

BRAVO F-SERIES INSTALLATION INSTRUCTIONS

Models: F-10-SS-D, F-10-RR-D, F-17-SS-D, F-17-RR-D

DOUBLEWALL ELECTRICAL

BRAVO ELECTRICAL F-SERIES FOR DOUBLE WALL FIBERGLASS SUMPS



COVERS BLR
RETROFIT

FOR:
3/4" - F17
1" - F10

PVC-Coated
ROBROY
Conduit
(F-1X-RR)
or
Galvanized
Conduit
(F-1X-SS)

ONLY

READ THIS MANUAL
FRONT TO BACK

**F-1X-xx-D MODELS ONLY WARRANTED WHEN INSTALLED
ON FLAT SIDED DOUBLE WALL FIBERGLASS SUMPS.
BRINE (Sodium Chloride) DOUBLEWALL SUMPS MUST USE
F-1X-RR-D & Rob Roy™ Conduit**

ii-F-Series-1X-SS-D-11A

S. Bravo Systems, Inc. - The Leader in Secondary Containment

2929 Vail Ave. | Commerce, CA | 323-888-4133 | FAX: 323-888-4123 | www.sbravo.com



MANDATORY

The F-Series DoubleWall Fiberglass Penetration Fittings **MUST** be installed by a **Bravo Certified Contractor.**

Details can be found at www.Sbravo.com/cert.htm

IMPORTANT

READ THESE INSTRUCTIONS - KEEP FOR FUTURE REFERENCE

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- Closely adhere to all directions and warnings indicated on the product or contained in these instructions.

- Warranty is void if there is any evidence of modification, abuse, negligence or improper installation.

If you have any problems with Bravo Systems components, DoubleWall Containment Systems, or accessories, Call Bravo Systems Immediately:

1-800-28-BRAVO

1-323-888-4133

info@sbravo.com

SAFETY FIRST! S. Bravo Systems, Inc. urges you to adhere to the normal safety procedures and precautions followed by your company. Please follow the mandates and compliances decreed by OSHA, local, State and federal regulations regarding the use of this product.

WARRANTY

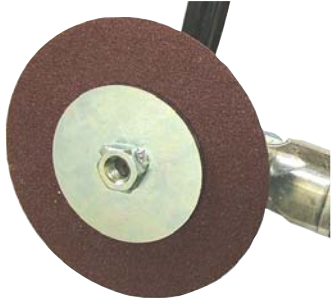
All containment systems sold by S. Bravo Systems, Inc. are warranted to be free from defects in material and workmanship for a period of one year from date of purchase. This warranty will be limited to the repair and replacement of Bravo parts only and will exclude all claims for labor or consequential damage. No other express warranties given and no affirmation of S. Bravo Systems, Inc., or its agents and/or representatives, by words or action, will constitute a warranty. IT IS EXPRESSLY AGREED THAT THIS WARRANTY WILL BE IN LIEU OF ALL WARRANTIES OF FITNESS AND IN LIEU OF THE WARRANTY OF MERCHANTABILITY.

This warranty is void if there is any evidence of modification, abuse, negligence, or improper installation. If any fittings or components, other than S. Bravo Systems approved fittings or components, are used in conjunction with any S. Bravo Systems product, the warranty pertaining to these products is immediately void.

F-Series COMPONENTS

MANDATORY

CLAMP-F1
(Per Fitting)



RECOMMENDED

SAND-F1
sanding disc back and centralizer.
For F-1X-XX Series Conduit
Fittings. Includes sanding discs.
Sanding Gun Sold Separately



REQUIRED TOOLS

(NOT PROVIDED)

Trichlorethylene or Acetone
to clean parts/pipe

Hole saw, 2-1/2" diameter

1/4" Drill bit

Air Sander w/ 5/8" Arbor

Approved Adhesives:

Smith™ #7069, 8069 (7014, 8014)

Ameron™ 8oz PSX-20

For Boot: ADHESIVE-KIT-FS-10

Adhesive Gun: MAN-GUN-FS-10

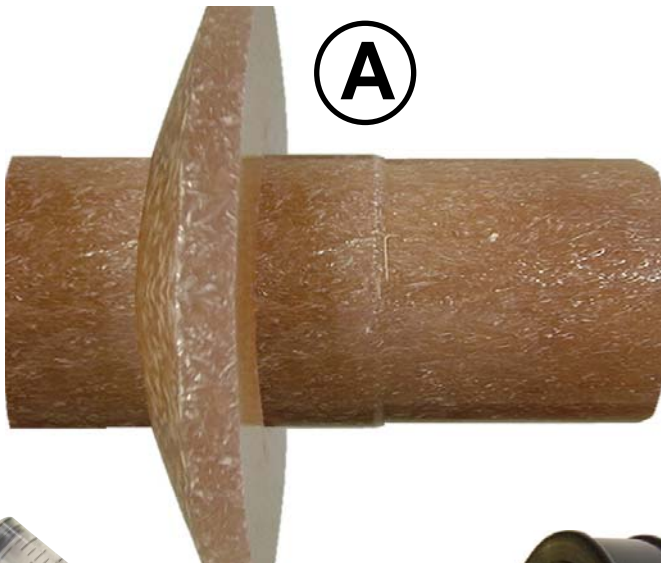
Included Parts (Per fitting)

[Components not shown at actual sizes]

- A) 1x Fiberglass F-Series Electrical Body
- B) 1x Loose Fiberglass Flange
- C) 1x 1.5 ounce bag of Fiberglass Filler for Adhesive
- D) 1x Plastic Syringe
- E) 1x Alcryn Reducing Boot w/epoxy SS Clamps
- F) 2x Pair of Industrial Nitrile gloves (Large)
- G) 1x Sheet of 80 grit sand paper (not shown)



C



A

B

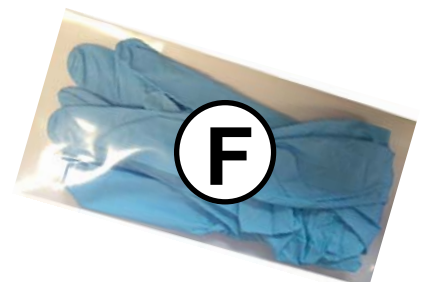
Optional Interstitial Test Port.
Standard on Double Wall Configuration



D



E



F

⚠️ WARNING

BEFORE PENETRATING FIBERGLASS WALLS ENSURE THAT THE DOUBLE WALL FRP SUMP IS HOLDING VACUUM AND UNDAMAGED.



