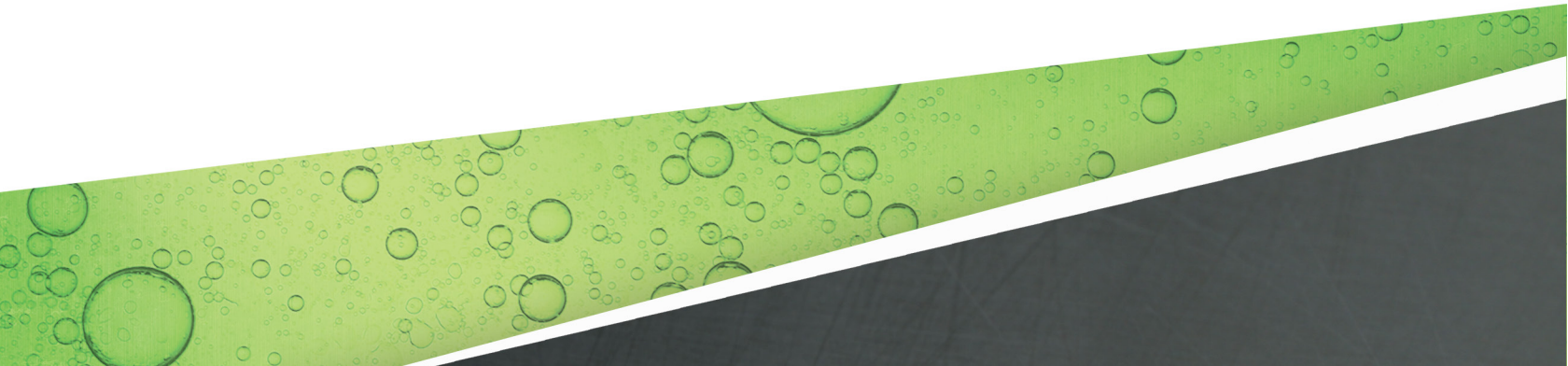
Franklin Fueling Systems

WATERTIGHT FIBERGLASS TANK SUMP

INSTALLATION GUIDE



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Conventions used in this manual

This manual includes safety precautions and other important information presented in the following format:

NOTE: This provides helpful supplementary information.

IMPORTANT: This provides instructions to avoid damaging hardware or a potential hazard to the environment, for example: fuel leakage from equipment that could harm the environment.

⚠ **CAUTION**: This indicates a potentially hazardous situation that could result in minor or moderate injury if not avoided. This may also be used to alert against unsafe practices.

⚠ **WARNING**: This indicates a potentially hazardous situation that could result in severe injury or death if not avoided.

⚠ **DANGER**: This indicates an imminently hazardous situation that will result in death if not avoided.

Operating precautions

Franklin Fueling Systems (FFS) equipment is designed to be installed in areas where volatile liquids such as gasoline and diesel fuel are present. Working in such a hazardous environment presents a risk of severe injury or death if you do not follow standard industry practices and the instructions in this manual. Before you work with or install the equipment covered in this manual, or any related equipment, read this entire manual, particularly the following precautions:

IMPORTANT: To help prevent spillage from an underground storage tank, make sure the delivery equipment is well-maintained, that there is a proper connection, and that the fill adaptor is tight. Delivery personnel should inspect delivery elbows and hoses for damage and missing parts.

⚠ **CAUTION**: Use only original FFS parts. Substituting non-FFS parts could cause the device to fail, which could create a hazardous condition and/or harm the environment.

⚠ **WARNING**: Follow all codes that govern how you install and service this product and the entire system. Always lock out and tag electrical circuit breakers while installing or servicing this equipment and related equipment. A potentially lethal electrical shock hazard and the possibility of an explosion or fire from a spark can result if the electrical circuit breakers are accidentally turned on while you are installing or servicing this product. Refer to this manual (and documentation for related equipment) for complete installation and safety information.

⚠ **WARNING**: Before you enter a containment sump, check for the presence of hydrocarbon vapors. Inhaling these vapors can make you dizzy or unconscious, and if ignited, they can explode and cause serious injury or death. Containment sumps are designed to trap hazardous liquid spills and prevent environmental contamination, so they can accumulate dangerous amounts of hydrocarbon vapors. Check the atmosphere in the sump regularly while you are working in it. If vapors reach unsafe levels, exit the sump and ventilate it with fresh air before you resume working. Always have another person standing by for assistance.

