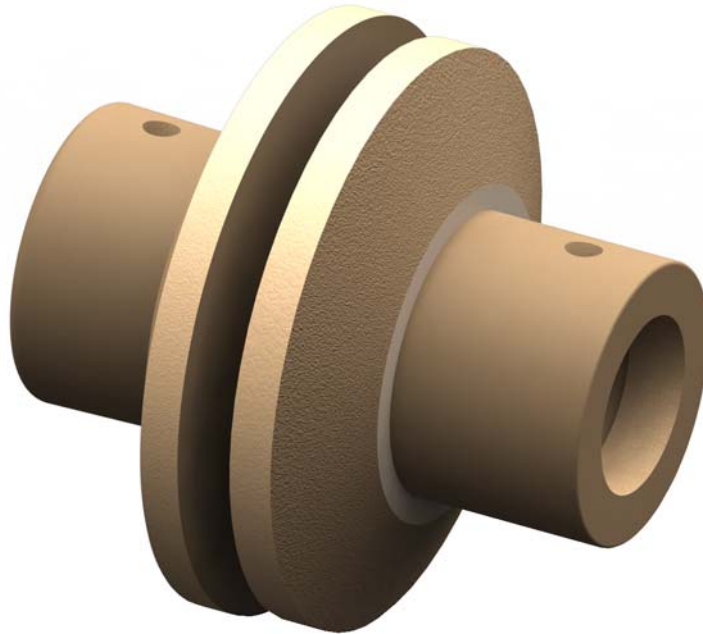


INSTALLATION INSTRUCTIONS

F-SERIES CONDUIT ENTRY FITTINGS FOR SINGLEWALL FIBERGLASS SUMPS



If corrosion protection is paramount, do not use a “wrapped” conduit. You must use RobRoy brand PVC-coated conduit only. See below.

Conduit Pass-through Fittings

PART #	Description
F-17-SS:	Fitting for 3/4" galvanized steel conduit
F-10-SS:	Fitting for 1" galvanized steel conduit
F-17-RR: *	Fitting for 3/4" RobRoy brand PVC-coated steel conduit
F-10-RR: *	Fitting for 1" RobRoy brand PVC-coated steel conduit

* RobRoy brand PVC Conduit is sold and marketed under three different names:

Plastibond:	www.plastibond.com
Permacote:	www.permacote.com
Korkap:	www.korkap.com

READ THIS MANUAL FRONT TO BACK

ii-F-Series-1X-SS-13A

MANDATORY

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

Details can be found at www.sbravo.com/certifications

IMPORTANT

READ THESE INSTRUCTIONS - KEEP FOR FUTURE REFERENCE

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C) ROBROY Conduit Installation..... p. 7

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E) Testing your F-Series SingleWall Installation..... p. 10

- 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, SingleWall 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.

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) F-Series Fiberglass Fittings are **NOT** installed by a **Bravo Certified Contractor**.
- C) 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.

