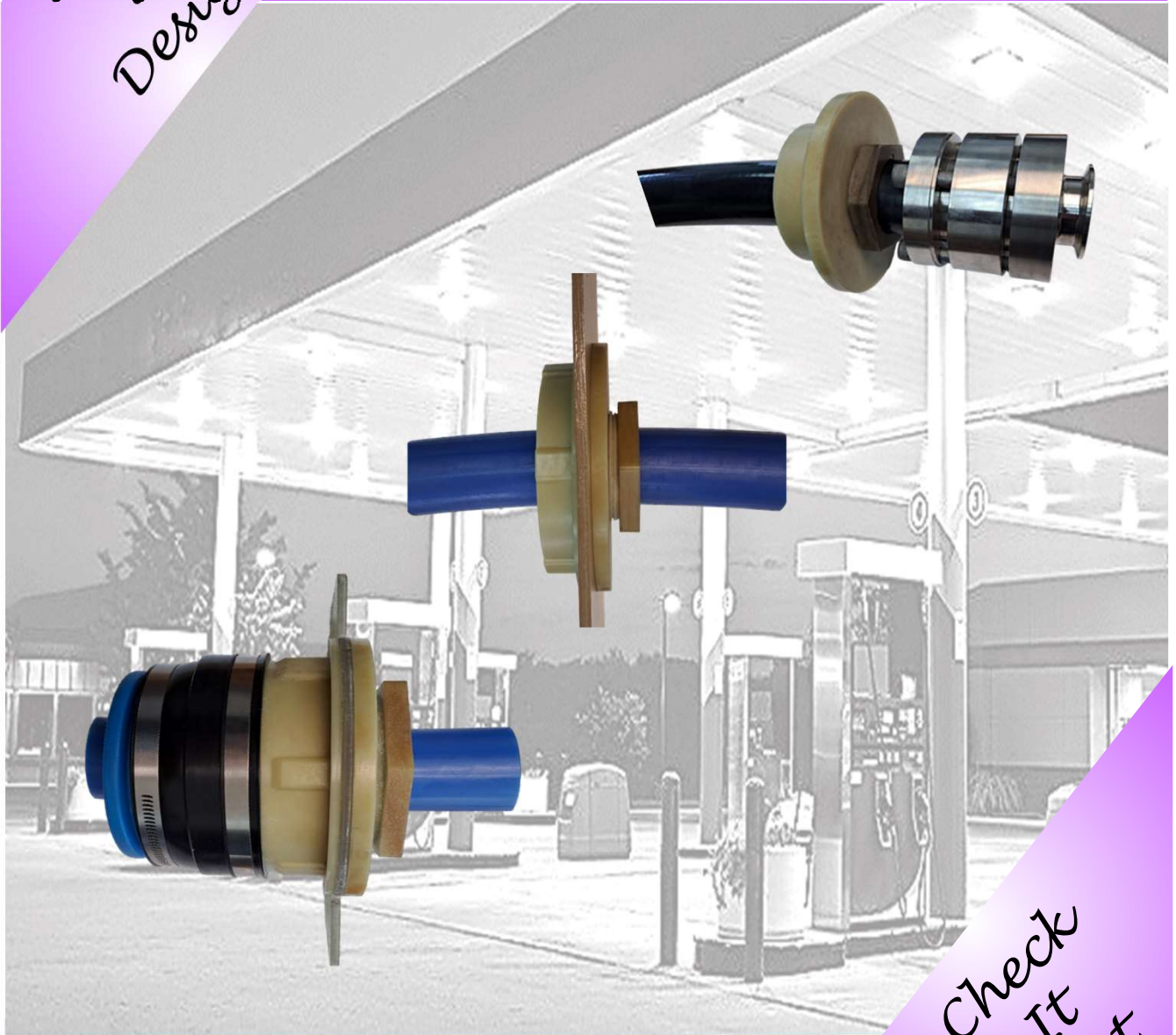


# Compact Fittings Catalog

*Better  
By  
Design*



*Check  
It  
Out*

**June 2023**



*"Better by Design"*

Diversified Products Manufacturing, Inc.

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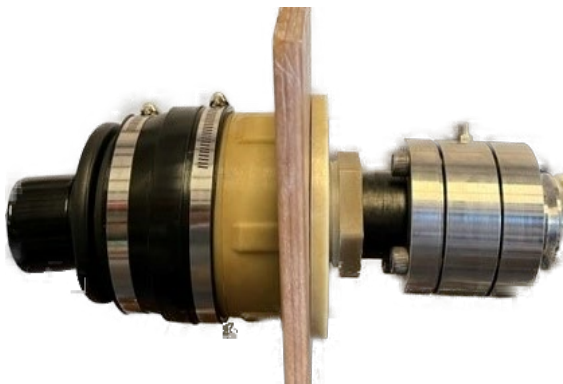
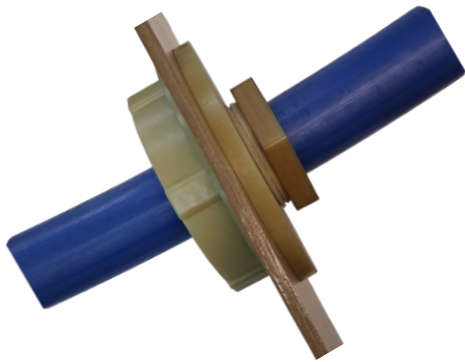


Diversified Products Manufacturing, Inc. 5523 Baggett Marysville Road Oroville CA 95965  
E-Mail: Sales@DPM-llc.com Web: dpm-co.com  
Phone: 530-534-3966 Fax: 530-534-7404





**Revolutionary Compact Penetration Fitting "NO RUBBER" In The Sump**



**Features**

**No Exposed Rubber In The Sump**

- Water Tight Corrugated Ducting Seals
- Penetration Extends Less Than 1-1/2" Into Sump
- Tested In Excess of 60 PSIG

**Benefits**

**Never Repair a Penetration Fitting Again**

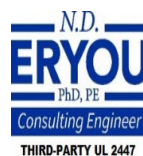
- Available For All Pipe Sizes up to 3.3" OD
- Pipe Is Fully Retractable & Replaceable
- Easy and Quick Installation

**Applications**

- Corrugated Ducting
- Direct Burial
- Single Wall Sumps
- Double Wall Sumps



EQ-742 EQ-801 EQ-836



THIRD-PARTY UL 2447





# Product Bulletin

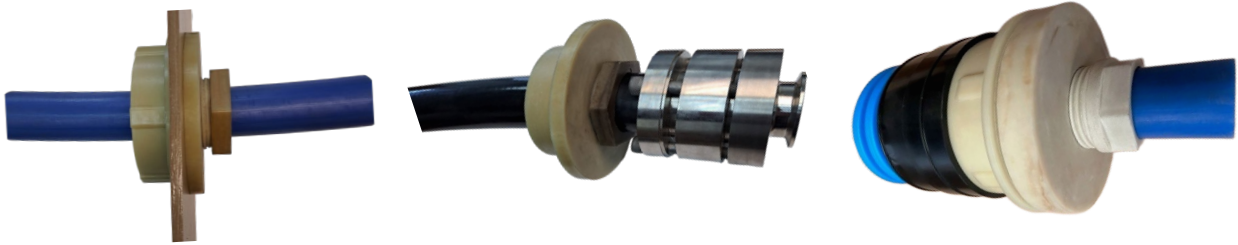


## Compact Penetration Fittings

### Never Repair A Penetration Fitting Again!

Diversified Products Manufacturing Inc now offers a solution to the problem at a competitive price.

