BRAVO
PROBLEM SOLVED

INSTALLATION GUIDE

Collar-Mount Tank Sump Doublewall B421, B481 And B487 Series

Step By Step Installation

Epoxy cure cycle. Full cure cycles vary depending on site conditions. Note that epoxy will not cure at temperatures below 40°F. See epoxy jar for more details.

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.

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.

Get Bravo Certified Today – Contact Your Sales Manager

HOW TO INSTALL COLLAR-MOUNT TANK SUMP B421, B481 AND B487 - DOUBLEWALL

REQUIRED ITEMS

T-400 Tool Kit (1)

K-402 Lamination 1 gal Kit (1)

K-410.5 ½ gal Paste Kit (1)

EPC-S1.0 Slurry 1 gal Kit (1)

Acetone

Propylene Glycol (IF-1.0)

Use clean, lint-free rags

When using and installing Bravo products, please consult local, state and federal regulations. **Installers of Bravo products must be Bravo-certified**.

HOW TO INSTALL COLLAR-MOUNT TANK SUMP B421, B481 AND B487 - DOUBLEWALL

STEP 1 – ABRADE TANK COLLAR

1. Abrade tank collar in preparation for lamination or slurry pour per tank manufacturers' instructions.

2. Sand the collar mount ring portion of the base at least 3" inside and outside, then wipe clean with acetone.

STEP 2 – DRY FIT BASE TO COLLAR

1. Test fit (dry fit) the base of the collar mount sump. Note if there are any large gaps.

2. Apply masking tape around the perimeter of the joint to bridge the base and tank collar

3. Carefully wipe the tape with an acetone rag.

STEP 3 – APPLY PASTE

1. Apply fiberglass paste (K-410) to smooth any large transitions or steps between the sump base and tank collar

2. Mix paste and catalyst per instructions on can for the quantity you will be working with.

3. After completely catalyzing the paste, use plastic spreader to apply paste to the desired areas.

4. The objective is to provide a smooth transition to laminate over.

5. Lamination should be applied while paste is still tacky.

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STEP 4 – LAMINATE BASE TO COLLAR

Note: Lamination materials should be clean and dry to perform a successful fiberglass bond

1. Cut or tear fiberglass mat into 24” strips that will overlap 2”. It will take approximately 8-10 pieces to complete one layer.

2. Doublewall lamination requires 4 layers of lamination to create the desired thickness approximately 32 to 40 pieces of mat depending on overlap.

3. When preparing resin for lamination, partition into smaller portions to avoid premature curing once catalyzed. Mix resin in ½ gallon increments or smaller quantities for higher temps or humidity. Site conditions will affect the cure time of the resin.

4. Apply catalyzed resin onto cardboard or other disposable surface and place fiberglass mat on top of it. Apply second layer to the previous one, offsetting by 1” lengthwise. Ensure fiberglass is fully wet out; it should be a similar color to the resin with no white spots. Repeat for layers 3 and 4.

5. Roll out air bubbles against the surface with each layer.

6. Peel the fiberglass laminate from the surface, taking care to get all 4 layers and apply to collar seam 3” above and 3” below the seam.

7. Roll out remaining air bubbles and seal edges.

8. Use a brush to dab or apply additional resin mixture as needed.

9. Allow for full cure cycle to occur. Laminate should not scratch easily with your fingernail.

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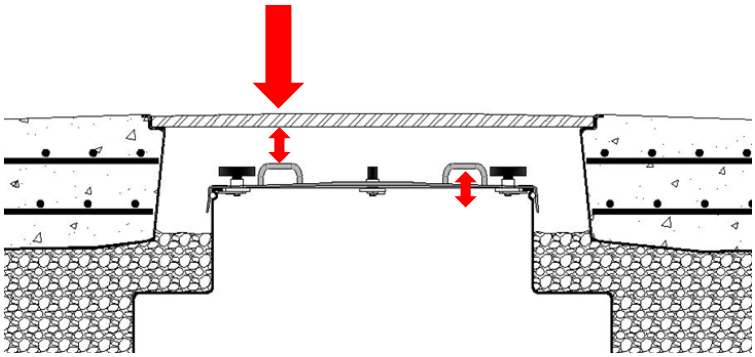
STEP 5 – TRIM TOP HAT

1. The lower portion of the top hat must be trimmed on every Bravo doublewall sump top hat. The interstice must be OPENED by cutting out the singlewall portion. This will be approximately 2” +/-.