⚠ **WARNING**: Follow all federal, state, and local laws governing the installation of this product and its associated systems. When no other regulations apply, follow NFPA codes 30, 30A, and 70 from the National Fire Protection Association. Failure to follow these codes could result in severe injury, death, serious property damage, and/or environmental contamination.

⚠ **WARNING**: Always secure the work area from moving vehicles. The equipment in this manual is usually mounted underground, so reduced visibility puts service personnel working on it in danger from moving vehicles that enter the work area. To help prevent this safety hazard, secure the area by using a service truck (or some other vehicle) to block access to the work area.

⚠ **DANGER**: Make sure you check the installation location for potential ignition sources such as flames, sparks, radio waves, ionizing radiation, and ultrasound sonic waves. If you identify any potential ignition sources, you must make sure safety measures are implemented.

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Introduction

IMPORTANT: The Franklin Fueling Systems (FFS) assembly and equipment described in this manual have been tested ONLY with FFS products. Do not use any non-FFS products and equipment (other than some of the tools listed in the "Tools" table).

⚠ **WARNING**: To help avoid personal injury risk, make sure you wear all required personal protective equipment.

⚠ **WARNING**: Catalysts and resin can be combustible. To help avoid a fire hazard:

- Make sure you work in adequately ventilated areas.
- Do not use near flammable materials.
- Do not use more catalyst or resin than required.
- Do not store rags, used mats, or materials you used to apply catalyst and resin.
- Make sure a 25 lb, ABC fire extinguisher is near the area you will use catalyst and resin.
- **Stay out of direct sunlight**!

⚠ **WARNING**: Acetone is highly flammable. Refer to the manufacturer's instructions for safety and handling information.

Recommendations

⚠ **WARNING**: The catalyst for the resin in the FG-Seam Kit is highly flammable. To obtain the Safety Data Sheets (SDS), which contains important safety and handling information, contact the following companies: For the resin, contact Arkema, Inc. at +1 800 331 7654 (Monday to Friday, 8:00 AM to 5:00 PM EST). Ask for the SDS for Luperox® DDM-9. For the slurry kit, contact ChemTrec at +1 800 424 9300 and ask for the Duratec SDS for 80LM-2A and 80LM-2B.

IMPORTANT: Make sure you keep the fiberglass mat dry before you use it.

- FFS tank sumps must be installed by a certified FFS installer.
- In hot or sunny weather, keep the sumps, seams, and channel kits in a shaded area out of direct sunlight until you do the installation.
- Make sure all perishable materials are new, unopened, and within their shelf-life.
- FFS recommends doing the installation in the morning. When there is direct sunlight, keep the components shaded (in a tent, for example).
- Make sure you have adequate quantities of all installation kits on site and in good condition before starting the installation. Each tank sump requires two FG-Seam Kits and one Slurry Kit. An installation kit is optional but helpful.

