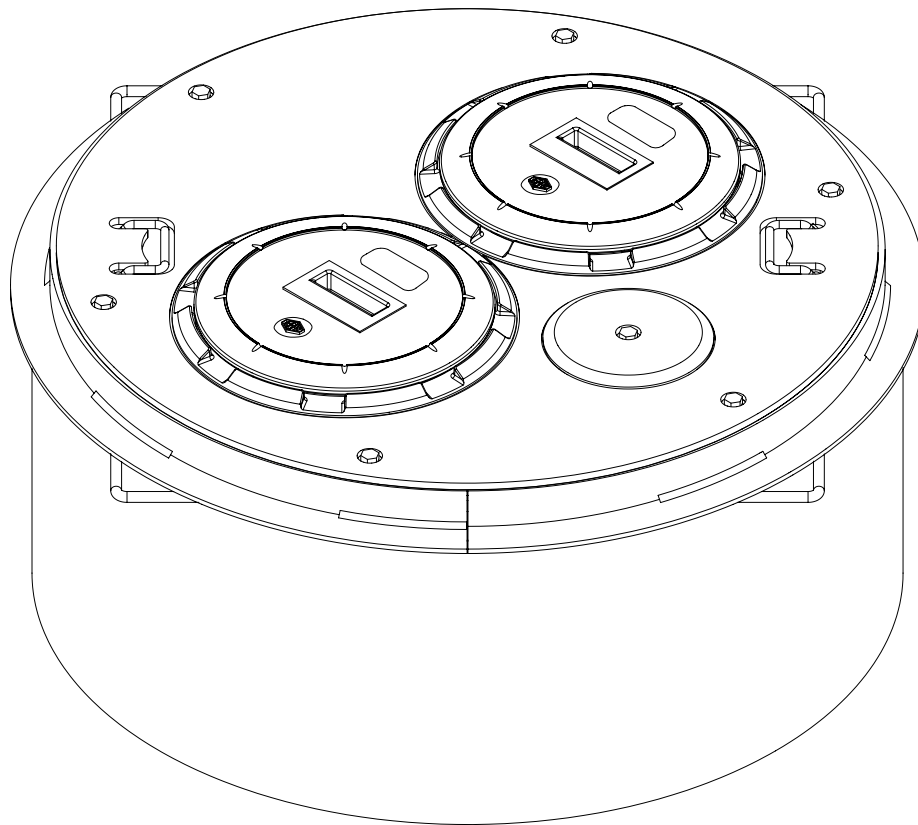


# **Multiport Spill Containment with Defender™ Spill Containers**

## **New Installation Guide Overview**



# Contents

<b>Notice</b> .....	<b>ii</b>
<b>Introduction</b> .....	<b>1</b>
Multiport Safety.....	1
Tools Required for Installation .....	1
Guidelines for a Successful Installation .....	1
Fiberglass Safety .....	1
Fiberglass Tools Required for Installation .....	1
<b>Installation Overview</b> .....	<b>2</b>
<b>Riser Installation</b> .....	<b>3</b>
<b>FFS Fiberglass Multiport Containment Sumps and Water Tight Sump Shield Installation</b> .....	<b>4</b>
<b>Fiberglass Application</b> .....	<b>4</b>
<b>FFS Multiport Containment Sump</b> .....	<b>4</b>
Mixtures and Cure Times for Resin and Catalyst .....	5
Applying Resin and Mat to Sumps.....	5
Fiberglassing Watertight Sump Shield.....	6
Gel Coat Application .....	6
<b>Installing Spill Bucket and Skirt</b> .....	<b>7</b>
<b>Install Cover and Concrete</b> .....	<b>7</b>
<b>Swivel Adapter/Drop Tube Installation</b> .....	<b>8</b>

---

## Notice

Franklin Fueling Systems (FFS) strives to produce the finest manual possible and to ensure that the information that it contains is complete and accurate. However, FFS reserves the rights to change this document and specifications at any time without notice. FFS makes no expressed or implied warranty with regard to the contents of this manual. FFS assumes no liability for errors, omissions or for any damages, direct or consequential, that may result from the use of this document or the equipment that it describes.

