Here's How...

From Rust, To Dust, To Lust!

Part 2 In A Series On 1965-68 Mustang Unibody Restructuring

Last month, we began this three-part series on 1965-68 Mustang unibody restructuring. To refresh your memory, we started with a severely rusted out 1966 Mustang convertible based in suburban St. Louis, Missouri. Our project supervisor, Bill Skinner, of the **Weld 1 Company** of O'Fallon, Missouri, showed us how to begin an extensive project like this. He cut out most of the rusted steel in preparation for the installation of new panels.

Make no mistake, a job like this is intimidating, and it isn't for the weak of heart. This means that you must be properly equipped, or be dealing with a body shop so equipped. There's no room for error here. A misaligned and welded panel or structural piece becomes a permanent mistake that either must be corrected or lived with. Living with improper alignment and installation means doors that won't close correctly, chipped paint, and other irritations - such as a front-end alignment shop who can't get the alignment correct because frame rail caps weren't in proper alignment before welding. It's *that* important.

This month, we're still in the process of removing old steel and cleaning up surfaces in preparation for new. Bill makes our job look easy, but it isn't. Once all of the old steel is removed, all surfaces to be welded must be cleaned with a grinder. This is long and tedious.

Clean contact surfaces will weld fine. However, before we begin welding in new panels, we must first think about corrosion protection. If you remember our last installment, you remember the elements that caused our rust-out to begin with. Electrolysis (which causes rust) has to have a place to start. Leaking cowl vents, more times than not,

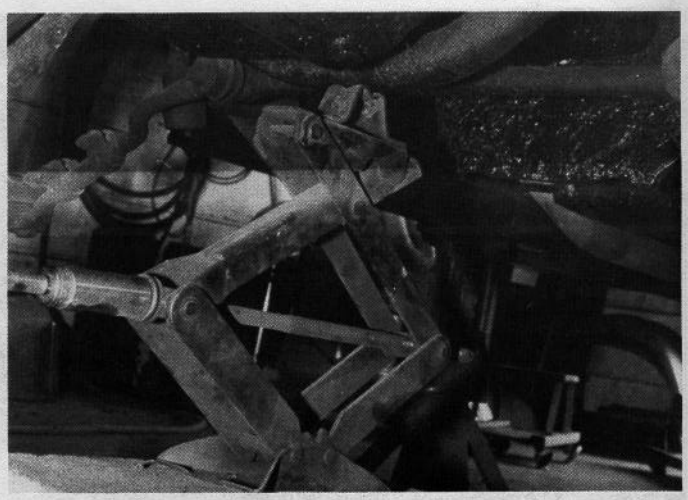
leaked moisture onto the carpet where electrolysis began long ago. Electrical charges are passed along the moisture, which serves as an electrolyte. For there to be a passage of charges, there has to be contact with the steel. To keep this from happening, we have to seal the metal.

To properly seal the steel, we must use a good primer/sealer base coat. But there's more. A good zinc-based primer/sealer will etch the metal first (like phosphoric acid) which promotes adhesion and prevents electrolysis. Primers like **Ditzler DP-40** and **DuPont Vari-Prime** are excellent self-etching primer/sealers. They etch and seal. Epoxy-based primers are also excellent choices for metal protection.

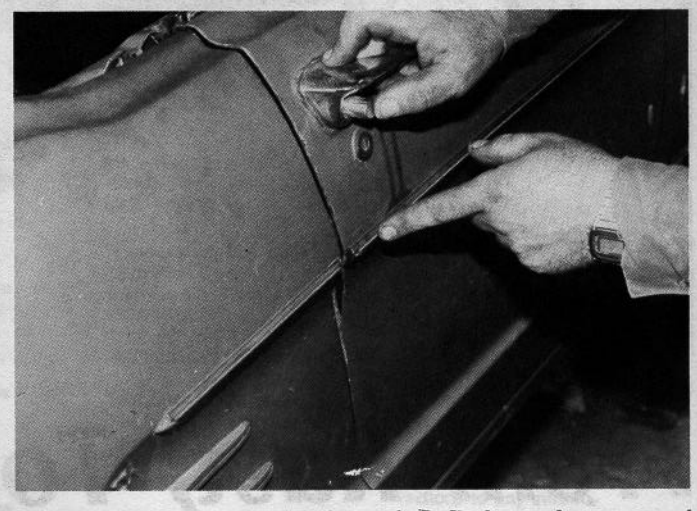
Because we are welding our sheet steel, we want a localized primer that will take the heat. There are primers made today that we can weld through. Check with your local automotive paint store for the best choices. Then prime the areas to be welded before you weld. Remember, the key to rust prevention is never allowing electrolysis a place to start. This means sealing *all* metal surfaces from the atmosphere, including those which are sandwiched together. Rust begins in bare sandwiched metal because condensation often forms there. Moisture in sandwiched areas promotes rust faster than any other means. Seal your metal thoroughly, and with the right primer. Primer surfacers (ordinary gray or red primer from the hardware or discount store) are not primer sealers.