Tools

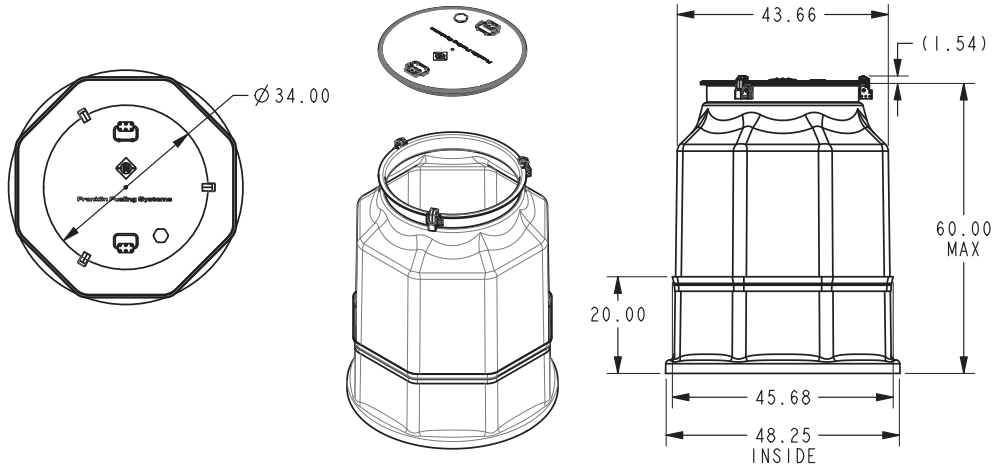
Description	Part Number
Slurry Kit (This kit is for one U-channel in either the 42 or 48” tank sump.) Includes: 1 Gallon can of resin 1-16oz can of resin hardener 1 Pair of rubber gloves 1 Mixing stick Sand paper	602366923
FG-Seam Kit (This kit is for one seam between the tank sump base and the tank collar in either the 42 or 48” tank sump.) Includes: 3 Quarts resin 4-0.5 oz tubes catalyst 2 Rolls 6x27” strand mat 1 Quart putty 1 Putty knife 2 Wooden stirring sticks 2 Pairs of rubber gloves	602366901
Tool Kit: Grooved roller, mixing sticks, putty knife, scissors, paint brushes, nitrile gloves	602366933 or locally sourced
Angle grinder (with flap sanding wheel), DA sander, or sand paper (80 grit or coarser)	Locally Sourced
Acetone	Locally Sourced
Lint-free rags	Locally Sourced
Markers	Locally Sourced
Assorted tools (e.g., tape measure, wrenches, pliers, screwdrivers)	Locally Sourced
Respirator (equipped with end-of-service-life indicator)	Locally Sourced
PPE: Cut-resistant gloves, nitrile gloves, goggles, boots, hard hat, long pants, long-sleeved shirt, hearing protection	Locally Sourced
Cutting tool/scissors	Locally Sourced
Fire extinguisher (25 lb, ABC)	Locally Sourced

Dimensions

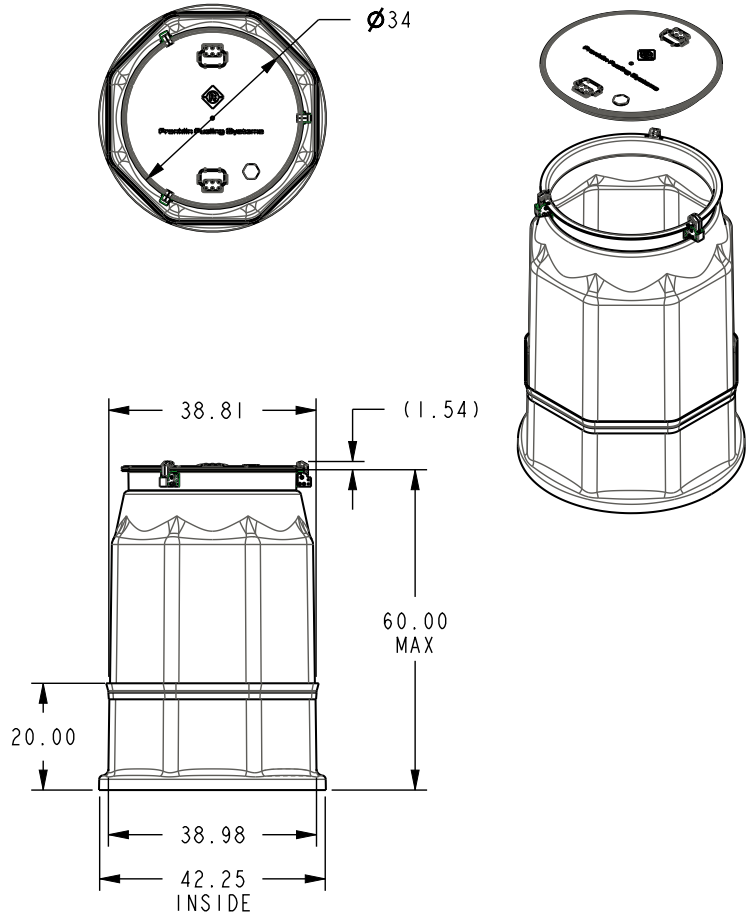
NOTE: The maximum tank sump height is 60 inches, as delivered, and the minimum height is 36 inches.

NOTE: Dimensions shown in the following diagrams are for reference only.

