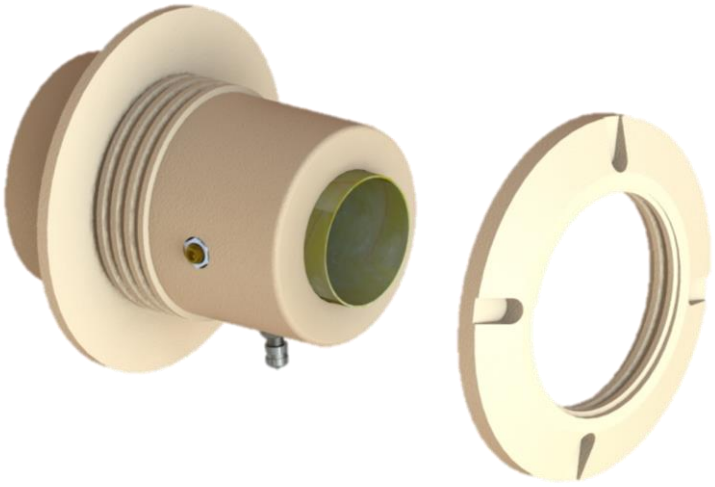
BRAVO
PROBLEM SOLVED

INSTALLATION GUIDE

Full-Body Series Threaded New Construction Fittings for Singlewall and Doublewall Sumps

Part # F-32C-T-F
F-32CL-T-F



Step by step installation

Step 1 – Sump Wall and Pipe Preparation
Step 2 – Dry Fit Fitting and Epoxy Preparation
Step 3 – Fitting Placement and Adhesive Beading
Step 4 – Prepping Pipe for Installation
Step 5 - Installing the Smith DW pipe to fitting
Step 6 – Installing LCX Piping and 4x2L Reducer
Step 7 – Prepping for Secondary Line Test

Approved Adhesives (Epoxy)
Recommended is Bravo EP100
Acceptable alternative is Bravo-approved NOV Epoxy

Epoxy cure cycle and full cure cycles vary depending on site conditions. In weather conditions below 50°F**, heat will be needed to cure epoxy used for the installation of Bravo full body fittings and test reducers. Do not heat the fittings above 1**50°F**. Extremely high temperatures can damage entry fittings and cause test ports to leak. Do not test until full cure cycle has been achieved.**

SAFETY FIRST

Safety First. S. Bravo Systems, Inc. recommends adherence to standard safety procedures and precautions provided by your company and to follow the regulations and compliances by OSHA, local, state and federal regulations regarding the use of this product.

UL LISTED
UL 2447

UL2447 is the standard for secondary containment and covers sumps and lids, sump fittings and sump accessories. Products are tested in accelerated conditions that have long term use in environments with extreme heat and cold, aggressive biofuel and ethanol blends, and extreme soil environments.

Sump Wall and Pipe Preparation



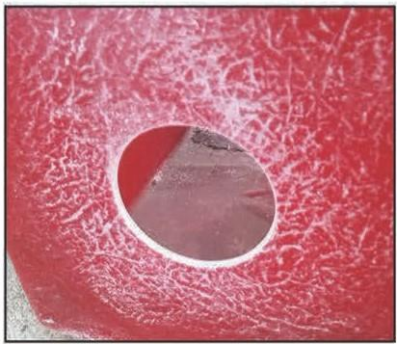
Pipe Type/Application - Fiberglass Pipe
3” over 2”
2” LCX

Hole Saw Size – 4-1/2”

Step 1 - Sump Wall and Pipe Preparation

1. The Schrader valve and threaded plug are sent loose in a zip lock bag with the threaded full-body fittings; Schrader valve and plug should be installed after the cure cycle has occurred.
2. To determine the penetration position, factor in the shear valve mounting position and plate, length of the flex connector and pipe connection to determine the penetration location on the sump; verify site plans and mark the desired location to penetrate the sump.
3. Use the appropriate size hole saw to penetrate the sump wall.
4. Remove excess gel coat and sand both interior and exterior of the fiberglass sump.





If installation issues arise, contact Bravo immediately. Do not make modifications or alter the new construction fittings, pipe or sump. Any modifications to new construction fittings VOID the Bravo warranty.