It is **REQUIRED** to visually check the Vacuum gauge on each and every BravoSystems Double Wall product and write on its FAX report **Vacuum level**, **name of observer**, and **date** for every DoubleWall Sump.

WARRANTY IS VOID: IF ANY OF THE FOLLOWING OCCUR

- A)** Adhesive that is not Bravo-Approved is used to install the F-Series fittings.
- B)** On DoubleWall Models, RobRoy PVC-Coated or hot dip galvanized conduit is not used.
- C)** On DoubleWall Models, the boot with clamps is not installed with the appropriate adhesive.
- D)** F-Series Fiberglass Electrical Penetration Fittings are **NOT** installed by a **Bravo Certified Contractor**.
- E)** F-1X-RR models that require RobRoy PVC-Coated Conduit are installed with any other brand of PVC-Coated Conduit other than RobRoy.
- F)** The F-Series Fittings are applied to Fiberglass Sumps that are not **Third Party Approved**.

If there is any indication or suspect damage, you must mark the freight paperwork ***“Suspect Freight Damage”*** as directed by your Contractor Warranty sheet.

⚠️ CRITICAL

ALL SUMPS AND BRAVO SYSTEMS FIBERGLASS F-SERIES FITTINGS MUST BE KEPT FREE OF CONTAMINANTS, ESPECIALLY DIRT AND WATER OR MOISTURE.

APPLY MEASURES TO KEEP THE INSTALLED FITTINGS DRY WHEN LEFT OVERNIGHT ON-SITE.

A) Preparing the Fitting & FRP wall

A.1) Prepare your fittings by identifying the parts. Clean the surfaces of all fittings with trichloroethylene or acetone to remove any contamination. Hand sand with 60-grit sandpaper if necessary. Do not lay them on dirt, water, debris or other contaminated surfaces. When dusting off, use a shop brush, chip brush or compressed air. **Do not use rags, cloth or cloth-like material**

IMPORTANT

DRY-FIT YOUR FITTINGS TO BE SURE THAT THEY ALIGN PROPERLY.

▲ CRITICAL

DO NOT PLAN HOLE SAW CUTS ON UNEVEN SURFACES. FLAT PANELS ONLY. CAREFUL OF CORNERS AND EDGES.

IMPORTANT

YOU CAN NOT MOUNT FITTINGS ON ROUND SURFACES

A.2) Dust off Sump walls (inside and out) and **drill your pilot holes** centered on the planned fitting locations using a 1/4" Drill bit. Proceed when done to cut your holes with 2-1/2" size hole saw with 1/4" centralizer. Hand-sand the rough edges inside and outside made by the hole saw.

DO NOT DRILL, CUT OR TAP ANYWHERE ON THE FITTING

DO NOT GLUE/SEAL THE DOUBLE WALL INTERSTICE AFTER YOUR HOLE IS CUT...

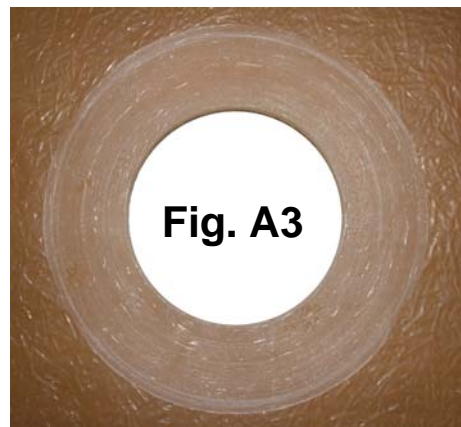
HOLE SAW SIZE CHART

2-1/2" for F-17-XX-D, F-10-XX-D

A.3) Use the Sanding kit (**Page 3, sanding gun sold seperately**) to lightly abrade each hole until the surfaces are flat and even and white fiberglass is open and visible. (**Fig. A3**).

Follow the **T-FS-SAND-KIT** Installation Instructions.

DO NOT OVERGRIND!! MAINTAIN A MINIMUM WALL THICKNESS OF 1/8" INCH. For other manufacturers, lightly grind off any gel-coat or gloss finish until flat. Replace any gel-coat or fiberglass that is removed in excess. Follow Manufacturers Installation Instructions.



CAUTION


WINTER WARNING

**FOR COLD WEATHER AT 50°F DEGREES OR LESS:
OBSERVE AND FOLLOW THE WARNINGS BELOW**

BRAVO SYSTEMS FF-SERIES FLANGE FITTINGS AND F-SERIES FITTINGS ARE THICKER THAN THE TYPICAL FIBERGLASS CLAMSHELLS COMMONLY INSTALLED IN FIBERGLASS PIPING APPLICATIONS. YOU MUST APPLY ADEQUATE HEAT TO THE PARTS AND BONDING ADHESIVES TO ALLOW A FULL CURE TIME DURING EXTREME COLD TEMPERATURES. FAILING TO ALLOW THE INSTALLATION TO FULLY CURE MAY CAUSE THE ADHESIVE BOND TO THE FITTING TO FAIL.