48 inch tank sump dimensions



42 inch tank sump dimensions



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Installation

Hydrostatic testing

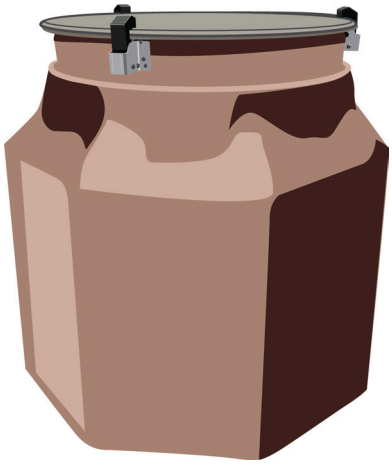
You must perform a hydrostatic test, according to the hydrostatic test procedure, on every seam and entry penetration in order to complete the tank sump installation. It is a best practice, but not required, to perform the hydrostatic test after you complete each seam with or without pipe entries complete. This confirms that a watertight seal exists between the sump base and tank collar before you proceed with the sump riser installation.

Follow the requirements in *PEI/RP 1200: Recommended Practices for the Testing and Verification of Spill, Overfill, Leak Detection and Secondary Containment Equipment at UST Facilities* to perform the hydrostatic test. FFS recommends performing the hydrostatic test on all sump joints 4" above the highest joint or penetration, whichever is higher.

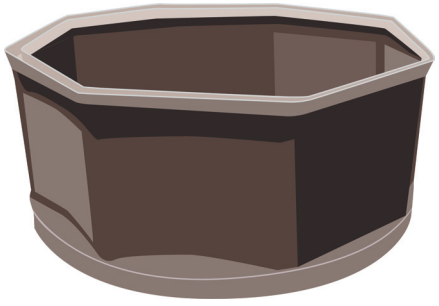
IMPORTANT: Follow all local, state, and federal regulations regarding testing protocols.

IMPORTANT: Contact FFS Technical support at +1 800 984 6266 if you need assistance.

1. Prepare the sump riser and base



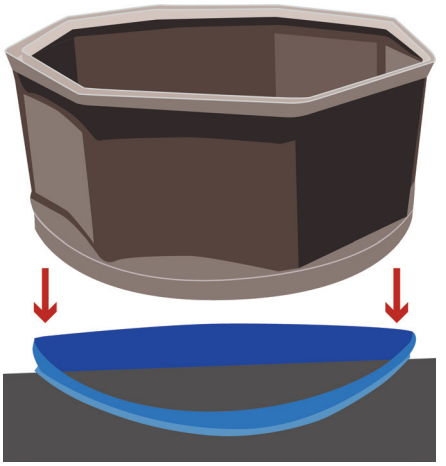
Sump riser



Sump base

1. Inspect the sump riser and base and all other equipment provided by FFS. If you find any damage, contact FFS Technical support at +1 800 984 6266 for assistance.

2. Cut the shrink wrap and bands that tie the base and riser to the pallet.
3. Lift the base off the riser and dry fit it on the tank collar. Make sure the base is level and stable and oriented so the octagonal faces are perpendicular to pipe entries.

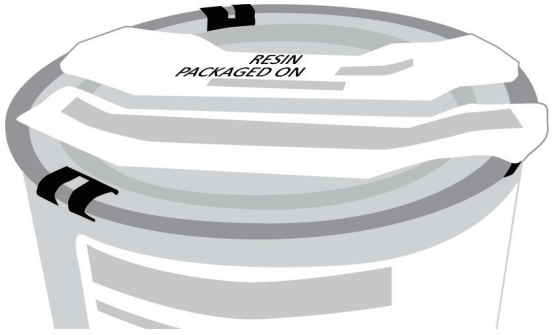


4. Remove the base from the tank collar, and then abrade, down to the glass fibers, all segments to be fiberglassed on the tank collar and the base. The abraded area requires a minimum of 4 inches of exposed sections on both the inside and outside of the parts that join together.

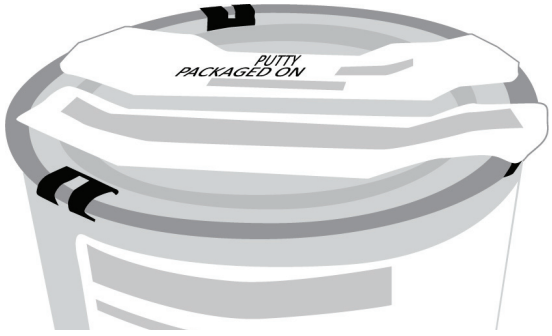
⚠ **CAUTION**: Make sure you wear nitrile gloves and eye protection when you use acetone.

