



*Environmental Protection First*



# ***Bravo Products 2015***

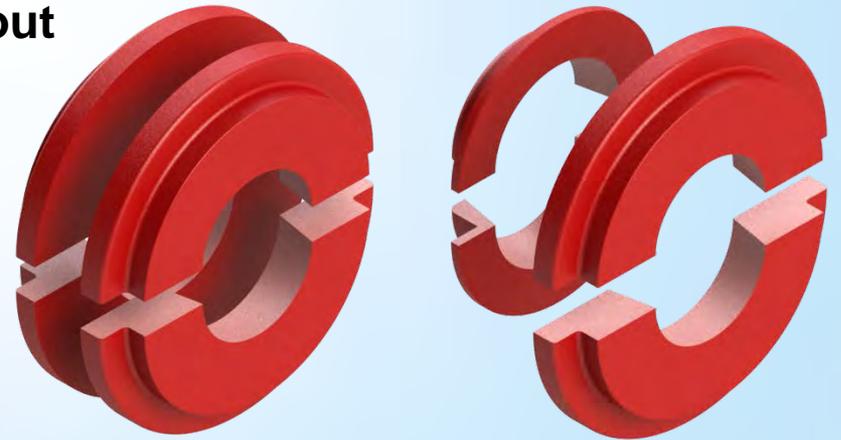
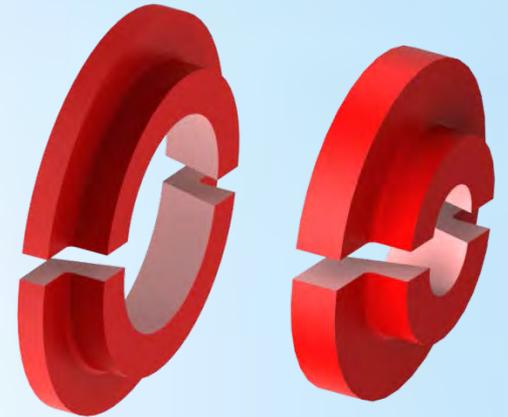
- 1) Fuel compatible FRP split retrofit fittings.**
- 2) Direct replacement FRP retrofits used with FRP or poly sumps**
- 3) Water-tight retrofit sump lids**
- 4) New construction FRP entry fittings**
- 5) Single wall FRP sumps**
- 6) Double wall FRP sumps and new EPA regulations.**

**Bravo Retrofit fittings are not meant to repair existing entry boots but rather upgrade them to fiberglass entry fittings.**

**All Bravo FRP fittings follow UL1316 resin specifications for fuel compatibility.**

**Bravo retrofits can be installed without excavation or disconnecting pipe.**

**They are extremely low profile and will easily accommodate extreme pipe angles.**





# ***Bravo Retrofit Products***

**Bravo retrofit fittings now cover all common existing applications. Including flexible piping and polyethylene sumps. All applications for single wall sumps fall into one of three categories.**

**RETROFIT-S Series;  
FRP piping and rigid conduit with FRP sumps**

**FLX Series;  
Flexible piping with FRP sumps**

**Direct replacement fittings  
All piping types (rigid & flex) with poly or FRP sumps**

**PATENTS  
PENDING**

**F-SERIES SPLIT RETROFIT-S**  
FOR SINGLEWALL FIBERGLASS SUMPS  
FRP SPLIT FITTING FOR RETROFITTING FLEXIBLE ENTRY BOOTS

**Permanently solve the problem !**

**FEATURES:**

- > No excavation needed
- > No disconnecting pipe
- > For conduit & FRP pipe
- > Lowest overall cost
- > For flat or round walls
- > Low profile: less than 2"
- > Angle Adjustability: 0 - 20°
- > Alternate models: 20 - 45°
- > Tank-Spec FRP material
- > No metal or rubber parts
- > Warranted for fuel submersion
- > 30 Year Corrosion Warranty
- > Only True FRP Retrofit Fitting
- > PERMANENTLY replaces all types of flexible entry boots



IMAGES COURTESY OF BRAVO INSTALLERS



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The Retrofit-S is the standard retrofit fitting for FRP sumps and rigid pipe and conduit.

All other fitting series are variations (FLX & direct replacements) of the Retrofit-s with the same installation principles.



# Retrofit-S Key Features

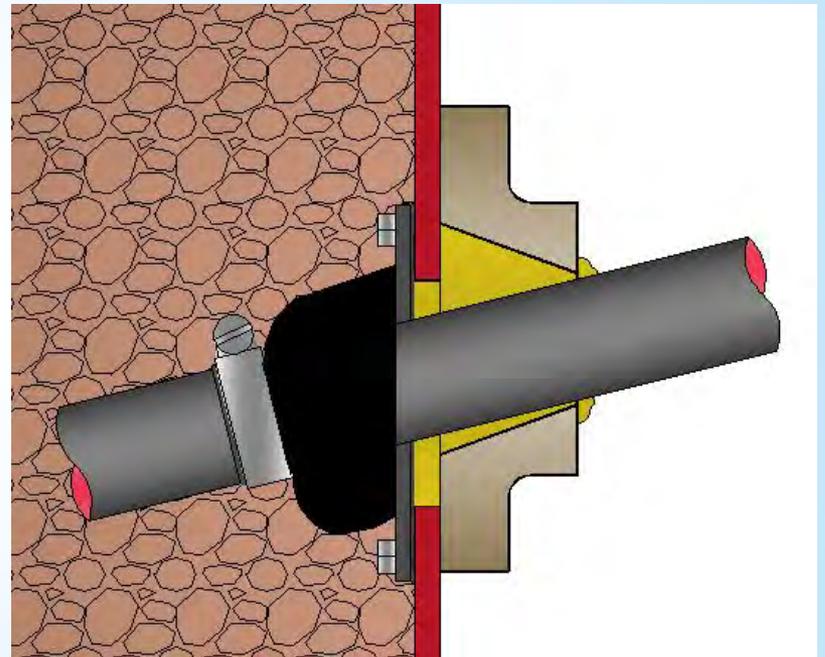
**Versatile design handles extreme piping angles.**

**Low profile.**

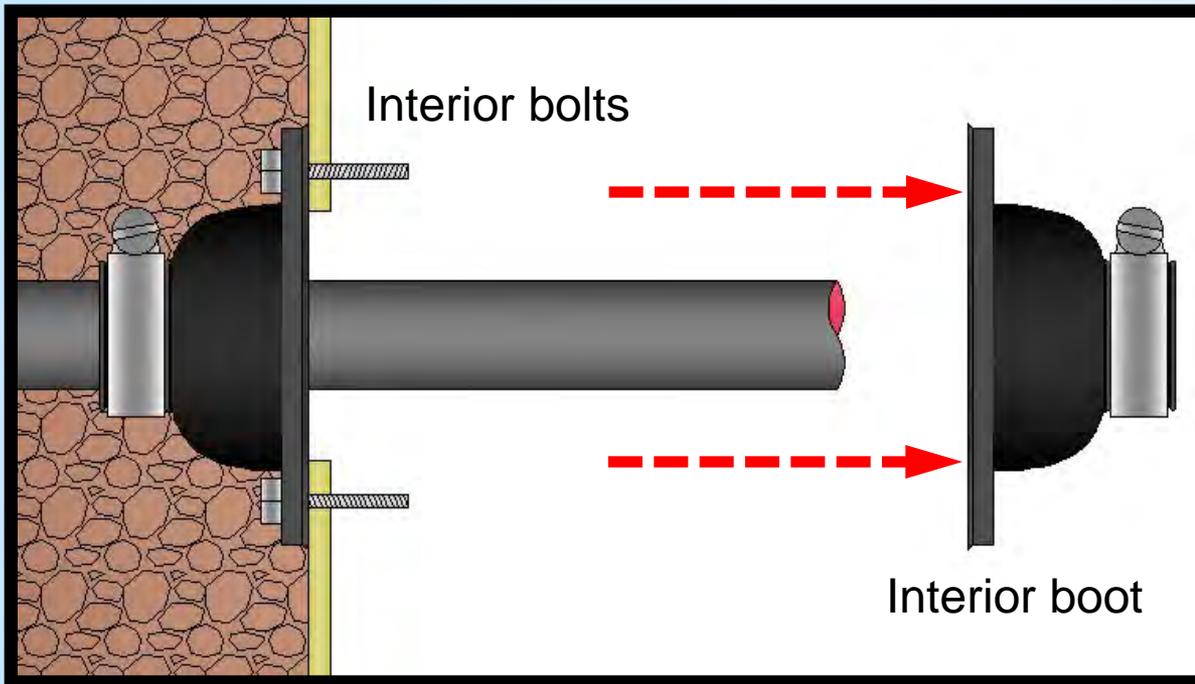
**Can be field modified to accommodate almost any entry fitting.**

**All kits fit both curved or flat sump walls, and include epoxy and clamps.**

**Bravo Retrofits are not entry fitting specific.**

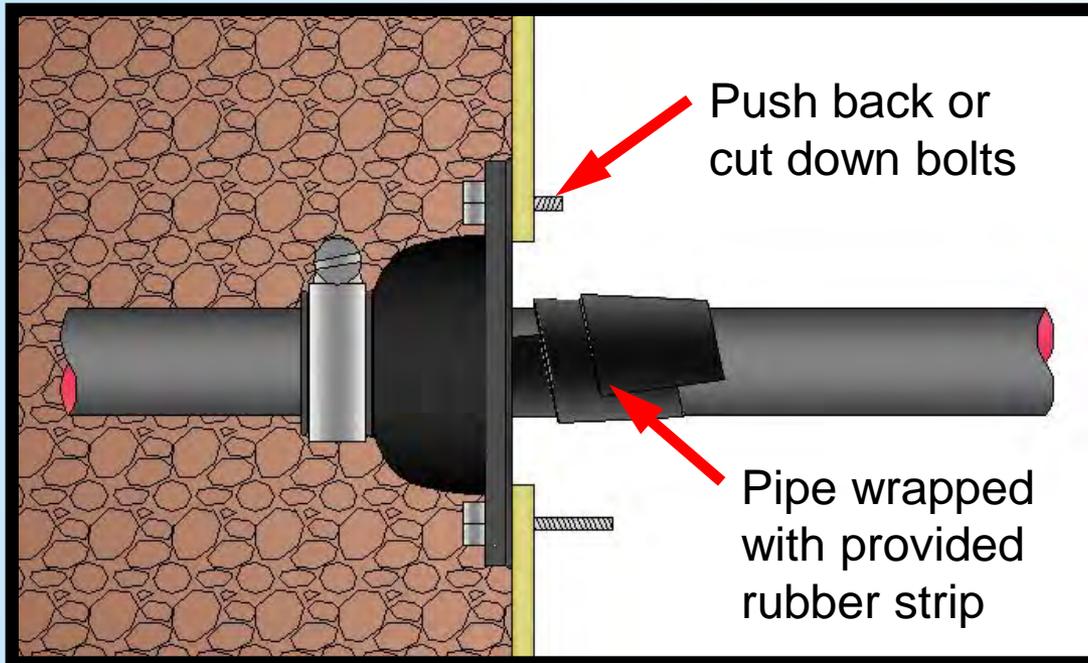


# Retrofit-S



**Remove the interior components of the existing flexible entry boot.**

# Retrofit-S



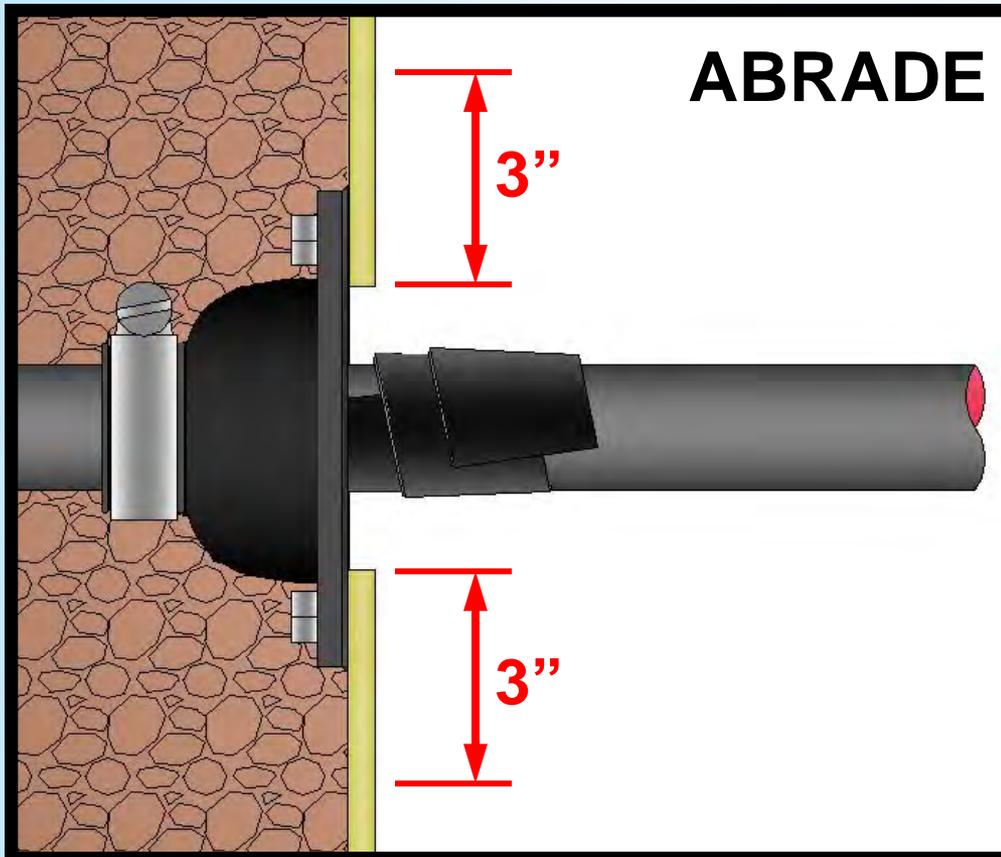
Push the bolts back into the backfill. Otherwise, Cut and grind the bolts down.