**JUST BEFORE EACH ADHESIVE APPLICATION
DRY FIT YOUR COMPONENTS ONE LAST TIME**

- 1) PRE-HEAT THE SUMP TO NO MORE THAN 150°F TO ELIMINATE MOISTURE.
- 2) PRE-HEATING COMPONENTS IN EXTREME COLD WEATHER IS CRITICAL:
 - > PRE-HEAT THE FIBERGLASS FITTING THOROUGHLY TO ~100°F
 - > PRE-HEAT THE ADHESIVE TO ~80°F. DO NOT HEAT CATALYST!!
- 3) DO NOT ASSUME THE ADHESIVE IS CURED BECAUSE IT HAS HARDENED ON THE EXTERIOR. IT MAY ONLY BE A CURED “CRUST” IN THIS TEMPERATURE AND ANY MOVEMENT OR WATER TESTING MAY CAUSE DELAMINATION AND TOTAL FAILURE OF THE BOND.
- 4) DO NOT ADJUST, MOVE, SHIFT OR OTHERWISE DISTURB THE SUMP, FITTINGS OR PIPING DURING THE CURING PROCESS.
- 5)  YOU MUST ENSURE A FULL CURE BEFORE WATER TESTING. FOLLOW YOUR ADHESIVE INSTRUCTIONS FOR TEMPERATURE GUIDELINES.

B) Gluing F-Series Electrical to Sump Wall

B.1) For F-1X-RR fitting models and your PVC-Coated ROBROY™ Brand Conduit, or your F-1X-SS fitting models and galvanized conduit should be clean and **COMPLETELY DRY AT ALL TIMES**. All pre-abraded or milled areas should be inspected for debris and inconsistencies. No dirt, grit, water or other foreign material should be on or inside the fiberglass fitting components.

⚠ CRITICAL

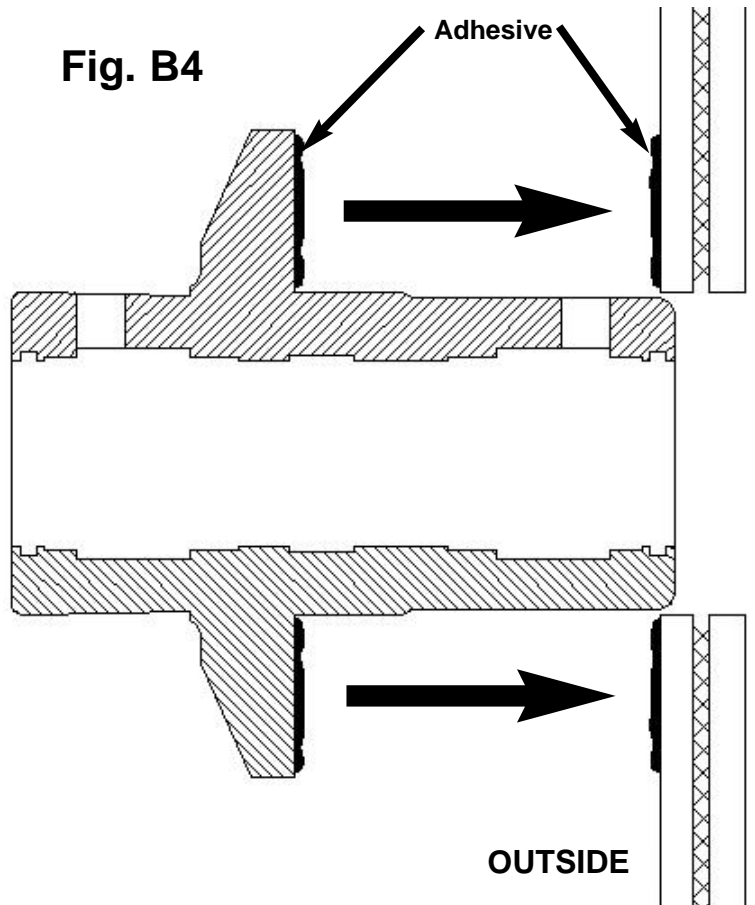
**USE SMITH™ ADHESIVE # 7069 or 8069
or AMERON™ PSX-20 8oz ONLY**

B.2) Get one clamping tool ready for each fitting installation.

B.3) Follow your adhesive manufacturer instructions to mix and apply your adhesive. One bag of provided fiberglass filler is to be fully mixed with each adhesive kit. (Pg. 3)

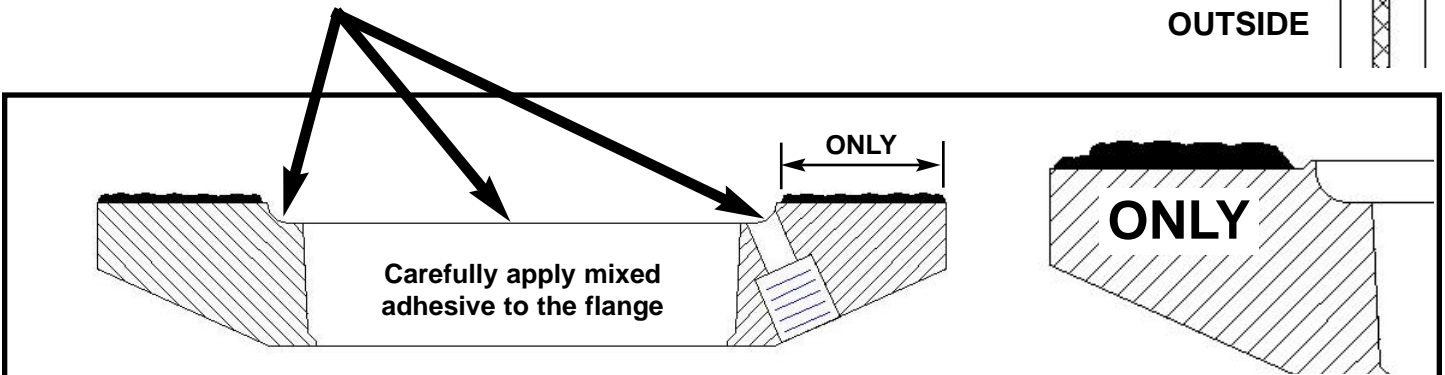
DO NOT ATTEMPT TO MIX MORE THAN ONE KIT AT A TIME.

