Franklin Fueling Systems

Single Wall Fiberglass Sumps

Installation Guide Overview

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Inspection of Materials

Visually inspect all components for defects or damage prior to installation. If any defect or damage is found, do not use the product and contact Franklin Fueling Systems for further assistance.

Warranty Information

Please refer to the *FFS Fuel Management Systems & Product Warranty Policy* for all warranty information.

Contacting Franklin Fueling Systems (FFS)

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Introduction

This guide is meant as an installation overview for single wall underground fiberglass sumps and should be used in conjunction with the appropriate part-specific installation instructions. For complete installation and safety information, refer to the installation documentation for the equipment described in this guide and any other related equipment. To ensure your system integrity and safety, it is essential that you follow all applicable installation instructions and the federal, state, and local codes that supersede them.

Safety

To ensure your safety, take these precautions when working with fiberglass sumps:

- Wear protective goggles
- Wear a protective mask (painter's mask)
- Wear hearing protection
- Protect and avoid skin contact (wear latex gloves, boots and cover all exposed skin)
- Check with local regulations concerning confined space entry

Warning **Catalyst can combust under certain circumstances. To help prevent combustion: adequately ventilate areas when working with materials, do not use near flammable materials, keep out of direct sunlight, do not use more catalyst than required when mixing with resin and do not store rags, used mats, or material that has been used to apply catalyst.**

Warning **Acetone is flammable; refer to the manufacturer's instructions for complete safety information.**

Tools Required for Installation

- Mat, resin, putty and catalyst
- FG-SEAMKIT (one per seam recommended) - see our product catalog for ordering information
- Protective gear: safety glasses, painter's mask, latex gloves and painter's suit
- Mixing stick and mixing containers for mats, resin and putty
- Grooved roller (check that it rolls freely)
- 4" to 6" disposable paintbrush
- (2) Bondo knives – one 4" and one 6" (can be purchased locally at automotive stores)
- 4" putty knife
- Acetone
- DA sander (coarse, green core 40 grit sandpaper) or hand grinder

Cutting Sump to Length

1. Measure from the tank collar to finish grade to determine the correct height for the sump (one piece sump) or from the sump base to the finish grade (two piece sump).
2. Mark the sump for cutting (see Figure 1).
3. Cut the sump where it was marked in Step 2 with a diamond blade to ensure a straight and accurate cut.
4. **Dry fit all of the components together so that the correct height is achieved.**

Figure 1 - Marking the Sump for Cutting

Surface Preparation

1. Abrade, **down to the glass fibers**, four inch tall segments on the two components being fiberglassed together.
2. The fiberglass sump should be sanded using a power sander with coarse, green core 40 grit sandpaper (DA Sander works best). If you're going to be sanding by hand, use an abrasive medium to make a rough surface for the fiberglass to bond to.
3. Remove dust created by the abrasion process with a tack rag.
4. Wipe abraded areas with acetone because this will help the mat adhere to the abraded areas of the components that are being fiberglassed together.
5. Clean the abraded areas with acetone.

Figure 2 - Sanding the Sump

Applying Putty to Sump Joints

1. Multi-port watertight sump shields must be properly aligned to the threaded inserts of underground storage tanks (UST's) before glassing the sump joints so that the finished sump installation fits together correctly. Dry fit spill collectors with their accompanying 4" riser pipes. Temporarily assembly risers, M-1600's, spill collectors, and 13" and 8" reducer boots so that all components align correctly (see Figure 3).
2. Clear the inside and outside of the joint of debris so that the area is completely dry and clean.
3. Mixing putty and catalyst:
   a. The putty and catalyst mixing ratio is 20 mL of catalyst per one quart of fiberglass putty. Use a measuring beaker or cup to measure out the 20 mL of catalyst.
   b. For best results, ambient temperature should be above 70° F when fiberglassing. If the ambient temperature is below 70° F, cure times will be longer and the catalyst ratio must be adjusted when mixing putty with resin.
   c. When mixing putty and catalyst, always mix from the bottom up.
   d. Mix the catalyst and putty together until the catalyzed putty is thoroughly, uniformly mixed with no color streaks.
4. Smoothly apply the catalyzed putty with a 4" putty knife to the outside joint of the sump, pushing some down into the joints (see Figure 4). Fill in any open areas of the joint with catalyzed putty.
5. Create a smooth surface for the mat to bond to by using a Bondo knife to smooth the catalyzed putty around the joint (see Figure 5). Make sure that there are no cracks or holes in the putty because this layer is what creates the watertight bond to the sump.