Protect the pipe appropriately while working.

The studs should be ground just under flush with the wall.

**Always monitor LEL while grinding!!**

# Retrofit-S



Abrade the sump wall around the opening from the pipe 3" out.

All paint or gel coat must be removed, exposing clean open fiberglass.

## **SECURING CONDUITS**

Before installing the retrofit fitting the conduits should be secured to either each other or the riser pipe, only.

## ROUGHING-UP YOUR FRP PIPE WITH SAND STRIP

**DO NOT USE  
ANY POWER  
TOOLS ON  
PIPE, EVER!**



## MIXING YOUR ADHESIVE

Your adhesive should be stored in a cool place until ready to be mixed. You should warm your adhesive and fiberglass fitting components if the ambient temperature is below 70°F.

**ADD CATALYST TO ADHESIVE AND MIX THOROUGHLY UNTIL THE COLOR IS EVEN AND CONSISTENT WITH NO SWIRLS**



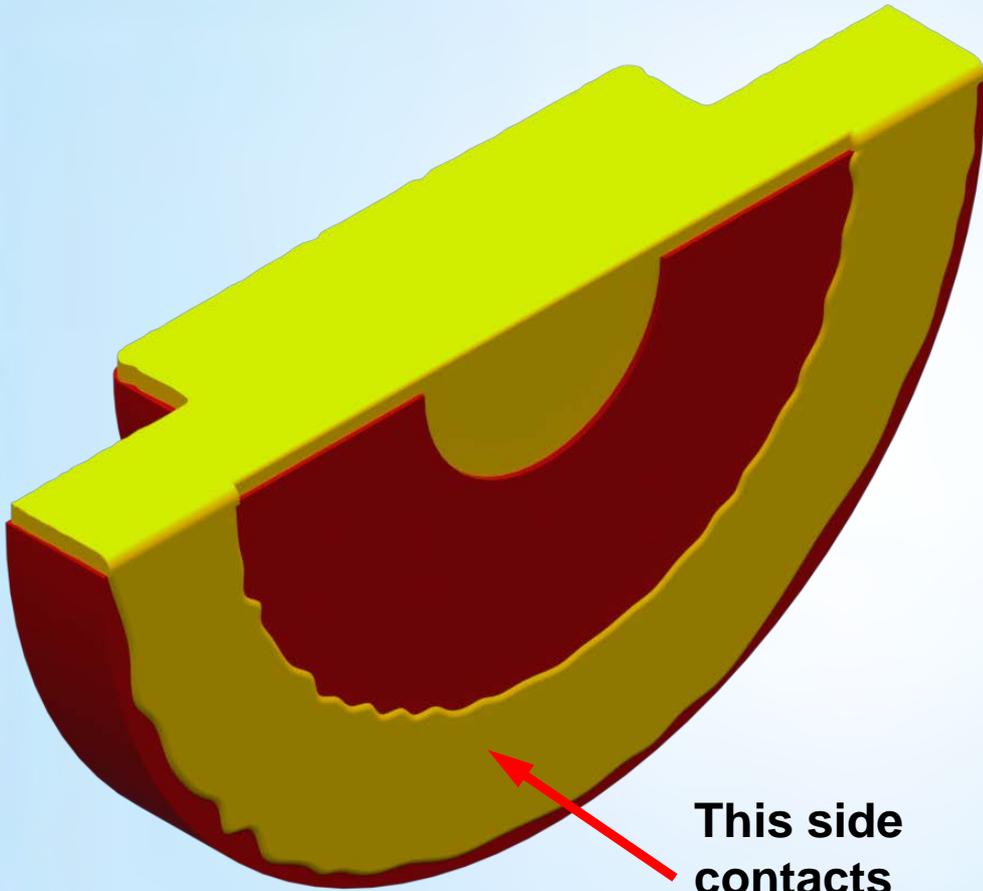
# Retrofit-S

## Cure Time Temperature Chart

Ambient Temp. (F °)	Cure Time	Work Time
50°F (10°C)	9 hours	60 min
60°F (16°C)	6 hours	45 min
70°F (21°C)	3 hours	30 min
80°F (27°C)	2-1/2 hours	25 min
90°F (32°C)	2 hours	15 min
110°F (43°C)	1 hours	5 min

The cure time / temperature range chart is located on the can containing the Bravo Retrofit Epoxy.

# Retrofit-S



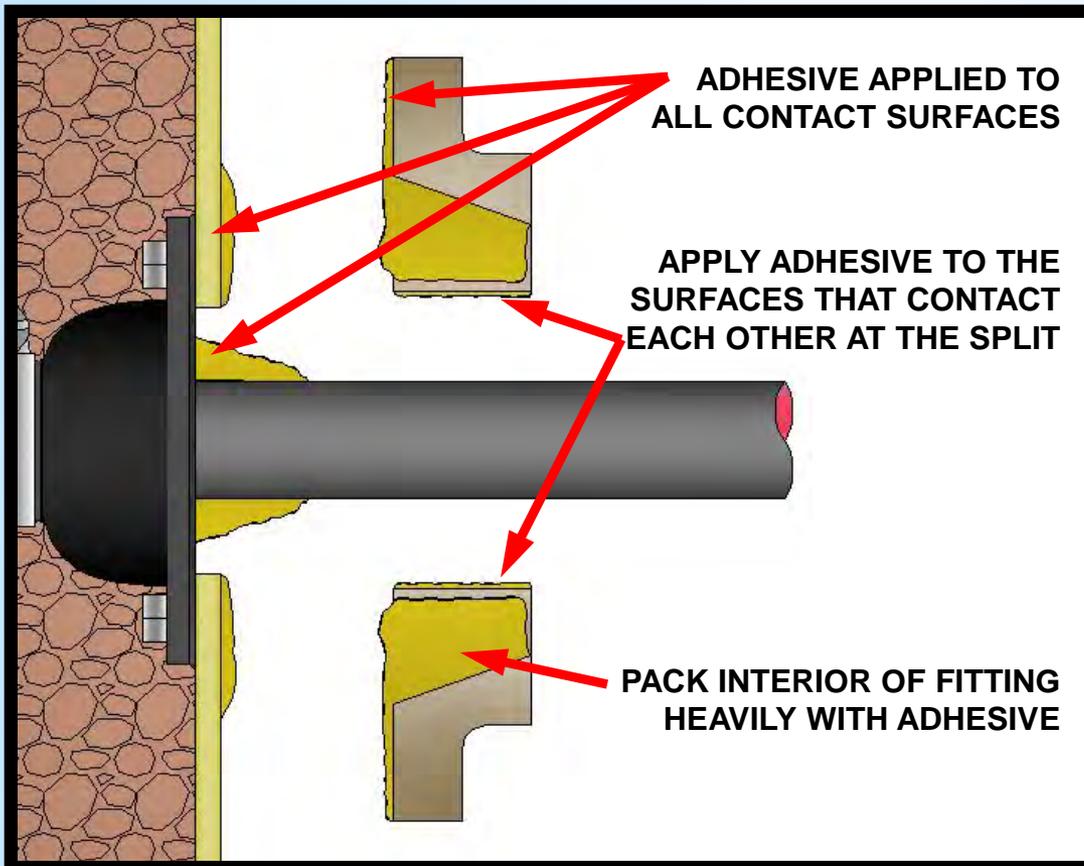
This side  
contacts  
the wall

With adhesive, apply to  
all contact surfaces.

**FILL IN THE INTERIOR**

This is possible on the  
conduit models.

# Retrofit-S



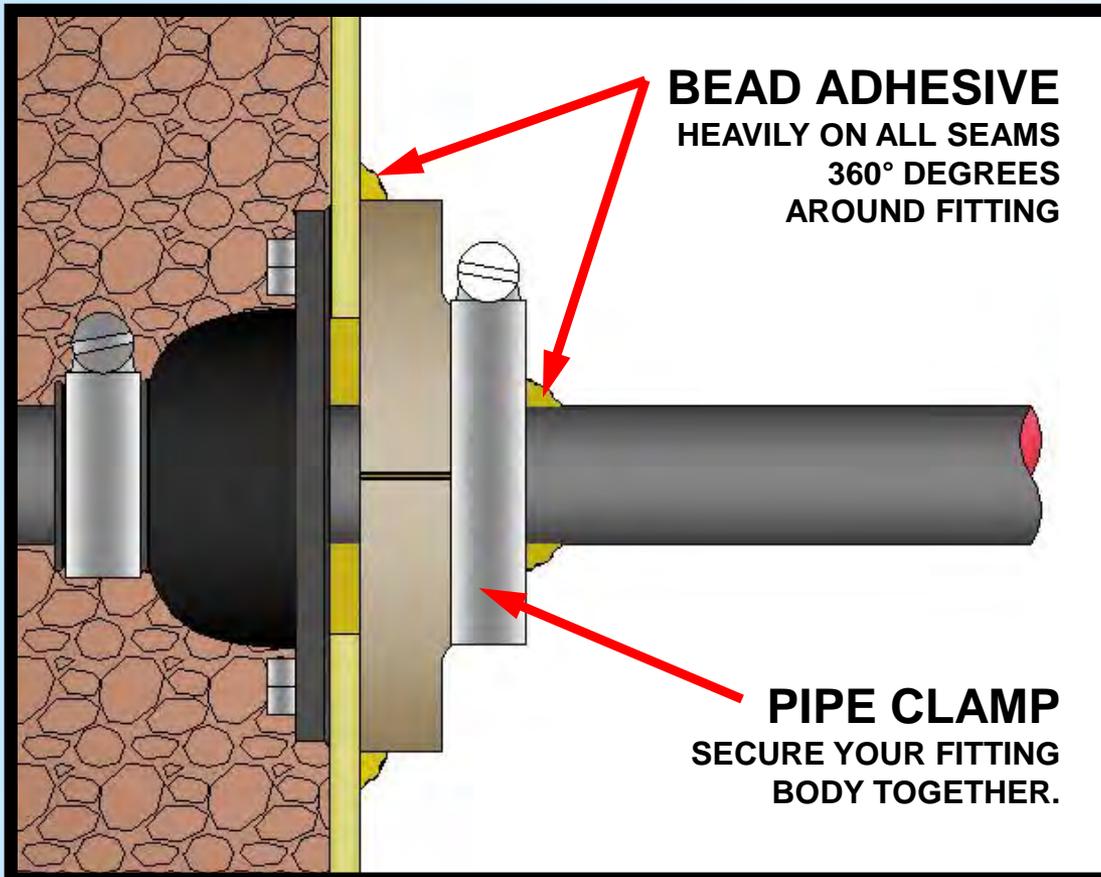
To install the fitting body coat all contact surfaces with epoxy including the wall or any flanges already installed on the wall.