1. Position the sump top hat into the V-channel on the sump base. Use a 4’ level to ensure the top hat is level.

2. Make indicator marking on the top hat so it can be installed with the same orientation.

3. Ensure there is at least 1-1/2” clearance from highest point of sump lid (handles) to planned underside of manhole cover



Min. Distance to manhole over cover is 1 ½”

STEP 6 – PREP TOP HAT

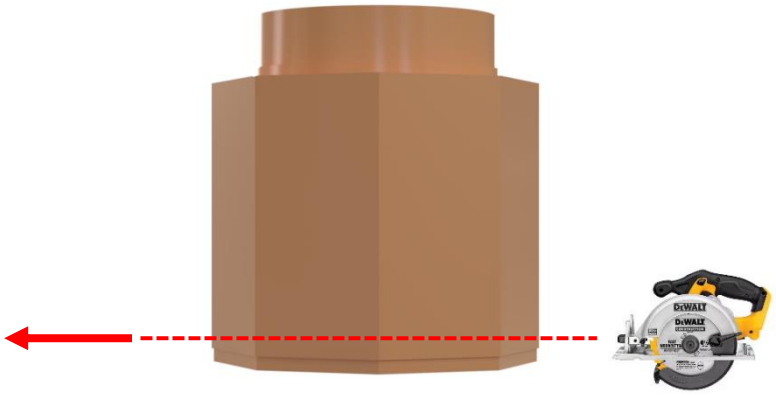
1. The top hat portion of the sump should be installed after piping has been completed.

2. Height adjustment is made by cutting from the lower portion of the sump top hat.

3. After making the height adjustment cut measure 3.5” on the lower portion of the top hat mark with a pen. This will be the line to grind or sand up to exposing raw fibers.

4. Also sand both sides of the V-channel on the interior.

5. Wipe all sanded areas with clean acetone rag removing all loose dust.



HOW TO INSTALL COLLAR-MOUNT TANK SUMP B421, B481 AND B487 - DOUBLEWALL

STEP 7 – COMPLETE V-CHANNEL JOINT

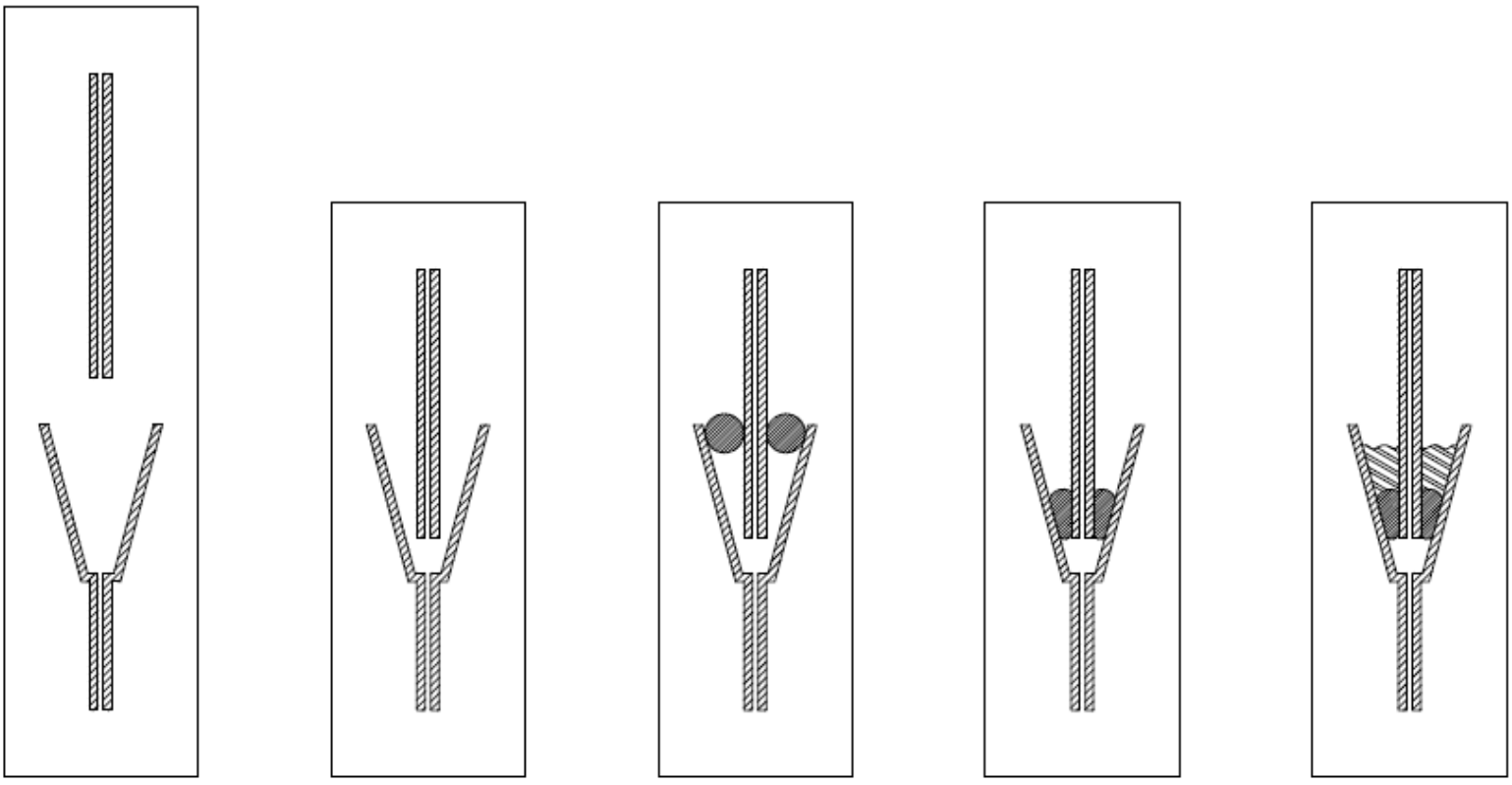
1. Install sump top hat using aligning mark to center sump top into V-channel.