## 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)

Please feel free to contact us by mail at:

Franklin Fueling Systems  
3760 Marsh Rd.  
Madison, WI 53718 USA

Or contact us by phone, fax or e-mail:

**Tel:** +1 800 225 9787

**E-mail:** [sales@franklinfueling.com](mailto:sales@franklinfueling.com)

**Fax:** +1 608 838 6433

[techserve@franklinfueling.com](mailto:techserve@franklinfueling.com)

**Office and Sales Hours:** 8 A.M. to 5 P.M. CST - Monday through Friday

**Technical Support Hours:** 7 A.M. to 7 P.M. CST - Monday through Friday

Please visit our website at [www.franklinfueling.com](http://www.franklinfueling.com)

# Introduction

This guide is meant as an installation overview for multiport spill container manways, single wall underground fiberglass sumps and water-tight sump shields. This should be used in conjunction with the appropriate part-specific installation instructions. 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.

## Multiport Safety

To ensure your safety, take these precautions when installing multiport spill containment devices:

- Wear steel-toed boots
- Wear work gloves
- Wear eye protection

## Tools Required for Installation

- Silicone spray or Silicone O-Ring Lubricant
- Ratchet and 3/4" socket
- T-7001 T-handle wrench and T-7102 Orange Tool
- T-7106 Installation Tool for the Defender™ Spill Bucket
- T-7107 Vacuum Test Kit (Double-Wall Only)
- Tape measure
- Pipe thread sealant approved for gasoline
- Torque Wrench, 0 to 200 Ft. Lbs with 1/2" drive


## Guidelines for a Successful Installation

- **Do not** alter the installation in any way.
- **Do not** install any material between the multiport containment skirt and concrete.
- **Do not** get debris in the D-Ring gasket channel. Failure to maintain this surface may cause improper seating of the steel diamond-plate cover.
- **Do not** Compromise the integrity of anchor points on the Skirt Ring Assembly.
- **Do not** place fingers or toes under multiport cover while installing.
- **Do** make sure the multiport fill and vapor risers are 16" center-to-center. The M-1600 riser support is used to hold the risers at the proper distance.
- **Do** tighten the cover cam-locks in a star pattern.
- **Do** allow concrete to encircle the multiport skirt.

## Fiberglass 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

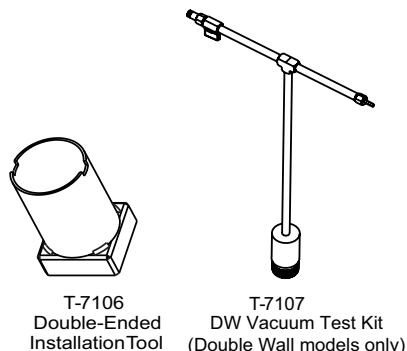
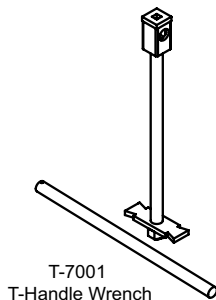
**Warning**  Catalyst can combust under certain circumstances. To help prevent combustion:

- Ventilate working area
- Do not use near flammable materials
- Keep out of direct sunlight
- Do not use more catalyst than required
- 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.**

## Fiberglass 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) plastic resin spreaders – one 4" and one 6" (can be purchased locally at automotive stores)
- 4" putty knife
- Acetone
- DA (Dual Action) sander (coarse, green core 40 grit sandpaper) or hand grinder



