
BODY RIVETS Part I By Larry Linder

Body Bracket Replacement.

In restoring my 65 coupe most of the body brackets, several body mounts, wire conduit cover clips, accelerator pedal nut plate, splash shield rear attachment brackets and the luggage retainer panel needed to be replaced. All of the parts are riveted to the body using solid aluminum rivets.

The vent doors, and the heater plenum were restored but using 1/8 inch nickel plated brass rivets.

Rivets are easy to replace - the only problem is there were no hand tools available and no procedures to replace these rivets.

Intimidating - That is the reason behind this article, to show you that riveting can be easy and save you a lot of time and money during a repair and make the restoration project structurally sound, look as good or better than the original.

Types of Rivets Used:

There are several types of rivets used in the Corvette to attach panels, body mounts and brackets to the fiberglass body:

3/16 inch body diameter.

1/2 inch length - 1/2 inch diameter head

3/8 inch length - 1/2 inch diameter head

3/8 inch length - 3/8 inch diameter head

5/8 inch length - 3/8 inch round head - when squeezed it looks like a pan head but with rounded edges.

3/8 inch flat head - used to mount bonding strips to metal structure.

1/8 inch body diameter.

Hollow brass rivet (nickel flashed) used on the heater plenum, and fresh air doors.

Other types of Rivets Available:

Why then don't we just use Pop rivets? They are cheap and available, and easy to use. There are three good reasons not to use of pop rivets in a fiberglass body. One, if the rivets are aluminum they don't have the required strength that a solid rivet will have. Secondly, if we use a steel or stainless steel pop rivet then the fiberglass panel may be crushed when the rivets are set, destroying the fiberglass structure. Third, the appearance will not look original. The factory used pop rivets in several places but limited the use to where two metal panels are joined and spot welds were not possible, or where the back side of rivet is inaccessible, such as found on the 63 - 67 dash mounting.

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Types of Rivet Joints:

Three of the types of rivet joints used in the 63 to 67 body are illustrated.

1. The rivet of a bracket to the fiberglass body where the bracket is the back up for the set rivet. Examples of these are the seat belt brackets, and seat reinforcement / threaded nut plates, body mounts, dimmer switch mounting plate, accelerator mounting plate. See figure 1 below.

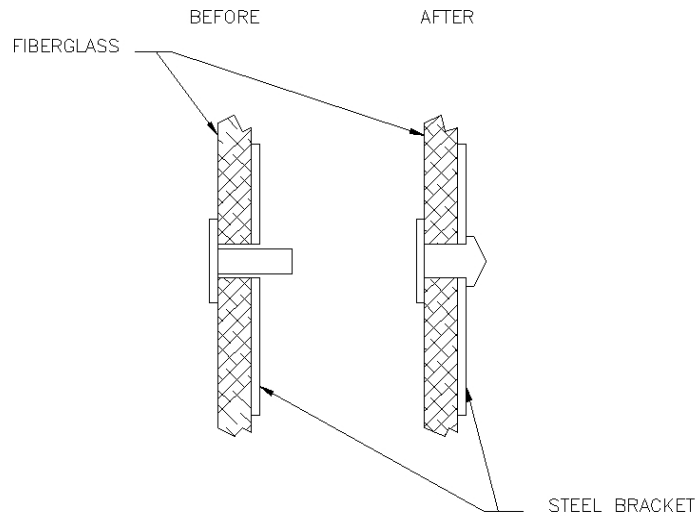


FIGURE 1

2. Rivet of a panel to fiberglass where the panel has the large rivet against the panel, the stem is thru the fiberglass body and a # 10 aluminum washer is used as backup for the set rivet. Examples of these are the luggage retainer panel behind the seats. See figure 2 below.