B.4) Main body first - carefully apply a generous amount of adhesive to the wall and the face that will meet the wall (Fig. B4).



IMPORTANT
⚠ CAUTION

DO NOT ALLOW ADHESIVE TO FILL THE CHANNEL OR TEST PORT AREA

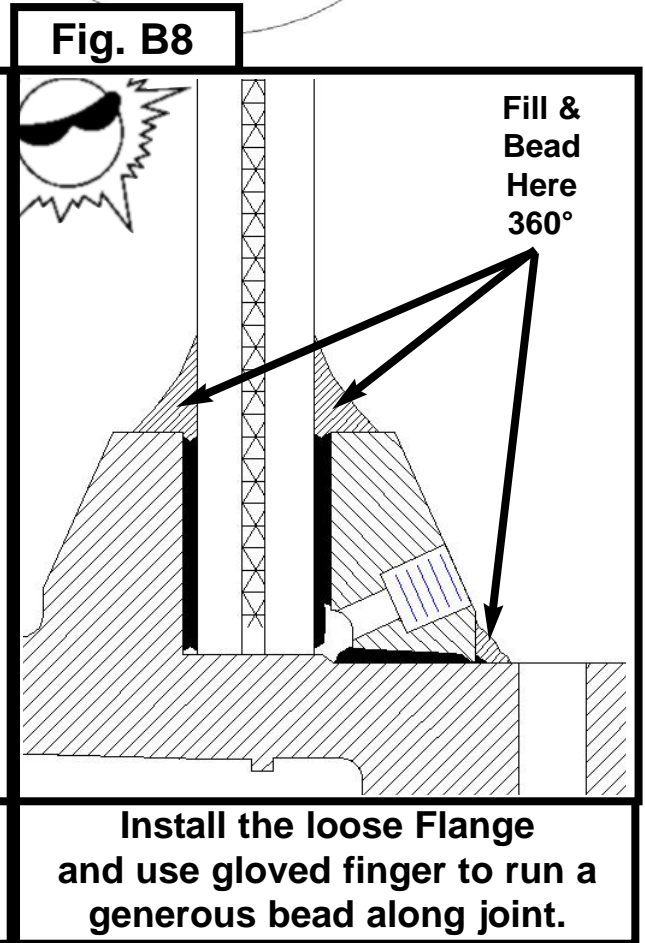
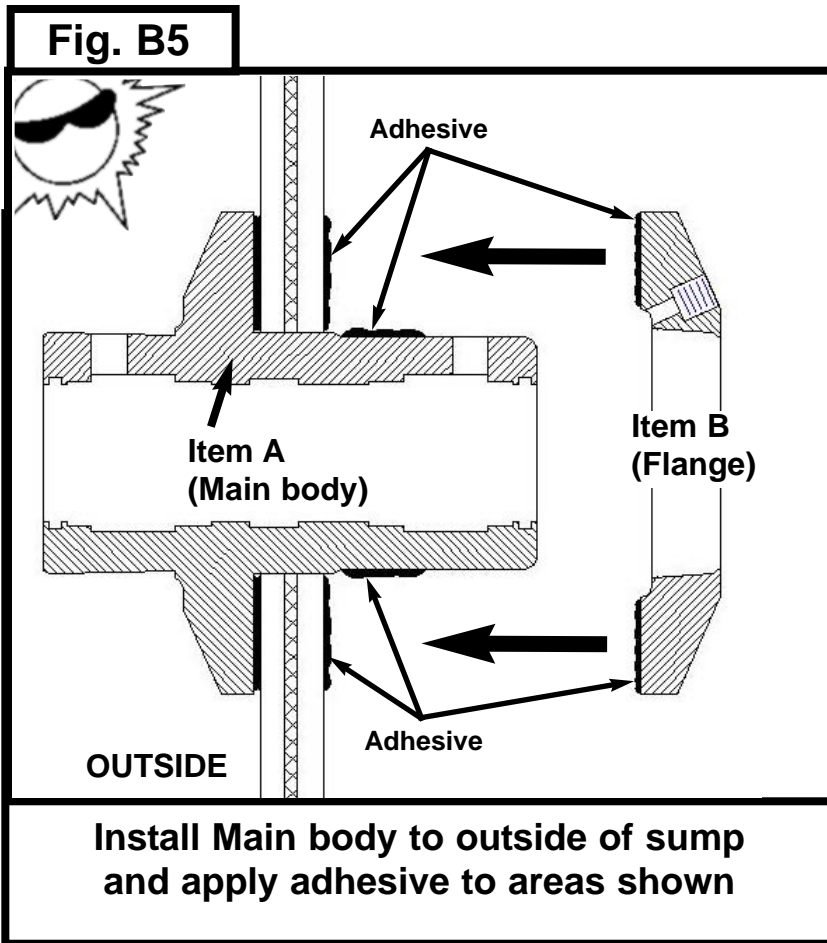
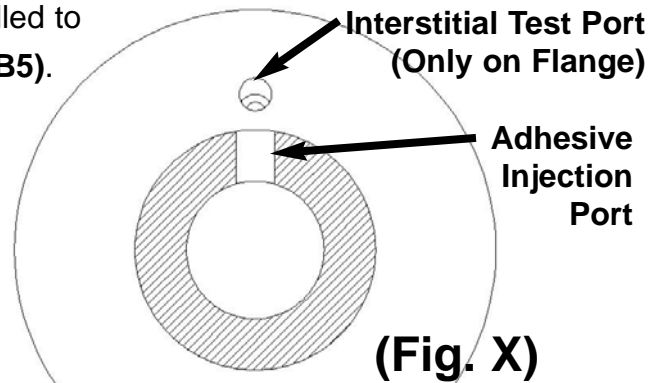


B.5) The main fitting body (**Item A**) should be installed to the outside first. Then apply adhesive as shown (**Fig. B5**).