**NOTE: The curved flange isn't needed if the wall is flat.**

Be sure to apply plenty of epoxy to the interior draft feature, nearly filling it.

Press the fitting body firmly into place using the alignment stripe as a guide.

# Retrofit-S



Use the included hose clamp to secure the two halves of the fitting body together during cure.

Bead the adhesive that oozes from the seams around all seams with a gloved finger.

**RECOMMENDED:**  
Clean the face of the fitting with acetone and rags to make it look like a new install fitting. Do not wipe adhesive away from the seams.

# Retrofit-S



**Typical Size over Size**



**Product & Vapor lines**

# Retrofit-S



**Fitting on curved sump**



**Close proximity &  
high angle**

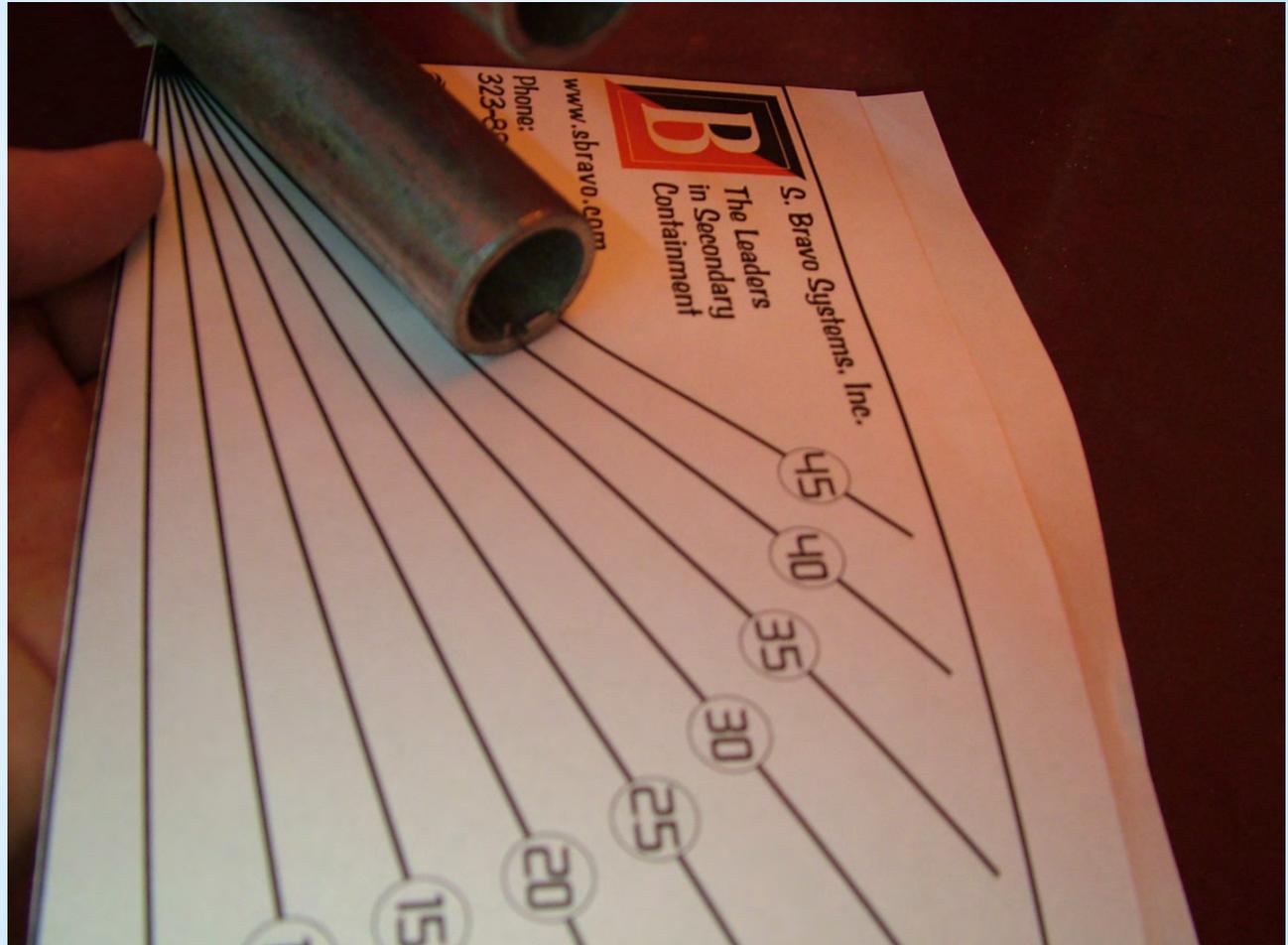
## Repair method for close proximity / extreme angles

These  $\frac{3}{4}$ " conduits are at a 40 degree angle and less than 1" apart.

The repair method depicted in the following photographs will work with less or more angle, and the conduits further or closer apart.



Protractor  
measuring the  
conduit angle at  
40 degrees.



**Make sure the wall is clean and dry. Sand off any sealants or Gel coat. The surface prep is the same as if you were going to laminate.**

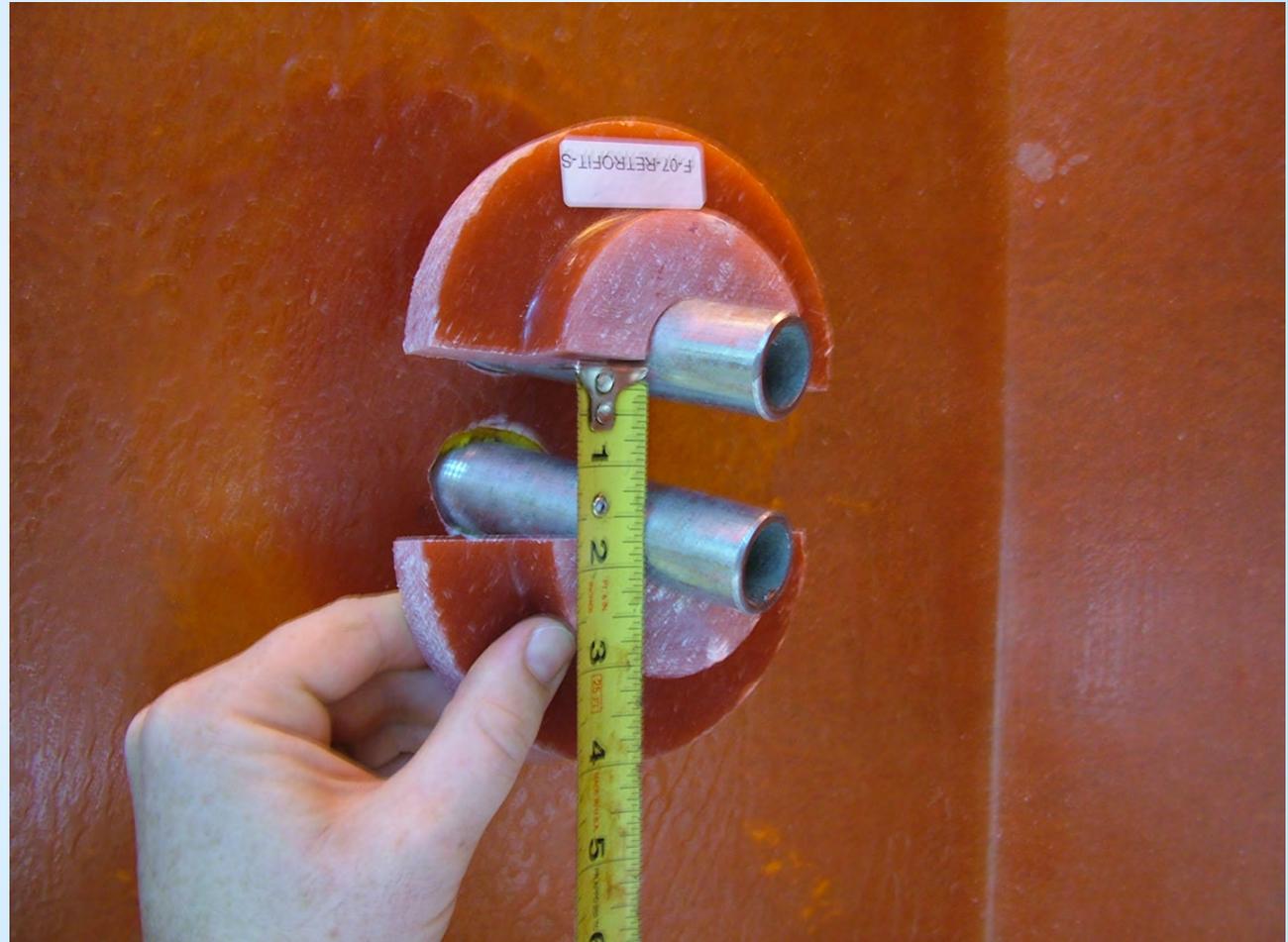


## Repair method for close proximity / extreme angles

Place one of your split fittings around your conduit as shown. Then measure the gap between the two fitting halves.

Using this technique we will only need to take this one measurement to know how to cut our fittings.

Our gap is 1  $\frac{3}{4}$ "



Now that your fitting is marked with the correct measurement it's ready to be cut.



**We used a tile saw to cut the fitting but a chop saw with the appropriate blade or a cut off wheel work well.**



## Repair method for close proximity / extreme angles

Now you have one cut fitting and one un modified fitting.



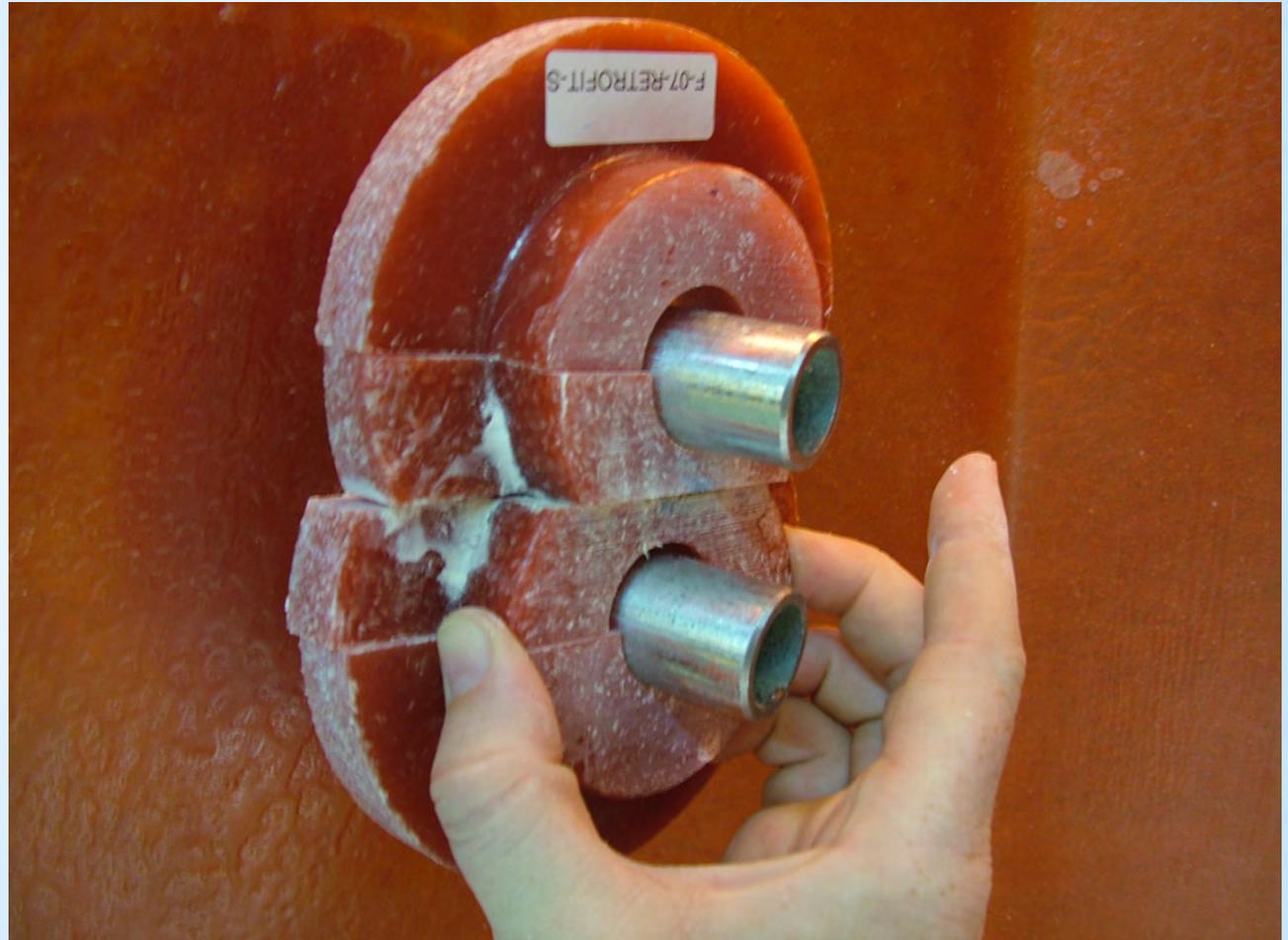
## Repair method for close proximity / extreme angles

Turn the two center pieces of the cut fitting back to back and place them between the two halves of your unmodified fitting.

