

MANHOLE CONE & PIPING HAND LAYUP KIT (KIT MH) INSTRUCTIONS

1. INTRODUCTION

- 1.1. Read, understand and follow these instructions.
- 1.2. This document is supplemental to the Manhole Installation Instructions (MAN 4033). Refer to the Manhole Installation Instructions for anything not explicitly covered in this publication.
- 1.3. This layup procedure is exclusively for the field attachment of manhole cones and stub out piping or cylinder height adjustments. It is neither intended nor approved to be used as a repair kit. Repairs should be performed by CSI trained personnel. Unauthorized repairs may void the product warranty.
- 1.4. The number of kits required for a field layup procedure depends on the manhole diameter. Contact your sales representative before ordering layup kits (KIT MH).

2. SAFETY

- 2.1. These instructions should not be interpreted in any way to put one's health at risk, or to harm property and/or the environment.
- 2.2. Keep this manual available at the installation site and refer to safety procedures as needed.
- 2.3. The following definitions will serve as a guide when reading this manual:

⚠ WARNING

Indicates a potentially hazardous situation, which if not avoided could result in death or serious injury.

⚠ CAUTION

Indicates a potentially hazardous situation, which if not avoided may result in minor or moderate injury.

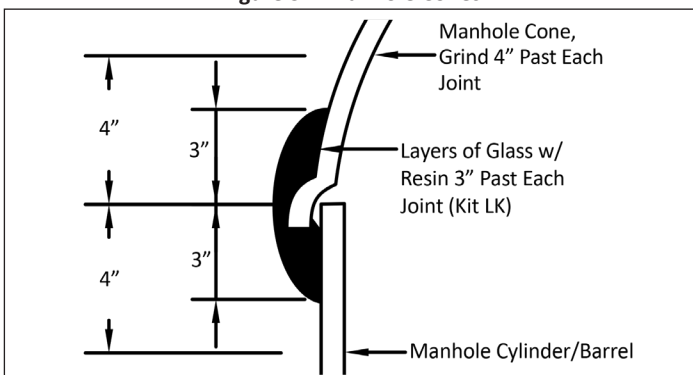
NOTICE

Indicates a potentially hazardous situation, which if not avoided may result in property damage.

3. HANDLING & PREPARATION

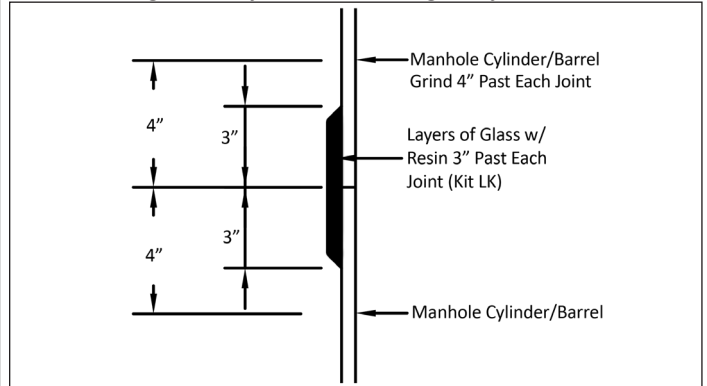
- 3.1. Visually inspect the manhole components for shipping damage. If damage is found, contact CSI.
- 3.2. Wear gloves.
- 3.3. Do not roll, drop, or bounce manhole components.
- 3.4. The contractor is responsible for protecting the manhole prior to installation to prevent damage.
- 3.5. This kit may be used for:
 - 3.5.1. Attaching a manhole cone to a manhole cylinder (barrel) in the field (see Figure 3-1).

Figure 3-1 Manhole Cones



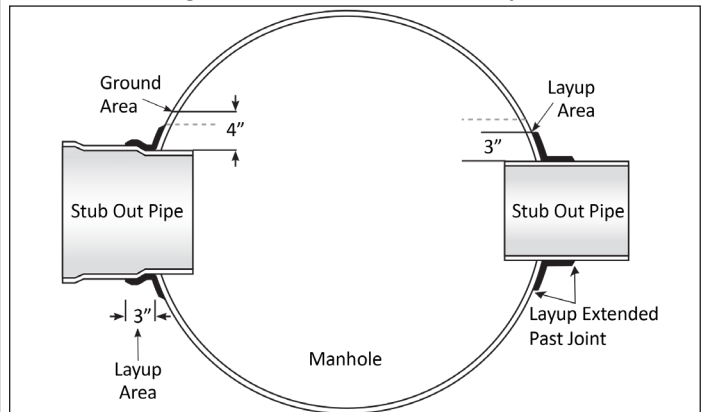
- 3.5.2. Modifying the cylinder height by means of a butt joint (see Figure 3-2).

Figure 3-2 Cylinder/Barrel Height Adjustment



- 3.5.3. Installing an inlet or outlet stub out pipe in a manhole (see Figure 3-3).