#### The Compact Fitting:



This remarkable invention is cost effective and works on all Flex Pipe, Semi Rigid Pipe, and Rigid Pipes up to 3.3" OD

Designed to work on Direct Burial and Corrugated Duct Applications

1.25" depth leaves maximum room in the sump for connections

Preferred by some OEM's

Tests to **Sixty** times maximum required pressure

Tested and did not fail to beyond 138 feet depth of burial

Product pipe is retractable without breaking concrete

Available through PEI Distributors

Custom Sizes Available

Third Party Approved to UL 2447 Protocols

Call us for a sample or test site

We have been here since 1991

First Testable Penetration, Magnetic Tank Sump Lid, and now the Compact Penetration

**CHECK IT OUT**

Call a Diversified representative to discuss your project needs. 530-534-3966

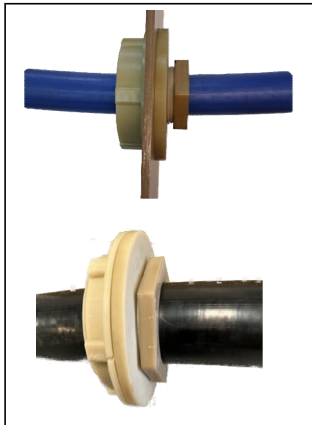




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### FGC Series Penetrations

#### Fiberglass Penetrations for Flex & NOV Pipe "No Rubber in the Sump" for DPM Single & Double Wall Sumps Direct Burial



Part #	Description	List Price
PF-FGC-1.18-DB	Compact Fiberglass Penetration for OPW-C075A	<b>\$146.96</b>
PF-FGC-1.27-DB	Compact Fiberglass Penetration for APT-XP-100-D	
PF-FGC-1.47-DB	Compact Fiberglass Penetration for APT-XP-100-SC	
PF-FGC-1.50-DB	Compact Fiberglass Penetration for OPW-C10A	
PF-FGC-1.70-DB	Compact Fiberglass Penetration for APT-XP-150-D	
PF-FGC-1.90-DB	Compact Fiberglass Penetration for APT-XP-150-SC	
PF-FGC-2.00-DB	Compact Fiberglass Penetration for OPW-C15A	
PF-FGC-2.15-DB	Compact Fiberglass Penetration for APT-XP-175-D	
PF-FGC-2.38-DB	Compact Fiberglass Penetration for NOV 2" Single Wall Pipe	
PF-FGC-2.45-DB	Compact Fiberglass Penetration for OPW-C20A & APT XP-200-D	
PF-FGC-2.65-DB	Compact Fiberglass Penetration for APT-XP-200-SC	
Note for OmegaFlex DoubleTrac Products refer to our OmegaFlex Catalog		

#### Fiberglass Penetrations for Flex & NOV Pipe "No Rubber in the Sump" for DPM Single & Double Wall Sumps used with Corrugated Duct



Part #	Description	List Price
PF-FGC-1.18-CD	Compact Fiberglass Penetration for OPW-C075A	<b>\$208.98</b>
PF-FGC-1.27-CD	Compact Fiberglass Penetration for APT-XP-100-D	
PF-FGC-1.47-CD	Compact Fiberglass Penetration for APT-XP-100-SC	
PF-FGC-1.50-CD	Compact Fiberglass Penetration for OPW-C10A	
PF-FGC-1.70-CD	Compact Fiberglass Penetration for APT-XP-150-D	
PF-FGC-1.90-CD	Compact Fiberglass Penetration for APT-XP-150-SC	
PF-FGC-2.00-CD	Compact Fiberglass Penetration for OPW-C15A	
PF-FGC-2.15-CD	Compact Fiberglass Penetration for APT-XP-175-D	
PF-FGC-2.45-CD	Compact Fiberglass Penetration for OPW-C20A & APT XP-200-D	
PF-FGC-2.65-CD	Compact Fiberglass Penetration for APT-XP-200-SC	
Note for OmegaFlex DoubleTrac Products refer to our OmegaFlex Catalog		

#### Diversified Fiberglass Bonder & Cleaner for Fiberglass Penetrations and Repair Kits



Part #	Description	List Price
CH-DFB-50ml	50ml Cart Set Epoxy Fiberglass Bonder for Fiberglass Penetrations includes one CH-DSM-V Static Mixer. Use with CH-DAG-III and CH-DSM-V	\$104.12
CH-DSM-V	Static Mixer for use with CH-DBF-50ml This is a fast curing Product. Additional Static Mixers may be required.	\$15.76
CH-DAG III	Plastic Applicator Gun for use with 50ml Cartridge Sets	\$142.49
CH-DAG III M	Metal Applicator Gun for use with 50ml Cartridge Sets	\$192.50
CH-DBC II	Diversified Bulkhead Cleaner for use prior to bonding	\$20.36



One 50 ml Cartridge Set for every 4 fittings if installing -DB series in the field.  
One additional 50 ml Cartridge set for every 4 fittings when water tight seals on Corrugated Duct Systems are required.



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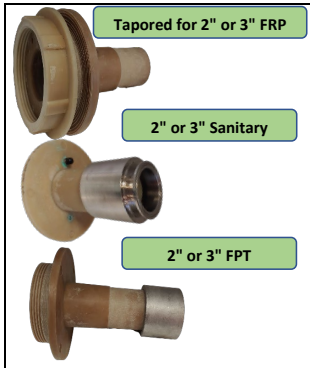




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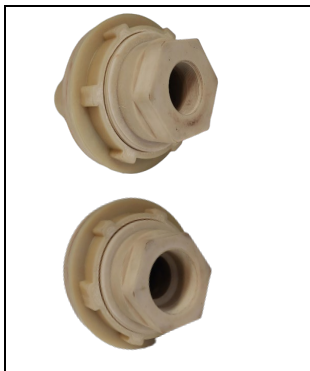
### FGT Series Penetrations

#### Fiberglass Penetrations for NOV Pipe "No Rubber in the Sump" for DPM Single & Double Wall Sumps



Part #	Description	List Price
PF-FGT-2NOVx2G	Threaded for 2" Single Wall Pipe also see compact fittings	\$162.28
PF-FGT-3NOVx3G	Threaded for 3" Single Wall Pipe also see compact fittings	\$168.00
PF-FGT-2LCXx2G	Threaded for 2" LCX Double Wall Pipe with test and drain ports	\$162.28
PF-FGT-3LCXx3G	Threaded for 3" LCX Double Wall Pipe with test and drain ports	\$212.14
PF-FGT-3x2G	Threaded for 3" over 2" Double Wall Pipe over Pipe with test and drain Ports	\$180.00
PF-FGT-4x3G	Threaded for 4" over 3" Double Wall Pipe over Pipe with test and drain ports	\$212.44

#### Fiberglass fittings for Above Ground UDC's with Hex head and no test or drain ports



Part #	Description	List Price
PF-FGT-1.5FPTx2G	Threaded for 1 1/2" MPT single wall pipe	\$155.60
PF-FGT-2FPTx2G	Threaded for 2" MPT single wall pipe	\$155.60

#### Diversified Fiberglass Bonder & Cleaner for Fiberglass Penetrations and Repair Kits



Part #	Description	List Price
CH-DFB-50ml	50ml Cart Set Epoxy Fiberglass Bonder for Fiberglass Penetrations includes one CH-DSM-V Static Mixer. Use with CH-DAG-III and CH-DSM-V	\$104.12
CH-DSM-V	Static Mixer for use with CH-DBF-50ml This is a fast curing Product. Additional Static Mixers may be required.	\$15.76
CH-DAG III	Plastic Applicator Gun for use with 50ml Cartridge Sets	\$142.49
CH-DAG III M	Metal Applicator Gun for use with 50ml Cartridge Sets	\$192.50
CH-DBC II	Diversified Bulkhead Cleaner for use prior to bonding	\$20.36

\$60 Hazmat fee on air shipments

No Shipping Restrictions



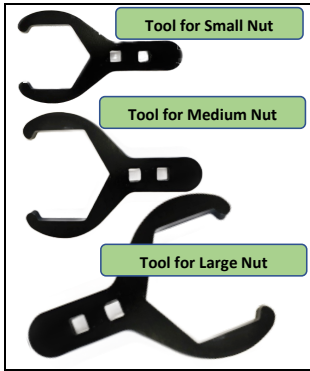
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Tools & Crossovers

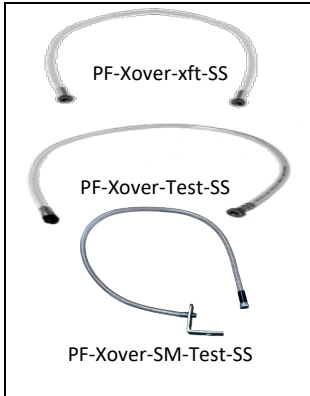


Part #	Description	List Price
PF-FGC-S-Tool	Spanner Tool for Small Nut - 1.18" OD through 1.55" OD Pipe	\$122.50
PF-FGC-M-Tool	Spanner Tool for Medium Nut - 1.70" OD through 3.93" OD Pipe	\$122.50
PF-FGC-L-Tool	Spanner Tool for Large Nut - 4.0" OD through 6.0" OD Pipe	\$122.50



Part #	Description	List Price
PF-FGS-Tool Kit	Spanner tools for 3 sizes of nuts with torque Wrench	\$560.00

