

Kemlite® Transportation Products

Roof Repair Manual
(for use with repair kit #R50TFIX)

Kemlite SunPatch® Repair Kit is also available
for small repairs.



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For questions or additional assistance, call
anytime between 8:00 am - 5:00 pm (CST)
Monday - Friday

===== IMPORTANT =====

These guidelines are provided to help prevent repair problems caused by the most common errors. Any one project may involve unique repair problems which require the application of general knowledge of an experienced technician. Selection of an experienced technician is the sole responsibility of the repair facility. These guidelines must necessarily be general procedures, and are not intended to be a step-by-step, foolproof checklist. The guidelines provided have proven to be the most generally successful methods. Deviations from the guidelines are taken at the risk of the repair facility.

Materials & Equipment

Contents of Repair Kit (R50TFIX)

1 Quart of T-Mix* (R50TMIXQT)
Glass mat (R13508): 1 pc 2' x 4'
Top / Embossed film (R06503): 1 pc 3' x 4'
Bottom / Smooth film (R04506): 1 pc 3' x 4'
MEKP hardener (catalyst): 2 tubes, 14cc
Spreaders: 2
Gloves: 1 pair
Mixing cup (500cc graduated): 2
Mixing sticks (tongue blades): 2
Instruction manual: 1
MSDS resin: 1
MSDS bondo hardener: 1
T-Mix, glass mat, and film (embossed or smooth), and panels of 0.075" thick Kemlite translucent roof material are available separately.

Other materials and equipment you may need:

Silicone Sealant (high grade)
Two-part, quick-setting clear epoxy
(Note: Epoxy tends to yellow quickly. Covering the repair with silicone will reduce the yellowing.)
Acetone (for cleaning and tool clean-up)
Masking tape, 2" wide
Clean rags
60-80 grit sandpaper
Pneumatic disc sander
Pneumatic drill
Pull rivet gun and rivets
Vise grip clamps

*Shelf life for T-Mix is up to 1 year when stored at room temperatures. Do not freeze.

Safety Precautions

1. Protect your eyes with goggles, cover your nose and mouth with OSHA-approved dust mask, and wear gloves when cutting and sanding fiberglass and using polyester resin, epoxy, and acetone.
2. Resins and solvents are highly flammable. Do not smoke or use electrically operated tools that may cause sparks. Always read the caution labels on all solvent containers and take the necessary precautions.
3. When working inside a truck or trailer make sure it is adequately ventilated to prevent buildup of fumes.

Introduction

The methods of repair illustrated here have been endorsed by all major truck and trailer manufacturers and repair facilities.

As you become more experienced you will develop additional techniques and short cuts that will further improve your ability to make repairs better and faster.

Important

It is recommended that all roof damage be repaired immediately to prevent further damage. Do not allow the trailer to travel at highway speed until repairs have been made.

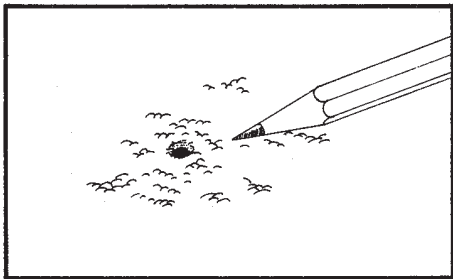
Repair

There are four major repair techniques:

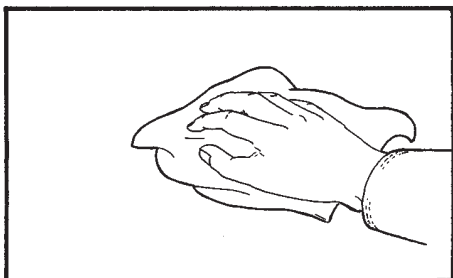
1. Small punctures and holes are repaired simply with quick-set epoxy and silicone sealant.
2. Small gouges and tears are fixed by the wet lay-up method using fiberglass mat and polyester resin.
3. Large tears or gouges where the roof material has been torn completely away may require a rigid fiberglass patch.
4. Extensive damage calls for replacing part of the roof with a new panel the full width of the trailer, very similar to sectioning an aluminum roof.

