

# 2088 EPOXY ADHESIVE 225 psig REPAIR & MAINTENANCE KIT

Maximum Application Temperature 200°F Higher pressure overwraps available upon request.

## Precautions

NOV Fiber Glass Systems **DOES NOT** recommend testing any installation with air or gas because of the safety hazards created.

Wear gloves and eye protection. Avoid contact with the adhesive and hardener, since they are capable of causing skin and eye irritation. If contact is made, flush with water and wash with soap and water.

Avoid inhaling fumes. Work in a well ventilated area.

When adhesive is allowed to set up (harden) in the metal container, the container may reach approximately 400°F. Do not handle hot containers without heavy gloves. This exothermic reaction will generate a heavy, dense, foul-smelling smoke; therefore, the container should be placed outdoors in an open area until it cools. Avoid inhaling smoke.

Solvent containers may be under pressure. Use caution when removing inner seals, especially in warm weather. Use eye protection. Concentrated vapors can be ignited. When using solvent, do not smoke or use near an open flame. Use with adequate ventilation. Refer to the warning label on each container for additional information.

## 2088 Maintenance Kit Contents

Description	Quantity
8.5 oz. Can 2069 Base Adhesive .....	5
8069 Filler Kits.....	2
Container Hardener.....	5
2" Paint Brush .....	4
Glass Cloth.....	8 in. x 7.5 yds.
Paper Towels.....	Approx. 25
Stir Sticks .....	4
Sandpaper.....	1 pc.
Disposable Gloves .....	4 pr.
Instruction Sheet .....	1

Description: 2088 adhesive repair and maintenance kit is an ambient temperature cure epoxy adhesive system. When properly mixed, the working or "pot" life is approximately 25 minutes at 75°F.

## Introduction

If a joint leaks because of improper installation, you can repair it by overwrapping with glass cloth and resin. **Note:** There must not be any pressure on the line or any fluid leaking from the joint when performing this procedure. The surface must be clean and dry.

In cool weather, the work area may have to be covered and heated to ensure a good overwrap (movable tent or other portable structure can be constructed with space heaters, etc.). The temperature in the work area should be 75°-90° F with uniform heating. Hot and/or cold sections of overwrap can overheat and/or sag. The overwrap must also be protected from the sun, which will produce a temperature differential from the top side to the bottom side.

## Preparation of Surface

1. Use a grinder or sander with coarse sandpaper (40 grit or less) to remove gloss five inches on either side of the joint (see Fig. 1).

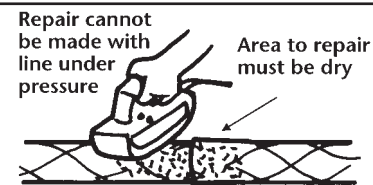


Figure 1

2. Bevel the shoulder of the bell with the grinder to blend it in with the pipe wall, i.e. there must be a smooth slope from the raised coupling, pipe bell end, or fitting to the pipe wall (see Fig. 2). In cases where it is not practical to do this much grinding, you can make a smooth transition between the two diameters by using one can of 8069 adhesive and two 8069 filler kits as a putty. This putty can be applied at the edge of the bell to form a slope which removes the step between the coupling, pipe bell end, or fitting and the pipe. The length (distance along the axis) of this putty compound should be held to a minimum, because the putty has limited pressure capabilities and is used only to ensure that the glass cloth is not laid over a sharp break in contour. Usually, 3/4" of tapered putty slope is sufficient.