Diversified crossover & Test Assemblies



Part #	Description	List Price
PF-Xover-2ft-SS	Crossover Assembly to connect Interstices 2 ft long	\$23.33
PF-Xover-3ft-SS	Crossover Assembly to connect Interstices 3 ft long	\$27.49
PF-Xover-6ft-SS	Crossover Assembly to connect Interstices 6 ft long for use with 50ml Cartridge Sets	\$31.63
PF-Xover-Test-SS	Crossover Assembly to connect Interstices 3 ft long for use with 50ml Cartridge Sets	\$28.18
PF-Xover-SM-Test-S	Crossover Assembly to connect Interstices Surface Mounted	\$45.00



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### Sanding Hole Saws- Carbide Tipped

Sanding Hole Saws - Carbide Tipped for Fiberglass



Part #	Description	List Price
PF-SHS-1.75x2.8	Sanding Hole Saw for 3/4 & 1" Bonded Electrical Conduits SW Sumps	\$232.28
PF-SHS-2x2.8	Sanding Hole Saw for 3/4 & 1" Bonded Electrical Conduits DW Sumps	\$256.61
PF-SHS-2x3	Sanding Hole Saw for B2 Series Penetrations SW Sumps	\$261.13
PF-SHS-3.5x5.2	Sanding Hole Saw for B3.5 Series Penetrations SW Sumps	\$407.56
PF-SHS-5x6.7	Sanding Hole Saw for B5 Series Penetrations SW Sumps	\$565.85
PF-SHS-6x7.6	Sanding Hole Saw for B6 Series Penetrations SW Sumps	\$587.08
PF-SHS-2.25x4.5	Sanding Hole Saw for 4 Stud Penetrations SW Sumps	\$291.71
PF-SHS-4x6.7	Sanding Hole Saw for 8 Stud Penetrations SW Sumps	\$466.05
PF-SHS-5.5x8	Sanding Hole Saw for 10 Stud Penetrations SW Sumps	\$509.88
PF-SHS-4.5x6.38	Sanding Hole Saw for FGT & FGC Series Fiberglass Penetrations SW Sumps	\$467.33
PF-SHS-5x6.85	Sanding Hole Saw for Omegaflex Series Penetrations SW Sumps	\$566.57
PF-SHS-5x6.38	Sanding Hole Saw for FGT & FGC Series Fiberglass Penetrations DW Sumps	\$566.57
PF-FGC-5.5x6.85	Compact Fiberglass Penetration for Omegaflex Penetrations DW Sumps	\$495.37



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# Compact Fiberglass Penetrations for APT Flex Pipe

## Technical Data Sheet

Since the introduction of EPA regulations for Underground Storage Tanks in 1988, there has been a need for Penetration Fittings that will last as long as the tanks. For flex pipe, the fitting must allow the pipe to be replaceable without breaking ground and there must be no "rubber" products inside the sump. DPM has the answer with the introduction of its "Compact" series of penetrations for Flex Pipe, Semi Rigid, and Rigid Fiberglass Pipe. The Compact Penetration Fitting assures the site owner that this cost will never be experienced again. Millions of repair dollars can be avoided in future budgets where these fittings are installed.

All components are either UL Listed or third party approved for their respective applications.

The Compact Fitting has a body, nut, compression nut, and seal. For those installing pipe in a Corrugated Duct, there is a terminating reducer that provides a water tight seal between the ducting and the penetration fitting.

Compact Penetrations are pressure tested in excess of 60 psi without leakage. Refer to DPM's test Data Summary.

Compact Penetrations may be used with flex pipes terminating with male swivel, sanitary, or barbed connections.

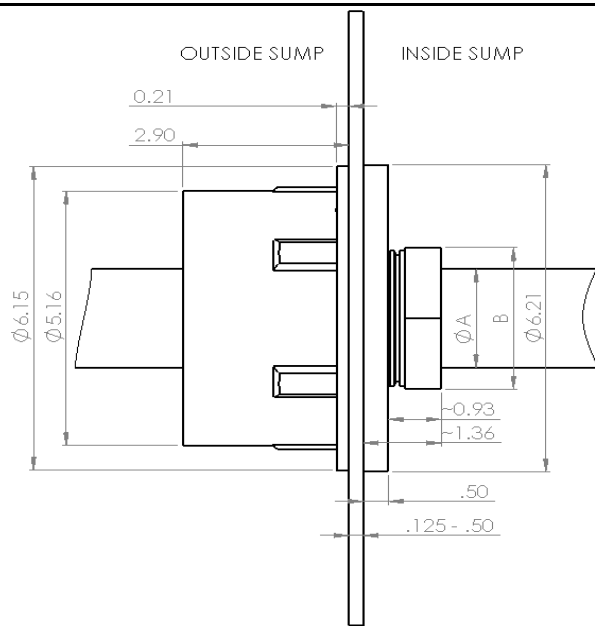
Size	Pipe	A	A
		Direct Burial	Corrugated Duct
1"	XP-100-SC	PF-FGC-1.47-DB	PF-FGC-1.47-CD
1 1/2"	XP-150-SC	PF-FGC-1.90-DB	PF-FGC-1.90-CD
1 3/4"	XP-175-SC	PF-FGC-2.15-DB	PF-FGC-2.15-CD
2"	XP-200-SC	PF-FGC-2.65-DB	PF-FGC-2.65-CD

Consult the Fitting Matrix Chart for Single Wall Product Numbers

### Third Party Approvals

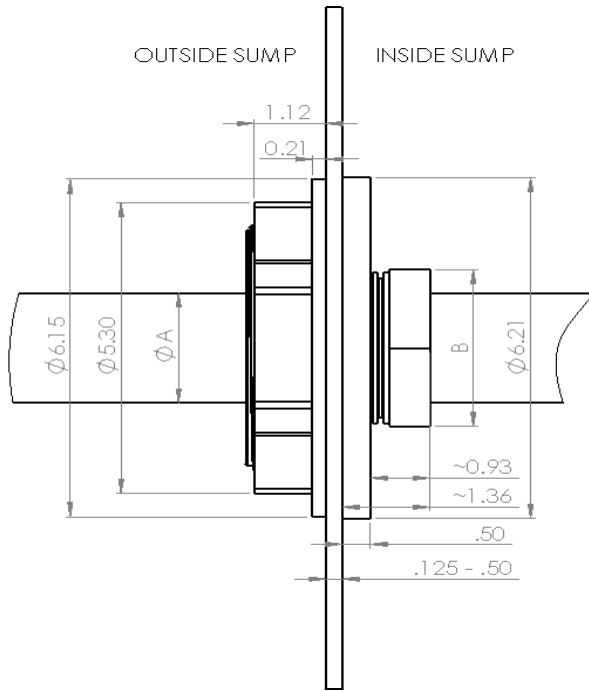






**B**  
 Small Nut 3.18"  
 Medium Nut 4.03"  
 Large

**Compact Fitting for Corrugated Duct Application**



**Direct Burial Application**

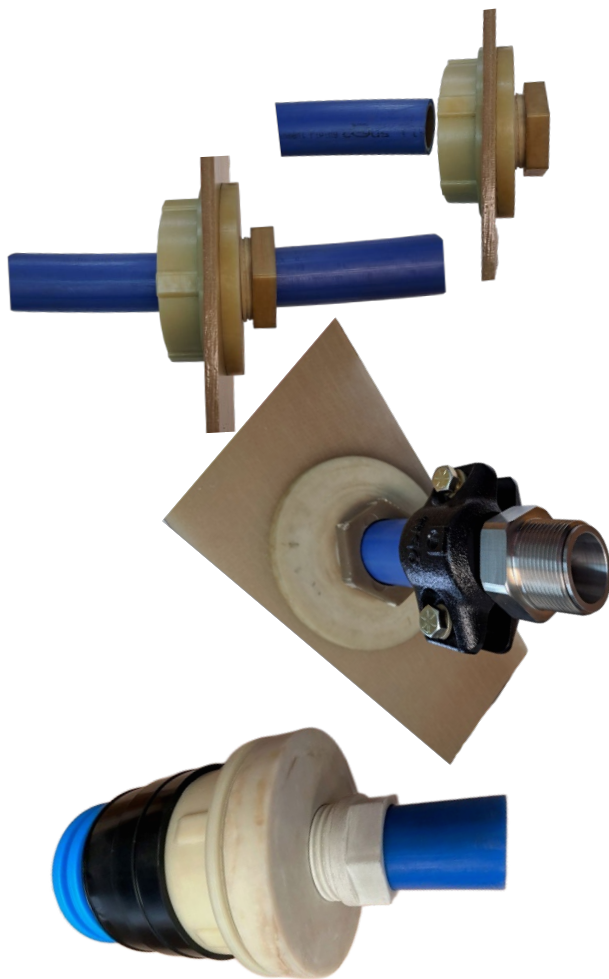


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Compact Fiberglass Penetrations for OPW Flexworks Pipe

Technical Data Sheet

Since the introduction of EPA regulations for Underground Storage Tanks in 1988, there has been a need for Penetration Fittings that will last as long as the tanks. For flex pipe, the fitting must allow the pipe to be replaceable without breaking ground and there must be no "rubber" products inside the sump. DPM has the answer with the introduction of its "Compact" series of penetrations for Flex Pipe, Semi Rigid, and Rigid Fiberglass Pipe. The Compact Penetration Fitting assures the site owner that this cost will never be experienced again. Millions of repair dollars can be avoided in future budgets where these fittings are installed.