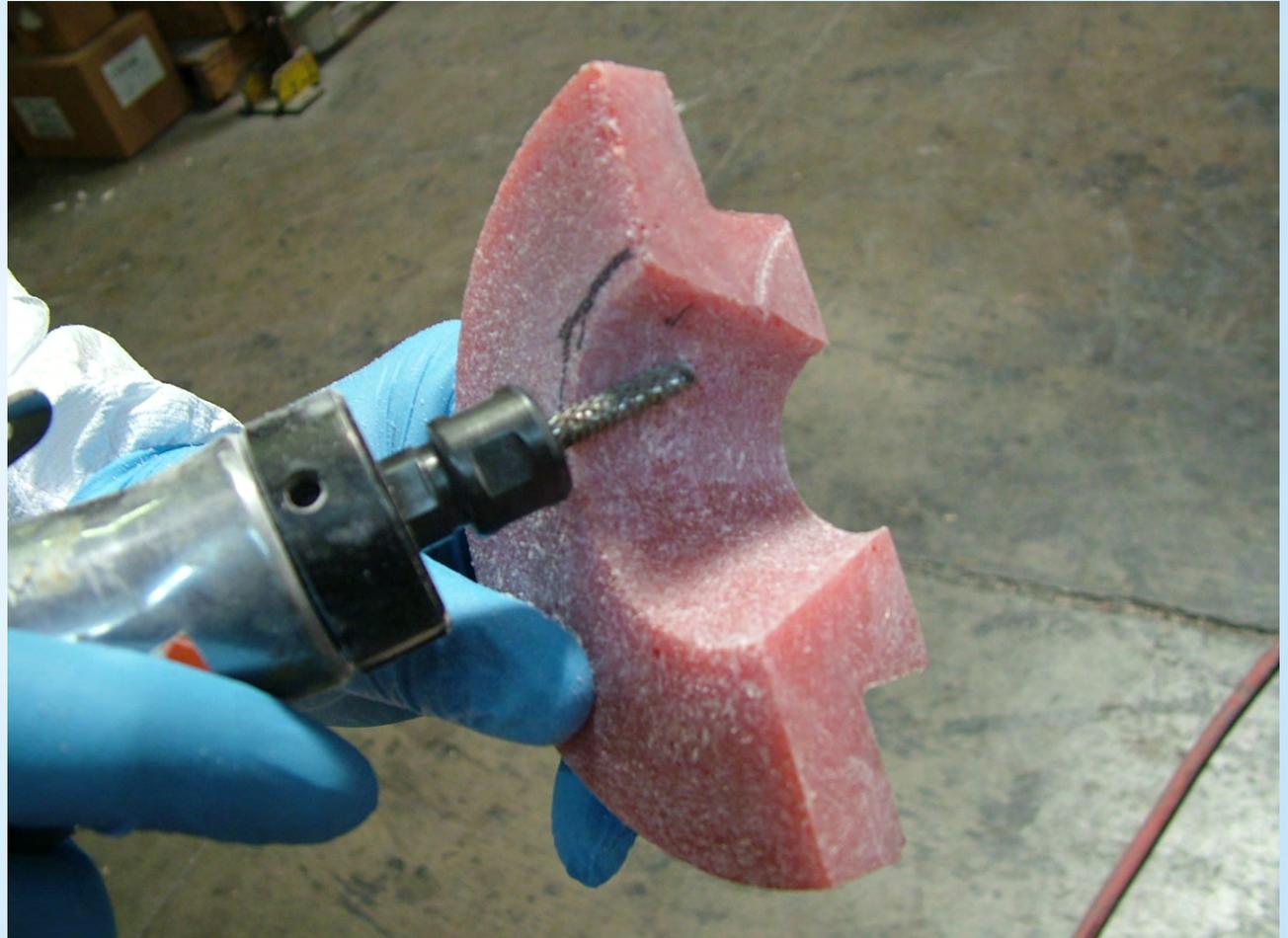
You now have a custom fitting with the correct center to center measurement.



**Dry fit your custom fitting to see if further modification is needed to match the angle of the pipe / conduit.**

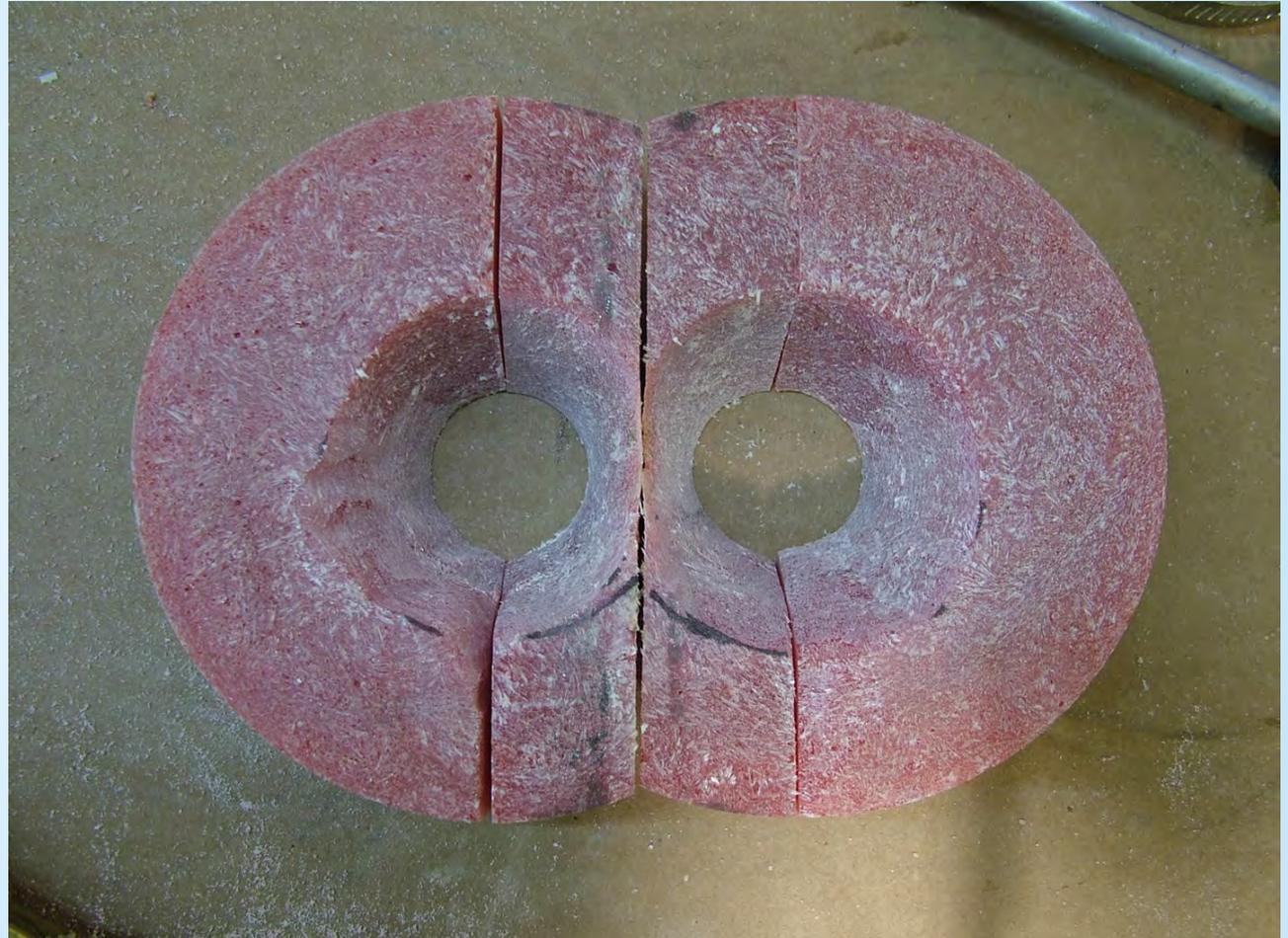


**Grind out the excess material and dry fit again. Repeat this process until the fitting rests flush to the sump wall, allowing the angled pipes to pass through the fitting easily.**



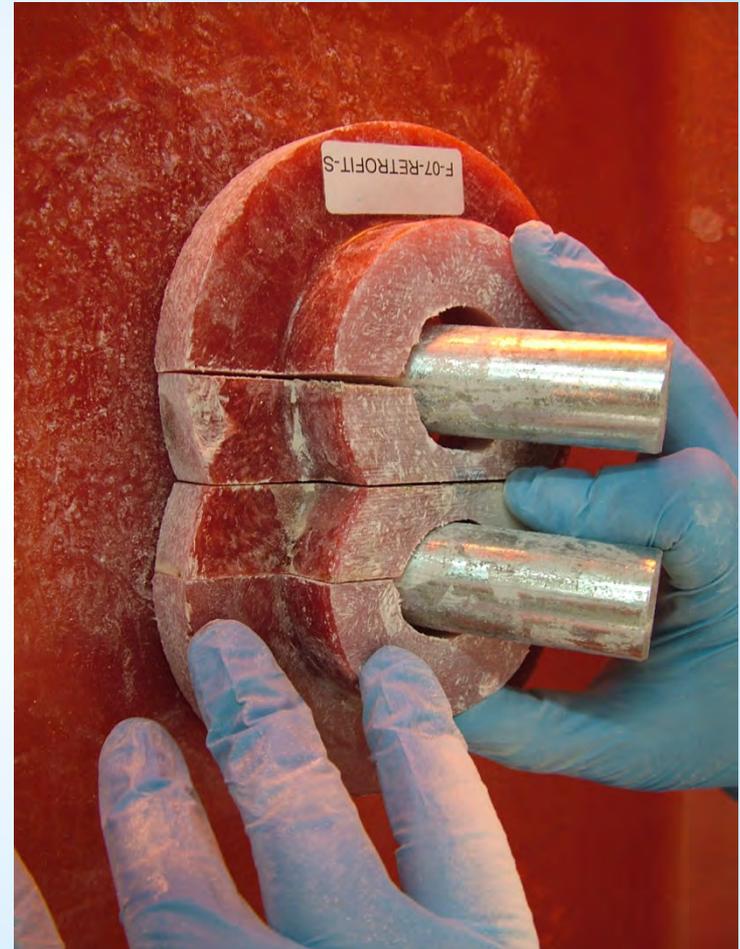
## Repair method for close proximity / extreme angles

Here's our fully modified retrofit fitting. The grinding does not need to be even as the epoxy will fill in all voids inside the fitting, making it a solid mass of fiberglass



## Repair method for close proximity / extreme angles

Final Dry fit. Note the pipes / conduits pass through the fitting easily.



Wall with epoxy  
applied.

