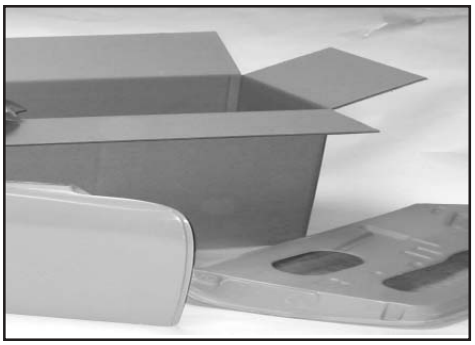
FRP Techniques

How to Install Doors

Doors are fairly easy to install, especially if you are working with high quality parts like those from Getty Design. From start to finish it only takes a little more than hour and a half per side to check the part, install the hardware and get the door hung and adjusted. Window frames might add an additional 30-45 minutes per side. Doors are similar to hoods and decklids in that there isn't a lot of lee way in their positioning. They pretty much have to go in one place.



Don't forget to open the box and check the parts as soon as they arrive.

When installing doors remember that the bottom edge is always parallel to the rockers. The fenders might not be on or the quarters loosely positioned, the doors can always be roughly adjusted in relation to the rockers, parallel to the top edge and flush with the corner (PHOTO 9)

STEP 1- Installing the hinges

Same as with tailbases, do all the prep work on the bench first. This includes preparing the hinge parts, installing the latch, etc.

It is always a good idea to test fit all the hinge components first so everything is a slip fit. This includes sanding the pin bores and the pins themselves. Replace bent pins.

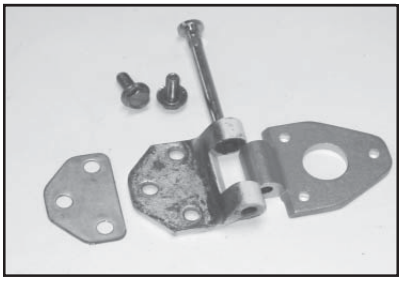


PHOTO 1
The Hinge Assembly.
If you look closely you will see that one side needs to be flipped over to accurately show the way they go together.

Next bolt the halfs onto the doors. Check the bolt length first. Hardware should be 6X1X20 mm bolts with washers and Nyloc nuts on the inside. Photo 3 shows the hinges installed and the door notched to clear the retention strap bracket. NOTE, the pin bores on the 2 hinges should align. You can check this on the bench by sliding a long 5/16 " rod through both hinges.

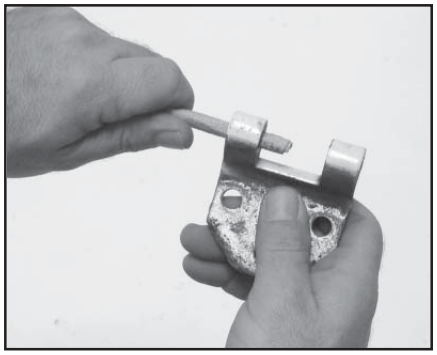


PHOTO 2
A rolled up piece of #80 is a good way to clean out the bores.

Now it's time to install the latch mechanism.

STEP 2- Installing the door latch

The rear latch is probably the most difficult part of preparing the doors. There are only 3 small mounting bolts and there isn't much room for error. So carefully read and follow the instructions and photos. I spend about 45 minutes per door installing the hinges and latches.

1. Begin by noting the scribe lines on the door liner. Use a hole saw to cut a 1 5/8" hole for the latch to come through (PHOTO 4).

2. Now using a smaller drill bit than the standard 6 mm mounting bolt (I like to use an 1/8th inch bit), drill through where the 3 holes

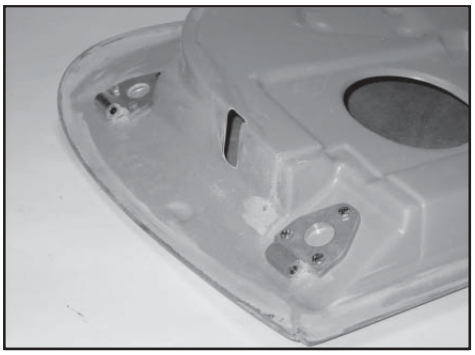


PHOTO 3
Hinges installed and a notch for the retention bracket.

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go. The reason we are using an undersize bit, is to make sure the drilled holes align perfectly with those in the latch. If you drill through and are off a little bit you can still correct it.

3. Now reach into the liner with a small piece of #80 grit sandpaper and clean up the backside of the holes so there are no rough fibers sticking out. This lets you clearly see the exact shape of the holes. Instead of cutting a nice round hole, most common drill bits just punch through leaving alot of fibers on the back side. A little bit of sanding will clean these up. At the same time make sure this inside surface is smooth enough for the latch to sit flat. Slide the latch in and see how the holes line up (PHOTO 5)

4. If the holes are spaced correctly open them up to the correct size and then countersink them with a half round burr on a die grinder (PHOTO 6). This step is important because the bolt heads have to be flush with the surface to clear the receiver. Once they are countersunk there isn't alot of material holding them in place so if the holes were drilled sloppy there wouldn't be much material holding them in.