All components are either UL Listed or third party approved for their respective applications.

The Compact Fitting has a body, nut, compression nut, and seal. For those installing pipe in a Corrugated Duct, there is a terminating reducer that provides a water tight seal between the ducting and the penetration fitting.

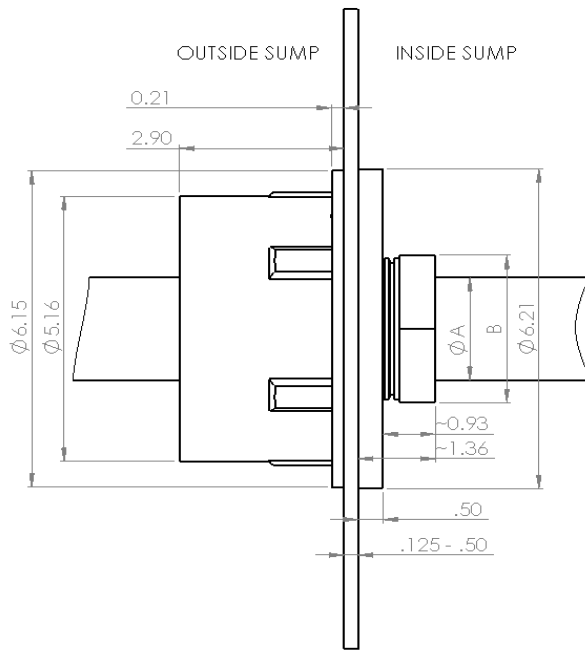
Compact Penetrations are pressure tested in excess of 60 psi without leakage. Refer to DPM's test Data Summary.

Compact Penetrations may be used with flex pipes terminating with male swivel, sanitary, or barbed connections.

Size	Pipe	A	A
		Direct Bury	Corrugated Duct
3/4"	C-075A	PF-FGC-1.18-DB	PF-FGC-1.18-CD
1"	C-10A	PF-FGC-1.50-DB	PF-FGC-1.50-CD
1 1/2"	C-15A	PF-FGC-2.00-DB	PF-FGC-2.00-CD
2"	C-20A	PF-FGC-2.45-DB	PF-FGC-2.50-CD

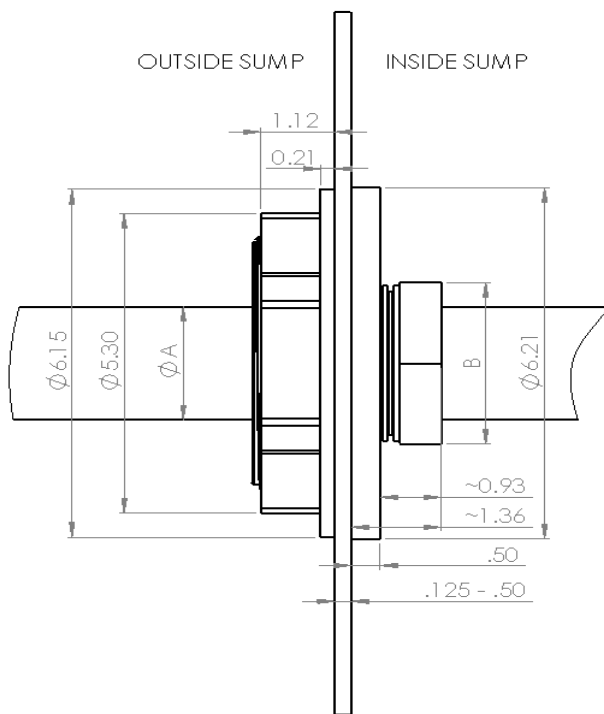
Third Party Approvals





**Compact Fitting for Corrugated Duct Application**

	<b>B</b>
Small Nut	<b>3.18"</b>
Medium Nut	<b>4.03"</b>
Large Nut	



**Direct Burial Application**



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# Compact Penetration Fitting Tool Kit

## Technical Data Sheet

Compact penetration fittings require the compression nut to be sealed by applying sufficient torque to compress a proprietary seal. The seal allows the pipe to be sealed to the body of the fitting while avoiding crushing the secondary of the double wall system. The system warranty will be voided should the torque not meet design standards.



The tool kit PF-FGC-Tool Kit comes complete with the custom spanner wrenches designed for the compact fittings.

The tool kit also comes with a torque wrench that will match the compact fitting's compression nuts.

Follow installation instructions. When the installation is complete, the compression nut should have 25 PSI torque applied to the nut.

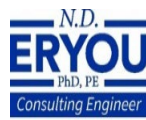
Spanner Wrenches may be purchased seperately or in a kit with both wrenches and the torque wrench.



### Third Party Approvals



EQ-742 EQ-801 EQ-836



THIRD-PARTY UL 2447





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# Crossover and Test Fitting Assemblies

## Technical Data Sheet

Crossover fittings are used in sumps to connect the interstice of the double wall system from the entering pipe to the leaving pipe. Crossover test fittings are used at the end of the run to provide easy access to the systems interstice to perform an air test of the system



PF-Xover-2ft-SS

Bicycle and test assemblies are manufactured by Diversified Products out of stainless steel in the USA by Diversified Products.



PF-Xover-Test-SS

PF-Xover-2ft-SS The standard crossover tubing is 24" long and may be manufactured to any length preferred.

PF-Xover-Test-SS The standard test fitting is 24" long and may be manufactured to any length preferred, and is terminated with a 1/8" MPT barbed fitting.



PF-Xover-SM-Test-SS

Crossover and test fittings have stress relieved collars at each end to prevent breakage.

Bicycle fittings have a knurled nut and 1/8" FPT thread to match air test valves manufactured to US pipe thread standards.

PF-Xover-SM-Test-SS is a test assemble with the test port mounted at grade Level for ease of testing.

Components may be ordered individually. Contact factory for cost and availability.

### Third Party Approvals







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## Sanding Hole Saws

### Technical Data Sheet

Proper Hole saw selection for penetration fittings is key to having a tight sump. After the hole is cut, the sump should be sanded to remove all gel coat and to smooth rough fiberglass surfaces on the surfaces to be bonded.. This can now be accomplished in one step with Diversified's Sanding Hole Saws. Sanding hole saws are manufactured to match the penetration fitting's diameter and provided a smooth relief for the diameter of the bonding surface. An additional slight relief is designed for excess epoxy to easily compress to the outside of the fitting.

Sanding hole saws are available for all penetrations made up to 6 1/2" Diameter.

Sanding hole saws are industrial grade carbide tipped

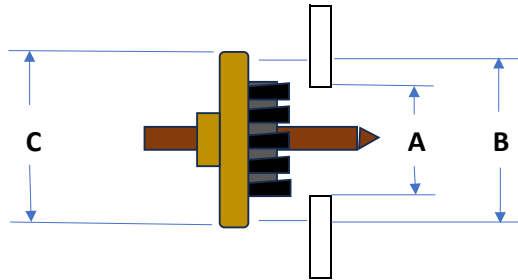
The hole saw is backed with an aluminum disc with an abrasive surface.

Abrasive surfaces are replaceable in the field by bonding on commercial sand paper of the grit desired.



Reduces labor by doing two operations at the same time.

Assures a smooth, even bonding surface for penetration fittings.





