW 200TG and 144TA/444TA are not required for EVR compliance, but if a tank gauge or tank alarm is used on your tank that these two OPW products are the only CARB AST EVR certified tank gauge and alarm.



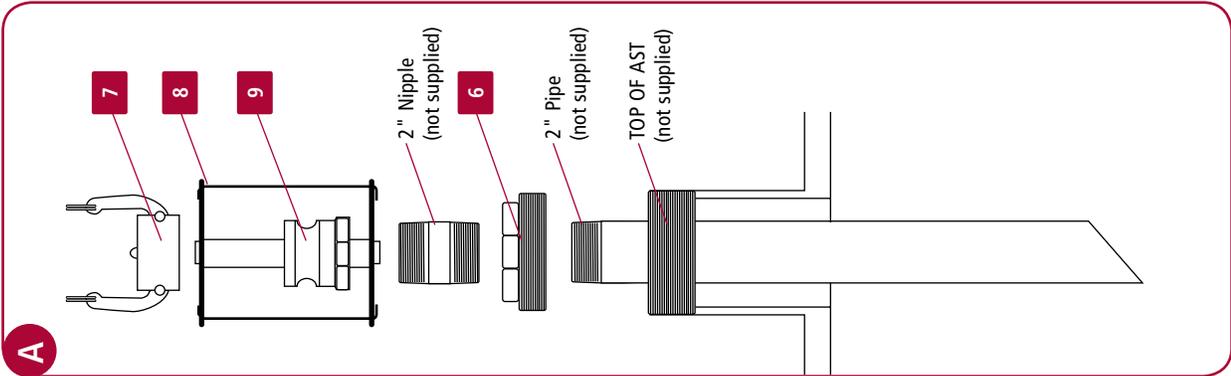
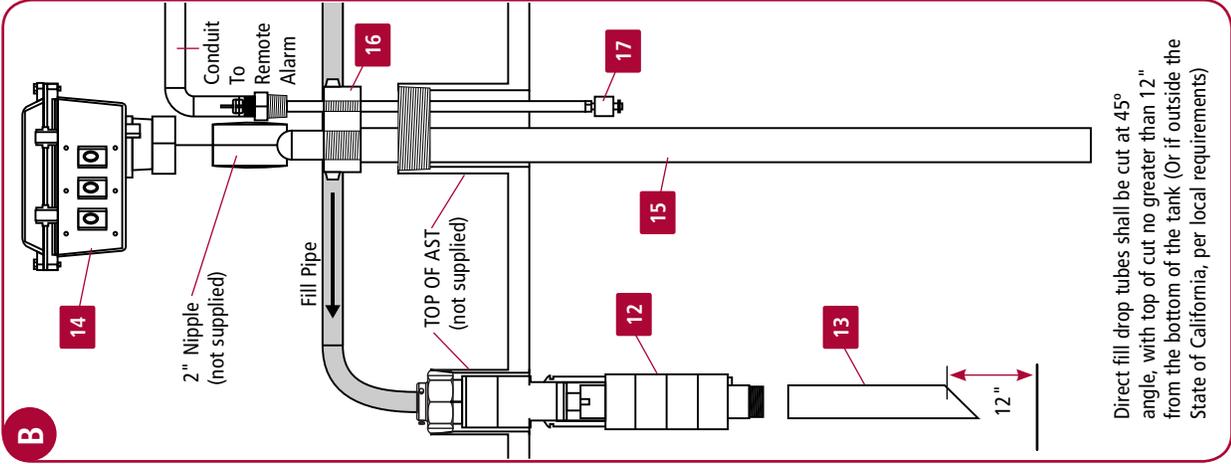
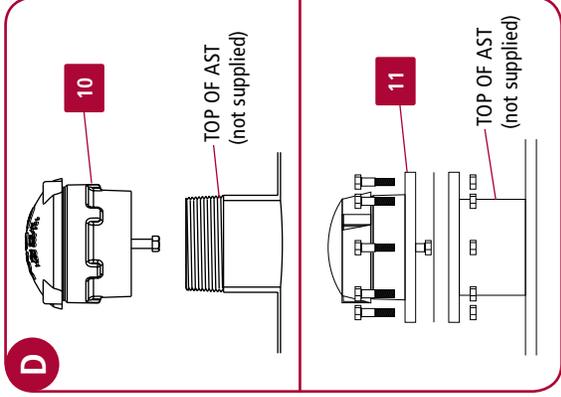
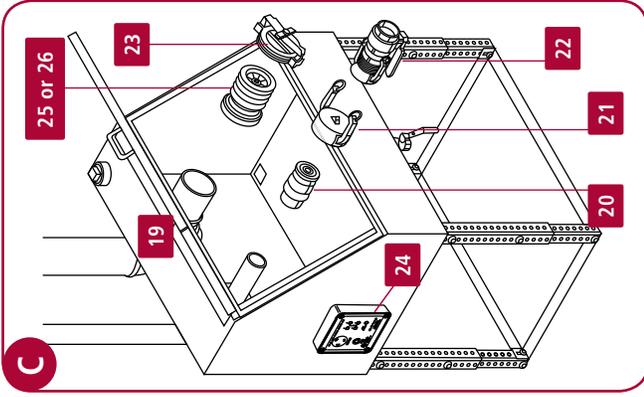
Above Ground Storage Tank - Remote Fill - Remote Dispensing

Typical Non-EVR Remote Fill / Remote Dispensing AST Application



PRODUCT KEY

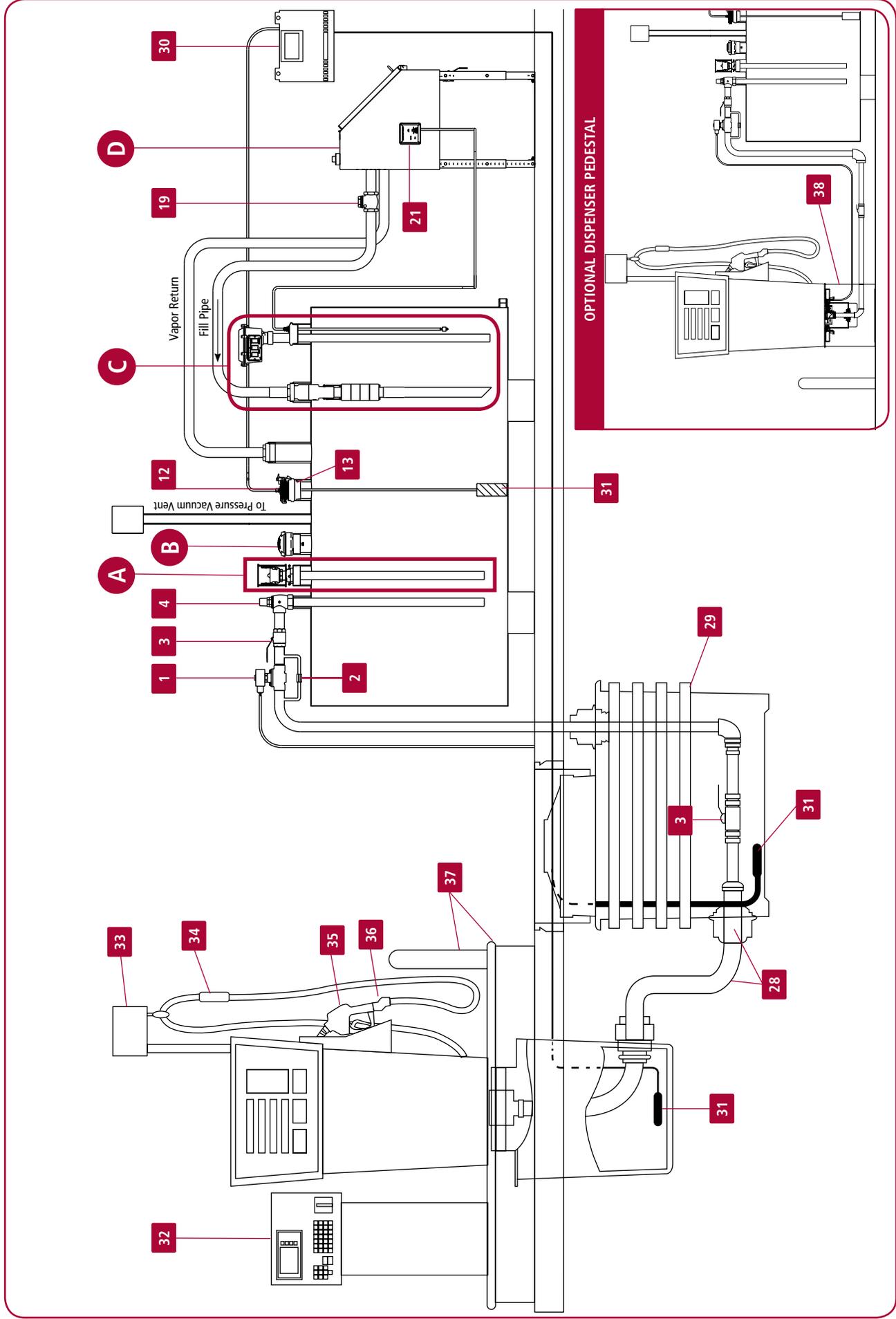
KEY	OPW PART / DESCRIPTION	PAGE
1	178S Series Emergency Valve	235
2	821 Series Solenoid Valve	233
3	21BV Series Ball Valve	234
4	199ASV Series Anti-Siphon Valve	232
5	82RV Series Pressure Relief Valve	233
6	53-00XX Series Double Tapped Bushing	127
7	634B-0150 or 634BK-0090 Cap	222-223
8	204247 Fill Prevention Cage	222
9	633AST-2190 Adaptor	222
10	301 Series Emergency Vent - Threaded Mount (See Vent Size Configuration Guide on page 216)	226
11	301 Series Emergency Vent - Flanged Mount (See Vent Size Configuration Guide on page 216)	226
12	615TOP-XXXX Series Overfill Prevention Valve	220-221
13	61FT Series Drop Tube	221
14	200TG-ENG Series Tank Gauge (optional / see Note below)	224
15	61T Series Drop Tube	224
16	TGTA-0400 4" Gauge/Alarm Combo Fitting (optional)	225
17	44TA-LLFS Liquid Level Float Switch	225
18	175 Series Swing Check Valve	236
19	6211R Series Remote Spill Container	219
20	1611AN-0200 or 1612AN-0200 - 2" Remote Fill or 1611AN-0300 or 1612AN-0300 - 3" Remote Fill Kamvalok Adaptor	223
21	A) 634B-0140 Dust Cap fits 633AST-0150 Adaptor B) 634B-0150 Dust Cap fits 633AST-2061 or 633AST-0200 Adaptor C) 634B-0160 Dust Cap fits 1611AN-0200 or 633ST- 0250 or 1611AN-2040 or 1612AN-2040 Adaptors D) 634B-0170 Dust Cap fits 1611AN-3060 or 1612AN-3060 Adaptors	222
22	1711D / 1712D Series Kamvalok Coupler	223
23	1711T-7085-EVR Cap or 1711LPC-0300 Low Profile Cap	97
24	144TA/444TA Series Tank Alarm (optional / see Note below)	225
25	1611AV Vapor Recovery Adaptor	96
26	61VSA Series Vapor Recovery Adaptor	95
27	62M Series Monitoring Probe Cap & Adaptor	98
28	FSA-400 Face Seal Adaptor	57



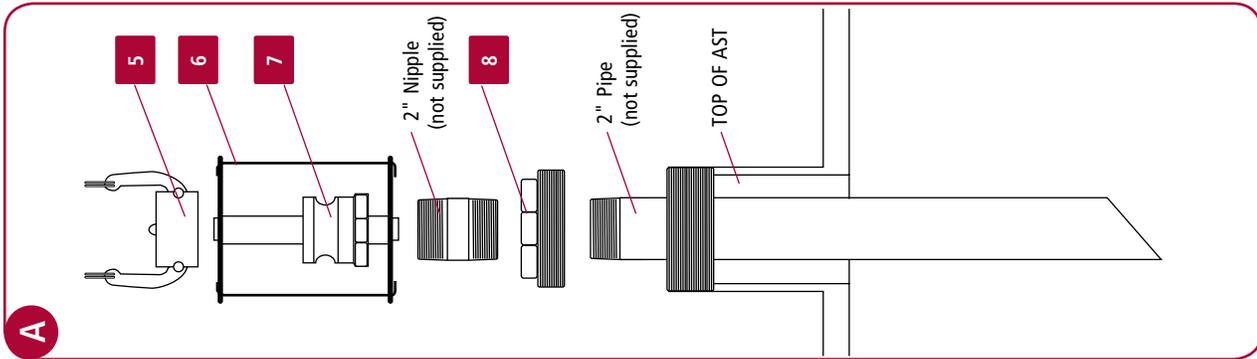
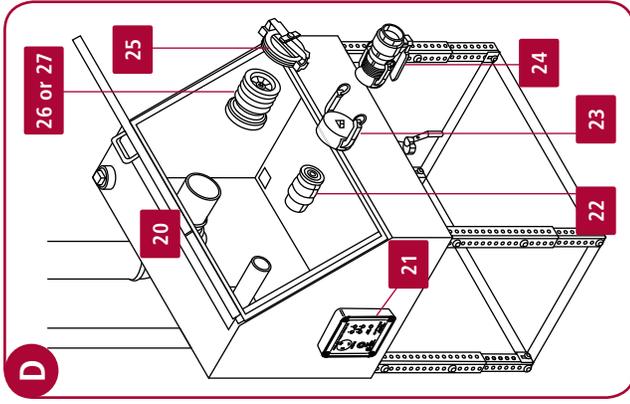
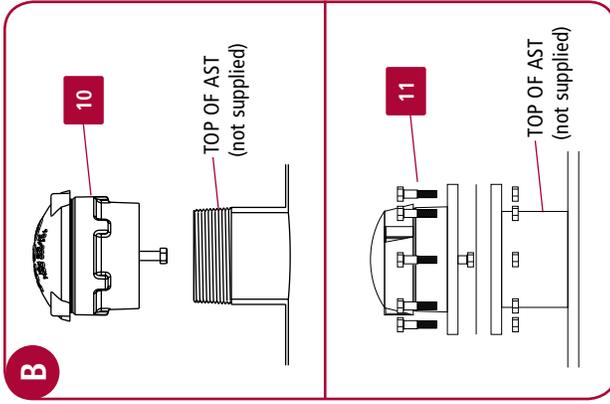
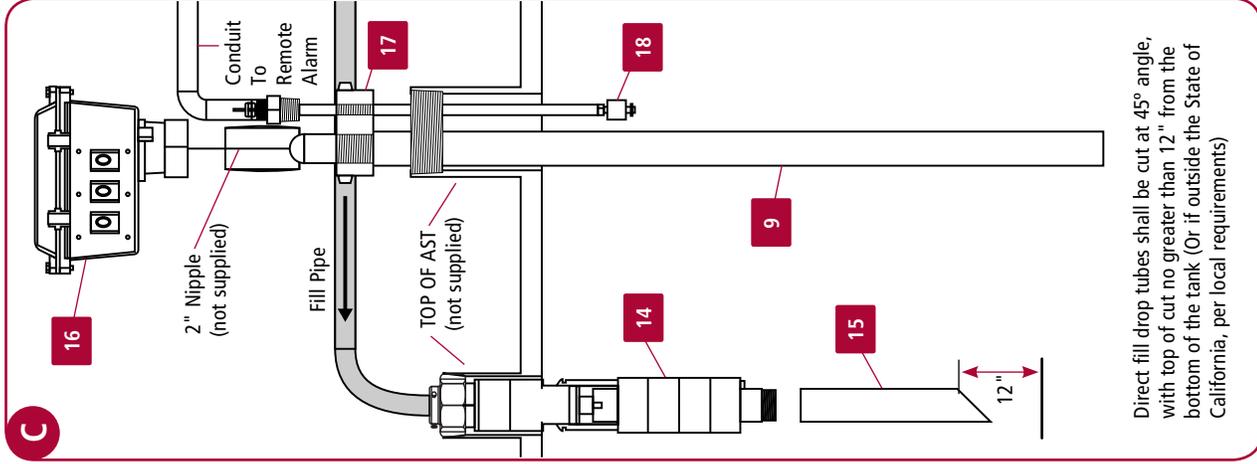
NOTE: The OPW 200TG and 144TA/444TA are not required for EVR compliance, but if a tank gauge or tank alarm is used on your tank that these two OPW products are the only CARB AST EVR certified tank gauge and alarm.

Above Ground Storage Tank - Remote Fill - Remote Dispensing

Typical Non-EVR Remote Fill / Remote Dispensing AST Fleet Application



PRODUCT KEY		
	OPW PART / DESCRIPTION	PAGE
1	821 Series Solenoid Valve	233
2	82RV Series Pressure Relief Valve	233
3	21BV Series Ball Valve	234
4	199ASV Series Anti-Siphon Valve	232
5	634B-0150 or 634BK-0090 Cap	222-223
6	204247 Fill Prevention Cage	222
7	633AST-2190 Adaptor	222
8	53-00XX Series Double Tapped Bushing	128
9	61T Series Drop Tube	224
10	301 Series Emergency Vent - NPT Mount (See Vent Size Configuration Guide on page 216)	226
11	301 Series Emergency Vent - Flanged Mount (See Vent Size Configuration Guide on page 216)	226
12	62M Series Monitoring Probe Cap & Adaptor	98
13	FSA-400 Face Seal Adaptor	57
14	61f5TOP-XXXX Series Overfill Prevention Valve	220-221
15	61FT Series Drop Tube	221
16	200TG-ENG Series Tank Gauge (optional / see Note below)	224
17	TGTA-0400 4" Gauge/Alarm Combo Fitting	225
18	44TA-LLFS Liquid Level Float Switch	225
19	175 Series Swing Check Valve	236
20	6211R Series Remote Spill Container	219
21	144TA/444TA Series Tank Alarm (optional / see Note below)	225
22	1611AN-0200 or 1612AN-0200 - 2" Remote Fill or 1611AN-0300 or 1612AN-0300 - 3" Remote Fill Kamvalok Adaptor	223
23	A) 634B-0140 Dust Cap fits 633AST-0150 Adaptor B) 634B-0150 Dust Cap fits 633AST-2061 or 633AST-0200 Adaptor C) 634B-0160 Dust Cap fits 1611AN-0200 or 633ST-0250 or 1611AN-2040 or 1612AN-2040 Adaptors D) 634B-0170 Dust Cap fits 1611AN-3060 or 1612AN-3060 Adaptors	222
24	1711D / 1712D Series Kamvalok Coupler	223
25	1711T-7085-EVR Cap or 1711PC-0300 Low Profile Cap	97
26	1611AV Vapor Recovery Adaptor	96
27	61VSA Series Vapor Recovery Adaptor	95
28	Flexible Piping Systems for Fuel Oil & Generator Applications	39
29	Underground Containment Systems	40

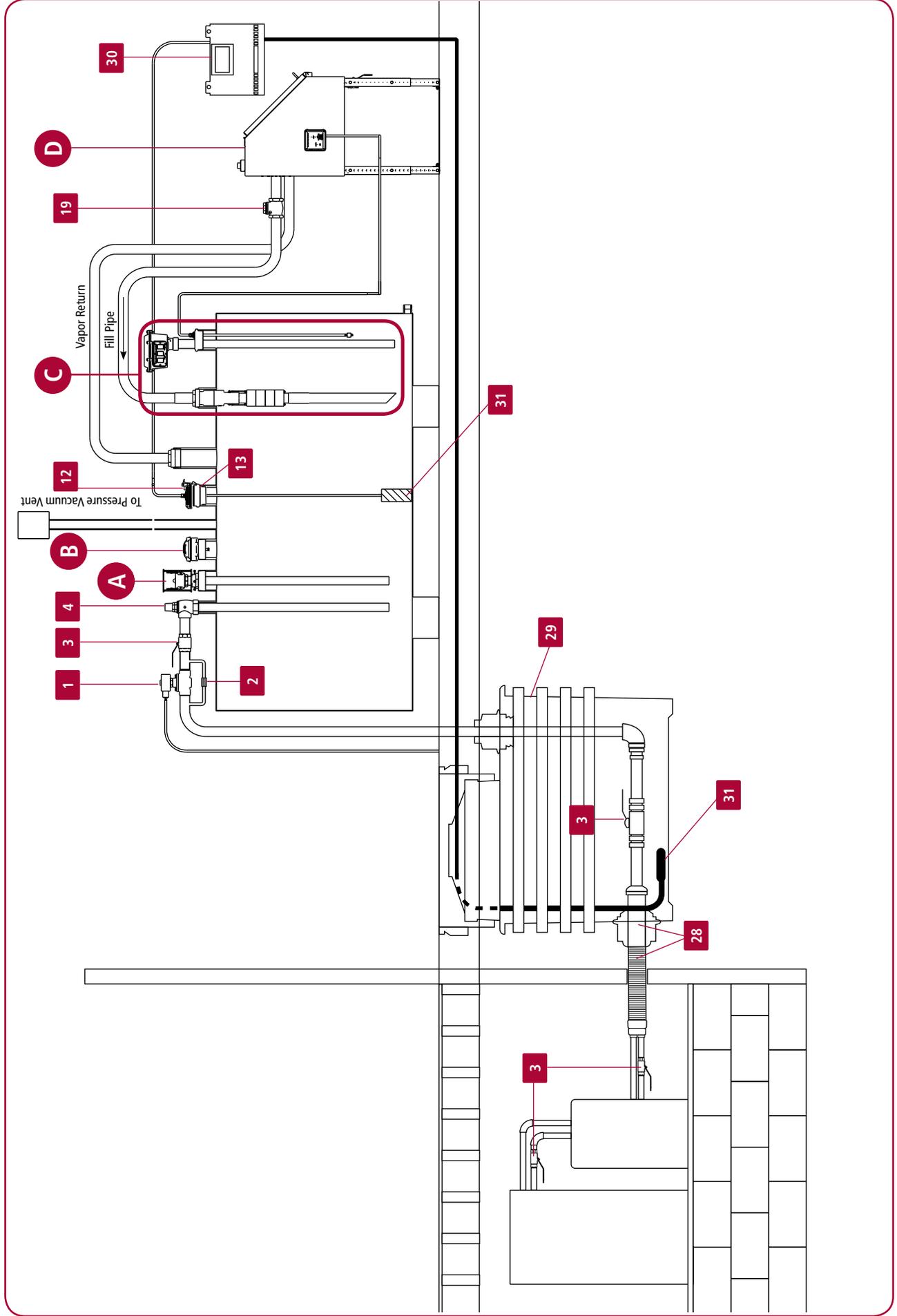


NOTE: The OPW 200TG and 144TA/444TA are not required for EVR compliance, but if a tank gauge or tank alarm is used on your tank that these two OPW products are the only CARB AST EVR certified tank gauge and alarm.

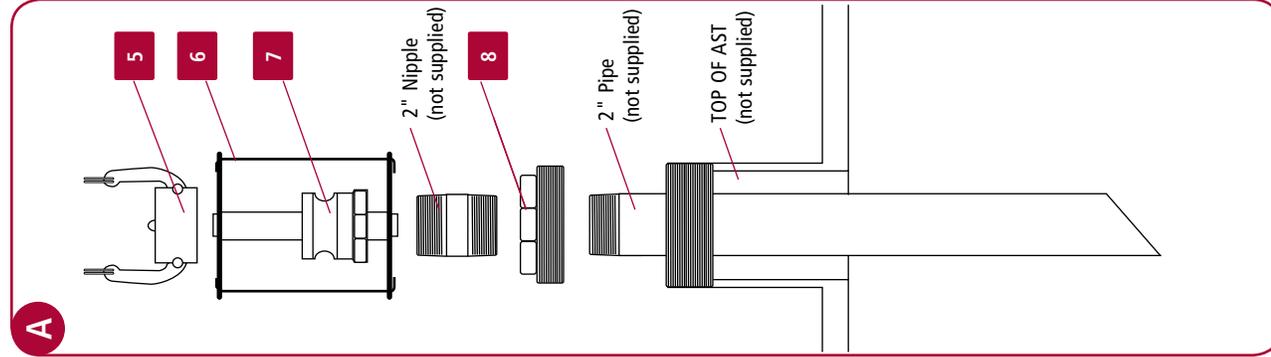
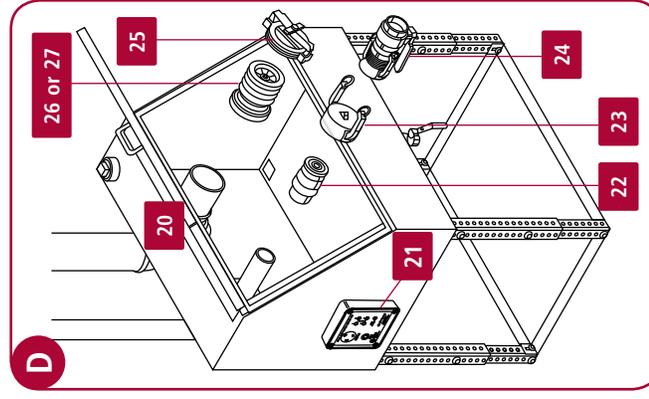
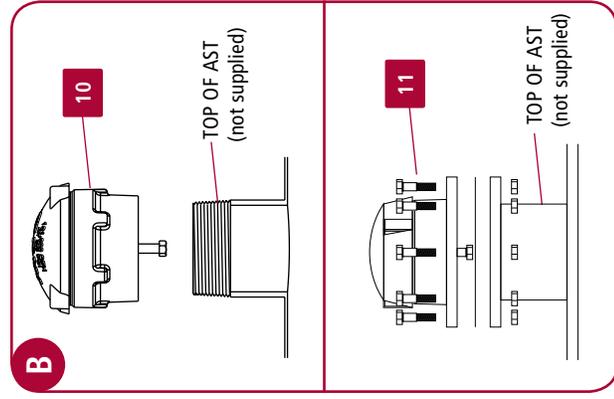
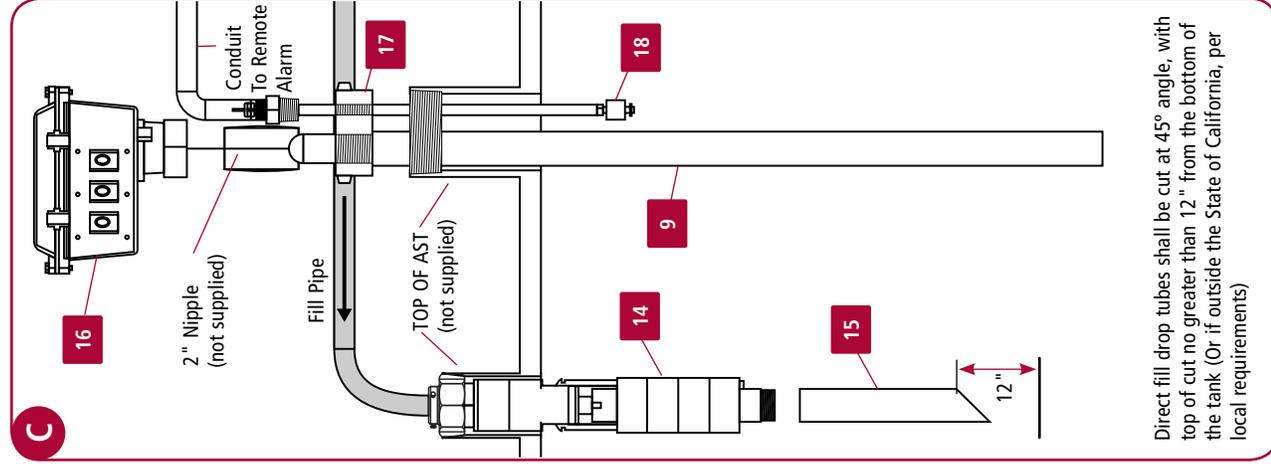
30	Automatic Tank Monitoring & Leak Detection Equipment	242-249	33	100 & 102 Series Hose Retractors	198-202	36	Swivels	160-163 & 174-175
31	Probes & Sensors for Liquid & Vapors	250-261	34	Breakaways	163-167 & 180	37	Island Forms and Bumper Guards	84-87
32	Automated Fuel Control System	264-281	35	Fueling Nozzles	144-147 & 194	38	Dispenser Pedestal	237

Above Ground Storage Tank - Remote Fill

Typical Diesel/Fuel Oil/Generator Application



PRODUCT KEY		
	OPW PART / DESCRIPTION	PAGE
1	821 Series Solenoid Valve	233
2	82RV Series Pressure Relief Valve	233
3	21BV Series Ball Valve	234
4	199ASV Series Anti-Siphon Valve	232
5	634B-0150 or 634BK-0090 Cap	222-223
6	204247 Fill Prevention Cage	222
7	633AST-2190 Adaptor	222
8	53-00XX Series Double Tapped Bushing	128
9	61T Series Drop Tube	224
10	301 Series Emergency Vent - NPT Mount (See Vent Size Configuration Guide on page 216)	226
11	301 Series Emergency Vent - Flanged Mount (See Vent Size Configuration Guide on page 216)	226
12	62M Series Monitoring Probe Cap & Adaptor	98
13	FSA-400 Face Seal Adaptor	57
14	61F5TOP-XXXX Series Overfill Prevention Valve	220-221
15	61FT Series Drop Tube	221
16	200TG-ENG Series Tank Gauge (optional / see Note below)	224
17	TGTA-0400 4" Gauge/Alarm Combo Fitting	225
18	44TA-LIFS Liquid Level Float Switch	225
19	175 Series Swing Check Valve	236
20	6211R Series Remote Spill Container	219
21	144TA/444TA Series Tank Alarm (optional / see Note below)	225
22	1611AN-0200 or 1612AN-0200 - 2" Remote Fill or 1611AN-0300 or 1612AN-0300 - 3" Remote Fill Kamvalok Adaptor	223
23	A) 634B-0140 Dust Cap fits 633AST-0150 Adaptor B) 634B-0150 Dust Cap fits 633AST-2061 or 633AST-0200 Adaptor C) 634B-0160 Dust Cap fits 1611AN-0200 or 633ST-0250 or 1611AN-2040 or 1612AN-2040 Adaptors D) 634B-0170 Dust Cap fits 1611AN-3060 or 1612AN-3060 Adaptors	222
24	1711D / 1712D Series Kamvalok Coupler	223
25	1711T-7085-EVR Cap or 1711LPC-0300 Low Profile Cap	97
26	1611AV Vapor Recovery Adaptor	96
27	61VSA Series Vapor Recovery Adaptor	95
28	Flexible Piping Systems for Fuel Oil & Generator Applications	39
29	Underground Containment Systems	40



NOTE: The OPW 200TG and 144TA/444TA are not required for EVR compliance, but if a tank gauge or tank alarm is used on your tank that these two OPW products are the only CARB AST EVR certified tank gauge and alarm.

30	Automatic Tank Monitoring & Leak Detection Equipment	242-249
31	Probes & Sensors for Liquid & Vapors	250-261

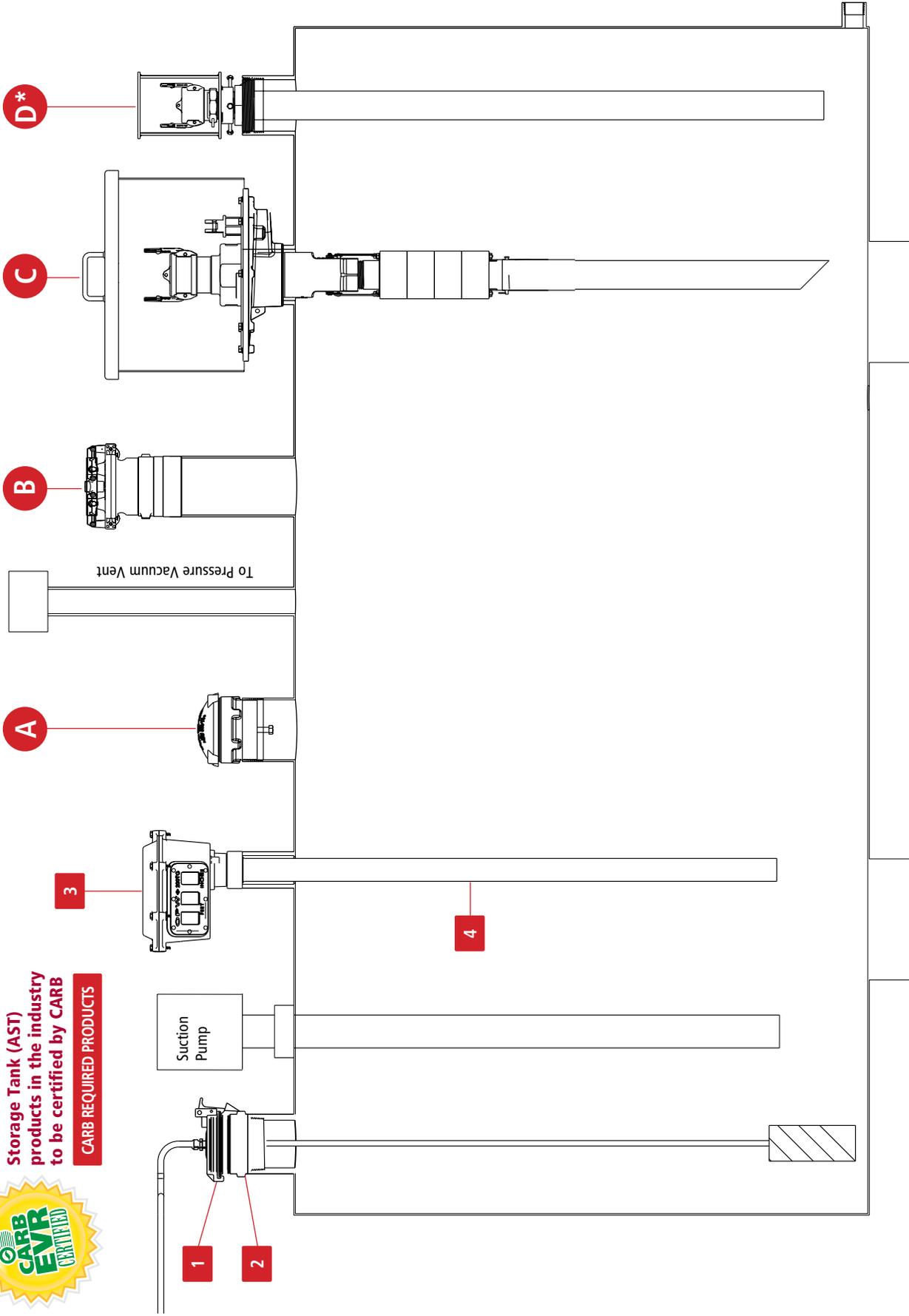
Above Ground Storage Tank - Direct Fill

Typical OPW Phase I System for AST



The *first* Above Ground Storage Tank (AST) products in the industry to be certified by CARB

CARB REQUIRED PRODUCTS

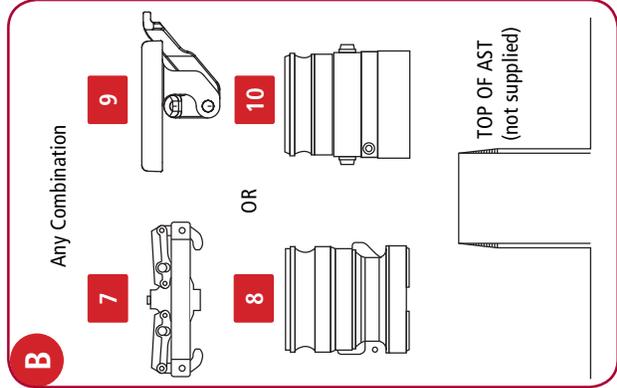
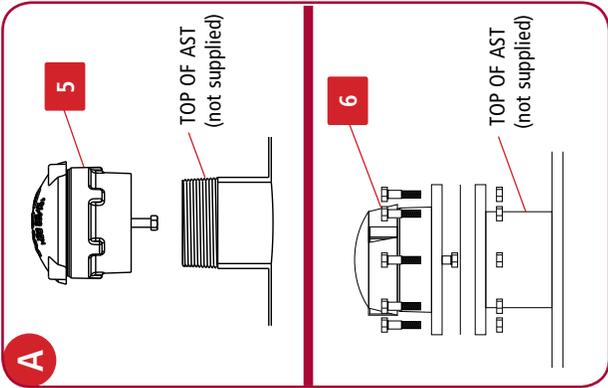
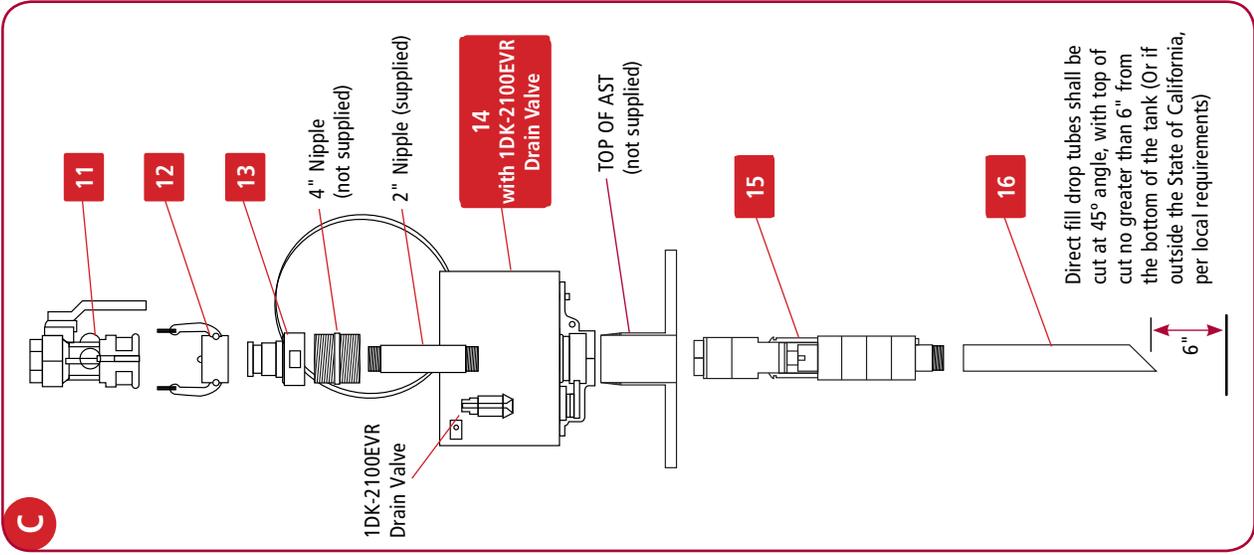
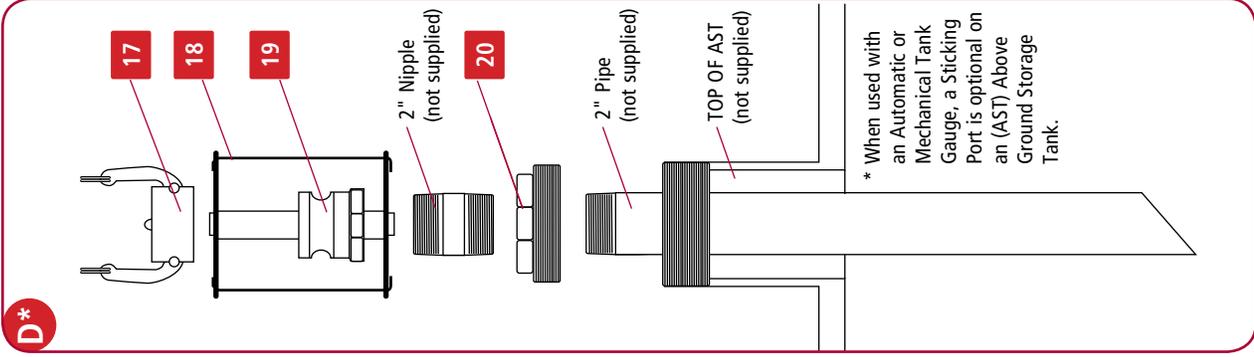




The first Above Ground Storage Tank (AST) products in the industry to be certified by CARB

CARB REQUIRED PRODUCTS

	OPW PART / DESCRIPTION	PAGE
1	62M Series Monitoring Probe Cap & Adaptor	98
2	FSA-400 Face Seal Adaptor	57
3	200TG-ENG Series Tank Gauge (optional / see Note below)	224
4	61T Series Drop Tube	224
5	301 Series Emergency Vent - NPT Mount (See Vent Size Configuration Guide on page 216)	226
6	301 Series Emergency Vent - Flanged Mount (See Vent Size Configuration Guide on page 216)	226
7	1711T-7085-EVR Cap	97
8	1611AV Vapor Recovery Adaptor	96
9	1711LPC-0300 Low Profile Cap	97
10	61VSA Series Vapor Recovery Adaptor	95
11	1711D / 1712D Series Kamvalok Coupler	223
12	A) 634B-0140 Dust Cap fits 633AST-0150 Adaptor B) 634B-0150 Dust Cap fits 633AST-2061 or 633AST-0200 Adaptor C) 634B-0160 Dust Cap fits 1611AN-0200 or 633ST-0250 or 1611AN-2040 or 1612AN-2040 Adaptors D) 634B-0170 Dust Cap fits 1611AN-3060 or 1612AN-3060 Adaptors	222
13	1611AN-2040 or 1612AN-2040 - 2" Direct Fill or 1611AN-3060 or 1612AN-3060 - 3" Direct Fill Kamvalok Adaptor	223
14	332 Series Spill Container	218
15	615STOP-XXXXT Series Overfill Prevention Valve	220-221
16	61FT Drop Tube	221
17	634B-0150 or 634BK-0090 Cap	222-223
18	204247 Fill Prevention Cage	222
19	633AST Series Adaptor	222
20	53-00XX Series Double Tapped Bushing	128



NOTE: The OPW 200TG and 144TA/444TA are not required for EVR compliance, but if a tank gauge or tank alarm is used on your tank that these two OPW products are the only CARB AST EVR certified tank gauge and alarm.

Above Ground Storage Tank - Remote Fill - Remote Dispensing

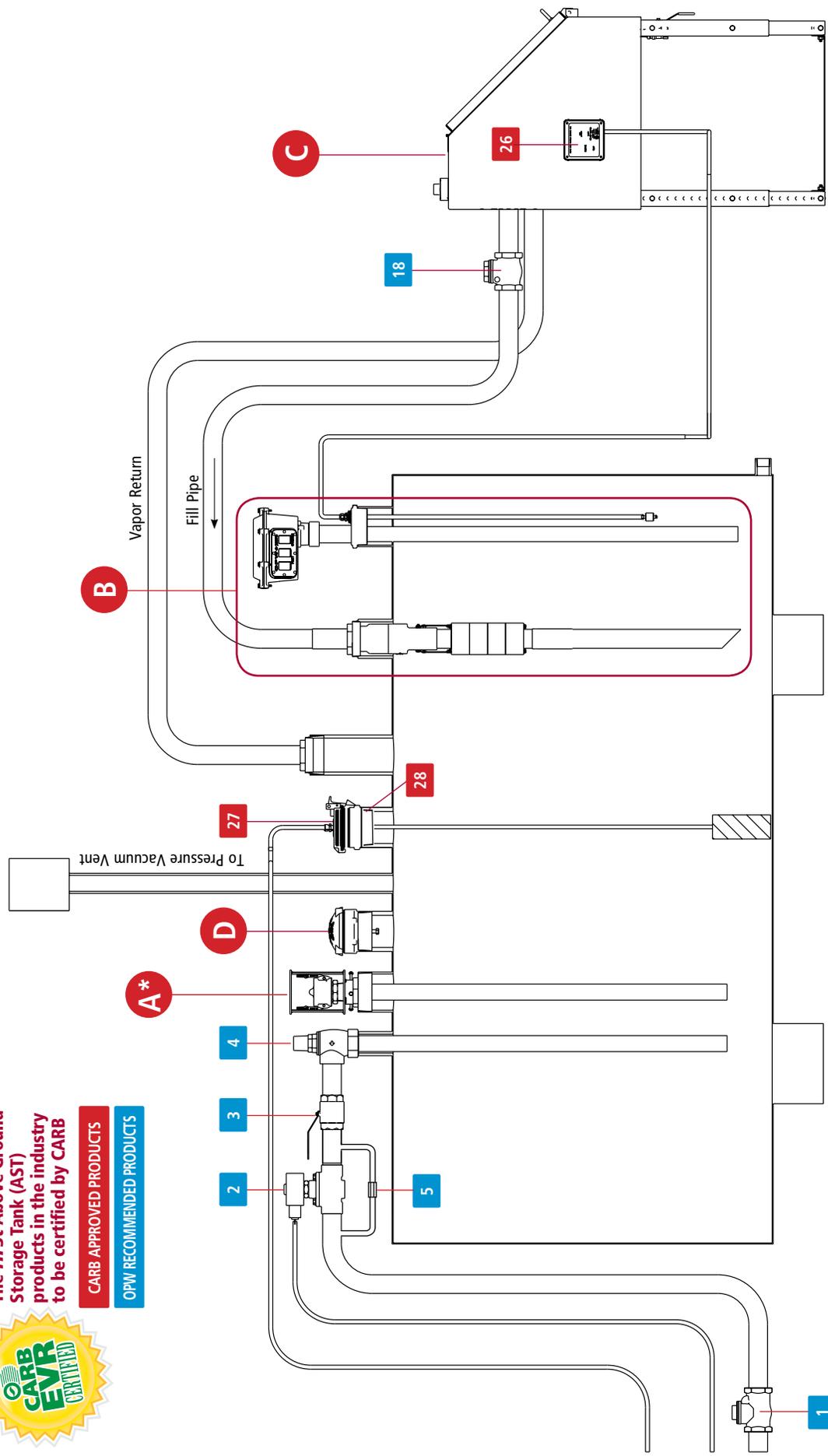
Typical OPW Phase I System for AST



The first Above Ground Storage Tank (AST) products in the industry to be certified by CARB

CARB APPROVED PRODUCTS

OPW RECOMMENDED PRODUCTS

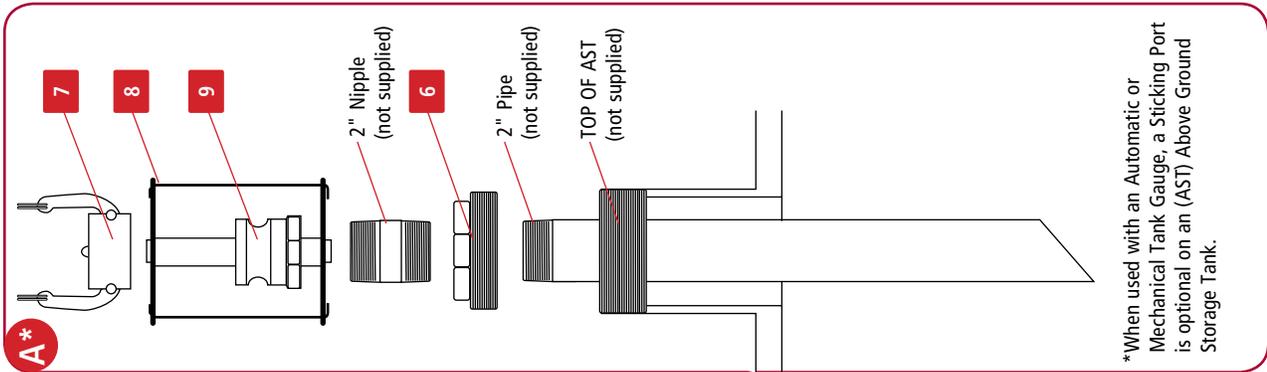
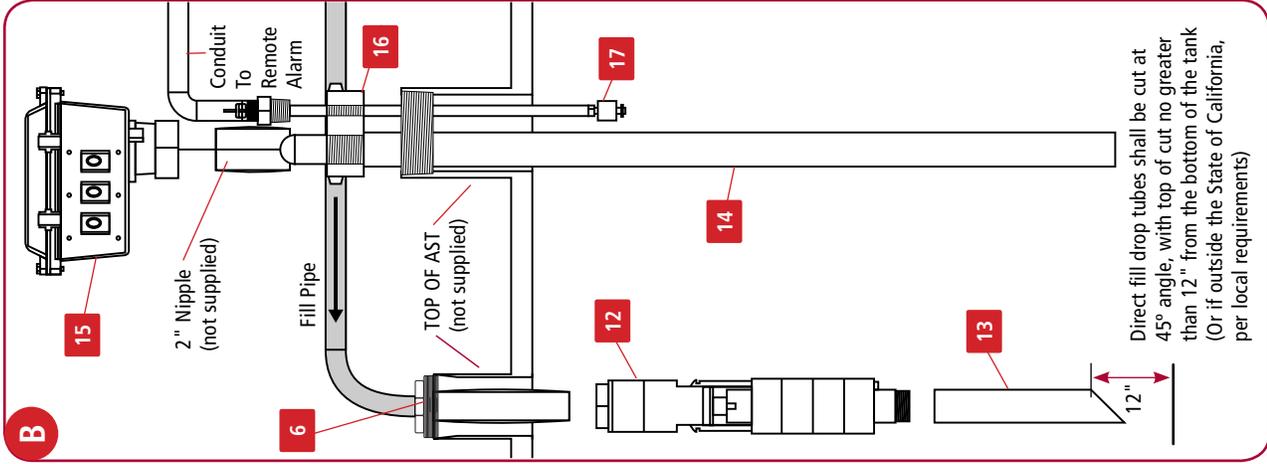
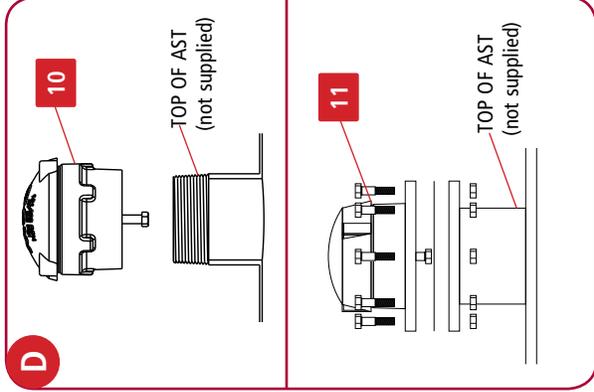
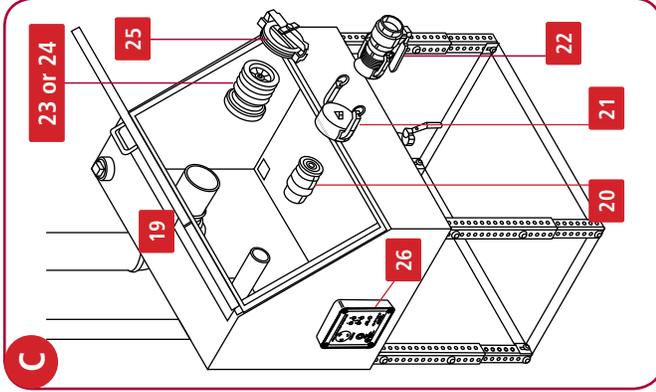


* When used with an Automatic or Mechanical Tank Gauge, a Sticking Port is optional on an (AST) Above Ground Storage Tank.