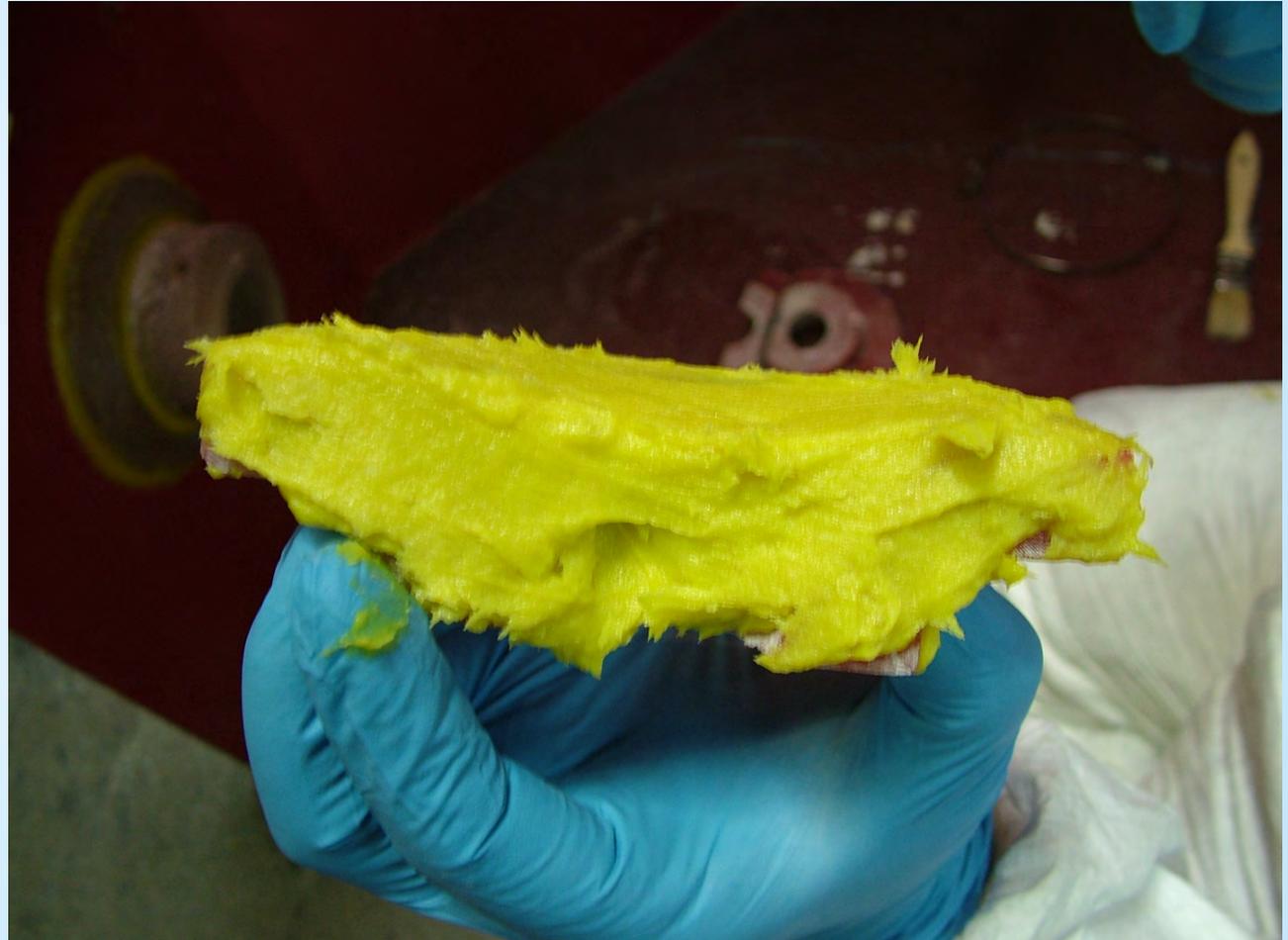


## Repair method for close proximity / extreme angles

Now apply epoxy to your custom retrofit fitting components. Be sure and apply a generous amount, especially in the drafted portion the pipe / conduit passes through.



Fitting  
component with  
properly applied  
adhesive.



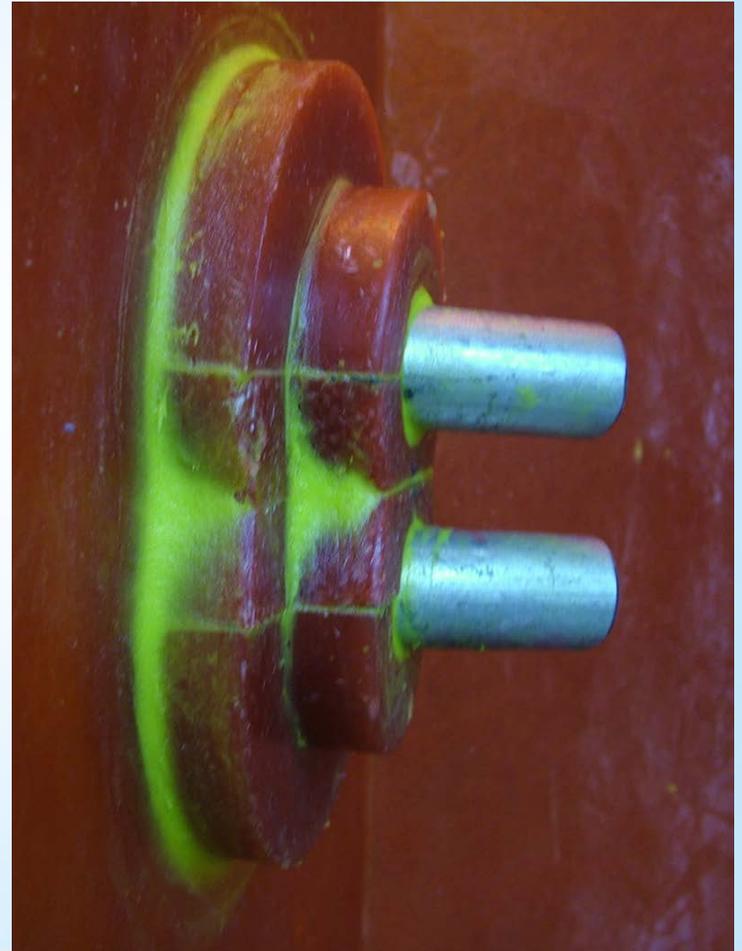
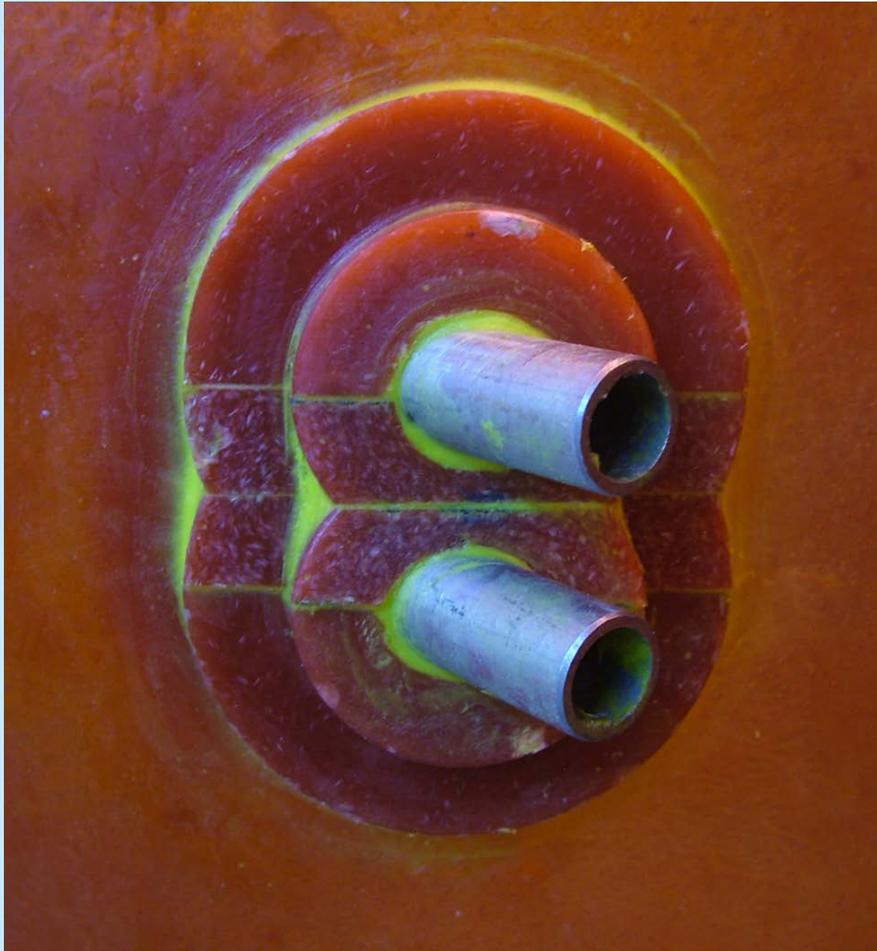
## Repair method for close proximity / extreme angles

Press your fitting components firmly in place squeezing out excess epoxy. A hose clamp can be used to draw the components together.



## Repair method for close proximity / extreme angles

End result, 40 degree angle conduits less than 1" apart.

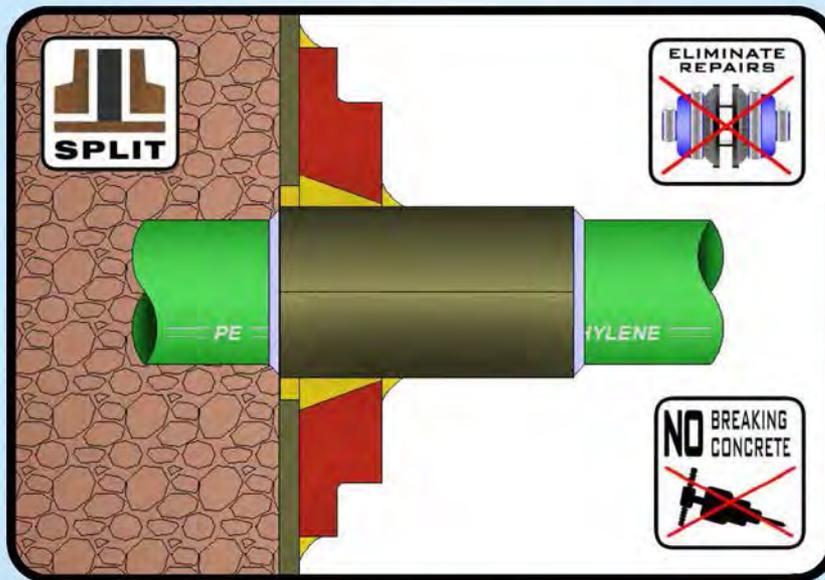


# FLX Series

PATENTS  
PENDING

**FLX-SERIES SPLIT RETROFIT FITTING**  
FOR SINGLEWALL CONTAINMENT SUMPS  
WITH FLEXIBLE COAXIAL PIPE LINES  
MANUFACTURED OF FIBERGLASS

The **ONLY** retrofit fiberglass fitting for flexible pipe



The FLX series retrofits allow entry fittings on FRP sumps to be replaced when flexible piping has been used.

The only difference when working with flexible piping is the addition of the “FRP sleeve adaptor”.

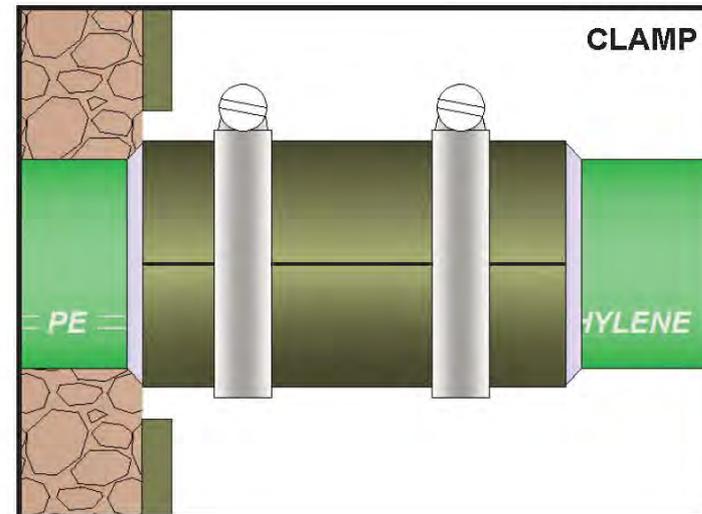
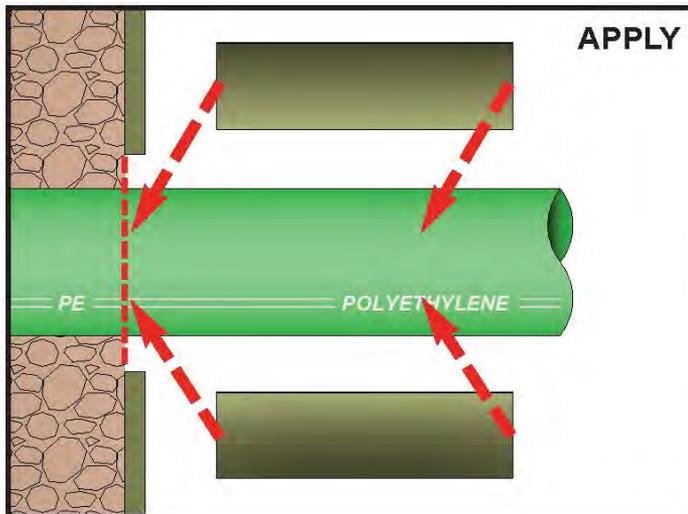
# Retrofit – FLX fittings



5) Hand sand the interior surface of both sleeve halves for maximum bonding grip.