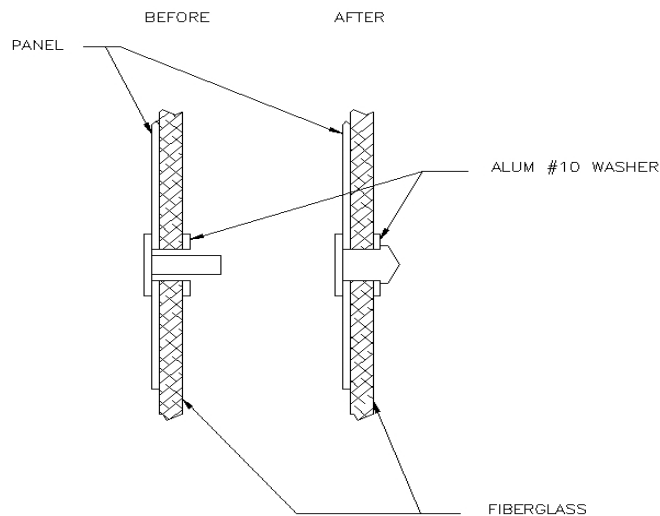
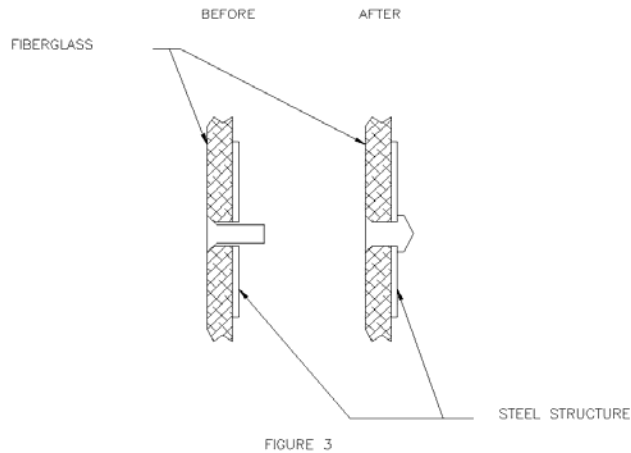


FIGURE 2

- The flat head rivet is used to hold some bonding strips to the steel reinforcement and is under a bonded fiberglass panel. The fiberglass is counter sunk and the rivet head is flush with the surrounding surface. Examples are the headlight attachment plates bonded to the front end fenders. See figure 3 below.



Simple Rivet Rules:

The riveting of brackets and panels all follow some very simple rules, when these rules are followed the riveted joint will be tight and look professional.

Rivet length: The rivet length should have between 1 to 1.5 times the rivet diameter protruding through the part assembly before the rivet is set. If it is too short there will be too little material to form a tight head and it will be structurally weak and if it is too long it will tend to bend over, be structurally weak and not form a good rivet head. Don't be afraid of cutting off a little material from a rivet that is too long. Discard rivets that are too short or use them in another application.

Bucking bar: A bucking bar should be of sufficient mass as not to react to the blow but concentrate all of the energy into forming the rivet.

Rivet anvil: This tool determines the final rivet set shape and controls the depth of the set rivet. This is important because a rivet set that is too shallow (too thin) will not have the proper strength.

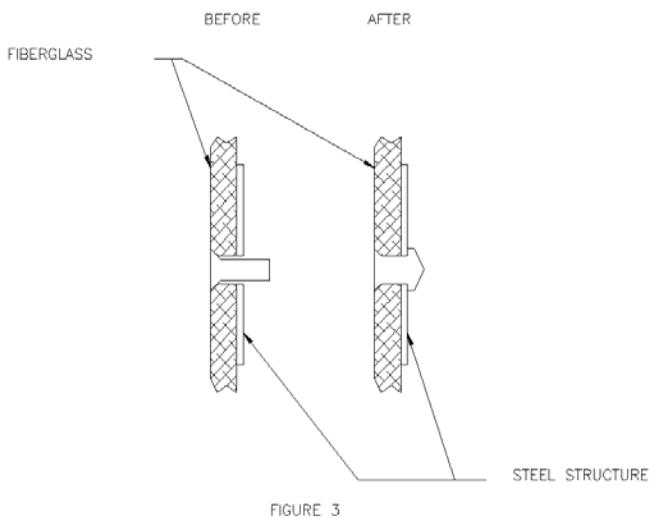


Figure 4 Correct Rivet Set Form.

