

MOLDED FIBERGLASS REPAIR

How to fix factory composite parts on your own

Words and Photography by Don Caithness

Let's begin this article with a little quiz:

What does a 1963-'67 Corvette spare-tire carrier have in common with some of the muscle-era fan shrouds, A/C plenums and heater boxes of the '60s, '70s and even '80s? Other than the fact that they are all prone to cracks and breaking (as we know too well), they are all constructed from molded fiberglass.

Often, the coloring of these parts is in the fiberglass resin itself, so many people believe they have no choice but to replace them when damaged. Recently, we came across a little operation that specializes in repairing almost anything made from molded fiberglass. The day we visited the shop, they were setting up to make a new mold, which allowed us to follow the process and see what's really involved in working with fiberglass.

As it turns out, although the mold-making process is time-consuming, with a little patience and effort, we believe you could do the same thing at home. After you have a mold, you can repair splits and cracks, and even replace those missing chunks. Check out the photos and captions to see what the process entails.

A large percentage of this shop's business is repairing Corvette tire carriers that have been damaged by road debris, carelessness or simply the effects of age. In this case, a mold has to be made to fix the broken outer edge of the top lid.



This view gives a better appreciation of the contours and ridges that need to be recreated. The plus side to this particular repair is that the curve of the part is uniform, so the mold can be made using an undamaged section of the same part.



3 The first step in constructing a mold is to clean the surface with acetone, then place a few lines with a permanent marker to indicate the size wanted. Next, you need to apply four to five coats of the release agent, which will allow the mold to be separated from the fixture later. We're using Honey Wax brand here.



6 Apply a thick layer of the gel coat to the area that is to be made into a mold. You don't need to worry about it being smooth—just make sure that every surface is covered, as this will become the inside of your mold.



4 Begin by cutting the shapes required from fiberglass mat—not fiberglass cloth like you find in those rust repair kits at the local auto parts store; you won't be able to get the cloth to lay flat without large air bubbles.



7 Start with the largest pattern that you cut from the fiberglass mat, setting the mat firmly into the gel coat. On our project, the curved pattern was applied next, followed by the inside strip.



5 Using gel coat on the inside of your mold will create a very smooth surface with no imperfections. A few drops of pigment will be added to the gel coat, only to make it easier to see when applying. Afterward, regular resin hardener is added, but at twice the normal ratio—otherwise, the gel coat will never fully harden.



8 With the pieces of fiberglass mat in place, you are now ready for the fiberglass resin. After adding hardener and pigment to the resin, apply the resin until the mat is fully soaked. Use a small paintbrush to work the resin into the mat, being careful not to lift the mat and checking to make sure there are no air pockets.



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Fiberglass mat is easily “stranded,” meaning that individual strands can be separated; these are then used to join sections of matting over compound curves. Work the mat strands and resin combination over the existing mat for additional strength. Don’t be concerned that things look rough; this is the back of the mold.



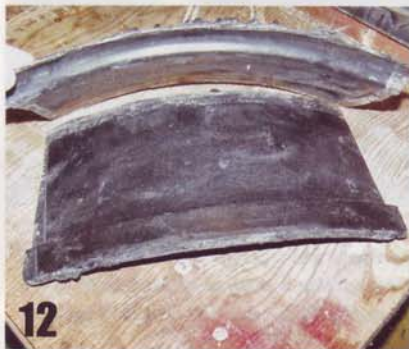
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After the mold has been allowed to cure for about an hour, begin to separate the mold from the jig by using a putty knife.



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With the mold removed and flipped over, you can see the smoothness of the gel coat and contours from the jig. All that is left is to clean up the edges of the mold and it will be ready to use.



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Another repair, for a bottom tire tub on another Corvette, was in progress while our project was being executed. We photographed the process on this part while the parts for our lid were curing. Here again, an inner and outer mold has been made to hold the new fiberglass material in place with all the correct contours.



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The edges of the damaged section were first ground smooth and beveled slightly; the area was also left rough to help the new fiberglass section bond to the old material. Then the new fiberglass material was sandwiched between the mold halves; C-clamps secure the molds until cured.



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Here’s the spare tire tub after the process has been completed. After the final sanding, the repaired section can’t be seen—the color and textures blend into the original for a perfect repair.



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We snapped a picture of this repaired fan shroud before the customer picked it up. When it arrived at the shop, the hole for the clip and the ribs were totally gone. Now it looks like an NOS item.

Source:

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