It is easier to hang a door if the hinge halfs are already installed onto the front hinge post. Then it is simply a matter of mating the hinge halfs and getting the pin started.

1. Bolt the cleaned, sanded and lubricated halfs to the post. Make sure they are facing the right way. I like to start with at least one shim behind each half.

Install all six mounting bolts, finger tight. If the nut plate keeps sliding down too far, start one bolt and then use a small pin or screwdriver to lever the plate into position. It is important that the threads are clean enough that the bolts thread in by hand. These hinges might be on and off several times before the shim pack is fully sorted. Use a tap to clean them up if needed. The standard mounting bolt is a metric 8X1.25 mm. Factory bolts have special serrations under the bolt head.

2. Installing the doors onto the car is a one man job. I like to kneel down next to rocker and balance the door on my outside leg. Even though a steel door can be quite heavy it works best with one man. Two guys just get in each others way (PHOTO 8).

3. To correctly install doors,each time you make an adjustment, the hinge pins must be slid completly in and the 6 mounting bolts need to be wrench tight. Otherwise there is too much slop to guage how the door is hanging.

4. Now swing the door closed and check the gap at the rocker panel. Ideally the bottom of the door is always parallel to the rocker. The number and placement of the aluminum shims behind the hinge

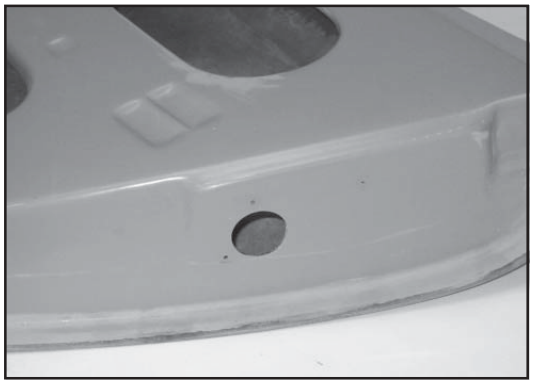

PHOTO 4
A hole saw has been used to make a nice round opening for the latch and 3 small pilot holes have been drilled to check how they line up with those in the latch. Also,the edges around the 4 holes have been sanded from the inside so thehave nice, sharp outlines.

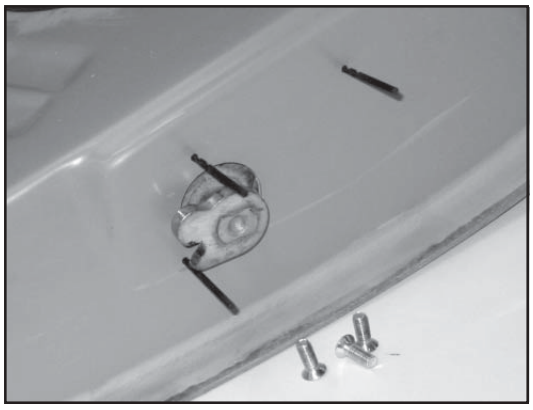

PHOTO 5
Here 3 small drill bits are slid throught the door into the latch. This verifies that the holes are right on center. There isn't alot of room for error so it pays to check.

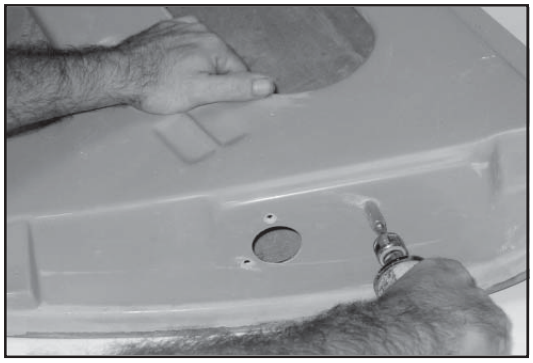

PHOTO 6
A die grinder with a round burr countersinks the holes so the bolts won't hit the receiver on the quarter panel.

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halfs on the front hinge post determine this gap. Once the shims are set then the whole door can be raised up or down so that the back top edge is level with the top of the quarter panel.

We are leaving the receiver off the rear lockpost because it is very important to get the swing arc correct first. It is too easy to have a poorly hung door twisted into postion by the latch. Fiberglass doors can be flexed or forced 3/4 of an inch out of their swing arc and this isn't what we want.

Once the hinges are set so that the door swings flat and closes level with the quarter panel; then you can put the receiver back onto the lockpost. If the bolts are sticky or rusty clean them up with a tap.