Dry Fit Fitting and Epoxy Preparation





Step 2 – Dry Fit Fitting and Epoxy Preparation

1. Remove loose material with an acetone rag.
2. Dry fit the fitting body to make sure there is no interference; threaded flange does not have to be installed during dry fit.
3. Use a piece of tape to cover the test ports so the threaded connection is not accidentally covered with epoxy during the installation.
4. To confirm there are no contaminates on the fitting that would affect bonding, sand the contact surfaces and wipe with acetone rag.
5. Mix Bravo EP100 thoroughly until a consistent texture and yellow color is achieved, stir top to bottom and in a circular manner until completely mixed.
6. Apply a generous amount of epoxy on the fitting body, threads and sump wall.
7. Liberally apply epoxy to the interior flange covering the surface and beveling thicker from the inside and thinner to outside of the flange.





NOTE: When installing on doublewall sump make sure the interstice is open to atmosphere before applying epoxy.

Fitting Placement and Adhesive Beading

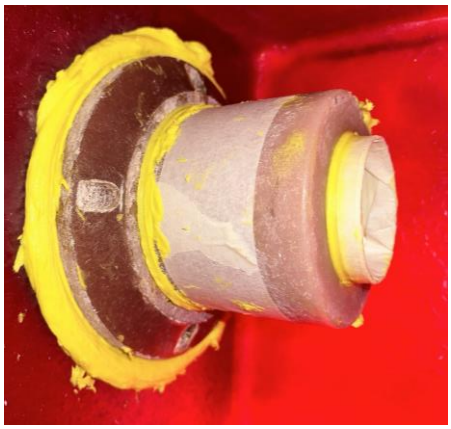


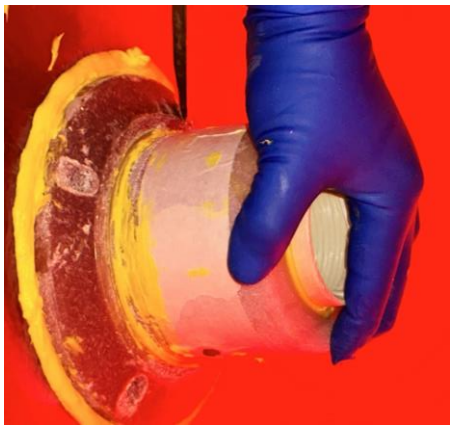


If site condition temperatures are below 50°F, use radiant heat to warm the fittings and sump walls. Monitor applied heat constantly to ensure the temperate does not exceed 150°F. Do not use NOV heat blankets or heat guns on high settings directly to fitting.
Pre-heat Bravo Epoxy base, not hardener, to 100°F to assist the curing process.

Step 3 – Fitting Placement and Adhesive Beading

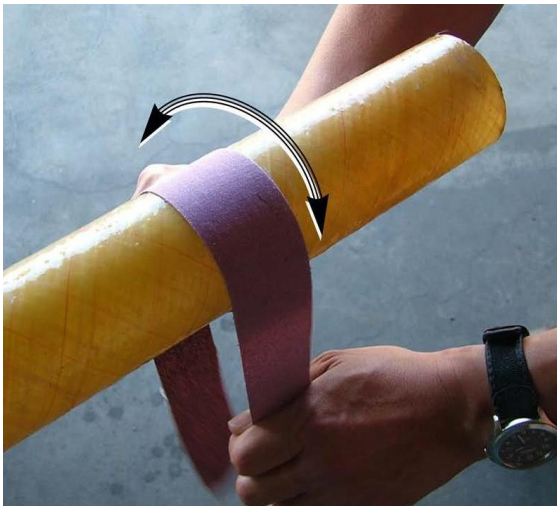
1. Install the epoxy coated fitting body from the exterior of the sump wall so that the ports are inside; with ports aligned in proper place. Rotate the fitting while pushing it into the wall apply adhesive on the fitting where it meets the wall inside of the sump.
2. Install the threaded flange and hand tighten to wall. After verifying correct positioning hold fitting in place while using a tool to tighten the flange to the wall; a nut driver or screwdriver can be used to assist in achieving the desired tightness.
3. Epoxy should be oozing 360° from flange to wall, and flange to fitting body.
4. Remove excess epoxy and make a smooth bead with an acetone rag on all joints, creating a seal that will be easy to inspect later.
5. Remove tape from threaded ports, verify that they are in a 3 o'clock and 6 o'clock position, or 9 o'clock and 6 o'clock position.
6. Ensure there is a clean bead of epoxy from the flange to the body of the fitting covering the threaded joint.
7. Let epoxy fully cure before piping.