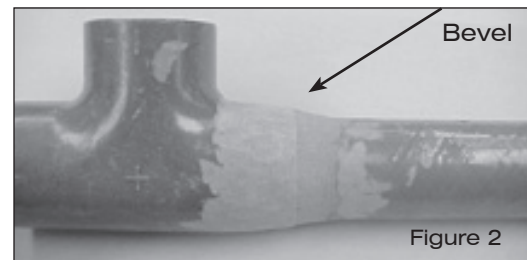


Figure 2

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

2700 West 65th Street  
Little Rock, Arkansas 72209  
Phone: 1 (501) 568-4010

25 S. Main Street  
Sand Springs, Oklahoma 74063  
1 (918) 245-6651

**NOV Fiber Glass Systems**

# 2088 EPOXY ADHESIVE 225 psig REPAIR & MAINTENANCE KIT

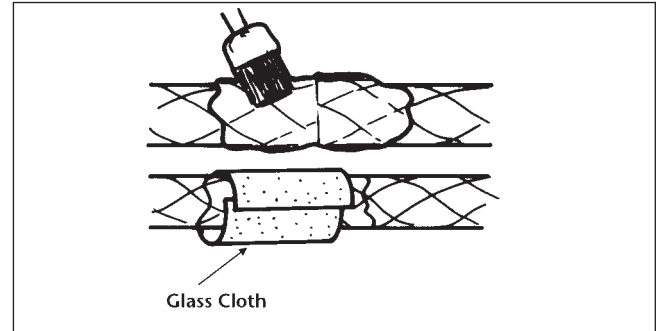
- For pipe to pipe joints butt two ends of pipe together and secure where they cannot move. Cut two 1" x 1" patches of glass for 2"-4" pipe, three patches for 6"-8" pipe and four patches for 10"-16" pipe. Mix one can of adhesive and hardener and spread on both the pipe and the glass patches. Apply patches evenly around the pipe. Allow to cure. The supplied 8069 putty fills in gaps between the two pipes. A hot air gun may be used to accelerate the cure. When patches are cured, re-sand both the patches and the putty in the gaps. Be sure there are no bulges. The joint is now ready for overwrapping.
- After the pipe has been sanded or scarfed, further preparation is not required for bonding unless contaminated with oil, grease, handprints, etc. High strength bonds are assured by clean surfaces. Contaminated surfaces must be resanded or cleaned with a degreaser such as acetone or trichloroethylene.
- For 2" through 6" diameter pipe, use six layers of glass cloth; for 8" through 16" diameter pipe, use one layer per each inch of diameter (e.g. 8" = 8 layers, 10" = 10 layers, etc.).
- Using a paint brush, apply a liberal coat of the mixed resin to all sanded areas (see Fig. 3). Remove any bristles that may have worked loose from the brush.
- Each piece of glass must be slightly longer than the previous piece, because the outside diameter (O.D.) of the pipe becomes larger as you add glass cloth. We suggest that you cut the first piece to allow for 2" of overlap. Then, when this length is no longer sufficient to overlap at least 1/2" on the ends, determine a new length with 2" of overlap.

## Base Resin Mixing

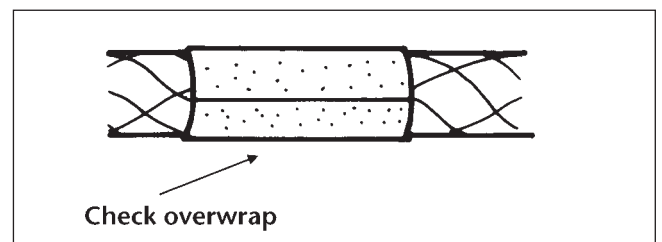
- The number of kits required for each joint is shown in Table 1. **Pipe to pipe joints may require an additional can of adhesive per joint.**
- Pour entire contents of hardener container into the adhesive container. **NEVER ATTEMPT TO SPLIT A CONTAINER OR ADHESIVE OR HARDENER.**
- Mix the adhesive and hardener together with the wooden mixing stick. Continue mixing until a consistent mix is obtained and all adhesive is mixed in from the edges and corners of the can. A smooth flow indicates adequate mixing.
- Do not use a power mixer for the adhesive!
- Occasionally stir the mix during application.
- If the adhesive becomes warm and starts to set up (harden) in the container, safely dispose of the container. **DO NOT USE THIS ADHESIVE TO BOND A JOINT**

Number of Kits Required per Joint

TABLE 1 - 2088	
Pipe Size (In.)	No. Kits per Joint
2	0.25
3	0.25
4	0.50
6	0.50
8	1.00
10	1.75
12	2.00
14	3.00
16	4.00



- Center a piece of glass cloth over the joint. Pull on the cloth while positioning it, and wet it out by painting with resin. Brush to remove any trapped air bubbles in the wrap. Start at one end of the cloth and work around the circumference, wetting the cloth with resin. Work the cloth away from the starting end and from the center of the cloth to the sides. The cloth must be thoroughly wetted with resin, but do not spend a lot of time in one area, as the cloth will wet out (lose its shiny-white appearance) with time. By the time the cloth has been worked down smooth with no air beneath it, most of it will be wetted out. In areas that remain unwetted, brush the area in smooth strokes in the same direction the cloth was laid. Work out any wrinkles in the same manner. (See Fig. 4.)