5. Wipe abraded areas with acetone and lint-free rags. Make sure there is no debris on them.

2. Install the sump base



Resin container



Putty container

1. Clear the inside and outside of the joint so that it is completely dry and clean.

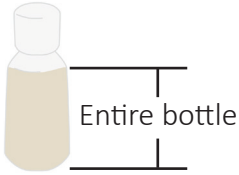
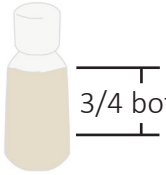
IMPORTANT: In the next step:

- Make sure the catalyzed putty is thoroughly, uniformly mixed with no pink streaks. It will turn light brown, with **no pink or pink streaks**, when it is thoroughly mixed.
- Under no conditions use less than half (1/2) of a bottle of catalyst.
- Do not mix catalyst and resin if the temperatures will be below 35° F or above 100° F for the next 24 hours.

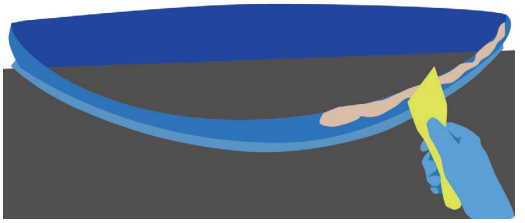
2. Mix the putty and catalyst on a separate board. Mix from the bottom up, and continue mixing until the catalyzed putty is thoroughly, uniformly mixed so that it is light brown and there are no pink streaks.

Uncatalyzed (pink)

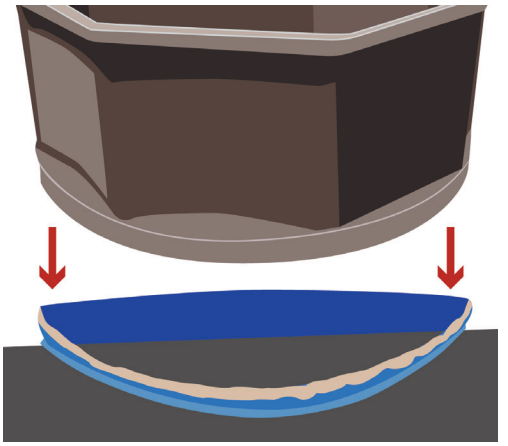
Catalyzed (light brown, no pink streaks)

Resin	Amount of catalyst for cool/overcast conditions (below 60° F)	Amount of catalyst for standard conditions (between 60-80° F)	Amount of catalyst for hot/sunny conditions (between 80-100° F)
32 oz. (1 L)			

3. Apply a bead of catalyzed putty (light brown, with no pink streaks) to the tank collar.

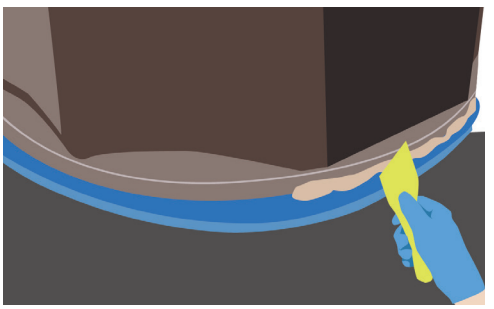


4. Press the sump base into the tank collar.

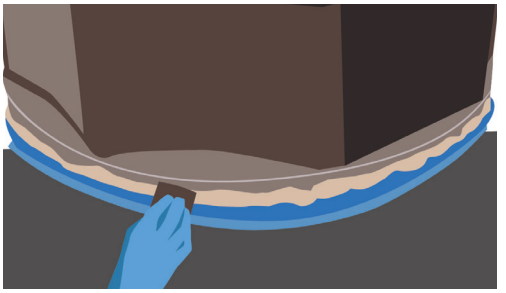


IMPORTANT: Always start applying putty on the shaded side of the sump.

5. Smoothly apply the catalyzed putty with a putty knife to the outside joint of the sump. Push putty into the joints. Fill in any open areas of the joint with catalyzed putty.