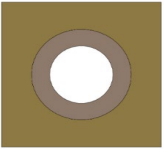
A Hole Saw	B Bonding Diameter	C SHS Diameter	Product Number	Application	Sump
1 3/4	2.61"	2.68"	PF-SHS-1.75x2.8	Bonded Electrical Conduit 3/4"	Single Wall
1 3/4	2.61"	2.68"	PF-SHS-1.75x2.8	Bonded Electrical Conduit 1"	Single Wall
2	2.97	3	PF-SHS-2x3	B2 Threaded Traditional Design	Single Wall
3.5	5.04	5.2	PF-SHS-3.5x5.2	B3.5 Threaded Traditional Design	Single Wall
5	6.54	6.7	PF-SHS-5x6.7-	B5 Threaded Traditional Design	Single Wall
6	7.43	7.6	PF-SHS-6x7.6	B6 Threaded Traditional Design	Single Wall
2 1/4	4.34	4.5	PF-SHS-2.25x4.5	4 Stud Traditional Design	Single Wall
4"	6.34	6.5	PF-SHS-4x6.7	8 Stud Traditional Design	Single Wall
5 1/2	7.96	8	PF-SHS-5.5x8	10 Stud Traditional Design	Single Wall
4 1/2	6.25	6.38	PF-SHS-4.5x6.38	FGC & FGT Fiberglass Fittings	Single Wall
5	6.55	6.85	PF-SHS-5x6.85	Omegaflex Fiberglass Compact Fittings	Single Wall
2	2.61"	2.68"	PF-SHS-2x2.8	2" Interstice seal for Bonded Electrical Conduit 3/4"	Double Wall
2	2.61"	2.68"	PF-SHS-2x2.8	2" Interstice seal for Bonded Electrical Conduit 1"	Double Wall
<b>Contact Factory for Applications</b>					
5	6.25	6.38	PF-SHS-5x6.38	Interstice Seal for FGC & FGT Fiberglass Fittings	Double Wall
5 1/2	6.55	6.85	PF-SHS-5.5x6.85	Interstice Seal for Omegaflex Fiberglass Compact Ftg	Double Wall

<h1>PF-FGC-CII</h1>	APT Brugg Omegaflex OPW	<h2>Contractor Installation Instructions</h2>	
		<h3>Compact Penetrations for Direct Burial &amp; Corrugated Ducted Applications</h3>	
 Diversified Products Manufacturing Inc.	 Weaver Products	<p><b>Prepare all Surfaces:</b> All surfaces to be bonded should be prepared prior to completing the installation steps below.</p> <p><b>Warning:</b> Failure to follow each step will void the warranty and may result in premature failure of the penetration fitting. Adhere to the following general instructions for each step of the installation.</p> <p><b>Cleaning:</b> Spray all surfaces to be bonded with CH-DBC II Cleaner and wipe dry. Excess cleaner may be wiped off with a clean dry cloth.</p> <p><b>Bonding to Steel and FRP surfaces:</b> Clean and sand (rough up) sump surfaces. Remove all gel coat on all fiberglass surfaces. Apply CH-DFB to all surfaces to be bonded both the fitting and sump wall.</p>	

**Step 1**


**Hole Preparation:** Drill a 4.5" Diameter hole where the fitting is to be installed. Sand around the hole 1 1/2" on the inside of the sump. (The nut is on the sump exterior and is bonded only when a water tight joint is required with the corrugated ducting.)

Hole Saw 4.5"  
  
Minimum Spacing between Centers 6.5"




**Step 2**

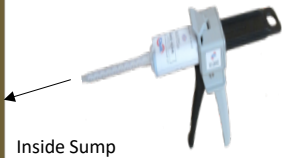
**Dry fit the fittings:** Dry fit. If you have trouble fitting the penetration in the hole, recheck the hole.



**Step 3**

**Clean & Bond:** Spray all surfaces to be bonded with CH-DBC II Cleaner. Air dry or wipe dry with a clean dry cloth. Apply CH-DFB Bonder to the fitting surface that creates a seal with the sump wall.

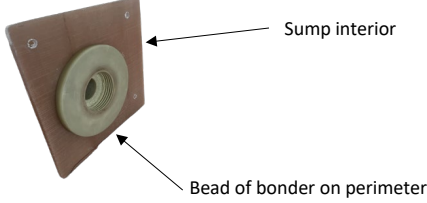

Sump Exterior
←
Inside Sump



**Step 4**

**Secure fitting to sump wall:** Install the nut and hand tighten to secure fitting to sump wall. When installing, there should be enough bonder so a small bead escapes the perimeter of the fitting when tightened. If no bonder is present, remove fitting and apply again. Allow bonder to cure.

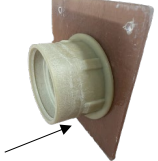
Sump interior  
  
Bead of bonder on perimeter



**Step 5**

**Water Tight Corrugated Ducting:** If a water tight seal is required for the corrugated ducting, the nut must also be bonded to the sump wall. See step 4 above and apply to the nut.


For water tight corrugated ducting.  
  
Bond nut to sump wall



**Step 6**

**Prepare the pipe for installation:** Slide the terminating reducer and corrugated duct seal over the corrugated ducting prior to installing the product carrying pipe into and through the penetration fitting.

Corrugated Duct Seal



**Step 7**

**Install the pipe:** Push the product carrying pipe through the fitting. Install the seal around the pipe and push into the fitting cavity. Turn in the compression nut hand tight to seat the seal. Tighten with the tool to 20-25 ft lb Torque.



Compression Nut

**Step 8**

**Tighten the compression nut:** Once the pipe is connected to its mating system component (flex connector or other terminating device), test the product carrying lines. A hand tight nut has produced no leaks at 5 psi test pressure. Torque the compression nut to 20-25 ft lbs. When torque on the compression nut at 20 psi is applied the resulting test has yielded a pass rating in excess of 60 PSIG. This is best accomplished by using the PF-FGC Tool Kit. The sump may be tested at any time after tightening all Compact Penetration Fittings. This completes the installation on Direct Burial Systems

**Step 9**

**Connect Corrugated Duct:** Push corrugated duct into the tailpiece of the penetration fitting. Push until it snaps in place. Warning - the corrugated ducting will be difficult to remove once installed. Be sure you are ready to perform this step.

**Step 10**

**Move Corrugated Duct Seal:** Place the corrugated duct seal in the groove nearest the penetration fitting.

Corrugated Duct Seal

**Step 11**

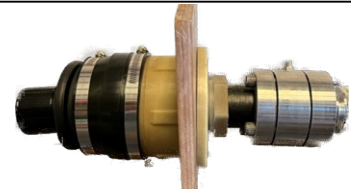
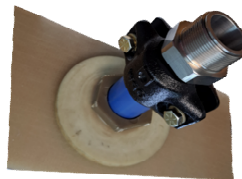
**Install the Boot:** Slide the boot in place. Push the front edge of the boot forward until it stops on the shoulder of the penetration fitting.

**Step 12**

**Tighten Band Clamps:** Tighten clamps but do not exceed 60 inch lbs. The installation should be complete.

**Step 13**

**Completed installations inside the sump.**

**Tools Required**

Sand paper for sump wall and pipe  
4.5" hole saw  
CH-DAG III applicator gun for CH-DFB bonder

**Products Needed**

PF-FGC - see product selection matrix to complete the product number  
CH-DFB 50ml Epoxy Bonder - will do three fittings  
CH-DBC II Aerosol Cleaner - will do 10 fittings  
PF-FGC-S-Tool or PF-FGC-L-Tool Spanner Wrenches



## Reference Data



### Guideline Specifications - Compact Penetration Fittings

#### Compact Penetration Fittings:

Provide Fiberglass Penetration Fittings as indicated on the drawings or specified otherwise.

Materials: The Compact Penetrations Fittings shall be manufactured from Virgin glass filled materials suitable for injection molding. Compression molded components are not acceptable.

#### Penetration Body:

The body shall have a flange at least 6 inches outside diameter with a minimum thickness of  $\frac{1}{2}$ ". The flange shall have grooves for receiving a bonding agent and shall assist in the distribution of the bonding agent. The body shall fit in a 4.5" hole and shall be threaded to accept a nut for either direct burial or for attaching corrugated ducting as a chase pipe. The body shall receive a threaded "compression" nut that compresses a seal from inside the sump. The body shall be made such that pipe may pass through the body using only hand applied force. The body shall have a seal that rests in a pocket molded or machined inside the body. The design of the pocket and mating seal are proprietary.

#### Compression Nut:

The compression nut shall be threaded to match the threads in the body of the penetration fitting. The nose of the nut shall be designed to engage a compression seal encapsulated by the body. The design of the compression nut, body, and seal shall pass a pressure test when hand tightened to 5 PSIG. The nut, body, and seal shall not leak when tested to pressures in excess of 60 PSIG, when installed on the intended pipe.

#### Seal:

The seal shall be injection molded for consistency. The material shall be a fuel resistant material capable of serving for 30 years without replacement. The seal design shall have a replaceable split seal that tests in excess of 60 PSI without leakage. The seal shall match the design of the body.

#### Direct Burial Applications:

An external nut shall be used to hold the body in place while a bonding agent cures the body to the sump wall. For Direct Burial applications, the nut is not required but is recommended to remain in place to protect the penetration fitting from damage.

#### Corrugated Duct Applications:

Where the fuel carrying pipe is installed in a chase (corrugated duct) a unique nut shall be provided that allows the corrugated duct to snap into the nut. The nut shall be designed to retain the corrugated ducting once installed. Provide a unique nut to match the corrugated duct being used on the project.