Figure 3
Aligning Multi-Port Sump Shield

6. Allow the puttied sump to sit for at least one hour in an above 70° F environment so that the putty can harden. **Do not disturb the sump during this time, or it could become misaligned.** Lower temperatures will require longer cure times.
7. Inspect the outside joint for gaps that could cause a problem for the mat when adhering it to the abraded area of the sump. Visually inspect the inside joint to verify that there are no problem areas, cracks or holes.
8. After the joint has fully cured, lightly grind all previously abraded areas (see Figure 6), dust them off, and wipe down the area with an acetone-soaked rag.

Figure 4 - Applying Catalyzed Putty

Figure 5 - Smoothing Catalyzed Putty

Figure 6 - Grinding

Mixtures and Cure Times for Resin and Catalyst

Important Things to Know

- Resin hardens quickly, so have all setup items prepared ahead of time. Spending extra time on setup items prior to mixing the resin will help ensure that you have enough time later to work with the resin before it hardens.
- Before mixing resin, check that your roller works properly.
- For best results, ambient temperature should be above 70° F. If the ambient temperature is below 70° F, curing time will be extended (refer to the time chart for approximate cure times).

Resin/Catalyst Mixtures

Resin	Catalyst in cool or overcast conditions: 2% per weight	Catalyst in standard conditions: 1.5% per weight	Catalyst in hot or sunny conditions: 1% per weight
16 fl. oz. (1 pt.)	9 mL	7 mL	5 mL
32 fl. oz. (1 qt.)	19 mL	14 mL	9 mL

Cure Times

Ambient Temperature	Minimum Set-up Time
35 F	20 Hours
40 F	14 Hours
50 F	8 Hours
60 F	5 Hours
70 F	3 Hours
80 F	2 Hours
90 F	1 Hour
100 F	½ Hour

Cure times given are for reference purposes only, exact times may vary.

1. Cut several dozen pieces of fiberglass mats to lengths of 24". These mats will be used in the next section, but it's important to do this before mixing the resin to give yourself more time to work with the resin before it hardens.
2. Mix one pint of catalyzed resin at a time, starting with a small amount so that the mixture does not cure before applying it to the sump. *As you become more familiar with the fiberglass application, you may increase the amount to one quart.*

Note: **Do not** use less than 1% per weight of catalyst per mixture, or the resin will not fully bond to the surface of the sump and mat.

Applying Resin and Mat to Sumps

When applying mats to a sump, use three layers of fiberglass mat strips (the ones you cut in Step 1 in the *Mixtures and Cure Times for Resin and Catalyst* section) for each joint of the sumps being fiberglassed. Apply one layer of mat at a time, centering the mats on the joint being fiberglassed.

Note: Do not store mats in humid or wet environments. If a mat comes in contact with liquids or humidity, it will begin to release the chemicals that allow it to adhere to the fiberglass sump. A wet or damp mat will not adhere to a sump and should be disposed of immediately.

1. Apply catalyzed resin generously to the puttied sump joint using a disposable paintbrush that is 4" or 6" wide. Wet out (apply a large amount of catalyzed resin [to]) the area on the components being fiberglassed more than large enough for the 24" piece of mat to lay on (see Figure 7).
2. Apply a fiberglass mat to the area you wetted out in Step 1 and saturate this layer of mat with catalyzed resin (see Figures 8 and 9).

Figure 7 - Wetting Out

Figure 8 - Applying Mat

Figure 9 - Saturating with Resin

3. Using a 4-6" grooved roller, roll over the layer of fiberglass mat and remove any air bubbles. Make sure that air bubbles are not present in this layer because this layer is the foundation for the next layer. White areas in a mat indicate the presence of air pockets.

4. Roll over the mat horizontally and vertically with the roller as many times as needed to eliminate air bubbles (see Figure 10).
5. Repeat Steps 1 through 4 all of the way around the sump, overlapping each mat with the one previously applied (see Figure 11). Three layers of mat need to be applied to each sump joint.

Note: Resin will soak through the first layer, so don't apply as much resin to the second and third layers as on the first.

Note: Clean the roller with acetone periodically so that it keeps rolling freely.

6. Finalize the mat install by spreading some extra resin across the mat. Again, remove any air pockets that may be caught in the resin.
7. Please refer to the Cure Times chart for approximate cure times. While you wait for mats to cure, work on other sumps.