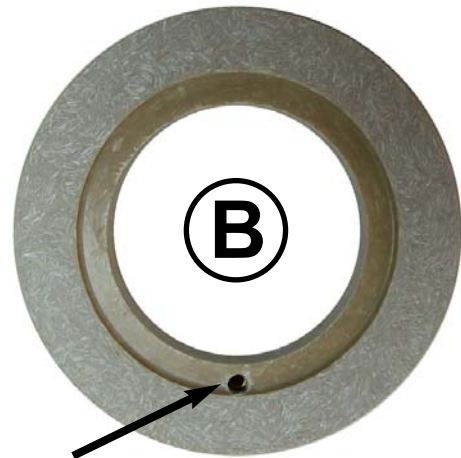
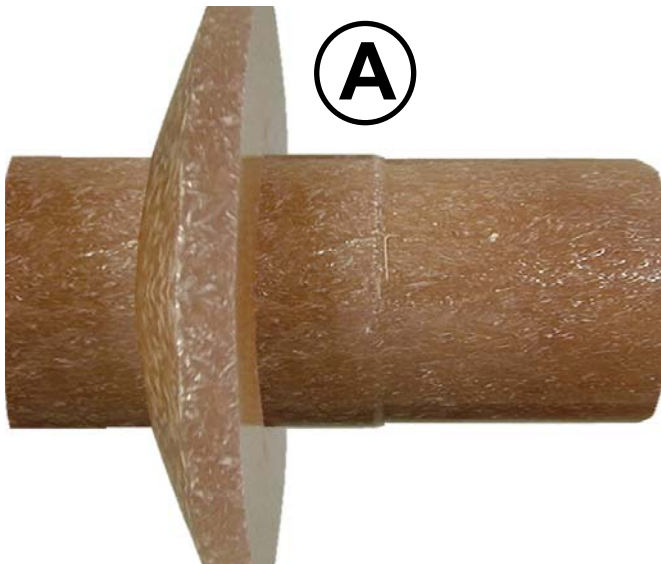
APPLY MEASURES TO KEEP THE INSTALLED FITTINGS DRY WHEN LEFT OVERNIGHT ON-SITE.

F-Series COMPONENTS

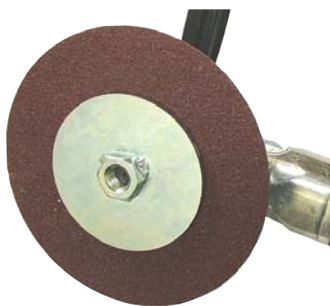
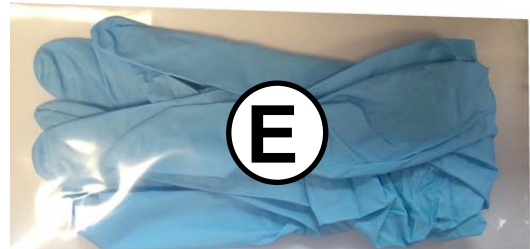
Included Parts (Per fitting)

[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) 2x Pair of Industrial Nitrile gloves (Large)
- F) 1x Sheet of 80 grit sand paper (not shown)



Optional Interstitial Test Port.
Standard on Double Wall Configuration



**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:

Bravo Adhesive Epoxy

Smith™ #7069, 8069

Ameron™ 8oz PSX-20

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.

⚠ CRITICAL

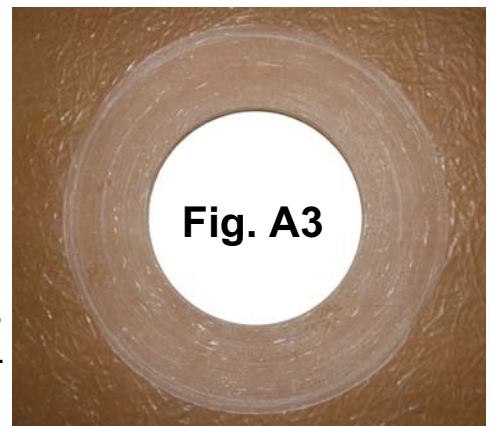
ALL SUMPS AND BRAVO SYSTEMS FIBERGLASS F-SERIES FITTINGS MUST BE KEPT FREE OF CONTAMINANTS, ESPECIALLY DIRT AND WATER OR MOISTURE.

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

HOLE SAW SIZE CHART

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

A.3) RECOMMENDED: Use the Sanding kit (Page 4, sanding gun sold separately) to lightly abrade each hole until the surfaces are flat and even and white fiberglass is open and visible.(Fig. A3).



