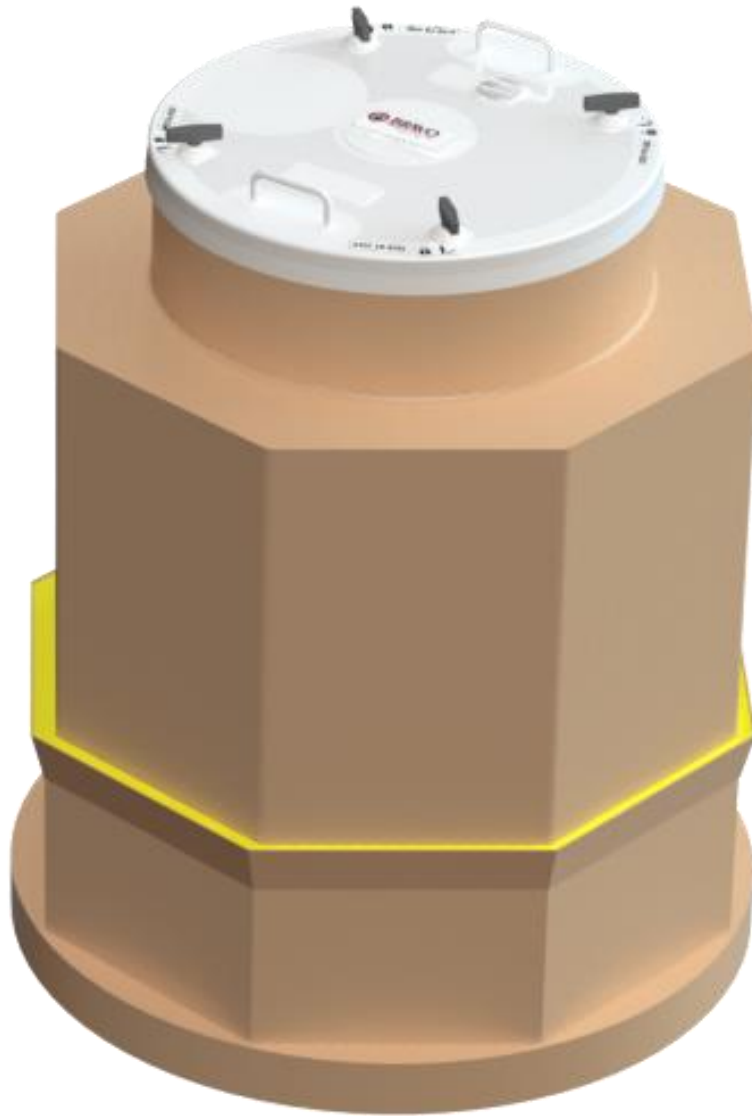


Collar-Mount Tank Sump Doublewall

Vacuum Pressure Hydrostatic



B421 Series – 42" Diameter
B481 Series – 48" Diameter
B487 Series – 48" Diameter x 42" Collar



Get Bravo Certified Today – Contact Your Sales Manager



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Warranties and Disclaimers

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



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.



Full cure cycles vary depending on site conditions. Note that epoxy slurry, resins will not cure at temperatures below 40°F. See cure chart for more details.

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.



Required Items

T-400 Tool Kit (1)



K-402 Lamination 1 gal Kit (1)



K-410.5 ½ gal Paste Kit (1)



EP-S1.0 Slurry 1 gal Kit (1)
EP-S.75 Slurry ¾ gall Kit (1) for inside tank collar channel



Acetone



Propylene Glycol (IF-1.0)

*NOTE: Use clean, lint-free rags



How to Install Collar Mount Tank Sump - Doublewall



1 Abrading 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

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.
4. Apply fiberglass paste (K-410) to smooth any large transitions or steps between the

3 Apply Paste

1. Mix paste and catalyst per instructions on can for the quantity you will be working with.
2. After completely catalyzing the paste, use plastic spreader to apply paste to the desired areas.
3. The objective is to provide a smooth transition to laminate over.
4. Lamination should be applied while paste is still tacky.



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4 Laminate base to collar

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. Pour 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.