Let's continue in our Mustang restructuring efforts. Bill Skinner begins our June installment with metal clean-up in preparation for new steel. The toughest part of this job is the removal of rusted steel. Our project Mustang, cursed with more than two decades of Missouri winters and rainy, humid summers, gets some long needed attention.

Skinner cleans up the frame rail with an impact chisel. Carefully, he peels the steel off, taking care not to penetrate the base metal. If there is serious rust in the frame rail, steel can be welded in place.. However, if rust is too extensive, your only choice is a frame rail from a donor vehicle.

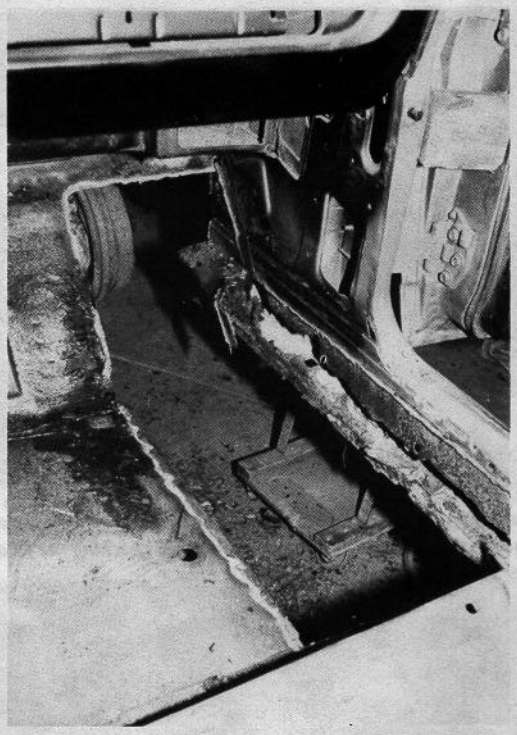


Before we go any further, Skinner supports the Mustang at the chassis crossmember as shown. This doesn't support the entire front-end, of course, it is used simply for adjustment.



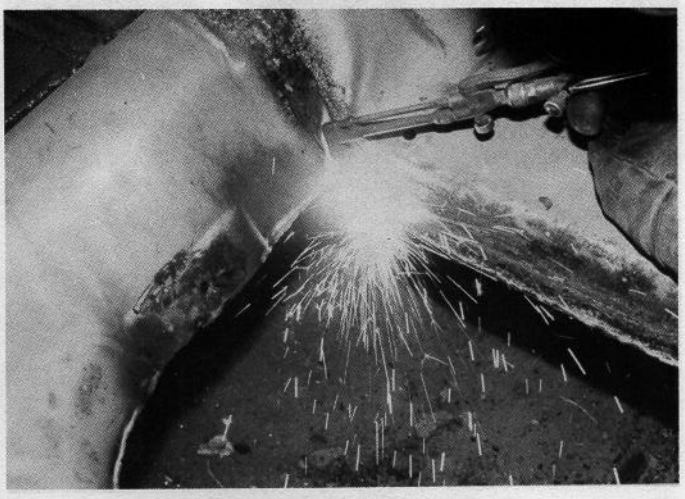
One key alignment point is right here, where the door and quarter panel meet. All points from top to bottom must be in alignment. Raise or lower the chassis cross member jack as one means to achieving alignment.