**Tool Needed for Defender™ Spill Bucket**

# Installation Overview

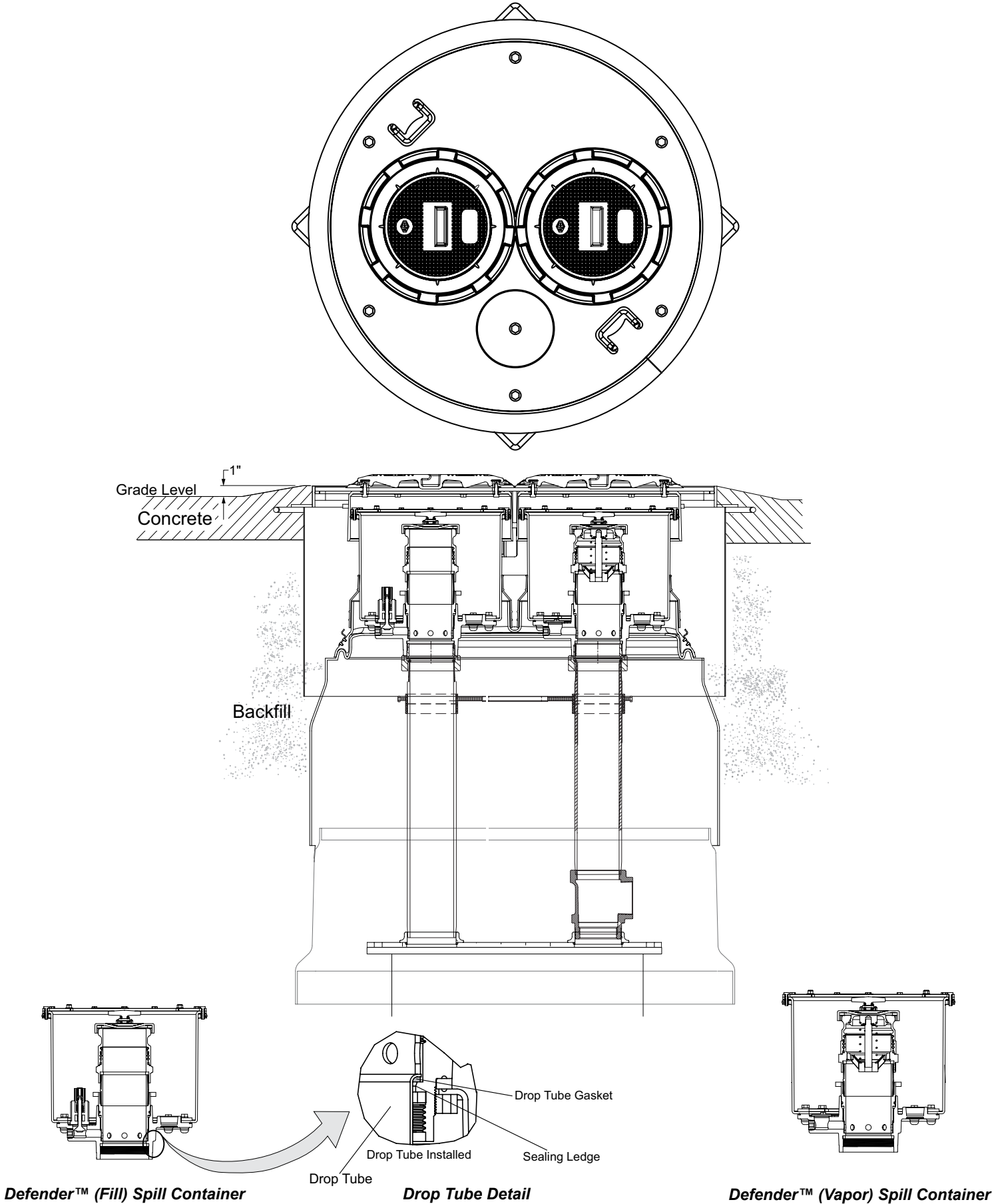
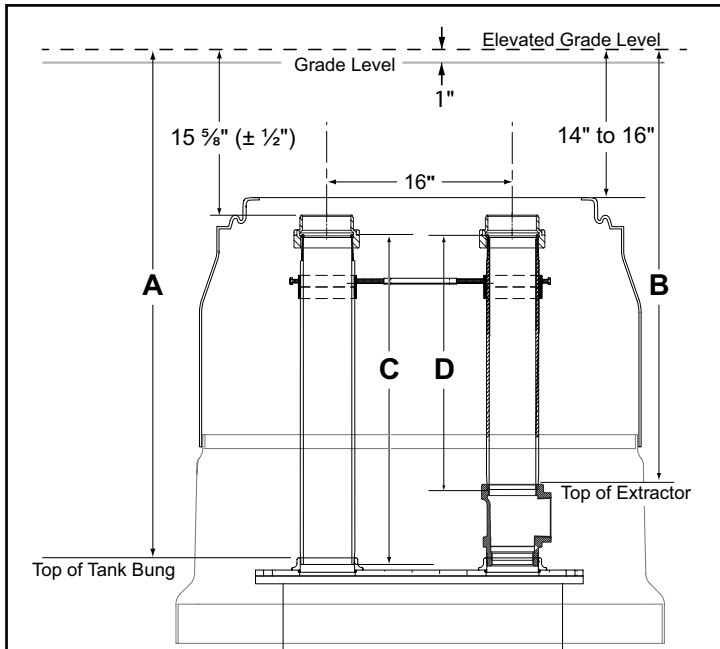