The first Above Ground Storage Tank (AST) products in the industry to be certified by CARB

KEY	OPW PART / DESCRIPTION	RECOMMENDED PRODUCTS	PAGE
1	178S Series Emergency Valve (optional)		235
2	821 Series Solenoid Valve (optional)		233
3	21BV Series Ball Valve (optional)		234
4	199ASV Series Anti-Siphon Valve (optional)		232
5	82RV Series Pressure Relief Valve (optional)		233
6	53-00XX Series Double Tapped Bushing (optional)		128
7	634B-0150 or 634BK-0900 Cap		222-223
8	204247 Fill Prevention Cage		222
9	633AST Series Adaptor		222
10	301 Series Emergency Vent - Threaded Mount (See Vent Size Configuration Guide on page 216)		226
11	301 Series Emergency Vent - Flanged Mount (See Vent Size Configuration Guide on page 216)		226
12	61FTOP-XXXXT Series Overfill Prevention Valve		220-221
13	61FT Series Drop Tube		221
14	61T Series Drop Tube		224
15	200TG-ENG Series Tank Gauge (optional / see Note below)		224
16	TGTA-0400 4" Gauge/Alarm Combo Fitting (optional)		225
17	44TA-LLFS Liquid Level Float Switch (optional)		225
18	175 Series Swing Check Valve (optional)		236
19	6211R Series Remote Spill Container		219
20	1611AN-0200 or 1612AN-0200 - 2" Remote Fill or 1611AN-0300 or 1612AN-0300 - 3" Remote Fill Kamvalok Adaptor	A) 634B-0140 Dust Cap fits 633AST-0150 Adaptor B) 634B-0150 Dust Cap fits 633AST-2061 or 633AST-0200 Adaptor	223
21	634B-0160 Dust Cap fits 1611AN-0200 or 633ST-0250 or 1611AN-2040 or 1612AN-2040 Adaptors 634B-0170 Dust Cap fits 1611AN-3060 or 1612AN-3060 Adaptors	C) 634B-0160 Dust Cap fits 1611AN-0200 or 633ST-0250 or 1611AN-2040 or 1612AN-2040 Adaptors D) 634B-0170 Dust Cap fits 1611AN-3060 or 1612AN-3060 Adaptors	222
22	1711D, 1711DL, 1712D, 1712DL Series Kamvalok Couplers		223
23	1611AV Vapor Recovery Adaptor		96
24	61VSA Series Vapor Recovery Adaptor		95
25	1711T-7085-EVR Cap or 1711LPC-0300 Low Profile Cap		97
26	144TA/444TA Series Tank Alarm (optional / see NOTE below)		225
27	62M Series Monitoring Probe Cap & Adaptor		98
28	FSA-400 Face Seal Adaptor		57



NOTE: The OPW 200TG and 144TA/444TA are not required for EVR compliance, but if a tank gauge or tank alarm is used on your tank that these two OPW products are the only CARB AST EVR certified tank gauge and alarm.

Emergency Venting Size Selection Guide

For Horizontal Above Ground Storage Tanks

The OPW AST Venting Guide is supplied to assist emergency venting selection for above ground storage tanks (AST). The table below contains common tank sizes and based on the Wetted Area of a horizontal cylindrical storage tank, the correct size OPW Emergency Vent. The following chart, was taken directly from NFPA 30 and UL 142.

Horizontal AST Emergency Venting Size Guide – Table 1

Capacity		Diameter		Length		Wetted Area		Required Vent Capacity		OPW 301 Vent Size
Gallons	Liters	ft. or in.	Meters	ft. or in.	Meters	sq. ft.	sq. m.	CFH	CMH	
280	1,060	3'	0.914	5'-2"	1.574	47	4.366	49,520	1,402	4"
300	1,136	38"	0.965	5'	1.524	49	4.552	51,640	1,462	4"
500	1,893	4'	1.219	5'-5"	1.651	69	6.410	72,650	2,057	4"
530	2,006	4'	1.219	6'	1.828	71	6.596	74,750	2,117	4"
550	2,082	64"	1.626	6'	1.828	75	6.967	78,950	2,236	4"
1,000	3,785	64"	1.626	10'-8"	3.251	119	11.055	124,950	3,538	6"
1,000	3,785	64"	1.626	6'	1.828	109	10.126	114,450	3,241	6"
1,500	5,678	64"	1.626	9'	2.743	147	13.657	154,350	4,371	6"
2,000	7,571	64"	1.626	12'	3.657	184	17.094	193,200	5,471	6"
2,500	9,464	64"	1.626	15'	4.572	222	20.624	223,320	6,324	6"
3,000	11,356	64"	1.626	18'	5.486	259	24.062	243,680	6,900	6"
3,000	11,356	6'	1.828	14'	4.267	240	22.297	233,400	6,609	6"
4,000	15,142	64"	1.626	24'	7.315	335	31.123	281,100	7,960	8"
4,000	15,142	6'	1.828	19'	5.791	311	28.893	270,060	7,647	8"
5,000	18,927	8'	2.438	13'-4"	4.064	326	30.286	276,960	7,843	8"
6,000	22,712	8'	2.438	16'	4.876	376	34.932	300,480	2,364	8"
8,000	30,283	8'	2.438	21'-4"	6.502	477	44.315	344,340	9,751	8"
10,000	37,854	8'	2.438	27'	8.229	584	54.255	385,920		8"
10,000	37,854	9'	2.743	21'	6.400	540	50.168	369,200	10,455	8"
10,000	37,854	10'	3.048	17'	5.181	518	48.124	360,840	10,218	8"
10,000	37,854	10'-6"	3.200	15'-7"	4.749	515	47.845	359,700	10,186	8"
12,000	45,425	8'	2.438	32'	9.753	678	62.988	420,080	11,895	8"
12,000	45,425	9'	2.743	25'	7.620	625	58.064	401,000	11,355	8"
12,000	45,425	10'	3.048	20'-6"	6.248	600	55.742	392,000	11,100	8"
12,000	45,425	11'	3.352	17'	5.181	583	54.162	385,540	10,917	8"
15,000	56,781	8'	2.438	40'	13.192	829	77.017	470,990	13,336	10"
15,000	56,781	8'	2.438	23'-5"	7.137	703	65.311	429,020	12,148	10"
20,000	75,708	10'	3.048	34'-2"	10.414	922	85.657	499,820	14,153	10"
20,000	75,708	10'-6"	3.200	31'	9.448	896	83.241	491,760	13,925	10"
20,000	75,708	11'	3.352	28'	8.534	868	80.640	483,080	13,679	10"
25,000	94,635	10'-6"	3.200	38'-6"	11.734	1,082	100.52	537,530	15,221	10"
30,000	113,562	10'-6"	3.200	46'-3"	14.097	1,274	118.36	568,100	16,087	10"

Horizontal AST Emergency Vent Selection

For Horizontal Above Ground Storage Tanks

TABLE 1 is a pre-calculated chart that may have all the information needed to choose the proper emergency vent. If the tank size is not in the pre-calculated chart, use the example below as a guide to figure out the wetted area, cubic feet per hour (CFH), and proper vent selection for the particular tank.

**EXAMPLE:

Given: Tank capacity is 10,000 gallons; 10 feet in diameter x 17 feet long.

Step 1

From TABLE 1: **WA = 518 sq. ft.**

If not in the table, do the following to calculate the wetted area:

$$\text{Formula: } WA = .75 \left[2 \frac{\pi d^2}{4} + pdl \right] = .75 \left[\frac{\pi d^2}{2} + pdl \right]$$

WA = wetted area in square feet

75% = horizontal tank factor

$\pi = 3.14$

d = diameter of tank end in feet

l = length of tank in feet

$$WA = .75 \left[\frac{3.14 \times 10^2}{2} + (3.14 \times 10 \times 17) \right]$$

WA = .75 (157.0 + 533.8) = **518 square feet rounded**

Step 2

If the tank size is in the chart, use the supplied CFH values to determine the emergency vent size needed in TABLE 1.

If not in the charts, continue the following example:

Using 518 square feet, the cubic feet per hour (CFH) can be found using TABLE 1.

Since 518 falls between the values of 500 and 600, interpolation is necessary as follows:

	600 sq. ft.	392,000 CFH	See TABLE 2 for additional CFH values.
Difference:	-500 sq. ft.	-354,000 CFH	
	100 sq. ft.	38,000 CFH	

$$\left[\frac{38,000}{100} \times \frac{x}{518-500} ; x = 6,840 \text{ CFH} \right]$$

Total CFH required = 354,000 CFH + 6,840 CFH = **360,840 CFH**

Step 3

Vent selection: using TABLE 1, find the range in which 360,840 CFH falls.

The tables show that an 8" emergency vent is needed.

**PEI Recommended Practices 200-96

Wetted Area versus Cubic Feet of Free Air Per Hour Table 2

(14.7 PSIA and 60°)

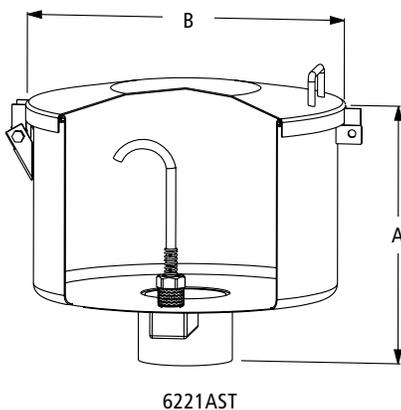
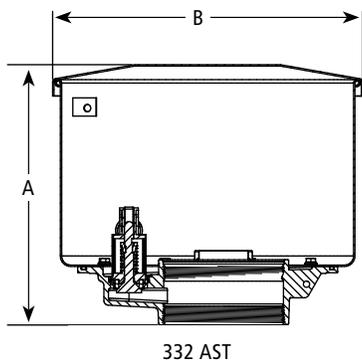
sq. ft.	sq. m.	CFH	CMH
20	1.858	21,100	597.48
30	2.787	31,600	894.81
40	3.716	42,100	1,192.13
50	4.645	52,700	1,492.29
60	5.574	63,200	1,789.62
70	6.503	73,700	2,086.95
80	7.432	84,200	2,384.27
90	8.361	94,800	2,684.43
100	9.290	105,000	2,973.26
120	11.148	126,000	3,567.92
140	13.006	147,000	4,162.57
160	14.864	168,000	4,757.23
180	16.723	190,000	5,380.20
200	18.581	211,000	5,974.85
250	23.226	239,000	6,767.72
300	27.871	265,000	7,503.96
350	32.516	288,000	8,155.25
400	37.161	312,000	8,834.85
500	46.452	354,000	10,024.16
600	55.742	392,000	11,100.20
700	65.032	428,000	12,119.61
800	74.322	462,000	13,082.38
900	83.613	493,000	13,960.20
1,000	92.903	524,000	14,838.02
1,200	111.48	557,000	16,338.82
1,400	130.06	587,000	16,621.98
1,600	148.64	614,000	17,386.54
1,800	167.23	639,000	18,094.46
2,000	185.81	662,000	18,745.75
2,400	222.97	704,000	19,935.06
>2,800	>260.13	742,000	21,011.10

SOURCE: **Flammable and Combustible Liquids Code 30, NFPA.**

Interpolate for immediate values.

POMECO/OPW 332AST & 6221AST Direct-Fill Above Ground Storage Tank Spill Containers

POMECO/OPW Direct-Fill AST Spill Containers are designed to prevent spilled product from entering soil near the fill and vapor return riser connections on an above ground storage tank during normal tank filling operation. The spill containers catch spillage to help prevent soil contamination and groundwater pollution. POMECO/OPW Direct-Fill AST Spill Containers thread on the top of an above ground tank and allow for drainage of spilled product back into the tank.



Dimensions

Model #	Capacity		A		B	
	gal.	liter	in.	cm	in.	cm
6221	7	26.5	14½	37	17	43
	3.5	13.2	9¼	24	17	43
332	7	26.5	14	35	17	43

Features

- ◆ Easy Installation – 4" NPT threaded base screws directly to the tank riser pipe. No further adjustments are needed.
- ◆ Integral Drain Valve – allows high-speed drainage of spilled product back into the tank.
- ◆ Capacity – available in 7-gallon (26.5 liter) container capacity. Larger 7-gallon capacity spill containers provide additional clearance for 61 fSTOP Overfill Prevention Valves (3.5 gallon-221 only).
- ◆ Rain-Shedding Cover Design – hooded cover design helps prevent water or snow entry by extending the lip of the cover over the body of the spill container.
- ◆ Welded-Hinge, Lockable Hatch – the cover includes a provision for a padlock and a welded-hinge assembly for added security.
- ◆ 12 Gauge Epoxy-Powder Coated Construction – heavy-duty materials, compatible with hydrocarbons, for long service life and added security
- ◆ 332AST and 6221AST Spun Steel Design – spun steel construction provides a lightweight, one-piece design for easy installation and a clean, sleek appearance on above ground tanks.



- ◆ 6211AST Heavyweight, Welded Base Design - Thick, welded stainless steel base and walls provide solid strength for heavy-duty applications.
- ◆ All Models Are ULC Listed – clearly labeled to identify the listing.
- ◆ CARB EVR Certified

 Model 06221 Series only.

332AST Spill Containers
Instruction Sheet Order Number: 203168

6211-AST Spill Containers
Instruction Sheet Order Number: 202207

Ordering Specifications:

CARB APPROVED AST EQUIPMENT

Product #	Description	Liters	lbs.	kg
332-ASTW74	7 gallon, 4.0" NPT EVR Approved	26.4 liter, 4.0" NPT	38	17.23
6221-ASTW32	3.5 gallon, 2.0" NPT White	13.2 liter, 4.0" NPT	18	8.16
6221-ASTW34	3.5 gallon, 4.0" NPT White	13.2 liter, 4.0" NPT	19	8.61
6221-ASTW72	7 gallon, 2.0" NPT White	26.4 liter, 2.0" NPT	20	9.07
6221-ASTW74	7 gallon, 4.0" NPT White	26.4 liter, 4.0" NPT	25	11.33
6221-ASTW76	7 gallon, 6.0" NPT White	26.4 liter, 6.0" NPT	25	11.33
6211SS-AST74	7 gallon, AST Stainless Steel Spill Container	26.4 liter, 4.0" NPT	25	11.33

Listings and Certifications

**CARB Certified
AST Phase I Enhanced Vapor Recovery (EVR) System**

Features

- ◆ Easy Installation – a 4" flexible boot on the back panel allows for a quick, simple connection to the remote fill or vapor lines. Optional reducer inserts are available to accommodate 3" and 2" piping connections.
- ◆ Models to Accommodate Various Fill Pipe Configurations – available in 15, 20 and 30-gallon container capacity. Smaller 15-gallon models are designed for a single-fill or vapor return connection. Larger 20 and 30-gallon models accept both fill and vapor return piping in a dual-port configuration. The 30-gallon model will accommodate both fill and vapor return piping in a single-port configuration and allow the use of 3" Dry Disconnects (OPW 1611AN and 1711D) in a dual-port configuration.
- ◆ Rain-Shedding Cover Design – hooded cover design helps prevent water or snow entry by extending the lip of the cover over the body of the spill container.
- ◆ 12-Gauge Epoxy-Powder Coated Steel or Stainless Steel Construction heavy-duty materials, compatible with hydrocarbons, for long service life and added security.



See Pomeco Product Configurator

6211-R

- ◆ Welded-Hinge, Lockable Hatch – cover includes a provision for a padlock and a welded-hinge assembly for added security.
- ◆ Easy Product Drainage – lockable ball valve drain provides for quick and easy product removal.
- ◆ Height Adjustable – adjustable legs enable the spill container to be set at a variety of heights, from 16½" to 30". Each leg is independently adjustable to account for uneven ground conditions.
- ◆ CARB Certified
- ◆ Custom Sizes Available Upon Request.

Ordering Chart

6	R -					
211		15	0	B2	L	
211SS		20	1	B3	LD	
		30	2	B4	N	
				N	ND	

211 – 12 Gauge Powder-Coated Steel Construction
211SS – Stainless Steel Construction

0 – No entry holes
1 – 1, 4" Entry hole
2 – 2, 4" Entry holes (30 Gallon Only)

B – Booted entry fittings in holes
N – No fittings in holes
2 – 2" Fitting
3 – 3" Fitting
4 – 4" Fitting

L – Adjustable legs and No base drain valve
LD – Adjustable legs with base drain valve
N – No legs and No base drain valve
ND – No legs with base drain valve

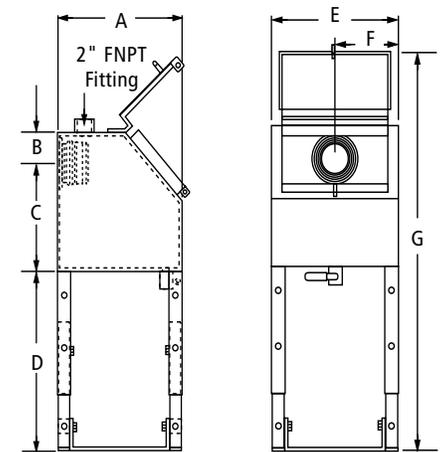
Note: an item must be selected for each column.

Dimensions

	15 Gallon		20 Gallon		30 Gallon	
	Weight 91 lbs. (41 kg)		Weight 135 lbs. (61 kg)		Weight 175 lbs. (79 kg)	
	in.	cm	in.	cm	in.	cm
A	18¼"	46	24	61	21	53
B	7⅞"	19	7½"	19	10½"	27
C	13⅝"	35	16½"	42	16½"	42
D	16½" to 30"	42 to 76	16½" to 30"	42 to 76	16½" to 30"	42 to 76
E	18¼"	46	24	61	34	86
F	9⅞"	23	12	30½"	9½"	24
G	47 to 60½"	119 to 154	56½" to 80"	144 to 203	56½" to 80"	144 to 203

POMECO/OPW 211-Remote-Fill Above Ground Storage Tank Spill Containers

POMECO/OPW Remote-Fill AST Spill Containers are designed to prevent spilled product from entering soil near the remote, horizontal-fill and vapor return connections on an above ground storage tank during normal tank filling operation. The spill containers catch spillage to help prevent soil contamination and groundwater pollution. POMECO/OPW Remote-Fill AST Spill Containers slip on the remote-fill and vapor return piping connected to an above ground tank. Compatible with methanol, ethanol, jet and AV-Gas fuels.



Replacement Parts

Part #	Description
201758	4 x 2 Reducer Insert
201759	4 x 3 Reducer Insert
PBOOT	Nitrile (Fuel-Resistant) Boot
202312	Aluminum Flange
21BV-0075	Fullport ¾"
6211R-15	Leg Kit - 15 Gal.
6211R-20	Leg Kit - 20 Gal.
6211R-30	Leg Kit - 30 Gal.

211R Instruction Sheet Order Number: **H15857PA**

PC04427 - Brass Drain Valve

OPW 61fSTOP "THE STOPPER" Overfill Prevention Valves

The OPW 61fSTOP Overfill Prevention Valve ("The Stopper") is designed to prevent overfilling of above ground storage tanks by providing a positive shut-off during a pressurized-fill (pump-on fill) delivery. "The Stopper" threads into the fill opening and is an integral part of the fill tube. The OPW61fSTOP is fully adjustable to allow for easy installation in new or existing above ground tanks of various heights and storage capacities.

The Stopper is a single-action, complete shut-off valve. When the liquid level rises to your specific, pre-determined tank capacity, the valve mechanism is released and automatically closes with the flow of the product. Any excess product left between the valve and the fuel delivery coupler is drained into the tank through internal drain vents. The drain vents on the 61fSTOP act as an anti-siphon, by introducing air/vapor into the fill line, to help isolate the tank from a potential siphon due to a broken or leaking fill pipe.

The 61fSTOP, available in either 2" or 3" full-flow models, maximizes flow rates and minimizes delivery times. The 2" 61fSTOP requires a 4" tank opening and minimum tank ullage (space from the top of the stored product to the inside top of the tank) of 8" on the 61fSTOP-1000 Cylindrical Float model and a minimum ullage of 4" on the 61fSTOP-2000 Float Arm model. The 61fSTOP-1000, with the cylindrical float, eliminates the need to position the valve to avoid tank walls or cross-bracing. The 61fSTOP-2000 with the float arm allows for increased usable storage capacity in the tank, and is well-suited for small capacity rectangular ASTs. The 3" 61fSTOP requires a 6" tank opening and incorporates a cylindrical float requiring 8" of tank ullage space.

Materials

Valve Body, Adaptor and Collar: Cast aluminum
Poppet: Cast aluminum, hard-coated
Cam: Stainless steel
Follower: Brass
Shaft: CRS zinc-plated
Bearing: Sintered bronze
Float: Closed-cell nitrile
Nipple: 2" - 3" schedule 40 steel pipe
Lower Nipple: 2" - 3" schedule 40 steel pipe with Duragard® coating



61fStop-1000 61fStop-2000

61fStop-3050



61fStop-1000T

61fStop-2000T

61fStop-3050T



Features

- ◆ A Special Crossbar Tank-Inlet Adaptor – is provided with each Stopper to provide for tight-fills and help prohibit open-fills. Mounting hardware, upper drop tube and 14" lower drop tube provided (longer-length drop tubes can be purchased or added).
- ◆ Completely Automatic Operation – no pre-checks to perform, no resets, and no overrides to be broken or abused.
- ◆ Direct or Remote-Fill Compatible – fuel delivery couplers can be connected directly to the 61fSTOP, or steel pipe can be threaded into the top of the valve and piped to a remote location where the couplers are contained in a 211-RMOT Spill Container.
- ◆ Integral Anti-Siphon Valve – drain vents on the 61fSTOP act as an anti-siphon, by introducing air/vapor into the fill line after the valve actuates, to help isolate the tank from a potential siphon due to a broken or leaking remote-fill pipe.
- ◆ 150 psi (10 bar) Pressure Rated* with Low Pressure Drop – to enable quick, safe delivery of fuel into the tank.
- ◆ 25 GPM (95 lpm) Minimum Flow Rate Required.
- ◆ UL and ULC Listed – to satisfy Third Party accreditation requirements of many jurisdictions.
- ◆ CARB Approved

*OPW does not recommend pumping pressures above 100 psi for Class 1B fuels or remote applications and we make no warranties for products use in conjunction with the 61fSTOP.

NOTE: OPW recommends the use of the 61fSTOP with clean product only. Debris and other products such as contaminated waste oil may cause improper operation of the valve.

NOTE: The 61fStop can be used in gravity drop provided the minimum flow rate is maintained.

A tight shut-off is not achieved in the closed position. However with a minimum tank size of 1,000 gallons, the leak rate will provide a 30-minute warning before the tank is full.

**Approvals
and Listings**



**CARB Certified
AST Phase I Enhanced Vapor Recovery (EVR) System**

Ordering Specifications and Dimensions

Product #	Description	A		B		C		D		E		F	
		in.	cm	in.	cm	in.	cm	in.	cm	in.	cm	in.	cm
61fSTOP-1000	2" Cyl. Float	3	7.6	10	25.4	2	5.1	9	22.4	3 ¹⁵ / ₁₆	10	n/a	n/a
61fSTOP-100M*	2" Cyl. Float for Methanol	3	7.6	10	25.4	2	5.1	9	22.4	3 ¹⁵ / ₁₆	10	n/a	n/a
61fSTOP-2000	2" Float Arm	3	7.6	10	25.4	1/2	3.8	5-18	22.4	1 ³¹ / ₃₂	5	6	15.2
61fSTOP-200M*	2" Float Arm for Methanol	3	7.6	10	25.4	1/2	3.8	5-18	22.4	1 ³¹ / ₃₂	5	6	15.2
61fSTOP-3050	3" Cyl. Float	3	7.6	10 ⁵ / ₈	27	2	5.1	8	20.3	5 ¹ / ₈	13	n/a	n/a
61fSTOP-305A*	3" Cyl. Float for Aviation or Methanol	3	7.6	10 ⁵ / ₈	27	2	5.1	8	20.3	5 ¹ / ₈	13	n/a	n/a
61fSTOP-100M*	2" Cyl. Float for E85	3	7.6	10	25.4	2	5.1	9	22.4	3 ¹⁵ / ₁₆	10	n/a	n/a
61fSTOP-200M*	2" Cyl. Float for E85	3	7.6	10	25.4	1/2	3.8	5-18	22.4	1 ³¹ / ₃₂	5	6	15.2
61fSTOP-305A	2" Cyl. Float for AV-GAS	3	7.6	10 ⁵ / ₈	27	2	5.1	8	20.3	5 ¹ / ₈	13	n/a	n/a

*Recommended for E85

Replacement Parts 2"

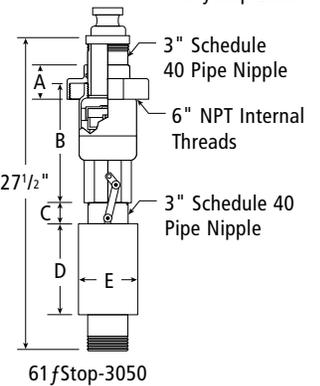
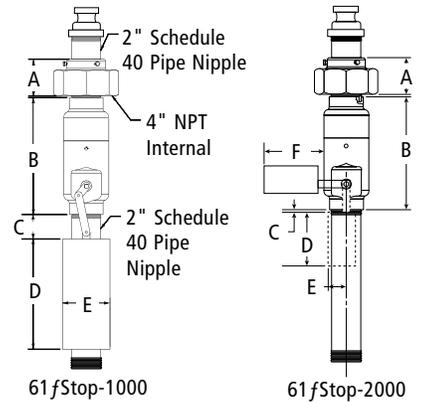
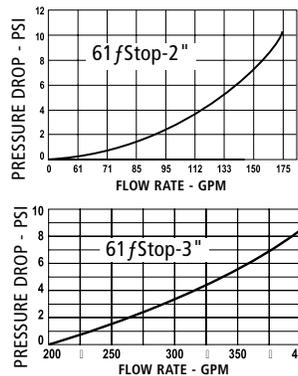
Product #	Description
C04093M	4" Retaining Collar
C04114RS	14" Nipple

Replacement Parts 3"

Product #	Description
D02037M	6" Retaining Collar
C04474RS	14" Nipple

61fSTOP Weights

Product #	Weight	
	lbs.	kg
61fSTOP-1000	13	5.89
61fSTOP-2000	12	5.44
61fSTOP-3050	22	9.97



CARB Approved Ast Equipment

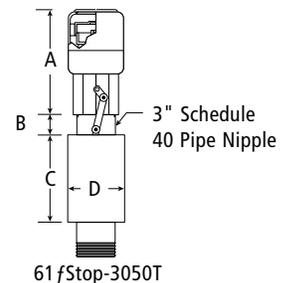
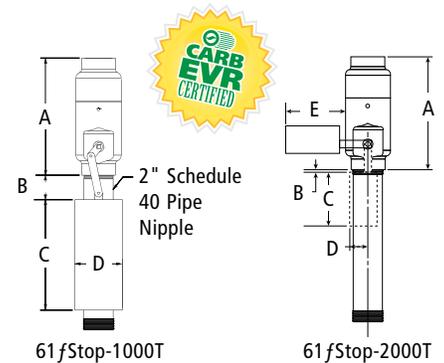
Product #	Description	A		B		C		D		E	
		in.	cm	in.	cm	in.	cm	in.	cm	in.	cm
61FSTOP-1000T	2" NPT with cylindrical float	10	25.4	2	5.1	9	22.4	3 ¹⁵ / ₁₆	10	n/a	n/a
61FSTOP-2000T	2" NPT with float arm	10	25.4	1/2	3.8	5-18	22.4	1 ³¹ / ₃₂	5	6	15.2
61FSTOP-3050T	3" NPT with cylindrical float	10 ⁵ / ₈	27	2	5.1	8	20.3	5 ¹ / ₈	13	n/a	n/a

Replacement Parts 2"

Product #	Description
H12617M	Float for 1000 (4 pieces required)
61ARM-2000	Floating Arm Retrofit Kit For 2000

Replacement Parts 3"

Product #	Description
C04438M	Float (4 pieces required for 3050)



OPW 61FT Drop Tube

The OPW 61FT Drop Tube is designed to install on the bottom of the 61fSTOP AST Overfill Prevention Valves when a lightweight, longer, lower drop tube is required. Constructed of extruded aluminum, the OPW 61FT is connected to the bottom of the 61fSTOP by a clevis and cotter pin assembly, and allows for submerged filling of ASTs.

Ordering Specifications and Dimensions

CARB APPROVED AST EQUIPMENT

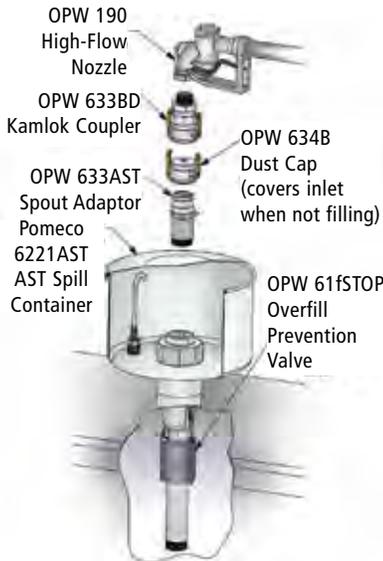
Product #	Description
61FT-0206	2" x 6' Drop Tube Kit
61FT-0312	3" x 12' Drop Tube Kit

61FSTOP-1000, 100M, 200M Instruction Sheet Order Number: **H12676M**
 61FSTOP-2000 Instruction Sheet Order Number: **H13337M**
 61FSTOP-3000, 3050, 305A Instruction Sheet Order Number: **H13315M**
 61FT-0312, 0206 Instruction Sheet Order Number: **H14428PA**
 61FSTOP-1000T, 2000T, 3050T Instruction Sheet Order Number: **203163**

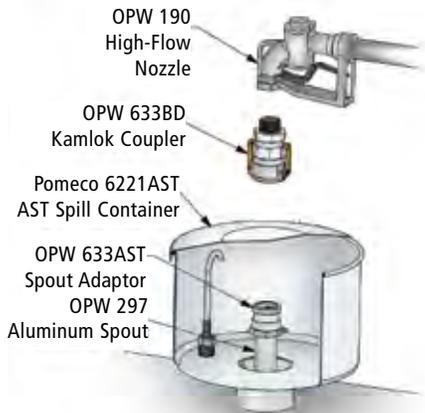
NOTE: When ordering a CARB EVR Certified OPW 61f STOP, the Fill Adaptor must be ordered separately.

Fuel Delivery Couplers And Accessories

Fuel Delivery Couplers and Accessories are designed to connect fuel delivery transport truck hoses or nozzles to the fill pipe of an aboveground storage tank.



Typical AST Filling Application



Typical AST Filling Application



Dedicated Gauging Port

For use with 633AST-XXXX Female NPT Kamlok Gauging Port.

Ordering Specifications

CARB APPROVED AST EQUIPMENT

Product #	Description
204247	Dedicated Gauging Port

Kamlok® Couplers

The 633BD has a Kamlok® Coupler on one end and external threads on the other end. This coupler should be threaded into an OPW 190 Nozzle and then coupled to the 61fSTOP for filling ASTs.

Ordering Specifications

Product #	Elbow/Thread	
	in.	mm
633BD-1261	2 x 1-1/2	51 x 38
633B-0150	2 x 2	51 x 51



633B Coupler

Tank Inlet Spout Adaptors With Crossbar

The 633AST Series Adaptors, with a boss installed across the inlet, are designed to prohibit open-fills. Adaptors are supplied with the 61fSTOP to provide for tight-fills.

Ordering Specifications

Product #	Elbow/Thread	
	in.	mm
633AST-2061	2 x 2	51 x 51
633AST-3061	3 x 3	77 x 77



633AST Spout Adaptor

Tank Inlet Spout Adaptors

The 633AST is an adaptor that can be threaded onto a 297 Spout. The spout and adaptor assembly may then be attached to a 190 Nozzle equipped with a 633BD Kamlok® coupler for open filling of ASTs when a 61fSTOP is not installed.

Ordering Specifications

CARB APPROVED AST EQUIPMENT

Product #	Elbow/Thread	
	in.	mm
633AST-0150	1.5 x 1.5	38 x 38
633AST-0200	2 x 2	51 x 51
633AST-0250	2.5 x 2.5	64 x 64
633AST-0300	3 x 3	76 x 76
633AST-0400	4 x 4	102 x 102

366FAST-XXXX, Male Thread Equivalent of Adaptors above



633AST Spout Adaptor

Dust Caps

The 634B Dust Caps are installed on 633AST Adaptors when not in use to deter dust, debris and water from entering the tank.

Ordering Specifications

CARB APPROVED AST EQUIPMENT

Product #	Description	in.	mm
634B-0140	For 633AST-0150	1 1/2	38
634B-0150	Caps 633AST-2061 or 633AST-0200 Adaptor	2	51
634B-0160	Caps 1611AN-0200 or 633AST-0250 or 1611AN-2040 or 1612AN-2040 Adaptors	2 1/2	64
634B-0170	Caps 61fSTOP (633AST-3061) or 366AST-0300 or 1611AN-3060 or 1612AN-3060 Adaptors	3	77
634B-0180	1611AN-0300 Kamvalok® Adaptor or 633AST-0400 Adaptor	4	103



Dust Cap

1611 & 1612 Series Kamvalok® Adaptors

Installed onto the 61fSTOP overfill prevention valve. Contains an internal spring loaded valve assembly that automatically closes to help prevent fuel spillage.

Ordering Specifications

CARB APPROVED AST EQUIPMENT

Product #	Seal	in.	mm
1611AN-2040	Direct Fill with Buna seal	2	51
1612AN-2040	Direct Fill with Viton seal	2	51
1611AN-3060	Direct Fill with Buna seal	3	77
1612AN-3060	Direct Fill with Viton seal	3	77

1611AN Adaptor Instruction Sheet Order Number: 204016



Kamvalok® Adaptor
for Direct Fill

Poppeted Kamvalok® Adaptors

The 1611AN Series Kamvalok® Adaptor is installed at the fill pipe and replaces the 633AST. The 1611AN contains an internal spring-loaded valve assembly that automatically closes to help prevent fuel spillage. The 1611AN mates with the 1711D Coupler to open the spring-loaded valve and proceed with a delivery 204016.

Ordering Specifications

CARB APPROVED AST EQUIPMENT

Product #	Seal	in.	mm
1611AN-0200	Remote Fill with Buna Seal	2	51
1611AN-0300	Remote Fill with Buna Seal	3	77
1612AN-0150	Remote Fill with Viton® Seal	1½	38
1612AN-0200	Remote Fill with Viton® Seal	2	51
1612AN-0300	Remote Fill with Viton® Seal	3	77
1672AN SS20	2" Stainless Steel Kamvalok® Adaptor	2	51
1672AN SS30	3" Stainless Steel Kamvalok® Adaptor	3	77

* Thread and Kamvalok® same size



Poppeted Kamvalok®
Couplers for Remote Fill

1611AN Adaptor Instruction Sheet
Order Number: 204016

Poppeted Kamvalok® Couplers

The 1711D Series Kamvalok® Couplers are installed on the fuel delivery transport truck hose and mate with the 1611AN Adaptors. The combination of the 1711D and 1611AN enable dry connection and dry disconnection of delivery fittings to help prevent accidental spillage of product.

Ordering Specifications

CARB APPROVED AST EQUIPMENT

Product #	Seal	in.	mm
1711D-1075	Buna	2	51
1711D-1080	Buna	3	77
1712D-1085	Viton®	1½	38
1712D-1090	Viton®	2	51
1712D-1095	Viton®	3	77
1772D-SS-20	2" Stainless Steel Poppeted Kamvalok® Adaptor	2	51
1772D-SS-30	3" Stainless Steel Poppeted Kamvalok® Adaptor	3	77

* Thread and Kamvalok® same size



Poppeted
Kamvalok® Couplers

H32116PA Coupler Instruction
Sheet Order Number: 204016

Dust Plugs

The 634A Dust Plug is installed in the end of the 1711D, and is designed to help prevent dust, dirt and debris from damaging the internal components of the Coupler.

Ordering Specifications

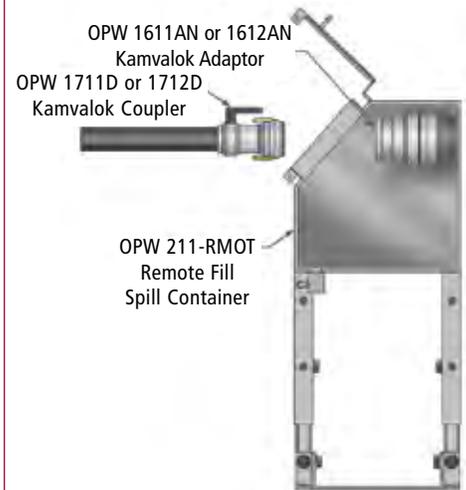
Product #	Description	in.	mm
634A-0160	Plugs 1711D or 1712D - 2" Kamvalok® Coupler	2½	64
634A-0180	Plugs 1711D or 1712D - 3" Kamvalok® Coupler	4	103



Dust Plug

Spout Kits And Delivery Couplers And Accessories

Fuel Delivery Couplers and Accessories are designed to connect fuel delivery transport truck hoses or nozzles to the fill pipe of an aboveground storage tank.



Typical AST Filling Application



Lockable Dust Plug

Lockable Dust Caps

The 634BK-0090 is a 2" lockable dust cap for the 61fSTOP. It will cap off any 2" 633AST Tank Inlet Spout Adaptor and offers the added feature of being lockable.

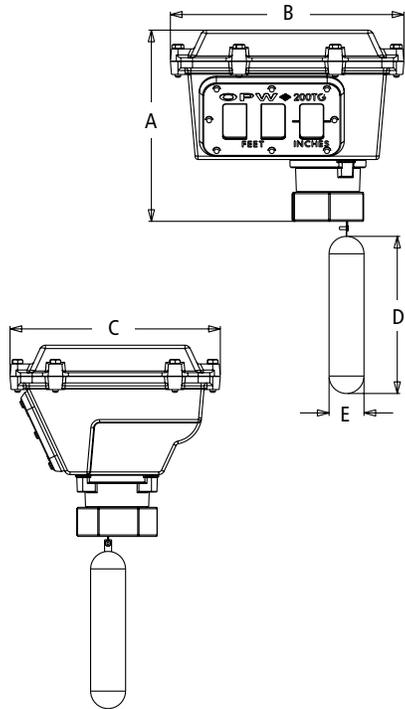
Ordering Specifications

CARB APPROVED AST EQUIPMENT

Product #	Description	in.	mm
634BK-0090	Caps 633AST Adaptor	2	51
634BK-0100	Caps 633AST Adaptor	3	77
634BK-0200	Caps 633AST Adaptor	4	103

OPW 200TG AST Mechanical Tank Gauge

The OPW 200TG Tank Gauge is designed for reading liquid levels in horizontal or vertical above ground storage tanks. The 200TG Tank Gauge provides an accurate numerical counter readout, eliminating the need for any on-site manual gauging.



Dimensions:

	in.	cm
A	8 1/4	21
B	10 1/4	26
C	9	22.75
D	6 3/4	17.25
E	1 1/2	3.75

Replacement Parts:

Part #	Description
C05165M	Float
H15325M	Lens
H15267M	Lens Gasket
H14909M	Lid Gasket



Underwriters Laboratory Listed UL Listing MH29367. Liquid level gauges which are intended to be used on above ground storage tanks and monitor the level of petroleum-based flammable or combustible fluids.

Materials

- Enclosure:** Powder-coated aluminum
- Swivel Base:** Hard-coat aluminum
- Float:** 304 stainless steel
- Lenses:** Tempered borosilicate
- Gears:** Acetal
- Gaskets & O-Rings:** Nitrile*
- All Hardware:** Stainless steel
- Accuracy:** + or - 2"



Features

- ◆ Vapor-Tight – allows for standard tank pressure testing and sealing up to 25-psig (1.72 bar).
- ◆ Angled Face – improves visibility from ground on large diameter tanks. May be read easily up to 30 feet away (9.14 m).
- ◆ Swivel Adaptor Base – allows for 360° of rotation of gauge face for easy viewing wherever needed.
- ◆ Easy Installation – 2" NPT-threaded base reduces labor time, and comes standard with female thread. A H11421RS may be purchased for male threaded applications.
- ◆ Corrosion-Resistant Construction – powder-coated die cast-aluminum body assures for long service life in many fluids.
- ◆ Drop Tube – prevents float entanglement in the tank, and gives the gauge a more accurate reading when turbulence is present (Drop Tubes sold separately. They are recommended for use in tanks with high turbulence, and where other piping and structures inside the tank may cause entanglement).
- ◆ Float Buoyancy – designed to float in all approved fuels with a specific gravity of 0.65 and greater.
- ◆ Tank Height – unit designed for use on any horizontal or vertical aboveground tank up to 18 feet (5.5 m) in depth. Specials available upon request.
- ◆ Numbering – black letters on white background for ultimate contrast and better visibility. Characters stand over 1" (25 mm) tall.
- ◆ Unit Measurement – Can be purchased in metric units to read in meters, 1/10, 1/100, or in English units to read in feet and inches.
- ◆ Maintenance – No annual maintenance required.
- ◆ U.S. Patent No.: 6,523,404 - Other patents pending.
- ◆ Compatible Fuels– see chart on page 292.
- ◆ Temperature Rating – 120°F to -40°F (49°C to -40°C)

200TG Tank Gauge Instruction Sheet
Order Number: H14912PA

Ordering Specifications:

Product #	Description	lb.	kg
200TG-ENG	English Unit Tank Gauge up to 18 ft.	7.75	3.52
200TG-ENG40	English Unit Tank Gauge - 40 ft.	7.75	3.52
200TG-MET	Metric Unit Tank Gauge up to 6 m	7.75	3.52
200TGMET40	Metric Unit Tank Gauge - 10 m	7.75	3.52

(Ancillary Equipment)

Product #	Description	lb.	kg
H11421RS	2" NPT Male x Male Nipple	1.5	0.68

CARB CERTIFIED AST EQUIPMENT

Product #	Description	lb.	kg
61T-0208	2" Dia. x 8' Long Drop Tube	2.67	1.21
61T-0212	2" Dia. x 12' Long Drop Tube	4.00	1.81
61T-0216	2" Dia. x 16' Long Drop Tube	5.33	2.42

Materials

Enclosure: Polybutylene terephthalate

Wire Grommet: Nylon w/ buna seal

Float Switch: Closed cell buna float & stainless steel rod

Pipe: Stainless steel

Tank Adaptor: Aluminum hardcoat anodized

444TA



Features

- ◆ Up to four alarm signals (444TA) – can be used for high or low liquid level sensing, interstitial monitoring, and/ or other signals in one to 4 separate tanks.
- ◆ Self-Powered – lithium battery with a 10-year shelf life for long service life.
- ◆ Audible Alarm – sounds a 90-decibel alarm at 4 feet away.
- ◆ Visual Notifications – red alarm light will flash during use for notification to the user. Low battery light indicates when battery needs replaced.
- ◆ Corrosion-Resistant Construction – petroleum and environmental resistant housing and all stainless steel pipe fitting ensure a long product life.
- ◆ Product /Alarm Identification Label – located on top of the alarm for quick and easy identification, allowing you to correspond alarms to signals. Label has a protective covering.
- ◆ Intrinsically Safe – complies with ANSI/UL 913 for Class 1, Division 1 & 2 for Groups C & D hazardous locations.
- ◆ Cold Weather Resistant – all components are safe for temperatures down to -40°F operation (and up to 120° F).
- ◆ Long Life Lithium Battery – self-powered by a lithium battery which includes a 10-year shelf life to ensure peace of mind for the owner.
- ◆ Easy Installation – requires no calibration and installs easily into a 1" tank bung. May be assembled remotely or directly on top of tank.



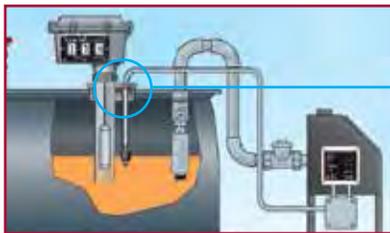
TGTA-0400 4" Tank Bung Combo Fitting
Note: Drop Tube must be used with TGTA-0400.