#### Watertight Corrugated Duct Applications:

Where watertight applications are required, provide a corrugated duct seal and terminating reducer to band clamp to the external nut of the penetration fitting and the outside of the corrugated ducting.

#### Bonding:

The flange of the body shall be bonded to the inside surface of the sump using a suitable epoxy bonding material designed for fiberglass applications. The body of the penetration fitting shall be held in place by an external nut. When the corrugated duct nut is used it shall be bonded to the external surface of the sump using the same bonding materials.



October 30, 2020

Mr. Josh Dow  
Diversified Products Manufacturing Inc  
5523 Baggett Marysville Rd  
Oroville, CA 95965

RE: NDE Reference No: NDE20201020  
Third-Party Certification under UL 2447- Outline of Investigation for  
Fittings Accessories for Fuels

Products Evaluated: Split Repair Fittings & Test Reducers for Containment Sumps for  
Fuels PF-Penetration Fittings Series, Sump Entry Fittings and Test  
Reducers  
SR- Split Repair Sump Entry Fittings and Test Reducer Series  
FG/PG Spilt Repair Series  
CH- Series, All Chemicals used in the installation process  
SU- Sumps and Accessories

Dear Mr. Dow,

In reference to the above listed products, our testing partner on this project (N.D. Eryou, PhD, PE) has performed our UL 2447 Third-Party inspection and testing. All products listed were determined to comply with the "Outline of Investigation for Fittings and Accessories for Fuels".

It is our opinion that both the design and materials used in the above products are based on sound engineering principles and the materials are compatible with all motor fuels and additives currently being used including fuels containing >10% ethanol or 20% biodiesel. Therefore, the Spill Containment Liner should have the same chemical resistance to the UL 2447 test fuels as the DPM "Products Evaluated" listed above.

Disclaimer: Underwriters Laboratories (UL) is an independent testing laboratory and use of, in any way, of the UL Listing or Registered Trade Mark UL is prohibited unless specifically authorized by Underwriters Laboratories.

Very truly yours,



Brian E Lewis, PE



Roundtable Engineering Solutions, Inc  
660 Southpointe CT, Unit 300G  
Colorado Springs, CO 80906

## NOTICE OF COMPLETION OF THIRD-PARTY UL 2447 EVALUATION

February 3, 2021

Mr. Josh Dow  
Diversified Products Manufacturing Inc  
5523 Baggett Marysville Rd  
Oroville, CA 95965

RE: NDE Reference No: NDE20201020  
Third-Party Certification under UL 2447- Outline of Investigation for  
Fittings Accessories for Fuels

Products Evaluated: Split Repair Fittings & Test Reducers for Containment Sumps for Fuels  
PF-Penetration Fittings Series, Sump Entry Fittings and Test Reducers  
SR- Split Repair Sump Entry Fittings and Test Reducer Series  
FG/PG Spilt Repair Series  
CH- Series, All Chemicals used in the installation process.  
SU - Sumps and Accessories

Dear Mr. Dow

In reference to the above listed products, we have performed our UL 2447 Third-Party inspection and testing. All products listed were determined to comply with the "Outline of Investigation for Fittings and Accessories for Fuels".

It is our opinion that both the design and materials used in the above products are based on sound engineering principles and the materials are compatible with all motor fuels and additives currently being used including fuels containing >10% ethanol or 20% biodiesel. Therefore, the Spill Containment Liner should have the same chemical resistance to the UL 2447 test fuels as the DPM "Products Evaluated" listed above.

Further to your recent request with regard to your Canadian distributors utilization of the above test results, we have compared the testing requirements of UL (US) 2447 with CAN/ULC-S664:2017 and found them to be virtually identical.

There were only two differences that we found between the two Codes.

1. ULC S664 Section 5.8.5 "Extreme Low Temperature Impact Test – requires testing at -40°F and our tests were conducted at a minimum temperature of -30°F.

2. ULC S664 Section Appendix B 1.1 Defines 21 specific grades of fuel while UL US defines four grades of fuel, which covers the wide range of fuels commonly used by gasoline and diesel-powered vehicles.

Furthermore, we have reviewed the UL (US) website which contains the following relevant statement confirming the sharing of UL specifications between UL – US and UL - Canada:

### **“UL STANDARDS: ACCREDITED IN THE US AND CANADA**

In the US, UL is accredited by the American National Standards Institute (ANSI) as an audited designator. In 2013, UL was accredited by the Standards Council of Canada (SCC) as a nationally recognized Standards Development Organization (SDO) able to develop National Standards of Canada (NSCs).

UL's Standards Technical Panels (STPs) serve as the consensus body for both American National Standards (ANS) and National Standards of Canada (NSC). Essential information About UL's standards development programs, how to Access Standards, and how to participate in the UL programs used to Develop Standards is available on this site.”

It should not be inferred that our test of DPM products addresses the issue of long-term quality control issues as both UL (US) and UL Canada do with their annual subscription programs.

Disclaimer: Underwriters Laboratories (UL – US & UL - Canada) are independent testing laboratories and use of, in any way, of the UL Listing or Registered Trademark UL is prohibited unless specifically authorized by Underwriters Laboratories (US or Canada).

Very truly yours,



N.D. Eryou, Ph.D., P.E.  
Eryou Engineering  
[dennis@eryouengineering.com](mailto:dennis@eryouengineering.com)

**NOTICE OF COMPLETION OF THIRD-PARTY UL 2447 EVALUATION**

October 22, 2020

Mr. Josh Dow  
Diversified Products Manufacturing Inc  
5523 Baggett Marysville Rd  
Oroville, CA 95965

RE: NDE Reference No: NDE20201020  
Third-Party Certification under UL 2447- Outline of Investigation for  
Fittings Accessories for Fuels

Products Evaluated: Split Repair Fittings & Test Reducers for Containment Sumps for Fuels  
PF-Penetration Fittings Series, Sump Entry Fittings and Test Reducers  
SR- Split Repair Sump Entry Fittings and Test Reducer Series  
FG/PG Spilt Repair Series  
CH- Series, All Chemicals used in the installation process  
SU- Sumps and Accessories


Dear Mr. Dow

In reference to the above listed products, we have performed our UL 2447 Third-Party inspection and testing. All products listed were determined to comply with the “Outline of Investigation for Fittings and Accessories for Fuels”.

It is our opinion that both the design and materials used in the above products are based on sound engineering principles and the materials are compatible with all motor fuels and additives currently being used including fuels containing >10% ethanol or 20% biodiesel. Therefore, the Spill Containment Liner should have the same chemical resistance to the UL 2447 test fuels as the DPM “Products Evaluated“ listed above.

Disclaimer: Underwriters Laboratories (UL) is an independent testing laboratory and use of, in any way, of the UL Listing or Registered Trade Mark UL is prohibited unless specifically authorized by Underwriters Laboratories.

Very truly yours,

  
N.D. Eryou, Ph.D., P.E.