1. Dry fit backer rod and cut to length to ensure both ends meet end to end leaving no gap.

2. Screw SVAB barb into gauge Schrader valve to open the interstice while the cure cycle of the slurry occurs. Note:This step is important so the interstice does not build pressure while slurry cures, potentially leaving voids.

3. Install backer rod in channel inside and outside, pushing it down to base of V-channel and tight against the walls to ensure a tight seal with no gaps; slurry pour must be a minimum of 2” thick.

Remove vacuum from sump top using barb fitting and leave vented to atmosphere until time to test



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Required: Grout Mixing Tool!

Length 16", Blade 3-1/4" (Sold Separately at Local Hardware)

STEP 8 – INSTALLING SUMP TOP HAT

1. Place a 4' level on top of the reducer to ensure the top hat is placed as you desire.

2. Break up the clumps in slurry using heavy screwdriver. Then proceed to use grout mixer to blend clumpy slurry into a uniform consistency.

3. Shake can of hardener before opening and add all hardener to the slurry mix.

4. Using the grout mixing tool, mix side to side and top to bottom until consistent color and texture.

Note: swirls in image means you are not finished mixing.

5. Fill grout bag with PC slurry and squeeze into channel.

6. Drag a stir stick through the PC Slurry to make sure the are no trapped bubbles.

7. Let PC Slurry fully cure prior to completing the inside channel.

8. After both, the inner and outer V-channel are poured, allow a full cure cycle to occur, with the interstice vented to the atmosphere.