444TA and 144TA Instruction Sheet
Order Number: 200655

Ordering Specifications:

Product #	Description	lb.	kg
444TA-0100*	Four Signal Tank Alarm, does not include Float Switch	4	1.8
44TA-LLFS**	36" Liquid-Level Float Switch Sub-Assembly	0	0.0
144TA-0100	Single Channel Liquid Level Tank Alarm, does not include Float Switch	4	1.8
TGTA-0400	4" Tank Bung Gauge and Alarm Combo Fitting (OPW 61T required for use)	10	4.5

**The OPW 144TA Requires the OPW 44TA-LLFS, the OPW 44TA-LLFS must be purchased as a separate item.



Replacement Parts:

Part #	Description
44TA-LLFS	Liquid-Level Float Switch ASSY
H15412M	Wire Fitting
H15411M	Float Switch
Items to Convert to a Low Level Alarm:	
C05295M	SST Tube
Battery Module	
H15937M	444TA-0100
See Note	144TA-0100*

OPW 444TA AST Four Signal Tank Alarm and OPW 144TA AST Liquid Level Tank Alarm

The OPW AST remote Four Signal Tank Alarm is designed to sense up to four different liquid levels or other signals using just one device.

The OPW 144TA Tank Alarm is designed for liquid level sensing.

Alarm Technical Information:

Hazardous Location Approval: Class I, Groups C & D
Maximum Voltage: 7.2 Volts
Maximum Current: 8 ma. per input (32 ma. total)
Maximum Internal Capacitance: 23 uF
Maximum Internal Inductance: 33 mH
Maximum Ambient Temperature Rating: 60° C
Maximum Surface Temperature Classification: T4 Surface Code

Wiring limitations: 1000 foot maximum between the 144TA/444TA unit and any remote switch for each channel of the alarm. This assumes that maximum capacitance for any input is 60 nanoFarads and that the maximum inductance is 0.2 milliHenry per input (UL-913 A7.3)

Note: This device is designed to work independently and should not be wired in parallel with another device, except as defined in the following instructions.

Requirements for devices wired to the 144TA/444TA:

- Attached wiring and devices must be classed Intrinsically Safe
- No voltage or current source
- Maximum capacitance: 60 nanoFarads (.06 uF) per input
- Maximum inductance: 200 microHenrys (.2 mH) per input

Float Switch Technical Information:

Minimum liquid specific gravity: 0.45.
Stem material: Stainless steel. Float Material: Closed Cell Buna-N (UL Approved) for gasoline services.
Max Pressure: 150 psi @ 70° F. Thread 1/8" NPT.

*NOTE: When replacing the battery for the 144TA-0100, open the alarm box and locate the OPW number on the black battery module. If the number reads "C05346" then use the replacement part H15615M. If the number reads "144TA-0100" then use the replacement part 202891.

444TA Dimensions:

	in.	cm
A	5 ¹ / ₃₂	12.8
B	5 ¹ / ₃₂	12.8
C	4 ³ / ₁₆	10.6

144TA Dimensions:

	in.	cm
A	5 ¹ / ₃₂	12.8
B	5 ¹ / ₃₂	12.8
C	3	7.6
D	4 ³ / ₁₆	10.6
E	1 ¹⁵ / ₁₆	4.9
F	35	88.9
G	11 ⁵ / ₁₆	4.9
H	1	2.5

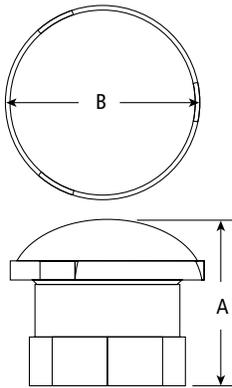
Approvals and Listings



Conforms to ANSI / UL STD 913
Certified to CAN / CSA STD C22.2 No. 157-92
Florida EQ-610
CARB Certified

OPW 301 Emergency Vents

The OPW 301 Emergency Vent is designed to prevent an above ground storage tank from becoming over-pressurized by providing high-capacity venting in the event of a fire or blockage. The 301 is a weighted, mushroom-style emergency vent. When the AST builds pressure, the weighted cast iron lid is forced up off its seat to relieve the pressure. When pressure is relieved, the lid lowers and is automatically reset. The appropriate 301 Series vent is determined by the emergency venting capacity requirements of the AST and the type of connection at the tank's emergency vent opening. The OPW 301 Emergency Vent is available in 4", 6", 8" and 10" openings with female NPT, male NPT or flanged connections (8"-10") to allow for easy installation in new or existing above ground tanks. Various lid pressure settings determine the initial venting of the valve.



Replacement Parts

Part #	Description
201877	4" Seal
202721	6" Seal
203325	8" Seal

Materials

Lid: Cast iron with powder-coated finish

Body: Aluminum

Shaft: Zinc-plated steel

O-Ring: Buna-N

301 SCFH @ 2½ PSI
(0.17 bar)
4" - 101,000
6" - 250,000
8" - 471,000



Features

- ◆ Automatically Resets – weighted cast iron cover reseats once the pressure in the tank is relieved.
- ◆ Aluminum Body and Cast Iron Lid
- ◆ Epoxy Powder-Coated Cover – prevents rusting of the cover to protect expensive finishes on ASTs.
- ◆ UL Listed – to satisfy third party accreditation requirements of many jurisdictions.
- ◆ CARB Certified – AST Phase 1 Enhanced Vapor Recovery (EVR) System

301 Series Instruction Sheet Order Number: **203568**

Ordering Specifications

CARB APPROVED AST EQUIPMENT

Model #	Pressure		Mounting Connection	A		B		Weight		
	in.	mm		Setting	in.	mm	in.	mm	lbs.	kg
301-3080	3	76	8 oz.	Female NPT	4.7	119.4	5.1	129.5	6.7	3
301M-3081	3	76	8 oz.	Male NPT	4.7	119.4	5.1	129.5	6.7	3
301-3160	3	76	16 oz.	Female NPT	5.7	144.8	5.1	129.5	11.4	5.2
301M-3161	3	76	16 oz.	Male NPT	5.7	144.8	5.1	129.5	11.4	5.2
301-4080	4	101.5	8 oz.	Female NPT	4.9	124.5	6.1	154.9	10.6	4.8
301M-4081	4	101.5	8 oz.	Male NPT	4.9	124.5	6.1	154.9	10.6	4.8
301-4160	4	101.5	16 oz.	Female NPT	6.1	154.9	6	152.4	18.1	8.2
301M-4161	4	101.5	16 oz.	Male NPT	6.1	154.9	6	152.4	18.1	8.2
301-6080	6	152	8 oz.	Female NPT	5.9	149.9	8.1	205.7	20.9	9.5
301M-6081	6	152	8 oz.	Male NPT	5.9	149.9	8.1	205.7	20.9	9.5
301-6160	6	152	16 oz.	Female NPT	7.4	188	8.1	205.7	37.5	17
301M-6161	6	152	16 oz.	Male NPT	7.4	188	8.1	205.7	37.5	17
301-8080	8	203	8 oz.	Female NPT	6.2	157.5	10.1	256.5	33.9	15.4
301M-8081	8	203	8 oz.	Male NPT	6.2	157.5	10.1	256.5	33.9	15.4
301-8160	8	203	16 oz.	Female NPT	7.8	198.1	10.1	256.5	61.9	28
301M-8161	8	203	16 oz.	Male NPT	7.8	198.1	10.1	256.5	61.9	28
301F-8085	8	203	8 oz.	Flange	6.2	157.5	10.1	256.5	41.8	19
301F-8165	8	203	16 oz.	Flange	7.8	198.1	10.1	256.5	70	31.8
301F-1085	10	254	8 oz.	Flange	6.5	165.1	13	330.2	65.2	29.6

Approvals and Listings

CARB Certified
AST Phase 1 Enhanced Vapor Recovery (EVR) System

Materials

Cover and body: aluminum
Link: Duratuff®
Spring: stainless steel
Sealing surface: Teflon®-coated aluminum

202 SCFH @ 2½ PSI
 (0.17 bar)
 4" - 150,000
 6" - 335,000
 8" - 555,000



Features

- ◆ Lightweight Construction – Allows for safe, easy installation on large aboveground tanks.
- ◆ Spring-Loaded, O-Ring Sealed Cover with Teflon-Coated Seat – Ensures smooth, vapor-tight sealing surface and reliable service life.
- ◆ Full-Bore, High-Capacity Upward Venting – Enables smaller diameter vents, with higher venting capacity, to be used on ASTs when compared to weighted, mushroom-style vents.
- ◆ Aluminum Cover and Body with Stainless Steel Components – Corrosion-resistant construction to protect expensive finish or epoxy coatings on ASTs.
- ◆ Mounts Vertical or Horizontal.
- ◆ Alerts Tank Operators of Possible Venting Problems – When the emergency vent is actuated, the lid remains open for inspection until manually reset. The actuation of the emergency vent indicates abnormal excessive pressure build-up in the tank due to either a blockage in the normal tank vent or in the event of a rapid expansion of vapors possibly from a fire.
- ◆ Easy Vent Reset – No extra parts required. Simply push the vent lid closed until an audible “click” is heard, indicating the vent is back in operation.
- ◆ UL Listed – To satisfy Third Party accreditation requirements of many jurisdictions.

OPW 202 Emergency Vents

The OPW 202 Emergency Vent is designed to prevent an aboveground storage tank from becoming over-pressurized by providing full-bore, high-capacity venting in the event of a fire or blockage of the OPW 23, 113, 523V, or 623V. The 202 is a vapor-tight, spring-loaded emergency vent. When the AST builds pressure to 2.5 psi, the spring-loaded lid opens full-bore and discharges vapors upward to relieve the pressure. The lid remains open for inspection to indicate a problem with the normal tank venting, or if a fire has taken place, until manually reset. The appropriate 202 Series vent is determined by the emergency venting capacity requirements of the AST and the type of connection at the tank’s emergency vent opening. The OPW 202 Emergency Vent is available in 4", 6", and 8" openings with female NPT connections.

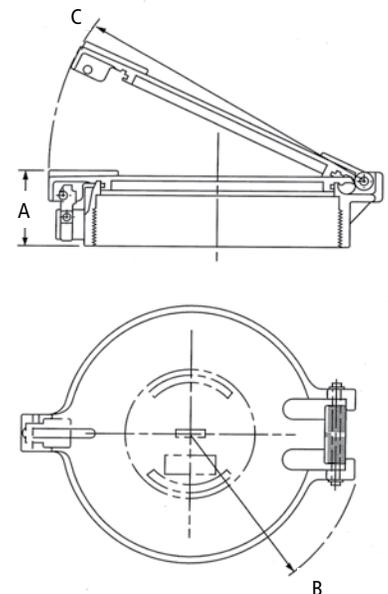
202 Series Instruction Sheet Order Number: **H11792M**

Ordering Specifications

Model #	in.	mm	lbs.	kg
202-0640	4	102	2.05	.95
202-0660	6	152	3.55	1.6
202-0680	8	203	5.1	2.3

Dimensions 202

	4" (102mm)		6" (152mm)		8" (203mm)	
	in.	mm	in.	mm	in.	mm
A	2 ³ / ₈	60	2 ³ / ₈	60	2 ³ / ₈	67
B	4	102	5	127	5 ⁷ / ₈	149
C	6 ¹ / ₂	165	8 ⁹ / ₁₆	218	10 ³ / ₄	273



Ordering Specifications Flange Mount

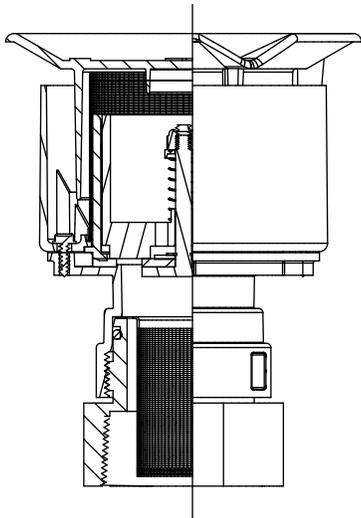
Model #	in.	mm	lbs.	kg
202F-0600 (Flange Mount)	8	203	5.2	2.4

**Approvals
and Listings**



OPW 623V Pressure Vacuum Vent

Pressure Vacuum Vents are installed on the top of vent pipes from underground or above ground fuel storage tanks. The vent cap and internal wire screen are designed to protect the tank vent lines against intrusion and blockage from water, debris or insects. A normally closed poppet in the valve opens at a predetermined pressure or vacuum setting to allow the tank to vent.



Conversion Table

Measurement Units	=	Oz.	PSI	In H ₂ O (WC)	In Hg (Merc)	Bar
Bar	x	236.0	14.5	401.4	29.53	
In. Hg (Mercury)	x	7.843	0.49	13.6		0.034
In H ₂ O (WC)	x	0.578	0.04		0.074	0.002
PSI	x	16.00		27.68	2.04	0.069
Oz.	x		0.063	1.73	0.128	0.004

Materials

Top/Body: Polypropylene
Base: Anodized aluminum
Poppet: Anodized aluminum
Screen: Stainless steel mesh
Gasket: Closed cell foam



623V

Vent Must Be Mounted Vertically

Features

- ◆ Pressure/Vacuum Setting – 2.5" to 6" water column pressure settings and -6" to -10" water column vacuum settings are factory preset and tested.
- ◆ Reliable Service – cycle tested to the equivalent of 80 years of service in the most severe environment without leakage problems.
- ◆ Corrosion-Resistant Construction – a Duratuff® composite body ensures a long service life.
- ◆ Easy Installation – the 623V is available in 2" and 3" threaded versions.
- ◆ Complies with NFPA 30 Requirements – for venting gasoline vapors upward.
- ◆ Manifold Vent Pipes – vent pipes may be manifolded to produce a single Pressure Vacuum Vent line. The 623V exceeds California's requirements of a maximum vapor leak rate of 0.17 SCFH at 2.00 inches H₂O.
- ◆ High Maximum Flow Rate – 6450 SCFH at 2 psi (0.1 bar) pressure drop.
- ◆ Leak Rate – multiple pressure vacuum vents may be installed on a single site. The 623V exceeds California standards with a leak rate of 0.05 SCFH or less at 2.00 inches H₂O.
- ◆ Maintenance – no tools required. A removable snap fit top allows for easy maintenance (recommended yearly).
- ◆ 100-Mesh Stainless Steel Wire Screens – helps prevent debris and insects from entering the tank vent lines. An added screen installed at the base prevents debris from intruding from the vent stack.
- ◆ Adaptor Bushing – removable hex threaded bushing designed for easy installation on NPT threaded risers. Allows easy access to lower screen.
- ◆ ATEX Approved – for flame arrestor applications

623V Instruction Sheet Order Number: H14898PA

Ordering Specifications

Product #	Description	Identification Label Color	lb.	kg
623V-2203	2.5" to 6" WC Pres., -6" to -10" WC Vac. 2" Thread-On	Yellow	1.55	.70
623V-3203	2.5" to 6" WC Pres., -6" to -10" WC Vac. 3" Thread-On	Yellow	2.20	1.00

Replacement Parts

Part Number	Description
C05086M	Lower Screen
H14895M	Upper Screen
C05089	2" Threaded Base Adaptor
C05122	3" Threaded Base Adaptor

Listings and Certifications



OPW 623V & 523V



ATEX Approved

Patent No. WO2004/036096AZ

Features

- ◆ A Variety of Pressure/Vacuum Settings – 3" water column, 1 oz., 8 oz., 12 oz. pressure settings and 8" water column or 1/2 oz. vacuum settings are factory preset and tested.
- ◆ Reliable Service – self-guided poppet assembly ensures consistent seating of the pressure/vacuum valve.
- ◆ Corrosion-Resistant Construction – Duratuff® composite body assures a long service life.
- ◆ Easy Installation – 523V is available in 2" and 3" threaded versions or slip-on models that provide for attachment to the vent line with allen head screws and radial sealing O-ring.



- ◆ Complies with NFPA 30 Requirements – for venting gasoline vapors upward.
- ◆ High Maximum Flow Rate – 7000 SCFH at 2 psi pressure drop.
- ◆ 40-Mesh Stainless Steel Wire Screen – helps prevent debris and insects from entering the tank vent lines.

Ordering Specifications

Product #	Description	Identification		
		Label Color	lb.	kg
523V-1100	2" 8 oz pres., 1/2 oz. Vac. Thread-On	Red	1.65	.75
523V-1150	2" 8 oz pres., 1/2 oz. Vac. Slip-On	Red	1.65	.75
523V-3100	3" 8 oz pres., 1/2 oz. Vac. Thread-On	Red	3.2	1.45
523V-3150	3" 8 oz pres., 1/2 oz. Vac. Slip-On	Red	3.2	1.45
523V-2300	2" 12 oz pres., 1/2 oz. Vac. Thread-On	Blue	1.65	.75
523V-2350	2" 12 oz pres., 1/2 oz. Vac. Slip-On	Blue	1.65	.75
523V-2200	2" 1 oz pres., 1/2 oz. Vac. Thread-On	Silver	1.65	.75
523V-2250	2" 1 oz pres., 1/2 oz. Vac. Slip-On	Silver	1.65	.75
523V-3200	3" 1 oz pres., 1/2 oz. Vac. Thread-On	Silver	3.2	1.45
523V-2203	2" 3" WC pres., 8" WC Vac. Thread-On	Yellow	1.65	.75
523V-2253	2" 3" WC pres., 8" WC Vac. Slip-On	Yellow	1.65	.75
523V-3203	3" 3" WC pres., 8" WC Vac. Thread-On	Yellow	3.2	1.45
523V-3253	3" 3" WC pres., 8" WC Vac. Slip-On	Yellow	3.2	1.45

Materials

Body: Aluminum
O-Ring: Nitrile



Ordering Specifications

Product #	Description	in.	mm	lb.	kg
523A-1003	3" Thread-On Adaptor for use with 523V Pressure / Vacuum Vents	2 x 3	51 x 76	.47	.213
523SA-1003	3" Slip-On Adaptor for use with 523V Pressure / Vacuum Vents	2 x 3	51 x 76	.63	.286
523SA-1002	2" Slip-On Adaptor for use with 523V Pressure / Vacuum Vents	2 x 2	51 x 51	.31	.141

523V Instruction Sheet Order Number: **H11972M**

OPW 523V Pressure Vacuum Vent

Pressure Vacuum Vents are installed on the top of vent pipes from underground or above ground fuel storage tanks. The vent cap and internal wire screen are designed to protect the tank vent lines against intrusion and blockage from water, debris or insects. A normally closed poppet in the valve opens at a predetermined pressure or vacuum setting to allow the tank to vent.

Conversion Table

Measurement Units	=	Oz.	PSI	In H ₂ O (WC)	In Hg (Merc)	Bar
Bar	x	236.0	14.5	401.4	29.53	
In. Hg (Mercury)	x	7.843	0.49	13.6		0.034
In H ₂ O (WC)	x	0.578	0.04		0.074	0.002
PSI	x	16.00		27.68	2.04	0.069
Oz.	x		0.063	1.73	0.128	0.004

Replacement Parts

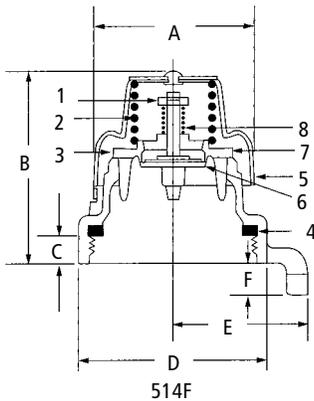
Part Number	Description
H11432M	O-Ring for 2" Thread
H11456M	O-Ring for 3" Thread

OPW 523V Series Adaptor Bushings

The 523V Series Adaptor Bushings are designed to thread into the base of 2" threaded 523V vents. The adaptor bushings convert a 2" 523V to 3" threaded, 2" slip-on or 3" slip-on connection.

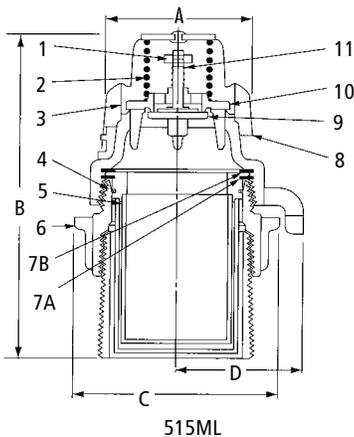
OPW Utility Tank Vents

OPW Utility Tank Vents are installed directly on the top of above ground storage tank or utility tank vent pipes. The vent cap is designed to protect the tank against intrusion of water, debris or insects. The 515ML incorporates a flame arrestor screen for jurisdictions that require these on tanks. A normally closed poppet in the valve opens at a predetermined pressure or vacuum setting to allow the tank to vent.



Dimensions (514F)

	in.	mm
A	2 ⁵ / ₁₆	59
B	2 ⁵ / ₁₆	75
C	1 ⁵ / ₁₆	24
D	2 ²¹ / ₃₂	67
E	1 ¹⁵ / ₁₆	49
F	7 ⁷ / ₁₆	11



Dimensions (515ML)

	in.	mm
A	2 ⁵ / ₁₆	59
B	5 ¹ / ₄	133
C	3 ³ / ₈	79
D	1 ¹⁵ / ₁₆	49

Materials

Cap body: High-tensile aluminum alloy construction. Has straight pipe threads with Nitrile for tight seal to tank. 2" - 11¹/₂" NPSH threads.

Dome: Plated steel

Screen: 40-mesh brass

514F



Features

- ◆ 3-Pound Pressure and 1 oz. Vacuum Settings – factory preset and tested to protect against product vapor loss and allow for rapid withdrawal of product from the tank.
- ◆ Reliable Service – precision-machined, lapped bronze pressure and vacuum seats ensure consistent seating of the pressure/vacuum valve.
- ◆ Corrosion-Resistant Construction – zinc/aluminum alloy body and zinc-plated steel dome assure a long service life.
- ◆ Easy Installation – 514F is available in 2" (11¹/₂" NPSH) female straight threads with a Buna-N gasket.

- ◆ High Maximum Flow Rate – 3500 SCFH at 4.5 psi (0.31 bar) pressure drop.
- ◆ Lockable Base - a provision for padlocking the vent to the tank is integrated into the base.

Replacement Parts

Key	Part #	Description
1	H01967M	Nut
2	H10096M	Pressure Spring
3	H07355M	Screen
4	H11432M	Seal
5	C03991M	Dome
6	H07356B	Vacuum Disc
7	H08380AH	Pressure Disc
8	H07353M	Vacuum Spring

Ordering Specifications

Product #	in.	mm	lbs.	kg
514F-3050	2	51	.46	.21

Materials

Cap Body: High-tensile aluminum alloy construction. Has straight pipe threads with Nitrile gasket for tight seal to tank.

Dome: Plated steel

Screen: 40 mesh brass

515ML



Features

- ◆ Flame Arrestor Screen – for jurisdictions that require flame arrestors on tank vents.
- ◆ 5 PSI (0.34 bar) Pressure and 1 oz. Vacuum Settings – factory preset and tested to protect against product vapor loss and allow for rapid withdrawal of product from the tank.
- ◆ Reliable Service – precision-machined, lapped bronze pressure and vacuum seats ensure consistent seating of the pressure/vacuum valve.

- ◆ Corrosion-Resistant Construction – zinc/aluminum alloy body and zinc-plated steel dome assure a long service life.
- ◆ Easy Installation – 515ML is available in 2" (11¹/₂" NPSH) male straight threads.
- ◆ High-Maximum Flow Rate – 3500 SCFH at 7.5 psi (0.52 bar) pressure drop.

Replacement Parts

Key	Part #	Description
7A	H11211M	O-Ring
7B	H03636M	Cap Gasket
8	C03991M	Dome
9	H07356B	Vacuum Disc
10	H08380AH	Pressure Disc
11	H07353M	Vacuum Spring

Ordering Specifications

Product #	in.	mm	lbs.	kg
515ML-1030	2	51	1.80	.82

Materials

Body: Aluminum
Screen: 40-mesh brass
Set Screws: Brass

23



Features

- ◆ Reliable Service – vent cap drain spouts extend outward to deter rainwater entry.
- ◆ Corrosion-Resistant Construction – aluminum body and cap assure a long service life.
- ◆ Easy Installation – 23 series is available in 2" and 3" slip-on models that provide for attachment to the vent line with set screws.
- ◆ Complies with NFPA 30 Requirements – for venting gasoline vapors upward.
- ◆ High-Maximum Flow Rate – 7000 SCFH at 2 psi (0.14 bar) pressure drop.
- ◆ 40-Mesh Brass Wire Screen – Helps prevent debris and insects from entering the tank vent lines.

Replacement Parts

Part #	Description
H00122M	Screw
H01967M	Nut
H01969M	Screen

Ordering Specifications

Product #	Description	in.	mm	oz.	kg	Weight	
						lbs.	kg
23-0044	Open Vent	1 1/2	38	3.8	.11	0.25	0.11
23-0033	Open Vent	2	51	4.3	.12	0.25	0.11
23-0055	Open Vent	3	76	5.0	.14	1.00	0.45

Materials

Body: Zinc/aluminum
Screen: brass
Cap: 2" - Steel 4" - cast iron
Screen: 40-mesh stainless steel

113



Ordering Specifications

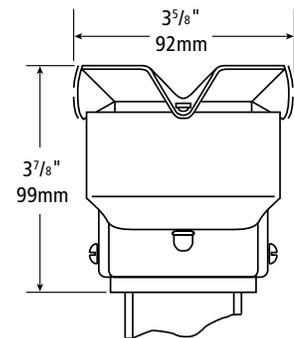
Product #	in.	mm	lbs.	kg
113-0066	2	51	.88	.40
113-0099	4	102	7.50	3.41

Dimensions

	2" (51mm)		4" (102mm)	
	in.	mm	in.	mm
A	1 1/2	38	2 3/4	70
B	3 3/4	95	7 7/16	189
C	2 3/4	70	4 15/16	125

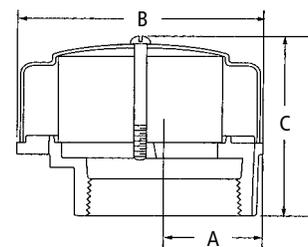
OPW 23 Series Open Atmospheric Vents

Open Atmospheric Vents are installed on the top of vent pipes from underground or above ground fuel storage tanks. The vent cap and internal wire screen are designed to protect the tank vent lines against intrusion and blockage from water, debris or insects. These vents are always open to atmosphere and allow any pressure or vacuum into the tank to vent.



OPW 113 Series Open Atmospheric Utility Vents

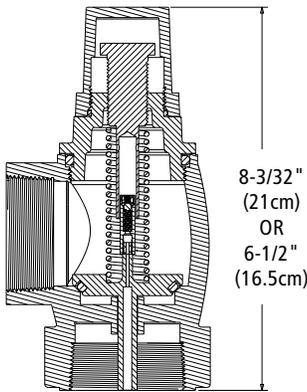
OPW 113 Open Atmospheric Utility Vents are installed on the top of above ground fuel storage tanks. The vent cap and internal wire screen are designed to protect the tank vent lines against intrusion and blockage from water, debris or insects. These vents are always open to atmosphere and allow any pressure or vacuum into the tank to vent. The 113 vents vapors downward and is used primarily on diesel, fuel oil, waste-oil and motor-oil tanks, but can also be used on a wide variety of above ground storage tank venting applications.



**For more information contact OPW Customer Service at
 1-800-422-2525; International call 1-513-870-3315.**

OPW 199ASV Anti-Siphon Valve

The OPW 199ASV Anti-Siphon Valve is designed to help prevent siphoning of an above ground storage tank should a leak or break occur in the fuel supply line. The 199ASV installs on the top of an above ground storage tank with a suction rod on the inlet and the fuel supply line (to a remote pump) on the outlet of the valve. A poppet in the valve remains normally closed, isolating the tank from siphoning. When the remote pump is activated, it overcomes a factory-adjusted spring set to a predetermined hydrostatic head pressure and allows flow of fuel out of the AST. An internal pressure relief valve helps absorb thermal expansion in the fuel supply line. The 199ASV is available in female NPT threads with four different factory-adjusted hydrostatic head pressure settings.



- ◆ 8³/₃₂" model for 1½" and 2" (20.55 cm model for 3.81 cm and 5.08 cm)
- ◆ 6½" model for ¾" and 1" (16.51 cm model for 1.90 cm and 2.54 cm)

Materials

- Body:** Clear anodized aluminum
- Bonnet:** Powder-coated aluminum
- Cap:** Powder-coated aluminum
- Spring:** Stainless steel
- Poppet:** Hard-coated aluminum
- Screw:** Hard-coated aluminum
- Poppet Seal:** Nitrile



199ASV

Features

- ◆ Factory-Adjusted Hydrostatic Head Pressure Settings – allow for quick, safe and easy installation on above ground tanks.
- ◆ Internal Pressure Relief Valve – helps protect piping and fittings from damage due to thermal expansion. Set to operate between 20 to 40 PSI (1.3 to 2.7 bar).
- ◆ Aluminum Bodies – compatible with gasoline, diesel, kerosene, ethanol, methanol, fuel oil and jet fuels.
- ◆ Temperature Rating – -20°F - 120°F (29°C - 49°C)

Valve Rating
ft of gasoline
S.G. = 0.7

Approximate Cracking Pressure

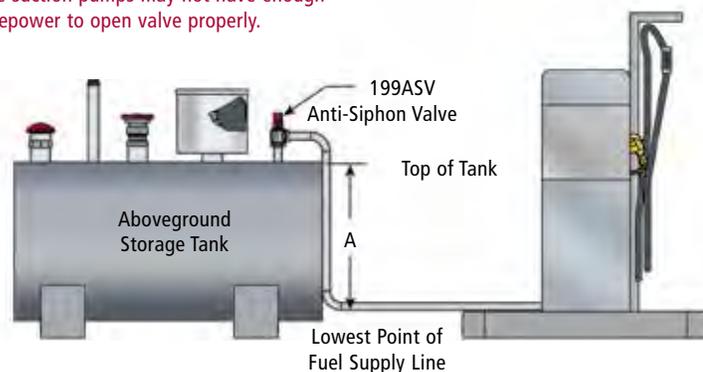
	PSI	ft. H ₂ O	in. H ₂ O	in. Hg	ft. Gas	ft. Diesel
0-5	1.88	4.33	51.96	3.85	6.2	5.35
5-10	3.68	8.48	101.76	7.53	12.12	10.47
10-15	5.6	12.92	155.04	11.47	18.51	15.95
15-20	7.4	17.07	204.84	15.16	24.4	21.07

*Note: Some suction pumps may not have enough horsepower to open valve properly.

Ordering Specifications

Product #	in.	mm	lbs.	kgs	Hydrostatic Head Pressure* (Dimension A)
199ASV-1075	¾"	19	1.6	.725	0'-5'
199ASV-2075	¾"	19	1.6	.725	5'-10'
199ASV-3075	¾"	19	1.6	.725	10'-15'
199ASV-1100	1"	25	1.6	.725	0'-5'
199ASV-2100	1"	25	1.6	.725	5'-10'
199ASV-3100	1"	25	1.6	.725	10'-15'
199ASV-1150	1½"	38	2.0	.907	0'-5'
199ASV-2150	1½"	38	2.0	.907	5'-10'
199ASV-3150	1½"	38	2.0	.907	10'-15'
199ASV-1200	2"	51	2.0	.907	0'-5'
199ASV-2200	2"	51	2.0	.907	5'-10'
199ASV-3200	2"	51	2.0	.907 </tr	

*Note: Head Pressure calculated for gasoline.



Listings and Certifications



Warning: Do not disassemble.
Do not field adjust.

Materials

Body: Aluminum
Diaphragm: Viton®
Seals & Disc: Viton®
Spring: Stainless steel
Rider Rings: Teflon®
Disc Holder: Nylon
Core Guide: Acetal, delrin
Core & Plugnut: Stainless steel



Features

- ◆ Aluminum Body - compatible with gasoline, diesel, kerosene, low grades ethanol/methanol, fuel oil and jet fuels.
- ◆ Strainer - strainer with 100-mesh screen is recommended at the inlet.
- ◆ Mount - vertical.
- ◆ Explosion Proof Shell & Water-Tight
- ◆ Standard Operation - 120/60 volts AC.
- ◆ Thermal Expansion
- ◆ Power Draw - 20 Watts @ 60 Hz.

Ordering Specifications

Product #	NPT Size		General Purpose	*CV Flow	Fluid Temp.	Operating Pressure Differential (PSI)		Operating Pressure Differential (BAR)		Weight		Mounting Position
	in.	mm				Min.	Max.	Min.	Max.	lbs.	kg	
821-0075AC	3/4	19	AC	5.1	125	0	50	0	3.4	2.75	1.25	Any Position
821-0100AC	1	25	AC	21	125	0	25	0	1.7	5.25	2.38	Upright & Vertical
821-0150AC	1 1/2	38	AC	35	125	0	25	0	1.7	7.25	3.29	Upright & Vertical
821-0200AC	2	51	AC	60	125	0	25	0	1.7	7.25	3.29	Upright & Vertical

*CV Flow: GPM @ 1 psi Pressure Drop

Dimensions

Product #	A		B		C		D	
	in.	mm	in.	mm	in.	mm	in.	mm
821-0075AC	3.31	84	3.64	92	4.46	113	2.33	59
821-0100AC	5.00	127	5.59	142	6.84	174	5.38	137
821-0150AC	5.00	127	5.59	142	6.84	174	5.38	137
821-0200AC	6.09	155	5.94	151	7.47	190	6.31	160

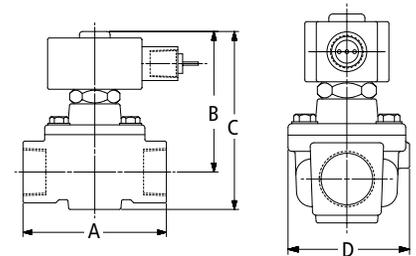
OPW 82RV - Thermal Pressure Relief Valve

Product #	NPT Size		Operating Pressure 25 psi, Stainless Steel Construction	Weight	
	in.	mm		lbs.	kg
82RV-2505	1/2	19		.25	.113

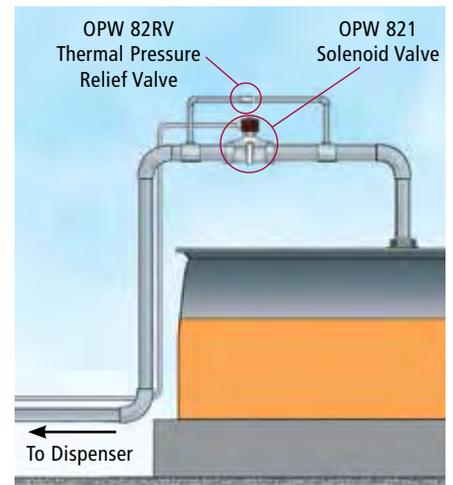


OPW 821 Solenoid Valve

The OPW 821 Solenoid Valve is designed to prevent accidental siphoning of above ground storage tanks if a leak or break occurs in the fuel supply line. The 821 valve is a two-way, normally closed diaphragm valve that opens when energized to allow fuel to flow to the pump or dispenser. Available in female NPT threads.



82RV-2505 Series Pressure Relief Valve
Instruction Sheet Order Number: 200517



OPW 82RV

The 82RV is designed to give thermal pressure relief to our 821 Series Solenoid Valve line. Made of all stainless steel construction with a Viton® seal, it is suitable for all petroleum products. The 82RV is precision set at the factory at 25 PSI (1.7 bar), and is field adjustable from 5 to 30 psi (.34 to 2 bar).

Listings and Certifications



OPW 21BV Full Port Two-Way Ball Valve

OPW Ball Valves are used throughout fueling systems where a shut-off point is desirable to isolate a section of the piping system. These full-port, forged brass valves feature a manual open-close arm and a quick quarter-turn handle, allowing easy shut down of your AST or UST system. Compatible with gasoline, alcohol fuels, diesel and MTBE. Available with Lockable Handle (LH).

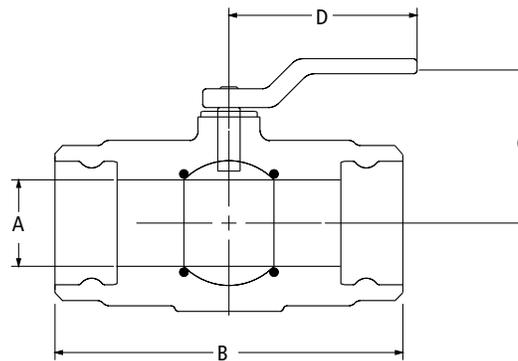
Materials

Body: Brass
Ball: Hard chrome plated
Seal: Teflon®



Features

- ◆ Pressure rated to 600 psig (41 bar) WOG
- ◆ Blowout-proof stem
- ◆ Chrome-plated brass ball
- ◆ Secondary O-ring stem seal
- ◆ PTFE seats, thrust bearing and stem packing



Ordering Specifications and Dimensions

Model #	Size (in.)	Dimensions (in.)			
		A	B	C	D
21BV-0050	1/2	0.59	2.28	1.81	3.35
21BV-0075	3/4	0.78	2.51	2.36	4.29
21BV-0100	1	0.98	2.97	2.52	4.29
21BV-0150	1 1/2	1.57	3.87	2.72	5.63
21BV-0200	2	1.96	4.29	3.03	5.63
21BV-0200SS*	2	1.96	4.80	3.66	7.09
21BV-0300	3	3.15	6.10	5.12	8.35
*SS denotes Stainless Steel.					
202233	Lockable Handle Kit for 1/2" Model (Handles sold separately)				
202234	Lockable Handle Kit for 3/4" and 1" Models (Handles sold separately)				
202235	Lockable Handle Kit for 1-1/2" and 2" Models (Handles sold separately)				

Listings and Certifications



Materials

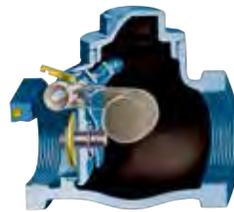
Body and Cap: Ductile iron
Packing Nut and Stem: Stainless steel
Disc: Viton®
Stem Seat: Viton®
Seat Ring: Brass
Cap and Packing Nut Seals: Viton®



(Valve Shown in Open Position)



(Valve Shown in Closed Position)



Features

- ◆ 178S Ductile Iron Construction – valve is manufactured from a ferrous metal to resist fracturing from high temperatures.
- ◆ Full-Bore Inside Diameter for Superior Flow Rates – maximizes flow rates in the fuel supply lines.
- ◆ Protected Main Poppet Disc – main poppet seal is held out of the main flow stream and protected from damage due to dirt or debris in the fuel.
- ◆ Compensator Ring on Main Poppet Carrier – ensures full seating of the main poppet for a tight seal.
- ◆ Viton® Main Disc and Stem Seat – compatible with gasoline, diesel, kerosene, ethanol, methanol, MTBE, fuel oil, mogas, motor oil and various other blends of fuel.
- ◆ Rated At Normal Pressure Limit of 125 psi (8.6 bar) (cold)
- ◆ Non-Shock Pressure Limit of 200 psi (13.8 bar)
- ◆ Temperature Limit 225° F

Ordering Specifications

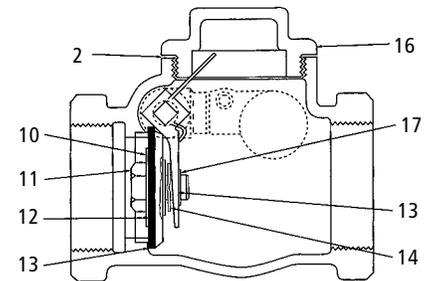
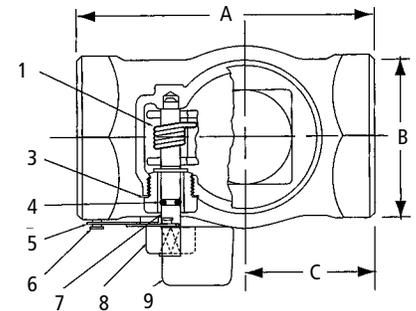
Product #	in.	mm	lbs.	kg
178S-6130	2	51	5.35	2.43

Replacement Parts

Key	Part #	Description
1	H05973M	Spring
2	H12070M	O-ring (Viton®)
3	H7635RB	Packing Nut
4	H10445M	O-ring (Viton®)
5	H01344M	Fusible Link Sub-Assy.
6	H01505RB	Pin
7	C01533RB	Stem
8	H07644M	Set Screw
9	H07642ZA	Lever
10	H03295M	Washer
11	H04035M	Disc Nut
12	H12071R	Disc (Viton®)
13	H10004A	Disc Holder
14	H11293M	Compensating Ring
15	C03144M	Carrier
16	H11547DI	Cap
17	H10003M	Retaining Ring

OPW 178S Series External AST Emergency Shut-Off Valve

The OPW 178S Series External AST Shut-Off Valve is designed to shut off product flow from an above ground storage tank, bulk loading rack or any place in the fuel supply line in the event of a fire. The 178S installs in-line on fuel supply piping. A fusible link attached to a spring-operated lever holds the poppet normally open. In the event of a fire, the fusible link melts at 160° F, allowing the spring-actuated poppet to shut off the flow of product in the fuel supply line. The 178S is available in 2" female NPT connections.



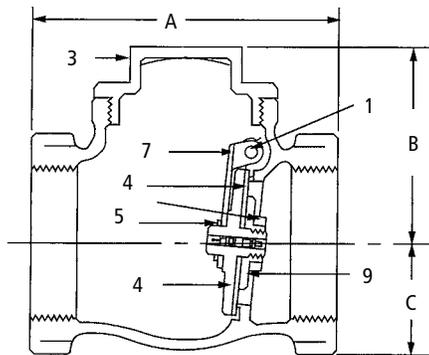
Dimensions

	in.	mm
A	5 ¹⁷ / ₃₂	140
B	3 ¹ / ₁₆	78
C	3 ¹ / ₁₆	62

For more information contact OPW Customer Service at
1-800-422-2525; International call 1-513-870-3315.

OPW Swing Check Valve

The OPW Swing Check Valves are designed to allow one-way product flow in fuel supply lines. OPW Swing Check Valves are installed in-line on fuel supply or transfer piping. A free-swinging poppet in the valve opens with flow of product and closes to prevent back-flow. The swing check valves can be located in either horizontal or vertical piping. The 175 is available in 2" female NPT connections. The 175B is similar to the 175 except it has an internal pressure relief valve to help absorb thermal expansion in the fuel supply or transfer line, pressure relief set at approx. 25 psi (1.7 bar). The 1175 is available in 3" female NPT connections.



Dimensions

	in.	mm
A	7 ¹ / ₂	191
B	7 ³ / ₁₆	183
C	2 ¹⁹ / ₃₂	66

Materials

Body: Bronze
Seat Ring: Brass
Disc: Viton®
Cap: Bronze



Swing Check Valve

Features

- ◆ Viton Main Disc - compatible with gasoline, diesel, kerosene, ethanol, methanol, MTBE, fuel oil, mogas, motor oil and various other blends of fuel.
- ◆ Full-Bore Inside Diameter for Superior Flow Rates – maximizes flow rates in the fuel supply lines.
- ◆ Easy Service Entry – threaded cap assembly allows removal, replacement or servicing of the carrier, disc or disc holder.
- ◆ Rated Normal Pressure Limit: 125 psi (8.6 bar)
- ◆ Cold Non-Shock Pressure Limit: 200 psi. (13.8 bar)
- ◆ Temperature Limit: 225° F

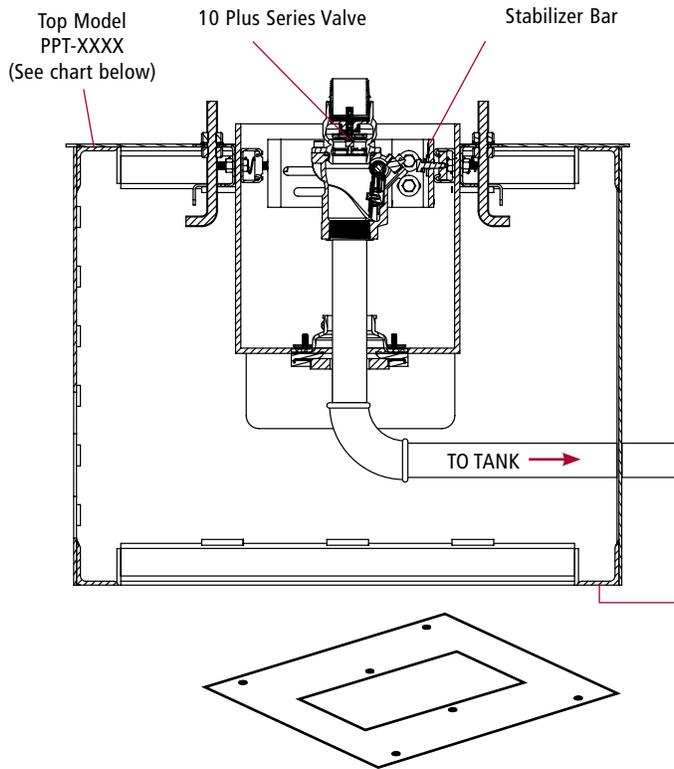
Ordering Specifications

Product #	in.	mm	lbs.	kg
175-0044	2	51	4.7	2.14
175B-1544	2	51	4.6	2.10
1175-0050	3	76	16.8	7.60

Replacement Parts

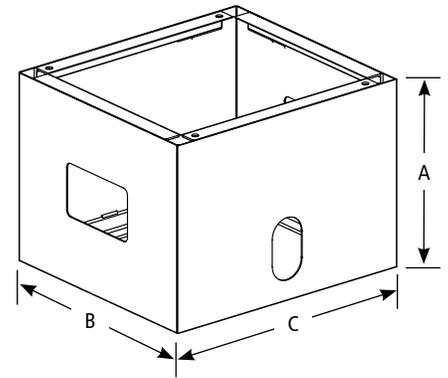
OPW 175, 175B, 1175

Key	Part #	Description
1 (175,175B)	H00409RB	Pin
1 (1175)	H06797RB	Stem
2 (175,175B)	H00404RB	Plug
2 (1175)	H06798RB	Plug
3 (175,175B)	H00642B	Cap
3 (1175)	H06800B	Cap
4 (175,175B)	H12071R	Disc
4 (1175)	H06799	Disc Sub-Assy.
5 (175, 175B)	H04035M	Disc Nut
6 (175)	H07488A	Disc Holder
6 (175B)	H07495A	Disc Holder
7 (175, 175B)	H07610RB	Carrier
7 (1175)	H06796B	Carrier
8 (175, 175B)	H05792M	Retaining Ring
9 (175, 175B)	H03295M	Washer
10 (1175)	H04250M	Lock Nut



OPW Dispenser Pedestal

- ◆ Designed specifically for AST dispenser applications
- ◆ Offers a way to contain leaks from AST dispensers during use and filter change outs
- ◆ Provides a raised platform for AST pipe runs into the dispenser to avoid burring underground piping
- ◆ Flexible by design – interchangeable tops for a variety of dispenser pans



Dimensions: Model No. PP-2136

	in.	cm
A	21	53.34
B	26	66.04
C	36	73.66
Weight	82 lbs	37 kg

WARNING:
Dispenser and pedestal must be surrounded by protective bumper curbing. Shear Valve is a fire valve only when installed in the pump pedestal.

OPW Dispenser Pedestal Top Model #	For use with Dispenser Model #	For use with FlexWorks Dispenser Model #
PPT-1123	Gasboy 9800 Series (28-1/4" Frame)	DP-1123
PPT-1630	Gilbarco Advantage Model Dresser/Wayne Select Model Global Century Model	DP-1630
PP-2136	Pump Porch	

Additional models available upon request, contact your OPW District Manager.