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

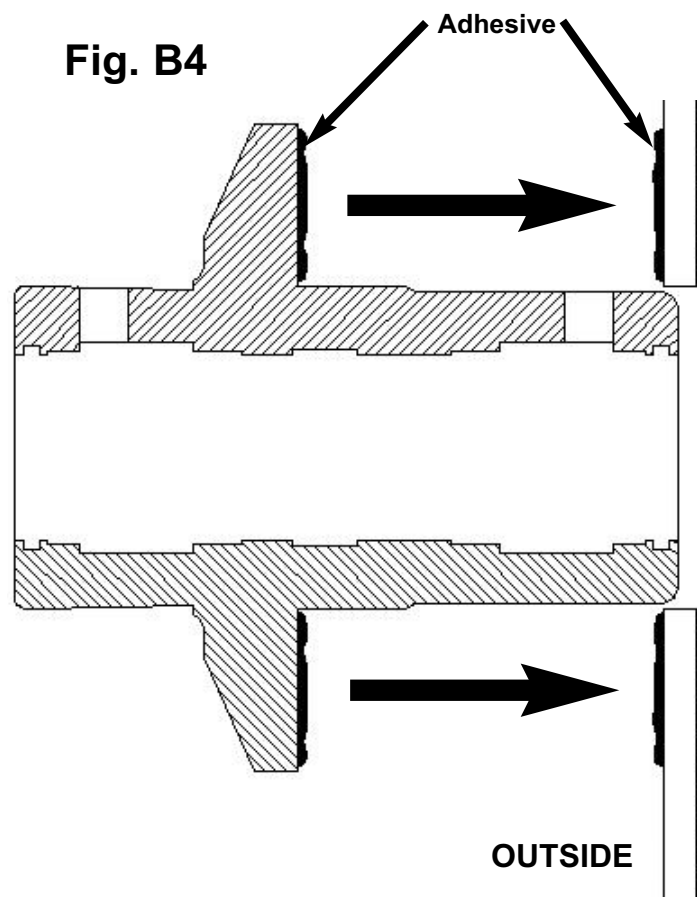
**USE SMITH™ ADHESIVE # 7069 or 8069
or AMERON™ PSX-20 8oz ONLY**

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

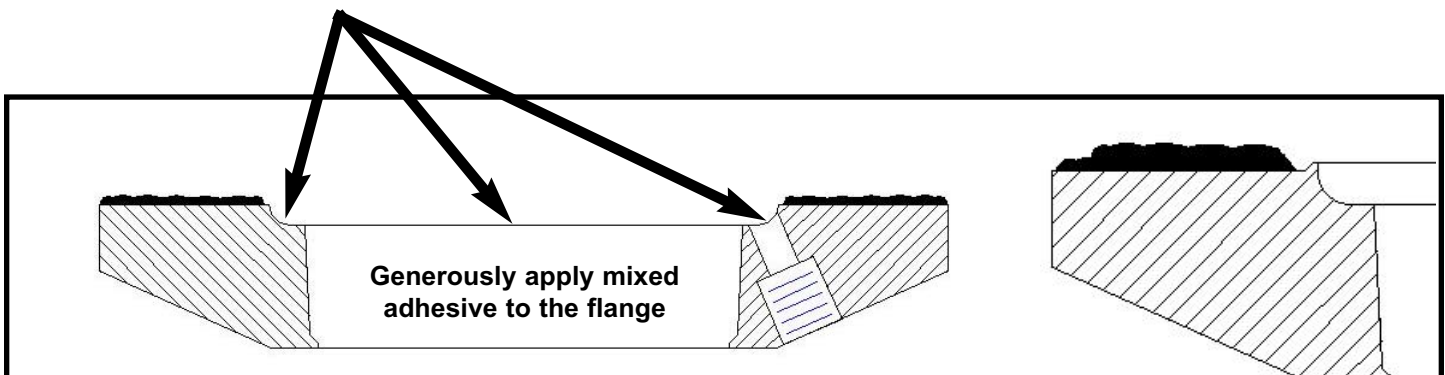
B.3) Follow your adhesive manufacturer instructions to mix and apply your adhesive. One bag of provided fiberglass filler is to be fully mixed with each adhesive kit. (Pg. 4)

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).