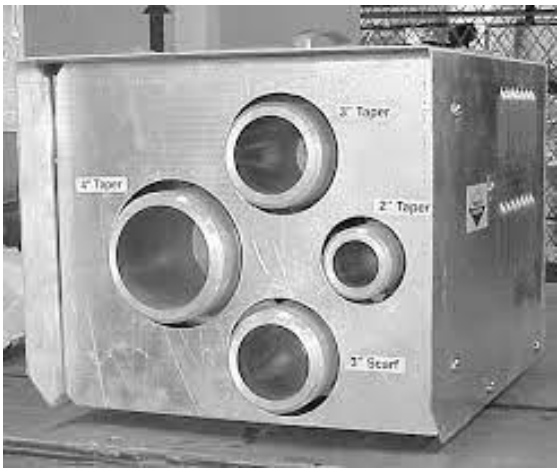


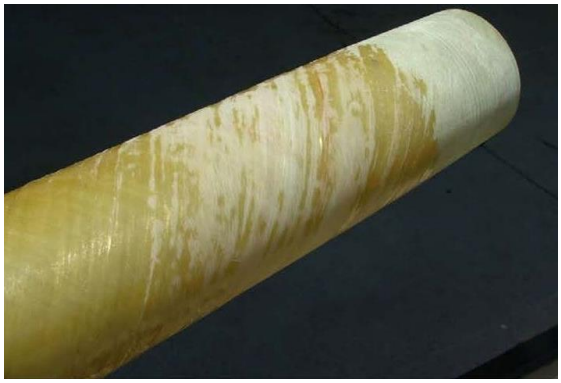




Prepping Pipe for Installation





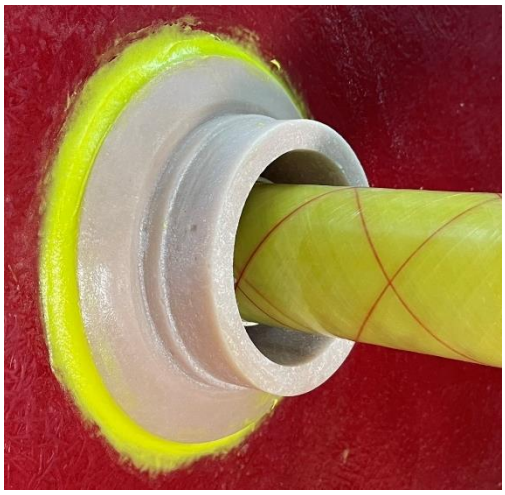


Step 4 – Prepping Pipe for Installation

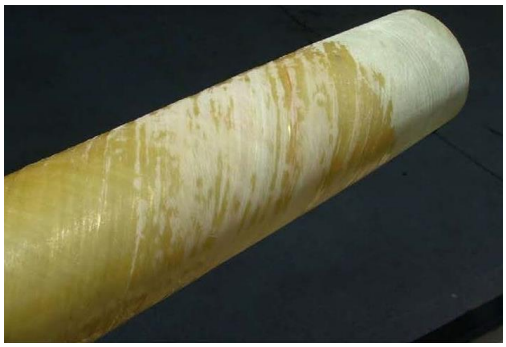
1. The section of pipe that is going to contact or penetrate the fitting needs to be prepared so it will receive the epoxy and make a proper bond.
2. The “gloss” or “sheen” on the exterior of the pipe needs to be sanded or scuffed.
3. Use the pipe manufacturers tapering tool to create a taper for the desired end fitting prior to installation**. With the 3” secondary pipe do not use the factory tapper use the tapering tool to create proper fit.** Fitting is designed to work using the pipe manufacturers’ taper specifications.
4. Fiberglass pipe dimensions are the nominal pipe dimensions. There may be some outer diameter variations.
5. If a fiberglass pipe is not fitting correctly, feel for any high spots on the OD of the pipe. The areas can be addressed with emery cloth or item specified by the pipe manufacturer.
6. If the primary pipe does not pass the entry fitting, sand interior of fitting to achieve clearance. There are ridges to be sanded off.

Secondary Pipe Application

Step 5 – Installing the Smith DW pipe to fitting.