9. After a full cure cycle has occurred, refer to step 11 and step 12 for testing procedures.

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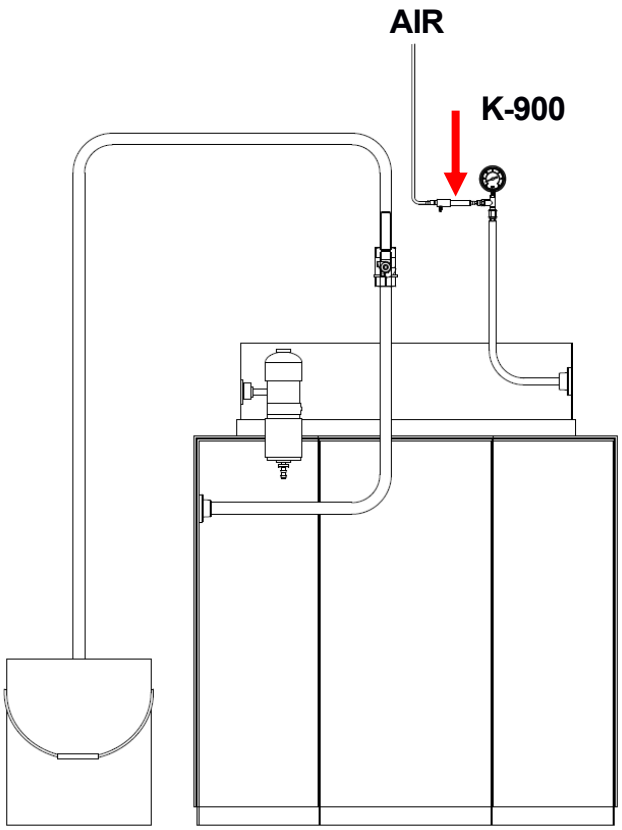
STEP 9 – DOUBLEWALL HYDRO FILL PROCEDURE

Bravo interstitial fluid (Bravo IF) is required to vacuum fill all Bravo doublewall products. Do not use Bravo IF and other manufacturer's hydrostatic fluids together.

1. Use the K-900 kit (Hydro-Vac fill kit) to perform Bravo doublewall fill method on all Bravo doublewall sumps.
2. Fill bucket (5gal) with Bravo IF (minimum 3-4 gal) and insert hose into bucket.
3. Connect ball valve (closed position) from the K-900 kit to the fill tube on the sump; this is the tube connected to the lower port on the doublewall sump.
4. Fill the tube with Bravo IF to prime the tube with ball valve closed.
5. Using the Venturi Vacuum from the K-900 Kit or alternate vacuum device; apply a minimum of 20" Hg vacuum to doublewall interstice.
6. Allow time to reach high vacuum level (25"Hg). Once desired vacuum level is reached, slowly open ball valve ¼ turn until it starts to flow.
7. Continue to slowly fill the sump until 2" above the fittings installed in the base and close ball valve and wait approx. 5 minutes for any bubbles to clear.
8. Continue with filling process until 2" above pour seam. Close the ball valve and wait approx. 5 minutes for any bubbles to clear.
9. Continue filling until IF is 2" below the top vacuum port and close ball valve and wait approx. 5 minutes for any bubbles to clear.
10. Ensure inspections have taken place for all penetrations and seam or joints (V-channel); if no bubbles are visible after 5 minutes, continue.
11. Complete the hydrostatic fill up to the DW port that the gauge is connected to.



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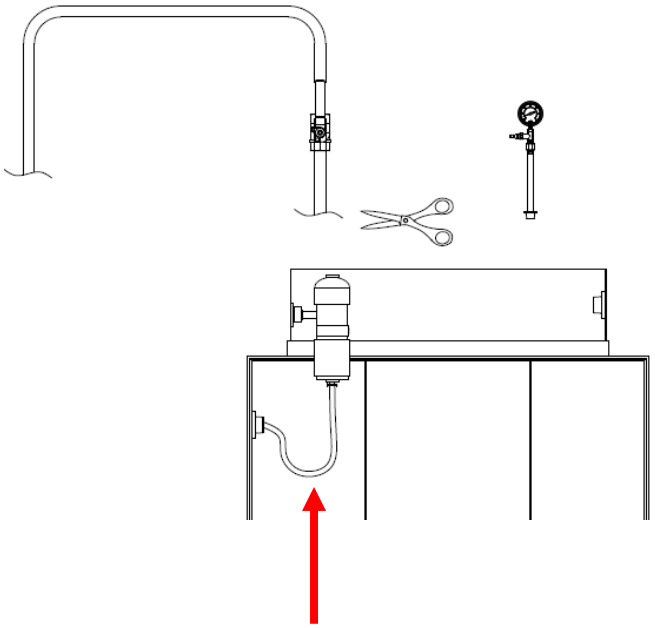
STEP 10 – INSTALL TUBE TO MANOMETER

1. With the ball valved closed, dry fit the fill tube to the base of the manometer, allow 4” to 6” of slack to leave a smooth curve to the connection; *avoid* creating a “P-Trap” or excess slack.
2. Cut the tube to the desired length, apply hose clamp and attach the tube to the barb on the manometer, secure hose clamps with tight connection 5/16 driver.
3. Verify all clamps are secure, fill the primary manometer to 2/3 full; system will balance out between the 2 manometers.
4. Once Bravo fill method is complete, cut gage assemble hose leaving 4” to install on the upper port as a breather, creating an open system



STEP 11 – TROBLESHOOTING

Finding a leak.

