

FRP Techniques

How to Install Fenders

If you've already read through the first three How To's you probably got the message that the first thing to do is check the part for shipping damage. So we can skip the unpacking shot of the fender and the box and get to the point.

Fenders are a little more complicated to hang than tailbases, doors or hoods for a couple of reasons. They have a lot of complicated seams. They have to be crowned to match the hood and the doors and in the front they also have to line up with the bumper. With fenders there is going to be a lot of on to check, then off to make small adjustments. Plan on taking your time and allocate at least 2 hours per side to get everything sorted out.

If you are rebodging the whole car install the fenders only after the doors and the hood are in place so you can get the seams as tight as possible. It's a lot easier to open up a tight seam than it is to try and fix a wide one. For example, if you just start bolting the fenders on and find the gap at the door is too wide you can't just move the door forward to compensate. There isn't that much leeway. Same with the hood. Slide it to one side and the other side gets worse.

We are going to install the fenders in 3 stages. First we are going to sort the chassis out. Getting it clean and straight. Second will be making the necessary adjustments to the fenders. Third will be the installation.

The first things to check after the mounting flanges have been cleaned (PHOTO 1), are the verticals and the hood rails. We briefly discussed the hood rails in the previous chapter, How To Install Hoods. The rails are the flanged upper part of the front tub where the fenders bolt. They have a 90 degree bend which serves as the channel for the weather seal and the holes for bolting the fenders along their length.

They are only sheet metal and are easily deformed. Sometimes all it takes is trying to pry off a set of steel fenders that had the original factory sealer to tweak them out of shape. Needless to say crash damaged cars will need some special attention.

Look at PHOTO 2. Here the hood is in place and the right hood rail has been carefully worked with a hammer and a dolly so that it is parallel to the edge of the hood and more importantly tapped in far enough so that the fender seam will be tight. Check this by holding the fender up against the rail to make sure it fits tight and even. There isn't anything worse than to get half the fender bolted on and then to find that the rail bows out ruining the hood seam.

After the hood rails have been worked on it's time to check the verticals (PHOTO 1). The verticals are the sheet metal pieces welded perpendicular to the front tub and also the matching flanges on the composite fenders. While some companies

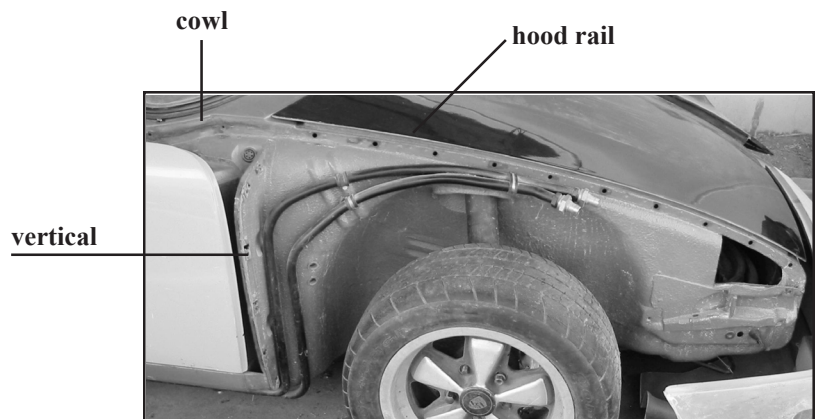


PHOTO 1
Preparing the tub
Clean the hood rails, the vertical and the cowl area.

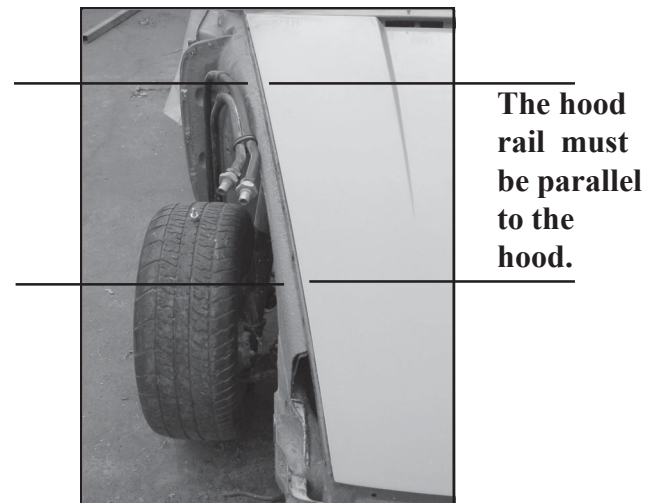


PHOTO 2
Adjusting the hood rails
Parallel to the edge of the hood and in.