Note: Kemlite SunPatch® Repair Kit is also available for small repairs.

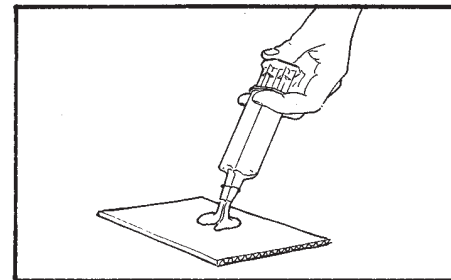
Repair of Small Holes



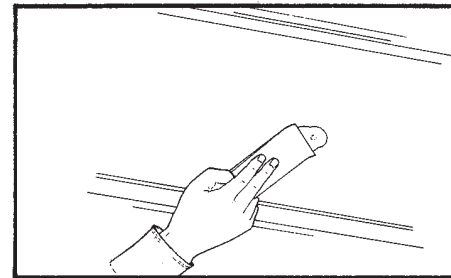
① Holes 1/4" or less in diameter can be repaired in 15 - 20 minutes and the trailer can go back into service immediately.



② Thoroughly clean the hole and an area about 4" around it with acetone. Make sure the area is completely dry before continuing.

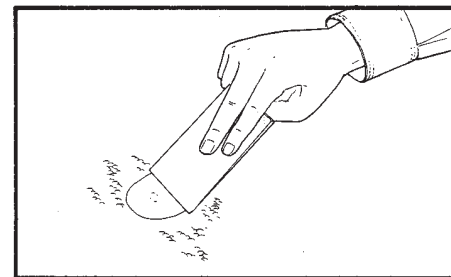


③ Mix a small dab of 5-minute epoxy and press it into the hole from the underside. It will cure in a few minutes.

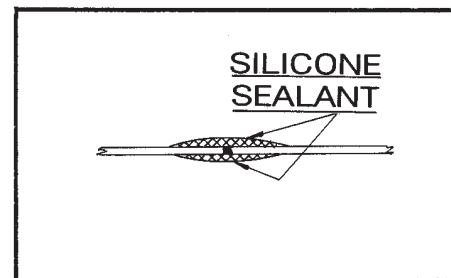


④ Then, cover the epoxy with a small amount of silicone sealant and feather out to make a neat job.

Note: Epoxy tends to yellow quickly. Covering the repair with silicone will reduce the yellowing.



⑤ To be sure of a long lasting, trouble-free repair, seal the repaired area with silicone sealant on the top also.



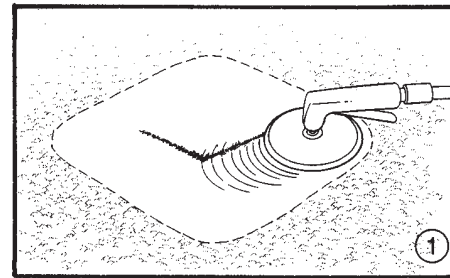
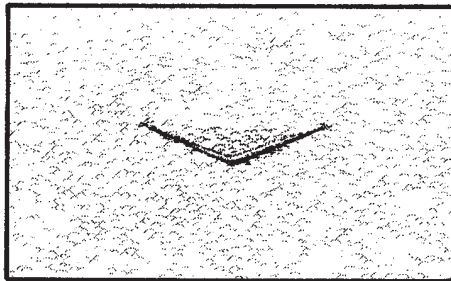
The job is done! The trailer can go back into service.

The Wet Lay-up Repair

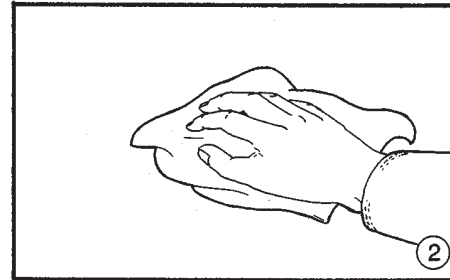
The wet lay-up repair using Crane Composites' polyester T-Mix Repair Kit has proven to be a good universal method for repairing tears and gouges that have broken through the surface of the fiberglass roof panel.