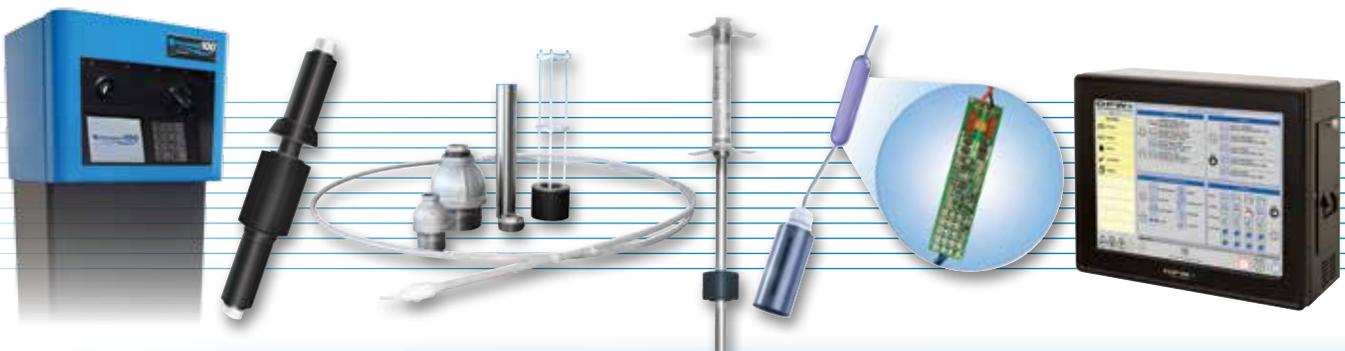
Electronic Fuel Management Systems

Making Sure You're in Complete Control, From Anywhere, All The Time.

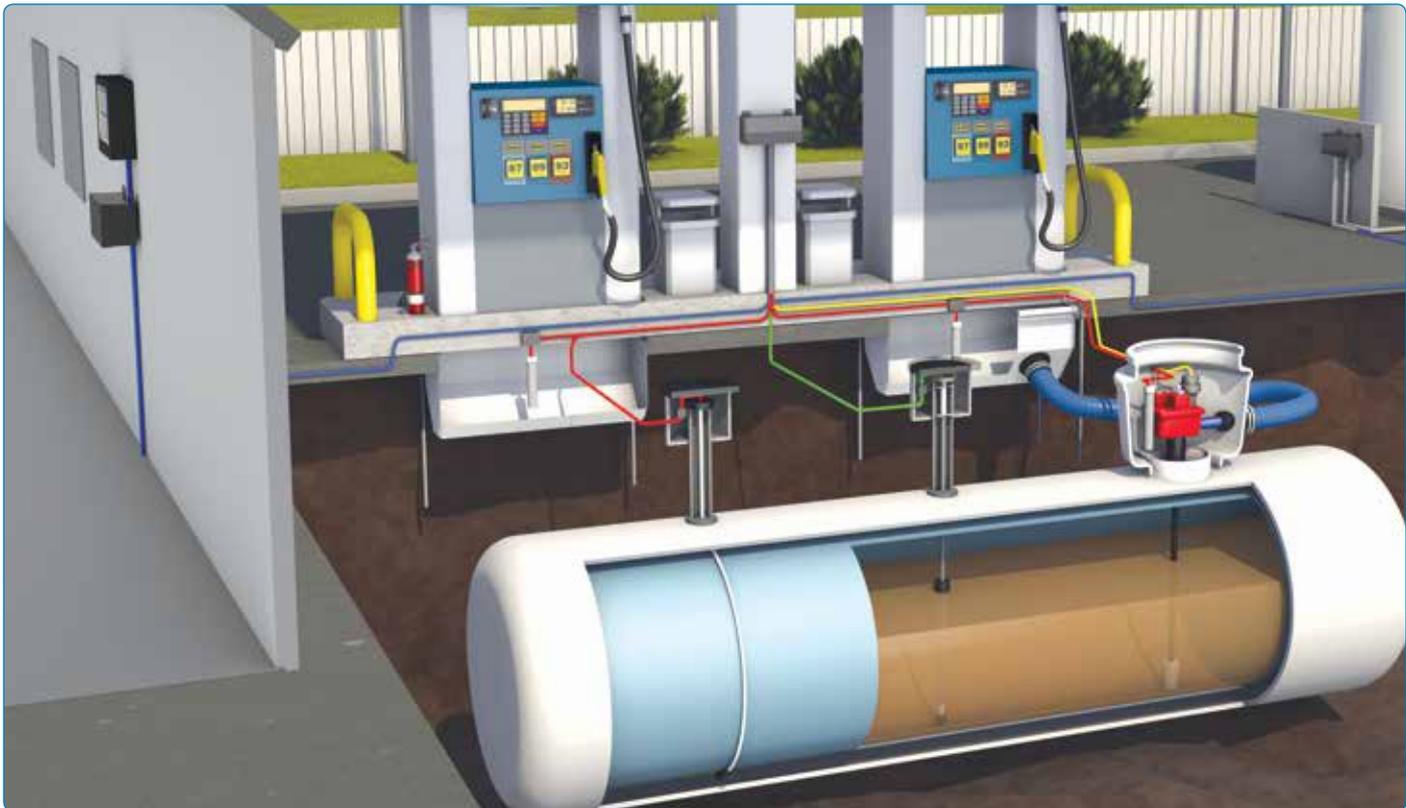
Innovation is a defining value principle at OPW Fuel Management Systems (FMS). From the industry's most innovative tank gauging systems – the SiteSentinel® suite, such as iSite™, iTouch™ and Integra 100™, to the most reliable and accurate fuel control systems in the world – the Petro Vend brand of fuel island terminals and systems – there's no better or more comprehensive solution on the market today to ensure that you know exactly how much fuel you have and where it is going. When it comes to complete fuel accountability, unparalleled protection against theft and total reconciliation, OPW FMS is Leading the Way in keeping you and your assets covered – both coming and going!

For more than 50 years, OPW FMS has delivered product excellence and a broad line of fuel control and tank gauge solutions to retail and commercial fueling operations worldwide. OPW FMS offers a comprehensive line of IntelliSense™ smart sensors, its famous 924B magnetostrictive rigid probe, AST flexible probe, as well as the patented, industry-changing Model 327 Volumetric Line Leak Detector (VLLD) for highly accurate, real-time measurement of line leaks.

OPW FMS solutions result in business-optimizing, customer-centric retail and commercial fueling solutions unlike any other.



OPW Tank Gauging and Fuel Controls



Tank Gauging

- SiteSentinel® Integra 100™ Console..... 242-243
- SiteSentinel® Integra 500™ Console 244-245
- The VSmart Module..... 246-247
- SiteSentinel® Nano® Console..... 248-249
- SiteSentinel® iSite™ Console 250-251
- SiteSentinel® iTouch™ Console..... 252-253
- Model 924B Probe 254-255
- Model 924B Inventory-Only Probe 256-257
- Density Measurement Sensor 258-259
- Model 7100 AST Flex Probe 260-261
- IntelliSense™ Sensors..... 262-263
- Model 327 Volumetric Line Leak Detector..... 264-265

Fuel Control

- Petro Vend Fuel Control Systems Overview 266
- Petro Vend 100® 268-269
- FSC3000™ Fuel Site Controller..... 270-271
- Dispenser Terminal Control..... 272-273
- FIT500™ 274-275
- C/OPT™ 276-277
- K800™ Hybrid 278-279
- K800™ 280-281
- Phoenix® 282-283
- AFC™ 284-285
- Pulsers..... 285
- IP Authorization Gateway 286-287

Comprehensive Fuel Management



1 **BEST-IN-CLASS SITESENTINEL® INTEGRA 100™, ISITE™ OR ITOUCH™ CONSOLE**



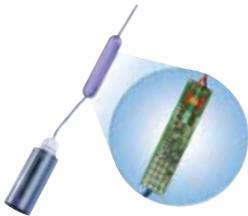
2 **BEST-IN-CLASS VSMART MODULE**



3 **BEST-IN-CLASS LINE LEAK DETECTION**



4 **BEST-IN-CLASS DENSITY MEASUREMENT**



5 **BEST-IN-CLASS INTELLISENSE™ SMART SENSORS**



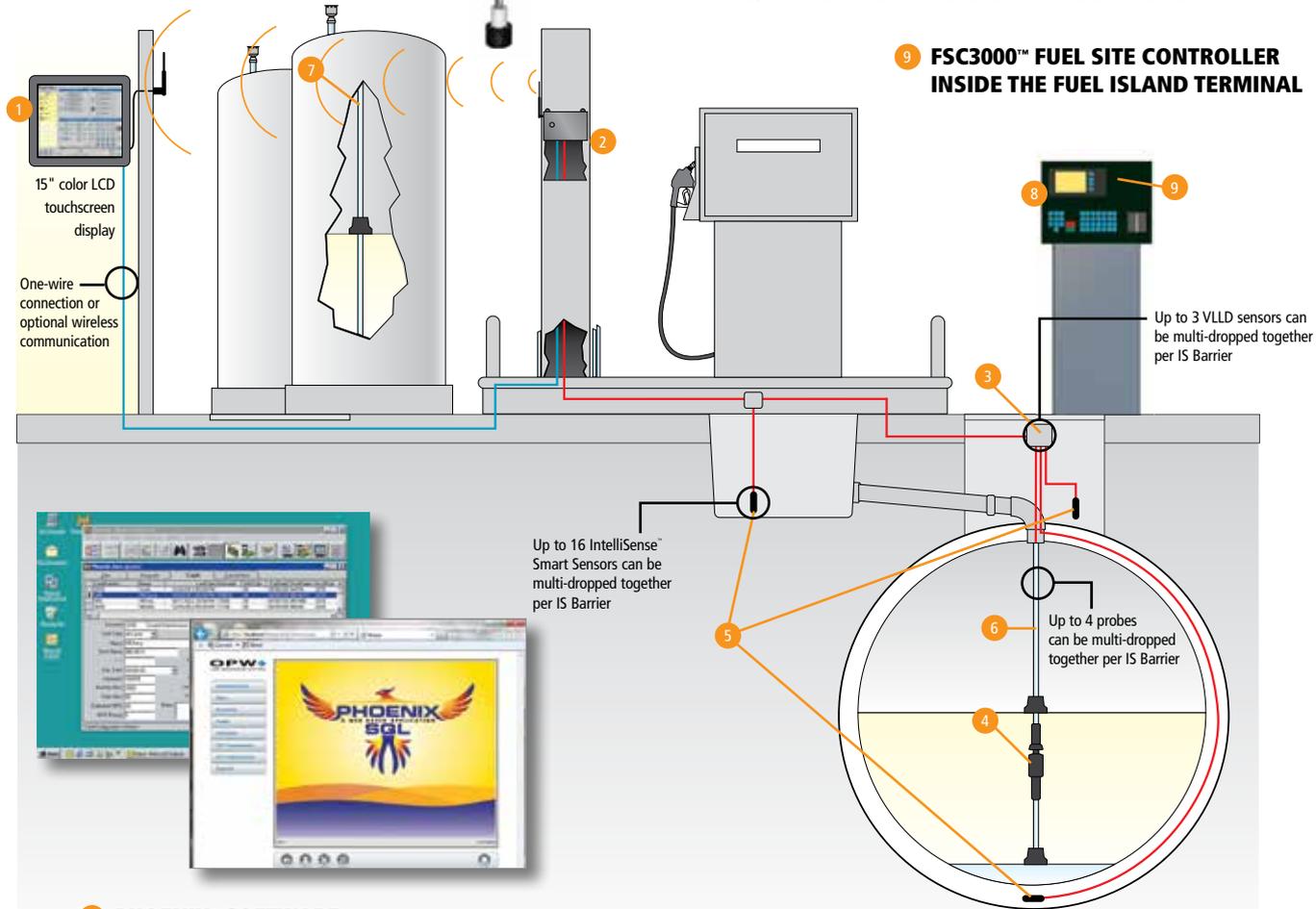
6 **BEST-IN-CLASS 924B MAGNETOSTRICTIVE PROBE**



7 **BEST-IN-CLASS AST FLEXIBLE PROBE**

8 **PETRO VEND 100®, DTC, K800™ HYBRID, C/OPT™ & FIT500™ FUEL CONTROL SYSTEMS**

9 **FSC3000™ FUEL SITE CONTROLLER INSIDE THE FUEL ISLAND TERMINAL**



10 **PHOENIX® SOFTWARE**



OPW Tank Gauging



Tank Gauging

- SiteSentinel® Integra 100™ Console..... 242-243
- SiteSentinel® Integra 500™ Console 244-245
- The VSmart Module..... 246-247
- SiteSentinel® Nano® Console..... 248-249
- SiteSentinel® iSite™ Console..... 250-251
- SiteSentinel® iTouch™ Console..... 252-253
- Model 924B Probe 254-255
- Model 924B Inventory-Only Probe 256-257
- Density Measurement Sensor..... 258-259
- Model 7100 AST Flex Probe 260-261
- IntelliSense™ Sensors..... 262-263
- Model 327 Volumetric Line Leak Detector..... 264-265



SiteSentinel® Integra 100™ Console

Provides complete tank monitoring, inventory management and environmental-compliance testing through the incorporation of the latest computer technology, which allows users to view data remotely from anywhere in the world.

The SiteSentinel® Integra 100™ has been designed to lower installation costs by reducing the number of wires to the probes and sensors that are connected to its internal I.S. module. In addition, all digital devices are automatically detected and configured by using the touch-screen interface, making it one of the easiest ATG systems in the industry to install, configure and use.

The SiteSentinel® Integra 100™ console has been designed to reliably provide connectivity now and in the future. Available ports include: Ethernet, USB, RS-232 and modem. It is also one of the easiest tank gauges to use, requiring the least amount of training and menu navigation to access critical data.

SiteSentinel® Integra 100™ Console

Part of the
SiteSentinel®
family of products



Features



Easy To Connect



Easy To Use



Convenient



Savings

- ◆ Large color touch-screen display gives one-touch access to real-time inventory data, delivery status, alarm conditions and leak-detection information – all accessible from a single cockpit view
- ◆ Statistical Leak Detection (SLD) – optional advanced leak-testing technology – provides continuous automatic in-tank leak-detection operation, with no need to schedule test times or shut down tanks
- ◆ Programmable Automatic Leak Detection (ALD) performs daily, weekly, monthly and annually required static leak tests when the system detects a quiet time
- ◆ Integral 4-channel multi-drop I.S. module
- ◆ Internal power supply works between 96-264 VAC, covering all global requirements
- ◆ International user-friendly icons follow guidelines in MIL-STD-1472
- ◆ Displays gross and net-corrected tank volume, product level, water level and temperature for individual tanks
- ◆ Configurable to meet localized settings (Date/Time formats and Metric/English units)
- ◆ Provides programmable correction factors for restrapping tanks (2,000 points)
- ◆ Includes address book of contacts to whom the unit can send text messages, fax and/or emails on any alarms and events
- ◆ Able to schedule reports to automatically run at specific times
- ◆ Communicates with industry-standard, third-party POS protocol and displays format commands
- ◆ Compliance calendar accessible with a single touch
- ◆ Non-volatile memory for event storage up to 10 years

Listings and Certifications



Additional Features

- ◆ Optional external USB thermal printer
- ◆ Available output module provides multi-purpose relays, which can be used for outputs such as overflow alarms, sensor alarms or STP positive shutdown
- ◆ Optional density measurement sensor has the capability to monitor product quality
- ◆ Downloadable and Flash upgradeable software for easy updates
- ◆ Monitors up to 16 probes and 64 sensors

Leak Test Certification

EPA Static Leak and Continuous Test Certified (ATGS & CITLDS Methods):

- ◆ 0.2 gph (0.76 L/hr) Statistical Leak Test at 397,000 gallons (1,502,809 liters)/month throughput for single-tank, 2-tank or 3-tank manifold installations with a 30,000-gallon (113,562 liters) combined maximum capacity
- ◆ 0.2 gph (0.76 L/hr) Static Leak Test
- ◆ 0.1 gph (0.38 L/hr) Static Leak Test

Specifications

Dimensions: 14.5 inch W x 12 inch H x 4 inch D (37 cm x 30 cm x 10 cm)

Operating Temperature: 32°F to 122°F (0°C to 50°C)

Humidity: Non-Condensing (Max 95%)

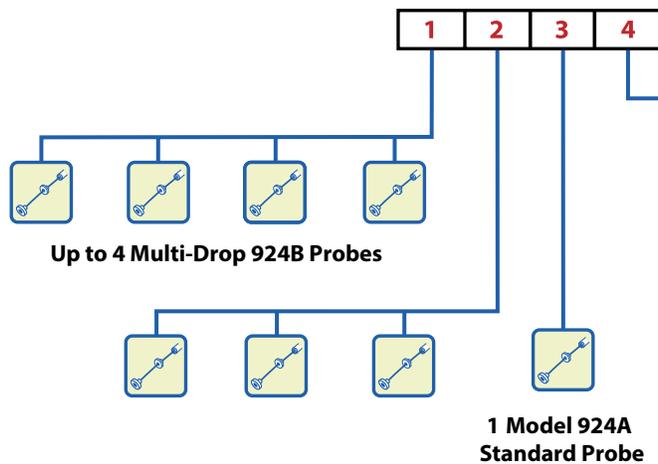
Typical Mounting Location: Indoor, Non-Hazardous Area

Power Requirements: 96-264 VAC, 50/60 Hz

Communication Ports: One (1) x Ethernet, Two (2) x RS-232, Two (2) x USB, Two (2) internal USB, One (1) x modem (optional)

Standard one (1) output and one (2) input internal relay connection

SiteSentinel® Integra 100™ Internal I.S. Barrier



- One (1) four-channel I.S. Barrier
- Maximum of 16 Model 924B Probes
- Maximum of 64 IntelliSense™ Sensors

Any combination of up to 16 IntelliSense™ Smart Sensors

NOTE: See OPW Fuel Management Systems' website at www.opwglobal.com for detailed product literature, manuals and sales representative contact information for your area.

SiteSentinel® Integra 500™ Console

The SiteSentinel® Integra 500™ tank gauge offers the industry's most comprehensive tank monitoring capabilities including inventory management, environmental compliance testing and remote access to real-time inventory data.

The tank gauge's Automatic Calibration and Reconciliation ensures in-depth and up-to-the-moment fuel monitoring. Statistical Leak Detection offers continuous automatic in-tank leak-detection operation, while programmable Automatic Leak Detection will perform daily, weekly, monthly and annually required static leak tests when the system detects a quiet time.

The SiteSentinel® Integra 500™ also can enable cost-savings through multi-drop technology, which decreases installation costs by reducing the number of wires to the probes, sensors and leak-detection devices that are connected to the gauge's internal I.S. module. With its Ethernet, USB, RS-485, RS-232 and optional modem ports, the SiteSentinel® Integra 500™ tank gauge can accommodate the communication needs of every fueling operation.

A large color touch-screen provides one-touch access to a web-based interface, which provides online access to inventory information and facilitates remote training. In addition, all digital devices are automatically detected and configured, making it one of the most user-friendly tank gauges in the industry.

SiteSentinel® Integra 500™ Console

NEW!

Part of the
**Site
Sentinel®**
family of products



Features



Easy To Connect



Convenient



Easy To Use



Savings

- ◆ Large color touch-screen display gives one-touch access to real-time inventory data, delivery status, alarm conditions and leak-detection information – all accessible from a single cockpit view
- ◆ Statistical Leak Detection (SLD) - optional advanced leak-testing technology - provides continuous automatic in-tank leak-detection operation, with no need to schedule test times or shut down tanks
- ◆ Programmable Automatic Leak Detection (ALD) performs daily, weekly, monthly and annually required static leak tests when the system detects a quiet time
- ◆ Optional Integral 4-channel multi-drop I.S. module
- ◆ Monitors up to 32 probes and 256 sensors
- ◆ Internal power supply works between 96-264 VAC, covering all global requirements
- ◆ International user-friendly icons follow guidelines in MIL STD - 1472
- ◆ Displays gross and net-corrected tank volume, product level, water level and temperature for individual tanks
- ◆ Configurable to meet localized settings (Date/Time formats and Metric/English units)
- ◆ Provides programmable correction factors for restrapping tanks (2,000 points)
- ◆ Includes address book of contacts to whom the unit can send text messages, fax and/or emails on any alarms and events
- ◆ Able to schedule reports to automatically run at specific times
- ◆ Communicates with industry-standard, third-party POS protocol and displays format commands
- ◆ Compliance calendar accessible with a single touch

Listings and Certifications



Additional Features

- ◆ Non-volatile memory for event storage up to 10 years
- ◆ Optional external USB thermal printer
- ◆ Available output module provides multi-purpose relays, which can be used for outputs such as overflow alarms, sensor alarms or STP positive shutdown
- ◆ Optional density measurement sensor has the capability to monitor product quality
- ◆ Downloadable and Flash upgradeable software for easy updates

Leak Test Certification

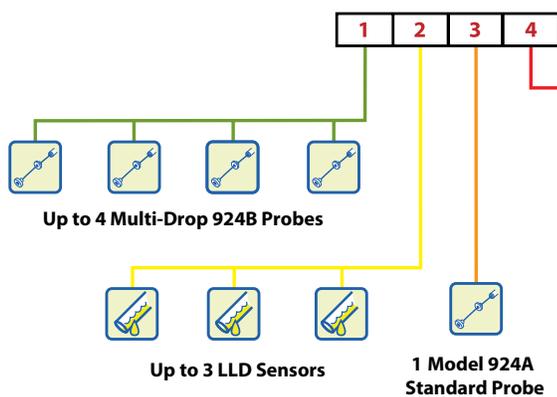
EPA Static Leak and Continuous Test Certified (ATGS & CITLDS Methods):

- ◆ 0.2 gph (0.76 L/hr) Statistical Leak Test 397,000 gallons (1,502,809 liters)/ month throughput for single-tank, 2-tank or 3-tank manifold installations; 30,000-gallon (113,562 liters) combined maximum capacity
- ◆ 0.2 gph (0.76 L/hr) Static Leak Test
- ◆ 0.1 gph (0.38 L/hr) Static Leak Test
- ◆ 3.0 gph (11.4 L/hr) Catastrophic Line Leak Test
- ◆ 0.2 gph (0.76 L/hr) Precision Line Leak Test
- ◆ 0.1 gph (0.38 L/hr) Static Leak Test

Specifications

- ◆ Dimensions: 14.5 inch W x 12 inch H x 4 inch D (37 cm x 30 cm x 10 cm)
- ◆ Operating Temperature: 32° F to 122° F (0° C to 50° C)
- ◆ Humidity: Non-Condensing (Max 95%)
- ◆ Typical Mounting Location: Indoor, Non-Hazardous Area
- ◆ Power Requirements: 96-264 VAC, 50/60 Hz
- ◆ Communication Ports: One (1) x Ethernet, One (1) x RS-485, Two (2) x RS-232, Two (2) x USB, Two (2) internal USB, One (1) x modem (optional)
- ◆ Standard Relay: one (1) output and one (1) input internal relay connection
- ◆ Up to 16 Relays Max: (4) output relays per module using optional OM4

SiteSentinel® Integra 500™ Internal I.S. Barrier



- One (1) four-channel I.S. Barrier
- Maximum of 12 Model 327 LLD Sensors
- SiteSentinel®Integra™ console can communicate to optional VSmart Module via direct-connect RS-485 twisted-pair, 900 MHZ wireless antennas or TCP/IP connection.
- Maximum of 16 Model 924B Probes
- Maximum of 64 IntelliSense™ Sensors

NOTE: See OPW Fuel Management Systems' website at www.opwglobal.com for detailed product literature, manuals and sales representative contact information for your area.

The VSmart Module

VSmart communicates to your SiteSentinel® iSite™ console through a unique wired, wireless or network connection. VSmart uses multi-drop technology to lower installation costs by allowing installers to use fewer wires between the VSmart, probes and sensors.

All digital devices can be multi-dropped directly to a VSmart I.S. Barrier, making installation quick and easy. Using patented proprietary IntelliSense™ technology for probes and sensors, the VSmart automatically detects the type of device connected to it and sends the information directly from the Module to the SiteSentinel® iSite™ console for easier programming. With a NEMA 4-rated enclosure, the VSmart Module can be located near the tank area (Note: not in Zone 0, 1 or 2), which will reduce or eliminate direct wiring runs back to the SiteSentinel® iSite™ console.

The VSmart Module Components



The VSmart Module Features



Multi-drop



Wireless



Easy Installation



Savings

- ◆ Optional single wireless radio antenna installed aboveground for higher-power signal and assurance of best possible connection
- ◆ Interfaces probes, sensors and LLDs to the SiteSentinel® iSite™ console by multi-dropping through a single I.S. channel
- ◆ Lowers installation costs by eliminating multiple wiring (home runs) for probes, sensors or LLDs back to the console in the building
- ◆ Automatic probe, sensor density float and LLD on any I.S. channel

The VSmart Module Specifications

- ◆ NEMA 4-rated VSmart enclosure
- ◆ Optional wireless modem
- ◆ Maximum of eight (8) VSmart Modules per SiteSentinel® iSite™ console
- ◆ Number of Probes: Up to 32 Model 924B probes and/or eight (8) flex probes per VSmart Module
- ◆ Probe Length: 924B rigid stainless steel; horizontal tanks up to 12 feet (3.7 m); vertical tanks up to 20 feet (6.1 m) or flexible PVDF for AST applications up to 70 feet (21.3 m)
- ◆ Maximum of 12 Model 327 VLLD Sensors per I.S. Barrier
- ◆ Maximum of 16 probes per I.S. Barrier
- ◆ Maximum of 128 sensors per VSmart module

Listings and Certifications



Intertek

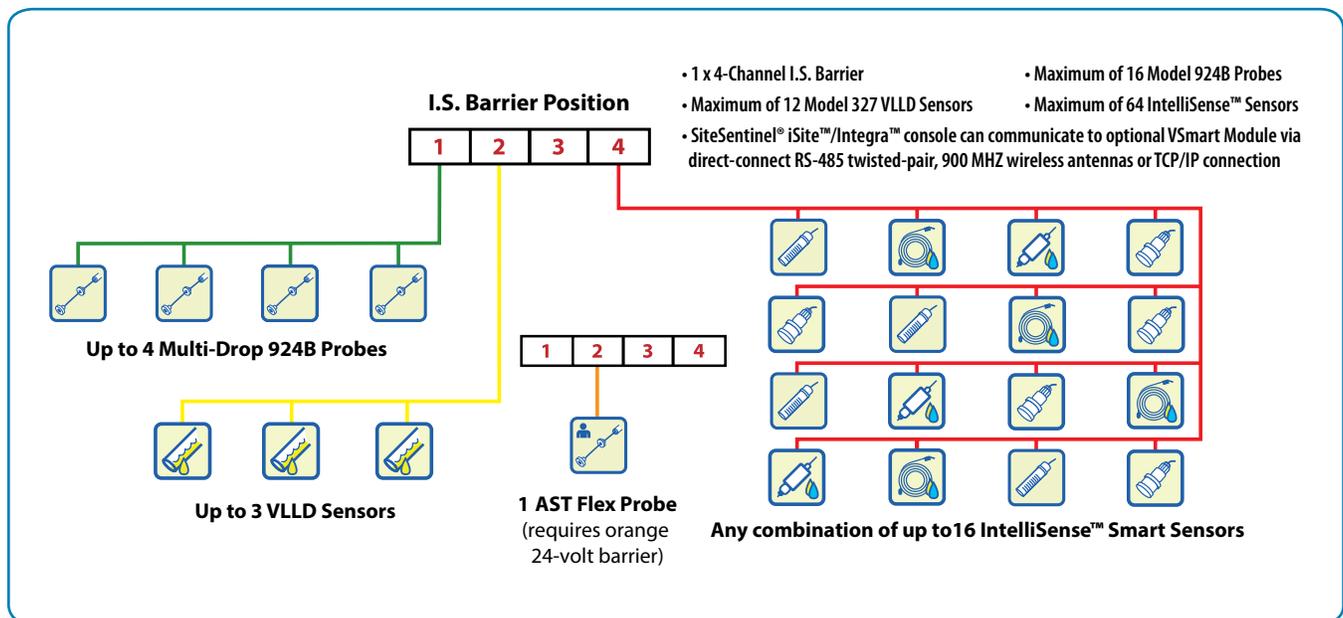


Intertek

The VSmart Module Specifications

- ◆ Maximum of 64 IntelliSense™ Sensors per I.S. Barrier
- ◆ Location: Class 1, Division 1, Group D; EEx ia IIA T4
- ◆ Typical mounting location outdoor – non-hazardous zone
- ◆ Operating Temperature: -40°F to 158°F (-40°C to 70°C)
- ◆ Data Cable: Belden 88760 (18 AWG) maximum of 1,000 feet (305 m) per barrier position; Belden 8871 (22 AWG) maximum of 500 feet (152 m) per barrier position
- ◆ Dimensions [W x H x D]: 11.3 x 5.6 x 5.8 inches (29 x 14 x 15 cm)
- ◆ Maximum twisted-pair wiring using RS-485: 5,000 feet (1,524 m)
- ◆ Maximum wiring for Ethernet (CAT5/CAT6): 300 feet (91.4 m)
- ◆ Wireless capabilities extend up to 1,500 feet (457 m) maximum with free line-of-site

VSmart Digital (12-volt) I.S. Module Capabilities



Note: The VSmart can handle two (2) four-channel I.S. barriers.

**Intrinsically Safe
Module Certifications**



SiteSentinel® Nano® Console

The SiteSentinel® Nano® tank gauge offers an easy-to-use interface and remote accessibility in a compact console, delivering precision inventory monitoring for fuel sites of all sizes.

The gauge's small equipment footprint and patented multi-drop technology make it ideal for fuel operations of any size. The Nano can monitor up to 12 probes and 24 sensors, while its multi-drop technology lowers installation costs through reduced wiring expenses.

Users can schedule daily, weekly and monthly static leak detection tests and reports. The Nano's Automatic Calibration and Reconciliation (ACR) ensures the gauge's information is reconciled for up-to-date transaction data.

Designed for convenience, the Nano provides access to precise inventory data. The console's large touchscreen communicates inventory, compliance and delivery statuses, as well as warnings and alarms. User-friendly software provides a "Calendar" view, while a "Favorites" list enables quick recall of the most-used filters.

Remote access allows users to control the gauge from anywhere. Employee training, emergency support and upgrades can be facilitated through remote capabilities, making the Nano one of the most user-friendly tank gauges in the industry.

SiteSentinel® Nano® Console

NEW!

Part of the
Site Sentinel®
family of products



Features



User-Friendly



Versatile



Intuitive



Convenient

- User-friendly interface features simple, easy-to-recognize icons
- Calendar view shows alerts for deliveries, compliance, alarms and warnings that can be filtered by event and/or tank
- A "Favorites" list enables quick recall of the most-used filter settings
- Monitors up to 12 probes (up to a maximum of four probes per barrier position)
- Internal barrier permits multi-dropped sensors and probes
- Automatic Calibration and Reconciliation (ACR) ensures the SiteSentinel Nano reconciles fuel consumption and deliveries
- Displays gross- or net-corrected tank volume, ullage, product volume and water, product level and water level, and product temperature for individual tanks
- Able to schedule reports to automatically run daily, weekly, monthly or yearly
- Programmable Automatic Leak Detection performs hourly, daily, weekly, and monthly static leak tests
- Local or remote PC connection
- Alarm notifications issued via email, fax, SMS
- Optional Tank Overfill Alarm
- Console is configured through an HTML web interface. No added hardware or proprietary software is needed for remote connections
- Networking screen allows user to select either a Static connection or DHCP
- A "blank door" unit is available for fueling sites that will operate the console through remote connection only
- Optional OM4 Output Module expands functionality to four additional output relays
- Reports include Current Inventory, Delivery History, Events in Progress, Event History, Leak Test

Listings and Certifications



Additional Features

- Auto Detect feature shows the number of devices connected to each of the internal barrier positions. Devices that are connected during startup will be detected automatically
- Includes address book of contacts to whom the unit can send text messages, fax and/or emails on any alarms and events
- Configurable to meet localized settings (Date/time formats and metric/English units)
- Meets Weights and Measures standards in countries where required
- Communicates with most industry-standard third-party POS protocols
- Optional density measurement sensor can monitor product quality. Fuel density reports can be shown in real time on the console

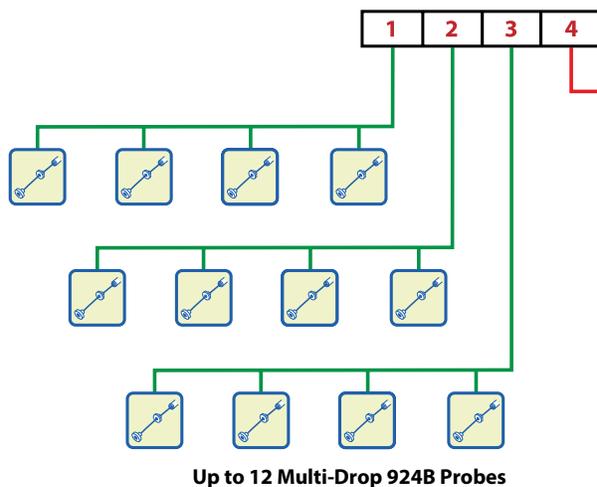
System Alarms and Events

- High Temperature
- Low Temperature
- Reconciliation Theft
- Fail RTD / Thermistor
- Delivery Start / Finish
- In-Tank Leak Test Failure
- In-Tank Test Warning
- Product High-High
- Product High
- Product Low-Low
- Product Low
- Water High-High
- Water High
- Probe Failure

Specifications

- Dimensions: 8.3 in H x 12.8 in W x 2.4 in D (21 cm H x 32.5 cm W x 6 cm D)
- Power: 120/240 VAC +/-10%, 50/60 Hz, 30 W
- Operating Temperature Range: 32°F to 122°F (0°C to 50°C)
- Display: 7.1 inches (18 cm) color LCD touchscreen display
- Graphical user interface
- Printer: External USB
- Standard Alarms: Buzzer, Light and Acknowledge
- Optional Alarms: External Tank Alert (internal relay)
- Alarm Notifications: Email, Fax, SMS
- Network Connectivity: DHCP/static addressable RJ-45 Ethernet ports, supports corporate and local LANs
- Communication Ports:
 - One (1) RS-232 communication port
 - One (1) RS-485 communication port
 - One (1) RS-422 communication port
 - One (1) Ethernet port
 - Two (2) USB ports
 - Two (2) Internal inputs
 - Two (2) Internal outputs

SiteSentinel® Nano® Internal I.S. Barrier



- One (1) four-channel I.S. Barrier
- Maximum of 12 Model 924B Probes
- Maximum of 24 IntelliSense™ Sensors
(Sensor capabilities to be released by end of 2014)



Any combination of up to 16 IntelliSense™ Smart Sensors on one barrier

NOTE: See OPW Fuel Management Systems' website at www.opwglobal.com for detailed product literature, manuals and sales representative contact information for your area.

SiteSentinel® iSite™ Console

Provides complete tank monitoring, inventory management and environmental compliance through the incorporation of Windows®-based technology, which allows users to view data remotely from anywhere in the world.

The SiteSentinel® iSite™ has been designed to lower installation costs by reducing the number of wires to the probes, sensors and leak-detection devices that are connected to its VSmart Module. In addition, all devices are automatically detected and configured by using the touchscreen interface, making it one of the easiest ATG systems in the industry to install, configure and use.

The SiteSentinel® iSite™ console has been designed to reliably provide connectivity now and in the future. Available ports include: Ethernet, USB and Serial (RS-232, RS-485), and modem communication ports. It is also one of the easiest tank gauges to use, requiring the least amount of training and menu navigation to access critical data.

SiteSentinel® iSite™ Console

Part of the

**Site
Sentinel®**
family of products



Features



Easy To Connect



Easy To Use



Convenient



Savings

- ◆ Large color touchscreen display gives one-touch access to real-time inventory data, delivery status, alarm conditions, and leak-detection information – all accessible from a single, cockpit view
 - ◆ Statistical Leak Detection (SLD) optional advanced leak-testing technology – provides continuous automatic in-tank leak-detection operation, with no need to schedule test times or shut down tanks
 - ◆ Programmable Automatic Leak Detection (ALD) performs daily, weekly, monthly, and annually required static leak tests when the system detects a quiet time
 - ◆ Provides real-time, accurate inventory information
 - ◆ Internal power supply works between 120/240 VAC \pm 10%, covering
- all global requirements
- ◆ Displays gross and net-corrected tank volume, product level, water level and temperature for individual tanks
 - ◆ International user-friendly icons follow guidelines in MIL-STD-1472
 - ◆ Configurable to meet localized settings (Date/Time formats and Metric/English units)
 - ◆ Downloadable and Flash-upgradeable software for easy updates
 - ◆ Communicates with industry-standard, third-party POS protocol and displays format commands
 - ◆ Provides programmable correction factors for restrapping tanks (2,000 points)

Listings and Certifications



Additional Features

Available output module provides multi-purpose relays, which can be used for outputs such as overflow alarms, sensor alarms or STP positive shutdown

Optional density measurement sensor has the capability to monitor product quality

- ◆ Includes address book of contacts to whom the unit can send text messages, fax and/or emails on any alarms and events
- ◆ Able to schedule reports to automatically run at specific times
- ◆ Non-volatile memory for event storage up to ten years
- ◆ Compliance calendar accessible with a single touch
- ◆ Monitors up to 256 probes, 1024 sensors and/or 16 VLLD sensors

Leak Test Certification

EPA Static Leak and Continuous Test Certified (ATGS & CITLDS methods):

- ◆ 0.2 gph (0.76 L/hr) Statistical Leak Test. Note: 397,000 gallons (1,502,809 liters)/month throughput for single-tank, two-tank or three-tank manifold installations; 30,000-gallon (113,562-liter) combined maximum capacity
- ◆ 0.2 gph (0.76 L/hr) Static Leak Test
- ◆ 0.1 gph (0.38 L/hr) Static Leak Test
- ◆ 3.0 gph (11.4 L/hr) Catastrophic Line Leak Test
- ◆ 0.2 gph (0.76 L/hr) Precision Line Leak Test
- ◆ 0.1 gph (0.38 L/hr) Precision Line Leak Test

Specifications

Dimensions [W x H x D]: 14.5 x 12 x 7 inches (37 x 30 x 18 cm)

Operating Temperature: 32°F to 122°F (0°C to 50°C)

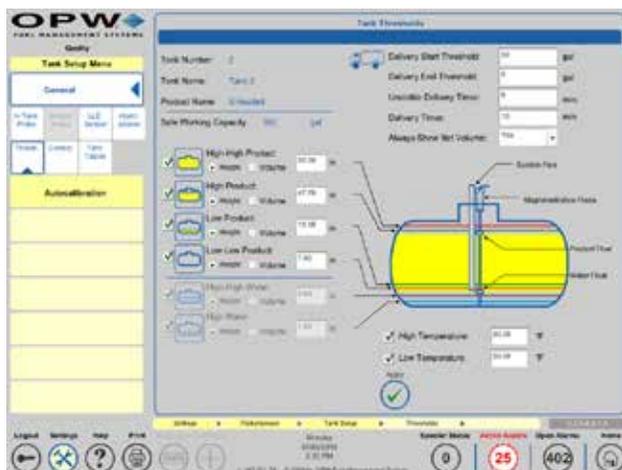
Humidity: Non-Condensing (Max - 95%)

Typical Mounting Location: Indoor, Non-Hazardous Area

Power Requirements: 120/240 VAC ± 10%, 50/60 Hz

Communication Ports: Two (2) x Ethernet; two (2) x RS-485; four (4) x RS-232; two (2) x USB; three (3) x Internal Modem

Up to 18 relays total: Two (2) internal inputs and two (2) relays per module, four (4) modules per system using optional OM4



Tank Threshold Screen



Compliance Calendar

NOTE: See OPW Fuel Management Systems' website at www.opwglobal.com for detailed product literature, manuals and sales representative contact information for your area.

SiteSentinel® iTouch™ Console

OPW's SiteSentinel® iTouch™ is a multi-function, high-quality tank-monitoring system that provides real-time, accurate inventory information for up to 16 underground storage tanks. The enhanced performance of the SiteSentinel® iTouch™ improves data processing, allows for future system expansion and can be customized to meet each user's needs.

Applications

- ◆ Provides real-time, accurate inventory information
- ◆ Displays gross or net-corrected tank volume, product level, water level, and temperature for individual tanks
- ◆ Available output module provides multi-purpose relays, which can be used for outputs such as overflow or sensor alarms
- ◆ Third-Party certified automatic or on-demand leak detection meets and/or exceeds U.S. Environmental Protection Agency regulatory requirements

SiteSentinel® iTouch™ Console Components

Part of the

Site Sentinel®
family of products



System Features



Compliance

The certified leak detection meets or exceeds U.S. EPA regulatory requirements, protecting the environment in and around storage tanks.



Easy to Use

The graphic display gives one-touch access to real-time inventory data, delivery status, alarm conditions and leak-detection information.



Automated

Programmable Automatic Leak Detection (ALD) can be set to perform routine required leak tests. The system can automatically email alarms and events.



Connectivity

Monitors up to 16 probes or sensors that can be connected in any combination. Reports can be printed on the external printer or from SiteConnect™ on the PC printer.

- ◆ Graphic touchscreen display uses international user-friendly icons
- ◆ Monitors up to 16 probes and/or sensors that can be connected in any combination
- ◆ Touchscreen provides one-touch access to real-time inventory data, delivery status, alarm conditions and leak detection information
- ◆ SiteConnect™ software, a Windows®-based configuration utility, makes site configuration easy
- ◆ Compatible with SmartTalk® software for enhanced business management and compliance reporting
- ◆ Automatic Leak Detection (ALD) can be programmed to perform daily, weekly, monthly and annually required leak tests. Once programmed, the SiteSentinel® iTouch™ system will automatically look for the appropriate quiet time over the course of the day to conduct a static leak test without operator intervention.
- ◆ System provides over 400 programmable correction factors guaranteeing the most accurate tank chart

Listings and Certifications



Intertek

Additional Features

- ◆ Meets weights and measures standards in countries where required
- ◆ Supports international time, date and decimal formats
- ◆ Software is downloadable (Flash RAM) for easy updates
- ◆ System interfaces with most POS devices, supporting standard industry protocols
- ◆ PV4 POS protocol can be modified to meet the needs and requirements of the user
- ◆ Provides three (3) dedicated RS-232 serial communication ports
- ◆ System provides one (1) output and one (1) input to connect external devices like overfill alarms and line leak detectors
- ◆ Internal power supply automatically switches between 120- and 240-volt power systems
- ◆ Output module (up to two (2) modules total) adds four (4) output relays per module to control external devices
- ◆ Density measurement ensures that you receive the expected fuel quality with each delivery
- ◆ System can automatically email alarms and events via TCP/IP
- ◆ Fax-out capability with external modem
- ◆ TCP/IP interface allows easy communications using your local network
- ◆ Increased memory size allows for future system expansion

System Alarms

- ◆ Low-Low Product (shutdown)
- ◆ Low Product (reorder)
- ◆ High Product (alarm)
- ◆ High-High Product (overfill)
- ◆ High Water (warning)
- ◆ High-High Water (alarm)
- ◆ Sensor
- ◆ Leak Detection

Reports

- ◆ System uses international icons to create Inventory, Delivery, System Alarm, and Leak Test reports
- ◆ Reports in Metric or English units of measurement
- ◆ Reports can be printed on the external printer or from SiteConnect™ on the PC printer

Probes and Sensors

- ◆ All probes and sensors are third party certified to meet and/or exceed U.S. Environmental Protection Agency regulatory requirements

Management Reports

- ◆ Inventory, Delivery, Alarm and Leak Reports are available at a touch
- ◆ Reports can be configured to meet localized settings (Date/Time formats and Metric/English units)

Specifications

Operating Temperature Range:
14°F to 122°F (-10°C to 50°C)

Printer Operating Temperature Range: 32°F to 104°F (0°C to 40°C)

Cabinet Dimensions [H x W x D]:
9.3 x 12.3 x 5.2 inches (23.5 x 31 x 13 cm)

Power Requirements

Input Power: 100-250 VAC, 50/60 Hz, 0.5 A

Input Contact: 12 VDC, 40 mA max.

Output Contact: 30V AC/DC, 2A

Output Module Contact: 2A @ 120/240 AC, 2A @ 24 VDC

PC Software: SiteConnect™ on CD-ROM is included

Minimum PC Requirements: Pentium® processor, 32 MB RAM, 20 MB available hard disk space, recommended PC screen resolution (800 x 600), Windows 98®, Windows NT® (version SP4 and above), Windows 2000®, Windows XP®, Windows Vista®

Printer: System-powered, graphics 40-column thermal printer includes wall-mounted bracket and a 6 ft (1.8 m) cable. Intrinsically Safe Barrier is ATEX-approved.

SiteConnect™ Software

- ◆ Easy to set-up and configure your entire site from your PC
- ◆ Configure your system to monitor the quality of your fuel deliveries (density measurement sensor is required)
- ◆ Refresh feature allows you to stay current with product inventory levels at a glance. Inventory changes in your tanks are dynamically updated.
- ◆ View and print inventory, delivery, alarm, leak test, set-up and system diagnostic reports directly from your PC
- ◆ Address book keeps emergency email and fax numbers organized
- ◆ POS protocols selectable through pull-down menus
- ◆ Available in different languages. Pull-down menu allows you to easily select languages.
- ◆ Provides the ability to manage fuel inventory locally or remotely from a centralized office
- ◆ Multiple password levels provide security for data access

Model 924B Magnetostrictive Probe

All stainless-steel construction, highly accurate, easy installation and trouble-free performance for inventory management and in-tank leak detection.

The Model 924B Magnetostrictive Probe features standard stainless-steel construction, making it ideally suited for use with gasoline, diesel, ethanol and biodiesel. The 924B probe is certified to meet the U.S. Environmental Protection Agency's performance standards for 0.1 gph (0.38 L/hr) volumetric tank tightness testing and 0.2 gph (0.76 L/hr) monthly product-level monitoring.