6. Create a smooth surface for the mat to bond to by using a putty knife to smooth the catalyzed putty around the joint. Make sure there are no cracks or holes in the putty. This layer is what creates the watertight bond to the sump.



7. Check the outside joint for gaps that could cause the mat not to adhere to the abraded area of the sump. Make sure there are no problem areas, crack, or holes on the inside joint.
8. Use a paint brush to lightly brush the putty seam to remove any high points.

IMPORTANT: Do not disturb the sump while the putty is hardening. Wait until the putty is completely cured.

9. Allow the putty to harden. Cure times may vary under field conditions. The table below shows the minimum hardening times for different abient temperatures. If the installation environment is under 35° F (2° C), you must put provisions in place to safely raise the environmental temperature to at least 35° F (2° C) to complete the installation.

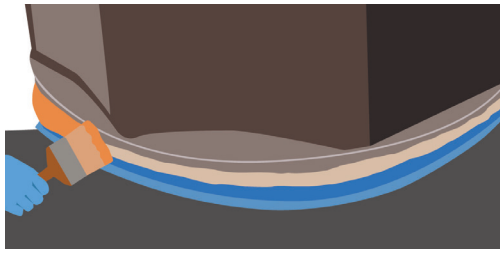
Ambient temp	Min hardening time	Ambient temp	Min hardening time
35° F (2° C)	20 hrs	70° F (21° C)	3 hrs
40° F (4° C)	14 hrs	80° F (27° C)	2 hrs
50° F (10° C)	8 hrs	90° F (32° C)	1 hrs
60° F (16° C)	5 hrs	100° F (38° C)	½ hrs

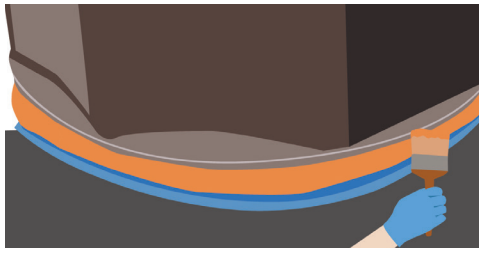
IMPORTANT: When possible, allow 24 hours for the putty to harden.

10. Make sure the collar seam joint has fully cured, and then lightly sand all previously abraded areas, dust them off, and wipe down the area with an acetone-soaked rag.
11. Before you mix the resin, cut enough 24” strips off the rolls of fiberglass mat to apply **three** layers to the collar seam joint. Preparing the mat strips in advance allows more time to work with the resin before it hardens.
12. Mix one can of catalyzed resin at a time, starting with a small amount so that the mixture does not cure before applying it.

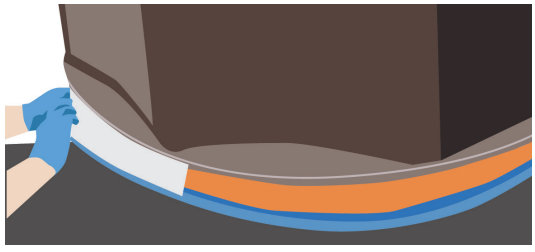
IMPORTANT: Make sure you use at least 1/2 of a bottle of catalyst with each quart of resin to help make sure the resin cures properly.

13. Use a paintbrush to generously apply catalyzed resin to the collar seam joint. Wet (apply a large amount of catalyzed resin) to the area being fiberglassed, more than large enough for the mat to lay on.





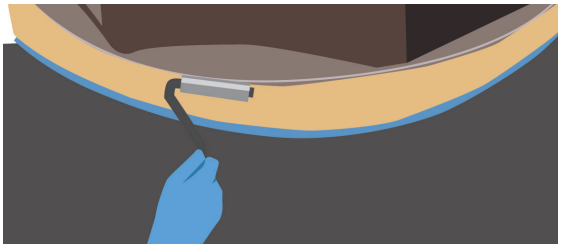
14. Apply a fiberglass mat to the area wetted out in the previous step, and saturate this layer of mat with catalyzed resin.