1. Make observations of the interior of the sump, i.e. is there any fluid at the base? Is there debris? Clean the base of the sump so accurate observations can be made.
2. To increase the visibility of the testing clean the walls with acetone rag.
3. Remove Bravo IF to 4” above the highest penetration or seam/ joint.
4. Connect a gage so vacuum can be applied. Draw a minimum of 20”Hg for the testing.
5. Once desired vacuum level has been achieved, allow 10 minutes for interstice to settle. This will eliminate false results.
6. Using a light to increase visibility, observe the walls for consistent bubble trail.
7. Follow the bubble down to the source to pin-point the leak. Mark this area.
8. If bubbles are found, remove Bravo IF down to 2” below leak point and observe under test. If the bubbles have stopped, the leak has been sourced.
9. The leak that has been found may not be the only leak but the largest leak.
10. Follow the repair procedures listed above to make the correction.
11. Allow the repair to go through the complete cure cycle prior to testing.
12. Repeat the testing procedure to ensure there are not any additional leaks.

Once repairs have been completed and all tests have passed, use the Bravo fill method (Vacuum) to add Bravo IF to the sump

STEP 12 – REPAIR

Doublewall Positive Pressure Test

Leak around a fitting (flange to wall, flange to fitting body)

1. Inspect the identified leaking location.
2. Define the area to repair.
3. Drain interstice fluid below break to be repaired.
4. Abrade repair location per manufacturers' instructions; this area should extend outside the identified leak by 1" in all directions.
5. Remove loose dust with acetone rag leaving the repair area free of debris.
6. Apply Bravo Epoxy EP100RF, beveling the epoxy from the wall to the installed fitting; use a rag with acetone to remove and smooth epoxy leaving a clean repair that can be inspected.
7. Use the Schrader valve to apply 4" – 8" Hg vacuum to sump interstice; draw in the epoxy into the void from the fitting installation.
8. Inspect the repaired area and over-coat with additional epoxy to ensure the vacuum level did not create a hole in the repair.
9. Close ball valve on vacuum and allow to cure under vacuum.

Leak at the flange to the pipe and/or secondary pipe if the fitting

1. Follow the steps in the repair above "leak around the fitting", except at step 6, pull vacuum from the secondary port of the fitting; ensure that the other end of the secondary pipe is closed.
2. It is important to follow the preparation steps of the repair for creating and bonding fiberglass repair.
3. Connect the Venturi to the Schrader valve and apply 4" – 8" Hg vacuum to build; do not exceed the pipe manufacturers' vacuum limits.
4. Once the full cure cycle has occurred, the repair can be tested; ensure the repair has been successful by performing a positive pressure test.

STEP 13 – DOUBLEWALL FIBERGLASS REPAIR

Repairing a leak in the wall.

1. Locate the identified area and inspect the puncture and damaged area; the overall repair should exceed the damaged area by 2" on all sides or a 360° repair; mark planned repair perimeter with a sharpie.
2. Abrade area of planned repair to the outer edges.
3. Remove any dust with an acetone rag.
4. Doublewall lamination repair (K-401 or K-402) requires 4 layers of FRP mat.
5. Tear the FRP mat into the proper size gradually expanding the size of the layers.
6. Use a roller to saturate the repair layers with resin and catalyst mixture, apply the layers centered over the leak point and roll smooth; repeat process until all four layers have been applied.
7. Allow full cure to occur prior to testing.

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.

LIMITED 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.

UL Sump Containment Rating: Secondary

UL 2447 LISTED

Sump Type: Tank Sump

DOUBLEWALL

Maximum Burial Depth: 84”

Liquid Rating: Automotive Fuels

- Must be installed by an S. Bravo Systems, Inc. certified installer. Installation by non-certified personnel will void the warranty and may result in damage or leaks.
- Install in accordance with S. Bravo Systems, Inc. installation guides.
- Use only OEM recommended fittings and accessories.
- Failure to use recommended accompanying sump products in the complete assembly may cause damage or leaks.

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