Use this method to repair small damages (up to about 3') where the roof material is intact and not missing. If material is missing, you'll want to use the rigid overlay repair.

The success of a wet lay-up repair depends on proper preparation of the roof surface. The surface must be abraded to achieve good adhesion between the T-Mix and the roof panel, and it must be dry and totally free of grease, road grime, exhaust residue, dust, and dirt.



① To start, sand the surface on the top side. Using a power sander with 60-80 grit sandpaper, sand the damaged area just deep enough to remove the embossment. You do not want to weaken the panel by sanding too deep. Extend the sanded area 4" - 6" beyond the damage. If the damage left a flap of roof material, leave it. Do not cut it off.



② Remove all the dust and wipe the area with acetone.

For areas smaller than 12", you could get by with a top-side, wet lay-up only repair, and fill the back in with silicone sealant.

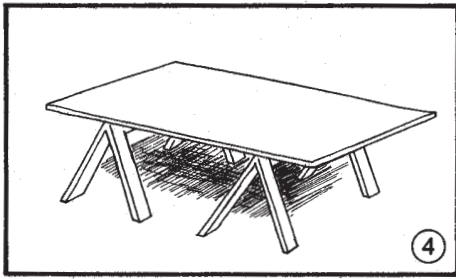
For areas larger than 12", use the wet lay-up repair on both sides.

***Note: Performing the wet lay-up repair on both sides gives optimum strength.**

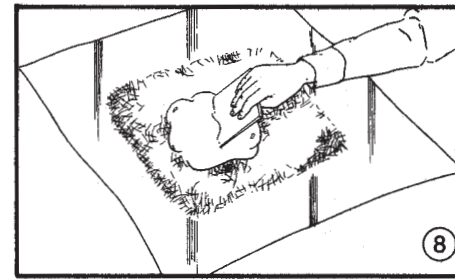
Now, leave the top side and go inside to complete the underside part of the repair.

③ Abrade the same area underneath as you did on the top, then remove all the dust and wipe the area with acetone.

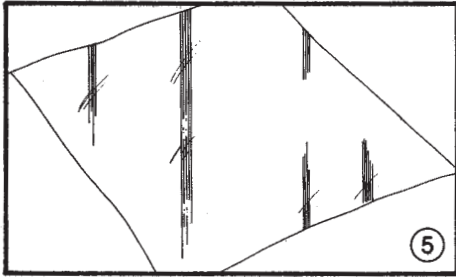
You are now ready to do the first lay-up on the underside of the roof.



④ First, you'll need to prepare a flat work surface for mixing, cutting the fiberglass mat, and wetting out the fiberglass with T-Mix. A sheet of plywood on saw horses works well.

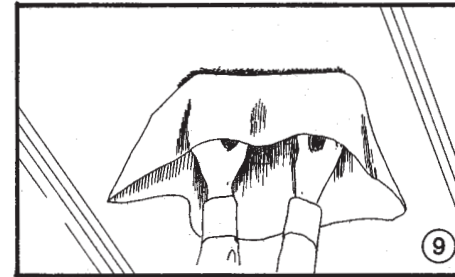


⑧ Spread a heavy layer of mix over the entire area of the fiberglass mat. Build-up the resin to at least 1/8".

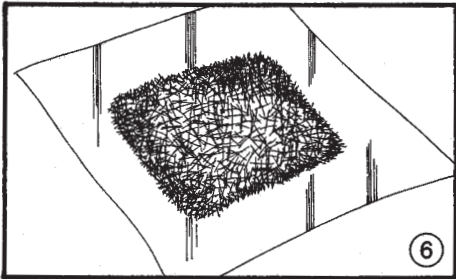


⑤ Spread a sheet of smooth polyester film on your work surface that is at least 8" larger all around than the sanded area.