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expect you to glue on separate verticals, ALL FENDERS from Getty Design come with the verticals as an integral part of the fender. They are indexed in the molds, so they come out perfect every time.

Just like the rails the verticals will have to be moved a little if they hold the fender too far from the door. Hold the fender tightly in place, check the gap at the door and then look underneath to see if the fender is tight to the vertical. Use a hammer and a dolly on the vertical if you need to move it.

Once you finish massaging the chassis it is time to see what needs to be done to the fenders.

In PHOTO 4, we are holding the fender in place and checking for interference. Places on the fender, that will have to be clearanced. In this case the door gap is too wide because the tip and the side are hitting. Also the fender is sitting too high because the mounting flange needs to be ground. At the bottom the vertical is hitting the oil lines and is held out from the door.

Now flip the fender over and lightly grind the 4 areas that we noted on the first attempt.

Now slide the fender back in place and continue to check and fit. From the guy holding the fenders body language you can see he is putting a little bit of force into holding it tight to the chassis (PHOTO 6). I find with fenders they always take a little bit of effort to force them into place. Usually what's happening is, with fiberglass fenders the verticals won't bend and take a set like they can do with metal ones so the fit is always really snug.

Now look at PHOTOS 7 and 8. After a few minutes of grinding we have a nice tight gap along the door and the cowl. NOTE the fender is being held at a little bit of an angle, up at the light. In this instance, this is where it seems to fit best. First we will get it bolted at the cowl and then check why it's sitting up. Worry about one thing at a time.

The fit is close enough now to start thinking about putting some bolts in. Fenders just like tailbases and doors have to be solidly bolted in place to accurately gauge the fit. The best place to start is with the 2 small 6mm bolts at the cowl. See PHOTO 9.

So I don't have a problem drilling the bolt holes accurately I mark their location and depth on the cowl, hold the fender in place and transfer the lines. This way its easy to drill from the back side.

Once the holes are drilled put the fender back in place and install the bolts (PHOTO 10). Here a flex socket on a long 1/4"



PHOTO 3

Hold the fender against the hood rail to check the gap. Tap the hood rail in as needed.

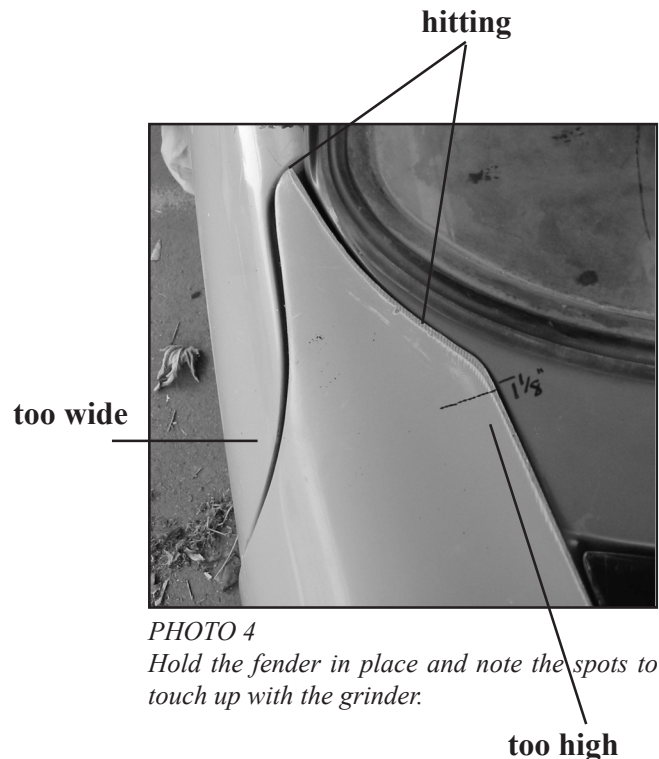


PHOTO 4

Hold the fender in place and note the spots to touch up with the grinder.