### Compact Fitting Matrix

#### Compact Fittings for Flexible & Semi Flexible Pipe

	Product Number	Seal Reference	Nominal Pipe Size	Pipe Manufacturer	Pipe Identifier	Single Wall Double Wall	Pipe Type
Small Nut	PF-FGC-1.18	PF-FGS-1.18	3/4"	OPW	C-075A	Double Wall	Flex Pipe
	PF-FGC-1.22	PF-FGS-1.22	3/4"	Brugg	CHT 21/31	Double Wall	Semi Flex Pipe
	PF-FGC-1.27	PF-FGS-1.27	1"	APT	XP-100-D	Single Wall	Flex Pipe
	PF-FGC-1.47	PF-FGS-1.47	1"	APT	XP-100-SC	Double Wall	Flex Pipe
	PF-FGC-1.50	PF-FGS-1.50	1"	OPW	C-10A	Double Wall	Flex Pipe
	PF-FGC-1.50	PF-FGS-1.50	1"	Brugg	CHT 30/38	Double Wall	Semi flex Pipe
	PF-FGC-1.55	PF-FGS-1.55	1"	Omegaflex	UGF-FSP-16	Double Wall	Semi Flex Pipe
Large Nut	PF-FGC-1.70	PF-FGS-1.70	1 1/2"	APT	XP-150-D	Single Wall	Flex Pipe
	PF-FGC-1.90	PF-FGS-1.90	1 1/2"	APT	XP-150-SC	Double Wall	Flex Pipe
	PF-FGC-1.90	PF-FGS-1.90	1"	Brugg	HL 30/48		Semi Flex Pipe
	PF-FGC-2.00	PF-FGS-2.00	1 1/2"	OPW	C-15A	Double Wall	Flex Pipe
	PF-FGC-2.15	PF-FGS-2.15	1 3/4"	APT	XP-175-SC	Double Wall	Flex Pipe
	PF-FGC-2.30	PF-FGS-2.30	1 1/2"	Omegaflex	UGF-FSP-24	Double Wall	Semi Flex Pipe
	PF-FGC-2.45	PF-FGS-2.45	2"	APT	XP-200-D	Single Wall	Flex Pipe
	PF-FGC-2.45	PF-FGS-2.45	2"	OPW	C-20A	Double Wall	Flex Pipe
	PF-FGC-2.45	PF-FGS-2.45	2"	OPW	520	Single Wall	Flex Pipe
	PF-FGC-2.50	PF-FGS-2.50	1 1/2"	Brugg	SEC 40		Semi Flex Pipe
	PF-FGC-2.65	PF-FGS-2.65	2"	APT	XP-200-SC	Double Wall	Flex Pipe
	PF-FGC-2.65	PF-FGS-2.65	1 1/2"	Brugg	CHT 48/60	Double Wall	Semi flex pipe
	PF-FGC-2.80	PF-FGS-2.80	2"	Brugg	CHT 60/71	Double Wall	Semi flex Pipe
	PF-FGC-2.80	PF-FGS-2.80	1 1/2"	Brugg	HL 48/71		Semi Flex Pipe
	PF-FGC-2.93	PF-FGS-2.93	2"	Omegaflex	UGF-FSP-32	Double Wall	Flex Pipe
	PF-FGC-3.00	PF-FGS-3.00	2"	Brugg	SEC 50		Semi Flex Pipe
PF-FGC-3.30	PF-FGS-3.30	2"	Brugg	HL 60/83		Semi Flex Pipe	

For Direct Burial Applications add -DB to the product Number  
 For Corrugated Ducted Applications add -CD to the product number.

<h1>PF-FGC- Testing Data</h1>		<p>APT Brugg Omegaflex OPW</p>	<h2>Design and Testing Data</h2>
			<h3>Compact Penetrations for Direct Burial &amp; Corrugated Ducted Applications</h3>
		 <p>Weaver Products</p>	
<p><b>Background:</b></p> <p>The EPA introduced regulations governing fueling facilities in 1988. The industry has struggled to create a seal for flexible pipe that would contain fluids, seal to the pipes and sumps. Additionally the penetration fitting needed to allow the flexible and semi rigid pipes to be removed and replaced at a later time. To date industry has not been able to meet these requirements without using a rubber type of membrane inside the sump. Traditionally these membranes have failed within a few years, spawning a whole industry fixing leaking penetration fittings. Diversified Products now introduces a very cost effective penetration fitting that performs all of the above requirements and more at a reasonable cost, often less than other products. DPM offers "no rubber" in the sump penetrations, that bond to fiberglass sumps, that tests over 60 times other fittings.</p>			
<p><b>Penetration Fitting to Sump Attachment:</b></p> <p>For direct burial pipe the Diversified "Compact" penetration fitting has a threaded fiberglass body with a flange that is bonded to the inside of the sump. There is a nut on the outside of the sump that holds the body in place while the bonder is curing (approximately 1 hour).</p> <p>For Corrugated Duct applications the nut is designed with a unique snap in feature. Snap the chase pipe into the nut and the chase installation is complete.</p> <p>For Corrugated Duct applications where a water tight seal between the chase pipe and penetration is desired, a terminating reducer is provided that seals the nut to the corrugated ducting.</p>			
<p><b>Penetration Fitting to Pipe Attachment:</b></p> <p>The body of the penetration fitting has a proprietary seal configuration that allows a compression nut to be tightened from the inside of the sump that compresses a seal around the outside of a single or double wall pipe. The seal is removable from inside the sump. A split seal may be used to replace the original at any time.</p>			
<p><b>Testing:</b></p> <p>The testing for the seal to the pipe was performed inside a pressure pot. Testing started with the compression nut hand tightened. The seals started to leak at approximately 5 PSIG. Of course the scientific method did not allow us to document whose hand was used in tightening the nut. The compression nut was tightened under various torque settings. At 20 ft lbs on a torque wrench, the seals were repeatedly tested to 60 PSIG without leaks around the pipe for both original seals and the split seals.</p>			
<p><b>Extremes:</b></p> <p>The nut was tightened until it bottomed out at 70-80 ft lbs torque. The seal continued to hold. The test fitting was disassembled and inspected. There was no damage to the threads on either the nut or body. The seal showed compression marks but was not damaged. It was reinstalled and retested with the same results.</p> <p>Testing protocols started by applying hand force to the nut with a leak generating after 5 PSIG air pressure was applied to the assembly. The compression nut was then tightened with the spanner tool and torque wrench to 20 ft lbs torque. Air was then introduced to the test chamber and tested to 10, 20, 30, 40, 50, and finally to 60 PSIG. There were no leaks between the fitting and pipe at any point in the process. The system could have been tested to higher pressures but for no real reason.</p> <p>Some of the sample pipes received by Diversified were significantly out of round. It is estimated that the variance from round was up to 20%. These samples tested to the same limits that round pipe achieved at 60 PSIG with no leaks.</p> <p>Double wall flex pipe and semi rigid pipe have rather small interstices. While under a 60 PSIG test the double wall pipe was terminated on one end with a test reducer. Air was introduced through the test reducer and flowed easily through the tested pipe to atmosphere.</p>			
<p><b>Operating Considerations:</b></p> <p>A column of water 2.31 ft high will yield 1 PSIG pressure at the bottom. Penetration fittings are generally installed at less than (2.31 ft or 27+ inches) from the surface. Therefore, most fittings would experience less than 1 PSIG when the sump is filled to grade level with water. The fitting Diversified has designed would not leak if submerged under 138+ feet of water.</p>			
<p><b>Test Subjects:</b></p> <p>Currently, Diversified has identified 24 different flex and semi rigid pipes. The outside diameter of these pipes run from 1.18 through 3.30 inches. A representative group of four sizes were selected for initial testing. Pipes with outside diameters of 1.55 inches, 2.00 inches, 2.30 inches, and 2.93 inches were tested using three sets of Compact fittings. All tests were terminated at 60 PSIG with all samples passing (No leaks around the pipe).</p>			

**Assembly & Retractability:**

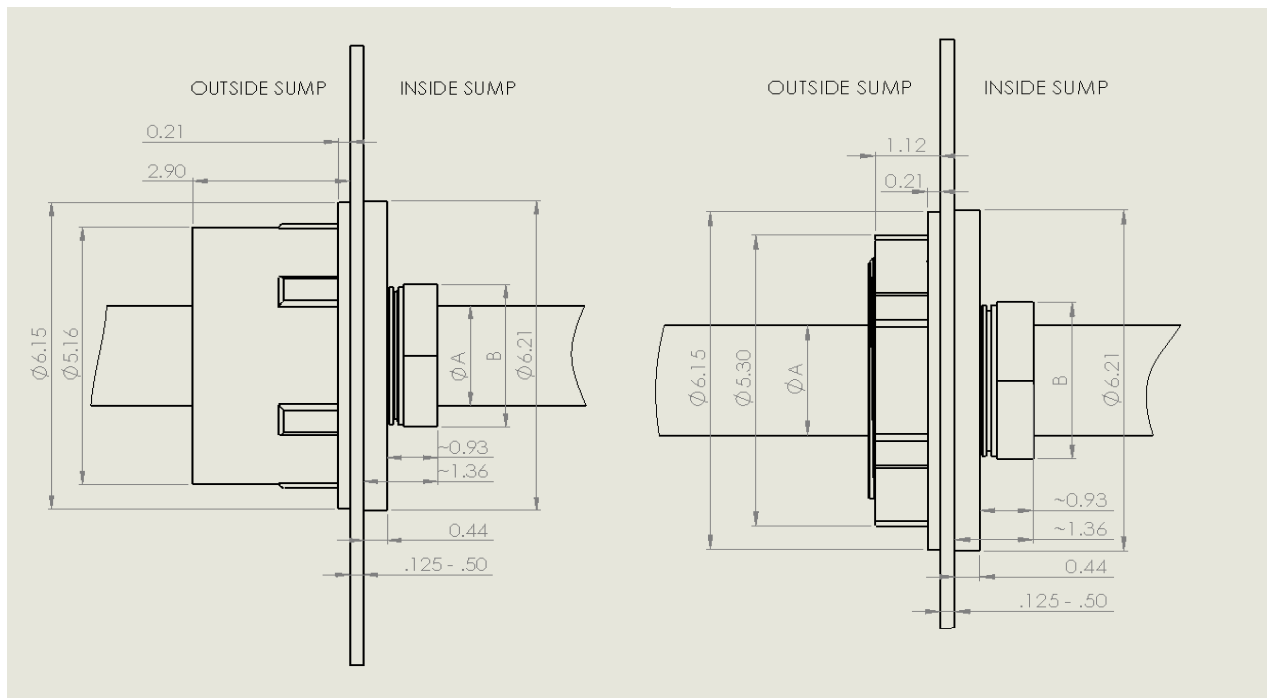
Once the body is bonded to the sump wall, the pipe may be inserted through the fitting into the sump. This only requires hand coordination and does not encounter any significant resistance. The surface of the penetration fitting extends approximately 1.25" into the sump leaving the most space available for assembling the end pieces on the pipe. Once the head of the pipe is secure, the pipe may be extended to the flex connector or other terminating location.