Adjusting the rear latch

The receiver has a pin that the 'U,' shaped door catch locks onto. Plastic shims can be used to space the receiver out from the lockpost.

1. First check that as the door closes the liner doesn't hit the receiver. It's possible to have the door too far back. And in some cases the receiver too far forward. Also if the bolts weren't countersunk deep enough they might also hit.

2. Now adjust the receivers up and down position. The door shouldn't ride up as it engages the pin or be forced down. This is where I see not enough time being spent to get this adjustment perfect. When everything is just right you should be able to close the door with 1 finger and hear 2 distinct clicks as the latch engages and locks.

3. The last adjustment is side to side to bring the door flush with the quarter. If you will be using the rubber weather stripping, make sure it's in place for this adjustment. The seal may tend to hold the door too far out. A 6lb composite door isn't going to crush the seal like a 35lb steel door. If it is a problem, try using an older door seal.

Notice PHOTO 10. While the angle grinder can be used to even up the seam along the door edge, I would try to space the door back further, first, so that the gap at the top is smaller. Then when you trim it the overall appearance would be much nicer with a tight seam. This is one of those instances when a few minutes of extra work really pays off. It's the difference between true professionals and amatuers.

PHOTO #7
Installing the hinge halfs onto the front lockpost

PHOTO #8
Hanging doors is a one man job.

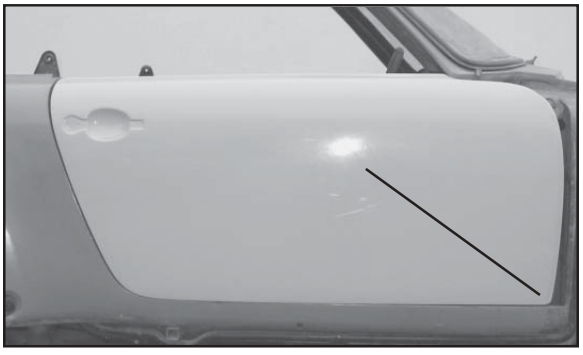

PHOTO #9
The corner of the door and the indent for the fender line up.The bottom of the door and the edge of the rocker are parallel.

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Installing door handles

Door handles are easy to install. Using a die grinder or the appropriate hole saw cut the correct size hole for the tumbler portion of the handle to slide into. Don't forget the small square key slot. Drill the 2 holes for the mounting studs.

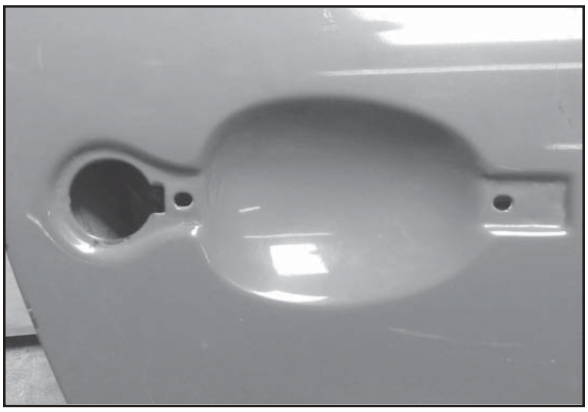

PHOTO 11
The holes for mounting the door handle

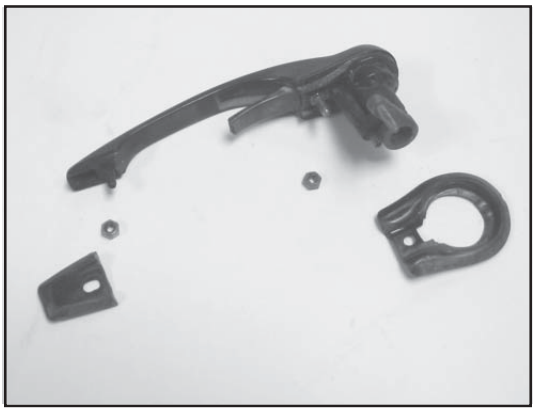

PHOTO 12
The door handle, mounting nuts and gaskets

PROFESSIONAL TIPS

PHOTO 10
Use an angle grinder to make the seam even. This door can probably be spaced back to tighten the gap.

After you have gone to all the trouble of hanging and adjusting the doors make sure whoever is going to paint them knows that it is important to only remove them with the hinge pins and not by unbolting.

1. Adding a stop strap prevents the door from opening too far
2. Tips, a chatter gun is often the only way to get stuck hinge pins out.
3. A drift pin welded to a 2' long steel rod is excellent for hammering out the top pin.
4. You might want to use the pins with bails on them for race cars.
5. If you want to save some time for the painter and do a nicer job sand both hinge halfs and the area under where they will mount ahead of time. This way the painter won't have to take the hinge halfs off the door. He can mask around them and the paint will stick and not flake off because the area has already been scuffed up.