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drive can easily get into this awkward location.

PHOTO 11 shows how the mounting flange is sitting up higher than the rail. Now while it's possible to just push the fender down and bolt it in place it would be much better to find out what the problem is.

Looking under the fender we can see that the reason it's up in the air is because the mounting flange is hitting the tub just forward of the vertical. Mark this location for more grinding. But before you remove the fender now is a good time to mark where the holes should be drilled for mounting the vertical.

Remove the doors and use a scribe to mark through the metal vertical onto the fiberglass (PHOTO 13).

It has taken only about 30-40 minutes of fitting and a little bit of grinding to get this fender ready to install.

Attach the fender back at the cowl and now its time to bolt it in place along the hood rail.

The Crown (the curvature) of the fender must match that of the hood. So it is important to have the correct hood in place before you begin this step.

A few things effect how much of a crown the hood has. It's natural curve, wether the weatherstrip is in place and the gas shocks. With the shocks in place the crown is more pronounced. Removing them and the hood lays much flatter. Building the crown is a simple step by step process of checking the fit then installing one bolt at a time working from the cowl to the bumper.



PHOTO 7
The door gap now looks good.

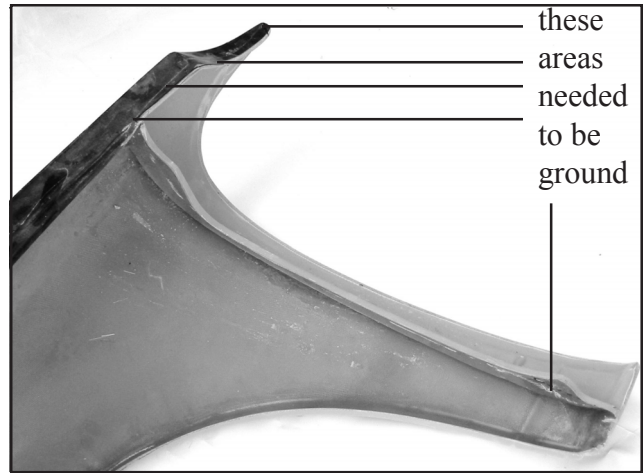


PHOTO 5
Remove the fender and grind the high spots.



PHOTO 6
Trying the fender a second time.

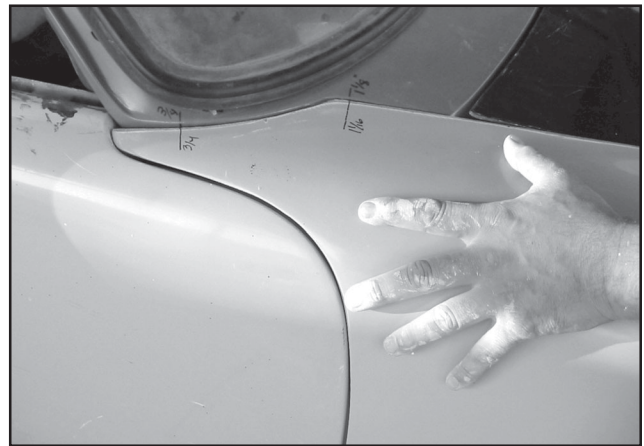


PHOTO 8
The fender tip at the cowl now looks much better.

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1. Mark the bolt hole locations on the fender. Close and latch the hood.
2. Now look at the gap at the first arrow and decide if the fender needs to go in or out and up or down (PHOTO 13).
3. Open the hood. Move the fender up or down as needed and decide on shims for the in or out. Then drill the hole, slide in the shims and tighten the bolts (PHOTO 14). A piece of tape can be used to help hold and position the washers.
4. Repeat steps 2 and 3, one bolt at a time, working toward the front.

Once everything is bolted in place you can use an angle grind to open up all the seams to a perfect, even width (PHOTO 15). If the plastic welding will be used at the cowl be sure to have it in place or space the fender out before you block sand across the door and fender (PHOTO 16).

Post Cure the fenders then proceed with normal body work. Look closely at PHOTO 17 and you can see a highlight across the door and fender just above the mans left hand. The fact that it goes straight across not jogging at the seam shows the curve of the door and the curve of the fender match very closely. Still, a little bit of block sanding with a board and #80 would make this seam perfect.