5 Trim Top Hat

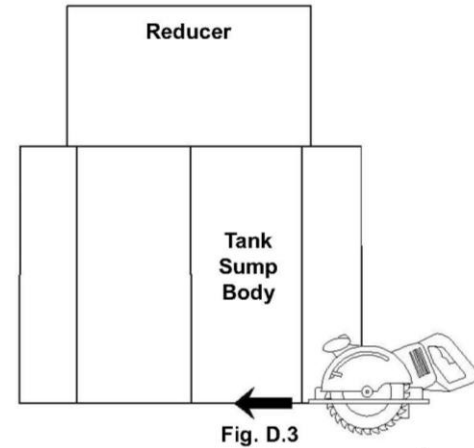
1. The lower portion of the top hat must be trimmed on every Bravo doublewall sump top hat. The interstice must be OPENED by cutting out the singlewall portion. This will be approximately 2" +/-.
2. Position the sump top hat into the V-channel on the sump base. Use a 4' level to ensure the top hat is level.
3. Make indicator marking on the top hat so it can be installed with the same orientation.
4. Ensure there is at least 1-1/2" clearance from highest point of sump lid (handles) to planned underside of manhole cover



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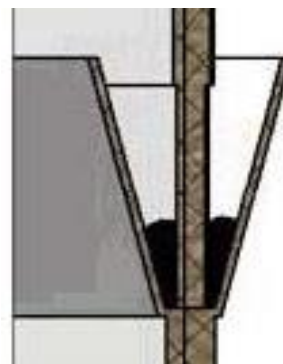
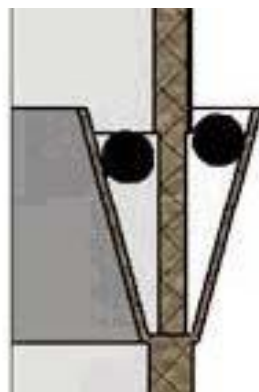
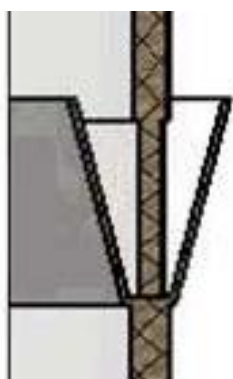
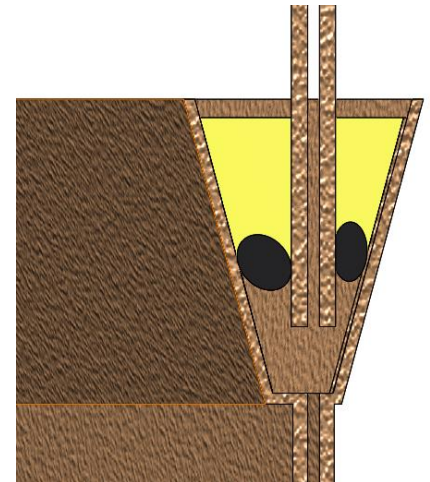
STEP 6 – PREPARING THE TOP HAT OF THE SUMP

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.
6. Complete the fitting installation per the manufacturers' guidelines before joining sump top hat to the base of the sump.



STEP 7 – COMPLETING V-CANNEL JOINT

1. Install sump top hat using aligning mark to center sump top into V-channel
2. Dry fit backer rod and cut to length to ensure both ends meet end to end leaving no gap.
3. 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.
4. 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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STEP 8 – INSTALLING SUMP TOP HAT

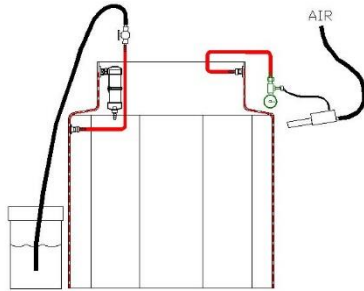
1. Place a 4' level on top of the reducer to ensure the top hat is placed as you desire.
2. Pre-mix slurry breaking up any clumps for even and smooth consistency. NOTE: If sitting for a while, the slurry may be initially very difficult to mix. This is normal.
3. Shake the can of hardener as the sticker indicates. Shake well.
4. Add all hardener to the PC slurry mix.
5. Using a mixing tool/ grout paddle, mix side to side and top to base until consistent color and texture.
6. Fill grout bag with PC slurry and squeeze into channel.
7. Drag a stir stick through the PC Slurry to make sure there are no trapped bubbles.
8. Let PC Slurry fully cure prior to completing the inside channel.

Caution: When using pressure, do not over-pressurize the interstice; maximum of 4 psi



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



Note: It is highly recommended to leave under vacuum during backfilling process.