Figure 3-3 Inlet/Outlet Stub Out Pipes



- 3.6. Kit Contents: This kit is designed for Hand Layup Joints.

- 3.6.1. 48" Manhole Contains (1) Box.
- 3.6.2. 60" Manhole Contains (2) Boxes.

Layup Kit Box Contents

Items	Size	Qty.
Rubber Gloves	X-Large	2
Roller	3/4" x 3"	1
Felt Roller Handle	3"	1
Felt Roller Pad	3"	4
Chopped Strand Fiberglass Mat	6"W x 33"L	25
Wooden Mixing Stick		1
Mix Instruction Sheet (INST 6032)		1
SDS for Resin (ACC 5015)		1
SDS for Catalyst (Cadox L-50A VR)		1
Resin (Part A)	1 gal	1
Catalyst (Part B)	5 gm tubes	15

4. DRY FIT INSTRUCTIONS

- 4.1. Dry fit all components prior to sealing layup joints.
- 4.2. FOLLOW ALL STEPS:
 - 4.2.1. Position the manhole cone or inlet pipe in the manhole system.
 - 4.2.1.1. For manhole cones: Position manhole cone on top of manhole pipe. Fit is easily accomplished by a lip on the manhole cone designed to fit a manhole pipe exterior.
 - 4.2.1.2. For inlet/outlet piping: Measure to ensure proper alignment of pipe. Secure position of pipe on manhole interior with tape if necessary.
 - 4.2.2. Using a contractor supplied 40-grit grinding disk, grind a minimum of 4" onto each part where the layup will be applied, then wipe free of dust with a clean cloth.
 - 4.2.2.1. Ensure mating surfaces are free of contaminants.
 - 4.2.2.2. Do not use oil-based solvents, soap, or water to clean surfaces.
 - 4.2.3. Confirm that mating surfaces on the exterior of the manhole cylinder and manhole cone or stub out pipe are dry and clean before applying hand layups.

5. HAND LAYUP INSTRUCTIONS

⚠ WARNING

To prevent fire or explosion hazard, Containment Solutions recommends air driven tools whenever possible. Do not use electrical power tools where flammable vapors or liquids exist. Also, when electric hand tools are used, be aware of potential shock hazards. Wear protective clothing and eye protection. Manholes & Wetwells may be a confined space. Follow proper safety procedures.



ASPHYXIATION



FIRE



EXPLOSION

⚠ WARNING

Always wear protective goggles and gloves when mixing and applying adhesive and resin. The liquid materials are flammable. Keep adhesive and resin away from sparks and ignition sources.

- 5.1. TEMPERATURE CONSIDERATIONS:
 - 5.1.1. Recommended method for supplemental heat is to transfer warm air to the manhole while keeping ignition sources away.
 - 5.1.2. **Cool Weather (less than 60°F):**
 - 5.1.2.1. Preheat the resin or adhesive to 60-75°F.
 - 5.1.2.2. Before adhesive or layup is applied, add supplemental heat. Apply heat to keep joint surfaces over 60°F.
 - 5.1.2.3. After adhesive or layup is applied, continue to apply supplemental heat until it hardens (30 minutes minimum).

- 5.1.3. **Warm Weather (between 61°F and 85°F):**

- 5.1.3.1. Adhesive or hand layup will harden in approximately 30 minutes.
- 5.1.3.2. No supplemental heat required.

- 5.1.4. **Hot Weather (above 85°F):**

- 5.1.4.1. Apply adhesive or layup more rapidly (adhesive and resin may harden in less than 10 minutes).
- 5.1.4.2. To increase working time, cool the adhesive or resin to 60°F to slow down chemical reaction.

- 5.2. FOLLOW ALL STEPS:

- 5.2.1. Thoroughly mix resin and catalyst following the mixing instructions included in the layup kit.
NOTE: After mixing resin and catalyst, you will have no more than 20 minutes to complete the application before the adhesive begins to harden.
- 5.2.2. Resin coat the sanded/ground mating surfaces on manhole, piping, and/or cone with felt roller.
- 5.2.3. Apply 3 layers of glass layup, saturated with resin, 360° around piping or cone, centered on joint. All layup joints must overlap a minimum of 1" but not exceed 2" in circumferential direction.
- 5.2.4. Using the ribbed roller supplied in the kit, hand roll over entire surface of applied layup, working air bubbles, entrapped air bubbles, or entrapped air from under the fiberglass mat.
- 5.2.5. Continue the above sequence until all of the layers of fiberglass material in the kit are used. A minimum of five (5) layers of fiberglass mat must be applied around the exterior of any inlet or outlet pipe up to 18" diameter. For pipe diameters larger than 18", contact CSI, additional kits and material may be required for proper installation.
- 5.2.6. Allow layup to cure at least 24 hours without moving the joined parts. The surface of the layup should be hard.