Professional Tips

1. Gas Filler Door. Track cars may or may not want to use the filler opening in the fender. If you add the door for a street car do it first on the bench and take your time fitting it carefully.
2. Be sure to check the fender return to tire clearance after fitting a new set of fenders. Check at full droop and rebound and turning left an right.
3. In some cases it may be necessary to try to pull a fender out a little bit to match a wider bumper. Make a couple of cuts in the bottom fender flange where it mates

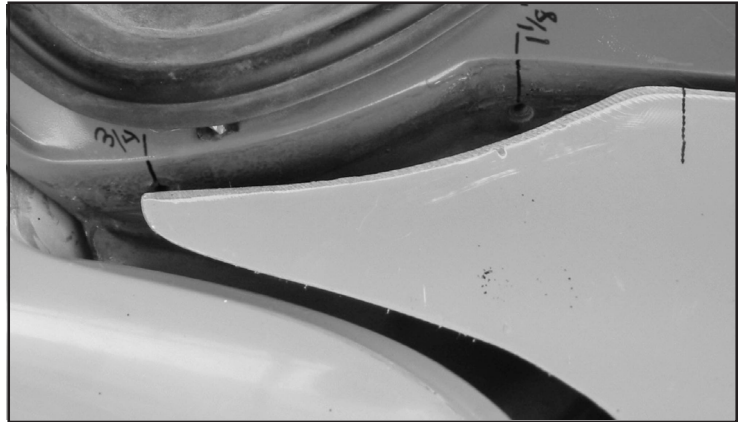


PHOTO 9

Mark the bolt location., transfer the lines from the cowl.



PHOTO 10

Install the 2 bolts at the cowl.

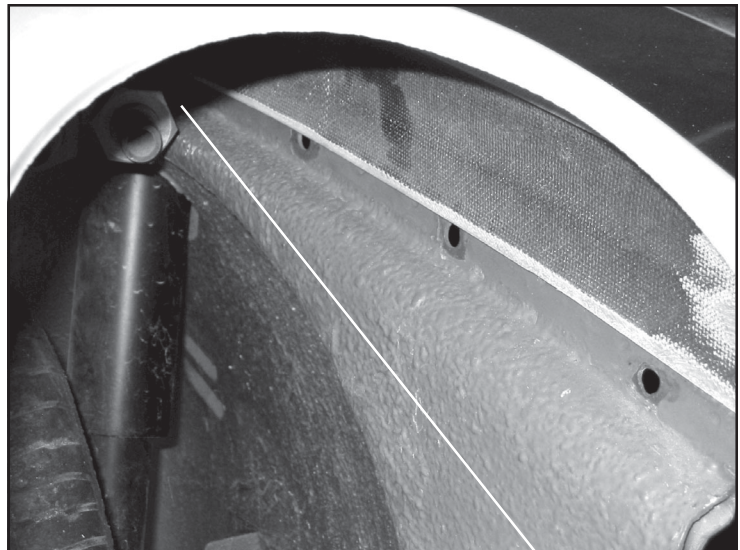


PHOTO 11

A high spot on the flange or tub is holding the fender up. Mark the problem area from underneath, then remove the fender and trim the flange.

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to the bumper. This will make it a little bit easier to spread the fender.

4. Fender Bracing. Always support the outer edge of the fender and the bumper with triangulated braces coming off the chassis. Don't allow the full weight of the bumper to hang just on the fender.
5. Mounting hardware. On track cars where you might want to frequently remove the fenders for routine maintenance try using T Nuts on the flanges and fiberglass them in place. This way you can simply unbolt the fenders and not lose a bunch of nuts and washers.
6. Star Cracks. To prevent star cracks from showing through on the outside glue lightweight rubber to the under side of the fenders.
7. Head Lights. To mount head light assemblies in 911's and C2's, you will have to pop rivet small right angle brackets into the head light buckets.



PHOTO 12

Scribe where the holes are to be drilled for mounting to the vertical.