Clean-up continues as Skinner preps the outer rocker panel.



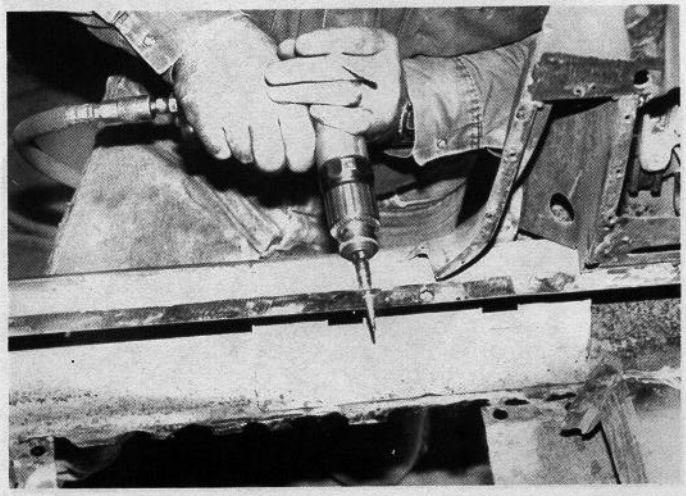
If this intimidates you, relax. Skinner has cut out the floorpan, torque and rocker boxes. As you can see, there's still a lot of clean-up left.

The right rear torque box (used on all body types) is cleaned up next. This torque box isn't too far gone, so we're going to repair it. Skinner cuts out the rusted steel at the front of the box. He will ultimately patch the front of the box when it's time for assembly. Like the front torque box, the rear torque box prevents body twist. Notice that Skinner has removed all of the rust from the outer rocker box. The stiffener has also been removed. Once all mating surfaces have been ground smooth, we're ready to assemble.



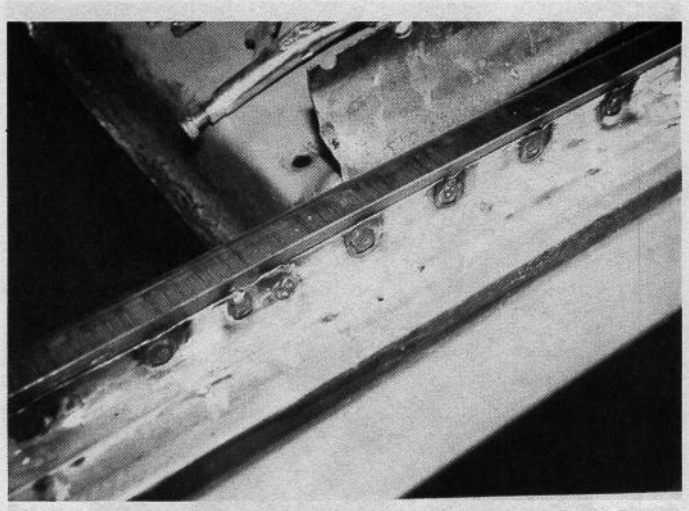
Skinner cuts out the remaining floorpan rust. Again, mating surfaces where our new steel panels will have to be welded must be ground smooth..

The new rocker boxes must be prepared for installation. Here, Skinner bores spot weld holes into the mating surfaces. Since we're not able to reproduce factory spot welds, we do the next best thing, we plug and fill.



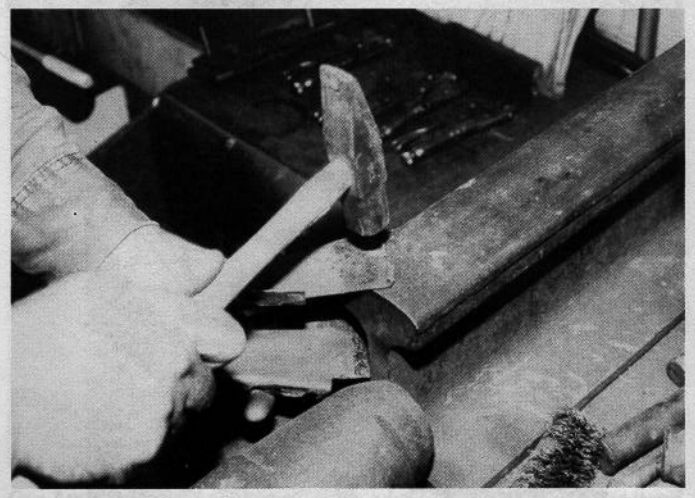
Prior to inner rocker box installation, Skinner bores plug and fill welding holes in the outer rocker panel as well.