If repairing both sides, you can use 1 layer of glass mat on each side. If only repairing top side, use 2 layers of glass mat.

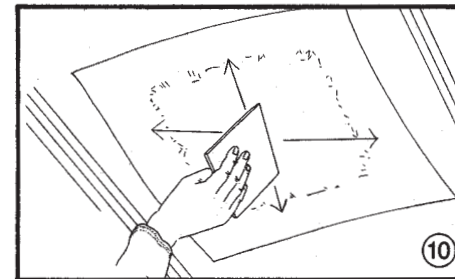


⑨ Lift this mat-and-film sandwich up to the abraded area and press it in place.

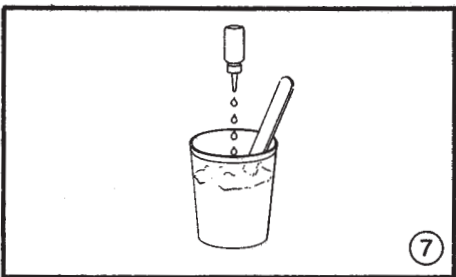


⑥ Cut a piece of fiberglass mat 1" smaller all around than the sanded area, and place it in the center of the film.

⑩ Using your plastic spreader as a squeegee, stroke outward from the center to the edges with slight pressure to work the T-Mix through the glass mat until it is completely saturated.



If there are areas not saturated with T-Mix, try to work more T-Mix into that area using the squeegee. If it is still not enough, pull back the film and add more T-Mix. Squeegee again.

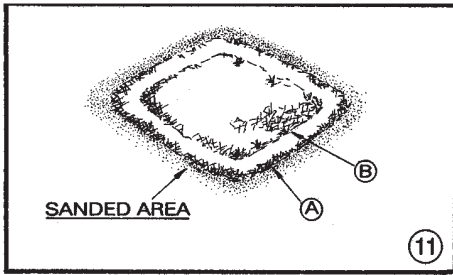


⑦ Catalyze a quantity of T-Mix with 1%-2% of hardener (20 drops ~1cc). Carefully follow the mixing instructions on the label. 200cc of mix should be plenty to do a 12" x 12" repair.

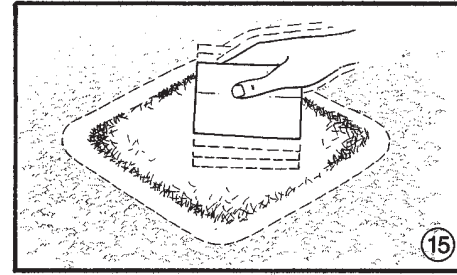
Continue lightly feathering T-mix out to the edge of the abraded area. Pick up any excess and feather again. Tape down the edges of the film to hold it in place. Let it cure.

Again, be sure to mix enough. Having too much is better than not enough. Your working time with the T-Mix will be about 20 minutes.

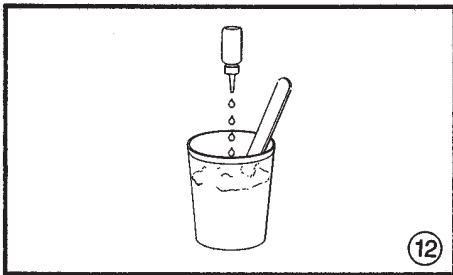
You are now ready to go back on top.



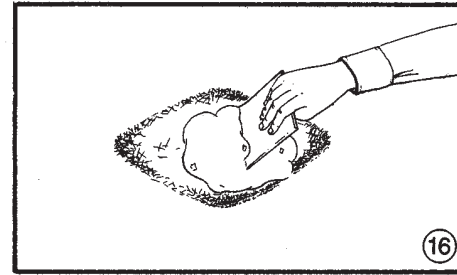
- ①① Cut two pieces of mat.
 ①② A The first should be about 1" smaller all around than the sanded area. ①③ B The second approximately 2" smaller all around than the first.