Model 924B Magnetostrictive Probe Components

Part of the
Site Sentinel®
family of products



System Features



Easy Integration



Compliance

- ◆ Welded construction eliminates potential leak points
- ◆ Level 1 probe – One (1) probe for all applications
- ◆ Easy Installation – Fits in a 2-inch to 4-inch (5.1 cm to 10.2 cm) riser



Accurate



Easy To Use

- ◆ Can be multi-dropped – Up to four (4) probes connected on a single I.S. channel (SiteSentinel® Integra 100™ and SiteSentinel® iSite™)
- ◆ Optional Density Float provides a measure of all changes in product density within the specified API density range

Magnetostrictive Probe Data

- ◆ Measures product level changes to a resolution of 0.0005 inches (0.0127 mm)
- ◆ Measures product temperature changes to a resolution of 0.001°F (0.0006°C)
- ◆ Measures water level changes to a resolution of 0.012 inches (0.254 mm)
- ◆ Linearity over the entire probe length is ± 0.04 inches (± 1 mm)

Certifications & Accreditation



1180

Leak Test Performance

- ◆ EPA Static Leak and Continuous Test Certified
- ◆ 0.2 gph (0.76 L/hr) Statistical Leak Detection (SLD) Test.
Note: Only available in SiteSentinel® iSite™ and Integra™ tank gauges, 397,000 gallons (1,502,809 liters)/ month throughput for single-tank, two-tank or three-tank manifold installations; 30,000-gallon (113,562-liter) combined maximum capacity
- ◆ 0.2 gph (0.76 L/hr) Statistical Leak Detection (SLD) Test: 99.1% Pd, 0.9% Pfa
- ◆ Third-party certified to meet US EPA Static Leak Detection requirements in tanks up to 20,000 gallons (76,000 liters)
- ◆ 0.2 gph (0.76 L/hr) Static Leak Test: 98.18% Pd, 1.82% Pfa
- ◆ 0.1 gph (0.38 L/hr) Static Leak Test: 96.5% Pd, 3.5% Pfa
- ◆ 0.2 gph (0.76 L/hr) Automatic Leak Detection (ALD)
- ◆ 0.1 gph (0.38 L/hr) Automatic Leak Detection (ALD)

Specifications

Type: Magnetostrictive/Float

Material: Stainless-Steel Body, Nickel-coated Brass Cap

Location: Hazardous, Class 1, Division 1, Group D

Temperature: 5 RTDs

Temperature Range: -40°F to 158°F (-40°C to +70°C) @ Pi: 1W

Data Cable: 1,000 feet (305 m) of Belden 88760; 500 feet (152 m) maximum of Belden 88761

Probe Length

Part #	Description	Part No.	Description
30-B053	53 inch (135 cm)	30-B105	105 inch (267 cm)
30-B069	69 inch (175 cm)	30-B113	113 inch (287 cm)
30-B077	77 inch (196 cm)	30-B125	125 inch (318 cm)
30-B089	89 inch (226 cm)	30-B137	137 inch (348 cm)
30-B101	101 inch (257 cm)	30-B149	149 inch (379 cm)

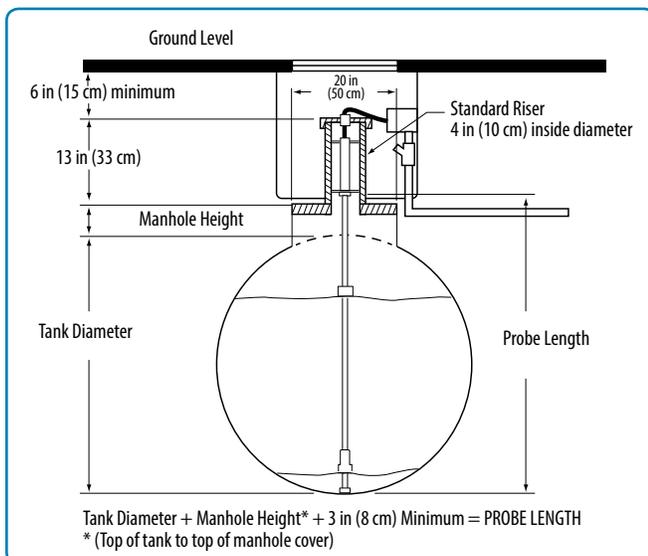
Probe Float Kits

Part #	Description
30-1509-02	2 inch (5.1 cm) Gas/Water Nitrophenyl Float Kit
30-1509-01	2 inch (5.1 cm) Diesel/Water Nitrophenyl Float Kit
30-3232	2 inch (5.1 cm) Density Measurement Kit

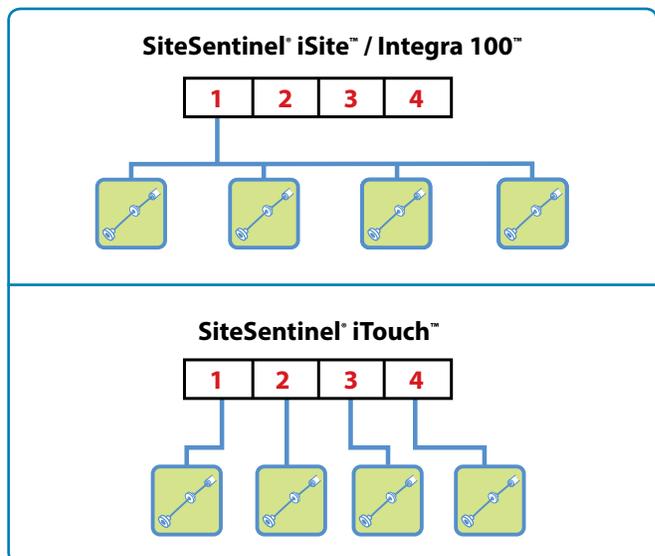
Stainless-steel floats available upon request.

NOTE: No leak testing available with stainless-steel floats.

Tank Configuration Diagram



I.S. Barrier Wiring Diagram



Model 924B Inventory-Only Magnetostrictive Probe (12 to 20 feet in length / 3.7 to 6 meters)

The 924B Inventory-Only Probe offers field-proven accuracy with industry-leading magnetostrictive probe technology.

The Model 924B Inventory-Only Magnetostrictive Probe features standard stainless-steel construction, making it ideally suited for use with gasoline, diesel, ethanol and biodiesel.

Model 924B Inventory-Only Probe Components

Part of the
Site Sentinel®
family of products



System Features



Accurate



Easy To Use



Easy Integration

- ◆ Welded construction eliminates potential leak points
- ◆ Level 1 probe – One (1) probe for all applications
- ◆ Adjustable probe-head centering disks provide a tight fit inside risers with diameters ranging from 2-inches to 4-inches (5.1 cm to 10.2 cm)
- ◆ With or without a water float
- ◆ Can be multi-dropped – Up to four (4) probes connected on a single I.S. channel (SiteSentinel® Integra 100™ and SiteSentinel® iSite™)
- ◆ Optional Density Float provides a measure of all changes in product density within the specified API density range
- ◆ Five-point temperature sensing element provides temperature compensation for product volume contraction and expansion, allowing for accurate inventory management.

Note: OPW recommends using a manlift to install the probe. Care should be taken to support the probe shaft until the probe is completely vertical. This installation will require two installers. Not certified for Leak Detection.

Magnetostrictive Probe Data

- ◆ Measures product level changes to a resolution of 0.0005 inches (0.0127 mm)
- ◆ Measures product temperature changes to a resolution of 0.001°F (0.0006°C)
- ◆ Measures water level changes to a resolution of 0.01 inches (0.254 mm)
- ◆ Linearity over the entire probe length is ±0.04 inches (±1 mm)

Certifications & Accreditation



Probe Length

Probe available from 12- to 20-foot lengths (3.7 to 6 meters)
 (Available in 6-inch (15.2 cm) increments only)

Probe Float Kits

Part #	Description
30-1509-02	2 inch (5.1 cm) Gas/Water Nitrophenyl Float Kit
30-1509-01	2 inch (5.1 cm) Diesel/Water Nitrophenyl Float Kit
30-3232	2 inch (5.1 cm) Density Measurement Kit

Stainless-steel floats available upon request.

Specifications

Type: Magnetostrictive/Float

Material: Stainless-Steel Body,
 Nickel-Coated Brass Cap

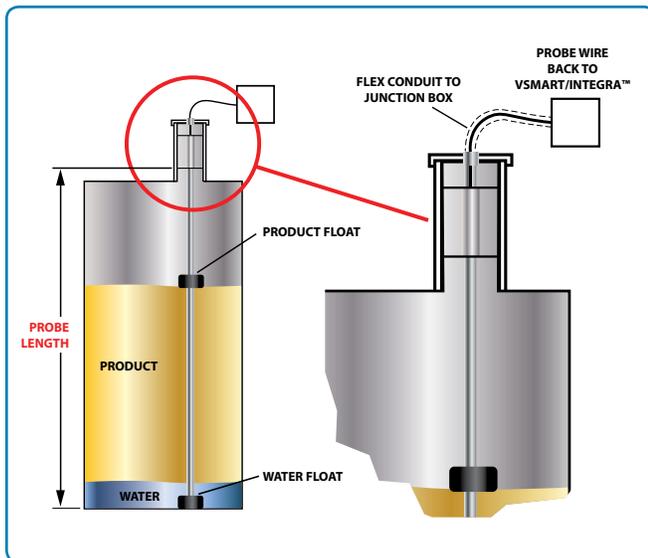
Location: Hazardous, Class 1,
 Division 1, Group D

Temperature: 5 RTDs

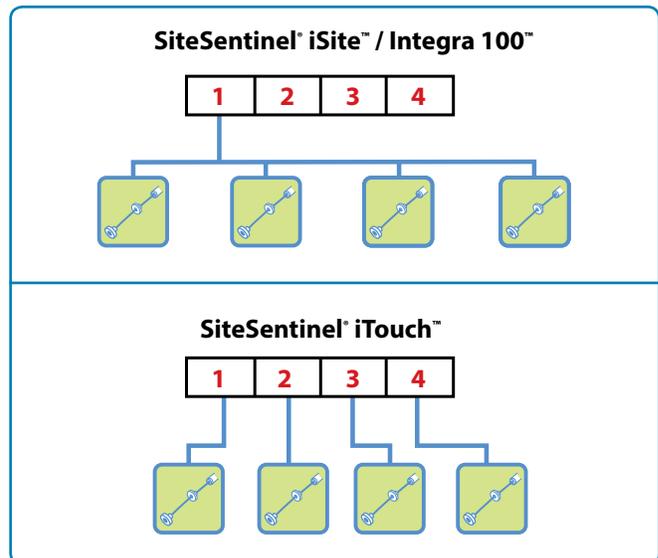
Temperature Range: -40°F to 158°F
 (-40°C to +70°C) @ Pi: 1W

Data Cable: 1,000 feet (305 m) of
 Belden 88760; 500 feet (152 m)
 maximum of Belden 88761

Tank Configuration Diagram



I.S. Barrier Wiring Diagram



Density Measurement Sensor

Whether for a new or existing installation, the Density Measurement Sensor easily installs on the OPW Magnetostrictive Probe. Combining industry-leading accuracy for water, product and density measurement, the SiteSentinel® family Density Measurement Sensor uses a single magnetostrictive in-tank probe assembly.

The sensor continuously measures the density of the fuel in the tank, providing a measure of even the smallest changes in product quality within the API density range. Fuel density reports can be displayed real-time on the SiteSentinel® family of controllers or exported to an external display. The density readings can be configured to either nominal or temperature-corrected density.

Density Measurement Sensor Components

Part of the
SiteSentinel®
family of products



IntelliSense™ Features



Accurate

Uses float displacement, taking advantage of the precision and accuracy of the magnetostrictive probe's level measurement, which is capable of detecting changes of 0.0005 in (0.0127 mm).



Installation

Density and level measurement combined on one I.S. channel.



Easy Integration

As with every OPW tank gauge component, the density sensor works seamlessly with the SiteSentinel® family of products.



Savings

Easily retrofitted to new and existing in-tank SiteSentinel® 924B level probes, providing an economical solution to ensure continuous product quality.

Features

- ◆ Trouble-free design
- ◆ Easy to retrofit to existing in-tank level probes (SiteSentinel® 924B Probe)
- ◆ Density and level measurement combined on one (1) I.S. module position connection without the need for a dedicated input channel or additional wiring
- ◆ Fits through the same 2.0 in (5 cm) opening in the tank that's used by the probe
- ◆ Economical solution to ensure continuous product quality
- ◆ Four (4) probes (with density sensor) per I.S. Channel (SiteSentinel® Integra 100™ and SiteSentinel® iSite™)
- ◆ Dedicated density probes can support three (3) density sensors per probe to ensure product quality – not available with level measurement

NOTE: See OPW Fuel Management Systems' website at www.opwglobal.com for detailed product literature, manuals and sales representative contact information for your area.

Applications

- ◆ Provide real-time, accurate density information
- ◆ Displays density in kg/m³, g/cc or API
- ◆ Applicable in petroleum products designed for both underground (UST) and above ground (AST) rigid probe applications
- ◆ Single sensor per standard in-tank probe or multi-sensor for dedicated triple-sensor density probe

Specifications

Material: Nitrophyl®, Delrin® and stainless-steel spring

Resolution: 0.00004 g/cc

Accuracy: ±0.0025 g/cc

Density Range: 0.6 - 1.0 g/cc

Operating Temperature: -40°F to 140°F (-40°C to 60°C)

Dimensions: 2 in (diameter) x 11 in [5 cm (diameter) x 28 cm]

Number of Sensors per SiteSentinel®

iSite™ System: One per probe or multi-sensor dedicated probe equipped with three (3) sensors

Proven Magnetostrictive Technology

- ◆ Supports extended operating temperature range: -40°F to 140°F (-40°C to 60°C)
- ◆ Compatible with gasoline, diesel and other approved fluids

Magnetostrictive Probe Data

- ◆ Measures product level changes to a resolution of 0.0005 in (0.0127 mm)
- ◆ Measures product temperature changes to a resolution of 0.001°F (0.0006°C)
- ◆ Measures water level changes to a resolution of 0.01 in (0.254 mm)
- ◆ Linearity over the entire probe length is ± 0.04 in (1 mm)

Probe Specifications

Type: Magnetostrictive/float

Material: All stainless steel construction, aluminum cap

Location: Hazardous, Class 1, Division 1, Group D

Probe Inputs: Intrinsically Safe

Probe Power Supply: 12 VDC Nominal

Level Precision: ± 0.0005 in (0.0127 cm)

Level Accuracy: ± 0.04 in (1.0 mm)

Temperature: ± 0.9°F (± 0.5°C)

Temperature: 5 RTDs

Temperature Range: -40°F to 140°F (-40°C to 60°C)

Data Cable: 1,000 ft (300 m) Belden 88760; 500 ft (150 m) max. Belden 88761 equipped with three (3) sensors

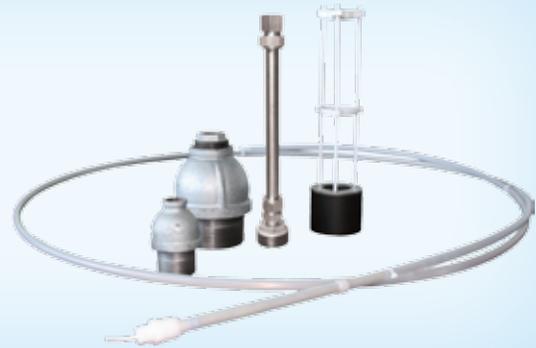
Model 7100 AST Flex Probe (Available in lengths from 12 to 70 feet / 3.7 to 21 meters)

Monitoring of products in above ground storage tanks is time-consuming, dangerous at times and inaccurate at best. Many AST tank-gauging devices are available, but none have the precision and accuracy of OPW's SiteSentinel® iSite™.

The 7100V Series flexible probe, using OPW's industry-leading, field-proven magnetostrictive technology, allows greater precision and reliability in measuring AST product levels. This probe is ideal for liquid-level monitoring of product and water levels in a wide variety of liquids in AST's, including gasoline, diesel, ethanol, biodiesel and lubricants. The 7100V Series can be outfitted with a low-level, inventory-only float kit, giving the operator inventory visibility to the bottom of the tank, as well as water levels in a wide variety of liquids in above ground storage tanks, including gasoline, diesel, ethanol, biodiesel, lubricants and some chemicals.

AST Flex Probe Components

Part of the
**Site
Sentinel®**
family of products



AST Flex Probe Features



Easy Integration

All probe electronics are integrated into the sensing tube, eliminating the bulky enclosure at the top of the probe and offering greater options for installation and mounting in above ground storage tanks.



Easy Installation

The flexible PVDF probe comes coiled with a threaded fitting on the end of the probe, which allows for easy installation.

Note: The recommended fittings are not included in the AST Flex Probe, but can easily be purchased through a local supplier.



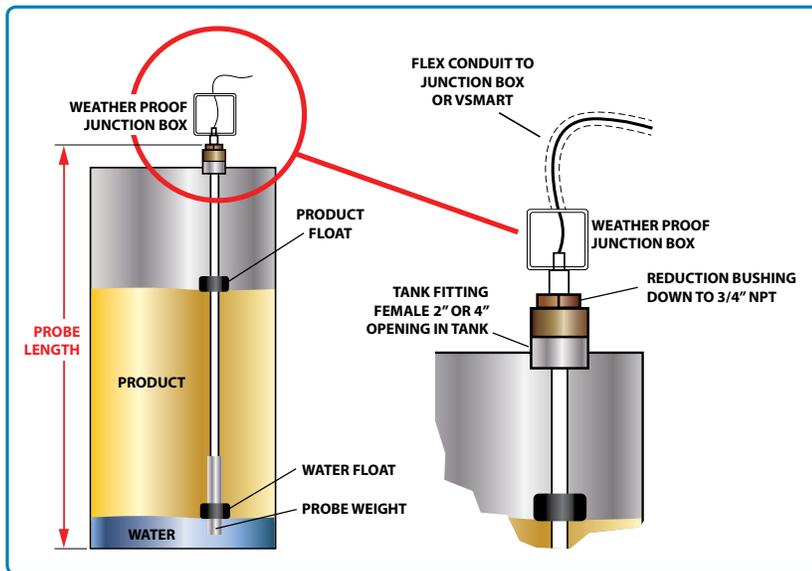
Accurate

OPW's SiteSentinel® iSite™ and Integra 500™ use proven magnetostrictive technology that accurately measures product level changes to a resolution of 0.010 inch.

Listings and Certifications



Flex Probe Installation Using Pipe Fittings



(If optional water float is needed a minimum 4-inch (10 cm) opening is required in the tank.)

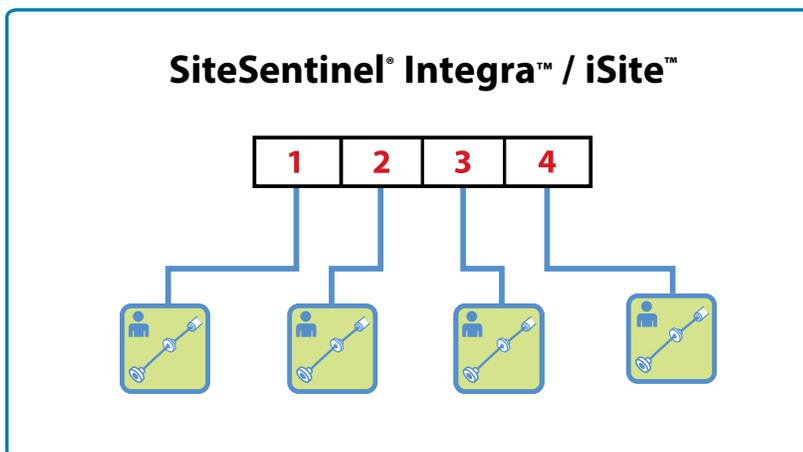
Flex Probe Catalog Number

Example: 7100V-F1T5-193

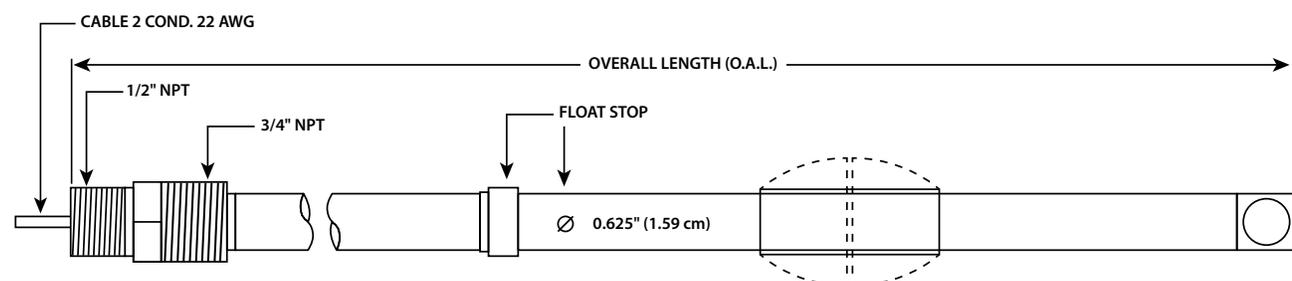
Probe Float Kits

Model #	# of Floats	# of Thermistors	Overall Length
7100V	F1	T1	193
	F2	T5	–

VSmart 24-Volt Barrier Wiring Diagram



7100V-Style Drawing



Specifications

Input Voltage: 23–28 VDC

Enclosure Material: PVDF

Resolution: 0.010 inch Inventory Mode

Linearity: +/- 0.01% of full scale, +/- 0.010 inch (.254 mm), whichever is greater

Repeatability: +/- 0.001% of Full Scale, +/- 0.00025 inch (0.0064 mm), whichever is greater

Temperature Accuracy: Absolute +/- 2°F (+/- 1.11°C)

Temperature Measurement Resolution: +/- 0.01°F (0.02°C)

Temperature Sensing Range: -40°F to +150°F (-40°C to +66°C)

Operating Temperature Range: -40°F to +158°F (-40°C to +70°C)

Water Float Lift-Off: 2.5 inches (6.35 cm) at 70°F (21°C)

Distance to VSmart Module: 1,000 feet (305 m) Belden 88760; 500 feet (152 m) maximum Belden 88761

Environment: NEMA 4

Listings: UL, Intrinsically Safe, ATEX and IECEx approval

Maximum Tank Capacity: 99,999,999 gallons (approx. 378,541,176 liters)

IntelliSense™ Technology

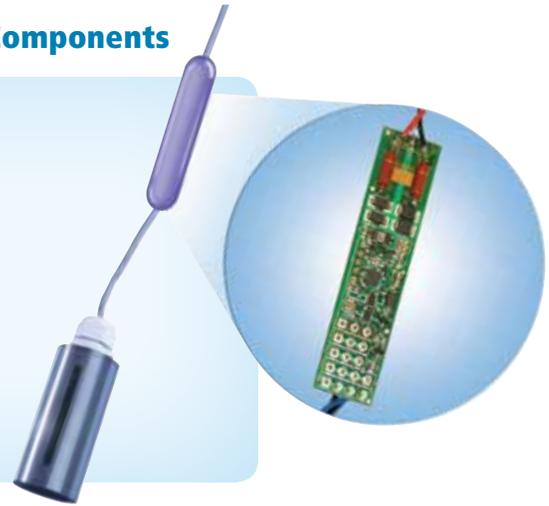
Delivers the ability to monitor all areas of the fuel site — tank interstice, piping sumps, STP containment sumps, dispenser sumps/pans and monitoring wells. IntelliSense™ technology allows for interfacing all sensors through a single 3-core cable connection. This proprietary technology is designed so that SiteSentinel® iSite™, Integra 100™ and Integra 500™ tank gauges, regardless of the type or place of installation, will know immediately what type of sensor is connected and the model number and name.

Low Cost of Installation

The SiteSentinel® IntelliSense™ technology enables sensors to be “multi-dropped” together during installation, eliminating a wiring “home-run” for each sensor back to the console in the building.

IntelliSense™ System Components

Part of the
**Site
Sentinel®**
family of products



IntelliSense™ Features



Innovative

IntelliSense® makes innovative sensor technology even smarter by communicating the connection status and sensor type to the SiteSentinel® iSite™ or Integra™ tank gauge.



Maintenance

IntelliSense™ technology and the SiteSentinel® iSite™ and Integra™ tank gauge systems keep track of replaced sensors by recording the sensor's serial number, along with the date and time of its replacement.



Compliance

OPW provides a full line of discriminating and non-discriminating sensors to monitor the environment of a fueling facility.



Savings

The IntelliSense™ technology allows sensors to be multi-dropped during an installation, eliminating a wiring home-run for each sensor.

Available Sensors

Discriminating Dispenser Pan Sensor - provides the ability to detect a low and high liquid level and distinguish whether the fluid is water or hydrocarbons. Detection of fuel or water will result in an alarm condition at the console. Detection of a fuel or high-water condition is useful to disable dispenser power to ensure protection of the environment. This feature assures that an alarm condition is sounded if the cable to the sensor breaks or if the sensor malfunctions.

Part Number: 30-0232-DH-10

Application: Dispenser pans

Detects: Fuel, water – high and low level

Differentiates: Fuel vs. water

Product Detection: 1.25 in (3.17 cm) fuel only - 1.25 in (3.17 cm) fuel on water

Operating Temp: -40°F to 150°F (-40°C to 65°C)

Discriminating STP Sensor - provides the ability to detect a low- and high-liquid level and distinguish whether the fluid is water or hydrocarbons. Detection of fuel or water will result in an alarm condition at the console. Detection of a fuel or high-water condition is useful to disable STP power to ensure protection of the environment. This feature assures that an alarm is sounded if the cable to the sensor breaks or if the sensor malfunctions.

Listings and Certifications



Sensors (continued)

Part Number: 30-0232-DH-20

Application: STP Sumps

Detects: Fuel, water – high and low level

Differentiates: Fuel vs. water

Product Detection: 1.25 in (3.17 cm)

fuel only - 1.25 in (3.17 cm) fuel on water

Operating Temp: -40°F to 150°F

(-40°C to 65°C)

Discriminating Interstitial Sensor - utilizes a solid-state optical technology to detect the presence of fluid in the annular space of a tank and distinguish whether the fluid is water or hydrocarbons. Detection of fuel or water will result in an alarm condition at the console. This feature assures that an alarm is sounded if the cable to the sensor breaks or if the sensor malfunctions.

Part Number: 30-0236-LW

Application: Tank Interstice

Detects: Fuel, water

Differentiates: Fuel vs. water

Product Detection: Fuel or water 0.63 in

(1.59 cm)

Operating Temp: -40°F to 176°F

(-40°C to 80°C)

Sump Sensor, Float Switch - designed to detect the presence of fluid in a containment sump/pan. Additionally, this feature assures that an alarm is sounded if the cable to the sensor breaks or if the sensor malfunctions.

Part Number: 30-0231-L

Application: Dispenser pans/transitions

Detects: Fuel, water

Product Detection: Min. height 1.50 in (3.81 cm)

Operating Temp: -40°F to 150°F

(-40°C to 65°C)

Hydrocarbon Vapor Sensor - designed for the early detection of the presence of hydrocarbon vapors in dry monitoring wells and interstitial spaces of a double-wall tank. The sensor is recoverable from detection

and will return to its normal state after the vapors have dissipated. This feature assures that an alarm is sounded if the cable to the sensor breaks or if the sensor malfunctions.

Part Number: 30-0235-V

Application: Dry monitoring wells, double wall tank interstice

Differentiates: Fuel

Product Detection: Hydrocarbon vapor

Operating Temperature: -40°F to 150°F

(-40°C to 65°C)

Interstitial Hydrocarbon Liquid with Water Indicator - designed for use in a double-wall fiberglass tank to detect the presence of fluid and distinguish between fuel and water. This feature assures that an alarm is sounded if the cable to the sensor breaks or if the sensor malfunctions.

Part Number: 30-0234-HW-01

Application: Interstitial space of double-wall fiberglass tank

Differentiates: Fuel vs. water

Product Detection: Requires min. 0.10 in (0.25 cm) fuel to activate

Operating Temp: -40°F to 150°F

(-40°C to 66°C)

Liquid Only Interstitial Sensor - designed to detect the presence of fluid in interstitial space of a double-wall tank (not applicable for double-wall fiberglass tanks). The sensor,utilizing a float technology, activates at the presence of water or fuel and providesan alarm condition. It's constructed of a chemically resistive non-metallic material, and can be used in sumps, dispenser pans and other containment locations. This feature assures that an alarm is sounded if the cable to the sensor breaks or if the sensor malfunctions.

Part Number: 30-0230-S

Application: Interstitial space of double-wall tank

Detects: Fuel, water

Product Detection: 0.20 in (0.50 cm)

fuel only - 0.10 in (0.25 cm) fuel on water

Operating Temp: -40°F to 150°F

(-40°C to 65°C)

Discriminating Fuel/Water Monitoring Well Sensor – provides the ability to detect the presence of hydrocarbons floating on the surface of water in a groundwater monitoring well. It's also able to detect when the water in the monitoring well has dropped below the sensor, making the detection of hydrocarbons no longer possible. The system will activate an alarm condition indicating that the monitoring well is dry and environmental protection has been compromised. This sensor is used for monitoring wells that are 6 to 20 feet (1.83 to 6.09 meters) deep.

Part Numbers: 30-0234-HW-06

[6.0 ft (1.83 m)],

30-024-MW-15 [15.0 ft (4.57 m)],

30-0234-HW-20 [20.0 ft (6.09 m)]

Application: Wet monitoring wells

Detects: Fuel on water surface

Differentiates: Fuel on water or when water drops below sensor

Product Detection: As little as a 0.10 in (0.25 cm) fuel on water

Operating Temp:

32°F to 122°F (0°C to 50°C)

Dual-Float Brine Sensors –

The dual float brine sensor measures the level of brine solution in a dispenser sump or fiberglass tank. The bottom float of the brine sensor will remain floating under normal conditions. If the bottom float drops, it will trigger a low liquid alarm; if the brine sensor's top float begins floating, it will trigger a high liquid alarm.

Part Numbers: 30-0232-D-10B (dispenser sump) and 30-0232-D-20B (fiberglass tank)

Application: Measures brine solution in dispenser sumps and fiberglass tanks

Detects: Low liquid, high liquid

Operating Temp: -40°F to 158°F (-40°C to +70°C)

Model 327 Volumetric Line Leak Detector (VLLD)

While pressure may have its place in many fuel-related applications, it's performance in line-leak detection has been found less than reliable. Rising to the challenge of finding a more reliable solution, OPW Fuel Management Systems offers the Model 327 Volumetric Line Leak Detector (VLLD). The VLLD has been designed to use a highly accurate flow sensor, rather than less-reliable pressure decay methods, to measure the product line's leak rate. In turn, VLLD provides a more accurate measure of the actual product volume that is being lost.

The Model 327 VLLD has been designed to detect a leak in the pressurized product pipe by utilizing the submersible turbine pump (STP) in order to monitor volume changes in the product piping when no one is dispensing fuel. The OPW VLLD utilizes an internal flow sensor to detect and measure any volume changes in the product pipe and will initiate an alarm condition if an actual leak is detected. Constructed from hardened anodized aluminum, the rugged Model 327 VLLD is easy to install in the 2-inch (5.1 cm) leak-detector port found on the submersible turbine pump (STP).

Model 327 Volumetric Line Leak Detector (VLLD)

Capable of >3 gph catastrophic line leak test, even if an STP relay fault condition occurs where the STP motor is in a continuous run state



Features



Easy Integration



Easy To Use



Easy Installation



Savings

- ◆ Provides a true volumetric line leak test
- ◆ Capable of >3 gph (11.4 L/h) catastrophic line leak test, even if an STP relay fault condition occurs where the STP motor is in a continuous run state
- ◆ Installs into the 2-inch (5.1 cm) leak detector port on the submersible turbine pump (STP) motor
- ◆ Capable of connecting three (3) VLLD sensors via one (1) three-conductor wire back to the building
- ◆ Capable of testing the largest pipe volume in the industry [1.5-inch (3.8 cm), 2-inch (5.1 cm), 3-inch (7.6 cm), and 4-inch (10.2 cm) pipe]
- ◆ Capable of controlling up to four (4) STP motors within a single-line manifold set
- ◆ Capable of controlling two separate STP motors installed in the same tank
- ◆ Eliminates the need to know exact line lengths or diameters of underground pipe
- ◆ Works with a combination of fiberglass and flex pipe
- ◆ Configurable for STP motor control as a way to bring all tanks in a manifold set down evenly either by percent of volume in the tank or until a user-defined product level is reached before switching over to another tank in the manifold set
- ◆ Reduces installation cost - Line Leak Interface Module (LIM) is mounted separately, near STP motor relays, to eliminate the need for running pump-control wires back to the tank-gauge console

Listings and Certifications

U.S. Patent
No. 8,316,695



Additional Features

- ◆ LIM is capable of controlling up to four (4) STP motors
- ◆ Will shut off STP motor if a low-level alarm or probe failure has occurred
- ◆ Programmable to run an optional monthly 0.2 gph (0.76 L/hr) or annual 0.1 gph (0.38 L/hr) compliance test
- ◆ Reduces installation time by eliminating the need to run a line-leak calibration test to determine the leak characteristics of the pipe
- ◆ Runs precision tests at the pump's operating pressure
- ◆ Reduces hydraulic hammering on the dispenser meters

Leak Test Certification

- ◆ Leak rate of 3.0 gph (11.4 L/hr) at 10 psi with Pd = 100% and Pfa = 0%
- ◆ Leak rate of 0.2 gph (0.76 L/hr) at operating pressure with Pd = 100% and Pfa = 0%
- ◆ Leak rate of 0.1 gph (0.38 L/hr) at 1.5 times operating pressure with Pd = 97.9% and Pfa = 2.1%

Specifications

Type: Volumetric Line Leak

Material: Hardened Anodized Aluminum

Location: Hazardous, Class 1, Division 1, Group D

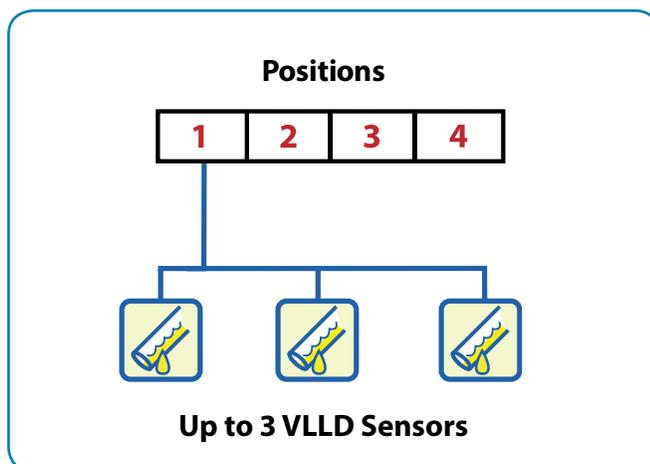
Temperature Range: -40°F to 140°F (-40°C to 60°C)

Data Cable: 1,000 ft (305 m) Belden 88760; 500 ft (152 m) maximum Belden 88761

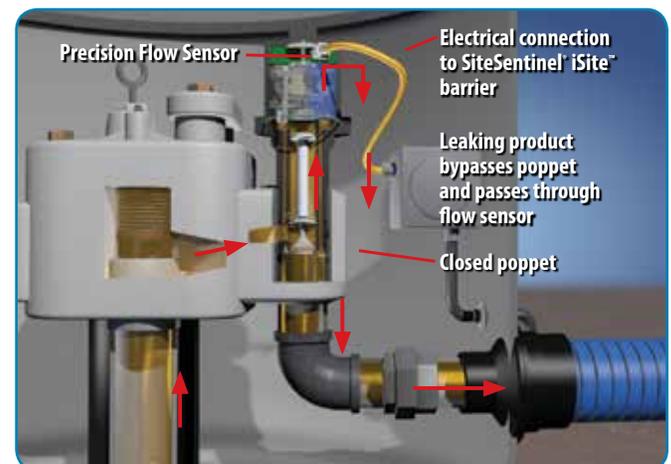
Pipe Characteristics

Pipe Diameter	Flex Pipe Length	Rigid Pipe Length
1.5 in (3.8 cm)	1,187 ft (362 m)	4,628 ft (1,411 m)
2 in (5.1 cm)	668 ft (204 m)	2,603 ft (793 m)
3 in (7.6 cm)	297 ft (91 m)	1,157 ft (353 m)

Integra™ / iSite™ VSmart I.S. Barrier



Operation of OPW VLLD Precision Flow Sensor



NOTE: See OPW Fuel Management Systems' website at www.opwglobal.com for detailed product literature, manuals and sales representative contact information for your area.

Petro Vend Fuel Control Systems

From the smallest fleet to the largest petroleum marketing operation, Petro Vend has been providing effective solutions to meet your fuel control needs since 1961.

24-hour unattended fleet fueling systems like the Petro Vend 100®, K800™ and AFC™ only allow authorized users to

access fuel, tracking every transaction and restricting vehicles to the type of fuel and quantities they need for complete security, accountability and control.

Systems like The K800™ Hybrid, C/OPT™, DTC and FIT500™ accept nationwide fueling network cards as well as local proprietary cards, allowing

petroleum marketers to grow their 24-hour unattended fueling business and stay profitable. Other industry-leading options like RFID access, wireless data communication and powerful fuel management software continue to make Petro Vend Fuel Control Systems the leader in 24-hour unattended fuel management.

Petro Vend Fuel Control Systems - Features Overview

Fuel Control System Model	Petro Vend 100® (page 268)	DTC (page 272)	FIT500™ (page 274)	C/OPT™ (page 276)	K800™ Hybrid (page 278)	K800™ (page 280)	AFC™ (page 284)
Magnetic Stripe Card Access	•	•	•	•	•	•	•
ChipKey® Access				•	•	•	
Proximity Card Access	•			•	•		
DuraKey™ Access							•
Keypad Access	•	•	•	•	•	•	•
Hose Capacity Per System ²	2	12	32	32	32	16	8
Fuel Island Terminal Capacity Per System	1		8	12	8	4	N/A
In-Dispenser Card Terminal		12 ³					
Max. Transaction Storage	Optional Unlimited	2000	2000	2000	2000	1,800	999
Maximum Proprietary (local network) Card/Key/User Capacity	250	150,000	150,000 ⁴	150,000 ⁴	150,000 ⁴	10,000	10,000
Single-Site Mileage Reasonability		•	•	•	•	•	•
Chipkey Mileage Reasonability				•	•	•	
Dual Card Accountability		•	•	•	•	•	•
Phoenix™ Software Compatibility		•	•	•	•	•	
Commercial Fleet and Trucking Card Acceptance		•	•	•	•		
Bankcard Acceptance		•	•	•			
Wireless Communication			•	•	•	•	
Certifications	ETL ETL C	ETL ETL C	ETL ETL C	ETL ETL C	ETL ETL C	ETL ETL C	ETL

¹ NOTE: Only applicable when used with appropriate fuel island terminal.

² NOTE: Hose capacity is dependent upon pump type (mechanical or electronic) for FIT500™, C/OPT™ and K800 Hybrid™ systems.

³ NOTE: Supports Wayne CAT or Gilbarco CRIND.

⁴ NOTE: Dependent upon options and card restrictions selected.

OPW Fuel Control



Fuel Control

- Petro Vend Fuel Control Systems Overview 266
- Petro Vend 100® 268-269
- FSC3000™ Fuel Site Controller..... 270-271
- Dispenser Terminal Control..... 272-273
- FIT500™ 274-275
- C/OPT™ 276-277
- K800™ Hybrid 278-279
- K800™ 280-281
- Phoenix® 282-283
- AFC™ 284-285
- Pulsers..... 285
- IP Authorization Gateway 286-287



Petro Vend 100® Fuel Control System

OPW Fuel Management Systems proudly introduces the Petro Vend 100® (PV100®) Fuel Control System – a stand-alone, pedestal-mounted system for small or mid-sized fleet-fueling sites that require one- or two-hose control.

The OPW Petro Vend 100® is the ideal solution for unattended fueling for small or mid-sized fleets. As a “turnkey system,” the unit is designed for quick and easy installation. It ships ready-to-use with 50 pre-configured users for immediate fueling access and requires only power, pulser and hose-control line connections in order to initiate system operation. The PV100® stores dispensed fuel amounts as card- and pump-specific totals, which can be viewed on the display or retrieved with an external USB flash drive.

Petro Vend 100® Fuel Control System Components



Features



Easy Installation



Convenient



Easy To Use



Savings

- ◆ Controls up to two hoses for mechanical pumps
- ◆ User selectable PINs, from three (3) to six (6) digits in length, allowing only authorized users to access fuel
- ◆ Hose-based quantity restrictions
- ◆ Dual, manual, pump override control enables pump relays and the recording of dispensed-fuel volumes during a specific time
- ◆ Monochrome graphic display
- ◆ Optional dual-head magnetic card reader
- ◆ Optional HID proximity key-fob reader
- ◆ Optional USB flash drive for transaction storage
- ◆ Allows you to adjust programming parameters, view card and pump totals, and transfer all data to a USB flash drive via Manager Card access in on-screen manager modes

Benefits

- ◆ Turnkey system with easy installation
- ◆ Cost effective for small to mid-sized fleet-fueling operations
- ◆ Field upgradable software
- ◆ Track and report fueling by card or pump totals (specific transaction data optional). See screen visuals on following page.
- ◆ Menu-driven configuration takes place at the terminal, eliminating the need for PC-required software
- ◆ Saves the expense of trenching and pulling wires for serial communications

Listings and Certifications



Electronic Testing Labs (ETL), per Underwriter Laboratories UL 1238
Electronic Testing Labs Canada (ETLC), per CSA C22.2

Mechanical Pump Control Specifications (PCM)

- ◆ Relay Contact Rating: 240 VAC; 20 A, 3.0 HP maximum
- ◆ "In-Use" Detection: Voltage Sense 120-240 VAC or Handle Switch
- ◆ Pulser Type: Single Channel
- ◆ Pulser Input: Mechanical (contact); Electronic (5-12 VDC)
- ◆ Pulser Divide Rate: 1:1 – 1000:1; 1 pulse increments
- ◆ Maximum Pulse Speed: (50% duty cycle) 6,000 Mechanical; 100,000 Electronic

Memory

- ◆ Standard memory allows tracking of up to 50 proprietary cards
- ◆ Expandable to 250 proprietary cards
- ◆ Stores virtually unlimited number of transactions on USB flash drive (optional)

Technical Specifications

Cabinet Dimensions [H x W x D]:
10.75 x 14.25 x 9.75 inches
(27.3 x 36.2 x 24.8 cm)

Pedestal Dimensions [H x W x D]:
48.0 x 14.0 x 9.0 inches
(122 x 36.0 x 23.0 cm)

Power Requirements: 115/230 VAC, 50/60 Hz, 200 watts maximum

Operating Temperature Range:
-40°F to 122°F (-40°C to 50°C)

Graphics display: 6.0 in (15.2 cm) monochrome

Painted steel enclosure and pedestal

Internal Pump Control: Standard for up to two (2) hoses for mechanical pump control

Card totals

	Pump 1	Pump 2	
0001	0.000	0.000	-100 →
0002	0.000	0.000	
0003	0.000	0.000	-10 →
0004	0.000	0.000	
0005	0.000	0.000	
0006	0.000	0.000	+10 →
0007	0.000	0.000	
0008	0.000	0.000	
0009	0.000	0.000	+100 →
0010	0.000	0.000	

Pump totals

Pump	Total	Totalizer
1	0.000	0.000
2	0.000	0.000

Press Clear to exit

FSC3000™ Fuel Site Controller

The FSC3000™ Fuel Site Controller sets the standard in fuel-management systems. The FSC3000™ is the most comprehensive solution for your fleet-fueling or petroleum-marketing applications, featuring the capability to conveniently track and report fueling transactions by driver and/or vehicle.

The FSC3000™ Fuel Site Controller interfaces with many authorization and commercial fueling networks, as well as proprietary network cards. It allows the user to set fueling restrictions that limit specific vehicles to the type of fuel used and quantities purchased, thereby assuring complete fueling-system security, accountability and control.

The FSC3000™ also provides various methods for controlling fuel dispensers, which may feature both mechanical and electronic pumps, along with Gilbarco CRIND and Wayne CAT in-dispenser card readers.

In addition, the FSC3000™ now offers several exciting new features for special pricing and dollar authorization. Fleet owners can now set price discounts for loyal customers, as well as authorize transactions according to dollar limit instead of quantity, providing better support for network card processing and daily or monthly allocations.

FSC3000™ Fuel Site Controller Components



Features



Secure



Communication



Easy To Connect



Easy Integration



Savings

- ◆ **NEW!** Each FSC3000™ can now control up to 12 FITs or Dispenser Terminal Controls (DTC) with a maximum of 32 hoses per site
- ◆ **NEW!** Optional Direct Pump Control communication via current loop or serial interface for Gilbarco, Wayne or Gasboy dispensers
- ◆ **NEW!** ChipKey® Read/Write Mileage Reasonability
- ◆ **NEW!** Optional Dispenser Terminal Control allows communication to Gilbarco CRINDs and Wayne CAT in-dispenser card readers
- ◆ **NEW!** Optional Tiered Discounts designed to provide support based on Gasboy-formatted cards
- ◆ **NEW!** Optional Tiered Accounts for credit cards and/or proprietary cards/keys to set tier pricing on a user-entered "Account" number
- ◆ **NEW!** Optional Wireless 3G modem, Bluetooth®, 802.11 WiFi communication devices allow communication to remote locations in order to facilitate updates and retrieval of transaction data
- ◆ Optional 900 MHz wireless communication reduces installation cost from installing Petro-Net™ twisted-pair wires between the Fuel Island Terminal and building
- ◆ **NEW!** Optional Future Media price-sign support
- ◆ Optional Office Journal Printer for transaction logging and reporting

**Listings and
Certifications**



NATIONAL COUNCIL OF
WEIGHTS AND MEASURES

Benefits

- ◆ PCI-compliance ensures cardholder data security
- ◆ Accepts the widest selection of fueling networks and major bank cards
- ◆ Memory to support larger card files (more than 64,000 cards with optional memory card expansion)
- ◆ Embedded hardware platform for ultimate 24/7 reliability
- ◆ Uses Flash technology to remotely download software updates
- ◆ Integrated FSC3000™ can be installed inside a Fuel Island Terminal for installations where no building is available
- ◆ Interfaces with OPW Tank Gauges for polling inventory and delivery data
- ◆ Built-in Ethernet port for network connectivity
- ◆ Multiple communication methods to access the system
- ◆ Standard USB memory key for transaction backup/transfer, allowing for the option to update card files

Memory

- ◆ Standard memory 2,000 proprietary cards and 500 transactions
- ◆ Expandable to 64,000 proprietary cards and 2,000 transactions
- ◆ **NEW!** The second memory card expands card support from 64,000 to 150,000 cards, depending on the options and card restrictions selected

Networks

- ◆ The FSC3000™ interfaces with many authorization and commercial fueling networks to accept the following cards:
 - CFN, Bank Cards, TCH, Fuelman®/GASCARD, Comdata, Fleet One®, Wright Express®, T-Chek™, EFS, Pacific Pride and Buypass
- ◆ Dual Network option reduces wait times by accessing two networks simultaneously
- ◆ The registered bankcard feature permits 24-hour fueling in areas where unattended fueling is generally restricted
- ◆ **NEW!** Optional IP Authorization Gateway, gives the FSC3000™ the capability to use a high-speed Internet connection instead of a dial-up phone line to authorize fleet and credit-card transactions with dial-up backup

Direct Pump Control

- ◆ Support for Gasboy, Wayne and Gilbarco dispensers
- ◆ Connects directly to pump manufacturer's distribution box
- ◆ Serial to current-loop communication (Gilbarco or Wayne)
- ◆ Serial to RS-485 communication (Gasboy)

FSC3000™ Specifications

Dimensions [H x W x D]: 2.25 x 10.0 x 8.25 inches (5.7 x 25.4 x 21.0 cm)

Power Requirements: 85-240 VAC, 50/60 Hz; 25 watts maximum

Operating Temperature Range (indoors): 32°F to 122°F (0°C to 50°C)

Serial Communication Ports:

Petro-Net™ (RS-485), Printer (RS-232), Terminal (RS-232), Modem (RS-232), Pass-through (RS-232), two (2) Auxiliary Ports (RS-232), Ethernet, USB

Maximum Petro-Net™ Distance:

5,000 ft (1,524 m)

Phoenix® Software

- ◆ Phoenix™ Plus – poll transactions, perform card updates, and run reports
- ◆ Phoenix™ Premier – all of the Phoenix™ Plus features, plus tank-gauge interface for reconciliation
- ◆ Phoenix® SQL – a Web-based multi-user browser interface with controlled user access. Polls transactions and tank gauges simultaneously, dramatically reducing data collection times for multiple fuel sites.

Dispenser Terminal Control (DTC) Fuel Control System

The Dispenser Terminal Control (DTC) System is an automated fuel-control system that allows communication to an in-dispenser card reader/terminal, which enables fleet owners to confidently manage and support fueling operations.