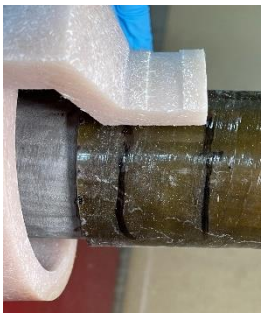
1. After fitting is cured, dry fit all your primary and secondary pipe connections. Follow pipe manufactures installation instructions.
2. Glue your primary pipe to the fitting interior coupling according to pipe manufactures installation instructions.
3. After primary pipe passes pressure test, per pipe manufacturer's instructions, measure for secondary pipe and taper and prep ends.
4. Apply either Bravo epoxy or NOV adhesive to the pipe and the interior body of the fitting and insert pipe.
5. Allow the adhesive to properly cure before prepping to test the entire secondary pipe system. Follow pipe manufacturers installation instructions.
6. The epoxy must be fully cured prior to testing. The cure cycle will be dictated by site conditions and the type of epoxy that was used; follow manufacturers' guidelines. Testing prior to the full cure cycle being complete <u>will</u> compromise the joint.





Note: Ensure test ports are open at all times during the installation process

Step 6 – Installing LCX Piping and 4x2L Reducer



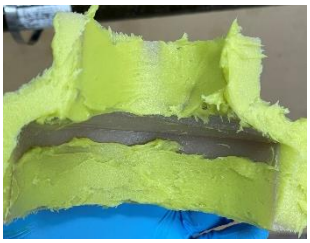
1. Prep the LCX pipe by cutting back the secondary and tapering the primary per manufacturer's instructions and clean with acetone.
2. Install the pipe into the interior coupling per manufacturer's instructions.



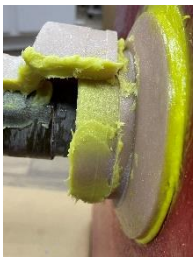
3. Dry fit the split reducer and install clamps to ensure the pipe is centered in the fitting during the curing process.
4. Once the adhesive has cured and the primary passed the pressure test, mark the edge of the reducer on the secondary.



5. Sand pipe 1" on either side of mark and clean with acetone.
6. Sand the split reducer and clean with acetone.
7. Mix EP100 until consistent color and texture is achieved.
8. Apply EP100 to all contact surfaces of split reducer and secondary pipe.



9. Install both halves of the reducer onto fitting against the raised surface and the secondary LCX pipe.
10. Install the worm gear clamps and tighten until epoxy pushes through seam. Ensure both halves are even before final tighten. Do not over-tighten.

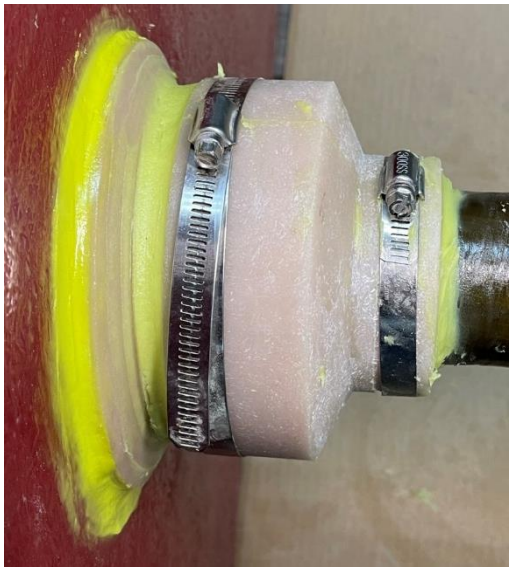


11. Remove excess epoxy with acetone to leave clean beads for inspection.

Note: Ensure test ports are open at all times during the installation process

Step 7 – Preparing for Secondary Line Test

1. Once fittings have fully cured, generously apply UL approved thread sealant onto hex plug and Schrader valve threads.
2. Carefully thread in Schrader valve and hex plug to finger tight, then 2-3 turns with a wrench, not to exceed 12 inch-lbs.
3. After the epoxy has reached full cure, test the secondary pipe per manufacturers' guidelines and/or local, state or federal codes and regulations.



Step 9 – Testing (SW and DW sumps)

1. Follow sump manufacturer's instructions and federal and local regulations.

WARRANTY

All Bravo products must be installed by a Bravo Certified Contractor. Information contained in all Bravo literature is subject to change without notice. Bravo does not assume responsibility for liability for loss, damage or expenses resulting from installation, operation use or maintenance from this manual. By installing this product, you agree to S. Bravo Systems warranty terms.

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UL LISTED UL 2447