Figure 1: Installation Overview

# Riser Installation



**Figure 2: Installation Using M/F 4x4 Riser Adapters NPSM (Straight Thread) Buckets**

## Riser Dimensions

Fill Riser (C) = A - 17 3/8 = \_\_\_\_\_ (+/- 1/2")

Vapor Riser (D) = B - 17 3/8 = \_\_\_\_\_ (+/- 1/2")

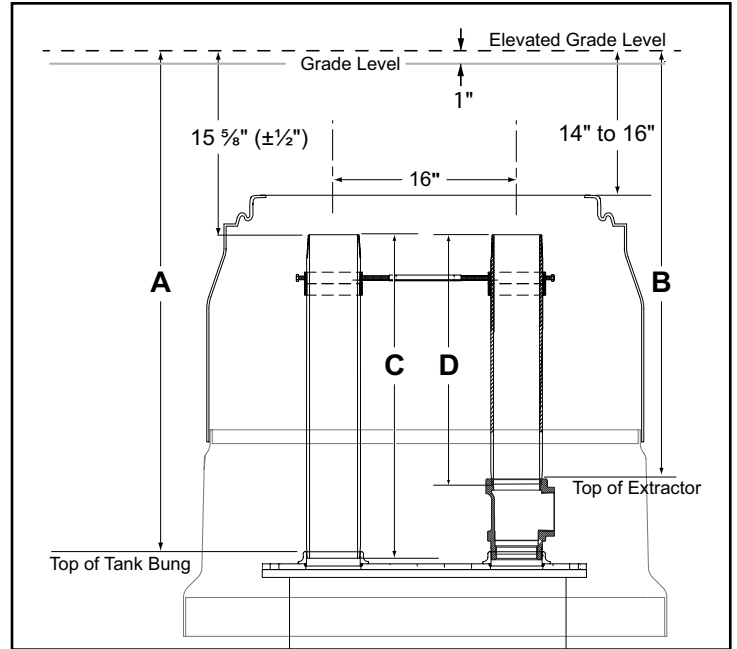
## Install Risers

1. Cut tank risers to length. Measurements include adding 1" slope above the grade line (Figures 2 or 3). If a different slope is used, adjust accordingly.
2. Install risers using thread sealant.
3. Install the M-1600 riser alignment bracket. This bracket ensures the proper 16" spacing between centers. This device is designed to provide no more than one inch adjustment of riser pipe spacing. The 16" spacing (Figure 4) is critical for having the manhole covers seat properly.
4. Install the M/F 4x4 adapters if applicable (Figure 5) using pipe sealant on the threads. Torque the adapter to 175-200 Ft-lbs using the T-7102 orange tool and a torque wrench.



**Figure 4: Confirming Distance**

Confirm the 16" spacing before proceeding.



**Figure 3: Installation without M/F 4x4 riser Adapters NPT (Taper Thread) Buckets**

## Riser Dimensions

Fill Riser (C) = A - 15 5/8 = \_\_\_\_\_ (+/- 1/2")

Vapor Riser (D) = B - 15 5/8 = \_\_\_\_\_ (+/- 1/2")

5. Re-check the height from grade to the top of the tank riser (or top of the M/F 4x4 adapter). This distance should be approximately 14 5/8" and must be between 13 5/8" and 15 7/8". (If measuring to the elevated grade, This distance should be approximately 15 5/8" and must be between 14 3/8" and 16 7/8").