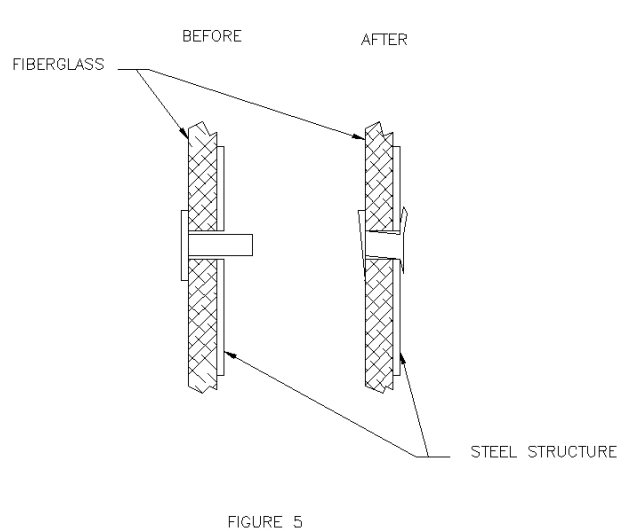


Figure 5 Poor Rivet Set Form - Structurally Deficient.

Body Rivet Information:

When you remove your first rivet from the fiberglass body you will notice that the rivet looks like it was beat with a hammer - and that is because a rivet gun (air hammer) was used to set the rivets. When you measure the rivet hole you will notice that the rivet hole in the body is 3/16 in diameter, the rivet hole in the nut plate or reinforcement is slightly larger in diameter and that the rivets and the rivets are 1/8 in diameter. This is done to allow complex parts like a body mount to aligned properly and all holes will easily accept a rivets. This also reduces the stress on the fiberglass by allowing the rivet to expand. The rivet of correct length is required to make sure that the rivet will have adequate metal to flow and form the rivet. A rivet with too little set thickness will be structurally unsound and too long a rivet will make forming a uniform head hard to accomplish, both are undesirable.

Rivets are cheap \$0.10 each and a few practice tries are recommended.

Tools Required:

- small hammer (6 oz.) approx.
- center punch
- 1/16 and 3/16 drills
- electric or Air drill motor
- small blunt chisel
- small drift punch
- large hammer (3 lb)
- body rivet tools set - see Figure 6.

Why do I need a Rivet Tool set:

A skilled body man may not need a rivet tool set if he does rivets all the time. But when you are only installing a few rivets and do not plan to install any more, then the tool set will make your rivet job look better than the professional.

- The bucking bar has two recesses, one to hold the ½ inch pan head rivet in place and keep you from squashing the rivet head. The corner recess is for the rivets in the corner of the seat belt bracket. If the rivet head is deformed then all of the rivet joints strength is lost.
- The rivet set tool is used to keep the rivet head in alignment and to form the rivet head into the desired shape.

There are two rivet tool sets available:

One is for the 1/2 and 3/8 inch pan head rivet. The anvil of this tool can also be use to set the round head rivet. The other is for the 1/8 hollow core brass rivet.

Removal of Rivets:

To remove rivets you must drill them out. Do not attempt to drive them out or to grind off the heads.

- Locate rivets to be removed, mark them with a black marker so only the necessary rivets are removed.
- Look on the back side of the riveted panel and make sure there is clearance. We don't want to drill into anything else
- Center punch the rivet as close to the center as you can get.
- Drill through the rivet with a 1/16 inch drill as a pilot.
- Change drills to a 3/16 drill and drill through the rivet, this should remove the rivet stem.
- If you are removing a plate that has multiple rivets drill all of them out.
- Once the rivets are drilled out use the chisel to remove the rivet heads by placing the chisel against the rivet head and tapping with the small hammer. The rivet head will shear away neatly. - do this for all rivets.
- Next use the punch and hammer to drive the rivet out, once you have driven out one or two rivets the rest pop out.
- Use a 3/16 inch drill and check the hole diameters before installing the new plate. If the holes are too large then you may want to use an epoxy / fiberglass mix to fill the hole and drill it to its proper diameter. What they sell at Wall Mart is polyester, it is not an epoxy resin and will shrink. The fiberglass body gets its strength from the fibers of glass and not the resin, so just don't fill the holes with resin.

Next - putting it all back together.....Body Rivets Part II

Internet:

More articles and tools are available on the WEB @

<http://www.micro-contols.com>

Where To Buy:

The rivet tools, rivets brackets and other Corvette parts are available from:

Volunteer Vette Products

3102 E Gov. John Sevier Hwy.

Knoxville, Tn 37914

PH: 1 865 521 9100

FAX 1 865 522 0080

<http://www.volvete.com>

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