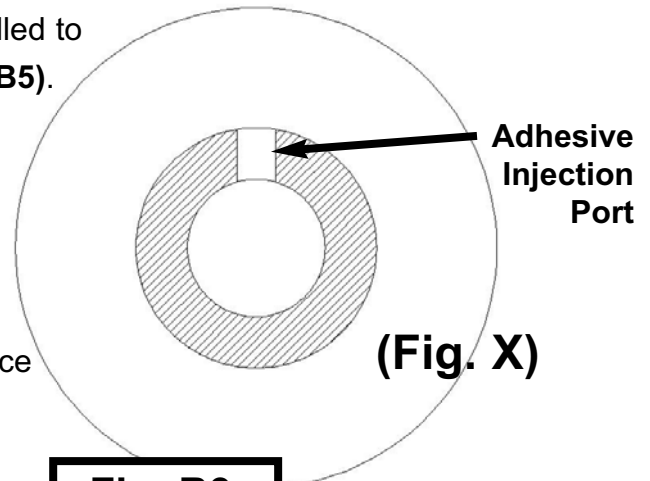
**GENEROUSLY APPLY ADHESIVE TO THE
FACE OF THE FLANGE AND THE
CHANNEL ON THE INSIDE**



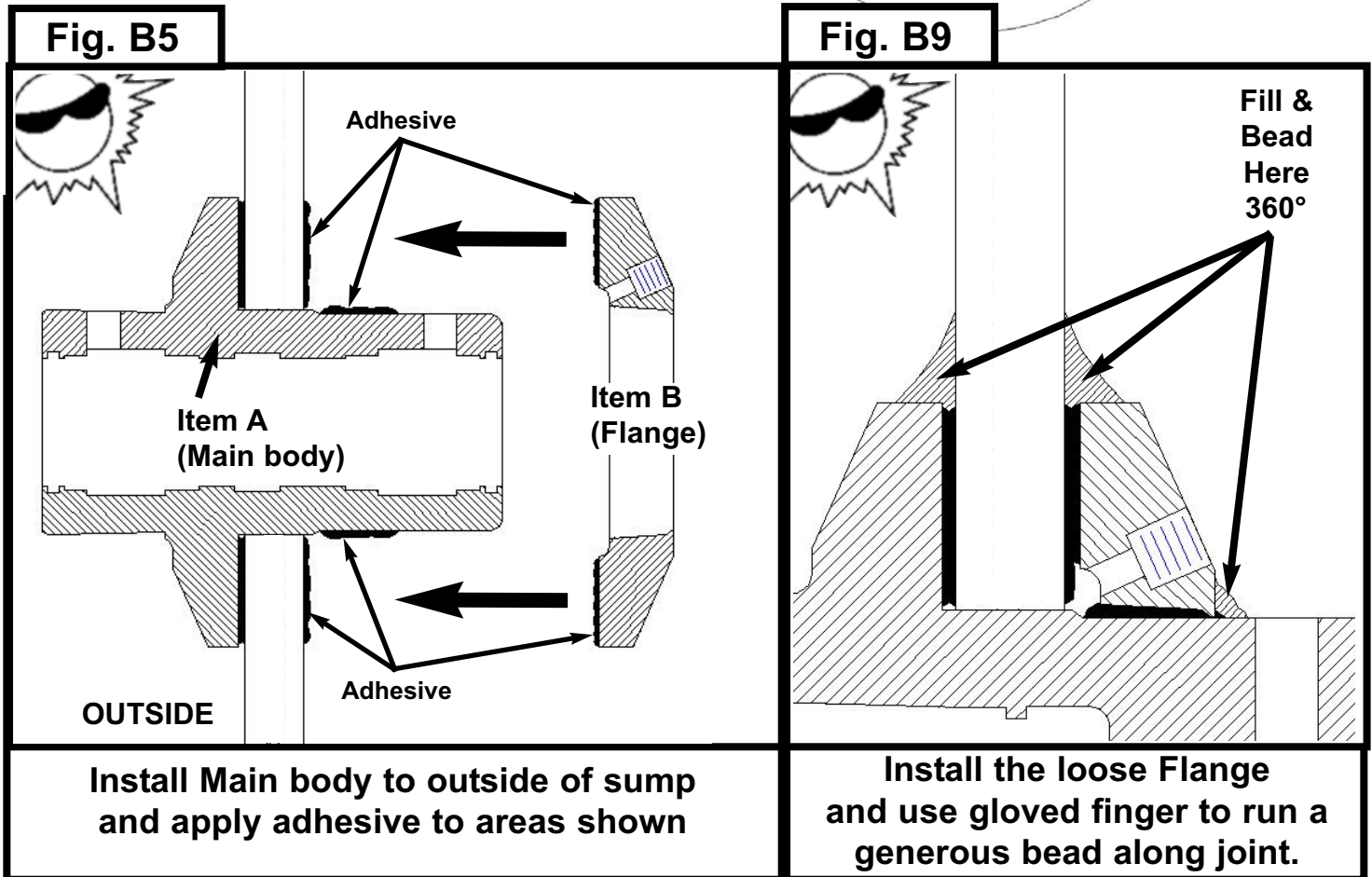
B.5) The main fitting body (**Item A**) should be installed to the outside first. Then apply adhesive as shown (**Fig. B5**).