**Figure 5: M/F 4x4 Adapters Fitted**

## Installing Fiberglass Riser

1. Dry fit the fiberglass riser onto the fiberglass sump to obtain proper height.
2. Cut the riser to length
  - a. If installing without a sump shield, cut the fiberglass riser/collar so it is at least 2" above the top of the tank riser or M/F 4x4 riser adapter.
  - b. If installing with an FFS water-tight sump shield, cut the fiberglass riser so the top edge is approximately 14" from grade (13" to 15").

# FFS Fiberglass Multiport Containment Sumps and Water Tight Sump Shield Installation

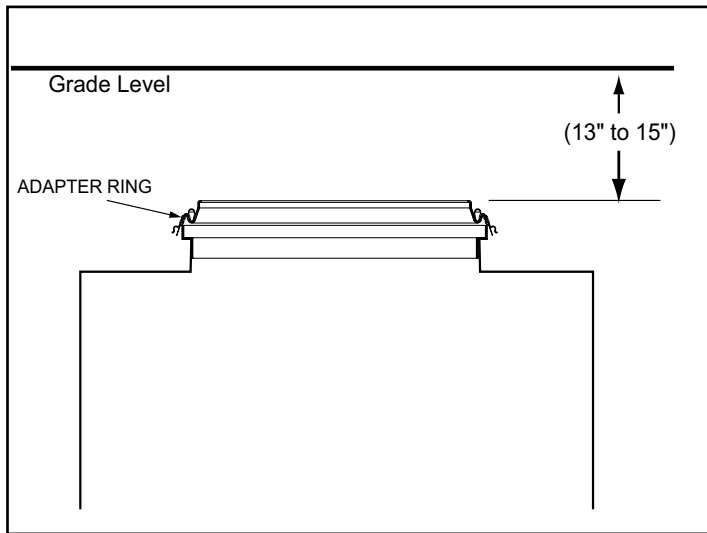


Figure 6: Dry-Fit Non-FFS Sump

## Fiberglass Application

### FFS Multiport Containment Sump

#### 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 (Dual Action 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. Use a tack rag to remove dust.
4. Wipe abraded areas with acetone to help the mat adhere to the abraded areas.
5. Test fit the sump shield and spill buckets (hand-tight) to keep the fiberglass riser aligned while adhering to the fiberglass sump base (Figure 7).

#### Applying Putty to Sump Joints

1. Clear the inside and outside of the joint of debris so that the area is completely dry and clean.
2. 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.

3. Smoothly apply the catalyzed putty with a 4" putty knife to the outside joint of the sump, pushing some down into the joints. Fill in any open areas of the joint with catalyzed putty.
4. Create a smooth surface for the mat to bond to by using a plastic resin spreader to smooth the catalyzed putty around the joint. 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 7: Aligning Multi-Port Sump Shield

5. 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.
6. 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.
7. After the joint has fully cured, lightly sand all previously abraded areas, dust them off, and wipe down the area with an acetone-soaked rag.



Figure 8: Applying Putty and Catalyst

## 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:	Catalyst in standard conditions:	Catalyst in hot or sunny conditions:
	2% per weight	1.5% per weight	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

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

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

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 and overlapping 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 (Figure 9).



**Figure 9: Apply Resin**

2. Apply a fiberglass mat to the area wetted out in Step 1 and saturate this layer of mat with catalyzed 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 (Figure 10).



**Figure 10: Remove Air Bubbles on Containment Sump**

5. Repeat Steps 1 through 4 all of the way around the sump, overlapping each mat with the one previously applied. Three layers of mat need to be applied to each sump joint.

**Note:** Resin will soak through the first layer: 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. Refer to the Cure Times chart for approximate cure times.

## Fiberglassing Watertight Sump Shield



Figure 11: MSC-XS36 Series Watertight sump Shields



Figure 12: MSC-42 and 48 Series Watertight Sump Shield

**Note:** Apply fiberglass to both the inside and outside of the watertight sump shield.

### 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](http://www.hkresearch.com/distributor_list.php).
- Catalyst
- Tacky rags
- Acetone to clean and prepare surface

#### Safety Considerations

- The white gel coat contains 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 (Certain gels become more fluid when over-stirred). If the gel coat is inadvertently over-mixed, hold material for four hours without agitation before application.