The Dispenser Terminal Control (DTC) system is the ideal solution for private fleet and cardlock fueling applications, with the ability to conveniently track and report fueling transactions by driver and vehicle. The DTC communicates with Gilbarco CRIND and Wayne CAT in-dispenser card readers/terminals, interfacing directly to the Gilbarco or Wayne Distribution Box to eliminate the need for conduit wiring between the fuel island and building. The in-dispenser card readers/terminals can also connect directly to the DTC interface when a distribution box is not available (up to four in-dispenser readers/terminals). In addition, the DTC interface connects to the FSC3000™ in order to emulate a fuel island terminal for each fueling position that is connected to the DTC system.

DTC Fuel Control System Components



Features



Easy Installation



Convenient

- ◆ Controls up to 12 in-dispenser card readers/terminals per system
- ◆ Supports Gilbarco CRIND and Wayne CAT in-dispenser card terminals
- ◆ Automatically prompts for receipts
- ◆ Connects to pump manufacturer's distribution box, eliminating the costs of installing additional conduit and wiring from the pump

FSC3000™ Fuel Site Controller Features

- ◆ PCI-compliance ensures cardholder data security
- ◆ Driver/Vehicle identification system
- ◆ **NEW!** Optional Future Media price-sign support
- ◆ **NEW!** Optional Tiered Discounts (supports Gasboy-formatted based cards)



Easy To Use



Savings

- ◆ **NEW!** Optional Tiered Accounts for credit cards and/or proprietary cards/keys to set tier pricing on a user-entered "Account" number
- ◆ Standard memory allows up to 2,000 proprietary cards and 500 transactions
- ◆ Expandable to 64,000 proprietary cards and 2,000 transactions
- ◆ The FSC3000™ interfaces with many authorization and commercial fueling networks to accept the following cards:
 - CFN, Bank Cards, TCH, Fuelman®/GASCARD, Comdata, Fleet One®, Wright Express®, T-Chek™, EFS, and Pacific Pride.
- ◆ Dual Network option reduces wait times by accessing two networks simultaneously

Listings and Certifications



Additional Features

- ◆ The registered bankcard feature permits 24-hour fueling in areas where unattended fueling is generally restricted
- ◆ **NEW!** Optional IP Authorization Gateway, gives the FSC3000™ the capability to use a high-speed Internet connection instead of a dial-up phone line to authorize fleet and credit-card transactions with dial-up backup

Phoenix® Software

- ◆ **Phoenix™ Plus** – poll transactions, perform card updates, run reports
- ◆ **Phoenix™ Premier** – all of the Phoenix™ Plus features, plus tank-gauge interface for reconciliation
- ◆ **Phoenix® SQL** – a Web-based, multi-user browser interface with controlled user access. Polls transactions and tank gauges simultaneously, dramatically reducing data collection times for multiple fuel sites.

Direct Pump Control

- ◆ Support for Wayne and Gilbarco dispensers
- ◆ Connects directly to pump manufacturer's distribution box
- ◆ Serial to current-loop communication (Gilbarco or Wayne)

DTC Specifications

Cabinet Dimensions [H x W x D]:

10.0 x 12.5 x 5.7 inches
(25.4 x 31.8 x 14.5 cm)

Power Requirements: 115/230 VAC;
50/60 Hz; 1.0/0.6 A

Operating Temperature Range:
-40°F to 122°F (-40°C to 50°C)

FSC3000™ Fuel Site Controller Specifications

Dimensions [H x W x D]:

2.25 x 10.0 x 8.25 inches
(5.7 x 25.4 x 21.0 cm)

Power Requirements: 85-240 VAC,
50/60 Hz; 25 watts maximum

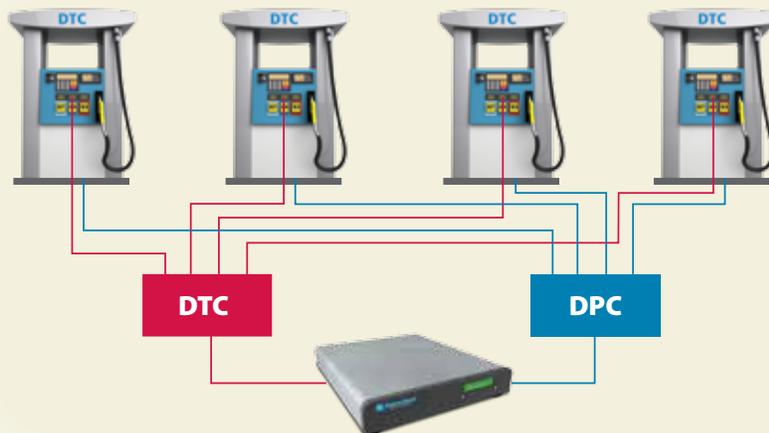
Operating Temperature Range (indoors): 32°F to 122°F (0°C to 50°C)

Serial Communication Ports:

Petro-Net™ (RS-485), Printer (RS-232), Terminal (RS-232), Modem (RS-232), Pass-through (RS-232), two (2) Auxiliary Ports (RS-232), Ethernet, USB

Maximum Petro-Net™ Distance:
5,000 ft (1,524 m)

DTC and DPC Interface Configurations



The FIT500™ System

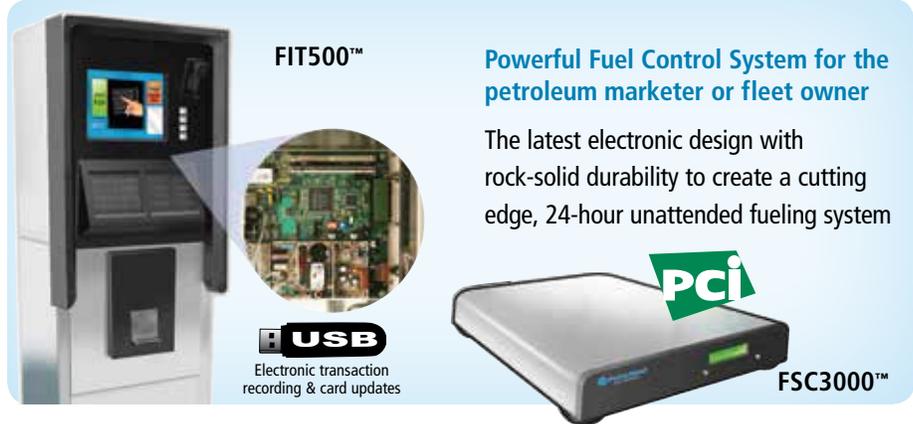
The FIT500™ system combines leading-edge technology with a futuristic look and solid stainless steel durability, creating an unequalled 24-hour fuel management system with the quality and reliability that Petro Vend is renowned for.

With the ability to add customizable screen images out at the fuel island, the FIT500™ is the ultimate fuel management system for advertising special promotions inside the store and for strengthening your brand identity.

Benefits

- ◆ Stainless steel enclosure for years of maintenance-free operation
- ◆ Dual-head card reader
- ◆ High-speed, auto-loading, thermal receipt printer with graphics capability
- ◆ Impressive 10.4 in (26.4 cm) graphics color display
- ◆ Add custom color graphics to your screen images with a simple USB memory key
- ◆ Metal alpha-numeric function key pads
- ◆ Supports a multitude of commercial fueling cards, truck fleet cards and major bank cards
- ◆ System is field-upgradeable so you can easily add network interfaces remotely
- ◆ Ideal for marine and ethanol fueling applications
- ◆ USB memory key for transaction backup/transfer and updating card files
- ◆ Optional dial-up or cell modem allows communication to remote locations
- ◆ Each FIT500™ can also be outfitted with 802.11 WiFi or Bluetooth® communication devices to facilitate updates and retrieval of transaction data

The FIT500™ System Components



Powerful Fuel Control System for the petroleum marketer or fleet owner

The latest electronic design with rock-solid durability to create a cutting edge, 24-hour unattended fueling system

FIT500™ Fuel Control System Features



Profitability

Accepts the widest selection of fueling network and major bank cards.



Customize

Customizable color screen images enhance your marketing programs and activities.



Easy Installation

Integrated FSC3000™ for installations where no building is available. USB key for transaction backup and card file updates.



Communication

Optional 900 MHz wireless communication between island and building. Cell modem, Bluetooth® and 802.11 WiFi communication also available.

- ◆ Easily create your own color graphic images and transfer them to the FIT500™ via USB memory key
- ◆ Change receipt paper without opening the FIT500™ enclosure
- ◆ Windows-based ARTWare™ PC software makes programming simple and provides system backup
- ◆ System management can be performed on-site or remotely via dial-up or cell modem, LAN/WAN or Bluetooth™ connection
- ◆ Remotely download software updates to the FSC3000™
- ◆ USB memory key for transaction data storage and card updates
- ◆ Pump and product totals automatically or on demand
- ◆ System and dual card (driver and vehicle) operation
- ◆ Cardless operation for either driver, vehicle or both
- ◆ Drivers and vehicles can be grouped into accounts for easier control of group restrictions, lockouts and reporting
- ◆ Daily and monthly credit allocations per card or account
- ◆ PCI-compliance via multi-tracking application PA-DSS (Payment Application Data Security Standard) for the FSC3000™ Fuel Site Controller
- ◆ ADA-compliant pedestal option available

Listings and Certifications



Networks

- ◆ The FIT500™ System interfaces with many authorization and commercial fueling networks to accept the following cards:
 - CFN – Fuelman/Gascard
 - Wright Express – Bank cards
 - Comdata – T-Chek
 - Voyager – FleetOne
 - EFS – TCH
- ◆ Dual network option reduces wait time by accessing two (2) networks simultaneously
- ◆ Registered bank card feature enables secure use credit cards even where unattended fuel may be restricted
- ◆ The FIT500™ System is field-upgradeable so you can easily add network interfaces to meet any needs

Memory

- ◆ Standard memory has 2,000 proprietary cards, and 500 transactions
- ◆ Expandable to 64,000 proprietary cards and 2,000 transactions

Pump Control Methods

- ◆ Pump Control Modules for Commercial Dispensers with mechanical registers
 - Mounted in Fuel Island Terminal for low-cost, convenient wiring
 - Mounted in remote cabinet
 - Pump Handle Monitor
 - Manual bypass for each dispenser
 - Four (4) adjustable fueling timers
 - Maximum fueling time
 - Maximum time to activate pump handle
 - Maximum time until first pulse
 - Maximum time between pulses
 - Counts in gallons or liters from thousandths to full units
 - Pump sentry provides protection from faulty pulsers

- ◆ Direct Pump Control communicates via serial link to the dispensers (optional)
 - Supports Wayne and Gilbarco protocols
 - Extremely simple installation
- ◆ Universal Pump Controller for operation with a pump controller (optional)
 - Interfaces with Wayne and Gilbarco protocols dispensers
 - Allows pumps to be controlled via the Fuel Island Terminal or retail pump console

Phoenix® Software

- ◆ Phoenix™ Plus – poll transactions, perform card updates, run reports
- ◆ Phoenix™ Premier – all of the Phoenix™ Plus features, plus tank gauge interface for reconciliation
- ◆ Phoenix® SQL – a Web-based multiuser browser interface with controlled user access. Polls transactions and tank gauges simultaneously, dramatically reducing data collection times for multiple fuel sites.

FIT500™ Fuel Island Terminal Specifications

Reader: Magnetic-stripe card with dual-read heads

Display: 10.4 in (nominal size), Active Matrix VGA Color Display

Receipt Printer: The high-resolution, thermal receipt printer has an integral cutter and large paper roll

Keypads: The keypads are durable and weather-resistant

Cabinet Dimensions [H x W x D]:
20.0 x 17.75 x 11.38 inches
(38.0 x 46.0 x 28.0 cm)

Pedestal Dimensions [H x W x D]:
42.0 x 17.75 x 9.0 inches
(122 x 36.0 x 20.0 cm)

Operating Temperature Range:
-40°F to 122°F (-40°C to 50°C)

Power Requirements: 120/240 VAC (auto detectable), 50/60 Hz; 250 watts max.

Pump Control Terminal Specifications

Relay Rating: 1 HP, 120/240 VAC

Pulsar Compatibility: Contact/12 VDC electronic

Pulsar Power Supply: 12 VDC; 40 mA max./pulsar

Pulsar Speed: 6,000 pulses/minute (mechanical)
100,000 pulses/minute (electronic)

Pulsar Rate: 1:1 to 9,999:1 (in one-pulse increments)

Pulsar Type: Single channel

Pulsar Duty Cycle: 50%

Operating Temperature Range:
-40°F to 122°F (-40°C to 50°C)

Cabinet Dimensions [H x W x D] of wall-mounted remote PCM: 11.5 x 12.0 x 6.5 inches (29.0 x 30.0 x 16.0 cm)

Power Requirements of Remote PCM: 85-240 VAC, 50/60 Hz; 25 watts max.

Operating Temperature Range of Remote PCM: -40°F to 122°F (-40°C to 50°C)

FSC3000™ Fuel Site Controller Specifications

Dimensions [H x W x D]:
2.25 x 10.0 x 8.25 inches
(5.7 x 25.4 x 21.0 cm)

Power Requirements: 85-240 VAC, 50/60 Hz; 25 watts max.

Operating Temperature Range (indoors): 32°F to 122°F (0°C to 50°C)

Serial Communication Ports: Petro-Net™ (RS-485), Printer (RS-232), Terminal (RS-232), Modem (RS-232), Pass-through (RS-232), two (2) Auxiliary Ports (RS-232), Tank Gauge, Ethernet, USB

Maximum Petro-Net™ Distance: 5,000 ft (1,524 m)

NOTE: See OPW Fuel Management Systems' website at www.opwglobal.com for detailed product literature, manuals and sales representative contact information for your area.

C/OPT™ Fuel Control System

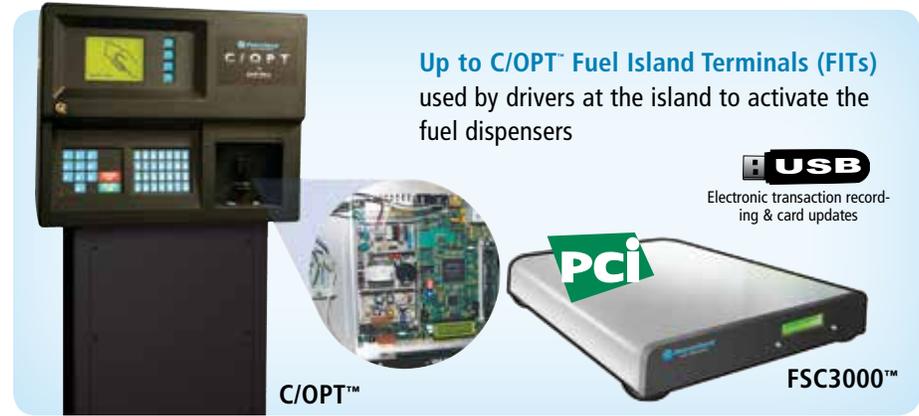
Now with the flexibility of having the FSC3000™ within the Fuel Island Terminal, as a stand-alone system, making this the best solution for your 24-hour fueling sites accepting commercial fleet or major bank cards.

With a wide variety of options available, Petro Vend's C/OPT™ System is one of the most comprehensive solutions for your fleet-fueling or petroleum marketing application.

Benefits

- ◆ Each FSC3000™ can control up to eight (8) FITs with a maximum of 32 hoses per site
- ◆ Graphics display guides users through the fueling process with pictures and text
- ◆ Accepts dual readers including magnetic, optical, proximity and ChipKey® for maximum flexibility and reliability
- ◆ Optional full alpha keypad allows entry of vehicle tags and other alpha information
- ◆ "Smart" weather shield automatically closes to protect card readers and receipt chute
- ◆ Fiber-optically lit keypads and LED backlit display for easy fueling at night
- ◆ Optional thermal receipt printer
- ◆ USB memory key for transaction backup/transfer and updating card files
- ◆ Optional dial-up or cell modem allows communication to remote locations
- ◆ Each C/OPT™ can also be outfitted with 802.11 WiFi or Bluetooth® communication devices to facilitate updates and retrieval of transaction data

C/OPT™ Fuel Control System Components



C/OPT™ Fuel Control System Features



Profitability

Accepts the widest selection of fueling network and major bank cards.



Easy To Use

Customizable prompts for driver clarity. ARTWare™ PC software makes configuration a snap.



Easy Installation

Integrated FSC3000™ for installations where no building is available. USB key for transaction backup and card file updates.



Communication

Optional 900 MHz wireless communication between the fuel island and building. Cell modem, Bluetooth® and 802.11 WiFi communication also available.

- ◆ PCI compliance via multi-tracking application PA-DSS (Payment Application Data Security Standard) for the FSC3000™ Fuel Site Controller
- ◆ USB memory key for transaction data storage and card updates
- ◆ Individual drivers and vehicles can be grouped into accounts for easier control of group restrictions and lockouts

Up to C/OPT™ Fuel Island Terminals (FITs) used by drivers at the island to activate the fuel dispensers



Electronic transaction recording & card updates



FSC3000™

- ◆ Daily and monthly credit allocations per card/key/account lets you set fueling restrictions
- ◆ Selectable automatic lockout after three incorrect PIN entries for added security
- ◆ Dual card accountability allows tracking and reporting on drivers using multiple vehicles
- ◆ Communication ports allow for journal printer, PC, serial pass-through port, modem and Petro-Net™ connection
- ◆ Wireless Petro-Net™ communication reduces installation costs
- ◆ Odometer reasonability checking ensures accurate odometer entries
- ◆ Nine-character "name field" makes card record reporting more complete
- ◆ Cardless/keyless access allows drivers to fuel using a quick keypad entry
- ◆ Office journal printer for transaction log and report

Networks

- ◆ The C/OPT™ System interfaces with many authorization and commercial fueling networks to accept the following cards:
 - CFN
 - T-Chek
 - Comdata
 - Voyager
 - EFS
 - Fuelman/Gascard
 - Bank cards
 - Pacific Pride
 - FleetOne
 - TCH
 - Wright Express

Listings and Certifications



Networks (continued)

- ◆ The registered bank card feature permits 24-hour fueling in areas where unattended fueling is generally restricted
- ◆ The C/OPT™ System is field-upgradeable so you can easily add network interfaces to meet any needs

Pump Control Methods

- ◆ Pump Control Modules for commercial dispensers with mechanical registers
 - Mounted in Fuel Island Terminal for low-cost, convenient wiring
 - Mounted in remote cabinet
 - Pump handle monitor
 - Manual bypass for each dispenser
 - Four adjustable fueling timers
 - Maximum fueling time
 - Maximum time to activate pump handle
 - Maximum time until first pulse
 - Maximum time between pulses
 - Counts in gallons or liters from thousandths to full units
 - Pump sentry provides protection from faulty pulsers
- ◆ Direct Pump Control communicates via serial link to the dispensers (optional)
 - Supports Wayne and Gilbarco protocols
 - Extremely simple installation
- ◆ Universal Pump Controller for operation with a pump controller (optional)
 - Interfaces with Wayne and Gilbarco dispensers
 - Allows pumps to be controlled via the Fuel Island Terminal or retail pump console

Memory

- ◆ Standard memory has 2,000 proprietary cards and 500 transactions
- ◆ Expandable to 64,000 proprietary cards and 2,000 transactions

Phoenix® Software

- ◆ Phoenix™ Plus – poll transactions, perform card updates, run reports

- ◆ Phoenix™ Premier – all of the Phoenix™ Plus features, plus tank gauge interface for reconciliation
- ◆ Phoenix® SQL – a Web-based multiuser browser interface with controlled user access. Polls transactions and tank gauges simultaneously, dramatically reducing data collection times for multiple fuel sites.

C/OPT™ Fuel Island Terminal Specifications

Readers: Magnetic-stripe card, optical card, ChipKey®, proximity reader

Displays: Standard graphics (3 x 4 inches; 320 x 240 pixels).

Receipt Printer (optional): The high-resolution, thermal receipt printer has an integral cutter and large paper roll

Keypads (standard and optional alpha): keypads are constructed of a UV-stable weather-resistant material over stainless steel contacts

Cabinet Dimensions [H x W x D]: 15.0 x 18.5 x 11.0 inches (38.0 x 46.0 x 28.0 cm)

Pedestal Dimensions [H x W x D]: 48.0 x 14.0 x 8.0 inches (122 x 36.0 x 20.0 cm)

Operating Temperature Range: -40°F to 122°F (-40°C to 50°C)

Power Requirements: 120/240 VAC (auto-detectable), 50/60 Hz; 250 watts max.

FSC3000™ Fuel Site Controller Specifications

Dimensions [H x W x D]: 2.25 x 10.0 x 8.25 inches (5.7 x 25.4 x 21.0 cm)

Power Requirements: 85-240 VAC, 50/60 Hz; 25 watts max.

Operating Temperature Range (indoors): 32°F to 122°F (0°C to 50°C)

Serial Communication Ports: Petro-Net™ (RS-485), Printer (RS-232), Terminal (RS-232), Modem (RS-232), Pass-through (RS-232), two (2) Auxiliary Ports (RS-232), Tank Gauge, Ethernet, USB

Maximum Petro-Net™ Distance: 5,000 ft (1,524 m)

Pump Control Terminal Specifications

Relay Rating: 1 HP, 120/240 VAC

Pulsar Compatibility: Contact/12 VDC electronic

Pulsar Power Supply: 12 VDC; 40 milliamps max./pulsar

Pulsar Speed: 6,000 pulses/minute (mechanical) 100,000 pulses/minute (electronic)

Pulsar Rate: 1:1 to 9,999:1 (in one-pulse increments)

Pulsar Type: Single channel

Pulsar Duty Cycle: 50%

Operating Temperature Range: -40°F to 122°F (-40°C to 50°C)

Cabinet Dimensions [H x W x D] of wall-mounted remote PCM: 11.5 x 12.0 x 6.5 inches (29.0 x 30.0 x 16.0 cm)

Power Requirements for Remote PCM: 85-240 VAC, 50/60 Hz; 25 watts max.

Operating Temperature Range of Remote PCM: -40°F to 122°F (-40°C to 50°C)



The rugged, tamper-resistant ChipKey® is a popular alternative to cards. It fits easily onto a customer's key ring, so it's convenient and hard to lose. Every ChipKey® contains a microchip that can be programmed and reprogrammed as many times as you like.



With the proximity reader option installed in your C/OPT™ Fuel Island Terminal, fueling access is either granted or denied when a cardholder waves their proximity card within a few inches of the reader.

NOTE: See OPW Fuel Management Systems' website at www.opwglobal.com for detailed product literature, manuals and sales representative contact information for your area.

K800™ Hybrid Fuel Control System

Now with the flexibility of having the fuel site controller within the Fuel Island Terminal as a standalone system for sites that require outdoor installations, or as a separate unit indoors.

Whether operating a small fleet with a single fuel site or a large fleet with multiple sites, the Petro Vend K800™ Hybrid Fuel Control System can help you improve the management of your unattended fueling operations by controlling one of your biggest assets and expenses – your fuel.

Benefits

- ◆ Ideal for small private fleets needing a low-cost fuel management solution
- ◆ Each Island Terminal controls up to four (4) mechanical dispensers
- ◆ Each FSC3000™ can control up to eight (8) FITs with a maximum of 32 hoses per site
- ◆ Backlit LCD provides enhanced visibility in bright sunlight and at night
- ◆ Programmable prompts to guide drivers through the fueling process
- ◆ Durable metal keypad, 16-gauge steel enclosure and thermostatically controlled heater for reliable operation in the harshest environments
- ◆ Downloadable software for easy system upgrades
- ◆ USB memory key for transaction backup/transfer and updating card files
- ◆ Optional dial-up or cell modem allows communication to remote locations
- ◆ Each K800™ Hybrid can also be outfitted with 802.11 WiFi or Bluetooth® communication devices to facilitate updates and retrieval of transaction data

K800™ Hybrid Fuel Control System Components



Easy to install, use and maintain, the K800™ Hybrid Fuel Control System is ideal for small private fleets needing a low cost fuel management solution.



K800™ Hybrid Fuel Control System Features



Savings

Ideal for small private fleets needing a low-cost fuel management system.



Easy-to-Use

Customizable prompts for driver clarity. ARTWare™ PC software makes configuration a snap.



Easy Installation

Integrated FSC3000™ for installations where no building is available. USB key for transaction backup and card file updates.



Communication

Optional 900 MHz wireless communication between the fuel island and building. Cell modem, Bluetooth® and 802.11 WiFi communication also available.

- ◆ PCI compliance via multi-tracking application PA-DSS (Payment Application Data Security Standard) for the FSC3000™ Fuel Site Controller
- ◆ Windows-based ARTWare™ PC software makes programming simple and provides system backup
- ◆ System management easily performed on-site or remotely via dial-up, cell phone modem, LAN/WAN, or Bluetooth™
- ◆ Pump and product totals automatically or on demand
- ◆ System can be set to track the mechanical pump totalizers
- ◆ Daily and monthly allocation amounts
- ◆ 16 quantity restriction levels
- ◆ 16 product restriction combinations
- ◆ Odometer or hour meter recording
- ◆ User can be prompted to enter miscellaneous data of up to ten (10) digits (job, vehicle, driver ID, etc.)
- ◆ Single or dual card/key/cardless entry operation (driver/vehicle number)
- ◆ Cards can be assigned to accounts or departments
- ◆ Card/key/account lockout
- ◆ Programmable K800™ Fuel Island Terminal displays messages and user prompts
- ◆ A price may be assigned to each product to be recorded for each transaction
- ◆ Standard system utilizes magnetic cards
- ◆ ChipKey® mileage and reasonability assures accurate mileage entry
- ◆ Optional proximity card reader

Listings and Certifications



Intertek

Additional Features

- ◆ Programmable system open/close times
- ◆ Password protection for ultimate security
- ◆ Self-test and diagnostic utilities for start-up and troubleshooting
- ◆ Office journal printer for transaction logging
- ◆ USB key for transaction information backup and card updates
- ◆ Optional Bluetooth™ or cell modem communication for remote sites
- ◆ Optional 900 MHz wireless communication between island and building
- ◆ Able to process commercial fueling cards such as WEX, Voyager and others

Memory

- ◆ Standard memory has 2,000 proprietary cards, and 500 transactions
- ◆ Expandable to 64,000 proprietary cards, and 2,000 transactions

Pump Control Methods

- ◆ Pump Control Modules for commercial dispensers with mechanical registers
 - Mounted in Fuel Island Terminal for low-cost, convenient wiring
 - Mounted in remote cabinet
 - Pump handle monitor
 - Manual bypass for each dispenser

- Four (4) adjustable fueling timers
 - Maximum fueling time
 - Maximum time to activate pump handle
 - Maximum time until first pulse
 - Maximum time between pulses
- Counts in gallons or liters from thousandths to full units
- Pump sentry provides protection from faulty pulsers
- ◆ Direct Pump Control communicates via serial link to the dispensers (optional)
 - Supports Wayne and Gilbarco protocols
 - Extremely simple installation
- ◆ Universal Pump Controller for operation with a pump controller (optional)
 - Interfaces with Wayne and Gilbarco dispensers
 - Allows pumps to be controlled via the Fuel Island Terminal or retail pump console

FSC3000™ Fuel Site Controller Specifications

Dimensions [H x W x D]: 2.25 x 10.0 x 8.25 inches (5.7 x 25.4 x 21.0 cm)

Power Requirements: 85-240 VAC, 50/60 Hz; 25 watts max.

Operating Temperature Range (indoors): 32°F to 122°F (0°C to 50°C)

Serial Communication Ports: Petro-Net™ (RS-485), Printer (RS-232), Terminal (RS-232), Modem (RS-232), Pass-through (RS-232), two (2) Auxiliary Ports (RS-232), Tank Gauge, Ethernet, USB

Maximum Petro-Net Distance: 5,000 ft (1,524 m)

Phoenix® Software

- ◆ Phoenix™ Plus – poll transactions, perform card updates, run reports
- ◆ Phoenix™ Premier – all of the Phoenix™ Plus features, plus tank gauge interface for reconciliation
- ◆ Phoenix® SQL – a Web-based multiuser browser interface with controlled user access. Polls transactions and tank gauges simultaneously, dramatically reducing data collection times for multiple fuel sites.

K800™ Hybrid Fuel Island Terminal Specifications

Readers (any one of the following):

- Magnetic-stripe card
- ChipKey®
- HID proximity card/key (optional)

Display: Two-line x 16-character backlit LCD

Enclosure Dimensions [H x W x D]: 12.0 x 13.0 x 10.0 inches (30.5 x 33.0 x 25.5 cm)

Power Requirements: 120/230 VAC; 50-60 Hz; 100 watts max.

Operating Temperature: -40°F to 122°F (-40°C to 50°C)

Pump Control Terminal Specifications

Relay Rating: 1 HP, 120/240 VAC

Pulsar Compatibility: Contact/12 VDC electronic

Pulsar Power Supply: 12 VDC; 40 mA max./pulsar

Pulsar Speed: 6,000 pulses/minute (mechanical)
100,000 pulses/minute (electronic)

Pulsar Rate: 1:1 to 1,000:1 (in 1-pulse increments)

Pulsar Type: Single channel

Pulsar Duty Cycle: 50%

Operating Temperature Range: -40°F to 122°F (-40°C to 50°C)

NOTE: See OPW Fuel Management Systems' website at www.opwglobal.com for detailed product literature, manuals and sales representative contact information for your area.

K800™ Fuel Control System

Be in control of your unattended fueling operation with Petro Vend's K800™ Fuel Control System. The K800™ provides you with the tools you need to manage your fuel expenses. Fuel access is restricted to authorized users, and set to the fuel type and quantity you specify. Every transaction is tracked, giving you the security and accountability your unattended fueling operation needs.

K800™ System Components

Fuel Site Controller (FSC) the hub of the system - stores transactions and connects peripherals

Up to four (4) K800™ Fuel Island Terminals (FIT) used by drivers at the island to activate the fuel dispensers

K800™ FIT



K800™ FIT Features

- ◆ Backlit LCD for visibility in bright sunlight or at night
- ◆ Programmable prompts to guide drivers through the fueling process
- ◆ Durable alloy keypad, 16-gauge steel enclosure and thermostatically-controlled heater for reliable operation in the harshest environments
- ◆ High-impact plastic door overlay and powder-coated enclosure and matching pedestal maintain their appearance for years to come
- ◆ Built-in diagnostics for simplified troubleshooting
- ◆ Built-in pulser power supply, pump control and pre-punched conduit access for easy installation
- ◆ Can be activated either by card (optical or magnetic-stripe), ChipKey® or code activated
- ◆ Manual bypass switch for each hose
- ◆ Four (4) adjustable fueling timers per hose position

K800™ FSC Features

- ◆ Controls up to four (4) Fuel Island Terminals and 16 hoses simultaneously to meet your needs today and tomorrow
- ◆ Up to 10,000 cards and 1,800 transactions can be stored in memory
- ◆ Menu-driven programming with on-screen help for ease of use
- ◆ Serial communication ports for printer, PC and modem
- ◆ Desktop controller can also be conveniently wall-mounted
- ◆ Easily interfaces to existing personal computers
- ◆ Dual card accountability allows tracking and reporting on drivers using multiple vehicles
- ◆ Cardless/keyless access allows drivers to fuel using a quick keypad entry
- ◆ ChipKey® mileage reasonability option ensures accuracy of odometer entries
- ◆ Lock-out any key or card
- ◆ Provides basic inventory tracking
- ◆ Wireless Petro-Net™ communication reduces installation costs
- ◆ Provides four (4) levels of authorized time access

Listings and Certifications



Additional Features

- ◆ Restricts product and quantity for any key, card or account
- ◆ Restricts number of transactions per day for any key or card
- ◆ Adjustable pump time-outs
- ◆ Pump handle monitor and pulser sentry
- ◆ Diagnostic test programs for system start-up and troubleshooting
- ◆ Standard report package groups cards together by account and provides itemized reports including MPG, CPM and price extensions
- ◆ Personal Identification Number (PIN) entry with auto-lockout
- ◆ Inventory, pump and product total reports

K800™ Fuel Island Terminal Specifications

Readers: Magnetic-stripe card, ChipKey®

Display: Backlit LCD (two lines x 16 characters)

Keypad: Durable alloy keypad

Cabinet Dimensions [H x W x D]: 12.0 x 13.0 x 10.0 inches (30.5 x 33.0 x 25.5 cm)

Pedestal Dimensions [H x W x D]: 48.0 x 14.0 x 8.0 inches (122 x 36.0 x 20.0 cm)

Operating Temperature Range:
- 40°F to 122°F (- 40°C to 50°C)

Power Requirements: 120/230 VAC,
50/60 Hz; 100 watts max.

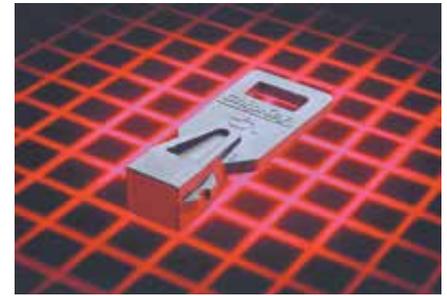
K800™ Fuel Site Controller Specifications

Cabinet Dimensions [H x W x D]: 2.0 x 9.0 x 11.0 inches (5.0 x 23.0 x 28.0 cm)

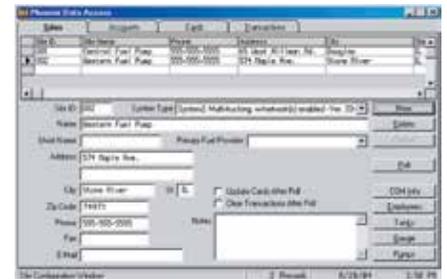
Operating Temperature Range: 32°F to 122°F (0°C to 50°C)

Power Requirements: 120/230 VAC,
50-60 Hz; 50 watts max.

Maximum Petro-Net™ Distance:
5,000 ft (1,524 m)



The rugged, tamper-resistant ChipKey® is a popular alternative to cards. It fits easily onto a customer's key ring, so it's convenient and hard to lose. Every ChipKey® contains a microchip that can be programmed and reprogrammed as many times as you like.



Phoenix™ Plus and Phoenix™ Premier are powerful fuel management software packages for your Windows®-compatible PC (see page 282 for detailed information).

NOTE: See OPW Fuel Management Systems' website at www.opwglobal.com for detailed product literature, manuals and sales representative contact information for your area.

Phoenix® Software For Advanced Management

Phoenix® SQL, Phoenix™ Premier and Phoenix™ Plus are powerful fuel management software packages for your C/OPT™ and FIT500™ Fuel Management Systems and your Windows®-compatible PC. The intuitive user interface lets you easily navigate between site, account, card and transaction screens.

Phoenix® SQL offers complete site reconciliation on a browser-based system operating over a server and the content is delivered to users via their browser. Phoenix® SQL is also designed to poll multiple TCP/IP based fuel control systems and tank gauges simultaneously, dramatically reducing data collection times for multiple fuel sites.

Phoenix™ Premier offers complete site reconciliation by incorporating additional site data from your OPW tank gauge or other brand of tank gauge. Most data can be exported to a third-party database, spreadsheet and fleet maintenance programs for further processing.

Phoenix™ Plus is a powerful data management and communications software package that gives you total, centralized control over your fueling operations, featuring back-up and restore, terminal emulation and on-demand or automatic transaction polling, plus reporting capability.

Phoenix® Components

A K800™, K800™ Hybrid, C/OPT™ or FIT500™ System

A Windows® PC with 1.5 GHz or higher processor speed running Windows XP®, 2003 Server, Vista, Windows® 7 and 8, 1 GB RAM, CD-ROM drive, 250 MB hard disk space and a 800 x 600 display



Phoenix® SQL Features

- ◆ Browser enabled; supported browsers include Internet Explorer 7 & 8, Mozilla Firefox 3.5 & 3.6
- ◆ Server-based and SQL-enabled
- ◆ Provides simultaneous multi-user access
- ◆ Centralized card database for multiple sites
- ◆ Provides communications through modem, Ethernet or direct connection
- ◆ Compatible with Windows® XP, Vista, and Windows® 7 and Windows® 8 (32/64-bit); Windows Server 2003 (32/64-bit), 2008 R2 (64-bit) and 2012
- ◆ Export transactions in Excel, CSV and XML
- ◆ Multi-level access and security features
- ◆ Allows for the creation of "Fuel Zones" to limit where fleet cards can fuel

Phoenix™ Premier Features

- ◆ Polls Petro Vend FSC3000™/System2™ for site, account, card, and transaction data, and OPW tank gauges (or other brands of automatic tank gauges) for real-time fuel inventory information for reconciling a site's fueling activities
- ◆ Ideal for owners of multiple fuel sites who want to integrate the management of their facilities into one centralized computer
- ◆ Based on Phoenix™ Plus software package, and includes full-featured back-up and restore, automatic and on-demand transaction polling, card management, and over 60 reports
- ◆ Runs on a Windows® PC – compatible with Windows XP® or Windows Vista®
- ◆ Provides communication through modem, Ethernet, or direct connection
- ◆ Eliminates the need for two (2) separate lines and modems when polling via phone lines
- ◆ Automatic and on-demand transaction polling enhances ease of reporting reconciliation information
- ◆ Centralized card database for multiple sites (FSC3000™ and System2™ version only)

AFC™ Fuel Control System

With the AFC™ Fuel Control System managing your fleet, you'll never have to wonder when vehicle maintenance is due, who gets which fuel type, where your fuel goes, or how to keep track of your vehicles.

This turn-key fuel control system for small to mid-size fleets is easy to use and set up. The AFC's™ durable, weather-resistant stainless-steel construction ensures years of uninterrupted service. And because it's modular, maintenance can be accomplished quickly, reducing downtime and operating costs.

AFC™ System Components

One Stand-Alone AFC™ Terminal can control from 2 to 8 hoses.



AFC™ Features

- ◆ Durable stainless-steel enclosure and pedestal
- ◆ System configuration via remote PC
- ◆ Track declining tank inventory, with low-level alert and programmable pump deactivation levels
- ◆ Access the AFC™ with the traditional magnetic card, system keypad or the durable DuraKey™
- ◆ Capacity:
 - 255 departments
 - 16 fuel types
 - Up to eight (8) fueling positions
 - 999 stored transactions
 - Two (2), four (4), six (6) and eight (8) hose capacity
 - 10,000 card/DuraKey™ capacity
- ◆ Fleet management features include:
 - Odometer reasonability
 - Vehicle classification
 - Maintenance alerts and lockout
 - Fueling restriction by fuel type/quantity
 - Taxable and nontaxable fuel totals
 - Programmable user prompts
- ◆ Lithium battery protects stored transaction data during power losses
- ◆ Weather shields guard card/DuraKey™ reader ensuring uninterrupted operation in the most inclement weather
- ◆ Standard display heater ensures normal operation in cold temperatures
- ◆ Selectable maximum fuel by fueling position
- ◆ Selectable automatic shift change
- ◆ Deactivation on pulser failure
- ◆ Department discounts
- ◆ Fuel management features include:
 - Fuel type and assignment report
 - Fuel type pricing
 - Security against product theft
 - Totals by fuel type and fuel position
 - Totals by shift
 - Grand totals
 - Running totals
- ◆ Automatically keeps track of all transactions by vehicle, driver and department, eliminating manual record keeping
- ◆ Accumulates information on card/DuraKey™ numbers, date and time of access, hose number, and amount fueled

Listings and Certifications



Additional AFC™ Features

- ◆ Provides comprehensive reports for critical fuel management decisions
- ◆ Administrator PC software is used to program vehicles, drivers, personal identification numbers, limits, etc.
- ◆ ASCII utility exports data to third-party software packages
- ◆ Historical totalizer readings provide data for inventory reconciliation
- ◆ Pre-punched conduit termination panel simplifies installation
- ◆ Field wiring terminals are clearly marked and easily accessible in the spacious enclosure
- ◆ Modular design makes servicing the AFC™ easy
- ◆ Fewer cable connections minimize maintenance and decrease service time
- ◆ Manual override switches allow you to bypass the card system if the unit is not operational

AFC™ Specifications

Readers: Magnetic-stripe card, DuraKey™

Display: Four (4) line, 20-character backlit display

Cabinet Dimensions [H x D x W]: 10.0 x 12.0 x 20.0 inches (25.0 x 30.0 x 51.0 cm)

Operating Temperature Range: -40°F to 158°F (-40°C to 70°C)

Input Power: 120/240 VAC, 50/60 Hz, 100 watts

Output Relay Rating:
Motor Duty: 1 HP @ 120 VAC;
3 HP @ 240 VAC

Pulser Supply: 12 VDC, 2.5 W max.

Pulsers

Petro Vend Fuel Control Systems offer a complete family of pulsers to meet your fuel management needs.

Model 500 Features

- ◆ Main shaft and shaft extensions are machined from solid aluminum
- ◆ Intrinsically safe
- ◆ No conduit required between barrier and pulser head
- ◆ Will pulse any voltage 5 to 170 volts AC or DC
- ◆ Compatible with most self-service readout equipment, card and key systems
- ◆ Jumpers used to set pulser for type of pump computer being used
- ◆ Available in 12 VDC, 120 VAC and 220 VAC
- ◆ Pulses in tenths, hundredths, or cents depending on installation



Model 800-F Features

- ◆ No conduit required between barrier and optical head
- ◆ Will pulse any voltage 5 to 170 volts AC or DC
- ◆ Compatible with Fill-Rite 800/900 Series Registers
- ◆ Available in 12 VDC, 120 VAC and 220 VAC
- ◆ Pulses in tenths (1/10)



Model 50 Features

- ◆ Will pulse any voltage 5 to 170 volts AC or DC
- ◆ Compatible with Gasboy 50 Series Register
- ◆ Available in 120 VAC
- ◆ Pulses in tenths (1/10)



NOTE: See OPW Fuel Management Systems' website at www.opwglobal.com for detailed product literature, manuals and sales representative contact information for your area.

IP Authorization Gateway

The OPW Petro Vend IP Authorization Gateway, when used with its FSC3000™ Fuel Site Controller, gives the FSC3000™ the capability to use a high-speed Internet connection instead of a dial-up phone line to authorize fleet and credit card transactions, creating a better on-site experience for customers with faster transaction approval times.

The IP Authorization Gateway gives fleet owners and retailers the capability to deploy the FSC3000™ over a high-speed IP connection. Compared to phone lines that transmit at only 24 Kbps, IP networks transmit at 100 Mbps, delivering faster, more reliable transactions. The IP Authorization Gateway creates a secure outbound IP connection for card authorizations while allowing for inbound communications to the fuel control system. Unlike other converter devices, the IP Authorization Gateway is certified to communicate with OPW standard card authorization networks, including Paymentech™, NBS, CFN, T-Chek™, TCH, Intevacon, Fuelman® and Bypass.

What is PCI Compliance?

Six leading members of the Payment Card Industry created a joint venture in 2006 to develop, manage and make users aware of security standards aimed at merchants and organizations that store, process or transmit cardholder data as part of payment authorization or settlement when these applications are sold, distributed or licensed to third parties.

IP Authorization Gateway System Components



Features



Convenience

IP Gateway ships pre-configured for Plug & Play installation.



Secure

PCI compliance ensures cardholder data security by restricting user access to sensitive data.



Connectivity

Uses an Internet connection instead of a dial-up phone line to authorize fleet and credit card transactions.



Savings

Gives fleet owners and retailers the capability to deploy the FSC3000™ over a high-speed IP connection.

- ◆ Faster card authorization transaction times
- ◆ Ships pre-configured for "plug and play installation"
- ◆ PCI-compliance ensures cardholder data security
- ◆ Dial-up back-up port activates automatically for uninterrupted processing
- ◆ Reliable IP connection eliminates dropped calls, ghosting and lost authorizations
- ◆ Saves money by eliminating a phone line
- ◆ Longest warranty in the industry – five (5) years offered by Abierto Networks (includes 12-month warranty offered by OPW after installation)
- ◆ Tested and approved for use with the OPW Petro Vend FSC3000™ and System2™ Fuel Site Controller (Please note: System2™ is not PCI-compliant)
- ◆ 3G Cellular options available for wireless-cellular coverage for inbound-only communications or one-way outbound

NOTE: See OPW Fuel Management Systems' website at www.opwglobal.com for detailed product literature, manuals and sales representative contact information for your area..

Ordering Specifications

Part#	Description
20-6000	Fleet Card Model – Configured for CFN, TCH, T-Chek™
20-6001	NBS Model – Configured for NBS Credit and supported fleet cards
20-6002	Paymentech™ Model – Configured for Paymentech™ and supported fleet cards
20-6003	IP Converter for Bypass
20-6005	3G Cellular IP Converter for CFN, TCH and T-Chek™
20-6006	3G Cellular IP Converter for NBS
20-6007	3G Cellular IP Converter for Paymentech
20-6008	3G Cellular IP Converter for Bypass
20-6009	3G Inbound-only IP Converter - AT&T Version
20-6010	3G Inbound-only IP Converter - Verizon Version

Features of the FSC3000™

- ◆ Stores transaction data and vehicle records, including fueling restriction data
- ◆ Stores thousands of proprietary cards and transactions, so even the largest operations have room to expand
- ◆ Programming is done right from a PC and simple menu choices guide users through setup and daily operations
- ◆ Software is compliant with Visa U.S.A. Payment Application Best Practices (PABP)/Payment Card Industry Payment Application Data Security Standard (PCI PA-DSS) guidelines by restricting user access to sensitive cardholder data
- ◆ Allows for mobile broadband Internet connections

Converts FSC3000™ to High-Speed For Inbound and Outbound Communications

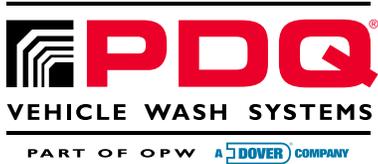


IP Authorization Gateway is certified to communicate with OPW standard card authorization networks, including:

- Paymentech™
- NBS
- CFN
- T-Chek™
- TCH
- Intevacon
- Fuelman®
- Bypass

PDQ Vehicle Wash Systems

Helping to Make Car Wash Operators Successful Since 1984



For the past 30 years, PDQ has provided the car wash industry with cutting-edge technological advances in car wash equipment and car wash systems, including the first contouring arch and the Virtual Treadle.

PDQ has always been recognized as the world-leading manufacturer of touch-free car wash equipment with one of the most powerful names in the industry – LaserWash®.

That same energy and passion that we bring to the touch-free industry is being unleashed onto the friction market with our ProTouch® line of in-bay automatic brush equipment.



Touch-free Car Wash Equipment

- LaserWash® 360 289
- LaserWash® AutoXpress 289
- LaserWash® G5 S-Series 289

Friction Car Wash Equipment

- ProTouch® ICON 290
- ProTouch® Tandem 290

OverGlow

- OverGlow Hi-Gloss Application System..... 291

Entry Pay Stations

- Access Series 292

**LaserWash® 360
with OverGlow
Hi-Gloss Application
System**



LaserWash® Series

LaserWash® 360

◆ The newest LaserWash® in-bay automatic car wash raises the standard for touchfree car wash equipment. With Revenue Enhancement and Total Cost of Ownership improvements being the main focus, this vehicle wash system delivers the industry's best Return on Investment. Smart 360™ Technology enables the car wash system to be responsive to the dynamic conditions in the wash bay, increasing up-time and optimizing the wash process.

Substantially faster wash speeds lead to increases in vehicle throughput and shorter lines that will make your customers happy. Simplified machine design and lower energy and utility usages reduce operating costs leading to a more profitable car wash operation.

LaserWash® AutoXpress

◆ With the introduction of our new LaserWash® AutoXpress, PDQ offers an affordable automatic car wash designed exclusively for the auto dealer market incorporating the most advanced touch-free technology. The LaserWash® AutoXpress provides you and your customers with quick, exceptional cleaning that is unsurpassed by any other touch-free wash in the auto dealer industry.