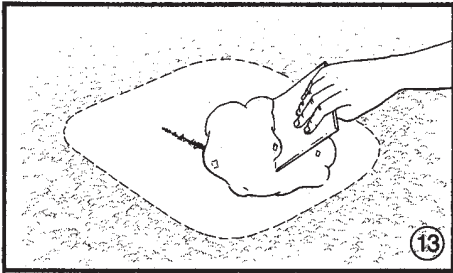
- ①⑤ Tap the glass mat lightly and repeatedly with the spreader to wet-out the glass mat. When this layer is saturated, spread T-Mix on the second piece of glass mat about 1/8" thick.



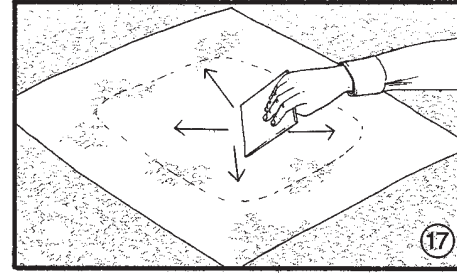
- ①② Catalyze more T-Mix. If you mixed the correct amount underneath, you'll now need that much, plus about 50% more.



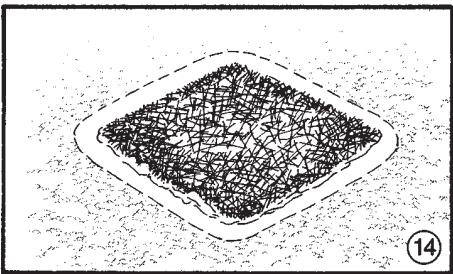
- ①⑥ Center it on top of the first piece, T-Mix side down. Tap with spreader to saturate the second mat. Continue with the squeegee a little more firmly to work out excess resin. Feather it to the edge of the abraded area, picking up any excess and continue feathering. Make sure the glass mat is thoroughly wet-out. Spread a thin layer of resin on top of the glass mat.



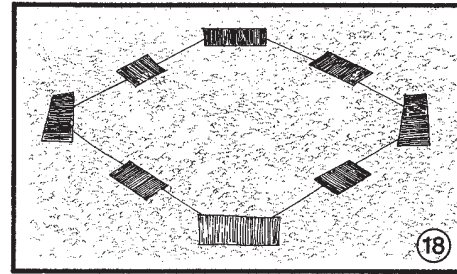
- ①③ Spread the catalyzed T-Mix on the abraded area about 1/8" deep.



- ①⑦ Place a sheet of embossed polyester film over the area. Again, using the spreader or a rag, stroke lightly from the center outward to work the T-Mix out to the edge of the abraded area. Do not use too much pressure or the embossment will be crushed.

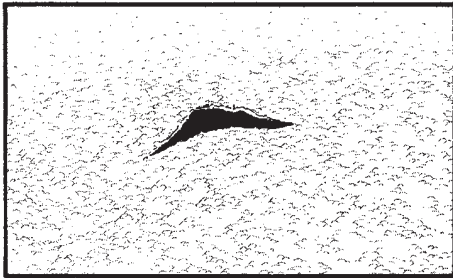


- ①④ Center the first, larger piece of glass mat over the damaged area and press it into the T-Mix. Be careful not to disturb the underside repair.

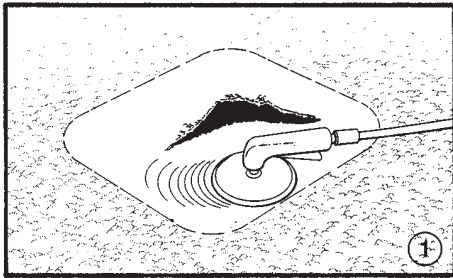


- ①⑧ Tape down the edges to hold the film in place. Now, let it cure. To test for cure without disturbing your repair, set aside your leftover T-Mix and check it occasionally. When the T-Mix has cured, trim off excess film around the repairs (on both sides) using a razor knife or scissors. The embossed film that is in contact with the cured resin 5 bonds to the repair.