#### Mixing

- The catalyst concentration used in the application of the “LHM” series NPG-ISO White Gel Coats should 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

Putty knives, grooved rollers

**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.



## Installing Spill Bucket and Skirt

1. Remove hand-tight spill buckets from the tank risers.
2. Install the reducer boots and band clamps onto the spill bucket (if applicable).
3. Reinstall the spill buckets onto tank risers.
  - a. If using NPSM (straight threads) buckets, apply grease or anti-sieze compound onto the threads of the M/F 4x4. Torque buckets to 75-100 Ft Lbs using the T-7106 tool.
  - b. If using NPT (taper thread) buckets, apply a non-hardening pipe thread sealant to the tank riser threads. Tighten bucket using the T-7106 tool.
4. Adjust reducer boots onto the water-tight sump shield and tighten band clamps (If applicable).
5. Backfill around the multiport sump until approximately 18" from grade level (Figure 13).

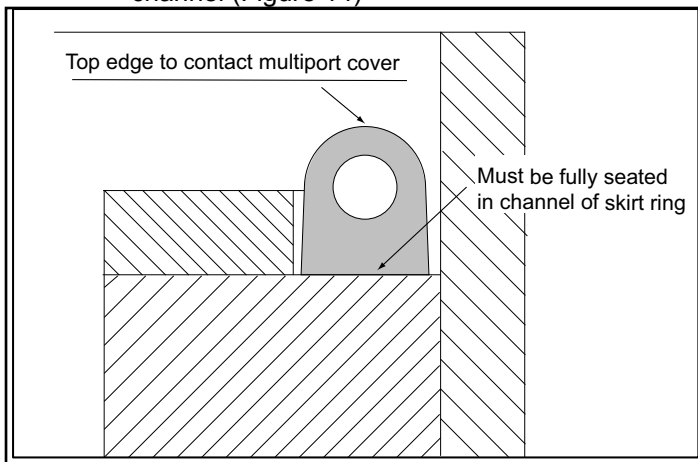


**Figure 13: Sump backfilled**

6. Place skirt ring (without manhole cover) around the multiport sump.

## Install Cover and Concrete

1. Before installing the multiport cover make sure the:
  - a. D-ring gasket is free of dirt and debris, the round edge is facing up, and it is fully seated in the skirt channel (Figure 14)



**Figure 14: D-Ring Gasket Cross Section**

- b. Cam locks are fully open with the long edge against the stop (Figure 15)



**Figure 15: Cam Lock Open**

2. Lubricate the inside of the spill bucket sleeves (on the manhole cover) with silicone spray or silicone O-ring lubricant.
3. Carefully install the cover over the spill buckets and let it rest on top of the spill buckets (Figure 16).



**Figure 16: Installing Diamond Plate Cover**

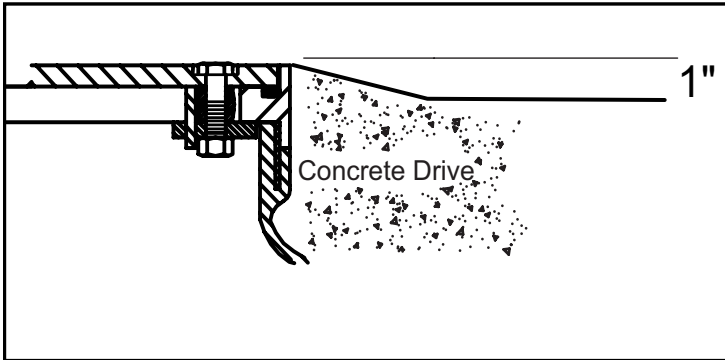
4. Raise the skirt ring up to the manhole cover and tighten cam-locks. This will center the skirt ring to the spill containers.
5. Seat the cover inside the skirt ring & against the d-ring gasket as much as possible before tightening the cam locks. This will ensure the cam swings underneath the cam ring (Figure 17) and draws the cover downward to fully seat against the d-ring gasket.



**Figure 17: Cam Lock Closed and Engaged**

6. To secure the manhole cover, tighten down the (6) cam-locks in a star/crossing pattern.

4. Pour the rest of the backfill around the skirt ring until the concrete depth is achieved.
5. Perform final height adjustment of the manhole cover to elevated grade (approximately 1" above grade for proper run-off as in Figure 18). Make sure backfill supports the assembly so it doesn't move during the concrete pouring.