LaserWash® G5 S-Series

◆ The LaserWash G5-S Series' energy-efficient design is environmentally friendly in terms of water and chemical consumption, and electrical demand providing a low cost and efficient wash. High-pressure wash cycles use less water due to a single pump system with an advanced zero-degree rotating nozzle design. Solutions are applied in one pass within an electronically measured and precisely controlled wash envelope that requires no purging of solutions, resulting in lower consumption. In addition, fast and efficient wash cycles significantly reduce electrical costs. The G5-S was ultimately designed to increase your bottom line!

Touch-free Car Wash Equipment

With more than 10,000 LaserWashes shipped worldwide, PDQ Manufacturing, Inc., takes great pride in being the leader in the touch-free in-bay automatic vehicle wash industry. We are dedicated to providing wash operators with the most innovative equipment that exemplifies our tradition of **Performance, Dependability and Quality.**

Friction Car Wash Equipment

The PDQ ProTouch Series just became the most formidable force in the friction in-bay automatic car wash industry, by offering two exceptional models: The ProTouch Tandem and ProTouch ICON.

To learn more,
visit our website at:
www.pdqinc.com

ProTouch® ICON



ProTouch® ICON

The PDQ ProTouch Series just became a more formidable force in the **friction in-bay automatic car wash** industry. With the introduction of the ProTouch ICON, PDQ is now capable of offering another option to meet all of your soft-touch in-bay automatic needs. The ProTouch ICON is a new **three-brush gantry-style system** that offers superior aesthetics, a larger wash envelope, next generation brush control precision, amazing illumination packages and revenue generating features that are synonymous with all PDQ car wash equipment.

Features

- ◆ ProGlow Illumination Effect System
- ◆ ProFlow Pressurized Fluid System
- ◆ ProFlow High Pressure Pump System
- ◆ ProLoad Vehicle Loading System
- ◆ Touch/Touchless Bi-directional Wheel Scrubs
- ◆ Swing Air Oscillating Drying System

ProTouch® Tandem

ProTouch® Tandem. This superior wash system **incorporates both high pressure and friction**, giving operators who prefer the "clean" produced by friction systems a superior choice. The ProTouch Tandem's full-body detergent coverage and **simplified two brush engineering** provides consistent cleaning performance with minimal brush contact. The ProTouch Tandem **touches the vehicle up to 70% less** than five brush car wash systems on the market today.



Features

- ◆ Open Bay design
- ◆ Remote Monitoring and Configuration
- ◆ Exceptional Cleaning
- ◆ Low Maintenance Costs
- ◆ Energy-Efficient Design
- ◆ Low Water and Chemical Consumption
- ◆ Local Distributor Support
- ◆ 24/7 PDQ Technical Service Support
- ◆ Custom Friendly Virtual Treadle

ProTouch® Tandem

Turn your wash into a Glowing Success

The OverGlow Hi-Gloss Application System is available on new orders and as retrofit kits for existing PDQ equipment.



OverGlow
Shown with the LaserWash® 360



System Includes:

- ◆ Application Manifold and Deflector Shield
- ◆ Pump Station Components
- ◆ Strategically Located Bright LED Lights



ProGlow
Shown with the ProTouch Tandem



LaserGlow
Shown with the LaserWash® 360

OverGlow Hi-Gloss Application System

Turn your wash into a glowing success! Put the shine back into your profits with the all new OverGlow Hi-Gloss Application System by PDQ. Not only will your customers love their shiny vehicles, you will love the extra revenue and increased profits. Available now for the LaserWash and ProTouch product lines.

To learn more,
visit our website at:
www.pdqinc.com

LaserGlow and ProGlow Illumination Effect System

Get Your Wash Noticed... Not only will the LaserGlow System assist in loading, it can also be configured to work for you 24/7/365 by illuminating your wash bay day and night whether there is a vehicle in your bay or not. The system can be programmed to display multiple color combinations of flashing patterns, or constant colored illumination that matches your brand image. A glow from your wash bay can be a highly effective marketing tool to draw more attention to your wash site, encouraging consumers to take notice and keep your existing customers coming back again and again.

Access® Entry Stations

Only Access® offers a family of wash activation systems that meets every operator's needs. Every model includes a user-friendly interface, POS options, credit card processing, full reporting capability, Wash Access Loyalty System (WALS), simple interface with Access gate and loader system, and remote programmability.

Access is a powerful wash activation system that offers complete site integration, marketing flexibility and multiple payment options. No other system offers the same level of security and built-in payment flexibility. The Access Wash Activation System delivers the high quality you have come to expect from PDQ.

- ◆ Industry's Most Secure Vault
- ◆ Accepts Cash, Credit Cards, Loyalty Cards, Codes, & Tokens
- ◆ Dispenses Change in \$1 Bills
- ◆ Customer Loyalty System option
- ◆ RFID System option
- ◆ Built-in Web Interface for Updating, Reporting & Monitoring

Features

- ◆ **Easy-to-Read, Easy-to-Hear, Easy-to-Use** – The ergonomic design of our Access entry unit includes a user-friendly layout featuring large buttons, high-quality audio prompts and easy-to-read screens. Instructions are clear and concise.
- ◆ **The Best Security on the Market** – Access is equipped with a number of standard security features. The S-Series includes a built-in heavy-duty, patented combination-locked audible vault, and every Access features an alarm with an open door sensor that automatically emails the wash owner when the door is opened.
- ◆ **Remote Communications and Real-Time Monitoring** – Wash operators can update the Access system, monitor transactions, and gather detailed reports on technical and financial information - all from a remote location.
- ◆ **Greater Marketing Flexibility** Wash owners can customize the Access decals, sign topper, screens, and audio to add their own unique advertisements or marketing messages. Add the optional PayGlow Illuminated Payment System to further enhance the marketing capabilities of Access.

- ◆ **Complete Site Integration** – Access is the only wash entry system that is completely integrated with the car wash system. Two-way communication between the entry unit and select LaserWash products is accomplished using a single network cable (easy installation, no more bundles of wire). The system integrates into PDQ's Simplified Site Network that allows all connected devices to share communications.
- ◆ **Easy Installation and Serviceability** – Not only is Access easy to use, it's easy to install and maintain. Plug and play installations allow for quick set-up and easy routine maintenance. Access maintenance can be performed without entering the vault, giving wash owners ultimate security of the cash storage area.

S-Series PayGlow



B-Series PayGlow

OPW Listing and Certifications

Every year we introduce more safety and environmental-protection innovations to the industry than any other petroleum equipment manufacturer. Leading-edge innovations such as the new 1-2200™ single-wall replaceable spill container, 68EZR™ reconnectable breakaway, Fibrelite covers and tank sumps,

decommissioning hanging hardware kits, the SiteSentinel® Integra 100™ automated tank gauge systems all serve to illustrate how OPW is **Leading the Way** in helping to protect the well-being of people and the environment – today, tomorrow and into the future. That's the nature of OPW.



OPW products may hold one or more listings or certifications with the following agencies:

CARB
California Air Resources Board



kiwa



OPW is a member of the following associations:



ISO 9001:
2000 Registered Company
Reference #A12174



National Association of Truck Stop Operators



NATIONAL COUNCIL OF WEIGHTS AND MEASURES

NFPA
(National Fire Protection Agency)

National Association of Convenience Stores



Below Ground Products Fuel Compatibility Matrix

Updated 1/2015

OPW Product Number	Description	Standard Fuels: ≤15% Ethanol Gasoline ≤5% Bio-Diesel*	High Ethanol Content Gasoline: 15-100% Ethanol	High Biodiesel Content 5-20% Biodiesel*	Av- Gas / Jet Fuel	Kerosene / Fuel Oil
CXXA Double Wall Piping	Double Wall Primary Piping	X	X	X	X	X
DPC-2150/DPC-2200	Double Wall Pipe Couplings	X	X	X	X	X
SPC-0150, SPC-0200, SPC-0300	Single Wall Pipe Coupling	X	X	X	X	X
SPC-0075, SPC-0100	Single Wall Coupling Male NPT	X	X	X	X	X
SMA-1515, SMA-1520, SMA-2020, SMA-3030	E-Coated Male Adaptors	X	X	X	X	X
STF-1515, STF-2020, STF-2215, STF-2020	E-Coated Swivel Tees	X	X	X	X	X
SEF-1515, SRE-2015, SEF-2020, SEF-3030	E-Coated Swivel Elbows	X	X	X	X	X
SBC-2150, SBC-2200	Stainless Steel Swivel Bolt On Coupling	X	X	X	X	X
SMA-7575, SMA-1010	Swivel Male Adaptor (Brass or Zinc Plated)	X			X	X
SFA-7575, SFA-1010	Swivel Female Adaptor (Brass or Zinc Plated)	X			X	X
1-2100 Series / Multiports	Spill Containers	X	X	X	X	X
101BG-Series	Spill Containers	X	X	X	X	X
1-3100 Series (Edge)	Double Wall & Single Wall Spill Container Series	X	X	X	X	X
60V Series	Vapor Line Shear Valve	X	X	X	X	X
10 Series	Emergency Shut Off Valve	X	X	X	X	X
10 Plus Series	Emergency Shut Off Valve	X	X	X	X	X
10P-0152E85	E85 UL Approved Emergency Shut Off Valve	X	UL	X	X	X
61SALP-1020-EVR	Fill Swivel Adaptor	X	X	X	X	X
633T-8076	Fill Adaptor	X	X	X	X	X
61VSA-1020-EVR	Vapor Swivel Adaptor	X	X	X	X	X
1611AVB-1625	Vapor Adaptor	X	X	X	X	X
634TT-7085-EVR	Fill Cap	X	X	X	X	X
1711T-7085-EVR	Vapor Cap	X	X	X	X	X
634LPC-040	Low Profile Fill Cap	X	X	X	X	X
1711LPC-0300	Low Profile Vapor Cap	X	X	X	X	X
62M Series	Monitoring Probe Cap	X	X	X	X	X
61SO Series	Overfill Valve	X			X	X
61SOM Series	Overfill Valve Anodized	X	X		X	X
6111 & 61TP Series	Tank Bottom Protectors	X			X	X
61T Series	Drop Tubes	X			X	X
71SO Series	Overfill Valve	X			X	X
71SOM Series	Overfill Valve	X	X		X	X
233 Series	Extractor Valve	X	X	X	X	X
FCXX Series	Stainless Flex Connectors	X	X	X	X	X
53VML/30MV Series	Ball Floats	X	X	X	X	X
523V Series	Pressure Vacuum Vent	X	X	X	X	X
623V Series	Pressure Vacuum Vent	X	X	X	X	X

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

UL - Emergency valve has UL or UL Approval for greater than 15% Ethanol Content ≤ Refers to less than or equal to the fuel standard rating for percentage of content



Above Ground Products Fuel Compatibility Matrix

Updated 1/2015

OPW Product Number	Description	Unleaded Fuels up to 10% Ethanol (≤E10)	Petroleum Diesel	Up to 25% Ethanol (≤E25)	Up to 85% Ethanol (≤E85)	Up to 100% Ethanol (≤E100)	Bio-Diesel		Av- Gas	Jet Fuel	Kerosene/ Fuel Oil
							Up to 5% (≤B5)	Up to 20% (≤B20)			
11A Series	Automatic Conventional Nozzles		UL/ULC				UL	UL			X
11AP Series	Automatic Conventional Nozzles	UL/ULC		UL/ULC							
11AF Series	Farm Nozzles		UL/ULC				UL	UL			X
11APF Series	Farm Nozzles	UL/ULC		UL/ULC							
11B Series	Pressure Sensing Automatic Conventional Nozzles		UL/ULC				UL	UL			X
11BP Series	Pressure Sensing Automatic Conventional Nozzles	UL/ULC		UL/ULC							
21Ge Series	Pressure Sensing Automatic Nickel Plated Conventional Nozzles	UL		UL	UL	X					
7H Series	Automatic High Flow Conventional Nozzles		UL/ULC				UL	UL			X
7HB Series	Pressure Sensing Automatic High Flow Conventional Nozzles		UL/ULC				UL	UL			X
12VW Series	Vacuum Assist Nozzles	UL									
11VA Series	Vacuum Assist Nozzles	UL									
11VF Series	Balance Nozzles	UL									
311/811 Series	General Duty Manual Nozzles	UL	UL				X	X			X
190/210/295SC Series	Manual Bulk Nozzles	X	X	X			X	X			X
295SAJ	Manual Jet Fuel Nozzle								X	X	X
295SA/SAC Series	Manual Av-Gas Nozzles	X		X					X	X	X
1290 Series	Automatic Bulk Fueling Nozzles	X	X	X			X	X			X
241 Swivels	Two Plane Hose Swivels	UL/ULC	UL/ULC	UL			UL	UL			X
241TPS-0492	Nickel Plated Two Plane Hose Swivels	UL		UL	UL	X	UL	UL			X
45 Swivels	Two Plane Hose Swivels	UL/ULC	UL/ULC	UL			UL	UL			X
36S Swivels	Straight Swivels	UL	UL				X	X			X
20S Swivels	Two Plane Hose Swivels - Cold Weather	UL/ULC	UL/ULC	X			X	X			X
25 Swivels	Bulk Straight Swivel	X	X	X			X	X	X	X	X
66V Series Breakaways	Single Use Conventional Breakaways	UL/ULC	UL/ULC	X			X	X			X
66V-0492	Nickel Plated Single Use Conventional Breakaways	UL		UL	UL	X	X	X			X
66 Series Breakaways	Various Reconnectable and Single Use Vac Assist Breakaways	UL/ULC	UL/ULC	X			X	X			X
68EZR Breakaway	Various Reconnectable and Single Use Vac Assist Breakaways	UL/ULC	UL/ULC	X			X	X			X
38CS Adaptor	Balance Adaptor	X	X	X			X	X			X
VaporSaver™ 1	Tank Pressure Management System	UL / ATEX									
CVS2™	Central Vacuum System	UL									

UL - UL listed X - Compatible ULC - UL Canada *Pending Investigation



Above Ground Storage Tank Equipment Fuel Compatibility Matrix

Updated 1/2015

OPW Product Number	Description	Unleaded Fuels up to 10% Ethanol (≤E10)	Up to 25% Ethanol (≤E25)	Up to 85% Ethanol (≤E85)	Petroleum Diesel	Bio-Diesel		Av- Gas	Jet Fuel	Kerosene/ Fuel Oil
						Up to 5% (≤B5)	Up to 20% (≤B20)			
523V Series	Pressure Vacuum Vent	UL	X	X	UL	X	*	X	X	X
623V Series	Pressure Vacuum Vent	UL	X	X	UL	X	*	X	X	X
61VSA-1020-EVR	Vapor Swivel Adaptor	X	X	X	X	X	*	X	X	X
1611AVB-1625	Vapor Adaptor	X	X	X	X	X	*	X	X	X
1711T-7085-EVR	Vapor Cap	X	X	X	X	X	*	X	X	X
1711LPC-0300	Low Profile Vapor Cap	X	X	X	X	X	*	X	X	X
301 & 201 Series	Emergency Vents	UL/ULC	X	X	UL/ULC	X	*	X	X	X
200TG Series	AST Mechanical Gauge	UL	X	X	UL	X	*	X	X	X
444TA Series	Tank Alarms	ETL	X	X	ETL	X	*	X	X	X
821 Series	Solenoid Valves	UL	X		UL	X		X	X	X
21BV SS	Full Port Stainless Steel Ball Valves	UL/ULC	X	X	UL/ULC	X		X		X
331 / 332 Series	AST Spill Containers	UL/ULC	X	X	UL/ULC	X	*	X	X	X
61f STOP	AST Overfill Valve	UL/ULC	X		UL/ULC	X				X
61f STOP - A or M Version	AST Overfill Valve Anodized	UL/ULC	X	X	UL/ULC	X		X	X	X

UL - UL listed X - Compatible ULC - UL Canada *Pending Investigation

FlexWorks Third-Party Approvals - FlexWorks Products

Product	Certifying Agency:	Specification/Standard:
Tank Sumps, Piping Sumps, Tank Adaptor Fittings for Tank Sumps, Dispenser Pans, Shallow Dispenser Sumps, and Deep Dispenser Sumps with or without Emergency Valve Mounting Frame Systems and Penetration Fittings. Product #: DS/DSW/DP-XXXX, SBK-XXXX, TSS/TSM/TSD-XXXX	Underwriters Laboratories Inc. UL Listed per: File MH19391	Flammable and Combustible Liquid Tank Accessories (EGVV)
Dispenser Sumps/Pans, Risers, Tank Sumps, Entry Fittings Product #: DS/DSW/DSF/DP-XXXX, SBK-XXXX, TSS/TSM/TSD-XXXX, CS-XXX, BF-XXX	Underwriters Laboratories of Canada File CMH1815 dated 8/11/97	ULC Listed per: ULC/ORD-107.21-1992, Under Dispenser Sumps & Tank Risers for Flammable and Combustible Liquids
Primary/Secondary Pipe and Couplings C075, C10, C15 C20, C30 S15, S20, S30	Underwriters Laboratories Inc. File MH16678 EN 4	UL Listed per: UL 971 - Non-metallic Underground Piping for Flammable and Combustible Liquids (Motor Vehicles, Aviation, Marine Fuels)
Primary Piping GFP-XXXX	KIWA BRL-K552/02 EN14125 Certificate K45726	
Sealant Polyurethane Adhesive/Sealant Product #: FlexWorks SL-1100 and BOSTIK-1100FS	State of California Registered Professional Engineer Approval (RHL Design Group) OPW Test Report #3505 Dated 11/16/99 May National Associates, Inc. Project Report #PU051502 06/26/02 May National Associates, Inc. Project Report	CCR Title 23 Division 3, Chapter 16, Section 2631 (d) AB2481 requires secondary containment for all underground piping in UST system

FlexWorks Third-Party Approvals - ERA Certified Products

FlexWorks	Primary/Secondary Containment Pipe & Couplings	BC63/0433/98.003
Florida		
Product No.	Description	Certification
C075, C10, C15, C20, C30	Primary Pipe	EQ-649
Loop System		EQ-709

OPW Patents - FlexWorks Piping Systems, Sumps, Fittings

United States Patents				
5,553,471	5,713,607	5,911,155	6,123,365	5,297,896
5,553,971	5,722,699	5,927,762	6,182,679	5,345,813
5,567,083	5,746,454	5,950,860	5,398,976	5,590,981
5,813,797	6,029,505	6,371,154	5,472,012	5,664,951
5,819,975	6,039,201	6,834,892	5,527,130	5,690,368
5,831,149	6,116,817	5,567,083	5,911,155	5,263,794
5,590,981	5,927,762	5,271,518	5,664,951	5,950,860
5,297,896	5,690,368	6,029,505	5,345,813	5,713,607
6,039,201	5,398,976	5,722,699	6,116,817	5,472,012
5,746,454	6,123,365	5,527,130	5,813,797	6,182,679
5,553,471	5,819,975	5,553,971	5,831,149	6,371,154
6,565,127	7,073,976			
Australia Patents				
752,894	714,773	714,819	716,720	717,766
732,767	696-049			
Ireland, Scandinavia, Luxumborg Patents				
213-530	731-893			
Austria/Belgium/France/Germany/Italy/Netherlands/Spain/U.K. Patents				
	0,876,287			
Poland Patents				
11,401,010-00-203373-USDCURR01-59				
Taiwan Patents				
100,777	8,920,312	132,372	123,768	183,977
111,608	179,231	206,308	087,691	
Europe Patents				
90902082.8	3356-54EP	97909838.1	97909839.9	97910023.7
98950667.0				
Brazil Patents				
PI9815402	PI9908225-0	PI9706825-0	P10501119-1	
China Patents				
1105677	ZL98813572.8	ZL97199689.9X	ZL97199685.7	ZL97191403.6
05-100023269	98813572.8			
Hong Kong (Patent Application No.)				
HK1016946	99101920.5			
Japan (Patent Application No.)				
3,251,298	2,933,094	3,430,338	3,444,424	2005-7183
Canada Patents				
2,293,215	2,285,495	2,268,177	2,393,653	2,268,174
2,492,346	2,176,464			
Mexican (Patent Application No.)				
002,952	209,733	984,583	993,304	999,158
993,305	984,582	221,155	218,307	194,949
Spain (Patent Application No.)				
97,909,839.9				
Argentina (Patent Application No.)				
AR008317B1	AR008316B1	AR008312B1		

California Air Resources Board, EVR, State of Missouri and Mexico Approvals

Product #	Description	Approval #	EVR Executive Order #	MOPETP #	Mexico Approvals
1611AV-1620	Vapor Recovery Adaptor	MO. No. 99-03		APCP-0002-001-99	
1-2100	Spill Container	CARB No. 93-26	VR-102	APCP-0002-001-99	
1-2100 (EVR) (ISC)	Spill Container (with drain valve)	MO. No. 99-03	VR-102	APCP-0002-001-99	
1C-2100 (EVR)	Spill Container	CARB No. 93-26	VR-102		
1-2115 (EVR)	Spill Container	CARB No. 93-26	VR-102		
1C-2115 (EVR)	Spill Container	CARB No. 93-26	VR-102		
1-3100	Spill Container	CARB No. 93-26	VR-102		
101BG(S)-2100	Spill Container	CARB No. 93-26			
101BG(S)-2115	Spill Container	CARB No. 93-26			
30MV	Ball Float Vent Valve	CARB No. 95-33	VR-101		
53FC	Float Vent Valve	MO. No. 99-03		APCP-0002-001-99	
53VML	Ball Float Vent Valve	CARB No. 92-4	VR-101		
60VP	Vapor Shear Valve	CARB No. 94-27			
60VSP	Vapor Shear Valve	CARB No. 97-15			
60VSPC	Vapor Shear Valve	CARB No. 97-15			
61SA	Swivel Adaptor	CARB No. 95-1		APCP-0002-001-99	SEGEMDGPCCAT-MTSR-VDOVER/001/2004
61SA Tool	Installation Tool		VR-102		
61SO	Overfill Valve	CARB No. 92-5/93-2/97-04			
61SOM	Overfill Valve	CARB No. 90-5			
61SOP	Overfill Valve	CARB No. 92-8			
61VSA (EVR)	Vapor Swivel Adaptor	CARB No. 00-11	VR-102		SEGEMDGPCCAT-MTSR-VDOVER/001/2004
61JSK(EVR)	Kack Screw Kit for 61SO		VR-102		
61SALP-EVR	Fill Swivel Adaptor		VR-102		
FSA-400	Face Adaptor		VR-102		
61AS	Side-Seal Adaptor	CARB No. G70-97A			
61T	Drop Tube	CARB No. G70-97A	VR-101 & VR-102		
61TCP	Coaxial Drop Tube	CARB No. 93-1			
62	Side-Seal Cap	CARB No. G70-97A			
62TT	Side-Seal Cap	CARB No. G70-97A			
116	Cap	CARB No. G70-97A			
71SO-400C/410C/420C1	Vapor-Tight Overfill Valve	CARB No. G70-97A	VR-102		
233V (EVR)	Extractor	CARB No. G70-97A	VR-101 & VR-102	APCP-0002-001-99	
233VM (EVR)	Extractor	CARB No. G70-97A	VR-101 & VR-102		
233SD (EVR)	Extractor	CARB No. G70-97A	VR-101 & VR-102		
233VTS (EVR)	Extractor/Assembly	CARB No. G70-97A	VR-101 & VR-102		
311	Multi-Port Spill Container	CARB No. 93-25			
511	Multi-Port Spill Container	CARB No. 92-12			
500L	Replaceable Spill Bucket		VR-102		
6500 Series (EVR)	Multi-Port		VR-102		
523	Pressure/Vacuum Vent	CARB No. 94-22/92-28		APCP-0002-001-99	
523V	Pressure/Vacuum Vent	CARB No. 98-1		APCP-0002-001-99	
633LC	Locking Clamp	CARB No. 97-14		APCP-0002-001-99	
633T	Top-Seal Adaptor	CARB No. G70-97A			
633TCP	Top-Seal Adaptor	CARB No. G70-97A			
634TT (EVR)	Top-Seal Cap	CARB No. G70-97A	VR-102	APCP-0002-001-99	
700L	Testable/Replaceable Spill Bucket		VR-102		
1711T (EVR)	Vapor Recovery Cap	CARB No. G70-97A	VR-102	APCP-0002-001-99	
1711TK	Cap	CARB No. G70-97A			
6111-1400 (EVR)	Tank Bottom Protector	CARB No. 98-21	VR-102		
211	Spill Container	CARB No. AGT-94-01			
1711LPC	Low Profile Vapor Cap		VR-102		
634LPC	Low Profile Fill Cap		VR-102		

UL Listed Products - Below Ground Products

OPW Approvals / Listings

Product	Description	File #
10 Series	Emergency Shut-Off Valves	MH6535
523, 523V, 523AV	Pressure/Vacuum Vents	MH19391
62M, 62MAB, & 62MBB	Cap	MH19391
60V, 60VP, 60VSP, & 60VSPC	Vapor Shear Valves	
FC XX-XXXX	Flex Connectors	MH48310
623V XXXX	Pressure Vacuum Vent	MH19391
Flex Connectors	Stainless Steel Flexible Connectors	MH48310

ULC Listed Products - Below Ground Products

Product	Description	File #
10 Series	Emergency Shut-Off Valves	MH27238
61SO & 71SO	Overfill Valve	MH21147
71SO	Vapor-Tight Overfill Valve	MH21147
70S	Vertical Check Valve	MH27238
1, 1SC, & 101BG	Spill Containers	MH27236

ERA Certified Products - Below Ground Products

Product	Description	File #
FlexWorks	Primary/Secondary Containment Pipe & Couplings	BC63/0681/97/003; BC63/0681/97/004

ATEX Certified / Compliant - OPW Below Ground Products

Product	Description	Certificate #
523 P/V Vent	Type 523 P/V vent - End-of-line Deflagration Flame Arresters, 523 METAL UK, 523 METAL UKDI	Sira 05ATEX9050X
623 V Vent	End-of-Line Deflagration Flame Arresters 623-V 2203, 0623-V 3203	Sira 05ATEX9049X
66VL Breakaway Valves	66VL-01AT, 66VL-02AT	Sira 06ATEX9326U
Pressure/Vacuum Vents	45L-01AT, 241TPS-01AT, 36SL-01AT, 45L-02AT, 241TPS-02AT, 36SL-02AT, 36SL-03AT	MH10040
Model 10 Series Shear Valves	Emergency Shut-Off Valves	Sira 06ATEX9341U
71SO, 61SO	Overfill Valve	Sira 08ATEX9047

Florida EQ Certifications

Product #	Description	Certification
111/211/311/511	Multi-Port Spill Containers	EQ-145
1, 1SC, 101BG, 111, 211 Series	Spill Containers	EQ-224
1C-3101D, 1C3101P	EDGE 1" Series Single Spill Container	EQ-718
1C-3100 Series	EDGE™ Double Wall Spill Container	EQ-708
500L	Secondary Containment Spill Containers	EQ-588
700L	Secondary Containment Spill Containers	EQ-640
61SO, 61TNG, 53V, 30MV Series	Overfill Valves & Ball Floats	EQ-123
6591B	Dual Port Spill Containers	EQ-638

North Carolina

Product #	Description	Certification
IC-3100	Double Wall Spill Container	EQ-708

Wisconsin Department of Commerce

Product #	Description	Certification
FC XX-XXXX	OPW Flex Connectors	

KIWA Approvals

Product #	Description	Certification
61SO-490C	Overfill Valve	

Arizona Department of Weights and Measures

Product #	Description	Certification
61SO-EVR	Overfill protection in vaulted systems	VR Alert No. 12

OPW Patents - Below Ground Products

Emergency Shut-Off Valves (10 Plus Series)

Patent #	Country
11/688509	USA
11/553067	USA
P10703950-0	Brazil
2605139	Canada
13300	Mexico
96137583	Taiwan
7254188.1	EPC
10166890.3	China
2085/DEL/2007	India
277976	Japan
107729	Korea

Jack Screw Device

Patent #	Country
6,523,581	USA

Spill Containers

Patent #	Country
61/033571	USA

Drop Tube (7150)

7069965, 7243675B2, 6913047, 7128102, 10/827202, 7213610	USA
PI0503141-9, P10502747-0, PI0502435.8, PI0502434-0, PI0502746.2, PI0502436.6	Brazil
2503927, 2503671, 2503923, 2503667, 2503924, 2503676	Canada
94113308, 94113304, 94113306, 94113303, 94113307, 94113305	Taiwan
5009175, 5009179.2, 5009177.6, 5009176.8, 5009178.4	EPC
510070023, 510070111, 0510070106.X, 510070104, 510070038.7	China
499/CHE/2005, 495/CHE/2005, 497/CHE/2005, 494/CHE/2005, 498/CHE/2005, 986/CHE/2005	India
2005-131499, 2005-131469	Japan
2005-36246, 2005-35903	Korea

Swivel Adaptor

Patent #	Country
5,664,951	USA

Cap – Fill Pipe

Patent #	Country
3,118,561 (634-TE), 5,640,999 (634-TTP)	USA

723V Pressure Vacuum Vent

61/033571	USA
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UL Listed Products - Above Ground Products

Product	Description	File #	UL Online Certifications	
11A Series & Astro	Automatic Nozzle	MH1942	 MH1942	
11B Series & AstroB	Pressure-Sensing Automatic Nozzle	MH1942		
1A Series	Automatic Nozzle	MH1942		
7H Series	Automatic Nozzle	MH1942		
7HB Series	Pressure-Sensing Automatic Nozzle	MH1942		
11AF	Farm Nozzle	MH1942		
21Ge	Pressure-Sensing Automatic Nozzle for E85	MH1942		
12VW	Vacuum-Assist Nozzle	MH1942		
20S	Hose Swivel	MH4542		 MH4542
241TPS	Two-Plane Swivel	MH4542		
241TPS-0492	Two-Plane Swivel for E85	MH4542		
36S	Hose Swivel	MH4542	 MH4542	
45	Hose Swivel	MH4542		
MFVA	Vacuum-Assist Vapor Recovery Swivel	MH4542		
199ASV	Anti-Siphon Valve	MH8488		
44 & 44N	Flow Limiters	MH8488	 MH8488	
66FL-1000	Vacuum-Assist Flow Limiter	MH8488		
38CS	Balance Adaptor	MH10040		
VaporSaver™ 1	Tank Pressure Management System	MH10040	 MH10040	
523, 523V, 523AV	Pressure/Vacuum Vents	MH19391		
623V XXXX	Pressure Vacuum Vent	MH19391		
821 Series	Solenoid Valve	E12264		
66RB	1" Reconnectable Breakaway	MH18037		
66SB	Swivel Breakaway	MH18037		
66ISU	Vacuum-Assist Vapor Recovery Breakaway	MH18037		
66ISB	Vacuum-Assist Vapor Recovery Breakaway	MH18037		
66REC	3/4" Reconnectable Breakaway	MH18037		
66V	Breakaway	MH18037		
66V-0492	Breakaway for E85	MH18037	 MH19391	
66CAS	Dry Reconnect Inverted Breakaway	MH18037		
66EZR	Dry Reconnect Inverted Breakaway	MH18037		
66CL/CSU/CLP	Coaxial Breakaways	MH18037		
202 Series	Emergency Vents	MH25724	 MH25724	
301 Series	Emergency Vents	MH25724		
61f STOP-XXXT Version	AST Overfill Valve	MH25724		
200TG	Mechanical Tank Gauge	MH29367	 MH29367	
44TA-LLFS	Liquid-Level Float Switch Sub Assembly	E177423		
X44TA-0100	Liquid-Level and Overfill Alarm	ETL302278-H01		

UL Listed for Canada and ULC - Above Ground Products

Product	Description	File #	UL Canada Online Certifications	
11A Series & Astro	Automatic Nozzle	MH1942	 MH1942	 MH8488
11B Series & AstroB	Pressure-Sensing Automatic Nozzle	MH1942		
1A Nozzle	Automatic Nozzle	MH1942		
7H Series	Automatic Nozzle	MH1942	 MH4542	 MH18037
7HB Series	Pressure-Sensing Automatic Nozzle	MH1942		
44 & 44N	Flow Limiters	MH8488		
11AKF & 11AKPF	Farm Nozzle	MH1942	 MH4542	 MH27236
241TPS	Two-Plane Swivel	MH4542		
20S	Hose Swivel	MH4542		
45	Hose Swivel	MH4542	 MH27235	 MH19391
66SB	3/4" Swivel Breakaway	MH18037		
66REC	Reconnectable Breakaway	MH18037		
66RB	1" Reconnectable Breakaway	MH18037	 MH27235	 MH27236
66V	Breakaway	ULC MH27235, UL for Canada MH18037		
61fSTOP-XXXX Series	Overfill Prevention Valve	MH25724		
61fSTOP-XXXXT Series	Overfill Prevention Valve	MH25724	 MH25724	 MH19391
6211 Series	Remote-Fill AST Spill Containers	MH27236		
6221 Series	Direct-Fill AST Spill Containers	MH27236		
331 / 332 Series	AST Spill Containers	MH19391		

MoPETP (Missouri Performance Evaluation Testing Procedures)

11VF-47	Balance Nozzle	MoPETP 99-03
66CL/CSU/CLP	Coaxial Breakaway	MoPETP 99-03
523V	Pressure/Vacuum Vent	APCP-0002-001-99

Florida

211AST, 211 REMOTE, 221AST	AST Spill Containers	EQ-226
61fSTOP Series	AST Overfill Prevention Valve	EQ-225

New York City Fire Department Certification Number

61fStop	AST Overfill Prevention Valve	4949
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KIWA Approvals

199-ASV	Anti-Siphon Valve	K22656/01
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Other VaporSaver Approvals

ATEX – SIRA 03ATEX 9535	Texas ORVR Certification Approval Letter: 12/01/04
TUV – 97-11.1	Mexico – SEGEMDGPCCAT- MTSR- VDOVER/001/2004
Independent 3rd Party Certified C-030501	Japan – KHK File# 16-4-5
MDE Regulation Chapter 02.03 c(5)b	

CARB EVR Certified Products - Above Ground Storage Tank Equipment

Product	Description	EO Number:
301-XXXX	Emergency Vent	VR 401
61fSTOP-XXXX	Overfill Prevention Valve	VR 401
331-ASTWXX & 332-ASTWXX	Direct Fill Spill Container	VR 401
1611AN-XXXX & 1612AN-XXXX	Kamvalok Adaptor	VR 401
634B-XXXX & 634BK-XXXX	Dust Cap	VR 401
61VSA-1020-EVR	Rotatable Swivel Adaptor	VR 401
1711T-7085-EVR & 1711LPC-0300	Vapor Recovery Caps	VR 401
61FT-XXXX	Drop Tube	VR 401
200TG-ENG, 200TG-ENG40, 200TG-MET, 200TG-MET40	Mechanical Tank Gauge	VR 401
144TA-XXX	Tank Alarm	VR 401
44TA-LLFS	Liquid Level Float Switch	VR 401
66CLP-5100	Balance, Reconnectable Breakaway	VR 204, VR-203

Product	Description	CARB Certification	CA Fire Marshal
12VW	Vacuum-Assist Nozzle	G-70-153 G-70-150 G-70-199	GVRC: 005:008:059
11VAI-27	Vacuum-Assist Nozzle w/o Vapor Valve	G-70-150 G-70-150/94-8 G-70-199	GVRC: 005:008:050 (applies to all)
11VAI-37	Vacuum-Assist Nozzle w/o Vapor Valve	G-70-164/95-29 G-70-199	GVRC: 005:008:050 (applies to all)
11VAI-68	Vacuum-Assist Nozzle	G-70-154 G-70-163 G-70-169 G-70-199	GVRC: 005:008:050 (applies to all)
11VAI-69	Vacuum-Assist Nozzle	G-70-153 G-70-199	GVRC: 005:008:050 (applies to all)
11VAA-61	Vacuum-Assist Nozzle	G-70-118	GVRC: 005:008:049
66CAS	Dry Reconnect Inverted Breakaway	96-18	GVRC: 005:008:056
66ISU	Vacuum-Assist Breakaway	94-9	GVRC: 005:031:009
66ISB	Swivel/Breakaways	95-35	GVRC: 005:031:016
11VF-47	Balance Nozzle	G-70-52	GVRC: 005:008:037
66CL/CSU/CLP	Coaxial Breakaway	91-14	GVRC: 005:008:047
Vacurite® 00-40005C	Centralized Vacuum-Assist Vapor Recovery System	G-70-164-AA G-70-175	GVRC: 004:001:001
Max Vacurite® AST 00-40001C	Centralized Vacuum-Assist Vapor Recovery System	G-70-164-AA G-70-175-AST	GVRC: 004:001:001
Micro Vacurite® 00-40003.UL	Centralized Vacuum-Assist Vapor Recovery System	98-13 G-70-164-AA	GVRC: 004:001:002
VacuSmart™	Air to Liquid Test Equipment	CARB Approved Alternative to TP-201.5	N/A
VacuChek™	Air to Liquid Test Equipment	CARB Approved Alternative to TP-201.5	N/A
VaporSaver™	Tank Pressure Management System	G-70-204A	GVRC: 005:008:062
61fSTOP	AST Overfill Valve	CARB No. ATG-01-01	N/A
523V	Pressure/Vacuum Vent	CARB No. 98-1	N/A

OPW Patents - Above Ground Products

Nozzles

Patent #	Country
5645115	USA
5454602	USA
5813443	USA
5620030	USA
5435357	USA
5577538	USA
6851628	USA
6951229	USA
93130770	Taiwan
7134580	USA
6024140	USA
9178054.4	EPC
5832970	USA

Breakaways

Patent #	Country
5695221	USA
5564471	USA
5570719	USA
5529085	USA

Island Forms

Patent #	Country
6,099,202, 6,375,384B1	USA
1227417C	China
2,322,216	Canada
221,155	Mexico

Storage Tank Emergency Vent Valve (AST)

Patent #	Country
5,141,020	USA

Storage Tank Shut-Off Valve (61fSTOP) AST

Patent #	Country
5,472,012	USA
5,850,849	USA

Tank Gauge (AST)

Patent #	Country
6,523,404, 7,174,784	USA
P10501119-1	Brazil
2492346	Canada
94100860	Taiwan
05-10002326.9	China
22/che/2005	India
2005-7183	Japan
4005/2005	Korea

OPW Alphanumeric Product Index

Product Number	Page	Product Number	Page	Product Number	Page	Product Number	Page
200143	118	204247	222	1-2100-DEVR	58	104A-1800WT	81
201339	31	204756	173	1-2100-DSH	71	104A-1819	81
201491	27, 31	204811	180	1-2100-PEVR	58	104A-1819WT	81
201530	53, 54	204870	180	1-2100-PSH	71	104A/FG-1200	81
201567	63	204872	180	1-2100C-DEVR	58	104A/FG-1219	81
201689	53, 54	205077	156	1-2100C-PEVR	58	104AC-1586	81
201692	54, 56	205181	72, 73	1-2115-DEVR	58	104AOW-0800	83
201739	56	205183	72, 73	1-2115C-DEVR	58	104AOW-1200	83
201758	219	205206	154	1-21AC	53, 58, 63	104AOW-1219	83
201759	63, 219	205217	154	1-21CC	53, 54, 58, 63	104AOW-1800	83
201877	226	205219	154	1-3100-TOOL	55	104AOW-1819	83
202233	234	205248	154	101BG-2100	65	104C-2000	80
202234	234	205252	154	101BG-2100C	65	104FG-1200*	81
202235	234	205598	154	101BG-2105**	65	104FG-1219*	81
202312	219	205599	154	101BG-2115	65	106DL-0095	74
202721	226	205749	78	101BG-2115C	65	106FL-0100	74
202950	118, 121	205899	124, 134	101BG-21AR	65	106N-1100	74
203035	53, 54	205900	124, 134	101BG-21LA	65	106N-2200	74
203174	78	206466	156	101BG-BUCKET	65	106N-3300	74
203246	73	206725	27	101BG-COVER	65, 80	106N-4400	74
203272	73	206726	27	101BG-LATCH	65	106P-0150	74
203325	226	207211	56	104A-0800	81	106R-0175	74
203541	78	207212	56	104A-0800WT	81	106SU-0185	74
203569	78	207235	56	104A-1022	81	106U-0125	74
203666	78	207243	56	104A-1066	81	106UP-0125	74
203667	78	207621	164	104A-1200	81	106X-0200	74
204128	157	207852	149	104A-1200WT	81	107-0300	74
204129	157	208197	56	104A-1219	81	10BF-5725	120
204130	157	208951	56	104A-12WT	81	10BFP-5726	120
204133	156	208952	56	104A-1800	81	10BHMP-5830	120

OPW Alphanumeric Product Index

Product Number	Page						
10BM-5825	120	10UTCP-5901	121	11AP-0500	145	11BP-0300-AD	149
10BU-5925	120	113-0066	231	11AP-0500-AD	149	11BP-0300-XC	146
10BUP-5926	120	113-0099	231	11AP-0750	145	11BP-0400	145
10FTP-5701	121	116-7085	98	11AP-0800	145	11BP-0400-AD	149
10P-0150	118	116M-0375	98	11AP-0900	145	11BP-0400-XC	146
10P-0152	118	116M-0500	98	11AP-0900-AD	149	11BP-0500	145
10P-0152E85	118	1175-0050	236	11APF-300F	151	11BP-0500-AD	149
10RF-2001	120	11A-0009	145	11APF-30FS	151	11BP-0750	145
10RFP-2002	120	11A-0100	145	11APF-40FS	151	11BP-0800	145
10RFT-5742	121	11A-0100-AD	149	11APF-4FSC	151	11BP-0900	145
10RFT-5750	121	11A-0200	145	11B-0009	145	11BP-0900-AD	149
10RFTP-5751	121	11A-0300	145	11B-0100	145	1290-0050	183
10RFTP-5752	121	11A-0400	145	11B-0100-AD	149	1290-0055	183
10RM-2003	120	11A-0400-AD	149	11B-0100-XC	146	1290G-0050	183
10RMP-2004	120	11A-0500	145	11B-0200	145	12VW - 0000	171
10RMT-5842	121	11A-0750	145	11B-0300	145	12VW - 0100	171
10RMT-5850	121	11A-0800	145	11B-0400	145	12VW - 0200	171
10RMTP-5851	121	11A-0900	145	11B-0400-AD	149	12VW - 0300	171
10RMTP-5852	121	11A-0900-AD	149	11B-0400-XC	146	12VW - 0400	171
10RPLUS-0150	118	11AF-10FS	151	11B-0500	145	12VW - 0500	171
10RPLUS-0152	118	11AF-300F	151	11B-0750	145	12VW - 0750	171
10RU-2005	120	11AF-40FS	151	11B-0800	145	12VW - 0900	171
10RUP-2006	120	11AF-4FSC	151	11B-0900	145	12VW-0100-AD	149
10RUTC-5962	121	11AP-0009	145	11B-0900-AD	149	12VW-0300-AD	149
10RUTC-5975	121	11AP-0100	145	11B-0900-XC	146	12VW-0400-AD	149
10RUTC-5972	121	11AP-0100-AD	149	11BP-0009	145	144TA-0100	134, 225
10SBHMP-5830	120	11AP-0200	145	11BP-0100	145	153-0910	186, 189, 193
10SBUP-5926	120	11AP-0300	145	11BP-0100-AD	149	153AF-0100	187, 193
10SHMTP-5811	121	11AP-0300-AD	149	11BP-0100-XC	146	153J-0100	186, 193
10UBK-015	121	11AP-0400	145	11BP-0200	145	1611AN-0200	223
10URK-020	121	11AP-0400-AD	149	11BP-0300	145	1611AN-0300	223

OPW Alphanumeric Product Index

Product Number	Page	Product Number	Page	Product Number	Page	Product Number	Page
1611AN-2040	223	190G-B104	188	1C-2200D	55	1SC-3122D	53
1611AN-3060	223	190K-0001	189, 192	1C-2200P	55	1SC-3122P	53
1611AV-1605	96	190S-7063	186, 193	1C-3101D	54	1SC-3132D	53
1611AV-1620	96	190WF-8002	187, 193	1C-3101P	54	1SC-3132P	53
1611AVB-1625	96	190WM-8001	186, 193	1C-3112D	53	1SC-31512D	53
1612AN-0150	223	199ASV-1075	232	1C-3112P	53	1SC-31512P	53
1612AN-0200	223	199ASV-1100	232	1C-3122D	53	1SC-31532D	53
1612AN-0300	223	199ASV-1150	232	1C-3122P	53	1SC-31532P	53
1612AN-2040	223	199ASV-1200	232	1C-3132D	53	1SC-TOOL	61
1612AN-3060	223	199ASV-2075	232	1C-3132P	53	1TAG-1000	74
1672AN SS20	134, 223	199ASV-2100	232	1C-31512D	53	1TAG-1010	74
1672AN SS30	134, 223	199ASV-2150	232	1C-31512P	53	1TAG-2000	74
1711D-1075	223	199ASV-2200	232	1C-31532D	53	1TAG-2010	74
1711D-1080	223	199ASV-3075	232	1C-31532P	53	1TAG-3000	74
1711LPC-0300	97	199ASV-3100	232	1DK-2100-EVR		1TAG-3010	74
1711T-7085-EVR	97	199ASV-3150	232		54, 56, 58, 61, 65, 71	1TAG-4000	74
1712D-1085	223	199ASV-3200	232	1DP-2100	56, 58	1TAG-4010	74
1712D-1090	223	19DEF-0500	182	1P-2105	63, 71	1TAG-4200	74
1712D-1095	223	19DEF-050L	182	1PPK-2100	58	1TAG-4210	74
175-0044	236	19DF-0100	182	1RL-KIT	79	1TAG-7000	74
175B-1544	236	19DFL-0100	182	1SC-2100-DEVR	61	1TAG-7010	74
1772D-SS-20	223	19DM-0100	182	1SC-2100-PEVR	61	1TAG-BE85	74
1772D-SS-30	223	19DML-0075	182	1SC-2100C-DEVR	61	1TAG-CE85	74
1772DL-SS20	134	19DML-0100	182	1SC-2100C-PEVR	61	2-0055	196
1772DL-SS30	134	1C-2100-DEVR	58	1SC-2105	63	20-6000	283
178S-6130	235	1C-2100-PEVR	58	1SC-2115-DEVR	61	20-6001	283
18KVA-1000	172, 173	1C-2100C-DEVR	58	1SC-2115-PEVR	61	20-6002	283
190-0112	188	1C-2100C-PEVR	58	1SC-2115C-DEVR	61	20-6003	283
190-0113	188	1C-2105	63	1SC-2115C-PEVR	61	20-6005	283
190-0114	188	1C-2115-DEVR	58	1SC-3112D	53	20-6006	283
190-0115	188	1C-2115C-DEVR	58	1SC-3112P	53	20-6007	283