IMPORTANT

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



B.6) Apply adhesive to the Main Body's outer surface (**Fig. B5**) 360° where shown.

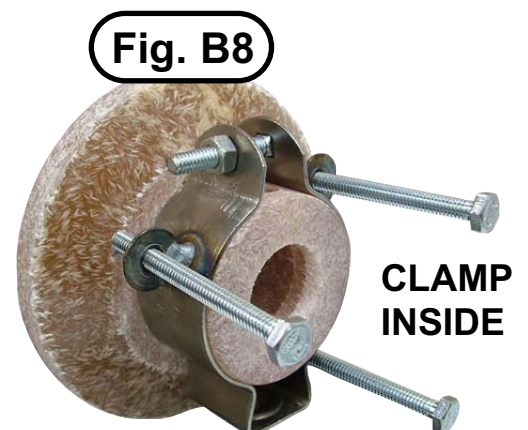


B.7) After applying adhesive to all contact areas (**Fig. B5**) Apply the flange over the fitting and to the wall.

B.8) Apply the Bravo Clamp immediately as shown in **Fig. B8**. 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.9) Apply a generous bead of adhesive as shown. (**Fig. B9**).

B.10) Glue all penetration fittings and allow to cure following the pipe manufacturers adhesive instructions.



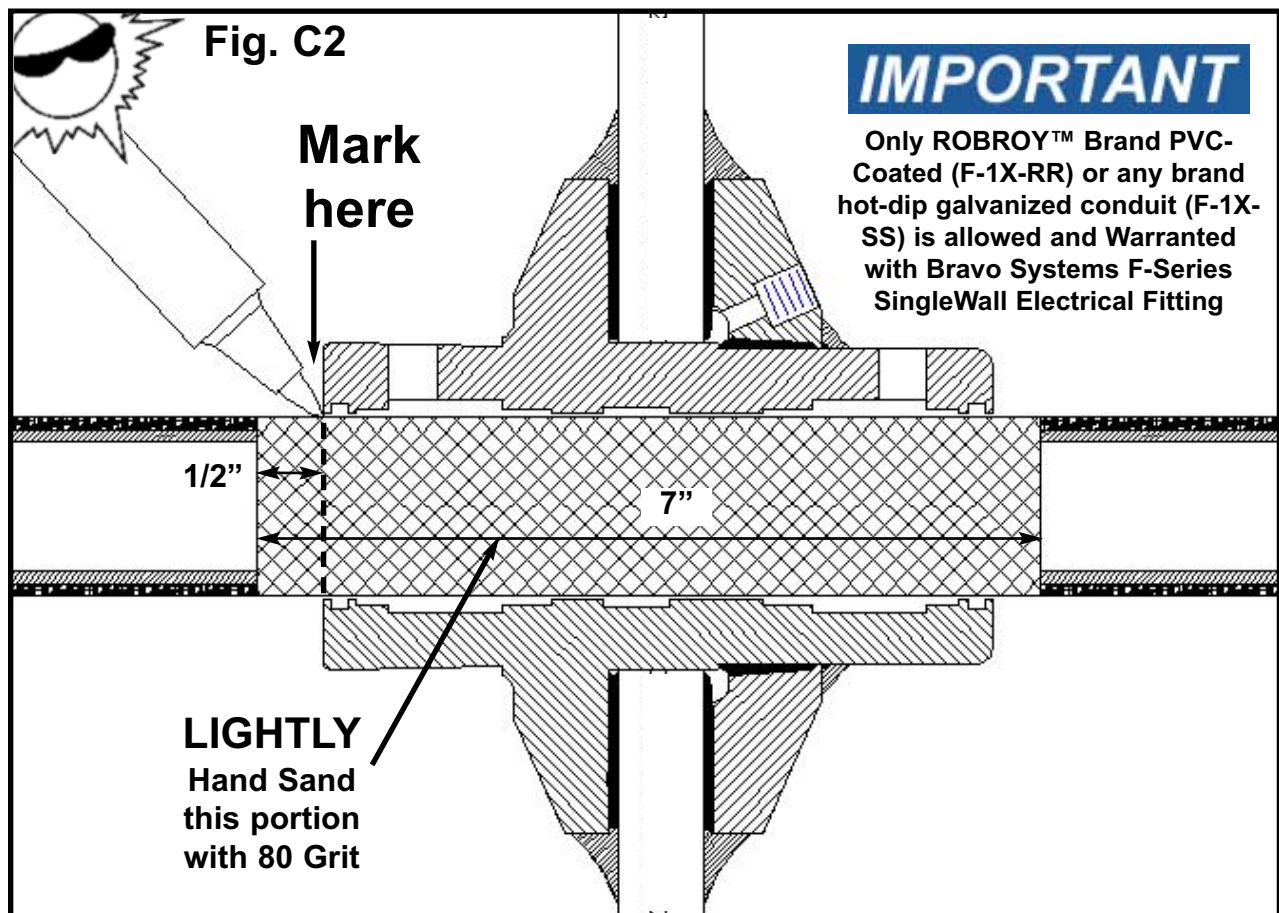
IMPORTANT

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

C) Electrical Conduit pipe Installation

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. (Fig. C2)

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 the galvanized 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 galvanized conduit must be lightly sanded, clean and dry.
You will now seal your conduit to the F-Series fitting.

YOUR SUMPS AND FITTINGS MUST BE COMPLETELY DRY!

⚠ CRITICAL

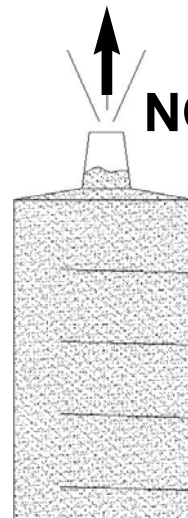
**USE SMITH™ ADHESIVE # 7069 or 8069
or AMERON™ PSX-20 8oz ONLY**

Follow your pipe manufacturers adhesive Instructions to mix and apply your adhesive. **DO NOT MIX MORE THAN ONE KIT AT A TIME.** SEE PAGE 4 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 4 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**