## Application of Reinforcement

**Note:** There must not be any pressure on the line or any fluid leaking from the joint when performing this procedure. The surface must be clean and dry. System must be open to atmosphere.

- When a high degree of chemical resistance is required, use the adhesive putty to fill all gaps and to use as a transition bead between fittings and pipe. For pipe delamination repairs, apply a thin layer of the putty over the affected area not to exceed 1" in diameter.

# 2088 EPOXY ADHESIVE 225 psig REPAIR & MAINTENANCE KIT

- Center the next piece of glass cloth on the joint starting from a new point on the circumference. Stagger the overlap of the ends to prevent thick sections or humps in the overwrap. Apply some tension to the glass cloth while positioning it in order to work the resin through the cloth. Smooth the glass around the circumference before adding more resin. Use only enough resin to wet out the cloth. Excess resin will run to the bottom of the wrap and may cause the entire wrap to sag (in which case the wrap must be removed and restarted).
- If the overwrap starts to give off heat, discontinue wrapping and let the joint cure and cool. Sand the cured layers to remove the gloss before restarting the overwrapping procedure.
- Pay particular attention to the bottom of the overwrap, as this is the area that may sag and is most difficult to see.
- In weather above 90° F, protect the overwrap from direct sunlight.

## Adhesive Cure

- Cure time depends on ambient temperature, overwrap thickness, and quantity of resin used during wet out of glass. A joint that exotherms (generates excess heat) and delaminates or bubbles is structurally weak and will contain channels or voids that may permit leakage. A weak joint should be removed by sanding the overwrap off or cutting the entire joint out.

Initial cure usually occurs within four hours at 75° F. A joint that generates absolutely no heat may require several days to cure. At low working temperatures, external heating sources such as space heaters may be required.

**Caution:** Do not apply direct flame to pipe and fitting joints. **DO NOT** apply electric heating collars to a wet joint.

Tapping the cured joint and pipe with a small metal object can indicate whether the joint is completely cured. If the joint sounds the same as the pipe, the cure is complete. A dull sound indicates an incomplete cure. Note: When fully cured, the resin should not be soft or susceptible to penetration with a probe or knife blade.

For more information, see NOV Fiber Glass Systems Pipe Installation **Manual No. F6000** or **Manual No. F6300**.

**Note:** This repair method is suitable for most chemical services, but it is not suitable for permanent repair of some extremely corrosive services handled by GREEN THREAD® pipe. Some such services could attack the overwrap materials and/or the pipe wall under the overwrap. Contact your NOV Fiber Glass Systems representative if in doubt about the use of this repair method.

**Adhesive Disposal:** Once the adhesive and hardener have been mixed and reacted, nothing can be extracted, and it is classified as non-hazardous material. Dispose of in a normal manner as other solid wastes. Excess adhesive and hardener can be mixed, allowed to react, and disposed of as above. If extra jars of adhesive or hardener have accumulated without the other component to mix and react, contact your NOV Fiber Glass Systems regional manager. Hardener jars, when empty are not subject to EPA regulations and can be disposed of in a normal manner. These guidelines are based on federal regulations. State and local regulations and ordinances should be reviewed.



National Oilwell Varco has produced this brochure for general information only, and it is not intended for design purposes. Although every effort has been made to maintain the accuracy and reliability of its contents, National Oilwell Varco in no way assumes responsibility for liability for any loss, damage or injury resulting from the use of information and data herein nor is any warranty expressed or implied. Always cross-reference the bulletin date with the most current version listed at the web site noted in this literature.

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

2700 West 65th Street  
Little Rock, Arkansas 72209  
Phone: 1 (501) 468-4010

25 S. Main Street  
Sand Springs, Oklahoma 74063  
1 (918) 245-6651

**NOV** Fiber Glass Systems

© 2009, NATIONAL OILWELL VARCO  
® Trademark of NATIONAL OILWELL VARCO  
D4085 February 2009