OPW Alphanumeric Product Index

Product Number	Page	Product Number	Page	Product Number	Page	Product Number	Page
20-6008.....	283	21BV-0200SS	234	233-4430.....	109	295SC-0139	190
20-6009.....	283	21BV-0300	234	233-4432.....	109	295SC-0141	190
20-6010.....	283	21BV-XXXXSS Series.....	134	233-4433.....	109	295SRK-0001	196
200TG-ENG	224	21Ge-0492	147	233E-4040.....	128	295SRK-0002	196
200TG-ENG40.....	224	21GE-0492-AD.....	149	233E-4240.....	128	295SWK-0007	185
200TG-MET	224	21Ge-0992	147	233VP-6046	109	295SWK-0009.....	185, 191
200TGMET40	224	21GE-0992-AD.....	149	241TPS-0241	162	295SWK-0013	185
202-0640.....	227	21GU-0400	134, 156	241TPS-0492.....	147, 162	295SWK-0014.....	185, 191
202-0660.....	227	21GU-040G.....	134, 156	241TPS-1000.....	162	296-0040.....	189, 192, 193
202-0680.....	227	21GU-0500	134, 156	25-0110.....	196	296-0060.....	189, 192, 193
202135-KIT.....	53	21GU-050G.....	134, 156	25-0120.....	196	296-0080.....	189, 193
202136-KIT.....	53	21GU-BCS	156	25C-0130	196	296CA-4000.....	189, 193
202137-KIT.....	53	21GU-H11	157	269-0085.....	100	296CA-4005.....	193
202F-0600	227	21GU-H12	157	28C-0028	178	296CJ-0100.....	186, 193
203193-KIT.....	54	21GU-H15	157	28R-2404	145	297-9020..	189, 191, 192, 193
203194-KIT.....	54	21GU-H17G	157	28S-0350.....	145	297-9030..	189, 191, 192, 193
205987-KIT.....	53	21GU-H21	157	295AF-0100	187	297-9040.....	189, 193
205988-KIT.....	53	21GU-HRS	157	295KLG-0200.....	190, 191	297AF-9070	187
206010-KIT.....	53	21GU-HXX.....	134	295KLG-0250.....	190, 191	297SA-9050	186, 193
206011-KIT.....	53	21GU-MFPD.....	134	295KLG-0300.....	184, 185	297SA-9060	186, 193
206215-KIT.....	53	21GU-SCS.....	156	295KLG-0350.....	184, 185	2VXK-0700	172
20S Series.....	146	21GU-SFH.....	156	295KLG-0400.....	184, 185	30-1509-01	251, 253
20S-1010.....	161	21GU-SPOUT.....	156	295SA-0135	184	30-1509-02	251, 253
20S-7575.....	161	21GU-SPOUT-N.....	156	295SA-0136	184	30-3232.....	251, 253
210-0104.....	192	21GU-SSB.....	134, 156	295SA-0137	184	30-B053.....	251
210-0105.....	192	21GU-SSS	156	295SA-0138	184	30-B069.....	251
21BV-0050	234	23-0033.....	116, 231	295SAC-0156.....	184	30-B077.....	251
21BV-0075	219, 234	23-0044.....	116, 231	295SAC-0157	184	30-B089.....	251
21BV-0100	234	23-0055.....	116, 231	295SAC-0158.....	184	30-B101.....	251
21BV-0150	234	233-4420	109	295SACJ-0200.....	184	30-B105.....	251
21BV-0200	234	233-4422	109	295SAJ-0200.....	184	30-B113.....	251

OPW Alphanumeric Product Index

Product Number	Page	Product Number	Page	Product Number	Page	Product Number	Page
30-B125	251	36S-5080	160, 196	523V-1100	115, 229	5BBPS-2137	145
30-B137	251	36S-5090	160, 196	523V-1150	115, 229	5BBPS-2137XC	146
30-B149	251	38CS-0380	178	523V-2200	115, 229	5BBS-2135	145
301-3080	226	39CD-PL10	79	523V-2203	115, 229	5BBS-2135XC	146
301-3160	226	39CD-PLKL	79	523V-2250	115, 229	5BF-0112	151
301-4080	226	39CD-RL10	79	523V-2253	115, 229	5BFS-0113	151
301-4160	226	39CD-RLKL	79	523V-2300	115, 229	5BH-0115	153
301-6080	226	39CD-WT10	79	523V-2350	115, 229	5BH-5115	153
301-6160	226	39CD-WTKL	79	523V-3100	115, 229	5BHB-0125	153
301-8080	226	39CD-XXXX Series	134	523V-3150	115, 229	5BPF-0172	151
301-8160	226	3VT-0400	172	523V-3200	115, 229	5BPFS-0173	151
301F-1085	226	3VW-0450	171	523V-3203	115, 229	5BPS-2117	145
301F-8085	226	44-0044	168	523V-3253	115, 229	5BPS-2117XC	146
301F-8165	226	444TA-0100	134, 225	53-0012	128	5BS-2110	145
301M-3081	226	44CD-PL10	79	53-0020	128	5BS-2110XC	146
301M-3161	226	44CD-PLKL	79	53-0034	128	5D-0125	183
301M-4081	226	44CD-RL10	79	53-0036	128	5D-0180	183
301M-4161	226	44CD-RLKL	79	53-0038	128	5FBP-4100	173
301M-6081	226	44CD-WT10	79	53-0062	128	5FF-0600	173
301M-6161	226	44CD-WTKL	79	53-0063	128	5FFB-0900	173
301M-8081	226	44CD-XXXX Series	134	53VML-0060	110	5FP-0300	173
301M-8161	226	44N-1044	168	53VML-0120	110	5VPG-1000	172, 173
3043 - BL	173	44TA-LLFS	134, 225	53VML-0160	110	5VSS-2000	172
3043R - BK	173	45-5060	160	53VML-0180	110	5VSS-4000	172
3043R - G	173	45-5075	160	53VML-2070	110	5VSS-6000	172
3043R - GD	173	45FP-0600	173	53VML-3050	110	5VSS-7000	172
3043R - R	173	514F-3050	230	53VML-3110	110	5VSS-8000	172
3043R - S	173	515ML-1030	230	53VML-3120	110	5VSS-9000	172
3043R - Y	173	523A-1003	115, 229	5BBH-0136	153	5VW-2000	171
3044K	173	523SA-1002	115, 229	5BBH-5136	153	6000P-B24	87
332-ASTW74	218	523SA-1003	115, 229	5BBPI-0492	147	6000P-B30	87

OPW Alphanumeric Product Index

Product Number	Page	Product Number	Page	Product Number	Page	Product Number	Page
6000P-B36	87	6013P-S04	87	6102-6000	199	61AS-2477	94
6000P-B42	87	6013P-S05	87	6102-8000	199	61fSTOP-1000	221
6000P-B48	87	6013P-S06	87	6102-AST	199	61fSTOP-1000T	221
6000P-B60	87	6013P-S07	87	6102-CNG	199	61fSTOP-100M	221
6000P-CFB	87	6013P-S08	87	6102-CNG2	199	61fSTOP-2000	221
6000P-SMP	87	6013P-S09	87	6102-DW1037	201	61fSTOP-2000T	221
6013P-EHCW3L30	86	6013P-S10	87	6102-DW1048	201	61fSTOP-200M	221
6013P-EHCW4L30	86	6013SSP-Link	87	6102-DW2037	201	61fSTOP-3050	221
6013P-ER6W3L18	86	60V-1000	123	6102-DW2048	201	61fSTOP-3050T	221
6013P-ER6W3L30	86	60V-DEF	124, 134	6102-DW3048	201	61fSTOP-305A	221
6013P-ER6W4L12	86	60VK-1002	123	6102-EC01	201	61FT-0206	221
6013P-ER6W4L18	86	60VK-1003	123	6102-EC02	201	61FT-0312	221
6013P-ER6W4L30	86	60VP-1001	123	6102-GB1N	201	61JSK-4410	57, 105
6013P-HG05	86	60VS-1000	122	6102-GB1W	201	61JSK-44CB	57, 105
6013P-HG06	86	60VSK-1002	122	6110-2410	82	61JSK-4RMT	105
6013P-HG07	86	60VSP-1001	122	6110-24WT	82	61SA-TOOL	54, 90, 95
6013P-HG08	86	60VSPC-1001	122	6110-3010	82	61SALP-1020-EVR	90
6013P-HG09	86	6100-4000	202	6110-30WT	82	61SALP-MA	90
6013P-HG10	86	6100-5000	202	6110-3710	82	61SOC-4001	108
6013P-HG11	86	6100-6000	202	6110-37WT	82	61SOC-4011	108
6013P-HG12	86	6100-7000	202	6110-4010	82	61SOCM-4000	108
6013P-HGL	86	6100-8000	202	6110-4200	82	61SOK-0001	108
6013P-HGR	86	6100-9000	202	6110-42WT	82	61SOM-412C-EVR	108
6013P-Link	87	6100-AGBR	202	6110-48WT	82	61SOP-4002	108
6013P-R6C	87	6100-AGLC	202	6111-1400	113	61SOP-4012	108
6013P-S01	87	6100-AGNV	202	6120-24WT	82	61SOR-4000	108
6013P-S015	87	6102-1000	199	6120-30WT	82	61SPVC-4000	99
6013P-S02	87	6102-1039P	199	6120-37WT	82	61SPVC-4015	99
6013P-S025	87	6102-1078P	199	6120-42WT	82	61SPVC-4020	99
6013P-S03	87	6102-1100	199	6120-48WT	82	61T-0208	224
6013P-S035	87	6102-4000	199	61ARM-2000	221	61T-0212	224

OPW Alphanumeric Product Index

Product Number	Page	Product Number	Page	Product Number	Page	Product Number	Page
61T-0216.....	224	633AST-0250	222	6511-RB16	70	66V-0492	147, 167
61T-7268.....	112	633AST-0300	222	6511-RB24	70	66V-1300	167
61T-7368.....	112	633AST-0400	222	6511ROS-4X2.....	70	66V-1350	167
61T-7468.....	112	633AST-2061	222	6521-XAR37.....	70	68EZR-7575	164
61T-SS-0412.....	112	633AST-3061	222	6521-XAR42.....	70	696J-7010	186, 193
61T-SS-0417	112	633B-0150	222	6521-XAR48.....	70	6PGR3-4153.....	88
61TC-7270	112	633BD-1261	222	66 REC-1000	146	6PGR3-4850.....	88
61TC-7272	112	633LC-1000.....	91	66-0075.....	167	6PGR3-4859.....	88
61TCP-3800	112	633T-8060.....	90	66-1300.....	167	6PGR3SS-3672.....	88
61TP-2398.....	113	633T-8070.....	90	66CAS-0300.....	176	6PGR3SS-4350.....	88
61VSA-1020-EVR.....	95	633T-8075.....	90	66CLP-5100.....	180	6PGR3SS-5445.....	88
61VSA-MA	95	633T-8076.....	90	66CSU-5200.....	180	6PGR4-4153.....	88
6211R-15	219	633TC-8090	91	66H-08575	167	6PGR4-4174.....	88
6211R-20	219	633TC-8095	91	66H-08575-LP	167	6PGR4-4951.....	88
6211R-30	219	633TCP-3803	91	66H-0975	167	6PGR4-4972.....	88
6211SS	134	634A-0160	223	66H-0975-LP	167	70-0070.....	127
6211SS-AST74.....	218	634A-0180	223	66H-1300	167	70S-0075.....	127
6221-ASTW32.....	218	634B-0140	222	66ISB-5100.....	175	7100VF1	257
6221-ASTW34.....	218	634B-0150	222	66ISU-5100	177	71JSK-44M4.....	57
6221-ASTW72.....	218	634B-0160	222	66PRK-5015	195	71JSK-44MA	105
6221-ASTW74.....	218	634B-0170	222	66PRK-5020.....	195	71JSK-4RMT.....	57, 105
6221-ASTW76.....	218	634B-0180	222	66RB-2000	166	71SO-4000	105
623V-2203	114, 228, 134	634BK-0090.....	223	66REC-1000.....	165	71SO-400C.....	105
623V-3203	114, 228, 134	634BK-0100.....	223	66S-0075.....	167	71SO-400CT.....	103
62M-0375	98	634BK-0200	223	66S-1300.....	167	71SO-4010	105
62M-0500	98	634LPC-0400	93	66SB-1010.....	163	71SO-410C.....	105
62M-MA.....	98	634LPC-0400D	93	66SB-7575.....	163	71SO-410CT	103
62PMC-0400.....	99	634TE-7085.....	93	66SP-5150.....	195	71SO-420C.....	105
62TT-7085.....	94	634TT-4000.....	92	66SP-5200.....	195	71SO-420CT.....	103
633AST-0150	222	634TT-7085-EVR.....	92	66SRK-1000	176	71SO-TOOLCT	105
633AST-0200	222	634TTM-7087	99	66V-0300	167	71SOM-412C	105

OPW Alphanumeric Product Index

Product Number	Page	Product Number	Page	Product Number	Page	Product Number	Page
7H-0100	153	8HY-0900	154	C03653M	154	C075A-1000	9, 10
7H-0400	153	8R-0300	154	C03655M	154	C075A-250	9, 10
7H-0900	153	8S-0200	154	C03656M	154	C075A-SB	9
7H-5100	153	8Y-0900	154	C03749	108	C075A-SR	9
7H-5400	153	90K-KLS	79	C03899M	108	C10,	134
7H-5900	153	AXP40	134	C03991M	230	C10A	11
7HB-0009	153	AXP40-100	12	C04093M	221	C10A-1000	9, 10
7HB-0100	153	AXP40-250	12	C04101B	61	C10A-250	9, 10
7HB-0100-XC	146	BA-PK0100-075	150	C04114RS	221	C10A-MR	9
7HB-0400	153	BA-PK0300-075	150	C04141M	61	C10A-SB	9
7HB-0400-XC	146	BA-PK0400-075	150	C04420M	22	C10A-SR	9
7HB-0900	153	BMA-1515	17	C04432M	22	C15A	11
7HB-0900-XC	146	BMA-2020	17	C04438M	221	C15A-1000	9, 10
7HB-5009	153	BMA-3030	17	C04474RS	221	C15A-1225	9
7HB-5100	153	C00181M	100	C04476M	65	C15A-1233	9
7HB-5400	153	C01094RB	93	C04495M	189, 192	C15A-1240	9
7HB-5900	153	C01533RB	235	C04698M	189, 191, 192	C15A-250	9, 10
821-0075AC	233	C01566B	128	C04785M	65	C15A-500	9, 10
821-0100AC	233	C02115A	186, 191	C05086M	114, 228	C15A-MR	9
821-0150AC	233	C02117A	186, 191	C05089	114, 228	C15A-SB	9
821-0200AC	233	C02642M	96	C05122	114, 228	C15A-SR	9
82RV-2505	233	C03144M	235	C05165M	224	C20A	11
83-0022	100	C03420AG	187	C05170M	71	C20A-1225	9
83-0066	100	C03422	187	C05223M	72, 73	C20A-1233	9
89-0044	111	C03485M	94	C05235M	202	C20A-250	9, 10
8B-0500	154	C03559M	173	C05236M	202	C20A-500	9, 10
8BL-0400	154	C03563M	173	C05238M	199	C20A-MR	9
8G-0100	154	C03632M	108	C05239M	201, 202	C20A-SB	9
8GL-0750	154	C03647M	154	C05261M	199	C20A-SR	9
8HBL-0400	154	C03648M	154	C05295M	225	C30A	11
8HG-0100	154	C03649M	154	C075A	11	C30A-200	9, 10

OPW Alphanumeric Product Index

Product Number	Page	Product Number	Page	Product Number	Page	Product Number	Page
C30A-MR.....	9	D01773M.....	154	D02586M.....	72, 73	DS-1120.....	26
C30A-SR.....	9	D01774M.....	154	D02628M.....	201	DS-1123.....	26
CHK-1000.....	23	D01775M.....	154	D02629M.....	201	DS-1123B.....	26
CLC-33.....	20, 21	D01776M.....	154	D02671M.....	202	DS-1123F.....	26
CME-0110.....	43	D01789M.....	154	DBS-3645H.....	23	DS-1229.....	26
CME-0110R.....	43	D01790M.....	154	DEB Series.....	134	DS-1242.....	26
CME-0220.....	43	D01791M.....	154	DEB-0150.....	37	DS-1543A.....	26
CMM-200.....	43	D01874M.....	61	DEB-0200.....	37	DS-1630.....	26
CMP-200.....	43	D02025M.....	22	DEB-0200X.....	37	DS-1642.....	26
CO3533M.....	173	D02034M.....	22	DEB-0300.....	37	DS-1741.....	26
CO3558M.....	173	D02037M.....	221	DEB-0300X.....	37	DS-1836.....	26
CO3595M.....	173	D02078M.....	154	DEB-0400.....	37	DS-1928.....	26
CO75A-MR.....	9	D02141M.....	171	DEB-0751.....	37	DSF-1117F.....	31
CSK-0075S.....	43	D02147M.....	201	DEB-4015.....	37	DSF-1120.....	31
CSK-0100S.....	43	D02197M.....	31	DEB-4020.....	37	DSF-1123.....	31
CSK-0150S.....	43	D02198M.....	31	DEB-4175.....	39	DSF-1123F.....	31
CSK-0200S.....	43	D02209.....	27, 31	DO1717M.....	172	DSF-1229.....	31
CSK-0300S.....	43	D02210.....	27, 31	DO1718M.....	172	DSF-1242.....	31
D00800B.....	100	D02212.....	27, 31	DO1747M.....	81	DSF-1543.....	31
D00907M.....	154	D02213.....	27, 31	DO1785M.....	172	DSF-1543C.....	31
D00908M.....	154	D02215.....	27, 31	DO2677M.....	78	DSF-1630.....	31
D00909M.....	154	D02223.....	21	DP-1117F.....	28	DSF-1642.....	31
D01174M.....	154	D02229.....	21	DP-1123.....	28, 237	DSF-1836.....	31
D01245M.....	154	D02238.....	21	DP-1123F.....	28	DSF-1836C.....	31
D01246M.....	154	D02511.....	27, 31	DP-1543.....	28	DSFE-3712.....	31
D01295M.....	154	D02532.....	27, 31	DP-1630.....	28, 237	DSFE-4612.....	31
D01529M.....	154	D02535.....	27, 31	DP-1836.....	28	DSW-1117F.....	27
D01530M.....	154	D02536.....	27, 31	DPC-2150A.....	14, 15	DSW-1120.....	27
D01532M.....	154	D02550.....	27, 31	DPC-2200A.....	14, 15	DSW-1123.....	27
D01719M.....	154	D02571M.....	72, 73	DS-1036.....	26	DSW-1123F.....	27
D01756.....	108	D02575M.....	72, 73	DS-1117F.....	26	DSW-1229.....	27

OPW Alphanumeric Product Index

Product Number	Page	Product Number	Page	Product Number	Page	Product Number	Page
DSW-1242	27	E00624	79, 129	FC075-MM12	125	FDS-4319	30
DSW-1543	27	E00626	79, 129	FC10	125	FDS-4721	30
DSW-1543C	27	E00628	79, 129	FC10-MM12	125	FDS, DEF, DS, DSW or PST.	134
DSW-1630	27	E00630	79, 129	FC10-MM18	125	FIB-KHB	77
DSW-1642	27	E00632	79, 129	FC10-MM24	125	FIB-KHP	77
DSW-1836	27	E00712	79, 129	FC15	125	FIB2-RL-KEY	77
DSW-1836C	27	E00713	79, 129	FC15-MM12	125	FIT-3530	29
DSW-1836CL	27	E00714	79, 129	FC15-MM14	125	FL100-SEAL	77
E00274AG	187	E00715	79, 129	FC15-MM18	125	FL100-SK10-16	77
E00292M	173	E00779	21	FC15-MM24	125	FL100-SK12	77
E00304M	154	E00917M	154	FC15-MM30	125	FL100BLACK	76
E00306M	154	EBF-0150	36	FC15-SWM12	126	FL100BLACK-SK12	76
E00307M	154	EBF-0200	36	FC15-SWM14	126	FL100F	77
E00308M	154	EBF-0200F	36	FC15-SWM18	126	FL100GRAY	76
E00324M	154	EBF-0300	36	FC15-SWM24	126	FL100GRAY-MP16	67
E00325M	154	EBF-0400	36	FC20	125	FL100GRAY-MP16-SK12-BU.	66
E00368M	154	EBF-0600	36	FC20-MM12	125	FL100GRAY-MP16-SK12-G.	66
E00491	65	EBF-0751	36	FC20-MM14	125	FL100GRAY-MP16-SK12-R.	66
E00508M	81	FBN-2075	44	FC20-MM18	125	FL100GRAY-MP16-SK12-W	66
E00510M	81	FBN-2100	44	FC20-MM24	125	FL100GRAY-OF8	67
E00512M	81	FBN-2150	44	FC20-MM36	125	FL100GRAY-OF8-SK12-G	66
E00514I	83	FC-10-BLACK	67	FC20-SWM12	126	FL100GRAY-SK12	76
E00515I	83	FC-10-BLUE	67	FC20-SWM14	126	FL120-SEAL	77
E00516I	83	FC-10-GRAY	67	FC20-SWM18	126	FL120-SK12	77
E00584M	81	FC-10-ORANGE	67	FC20-SWM24	126	FL120BLACK	76
E00590M	27	FC-10-RED	67	FC30	125	FL120BLACK-MW	83
E00591M	27	FC-10-SEAL	67	FC30-MM18	125	FL120BLACK-MW-SK12	83
E00618	79, 129	FC-10-WHITE	67	FC30-MM24	125	FL120BLACK-SK12	76
E00620	79, 129	FC-10-YELLOW	67	FCXX-XXXX Series	134	FL120F	77
E00622	79, 129	FC075	125	FDS-4021	30	FL180-SEAL	77

OPW Alphanumeric Product Index

Product Number	Page	Product Number	Page	Product Number	Page	Product Number	Page
FL180-SK12	77	FL90BLACK	76	H01344M	235	H05000M	185, 191
FL180BLACK	76	FL90BLACK-SK12	76	H01461AH	192	H05063M	186, 191
FL180BLACK-SK12	76	FL90F	77	H01500B	128	H05064M	185, 191
FL180F	77	FL90GRAY-MP-SK12-BU	66	H01505RB	235	H05087M	186, 191
FL180GRAY-SK12	76	FL90GRAY-MP-SK12-G	66	H01608M	100	H05088M	185, 191
FL36-SK12	77	FL90GRAY-MP-SK12-R	66	H01614M	74	H05135M	186, 191
FL36BLACK	76	FL90GRAY-MP-SK12-W	66	H01629M	74	H05198M	185, 191
FL36BLACK-SK12	76	FL90GRAY-MP16	67	H01780M	74	H05289M	90
FL36F	77	FL90GRAY-OF	67	H01781M	74	H05297M	186
FL36GRAY	76	FL90GRAY-OF-SK12-G	66	H01814	189	H05361	121
FL42-SK12	77	FL90GRAY-OF-SK12-Y	66	H01817	189	H05719RE	192
FL42BLACK	76	FL90GRAY-SK12	76	H01818	189	H05783DI	100
FL42BLACK-SK12	76	FSA-400	57	H01841	192	H05784M	100
FL42F	77	FSA-400-S	57	H01967M	116, 230, 231	H05792M	236
FL42GRAY-SK12	76	FSS-50	34	H01969M	116, 231	H05973M	235
FL600-SEAL	77	H00113RA	189, 192	H02211M	74	H06026M	186
FL600-SK12	77	H00113RAG	189	H02477M	185, 191	H06045M	186, 191
FL600BLACK	76	H00122M	116, 231	H03295M	235, 236	H06733M	189
FL600BLACK-SK12	76	H00136M	189, 192	H03636M	230	H06742RE	189
FL600F	77	H00195RB	189, 192	H03666M	189	H06796B	236
FL7	77	H00250RB	189	H03981RE	185, 191	H06797RB	236
FL760-SEAL	77	H00252RA	189	H04035M	235, 236	H06798RB	236
FL760-SK12	77	H00390RS	128	H04145M	94, 96	H06799	236
FL760BLACK	76	H00404RB	236	H04150M	90, 96, 100	H06800B	236
FL760BLACK-SK12	76	H00409RB	236	H04250M	236	H07012M	189, 192
FL760F	77	H00520RB	189	H04788M	121	H07062M	186, 191
FL7A	77	H00538RE	189	H04825M	186, 191	H07071M	128
FL7A-ENCL	77	H00642B	236	H04828M	185, 191	H07084M	74
FL90-SEAL	77	H00999M	192	H04898M	100	H07353M	230
FL90-SK12	77	H01227M	185, 191	H04981M	128	H07355M	230

OPW Alphanumeric Product Index

Product Number	Page	Product Number	Page	Product Number	Page	Product Number	Page
H07356B	230	H09039M	90, 94, 95	H11456M	115, 229	H12280M	65
H07488A	236	H09212	186, 191	H11499M	186	H12319M	186, 191
H07495A	236	H09213	186, 191	H11547DI	235	H12320M	186, 191
H07580M	185, 191	H09214	186, 191	H11592AH	189	H12583M	172
H07593M	186, 191	H09215	186, 191	H11620M	78	H12585M	172
H07595M	186, 191	H09365M	186, 191	H11671M	65	H12617M	221
H07610RB	236	H09366M	186, 191	H11744M	172	H12620	65
H07613M	186, 191	H09367M	185, 191	H11745M	172	H12705M	186, 191
H07642ZA	235	H09417	185, 191	H11746M	172	H12706M	185, 191
H07643RB	121	H09420	185, 191	H11747M	172	H12707M	186, 191
H07644M	235	H09600AH	189	H11751M	172	H12806M	58, 61, 70
H07659M	121	H09601AH	189	H11756M	172	H12872M	83
H07670M	186	H09712RS	185, 191	H11775M	74	H12873M	83
H07719	185, 191	H09713RS	185, 191	H11817M	172	H12874M	83
H07766M	186	H10003M	235	H11818M	172	H12927M	61
H08163M	189, 192	H10004A	235	H11819M	172	H13213M	22
H08164RE	189	H10096M	230	H11829M	172	H13214M	21, 22
H08165RE	189, 192	H10122M	74	H11923M	154	H13215M	22
H08380AH	230	H10387	186, 193	H11925M	189	H13257M	21, 22
H08441RS	186, 191	H10388	186, 193	H11930	109	H13439M	78
H08879M	185, 191	H10445M	235	H11931M	108	H13441M	78
H08881M	186, 191	H10458M	186	H11960M	128	H13774M	185
H08882M	186, 191	H10731RE	93	H11961M	128	H13775M	186, 191
H08884M	186, 191	H10765M	93	H12011M	172	H13776M	186, 191
H08886M	185, 191	H10886M	97	H12013M	172	H13931M	61, 71
H08887M	185, 191	H10899M	74	H12014M	172	H13941M	171
H08889M	186, 191	H11211M	230	H12018M	172	H13942M	171
H08890M	186, 191	H11293M	235	H12070M	235	H13943M	171
H08892M	186, 191	H11421RS	224	H12071R	235, 236	H13964M	171
H08989M	96	H11432M	115, 229, 230	H12229M	53, 54, 56, 58, 63	H14105M	189, 191, 192

OPW Alphanumeric Product Index

Product Number	Page	Product Number	Page	Product Number	Page	Product Number	Page
H14460M	79	H15268M	58, 61, 70	MPK-10	29	P110-3950L	79
H14461M	79	H15271M	58, 61, 70	MPWS-33	72	P110-40G	82
H14462M	78	H15294M	96	MPWS-33BD	72	P110-40L	82
H14463M	78	H15325M	224	MPWS-33BDD	72	P110-42G	71, 82
H14580M	171	H15411M	225	MPWS-36	72	P110-42L	82
H14661M	171	H15412M	225	MPWS-39BD	72	P110-4425L	79
H14662M	171	H15937M	225	NTK11-0100	149	P110-48G	71, 82
H14858	79	H15985M	145	NTK11-0300	149	P110-48L	82
H14895M	114, 228	H7635RB	235	NTK11-0400	149	P110-8G	82
H14909M	224	ID-D	67	NTK11-0500	149	P110-8L	82
H15002M	58	ID-E85	67	NTK11-0900	149	P111-WTL	71
H15005M	92, 93, 97	ID-M	67	NTK12-0100	149	P111WTL-S	71
H15144M	58, 61, 70	ID-MW	67	NTK12-0300	149	P120-36L	82
H15187M	53, 71	ID-P	67	NTK12-0400	149	P120-37L	82
H15188M	72, 73	ID-R	67	P-30L	71	P120-42L	82
H15190M	72, 73	ID-T	67	P100-2AST	199	P2105BUCKET	71
H15210M	201	ID-U	67	P100-3F	199	P311-14	71
H15210M	199	ITR-3015	29	P100-4STF	202	P311-1R	71
H15211M	199, 201	ITR-3020	29	P110-12G	82	P311-G	71
H15212M	199, 201	JCB-1000	44	P110-12L	82	P338SPOOL	199, 202
H15238M	71	JCT-0075	44	P110-16G	82	P40-ROTOLID	71
H15240M	71	JCT-0100	44	P110-16L	82	P411-EVRPL	71
H15260	202	JCT-0150	44	P110-18G	82	P511-15-EVRDV	67, 71
H15261	202	JCT-0200	44	P110-18L	82	P511-BK	71
H15262	202	JCT-0300	44	P110-20LID	65	P511-DEVRB-14	71
H15263	202	KEY-HREP-10-76-90	77	P110-24G	82	P511-DEVRBUCKET	71
H15264	202	LRK-CLC	20	P110-24L	82	P511-G14	71
H15265M	201, 202	MBS-3645H	23	P110-30G	82	P511-GKIT	71
H15266	202	MFPD	156	P110-37G	71, 82	P511-PEVRB-14	71
H15267M	224	MFVA	174	P110-37L	82	P511-PEVRBUCKET	71

OPW Alphanumeric Product Index

Product Number	Page	Product Number	Page	Product Number	Page	Product Number	Page
P511BUCKETBOLT	71	PPT-1630	237	S-CS-SEALANT	20	S8CR	19
P511C-DEVRB-14	71	PROTO-LOCK	71, 82	S-TH-RISER-31	20	S8CR-3100G-MP3716-R	68
P511C-DEVRBUCKET	71	PSL-2430	42	S-TH-RISER-33	20	S8CR-3100G-MP3716-W	68
P511C-PEVRB-14	71	PSL-3630	42	S-TH-RISER-37	20	S8CR-3100G-OF378-Y	68
P511C-PEVRBUCKET	71	PSL-3830	42	S14-3100-TH	19	S8CR-390BL-WT33	24
P511YBUCKET	71	PST-4630	40	S14-390-TH	19	S8CR-390G-WT33	24
P521-GKIT	71	PST-5030	40	S14-EX12	19	S8CR-390WT-KIT	19
P711-EVRDV	67, 71	PSTF-4630	40	S14CR	19	S8CRD	19
P711-EVRPL	67, 71	PTA-4175	39	S14CR-3100BL-WT33	24	S8CRD-390BL-WT33	24
P761C-EVRDV	67, 71	PTS-4021	40	S14CR-3100G-MP3716-R	68	S8CRD-390G-WT33	24
P761C-EVRPL	67, 71	REF-0075C	35	S14CR-3100G-MP3716-W	68	S8CRD-390WT-KIT	19
PA15-10	119	REF-0100C	35	S14CR-3100G-MP3755-R	68	S8SB	19
PA15-15	119	REF-0150	35	S14CR-3100G-OF3727-Y	68	S8SB-390BL-WT33	24
PA15-20	119	REF-0200	35	S14CR-3100G-OF378-Y	68	S8SB-390G-WT33	24
PB-1344	199, 201	REF-0200F	35	S14CR-3100G-WT33	24	S8SB-390WT-KIT	19
PB-1373	199, 201	REF-0200X	35	S14CR-390WT-KIT	19	S8SBD	19
PB-1375	199, 201	REF-0300	35	S15-3100-TH	19	S8SBD-390WT-KIT	19
PB-1394	199, 201	REF-4015	35, 134	S15-390-TH	19	SAB-7400	36
PB-1396	199, 201	REF-4015A	35	S15-EX12	19	SBA2-0150	43
PBOOT	219	REF-4020	35, 134	S15CR	19	SBA2-0200	43
PCB-2000	44	REF-4020A	35	S15CR-3100BL-WT33	24	SBC-2075	16, 39
PCT-1000	44	RF400-10	194	S15CR-3100G-MP3755-W	68	SBC-2100	16, 39
PDT-411	39	RF400-10P	194	S15CR-3100G-WT33	24	SBC-2150	16
PEF-3515R	29	RF400-75	194	S15CR-390WT-KIT	19	SBC-2200	16
PEF-3515X	29	RF400-75P	194	S42-3100-TH	19	SBK-1000J	29
PEF-3520R	29	RK-5000	20, 21	S45	19	SBK-1100J	29
PJK-4175	39	RPHK	78	S45-1180BL	83	SBK-1200J	29
PLEX-TUBE	20	RPHK	82	S45-1180G	83	SBK-1500	29
PlexisApplicator	20	RPKLLK	78	S8-3100-TH	19	SBK-1500A	29
PP-2136	237	RTR Series	53	S8-390-TH	19	SBK-1500AV	29
PPT-1123	237	S-CR-FGK	20	S8-EX12	19	SBK-1500V	29

OPW Alphanumeric Product Index

Product Number	Page	Product Number	Page	Product Number	Page	Product Number	Page
SBK-1600	29	SMF-4EFT	25	TBA-0300	38	VA-PK0100-075-LP	150
SBK-1800	29	SMF-6	25	TBA-3015	38	VA-PK0300-075	150
SBO-0250	29	SPC-0075	15	TBA-3020	38	VA-PK0300-075-LP	150
SBO-0300	29	SPC-0100	15	TBA-4015	38	VA-PK0400-075	150
SC-PLAIN	61	SPC-0150A	15	TBA-4020	38	VA-PK0400-075-LP	150
SCC-1515	15	SPC-0200A	15	TBA-4030	38	VAR75	178
SCC-2015	15	SPC-0300	15	TBA-4175	39	VPN4X7	58, 61, 70
SCC-2020	15	SPC-400	44	TBA-4175A	39	VPN4X9	61, 70
SCC-3030	15	SRE-2015	15	TC-400	58, 61, 70	WIP-HK-8000	23
SCS-0030-HW	23	SRT-2151	15	TCT-2509	38	WS-RING-31	20
SCS-0036-HW	23	SSE-1515	16	TFA-4090	25	WS-RING-33	20
SCS-0042-H	23	SSE-2020	16	TGA-15	38	WS-RING-37	20
SEF-1515	15	SSSBA-150	43	TGTA-0400	225	WSP-CRK	20
SEF-2020	15	SSSBA-200	43	TJ-200A	38	WSP-WTS-OPC	20
SEF-3030	15	SSSBE-150	43	TLT-36A	38	WSP33-16	68
SFA-1010	15	SSSBE-200	43	TMA-2224	25	WSP33-8	68
SFA-7575	15	SST-1515	16	TMA-2424	25	WSP37-16	68
SGP-0150	15	SST-2020	16	TSC-0030	23	WSP37-275	68
SGP-0200	15	Stainless Steel Link	87	TSC-0036	23	WSP37-550	68
SGP-0300	15	STC-0150	15	TSC-0042	23	WSP37-8	68
SIP-4	25	STC-0200	15	TSD-4536	22	WT-31	19
SIP-6	72, 73	STC-0300	15	TSD-4842	22	WT-33	19
SL-1100	20, 58, 31, 44	Steel (12K Plate)	87	TSDF-4536	21	WT-37	19
SLPK	72, 73	STF-1515	15	TSDF-4536CL	21	WTS-CAP-14	20
SMA-1010	15	STF-2020	15	TSM-4536	22	WTS37-16	68
SMA-1515	15	STF-2215	15	TSM-4842	22	WTS37-8	68
SMA-1520	15	STF-3030	15	TSMF-4536	21		
SMA-2020	15	TBA-0075	38	TSMF-4536CL	21		
SMA-3030	15	TBA-0100	38	TSS-4536	22		
SMA-7575	15	TBA-0150	38	TTT-2536	38		
SMF-4E	25	TBA-0200	38	VA-PK0100-075	150		

OPW Product Instruction Sheet Index

Description	Part Number	Description	Part Number
Access Pipe Installation Instructions	API-0001	1 TAG.....	H13773M
California Compliant Boot Info Flyer.....	CAB-0001	1-2100-DSH Shell/Fibrelite Spill Container	H15324PA
California Compliant Pipe Info Flyer.....	CPF-0001	1-3100 Series Double Wall Spill Container.....	202181
Coax Fitting Flyer	CFF-0001	1-3100-TOOL	202395
Cold Weather Flyer	CWF-0001	10 Plus Emergency Valve	201614
Coupling Machine Operating Instructions.....	CMI-0001	10 Series	H11374PA
Dispenser Containment Flyer	DCF-0001	10 Series 2"	H11442M
Dispenser Containment Manual.....	DCM-0001	100 Series Counterweight Hose Retractors	H15852PA
Dispenser Pans and Entry Fitting Install	DPI-0001	101BG Slip On.....	H12579M
Dispenser Sumps & Stabilizer Bars.....	DSI-0001	101BG-2100.....	H12260M
Double Entry Boot Flyer	DBF-0001	101BG-21AR Spacer Ring	H12713PA
Entry Boot Flyer.....	EBF-0001	101BG-LATCH	H13533M
E-Vac Installation Instructions.....	EII-0001	104AOW Observation Well	H12892M
Flexible Entry Boot Manual	EBM-0001	104AOW-12KIT	H14490M
Flexible Entry Boots	FBI-0001	10R Replacement Top	H09683PA
Flexible Isolation Tubes.....	P-ITI-5080	144TA and 444TA-0100.....	200655
Flexible Piping Manual.....	UPM-0001	18KR RACK KIT	H10150PA
Float Vent Valve Install	FVV-0001	18KVA Rack Kit.....	H13156M
Install Tips.....	FIT-0001	199ASV Series.....	H13422PA
PetroTrip Flyer.....	PTF-0001	1DK-2100 Drain Valve Kit	H11471M
Petro-Trip Installation	PTI-0001	1DP Drain Plug Kit	H15199M
Pipe Cutaway Flyer	FPC-0001	200TG Tank Gauges.....	H14912PA
Piping Flyer	FPP-0001	201 Series	H14271PA
Piping Installation Instructions.....	PII-0001	202 Series	H11792M
SB-989 Testing Procedures.....	P-SB-989	233's and 53VML's	H14111M
Swivel Fitting Flyer.....	SFF-0001	295-SRK	H9775PA
Tank Fitting Adapter	FAI-0001	30MV-KIT	200172
Tank Sump Flyer.....	TSF-0001	505 Multi-port	H15225PA
Tank Sump Manual	TSM-0001	523V	H11972M
Transition Sump Flyer.....	SFT-0001	523V 3" Water Column	H12988M
1 Spill Container Slip-on Models	H12262M	53VML/30MV.....	H14111PA
1-2100 Series Spill Container	H12295M	60V	H12133M

OPW Product Instruction Sheet Index

Description	Part Number	Description	Part Number
60VS	H12291M	633TC & 633TCP	H10013PA
61FSTOP-1000, 100M, 200M	H12676M	634TTM-7087	H10772PA
61FSTOP-2000	H13337M	6521-XAR Adaptor Ring	201526
61FSTOP-3000, 3050, 305A	H13315M	6591B Contained	H16047PA
61FT-0312, 0206	H14428PA	6591B Series	H16043PA
61JSK	H15289M	68EZR Reconnectable Breakaway	208080
61JSK-4410 AND 61JSK-44CB	H15289M	70 and 70S Verticle Check Valve	H11055PA
61JSK-4RMT	H14741PA	71SO	H15524PA
61SOM EVR	H15057PA	700 Series Remote Replaceable	200242
61SA-TOOL	H14991PA	700 Series Replaceable Spill	200219
61SALP	H12712M	82RV-2505 Series Pressure Relief Valve Instruction Sheet	200517
61SALP	H12712M	CPN PIPE - POLYWRAP REMOVAL	200453
61SO Methanol Lower Tube Instructions	C04098M	Extractor Fittling 233E Style, 233VP, 233 VMP	
61SO-4000 Series	H11764M	Test Caps	H11223PA
61SO-4BYT	H12027M	MPWS	H15226PA
61SOC Coaxial Fill Tube	C03634PA	MPWS-33TS	H15912PA
61SOK Float Kit	H11403PA	MPWS	H15861PA
61SOM EVR	H14790M	MSDS Sheet For Loctite "Weld"	H12854M
61SOR Remote Fill Tube	H11964M	POMECO 211-RMOT Remote Fill Aboveground Storage Tank Spill Container	H15857PA
61T Drop Tube	200652	POMECO 211, 221-AST Direct Fill Aboveground Storage Tank Spill Containers	H15854PA
61T-2" Drop Tube	H15392PA	POMECO 6111-KP Slip On Series Spill Container with Hand Pump Instruction Sheet	H15850PA
61TCP-3800	H12064M	POMECO 7111SS-CSDW Double Wall Slip On Series Spill Container Instruction Sheet	200639
61TNG	H12697M	POMECO Island Form Instruction Sheet	H15851PA
61TP-2398	H09787PA	Pump Kit 1P-2105	H12302M
61VSA	H14656M	Registration Card	H15003PA
1611 - 3" Vapor Adaptor	H08843PA	Threaded Carb Approved (61SOP)	H13792M
6111-1400	H14977M	Threaded/Carb Approved (61SO)	H13791M
6111-1400 Tank Bottom Protector	H14977PA		
6211-AST and 6221-AST Spill Containers	202207		
623V	H15208M		
623V	H14898M		
62M Series	H14491PA		

OPW Product Instruction Sheet Index

Description	Part Number	Description	Part Number
100 Series Counterweight Hose Retractors	H15852PA	12VW Series Instruction Sheet	H14072M
102 Spring Balance Hose Retractors	H15853PA	12VW Spout Replacement Kit Instruction Sheet .	H14603PA
11A Spout Replacement Kit Inst. Sheet, Canada	H15177PA	190 Upper Poppet Replacement Inst. Sheet.....	H10969PA
11A, 11B, 7H Nozzles Canada	H15987M	295 Guard Replacement Kit Instruction Sheet	H14519M
11A, 11B, 7H Nozzles International	H15988M	295 Series Instruction Sheet.....	H09237PA
11A, 11B, 7H Nozzles USA.....	H15985M	295 Swivel Repair Kit Instruction Sheet	H15904PA
11B Spout Replacement Kit Inst. Sheet, Canada	H15178PA	38CS Series Instruction Sheet.....	H10754PA
11VA & 11VAI Series Instruction Sheet.....	H13664M	3VW VEG Kit (Wayne Models) Instruction Sheet..	H12172M
11VA Hand Insulator Kit Instruction Sheet.....	H11935PA	44 Series Instruction Sheet.....	H12918PA
11VA Spout Replacement Kit Instruction Sheet ...	H13938M	44N Series Instruction Sheet	H13168PA
11VAA Series Instruction Sheet.....	H13234M	5B Leaded Spout Kit Instruction Sheet.....	H10426PA
11VAI Spout Repl. Kit w/ Adap. Inst. Sheet.....	H12686M	5B Series 11A, 11B Spout Kit Instruction Sheet...	H04872M
11VAI Spout Repl. Kit w/o Adap. Inst. Sheet.....	H12881M	5BH Series 7H, 7HB Spout Kit Instruction Sheet..	H08336PA
11VAI Vapor Path Rep. Kit Instruction Sheet	H13142M	5D Series 1290 Spout Kit Instruction Sheet.....	H09656PA
11VAI, 12VW Vapor Recovery Nozzles.....	H15986M	66CAS, 66TEC, 66FLB Series Instruction Sheet....	H13008M
11VF Balance Nozzle.....	H10655PA	66CL Series Instruction Sheet.....	H11487PA
11VF Balance Nozzle.....	H14380M	66CLP Breakaway	F-70
11VF Bellows & Face Seal Rep. Kit Inst. Sheet....	H11011PA	66CSU Breakaway.....	F-72
11VF Bellows Replacement Kit Instruction Sheet...	H11010PA	66ISB Swivel Break	F-68
11VF Face Seal Replacement Kit Inst. Sheet	H11009PA	66ISU Breakaway.....	F-71
11VF Hand Insulator Instruction Sheet.....	H10791PA	66SB/RB	F-69
11VF Spout Replacement Kit Instruction Sheet...	H11007PA	66SRK-1000 O-ring kit (66CAS)	H14485PA
11VF Spout, Bellows, & Face Seal Repl. Kit Inst.	H11008PA	OPW Hand Insulators.....	H11337PA
1290 Automatic Bulk Nozzle.....	H09238PA	Renewable Hand Insulators	H10652PA
12VW Hand Insulator Repl. Kit Instruction Sheet..	H14604PA		



OPW STANDARD PRODUCT WARRANTY

NOTICE: FlexWorks by OPW, Inc., VAPORSAVER™ and all other OPW products must be used in compliance with all applicable federal, state, provincial and local laws, rules and regulations. Product selection is the sole responsibility of the customer and/or its agents and must be based on physical specifications and limitations, compatibility with the environment and material to be handled. All illustrations and specifications in this literature are based on the latest production information available at the time of publication. Prices, materials and specifications are subject to change at any time, and models may be discontinued at any time, in either case, without notice or obligation.

OPW warrants solely to its customer (the initial purchaser and any subsequent purchasers within the warranty period) that the following products sold by OPW will be free from defects in materials and workmanship under normal use and conditions for the periods indicated:

PRODUCT	WARRANTY PERIOD
FlexWorks Primary Pipe	10 years from date of manufacture
All Products and replacement parts installed in the State of California Certified to California CP-201 and/or CP-206 Standards*	1 year from date of installation (proof of purchase from certified contractors/technicians required) OPW warrants ongoing compliance with the standards and specifications for the duration of the warranty period required by the State of California; this limited warranty is under the condition the equipment was installed and maintained by trained and certified contractors/technicians unless noted in Installation Manual
All Other Products	1 year from date of manufacture
*Products certified to California CP-201 and/or CP-206 Standards have been factory tested and met all applicable performance standards and specifications and will have an OPW registration card enclosed/attached to the product	

OPW's exclusive obligation under this limited warranty is, at its option, to repair, replace or issue credit (in an amount not to exceed the list price for the product) for future orders for any product that may prove defective within the applicable warranty period (repairs or replacements are subject to prorated warranty coverage for remainder of the original warranty period). Complete and proper warranty claim documentation and proof of purchase required. All warranty claims must be made in writing and delivered during the applicable warranty period to OPW at OPW 9393 Princeton-Glendale Road Hamilton, Ohio, USA 45011, Attention: Customer Service Manager. No products may be returned to OPW without its prior written authority.

This limited warranty shall not apply to any FlexWorks or VAPORSAVER™ product unless it is installed by an OPW attested installer. This limited warranty also shall not apply to any FlexWorks, VAPORSAVER™ or other OPW product: unless all required site and warranty registration forms are completed and received by OPW within 60 days of installation; unless all piping connections are installed with a nationally-recognized or state-approved leak detection device in each tank and dispenser sump (which are not for storage and from which all discharge hydrocarbons must be removed, and the systems completely cleaned, within 24 hours); unless testable sumps utilize FlexWorks pipe and access fittings; unless a sump inspection log or an EPA recommended/required checklist is maintained and the results are furnished to OPW upon request; and unless OPW is notified within 24 hours of any known or suspected product failure and is provided with unrestricted access to the product and the site. This limited warranty also shall not apply to any product which has been altered in any way, which has been repaired by anyone other than a service representative authorized by OPW, or when failure or defect is due to: improper installation or maintenance (including, without limitation, failure to follow FlexWorks Quick Reference Manual Installation Guide and all product warning labels); abuse or misuse; violation of health or safety requirements; use of another manufacturer's, or otherwise unauthorized, substances or components; soil or other surface or subsurface conditions; or fire, flood, storm, lightning, earthquake, accident or any other conditions, events or circumstances beyond OPW's control.

THIS LIMITED WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, AND ALL OTHER WARRANTIES INCLUDING, WITHOUT LIMITATION, THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE HEREBY EXCLUDED.

OPW shall have no other liability whatsoever, whether based on breach of contract, negligence, gross negligence, strict liability or any other claim, including, without limitation, for special, incidental, consequential or exemplary damages or for the cost of labor, freight, excavation, clean-up, downtime, removal, reinstallation, loss of profit, or any other cost or charges. No person or entity is authorized to assume on behalf of OPW any liability beyond this limited warranty. This limited warranty is not assignable.



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