IMPORTANT

The **Adhesive Injection Port** on the fitting body must be at the **12-o-Clock** or North Position.

The **Interstitial Test Port** on the Flange must be at **12-o-Clock** or North Position.

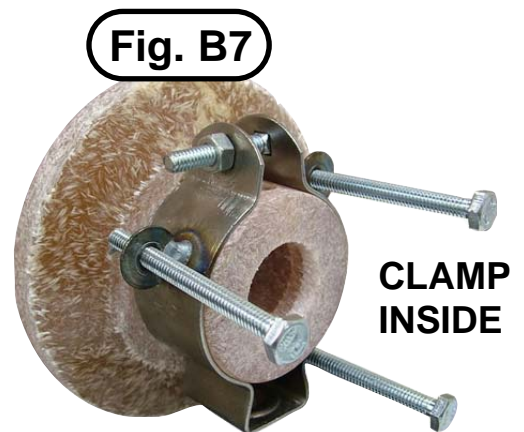


B.6) Apply adhesive to the Main Body's outer surface 360° where shown. After applying adhesive to all contact areas (**Fig. B5**) Apply the flange over the fitting and to the wall (**Item B, Fig. B.5**)

B.7) Apply the Bravo Clamp immediately as shown in **Fig. B7**. Install clamp shown to the body roughly 1/4" from the face and tighten. Then hand-tighten each bolt so it is snug. Apply a 1/4 - 1/2 turn to each bolt evenly until the clamp starts to slide away from the wall and flush with the face of the fitting.

B.8) Apply a generous bead of adhesive as shown. (**Fig. B8**).

B.9) Glue all penetration fittings and allow to cure following the pipe manufacturers adhesive instructions.



DO NOT UNDER ANY CIRCUMSTANCES, DRILL, CUT OR TAP ANYWHERE ON THE F-SERIES FITTING

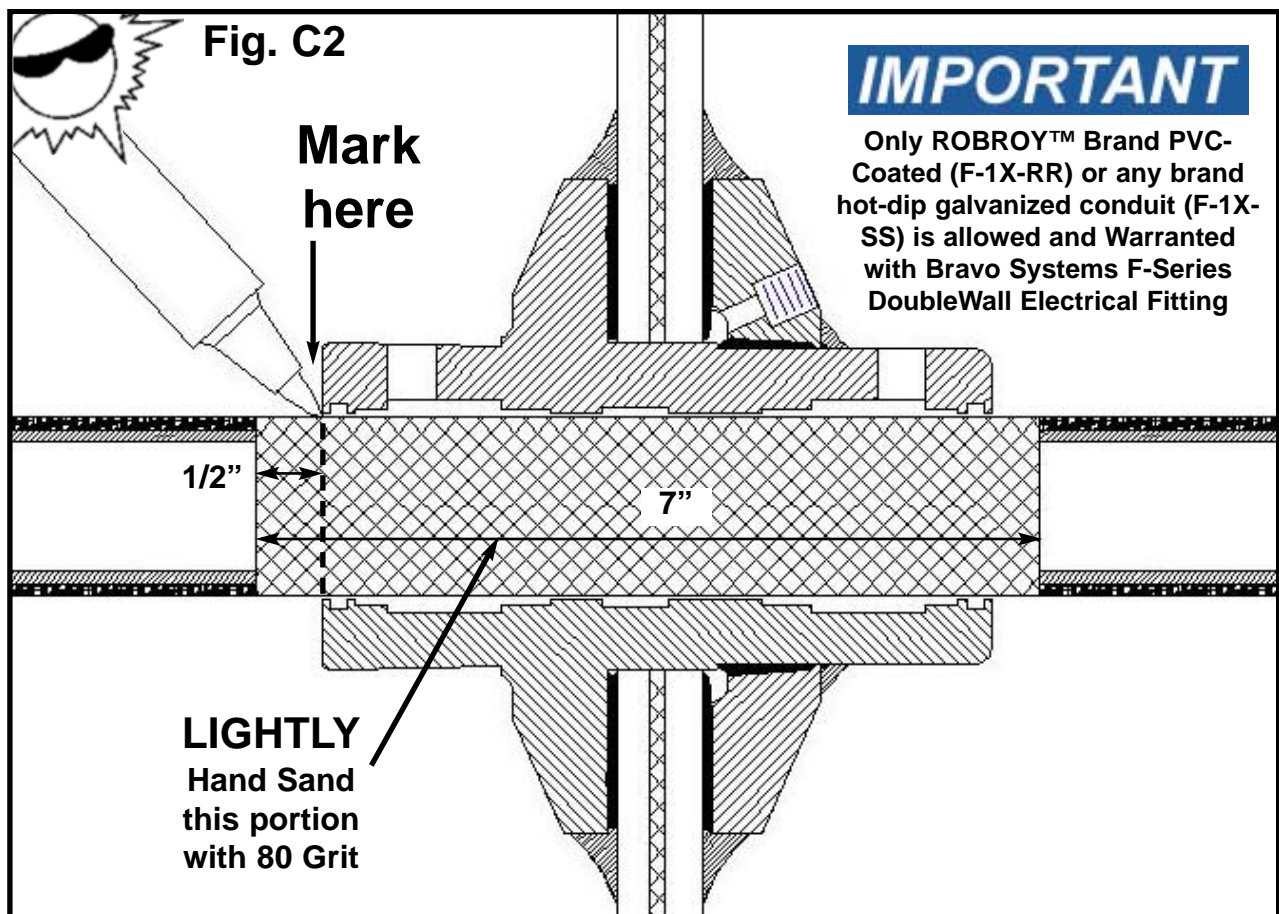
C) Electrical Conduit pipe Installation

IMPORTANT

STEP C1) Only PVC-Coated ROBROY™ Brand conduit (for F-1X-RR fittings) or standard hot-dip galvanized conduit (for F-1X-SS fittings) are allowed in this installation. Slide your Bravo Boot over the conduit on the **OUTSIDE** of the sump.