Once in place, the nut should be tightened to 25 ft lbs. Diversified offers a kit with two spanner wrenches (one for the smaller sizes and one for the larger sizes) and a torque wrench pre set to 25 PSI. Turn the nut until the 25 PSI setting has been reached. Finished!

Should the customer be using Corrugated Ducting for a chase pipe, a different nut, a boot and corrugated duct seal are provided. Once the primary pipe is in place and tested, the corrugated duct can be snapped into place in the tailpiece of the nut. The corrugated duct seal and boot then need to be

To extract the pipe for replacement, disconnect and remove the terminating head of the pipe. Using the spanner wrench loosen the compression nut or remove the nut completely. Pull out the existing pipe.

To install new pipe. Contact the factory for a new seal. If a smaller pipe is to be installed, contact the factory for a custom seal to match the fitting and new pipe to be installed.



PF-FGC-x.xx-CD

Dimensional Data for Corrugated Duct Applications

PF-FGC-x.xx-DB

Dimensional Data for Direct Burial Applications

**Corrugated Duct Applications:**

Corrugated Duct applications can be completed by just snapping the appropriate corrugated duct into the nut. The nut is designed to accommodate the ducting supplied by the product carrying pipe manufacturer. Contact the factory if an alien corrugated duct is being used on your installation. While nuts are interchangeable on DPM Compact Fitting Bodies, they are not interchangeable with multiple corrugated ducts. Each nut is unique for APT, OPW, and Omegaflex or other piping systems.

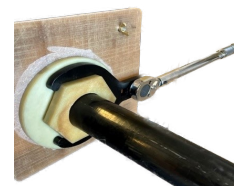
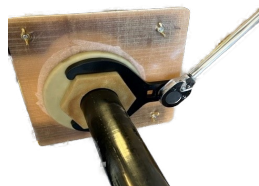
Where it is desired to have the corrugated ducting sealed water tight, the "outer" nut must be bonded to the sump wall and a terminating reducer with seal must be installed. See Installation Instructions.

**Direct Burial Applications:**

When corrugated duct is not used, the product carrying pipe, single wall or double wall are directly buried in the soils. In this event, the nut on the outside of the sump is for holding purposes only while the bonding materials are cured. The nut should remain in place to protect against potential damage.

**Sealing to Pipes:**

When it comes time to create a seal between the pipe and the penetration fitting, use the appropriate spanner (small or Large) and attach the torque wrench. Turn the nut until 20 PSI is attained on the torque wrench. At this point the installation should be complete.





**Testing:**

Testing was performed using two compact fittings with a representative segment of pipe running between the penetration fittings. The fittings were installed in both ends of the pressure pot. In one case, the compression nut is inside the pot and in the second instance the compression nut is outside of the pot. When the pressure is applied to the test pieces, both possible real world applications are tested simultaneously. In one case the test verifies that liquid cannot escape out of the sump. In the latter case the test verifies that liquid cannot enter the sump from outside the sump.



Test Assembly



Compression Nut Outside Sump



60 PSIG Test

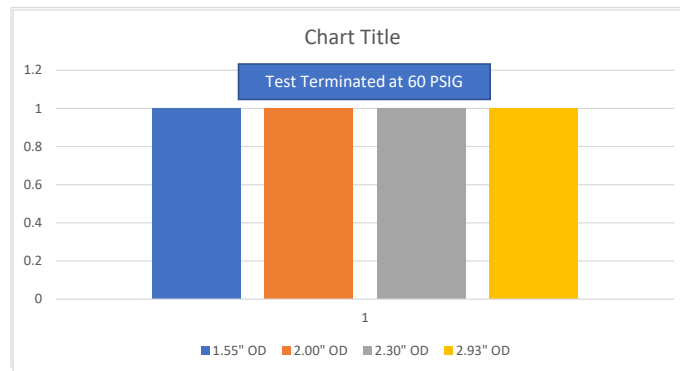


Compression Nut Inside Sump



Interstice Test

**Test Results:**



The test results are rather boring and show that the product is performing at approximately 60 times required operational expectations.

**Pipe Size Selection:**

Refer to the following table and select the pipe being used. Select the product Number for Ordering. Be sure to add -CD or -DB for Corrugated Duct for Direct Burial applications

**Compact Fittings for Flexible & Semi Flexible Pipe**

	Product Number	Seal Reference	Nominal Pipe Size	Pipe Manufacturer	Pipe Identifier	Single Wall Double Wall	Pipe Type
Small Nut	PF-FGC-1.18	PF-FGS-1.18	3/4"	OPW	C-075A	Double Wall	Flex Pipe
	PF-FGC-1.22	PF-FGS-1.22	3/4"	Brugg	CHT 21/31	Double Wall	Semi Flex Pipe
	PF-FGC-1.27	PF-FGS-1.27	1"	APT	XP-100-D	Single Wall	Flex Pipe
	PF-FGC-1.47	PF-FGS-1.47	1"	APT	XP-100-SC	Double Wall	Flex Pipe
	PF-FGC-1.50	PF-FGS-1.50	1"	OPW	C-10A	Double Wall	Flex Pipe
	PF-FGC-1.50	PF-FGS-1.50	1"	Brugg	CHT 30/38	Double Wall	Semi flex Pipe
	PF-FGC-1.55	PF-FGS-1.55	1"	Omegaflex	UGF-FSP-16	Double Wall	Semi Flex Pipe
Large Nut	PF-FGC-1.70	PF-FGS-1.70	1 1/2"	APT	XP-150-D	Single Wall	Flex Pipe
	PF-FGC-1.90	PF-FGS-1.90	1 1/2"	APT	XP-150-SC	Double Wall	Flex Pipe
	PF-FGC-1.90	PF-FGS-1.90	1"	Brugg	HL 30/48		Semi Flex Pipe
	PF-FGC-2.00	PF-FGS-2.00	1 1/2"	OPW	C-15A	Double Wall	Flex Pipe
	PF-FGC-2.15	PF-FGS-2.15	1 3/4"	APT	XP-175-SC	Double Wall	Flex Pipe
	PF-FGC-2.30	PF-FGS-2.30	1 1/2"	Omegaflex	UGF-FSP-24	Double Wall	Semi Flex Pipe
	PF-FGC-2.45	PF-FGS-2.45	2"	APT	XP-200-D	Single Wall	Flex Pipe
	PF-FGC-2.45	PF-FGS-2.45	2"	OPW	C-20A	Double Wall	Flex Pipe
	PF-FGC-2.45	PF-FGS-2.45	2"	OPW	520	Single Wall	Flex Pipe
	PF-FGC-2.50	PF-FGS-2.50	1 1/2"	Brugg	SEC 40		Semi Flex Pipe
	PF-FGC-2.65	PF-FGS-2.65	2"	APT	XP-200-SC	Double Wall	Flex Pipe
	PF-FGC-2.65	PF-FGS-2.65	1 1/2"	Brugg	CHT 48/60	Double Wall	Semi flex pipe
	PF-FGC-2.80	PF-FGS-2.80	2"	Brugg	CHT 60/71	Double Wall	Semi flex Pipe
	PF-FGC-2.80	PF-FGS-2.80	1 1/2"	Brugg	HL 48/71		Semi Flex Pipe
	PF-FGC-2.93	PF-FGS-2.93	2"	Omegaflex	UGF-FSP-32	Double Wall	Flex Pipe
	PF-FGC-3.00	PF-FGS-3.00	2"	Brugg	SEC 50		Semi Flex Pipe
PF-FGC-3.30	PF-FGS-3.30	2"	Brugg	HL 60/83		Semi Flex Pipe	

For Corrugated Ducted applications add -CD to the product number  
 For Direct Burial applications add -DB to the product number