Restoring the Hagerty Tiger: Becoming a Body Man

Drilling out spot welds and fabbing patch panels on the Hagerty Insurance '67 Sunbeam Tiger project car

By Frank Markus | June 16, 2015 | 0

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I've owned a 1967 Sunbeam Alpine since my Chrysler engineering days, back when Lee Iacocca was saving the Pentastar brand from an earlier brush with death. I bought it because I wanted a fun convertible that I could drive to work occasionally and park in the "good employee" lot, not the distant one for traitors who drove non-Chrysler products. The Rootes Group that produced Sunbeams was, you see, purchased by Chrysler in 1967. So when I heard that Hagerty was following up last year's restoration of a 1964-½ Mustang (which I assisted with, as it was a virtual doppelgänger for the first car I ever owned) with a project to renew a V-8 Tiger version of my beloved Alpine, I eagerly signed up to pitch in once again. This is the fourth car in Hagerty's annual restoration program, which gives all employees the opportunity to gain hands-on experience learning what it takes to properly restore a classic car.

Hagerty's Tiger is a pretty cool one, a Series II model with the larger 289-cu-in small-block Ford V-8. Yes, Ford V-8s were sold in Chrysler vehicles — a situation that obviously had no future. (Chrysler's 318 small-block didn't fit, largely because of its rear-mounted distributor.) The limit of Chrysler's patience with this arrangement was 633 cars that had their "Powered by

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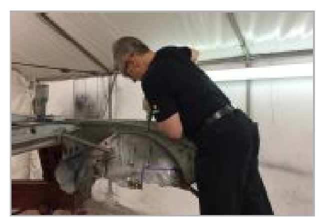
Ford" emblems replaced with less ironic ones reading "Rootes V8." This one suffered some front-end crash trauma early in its life, and overheating troubles sidelined it later in life. In 1982 it was parked in a driveway, where it sat until Hagerty rescued it. So this project involves a bit more bodywork than the last one.



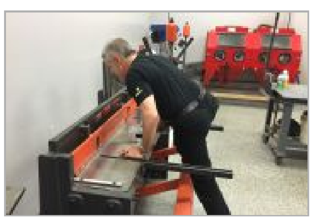
That suited me fine, as the extent of my hands-on experience with bodywork up until now has involved tin-snipping, bending, riveting, and sheetmetal-screwing 26-gauge galvanized ductwork sheetmetal into rusted-out Mustang floorboards and troweling Bondo into deep cracks and dents as a teenager. Not surprisingly, it turns out there is a better, more professional way, and with all the right (expensive) equipment, mere mortals can repair a body the right way and in such a way as to be undetectable to the concours judge and future crash forces and suspension inputs.

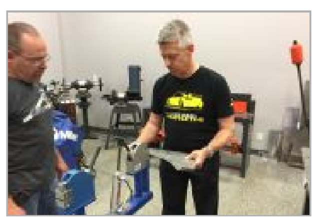
My tutor for the day is Tom Weston, who has been doing concours restoration work and custom vehicle builds since about the time I was screwing those Rube Goldberg floorboards into my Mustang. Tom explains that it is possible to disassemble just about anything a manufacturer has managed to spot weld, hem-flange, braze, or MIG or TIG weld together on a factory body line and then replace it in such a way as to make it look original and maintain its original structural integrity. It helps, of course, to take pictures and pay close attention to how it looks before you take it apart.

My task is to remove the front half of the driver-side engine-compartment sidewall. This part spans from the wheel opening on the bottom to the outer fender on the top and from the firewall at the back to near the radiator support in the front. It was kinked and damaged in the frontal shunt. Step one: Locate and drill out what turn out to be 11 spot welds attaching the front of the panel. Tom has a set of mono-taskers for that called Rotabroach cutters, sized to match the diameter of the spot weld. Running my two index fingers along the front and back surfaces of the weld joint, it's pretty easy to sense where most of the spot welds are, and we mark them with a Sharpie. Then we take a one-eighth-inch drill and just make a pilot divot at the center of each.