6) Apply the appropriate adhesive generously to the interior of each fiberglass sleeve.

7) Clamshell both halves of the fiberglass sleeve around your pipe FIRMLY and clamp in place.



# Retrofit – FLX fittings



# Retrofit – FLX fittings



**Removal of the  
interior portion of  
the fittings**

# Retrofit – FLX fittings



**Surface prep and  
installation of the  
FRP sleeve  
adaptors**

# Retrofit – FLX fittings



**Completed FLX  
installation.**

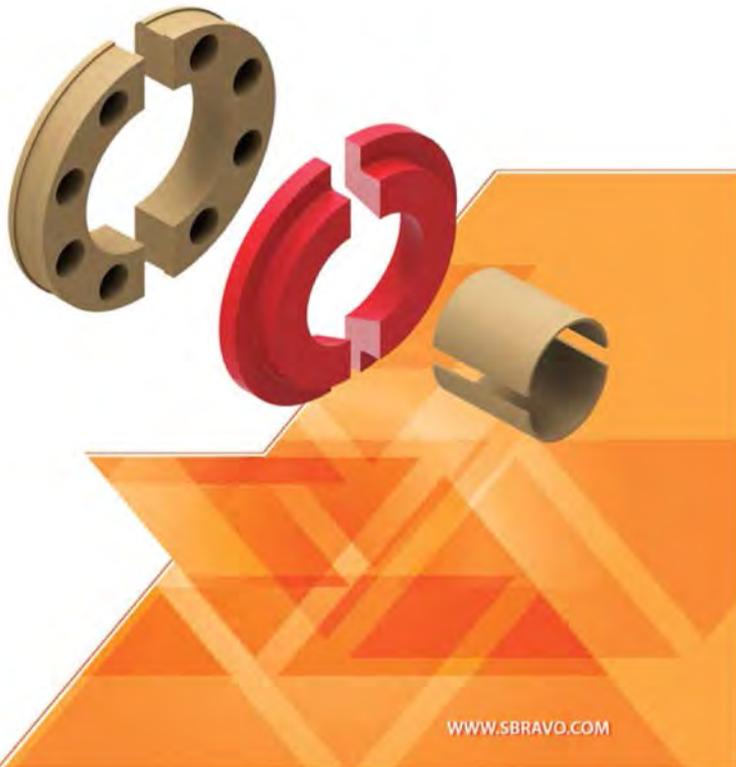
# Retrofit – FLX fittings



# Direct Replacements



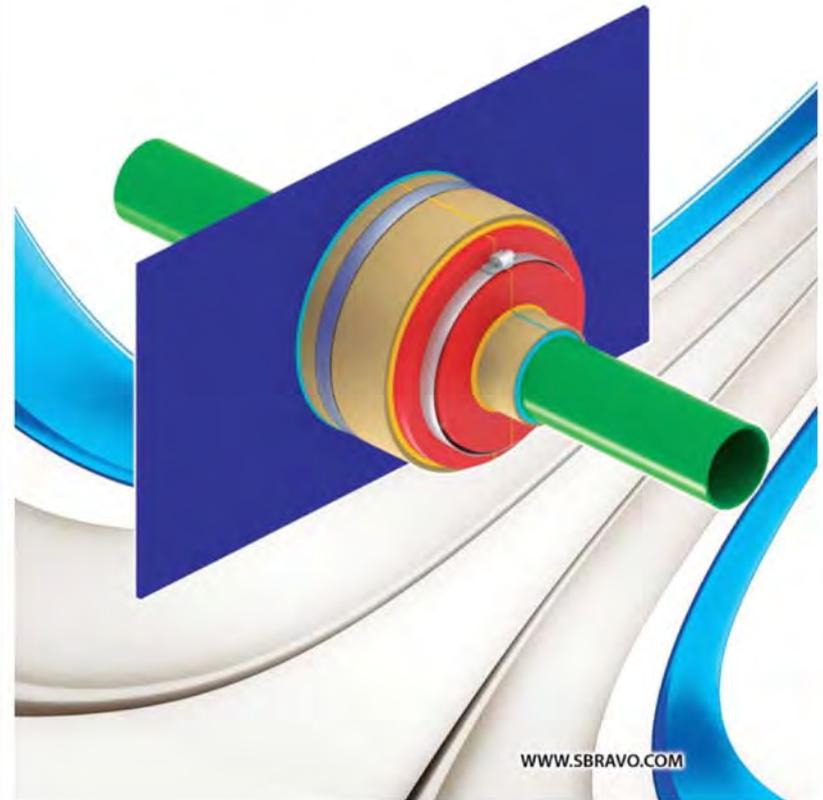
Direct Replacements - Bolted Fittings  
Installation Instruction Guide



[WWW.SBRAVO.COM](http://WWW.SBRAVO.COM)

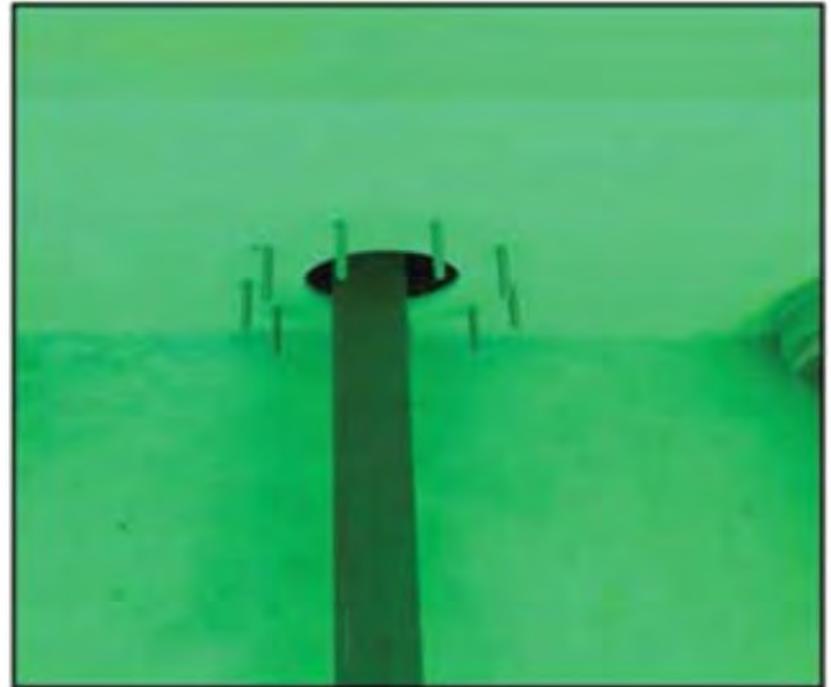


TCI Direct Replacement - Thread On  
Installation Instruction Guide



[WWW.SBRAVO.COM](http://WWW.SBRAVO.COM)

# Direct Replacements



# Direct Replacements

The mounting ring attaches to the sump wall using existing studs.

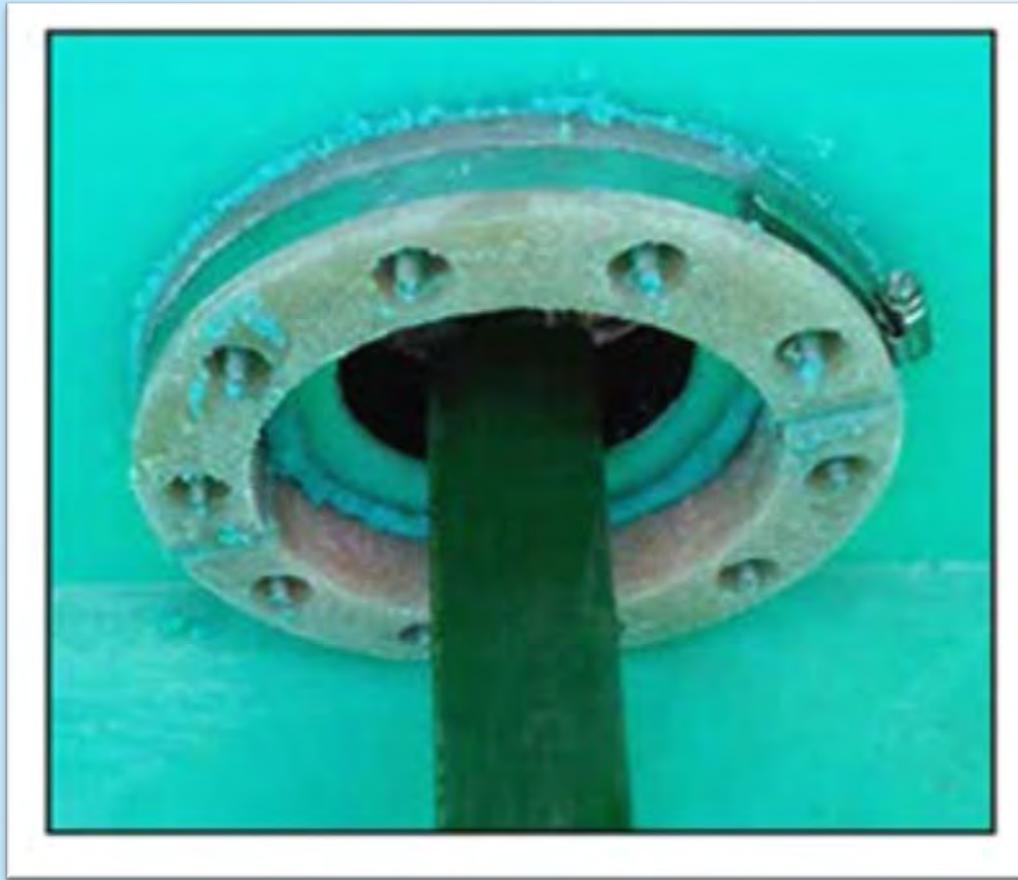


# Direct Replacements

After placing the ring to the wall install the stainless band clamp, then tighten the nuts.



# Direct Replacements



**Completed mounting ring installation. The process would be the same for FRP sumps, only the adhesive would change.**

# Direct Replacements

FRP sleeve adaptor installation for flexible piping.



# Direct Replacements



**Installation of FRP sleeve adaptor. This step is omitted for conduit and FRP pipe**



# Direct Replacements

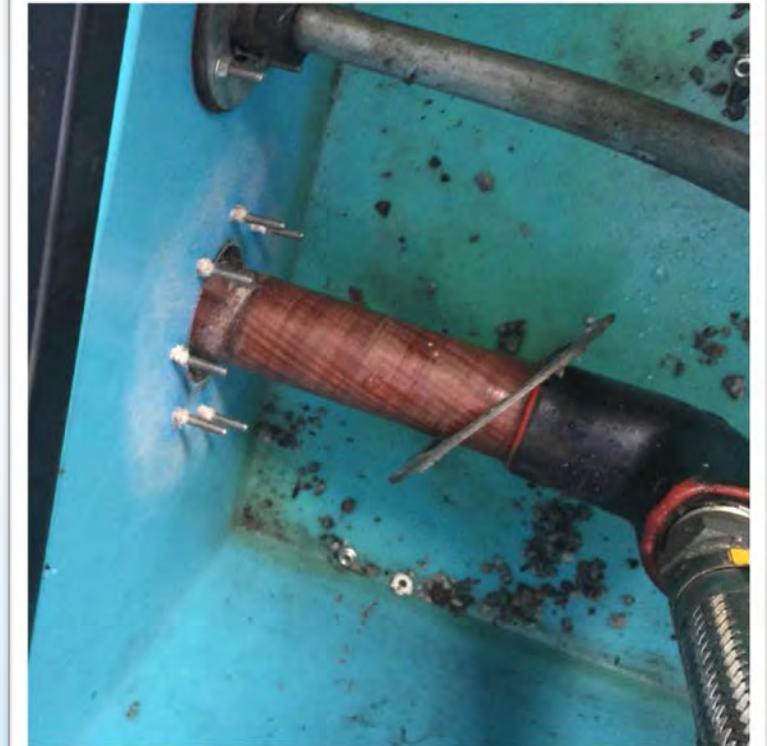


Fitting flange installation



# Direct Replacements

Actual installation.