STEP C2) Dry fit your conduit and mark a line along the pipe (**Fig. C2**) where it meets the edge of the F-Series fitting on the outside of the sump.



IMPORTANT

DO NOT INJECT ADHESIVE YET

STEP C3) From your mark line, you must lightly sand your conduit a **Half Inch (1/2")** away from the fitting and **Seven Inches (7")** towards the fitting, 360° around. **Fig. C2.**

You must then blow the area with compressed air and clean with acetone using clean rags.

D) Conduit Adhesive Injection

Your ROBROY™ Brand PVC-Coated or any brand hot-dip galvanized conduit must be lightly sanded, clean and dry. Your Boot should already be over your conduit on the outside of the Sump. You will now seal your conduit to the F-Series fitting.

YOUR SUMPS AND FITTINGS MUST BE COMPLETELY DRY!

⚠ CRITICAL

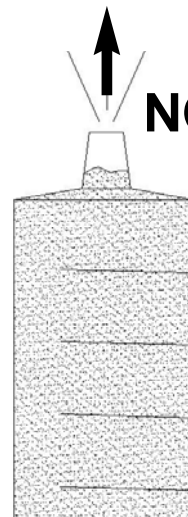
**USE SMITH™ ADHESIVE # 7069 or 8069
or AMERON™ PSX-20 8oz ONLY**

Follow your pipe manufacturers adhesive Instructions to mix one fiberglass filler pack and apply your adhesive. **DO NOT MIX MORE THAN ONE KIT AT A TIME.** SEE PAGE 3 FOR KIT TYPES.

IMPORTANT

**YOU MUST PURGE THE AIR FROM THE
TIP OF THE ADHESIVE SYRINGE**

THERE CAN NOT BE MOISTURE IN THE ADHESIVE CHANNELS OF THE FITTING. DRY YOUR FITTINGS WITH AIR. **USE CAUTION** WHEN USING ELECTRIC DRYERS OR OTHER AIR SOURCE.



NO AIR !

HINT!

LOAD YOUR SYRINGE BY PLACING TIP IN THE CAN OF MIXED ADHESIVE AND DRAWING IT UP DIRECTLY. THIS METHOD IS NEAT AND CLEAN.

ADHESIVE JOINT CHART

SEE PAGE 3 FOR KIT TYPES

3/4" Conduit - 15 ml Adhesive

1" Conduit - 20 ml Adhesive

**DO NOT
COMPLETELY
FILL SYRINGE**

⚠ CRITICAL

**USE SMITH™ ADHESIVE # 7069 or 8069
or AMERON™ PSX-20 8oz ONLY**

STEP D1) Get your injection syringes and your adhesive kits ready. See Page 3 or 9.