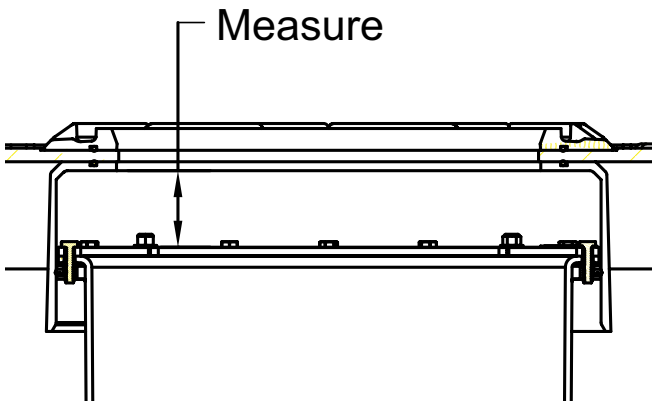


**Figure 18: Concrete Slope from Cover**

**Important!** Double-check the distance between the top of the spill bucket to the underside of the sleeve. This dimension must be between  $\frac{3}{4}$ " and  $3 \frac{3}{8}$ ".

6. Finish Concrete.

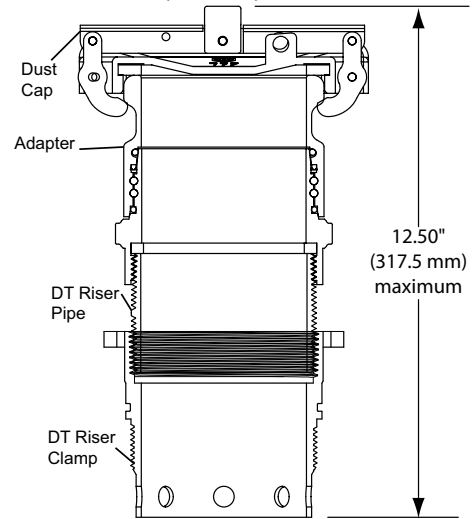
**Important!** Double check the distance between the top of the spill bucket to the underside of the sleeve. This dimension must be between ( $\frac{3}{4}$ " –  $3 \frac{3}{8}$ ").



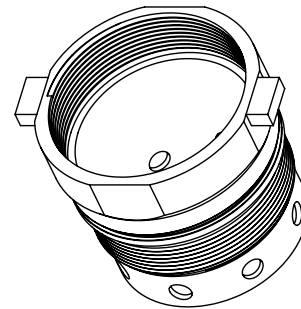
**Figure 19: Measure Clearance**

## Swivel Adapter/Drop Tube Installation

1. Remove the DT riser clamp assembly (Figures 20 and 21) using the notched end of the double-ended installation tool (T-7106).
2. Install swivel fill/vapor adapter using a close nipple and pipe thread sealant to the end threading into the DT riser clamp. Torque to 50-75 ft lbs.
3. Insert the drop tube/overflow prevention valve assembly & gasket into the bucket (if applicable).
  - a. If the tank riser length was changed, a retrofit M/F 4x4 was installed, or if the drop tube was previously installed underneath the swivel adapter – a new upper drop tube will need to be cut to the appropriate length.
4. Install the DT riser clamp assembly and torque to 50-75 ft-lbs using the notched end of the double-ended installation tool (T-7106).



**Figure 20: Drop Tube (DT) Riser Clamp Assembly Dimensions**



**Figure 21: Drop Tube Riser Clamp**

Page intentionally Blank



**Franklin Fueling Systems**

[www.franklinfueling.com](http://www.franklinfueling.com)

3760 Marsh Road • Madison, WI 53718, U.S.A.

Tel: +1 608 838 8786 • Fax: +1 608 838 6433

Tel: USA & Canada 1 800 225 9787 • Tel: México 001 800 738 7610

**Franklin Fueling Systems GmbH**

Rudolf-Diesel-Strasse 20 • 54516 Wittlich, GERMANY

Tel: +49-6571-105-380 • Fax: +49-6571-105-510