Figure 10 - Removing Air Bubbles

TFA or Manway Adapter Installations

1. Determine the location of the tank fitting adapter(s) (or manway adapter) and mount the tank sump to the adapter. See the *Tank Fitting Adapter Installation Instructions* (p/n 771-109-00) and *Manway Installation Instructions* (p/n 771-239-00) for further information.

Note: To reduce stress on tank sumps (specifically in installations with high water tables), FFS recommends installing two Tank Fitting Adapters (TFAs) if two bungs are available.

2. Be sure to properly support the tank sump with approved backfill below and around the sump.

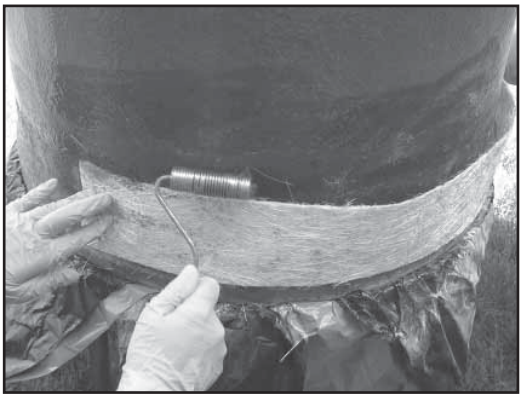

Figure 11 - Applying 2nd Layer

Gel Coat Application

Tools

- NIOSH approved respirator
- Disposable paint brush or roller
- Disposable bucket for mixing
- Mixing sticks
- Gel Coat LHM-2900 Low Hap White HydroShield Lite NPG/ISO Marine Gel Coat (available from HK Research). Check this link for local distributor information: www.hkresearch.com/distributor_list.php.
- Catalyst
- Tacky rags
- Acetone to clean and prepare surface

Safety Considerations

- The white gel coat contain styrene monomer, which is a flammable liquid. Keep away from sparks, heat and open flame.
- Styrene vapors are heavier than air. Use adequate ventilation or suction fans to remove vapors.
- Both the polyester gel coat and the catalyst may cause burns to eyes and skin. Do not get in the eyes!
- Avoid breathing vapors! Gel coat applicators should wear a NIOSH approved respirator effective for vapors, spray mist and dust. In case of accidental contact, remove the contaminated clothing and wash affected skin areas with soap and copious quantities of water. Contact a physician if persistent skin irritation occurs. For eyes, immediately flush with plenty of water for at least 15 minutes; call a physician immediately. Wash contaminated clothing before reusing.

Note: Do not mix material continuously or its thixotropic properties may be lost. If the gel coat is inadvertently over-mixed, hold material for four hours without agitation before application.

Mixing

- It is suggested that the catalyst concentration used in the application of the “LHM” series NPG-ISO White Gel Coats not exceed 3.0% or fall below 1.5% to retain maximum properties.
- The recommended range for the catalyst concentration within the applied film is 1.8 to 2.2% at 77° F.
- Recommended catalysts are NORAC MEKP-9, Superox 46-702 and Cadox L-50a. Call HK’s Lab for other recommendations.

Application

1. Use sandpaper to rough up the surface and remove the shiny surface of the existing gel coat layer.
2. Use a tacky rag to remove dust on the surface to be gel coated.
3. Clean area with acetone and let dry.
4. After mixing resin and catalyst, apply it using a disposable brush or roller. Coat the area thoroughly and allow the gel coat to set. The time required for the gel coat to set is dependent upon the temperature and the percent of catalyst mixed into resin.
5. Inspect the area for full coverage. Paint on additional coats to ensure full coverage.

Finishing

1. After the fiberglass has cured, lightly sand the area (preferably by hand using coarse, green core 40 – 60 grit sandpaper) to remove all excess fiberglass material.
2. Dust the sump clean.

Clean-Up

Bondo knives, putty knifes, grooved rollers and other reusable items can be cleaned with acetone and a cloth rag.

Warning **Take care when disposing of these clean-up items because they are highly flammable.**

Storage Limitations of Catalyst, Resin and Mat

- Do not store mat in a humid or wet environment. If mat comes in contact with humidity or liquid it will begin to release the chemicals that allow it to adhere to the fiberglass sump. A wet or damp mat will not adhere to a sump and should be disposed immediately.
- Three months after manufacture at 73° F or below in a factory-sealed container.
- Keep out of direct sunlight.

Warning **Catalyst can combust under certain circumstances. To help prevent combustion: do not store rags, used mats, or material that has been used to apply catalyst; adequately ventilate areas when working with materials; do not use near flammable materials; keep out of direct sunlight and do not use more catalyst than required when mixing with resin.**

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