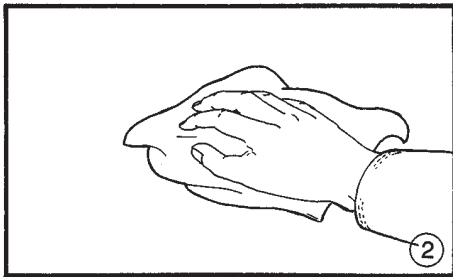
Rigid Overlay Repair or Patch Method



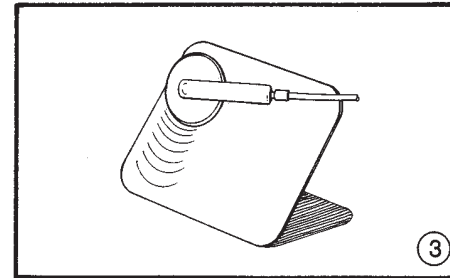
For large, damaged areas (up to 2' x 2'), where the roof material is broken away and missing, use an overlay of 0.075" translucent roof material. An appropriate size patch is adhered to the top surface with highly flexible silicone adhesive. It is mechanically fastened with pull rivets at the corners and every 6" around the perimeter.



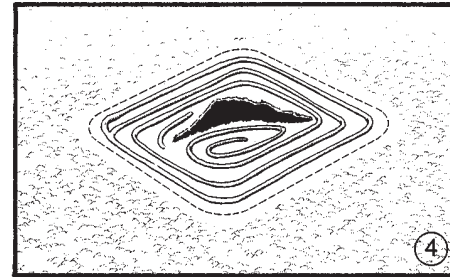
① First prepare the area by sanding away loose material and abrade the surface 6" all the way around the broken area to assure a good bond.



② Remove the dust and wipe the area with acetone to be sure it's free of grease, grime, exhaust residue, and moisture.

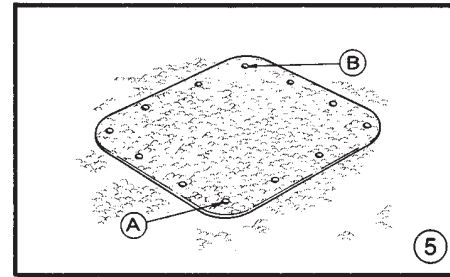


③ Cut a rectangular patch of roof material. Plan to position the patch so its corner-to-corner axis is parallel with the length of the roof. Round the corners slightly.



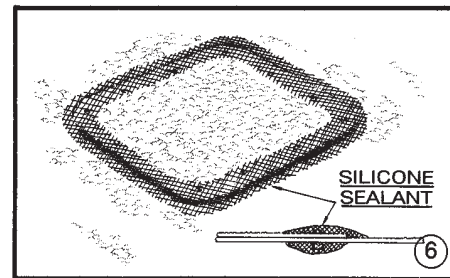
The underside of the patch should also be abraded and cleaned with acetone.

④ Apply silicone in 1/4" diameter beads about 1" apart over the prepared area.



⑤ Set the patch in position. Press down firmly and shift it back and forth slightly to completely embed the patch in silicone and eliminate air pockets.

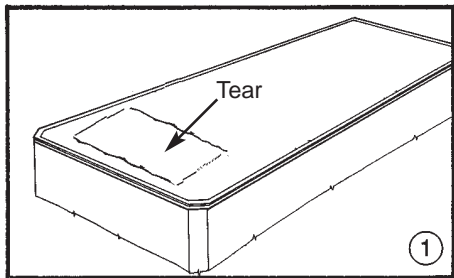
Drill the appropriate size hole and install the pull-out rivet. Drill another hole in the opposite corner and install the second rivet. This will secure the patch, and then the remaining holes can be drilled and riveted.