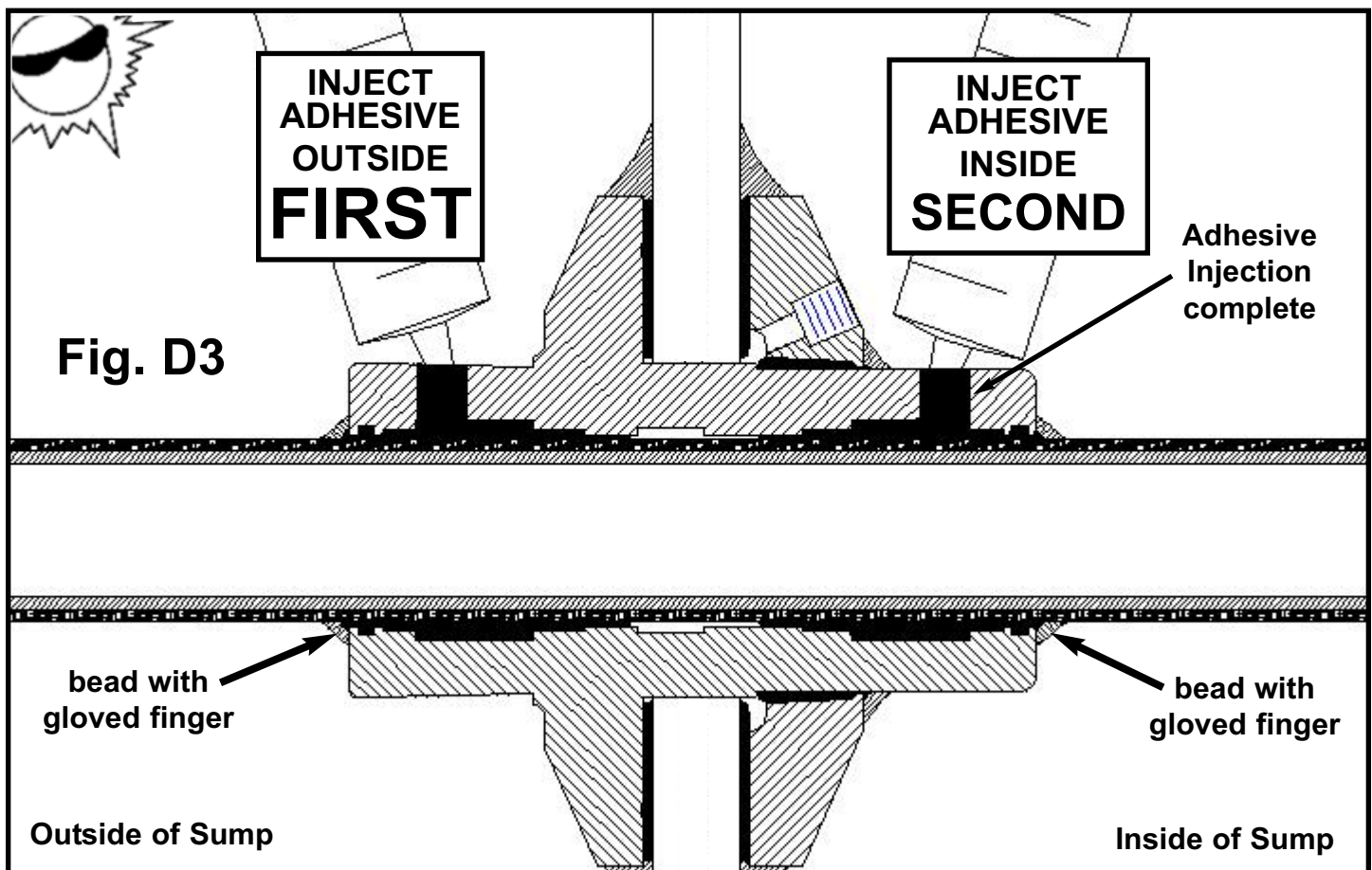
STEP D1) Get your injection syringes and your adhesive kits ready. See Page 4 or 9.

The amount of adhesive shown on the Adhesive chart on page 8 must be measured and injected into EACH port on the fitting. Each fitting has two ports. One inside and one outside.

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, which is located at the top of each fitting body. The paste should flow into the interior channel and seep out along the conduit. (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 SingleWall: Bravo recommends a water level test to a maximum of 2" above the highest penetration to the containment vessel. All local or state regulatory requirements should be followed and may supercede the recommendation listed above.

E.2) 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!

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