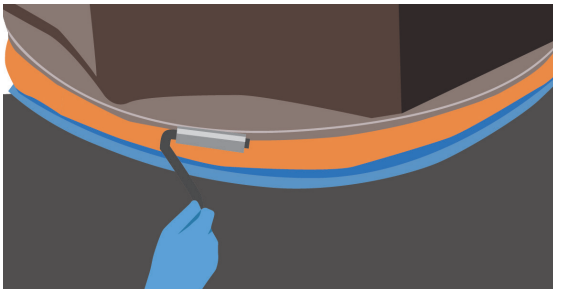
NOTE: When you use the roller to remove air bubbles, roll from the middle of the seam either upwards or downwards.

NOTE: Clean the roller with acetone and allow it to dry periodically so that it keeps rolling freely.

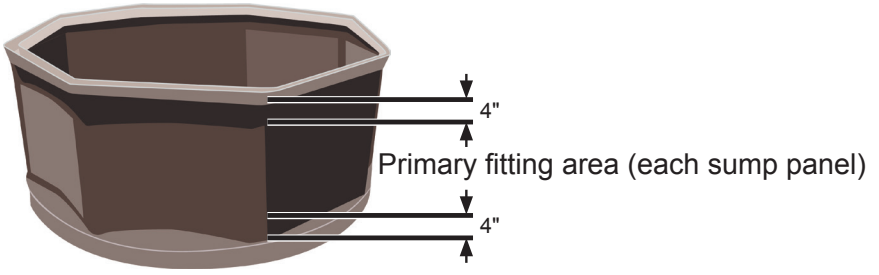
15. Use a grooved roller to roll over the mat and remove any air bubbles. Make sure there are no air bubbles in this layer because this layer is the foundation for the next layer. White areas in a mat indicate the presence of air pockets.



16. Roll over the mat vertically with the roller as many times as needed to eliminate air bubbles.
17. Repeat the previous four steps all of the way around the collar seam joint, overlapping each mat approximately 20% with the one previously applied. **Three** layers of mat need to be applied to the collar seam joint.
18. Spread extra resin across the mat. Remove any air pockets that may be caught in the resin.



3. Install entry fittings



IMPORTANT: When you install entry fittings, make sure they are in the primary fitting panel area for best results.

Install fittings according to the ***Rigid Entry Boot Installation Guide*** (FFS pt# 771-244-00). If the thickness varies by more than .06" over the area of the fitting flange, do one of the following:

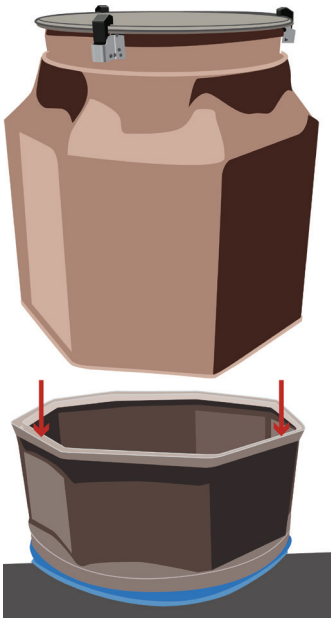
- Use coarse sandpaper (80 grit or coarser) to sand portions so that they meet minimum thickness requirements of .125".
- Build up thin areas with fiberglass mat and resin, and then sand transition areas smooth.

4. Install the sump riser

IMPORTANT: If you do not remove the sump riser lid, air could be trapped in the sump that could cause channel resin to be displaced. This can result in spillage over the channel onto the entry surface, which would require cleanup.

IMPORTANT: During the initial sump base installation, perform the hydrostatic test after you apply mat and resin to the collar and sump base. **The mat and resin must be completely cured before you perform the test!** For assistance, contact FFS Technical support at +1 800 984 6266.