# Direct Replacements

Final Installation.



# Direct Replacements



TCl retrofit

# Direct Replacements



**TCI mounting ring and  
completed installation.**





# **Bravo Retrofit Fittings**

**All Bravo retrofit fittings are manufactured from UL1316 specified resins that are compatible with gasoline, E85, & Bio diesel.**

**By using more durable FRP materials to construct our retrofit products Bravo provides a large cost advantage by reducing repeat repairs.**

**The projected service life of Bravo retrofits should make them life of the system repairs when properly installed.**

**The Retrofit-S fittings have a 30 year corrosion warranty.**

**Retrofits on plastic materials have a 3 year warranty.**

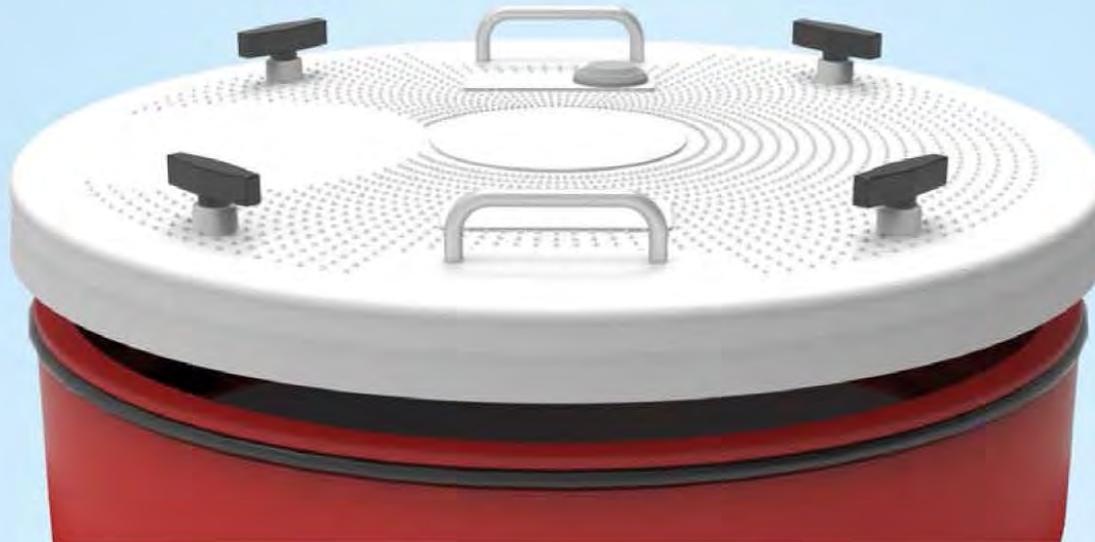
**Bravo retrofit products must be installed by Bravo certified installers. Bravo offers in depth classroom training, on site training, & online certification options.**



# Snap Lock water-tight lids

***NEXT-GENERATION*** DESIGN THAT MAKES  
TWIST-LOCK COVERS OBSOLETE...

SNAP  
LOCK  
SHOWN



NON  
LOCK  
AVAILABLE

TESTED TIGHT UNDER ***5 FEET*** OF WATER

# Snap Lock water-tight lids

**PATENTS  
PENDING**

**RC-Series Retrofit SNAP-LOCK COVERS**  
FOR SINGLE & DOUBLE WALLED TANK SUMPS  
32" DIAMETER COVER WITH REDUCER  
MANUFACTURED OF FIBERGLASS

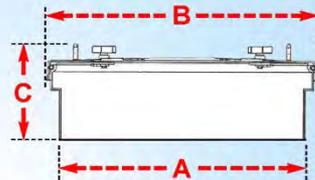
## SNAP-LOCK COVER, **RETROFIT**



NOT FOR BRAVO BRAND  
DOUBLEWALL TANK SUMPS

High pressure vertical o-ring seal  
eliminates water intrusion.

Tested under 5' feet of water (2 PSI)



FOR 8" INSPECTION PORT, ORDER: INSP-PORT-8INCH AT \$ 190 LIST

Part Number:	Reducer O.D. (A)	Maximum O.D. (B)	Assembled Height (C)	Lamination & Paste Kit	List
RC-32-10T-29-SL	29"	33-1/2"	12"	Included	\$ 700
RC-32-10T-30-SL	30"	33-1/2"	12"	Included	700
RC-32-10T-31-SL	31"	33-1/2"	12"	Included	700
RC-32-10T-32-SL	32"	33-1/2"	12"	Included	700
RC-32-10T-33-SL	33"	33-1/2"	12"	Included	700
RC-32-10T-34-SL	34"	34"	12"	Included	700
RC-32-10T-35-SL	35"	35"	12"	Included	700
RC-32-10T-36-SL	36"	36"	12"	Included	700
RC-32-10T-41-SL	41"	41"	12"	Included	1200

ONE "FRP-TOOL-KIT-400" IS REQUIRED PER JOB SITE AT \$ 160 LIST

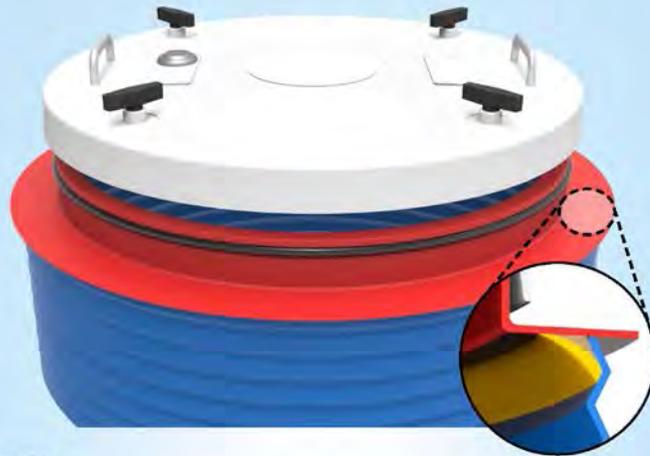
14C

Bravo Systems has standardized their sump lids. The Snap-Lock will replace previous lid designs on Single wall sumps, double wall sumps, and retrofit sump lid applications.

# RCP series (poly sumps)

**RCP RETROFIT SNAP-LOCK COVER**  
FOR POLYETHYLENE TANK SUMPS  
32" DIAMETER COVER WITH FLANGED OPTIONS  
MANUFACTURED OF FIBERGLASS

**WATER-TIGHT SNAP-LOCK RETROFIT FOR POLY**



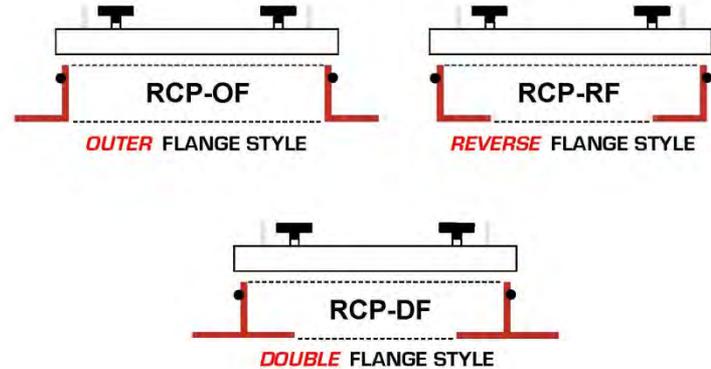
**FEATURES:**

- > Water-Tight SNAP-LOCK for poly sumps
- > All "FRP" construction
- > Three flanged models to choose
- > Includes poly and epoxy bonding kits
- > LOTS of adhesive included for each

**E-85**  
UP TO  
E100 & B100



PATENT PENDING 15A



OF - OUTER FLANGED SL REDUCER					
Part Number:	Flange O.D.	Flange I.D.	Assembled Height	Included Kits Epoxy / PE	List
RCP-OF-SL32	42"ø	32"ø	5"	4 EP100 / 250ml PE *	\$ 977

RF - REVERSE FLANGED SL REDUCER					
Part Number:	Flange O.D.	Flange I.D.	Assembled Height	Included Kits Epoxy / PE	List
RCP-RF-SL32	32"ø	23"ø	5"	3 EP100 / 250ml PE *	\$ 885

DF - DOUBLE FLANGED SL REDUCER					
Part Number:	Flange O.D.	Flange I.D.	Assembled Height	Included Kits Epoxy / PE	List
RCP-DF-SL32	42"ø	23"ø	5"	4 EP100 / 250ml PE *	\$ 1125

FOR 8" INSPECTION PORT, ORDER: INSP-PORT-8INCH AT \$ 198 LIST

\* ONE "MAN-GUN-FS-10" IS REQUIRED PER JOB SITE AT \$ 230 LIST

# RC Adjustable height lids



# RC Adjustable height lids



# FRP ENTRY FITTINGS

Apply a generous amount of adhesive to the pipe/conduit, wall, and fitting.

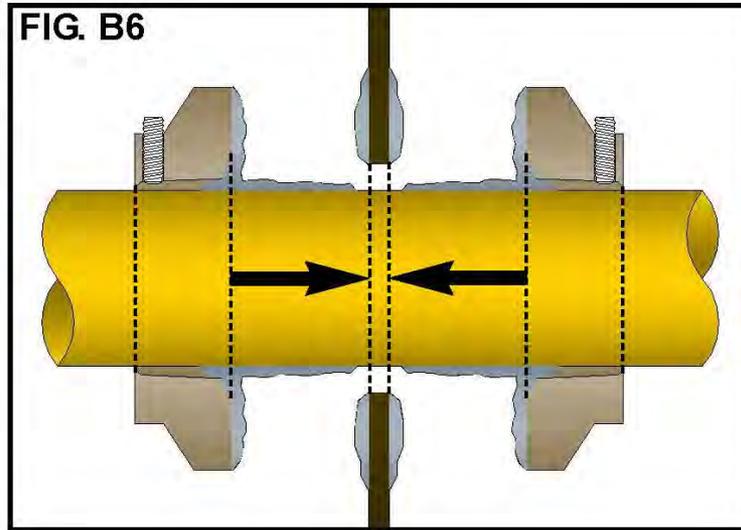
Use the provided epoxy filler in needed.

Each fitting is supplied with two bags of milled fiberglass filler. Follow the list to add the right amount of filler to a Smith or Ameron adhesive kit and thoroughly mixed **BEFORE ADDING CATALYST**.

Cool weather - 1 bag of filler per kit  
HOT weather - 2 bags of filler per kit

When thoroughly incorporated, add catalyst and thoroughly mix again before application.