IMPORTANT

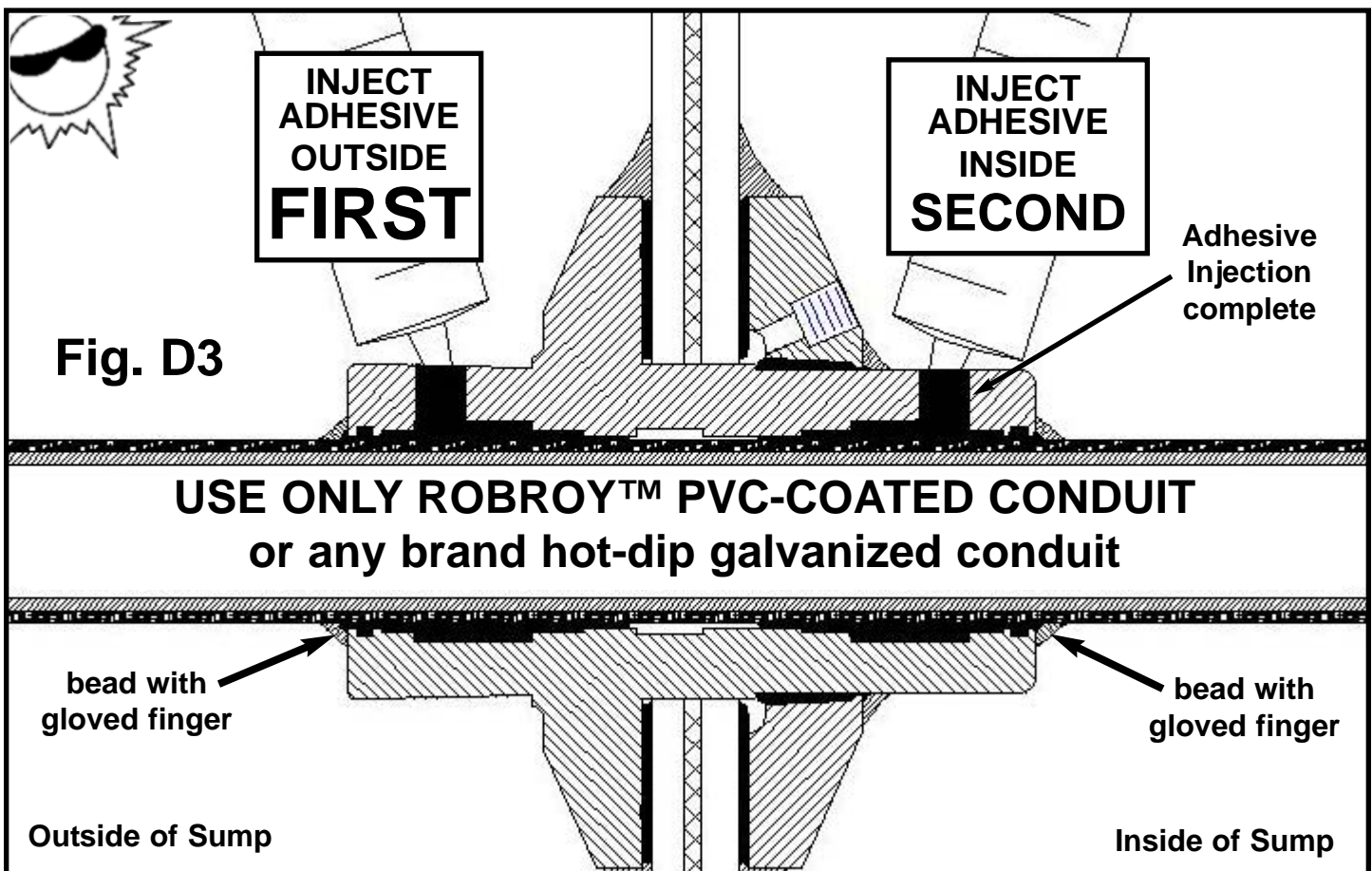
SVA-BARB

FOR BRAVO DOUBLEWALL SUMPS ONLY:
While fittings are curing, keep the SVA-BARB installed on the schrader valve. This will relieve any pressure.

STEP D2) Mix your approved adhesive kit with the provided fiberglass filler. Load your syringe by placing the tip in the can of mixed adhesive and drawing it up. **PURGE THE AIR FROM THE SYRINGE TIP (Pg. 9)**

STEP D3) Quickly inject the adhesive into the Adhesive Injection Port **OUTSIDE THE SUMP -FIRST-**, which is located at the top of each fitting body. The paste should flow into the interior channel and seep out along the conduit. When the exterior is complete, Inject the same amount of adhesive into the port **INSIDE THE SUMP -SECOND-**. (Fig. D3)

DO NOT ATTEMPT TO INJECT BOTH SIDES AT ONCE



STEP D4) Run adhesive around the joints and bead with a gloved finger and let cure. (Fig D3)

E) TESTING YOUR F-SERIES INSTALLATION

MANDATORY

THE F-SERIES FIBERGLASS PENETRATION FITTINGS MAY ONLY BE INSTALLED AND TESTED BY A BRAVO CERTIFIED CONTRACTOR
Details can be found at www.sbravo.com/cert

E.1) After all the F-Series Fiberglass Fittings on one Sump are installed and fully cured:
For DoubleWall: test the Sump interstice using a pressure/soap method.

⚠ CRITICAL

**BRAVO SYSTEMS DOUBLEWALL F-SERIES FITTINGS ARE WARRANTED ON OTHER MANUFACTURERS DOUBLEWALL SUMPS ONLY IF INSTALLED BY A BRAVO CERTIFIED INSTALLER
CHECK WITH YOUR DOUBLEWALL SUMP MANUFACTURER FOR DIRECTIONS ON HOW TO TEST THE INTERSTICE.**

E.2) For Bravo Systems DoubleWall Sumps, the maximum test pressure for the interstice is **4 PSI**. Pressure your interstice **using ONLY the Factory-Installed Combination Gauge *** and soap down all the F-Series penetration fittings and/or any previous repairs made to the Sump. If any leaks are found on or around the F-Series fittings, Call Bravo Systems Technical Support for special directions. **DO NOT ATTEMPT TO FIX OR SEAL LEAKS ON THE FITTING YOURSELF!**

IMPORTANT * If the site plans tell you to REMOVE THE FACTORY-INSTALLED GAUGES, you must NOT remove these components, and call Bravo Systems Tech Support so they can resolve this issue with the firm that drew the plans. **REMOVING THE FACTORY-INSTALLED CONNECTIONS VOIDS THE PRODUCT WARRANTY!**

If you have any problems with Bravo Systems components, DoubleWall Containment Systems, or accessories, Call Bravo Systems Immediately:

1-800-28-BRAVO

1-323-888-4133

info@sbravo.com

F) Adhesive Seal with Boot - Final Step

You can only proceed with this step after all of your F-Series Fitting Installations have passed the interstitial test and there are no leaks. Your ROBROY or galvanized conduit must be absolutely clean and dry. Your Boot should already be over your conduit on the outside of the Sump. **You will now seal your Boot to the conduit and F-Series fitting.**