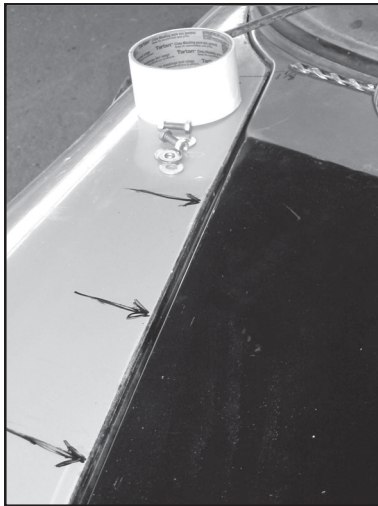


PHOTO 13

Checking how to shim the hood seam.

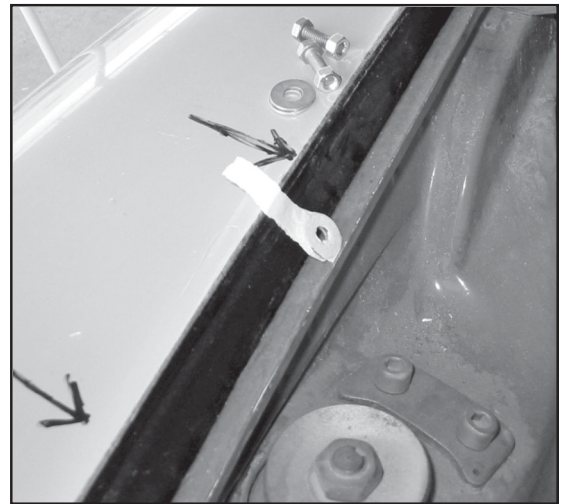


PHOTO 14

Use tape to help position the washers.

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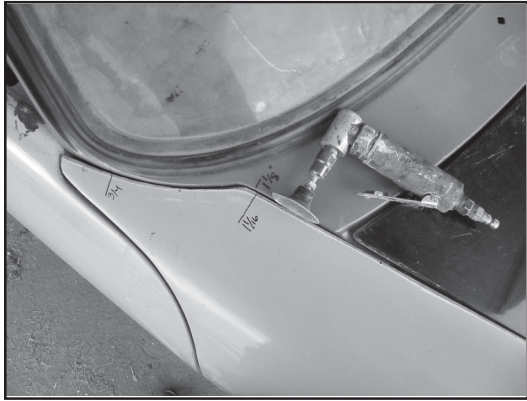


PHOTO 16
Grinding at the cowl.



PHOTO 17
Block sanding across the door and fender for a perfect match.

Drilling holes for wires or grommets.

Use vernier callipers to accurately measure the hole sizes. Draw the correct diameter circle on the part and use a die grinder to open it up.

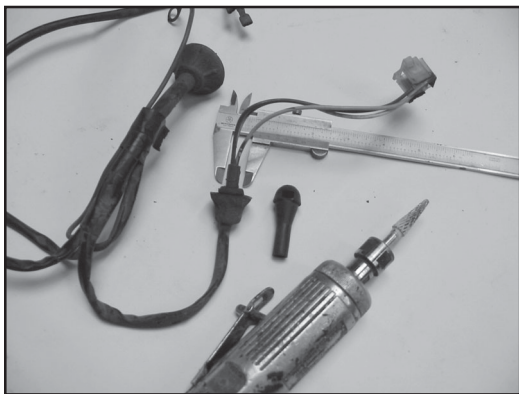


PHOTO 18
Measuring for the right size hole.



PHOTO 15
Grinding the seam. Use a right angle die grinder with an #80 grit disc. You may need to relieve the inside corner also so the door doesn't catch when opening.

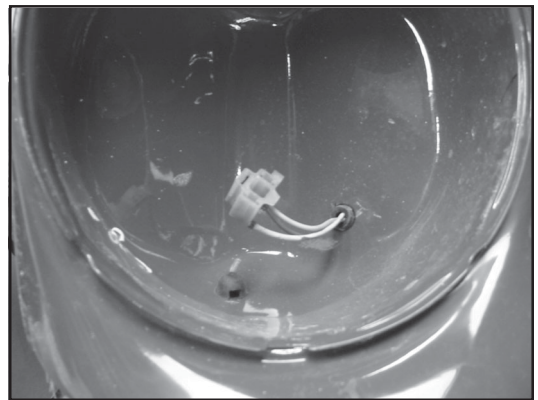


PHOTO 19
Headlight wiring and water drain.