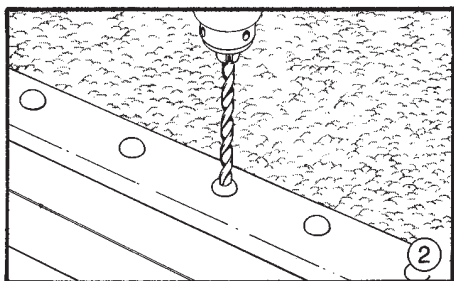
⑥ Cover the edges of the patch and the rivet heads both top-side and underneath with silicone and feather out to make a neat job.

Partial Roof Replacement

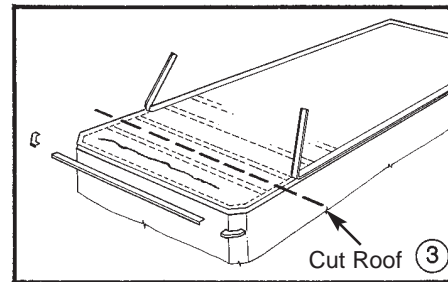
When damage is severe (when damage exceeds 3' in any direction), it's best to install a new section of roof panel. This is accompanied by first cutting and removing the damaged portion just ahead of a roof bow; second, installing a new section that overlaps the good roof by 12"; third, securing the seam with mechanical fasteners and an aluminum cap strip top and bottom. Clear silicone sealant is used between the panels at the overlap.



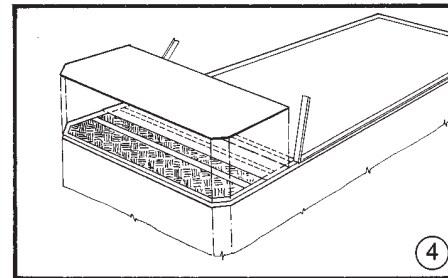
① A section of roof may be replaced anywhere along the length of the trailer provided the new section underlaps at the forward edge and overlaps at the trailing edge with a roof bow underneath to support the overlap.



② Drill out the rivets surrounding the area to be replaced. Remove the aluminum fastener strips. Along the side, "J" strips can be folded back.

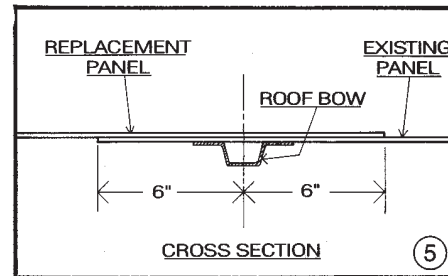


③ Cut off the damaged portion of the roof 6" in front of the first roof bow in the good section.



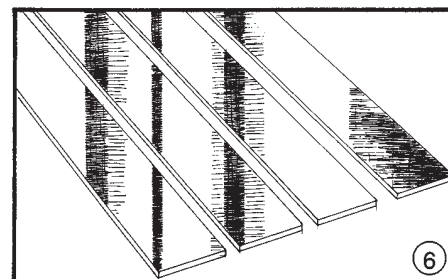
④ Cut a replacement panel of translucent 0.075" thick material. Add 12" to the length for the overlap, plus an additional amount if tensioning will be done.

Note: If the repair is in the center of the trailer, two overlaps will be required.

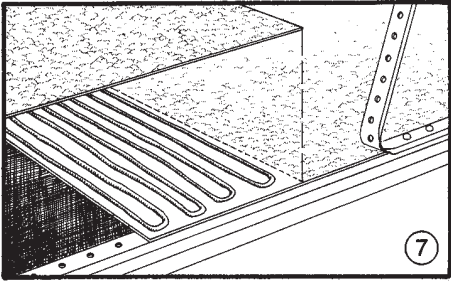


⑤ The new panel section will overlap 12" (6" in front of the roof bow and 6" in back of the roof bow).