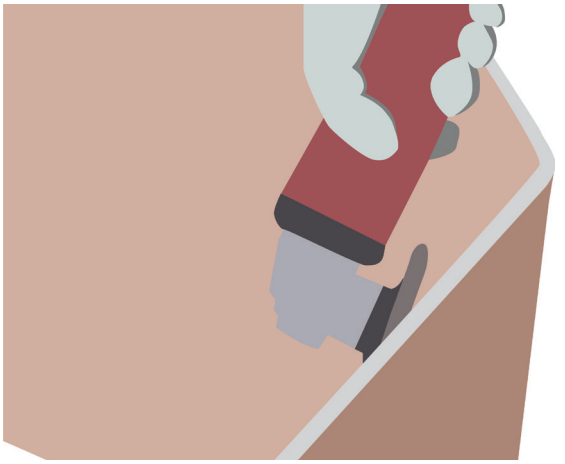
1. Perform the hydrostatic test. See the "Maintenance and Testing" chapter in this manual Follow the requirements in ***PEI/RP 1200: Recommended Practices for the Testing and Verification of Spill, Overfill, Leak Detection and Secondary Containment Equipment at UST Facilities*** to perform the hydrostatic test. FFS recommends performing the hydrostatic test on all sump joints 4" above the highest joint or penetration, whichever is higher. Contact FFS Technical support at +1 800 984 6266 if you need assistance.
2. Make sure you remove the sump riser lid
3. Dry fit all of the components together to determine the correct sump height. Level the riser before you take measurements.



IMPORTANT: You can cut off up to (but no more than) 24" from the bottom of the tank riser to your desired height. The cut must be square within a 1/4" +/- tolerance around the entire sump.

4. Cut the bottom of the sump riser so the height is correct when installed in the manway at finished grade.
5. Dry fit the riser and sump base again. Make sure that the height is appropriate and the riser is level. Make any necessary adjustments.

6. Remove the riser from the base, and then abrade, down to the glass fibers, all segments you are going to fiberglass on the tank collar and the base. Abrade the riser up to a minimum of 4 inches from the bottom of the riser, both inside and outside the sump walls.



⚠ **CAUTION**: Make sure you wear nitrile gloves and eye protection when you use acetone.

IMPORTANT: Make sure the channel is clean and dry.

NOTE: The sump channel arrives abraded, but you can abrade it again before you clean it.

7. Wipe the abraded riser areas and the U-channel of the sump base with acetone. Make sure the abraded areas and U-channel are dry and no debris is in them.

IMPORTANT: You must use the FFS slurry kit for your installation, unless prior written approval was obtained from FFS. Contact FFS Technical support at +1 800 984 6266 if you need assistance.

IMPORTANT: Have a second person help with the remainder of the installation.

IMPORTANT: For the next step, follow the Slurry Instructions provided with the Slurry Installation Kit. You must follow these instructions correctly, otherwise the installation will fail!

8. Place the riser straight down into the center of the U-channel. Do not adjust the riser position after you place it into the slurry. The sump base must be level to make sure the slurry will be distributed evenly around the entire diameter of the middle joint you will assemble. It is critical for you to follow the slurry mixing instructions exactly as described and the sand/resin mixture is mixed thoroughly. Also, it is imperative to wait a minimum of 24 hours for the slurry to harden. Otherwise, the integrity of this slurry solution may fail.

9. Use the remaining slurry mixed with catalyst to reapply or refill the slurry that was displaced from the channel wihen the fiberglass riser was installed.

IMPORTANT: During the initial sump riser installation, perform the hydrostatic test after you apply slurry to the channel joints and allow the slurry to harden. **The slurry must be completely hardened before you perform the test!** Contact FFS Technical support at +1 800 984 6266 if you need assistance.

10. Perform the hydrostatic test. See the “Maintenance and Testing” chapter in this manual.

    Follow the requirements in *PEI/RP 1200: Recommended Practices for the Testing and Verification of Spill, Overfill, Leak Detection and Secondary Containment Equipment at UST Facilities* to perform the hydrostatic test. FFS recommends performing the hydrostatic test on all sump joints 4” above the highest joint or penetration, whichever is higher. Contact FFS Technical support at +1 800 984 6266 if you need assistance.

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Maintenance and Testing

Testing sumps

Follow the requirements in *PEI/RP 1200: Recommended Practices for the Testing and Verification of Spill, Overfill, Leak Detection and Secondary Containment Equipment at UST Facilities* to perform the hydrostatic test. FFS recommends performing the hydrostatic test on all sump joints 4" above the highest joint or penetration, whichever is higher.

IMPORTANT: Follow all local, state, and federal regulations regarding testing protocols.

IMPORTANT: During the initial sump installation, perform the hydrostatic test after you apply slurry to the collar and channel joints and allow the slurry to harden. **The slurry must be completely hardened before you perform the test!** Contact FFS Technical support at +1 800 984 6266 if you need assistance.

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