FIG. B6

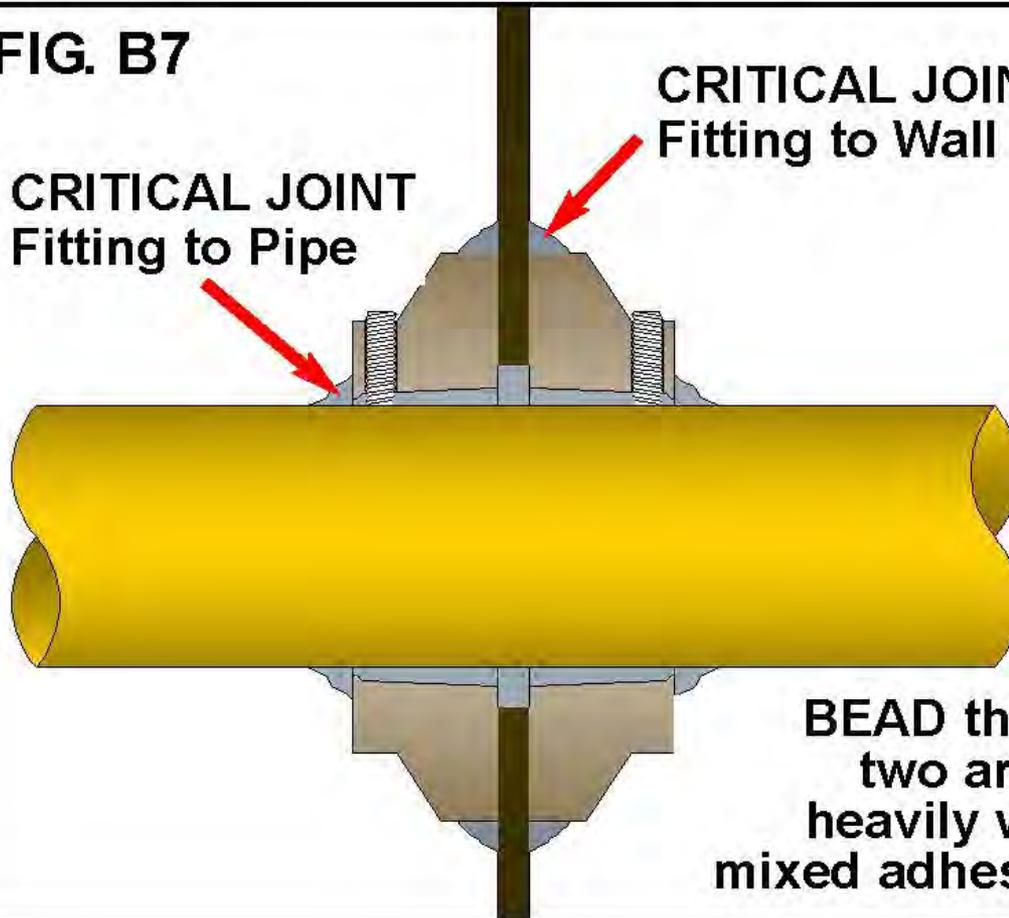


# FRP ENTRY FITTINGS

**FIG. B7**

**CRITICAL JOINT  
Fitting to Pipe**

**CRITICAL JOINT  
Fitting to Wall**



**BEAD these  
two areas  
heavily with  
mixed adhesive**

**BRAVO**  
PROBLEM SOLVED

# *FRP ENTRY FITTINGS*



**FF Series installation**

**PATENTS  
PENDING**

**F-SERIES FIBERGLASS ENTRY FITTINGS  
FOR FLAT DOUBLEWALL FIBERGLASS SUMPS**  
F-1X-SS-D / F-1X-RR-D / F-XX-TS-D / F-XX-LS-D  
DOUBLEWALL FITTING FOR CONDUIT AND FIBERGLASS PIPE

**True AB-2481 Compliance !**



**Conduit Pass-through Fittings**

PART #	Description	List price
F-17-SS-D*	Fitting for 3/4" galvanized steel conduit	\$ 160
F-10-SS-D*	Fitting for 1" galvanized steel conduit	165
F-17-RR-D	Fitting for 3/4" RobRoy brand PVC-coated steel conduit	160
F-10-RR-D	Fitting for 1" RobRoy brand PVC-coated steel conduit	165

\* IF BRINE (SALINE) IS USED - YOU MUST USE "RR" MODELS



**Size over Size / LCX Fittings**

PART #	Description	List price
F-32-TS-D	Fitting for 3" over 2" FRP pipe w/ dual test ports	\$ 210
F-43-TS-D	Fitting for 4" over 3" FRP pipe w/ dual test ports	280
F-64-TS-D	Fitting for 6" over 4" FRP pipe w/ dual test ports	935
For Ameron LCX Coaxial pipe		
F-22-LS-D	Fitting for 2" LCX Coaxial FRP pipe w/ dual test ports	\$ 210
F-33-LS-D	Fitting for 3" LCX Coaxial FRP pipe w/ dual test ports	310

**FEATURES:**

- > Reduce Labor & Material
- > Tank-Spec FRP material
- > No metal or rubber parts
- > Port for testing sump interstice
- > Warranted for fuel submersion
- > 30 Year Corrosion Warranty



Third Party Approved



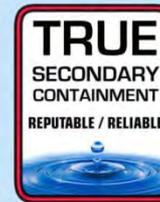
CONTACT FACTORY FOR ROUND SUMPS

13A

**PATENTS  
PENDING**

**F-SERIES Adjustable Entry Fittings**  
0-10° ADJUSTABLE FITTING FOR SINGLEWALL FRP SUMPS  
FOR SMITH / AMERON FRP PIPE AND STEEL CONDUIT

**Angle Adjustable F-Series Entry Fitting !**



**UP TO 10°  
OF ANGLE**



Third Party Approved



**FEATURES:**

- > Reduce Labor & Material
- > Dual-Port design
- > 0-10° degrees of adjustability
- > Tank-Spec FRP material
- > No metal or rubber parts
- > Warranted for fuel submersion
- > 30 Year Corrosion Warranty

**PRODUCT SPECS:**

Material . . . . . UL Fiberglass	
PART #	Description
F-22-LS-T-ADJ-MP	Multi-Port 0-10° degree entry for 2" LCX Coaxial FRP pipe
F-32-TS-T-ADJ-MP	Multi-Port 0-10° degree entry for 3" over 2" FRP pipe
F-33-LS-T-ADJ-MP	Multi-Port 0-10° degree entry for 3" LCX Coaxial FRP pipe
F-43-TS-T-ADJ-MP	Multi-Port 0-10° degree entry for 4" over 3" FRP pipe
F-64-TS-T-ADJ-MP	Multi-Port 0-10° degree entry for 6" over 4" FRP pipe

12A

**BRAVO**  
PROBLEM SOLVED

# ***FRP ENTRY FITTINGS***



**BRAVO**  
PROBLEM SOLVED

# *UDC Options*



# *Bravo Tank Sumps*

**B-407-TG**  
“Tall Collar”



**B-407-PP**  
“Collar Mount”



**B-407-RB**  
Retrofit





# Double Wall Tank Sumps

## B-401-DB-XT Split Collar Mount Sump

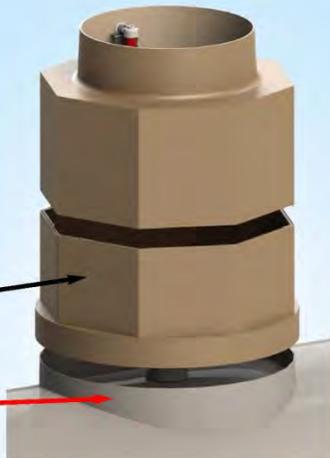
DOUBLEWALL SUMP (2-PIECE) FOR SHORT ROUND COLLARS  
42" OR 48" DIAMETERS WITH 32" OR 36" REDUCERS  
MANUFACTURED OF FIBERGLASS



AB-2481 Compliant  
Third Party Approved

Eight Sided Sump  
Great for 45° & 90°  
Fiberglass Fittings

Short round collars  
installed by your Tank  
manufacturer



Compatible with  
and warranted for  
continuous exposure  
to all common fuels  
and alternative fuels  
including ethanol  
and biodiesel.



All sumps  
ship under  
20"Hg for  
continuous  
testing



EQ# 615

### FEATURES:

- > Tank-Spec Fiberglass Construction
- > AB-2481 Compliant Monitored DoubleWall
- > Ships under a continuous 20"Hg vacuum test
- > Large flat walls for more entry fittings
- > Octagonal walls with round collar mount
- > 42" or 48" Diameters
- > 32" or 36" Diameter reducers
- > Includes Manometers and interstitial fluid
- > Height adjustable in the field



RECOMMENDED:  
F-Series-D FRP Fittings Only

Patent# 6,823,886 - Other Patents Pending 13A

Bravo double wall tank sumps have a testable interstice that can also be monitored.

Installation of a double wall system can be an option to tri-annual testing.



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# UDC Upgrades

**B-8000-D-AB & B-9000-D-AB**  
**DOUBLEWALL MONITORED UDC**  
 DEEP UNDER DISPENSER CONTAINMENT SUMPS  
 MANUFACTURED OF FIBERGLASS & STEEL



**B-8000-D-AB UDC**  
 Width: 20" Depth: 30"  
 Length: 

Lrg	Med	Sm
42"	30"	25.5"



**70% LARGER**  
**B-9000-D-AB UDC**  
 Width: 29" Depth: 35.5"  
 Length: 

Lrg	Med	Sm
42"	30"	25.5"

### FEATURES:

- > Built like a Tank! Compatible with all fuels & additives
- > Clear Walls - True DoubleWall AB-2481 compliance
- > Interstice is continuously tested from factory to destination
- > Ships ready for both Hydrostatic or Vacuum monitoring
- > Large flat walls make it easier to fit more entry fittings
- > Option to add or subtract sump depth at time of order
- > Interchangeable Dispenser Frame allows future upgrades
- > Shown with optional Electrical Offset (EO) frame
- > Optional Factory-Installed F-Series entry fittings
- > Stabilizer brackets included and pre-plumbed
- > Includes all installation accessories & interstitial fluid
- > Sized & Tailored to any Dispenser model

CALL for Vista 4-Grade and Wayne-Vac equipped dispensers

\* CONDUIT LINES NOT INCLUDED



**RECOMMENDED:**  
F-Series-D FRP Fittings Only

View UDC's at [sbravo.com/UDC](http://sbravo.com/UDC)



PATENTS PENDING  
PAT. #9,800,142, #6,823,086  
THIRD PARTY APPROVED

12A

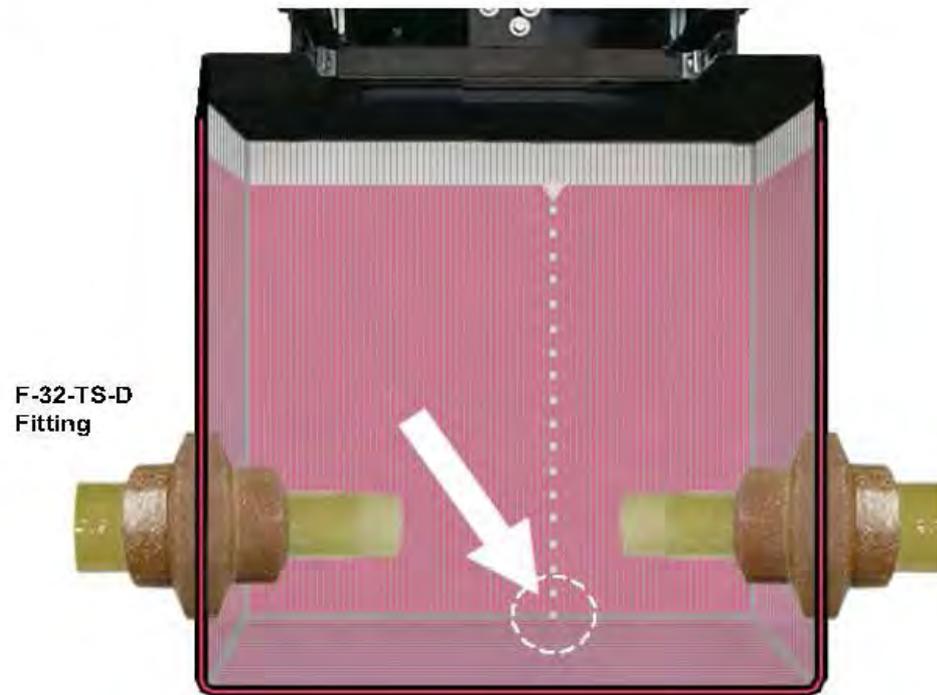


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## Bravo double wall UDC's also have a testable interstice.

## ALDP IN ACTION DIAGRAM



## Get Bonded

Never repair an entry fitting again

With the F-Series fitting family,  
there are no more excuses

[Learn More](#)

Tank Sump



UDC Sump



AST Transition



UST Transition



F-Series Fittings



Retrofit Fittings

### Latest News

Bravo launches new high-tech website

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### Distributor Map



Our customers will not need to  
constantly pump out water because of  
these fittings

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