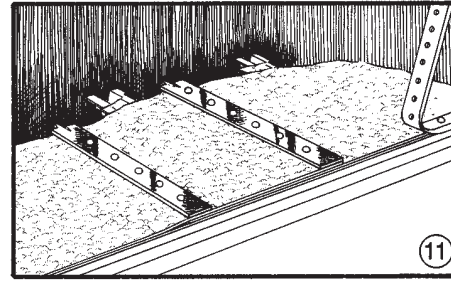
Sand and thoroughly clean the overlapping surfaces with acetone, and be sure they are free from grease, road grime, exhaust residue, dust, dirt, and moisture.



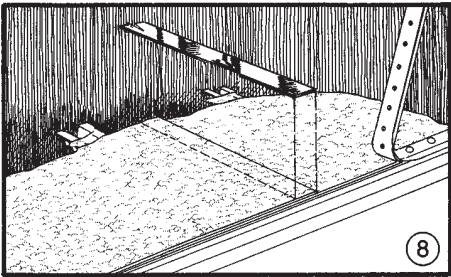
⑥ Cut 4 cap strips from standard 0.04" or 0.05" aluminum; 2" wide by the width of the trailer roof.



⑦ Lay down beads of silicone on original roof 1/4" in diameter about 1" apart the length and width of the overlap. Treat the perimeter edges as you would normally.

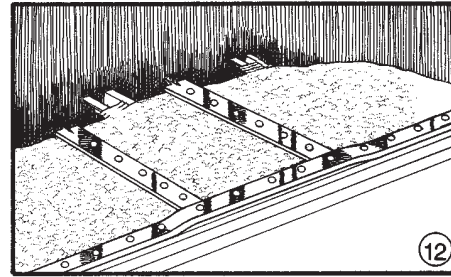


⑪ Repeat the same procedure at the front overlap.

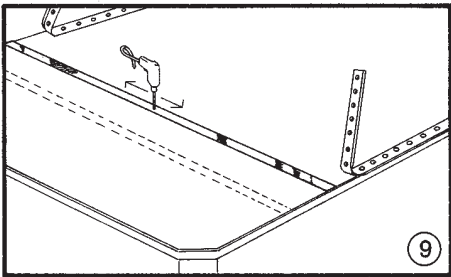


Set the new panel in position. When the panel is properly positioned, press down firmly at the overlap to seal the panel in silicone. Clamp it at the top rail to hold it in position.

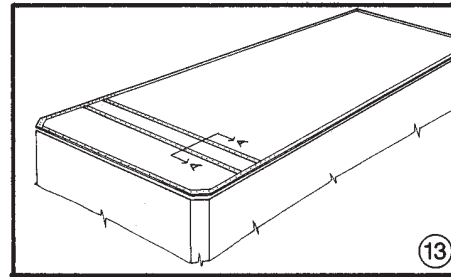
⑧ Set one of the previously prepared aluminum cap strips in position at the rear edge of the overlap and clamp.



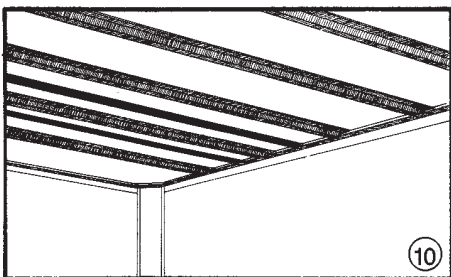
⑫ After riveting the overlap, tension the panel and seal and fasten the perimeter at the top rail as usual.



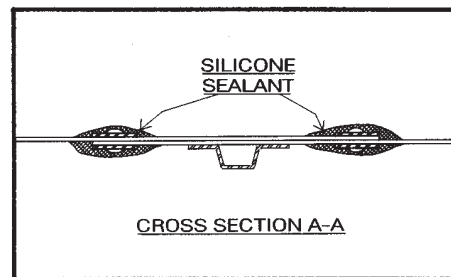
⑨ Fastening will begin in the center of the rear overlap.



⑬ To complete the job, seal the overlap edges and rivet heads with silicone at the new overlap splice, along the perimeter "J" strip.



⑩ Use double-sided tape to hold the inside cap strip in position while the first fastener hole is drilled and riveted. Continue fastening every 2" to 4", working from the center toward the rail.



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