Skinner positions the inner rocker box for permanent installation. When it comes to structural integrity, this is probably the most important component of all. Measurements must be taken and door fit must be perfect.

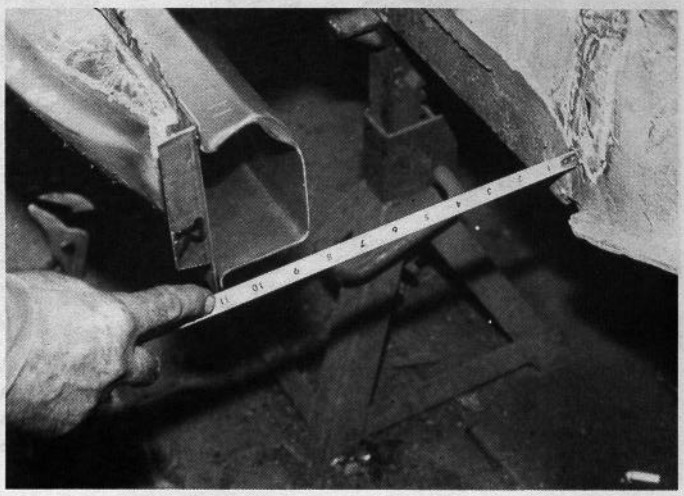


With all measurements within specs and a door that closes properly, we have begun the welding process. We strongly suggest checking the fit of fenders and other body parts that tie in with this area.

Once in position, the inner rocker box can be adjusted with the gentle tap of a hammer. Sometimes it takes a firm blow.



Some pieces, such as this stiffener, must be hand fabricated because they aren't available in reproduction form.



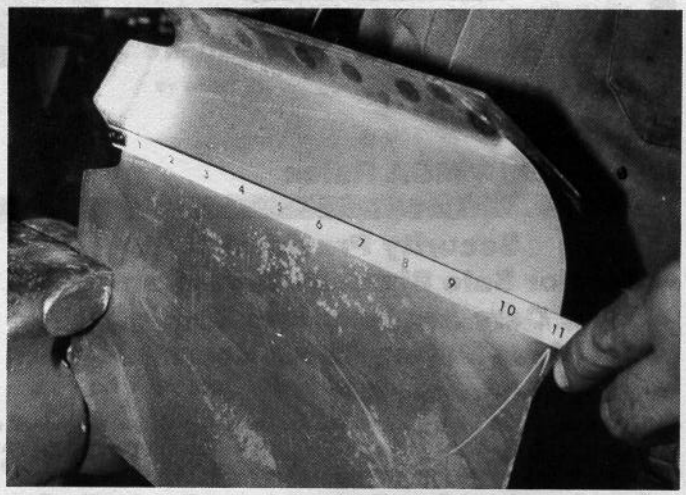
Skinner checks our measurements. From the outer rocker box flange to the main frame rail should be exactly 11-inches, no exceptions.

With our inner rocker box welded in place, we're ready for other areas. Skinner measures eight-inches for the plate he will fabricate here.

First, we clean up the mating surfaces with a grinder. Rusted surfaces will not weld. What's more, they will get worse. Clean it up first.

Some trimming of the front torque box is required in this case. As always, close attention must be paid to detail.

Next, Skinner takes a piece of stock and checks for fit. This piece will have to be formed into place using a penning technique.



The torque box should be exactly 11-inches across, just like our outer rocker box to frame rail dimension. The torque box must fit the space perfectly. This means getting your mating surfaces flush.

Skinner welds our plate into place. Once welded, he does the final penning into place. We're simply forming the plate to the torque box.

Next, Skinner fit checks the torque box. Notice the flange that is flush with the frame rail. The flange on the left (Skinner's left thumb) should be flush with the end of the outer and inner rocker boxes. Next month, more!