STEP 9 – HYDRO FILL of DOUBLEWALL PROCEDURE

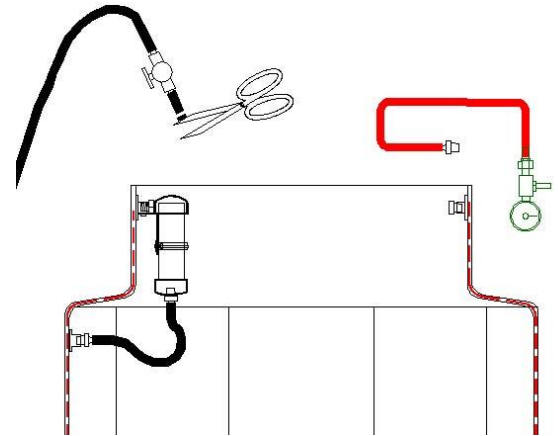
1. Use the K-900 kit (Hydro-Vac fill kit) to perform Bravo doublewall fill method on all Bravo doublewall sumps.
2. Fill bucket (5gal) with Bravo interstitial fluid (minimum 3-4 gal) and insert hose into bucket.
3. Connect ball valve (closed position) from the K-900 kit to the fill tube on the sump; this is the tube connected to the lower port on the doublewall sump.
4. Fill the fill tube with Bravo interstitial fluid, inside the fill tube with ball valve closed; prime fill tube, using and close ball valve.
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 15% until it starts to start flow; the flow stream should be 1-1/2" from the port on tank sumps and smooth controlled flow of Bravo IF.
7. There will be minimum of 2 inspection points (seam or joint, highest penetration fitting) during the fill process to validate integrity of the sump 2" of Bravo IF above inspection point; close ball valve and look for a bubble trail which would indicate a breach or leak; if no bubbles after 5 minutes, proceed to next inspection point.
8. Close ball valve and hold vacuum at 25"Hg or more for 5 minutes while inspecting for bubble trail.
9. Ensure inspections have take place for all penetrations and seam or joints (V-channel); if no bubbles are visible after 5 minutes, continue.
10. Complete the hydrostatic fill up to the doublewall 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 – TROUBLE SHOOTING REPAIR

Results of positive pressure test/identified leak location; there is not any liquid in the interstice when the repairs are performed

DW - POSITIVE PRESSURE TEST

1. Verify what testing is recommended by the Sump or UDC manufacturer prior to performing testing.
2. With a restricted air source (regulated to 4psi maximum), or bicycle pump, to provide a maximum of 4psi in the interstice or specified amount by the manufacturer; once pressure has been introduced, spray with joints, connections and penetrations with water and soap formula
3. The water and soap formula is 10 parts water to 2 parts dish soap
4. If no bubbles are discovered during positive pressure test, continue to test for 24 hours at 4psi; installing contractor must verify no pressure decay has occurred
5. If bubbles *are* discovered, it indicates a leak and troubleshooting/repair process should begin; mark location of the bubbles so an appropriate repair can be performed; after full cure has been achieved, perform positive pressure test again; proceed to a vacuum test at 20”Hg and should be under test for at least 12 hours with no decay in gauge reading



How to Install Collar Mount Tank Sump - Doublewall

STEP 12 – TROUBLE SHOOTING REPAIR

Results of positive pressure test/identified leak location; there is not any liquid in the interstice when the repairs are performed

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. Abrade repair location per manufacturers' specification, this area should extend outside the identified leak by 1" on all directions
4. Remove loose dust with acetone rag leaving the repair area free of debris
5. Apply Bravo Epoxy EP100RF beveling 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
6. Use the Schrader valve to apply vacuum to sump interstice draw in the epoxy into the void from the fitting installation; apply vacuum of 4" - 6"Hg using Schrader valve on fitting body
7. Inspect the repaired area and over-coat with additional epoxy to ensure the vacuum level did not create a hole in the repair
8. 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 as that is the key to successfully creating and bonding fiberglass repair
3. Connect the Venturi to the Schrader valve and allow vacuum to build; do not exceed the pipe manufacturers' vacuum limits; achieve 4" – 6"Hg on the secondary to assist in the repair adhesion to the fiberglass area
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



How to Install Collar Mount Tank Sump - Doublewall

STEP 13 – TOPPING OFF BRAVO Interstitial Fluid

If Bravo Interstitial Fluid level drops more than 2” proceed as follows

1. Top off with Bravo IF, mark level on manometer and monitor level over time, marking the level each visit.
2. If fluid loss continues, review the alarm history to determine if there is a pattern.
3. Then perform ALDP test

STEP 14 – DOUBLEWALL FIBERGLASS REPAIR

Puncture of the fiberglass wall and or corner leak

1. Make observations of the interior of the sump, is there any fluid at the base? Is the debris? Clean up 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 this will 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 then you have sourced the leak.
9. Keep an opened mind, 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 is not any additional leaks

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



WARRANTY DOUBLEWALL TANK SUMP

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 Bravo products MUST be installed by a Bravo Certified contractor. Information contained in all Bravo literature is subject to change, to ensure you are viewing the current literature located on the Bravo website. 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, Inc's warranty terms. All Bravo products are subject to complete warranty information located on the S. Bravo Systems; Inc. website located at www.sbravo.com.

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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