⚠ CRITICAL

FOR BOOT INSTALLATION, USE ONLY BRAVO PART NUMBER "ADHESIVE-KIT-FS-10" CARTRIDGE

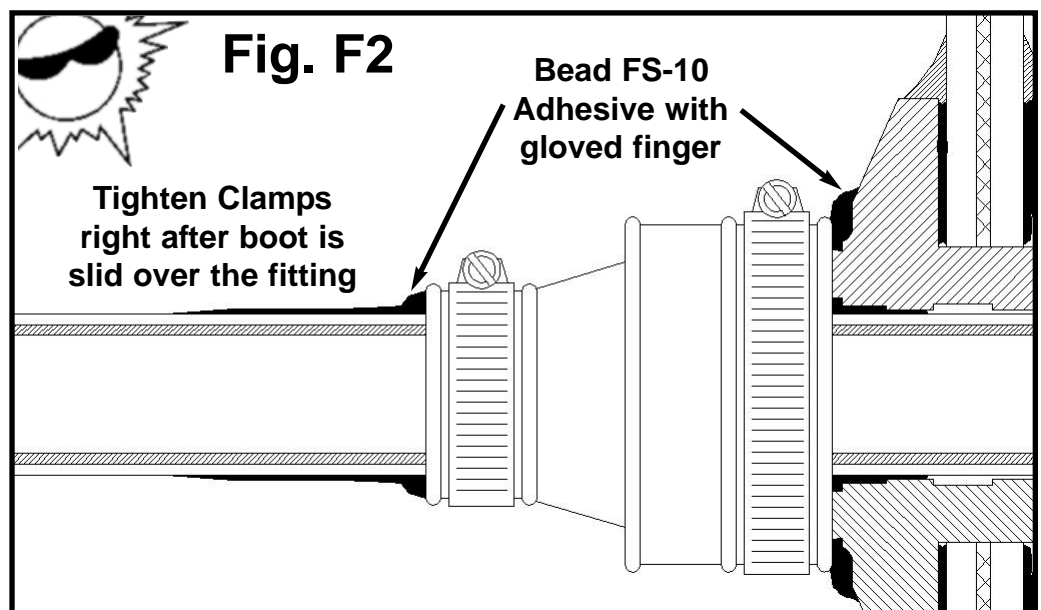
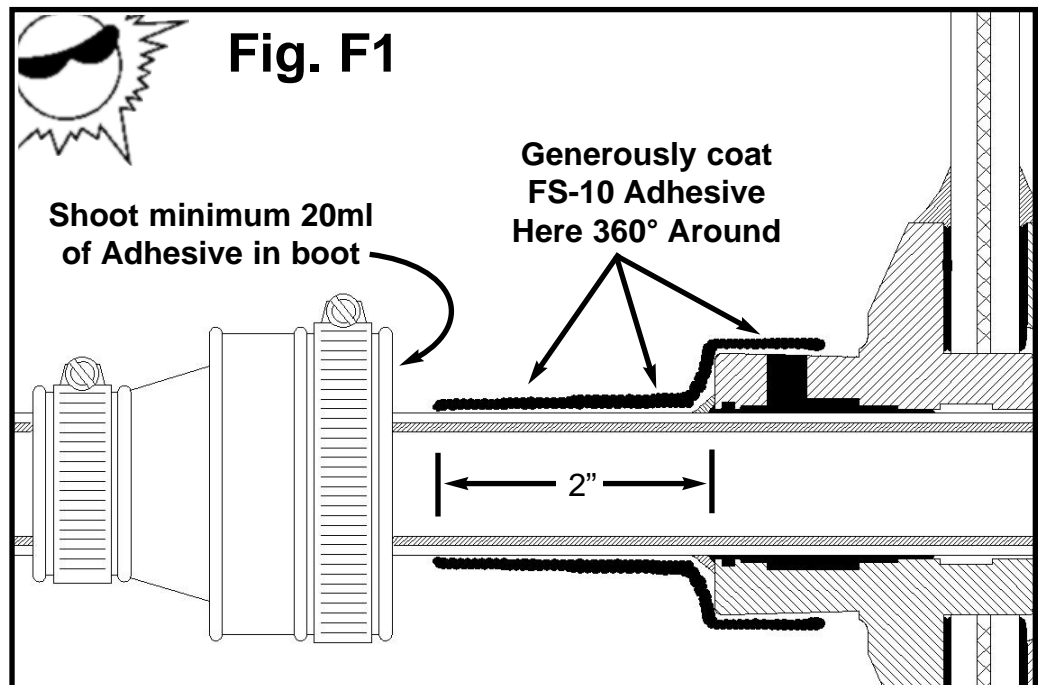
F.1) After all of your F-Series Fittings have been fully Installed and have passed the interstitial test with no leaks,

Slide your exterior boot close to the fitting and ensure the surfaces shown (**FIG F1**) are Clean and dry. Use Acetone to clean these surfaces.

Prepare your **ADHESIVE-KIT-FS-10** adhesive cartridge into the **MAN-GUN-FS-10** gun and apply adhesive 2" from the front of the fiberglass fitting and over the outer Diameter 360° around as shown. (**FIG F1**)

Then inject a minimum of **20ml** of FS-10 adhesive into the Boot. (**FIG F1**)

F.2) After FS-10 adhesive has been applied as shown in Figure F1, Slide the boot over the exterior of the Fiberglass Fitting. Tighten the hose clamps and bead the FS-10 adhesive that oozes out with a gloved finger (**FIG F2**). Let cure.



BRAVO EPOXY-COATED STAINLESS STEEL HOSE CLAMPS

Some Regulators / Inspectors do not approve of any kind of metal hose clamps on the outside of Underground Storage or Containment Equipment. Please note that these clamps are **NOT** associated with the primary seal between the conduit, the Fiberglass Fitting, and the Fiberglass Sump. Rather, these clamps are part of a tertiary seal that is a redundant measure against leaks. The clamp exists only to keep the boot over the outside end of the fitting to contain the adhesive while it cures, not as a primary or secondary seal between the conduit or the fitting. Bravo Systems Epoxy-coated SS hose Clamps have been installed across the nation on containment equipment since 1987.

Standard Bravo procedure for clamps: Coat/encapsulate the entire surface area with Vulkem 116 polyurethane sealant.

***THE CLAMPS ARE NOT USED TO
MAKE A SEAL OF ANY KIND***

To find a sales representative for ROBROY Brand PVC-Coated conduit, please visit the below link, or call the main number for assistance.

www.plastibond.com/RepMap.cfm

903 - 843 - 5591

If you have any problems with Bravo Systems components, DoubleWall Containment Systems, or accessories, Call Bravo Systems Immediately:

1 - 800 - 28 - BRAVO 1 - 323 - 888 - 4133 support@sbravo.com

www.sbravo.com