Now the air-powered drill with the Rotabroach bit comes in. It has a flexible concentric pointer that keeps the bit centered on our pilot hole, allowing the broach to cut away just the outer (bad) piece sheetmetal around the spot weld, leaving the good sheetmetal untouched on the other side, along with the evidence of where the spot weld had been so that the new piece can be spot welded in at exactly the same points for authenticity. It's important to keep the cutter perfectly perpendicular to the part and check your progress. When you're through the outer layer, you may see dark (rusty) metal shavings, or you may just see a dark edge around the hole that is the next layer of metal.






Once we think all the spot welds are drilled out, we grab what looks like a pry bar sharpened to a chisel edge on the end and on one adjacent side. We pound the end in between the sheetmetal layers at the top of the joint then pound the sharp side edge down, separating what's left of any spot welds and revealing any we may have missed.

We repeat this method to separate the welds along the joint with the fender, but the welds at the bottom of the piece, where it meets the wheelhouse, are only accessible from under the fender, and the drill can't reach. These will need to be broken by grinding away the material using a grinding wheel. To make it easier to see these welds, we first use the grinding wheel like a sabre saw to cut away the remaining bits of this panel so we can see the welds from inside the engine compartment. Fortunately Tom has an air drill that's reversible so that we can keep the sparks flying away from our (safety-glasses-protected) faces. Learning how to tell when you're through the top layer of a spot weld is tricky. Just before you go through the metal, it turns kind of blue. When we took the chisel thing to this joint, we found there was a lot more grinding needed, but eventually the flange was fully liberated.

The next step is to create a template and fabricate the new panel. The reworked fender isn't perfectly positioned, so we trace our template in the gaping hole and modify it based on dimensions from a completely unmolested donor body Alpine Series III body procured for this purpose. I trace the template shape onto the metal (we are using part of the original hood, the front of which was unsalvageable, in order to keep as much metal "original" to the car as possible), with Tom coaching me on how much material to add for the flanges and how to note which direction they fold over.

Cutting my 19-gauge metal part out is a breeze using a "throatless rotary shear." Two sharp wheels, one serrated, work like a can opener. A ratchet handle turns the wheel, you turn the part to keep the wheels on the intended line, and voila. A few straight-line cuts are managed easily on a big foot-operated, 4-foot shear. Small corners for the flanges and fine corrections are snipped out with left- and right-handed snips. (The handedness refers to which direction you can turn the part without the metal binding with the shear, not the handedness of the operator.)

The one simple straight-edge flange is easily bent on a segmented box brake, but bending flanges along curved edges is much trickier. That's because the metal must either expand or contract to make such a bend. Naturally, the Hagerty shop has a gizmo for this: a pneumatic shrinker/stretcher. The metal on the upper flange of my part has to shrink along the convex line it's following, and the lower flange must expand to follow its concave line. Feed the part into the shrinker or stretcher side of this gizmo, and when you apply air pressure via the foot pedal, two pairs of grippy metal plates clamp the metal and either shove it together about one-eighth of an inch or pull it apart by that much. As this happens, you put a little pressure on the part to bend the flange. Bend it enough, and the part stays flat as you go.

Once the flange is partly bent over, Tom rolls his round steel table over and hands me an Eastwood plastic hammer, which I use to complete the bend to 90 degrees. Doing this induces wrinkles and bends in the part and the flange, prompting more work on the shrinker/stretcher. Inevitably, the flange I was stretching needs some shrinkage to fine tune it and vice versa.

At this point the flange is a little jaggedy when viewed right up close, so Tom shows me his collection of "dollies," specifically a heel dolly (shaped like a men's dress-shoe heel) and a half-toe dolly, and his body hammers. I hold an appropriate edge of the dolly on the inside of the flange and hammer the outside to smooth these out, returning to the shrinker/stretcher as needed to keep everything flat, and finish the job by using the snips to even out the edge of the flange. We test fit my part and find that it doesn't fit quite perfectly, but that was expected because the fender still needs some finessing.

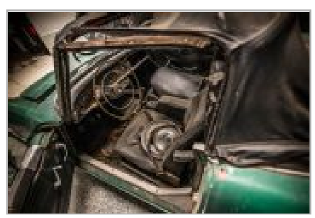
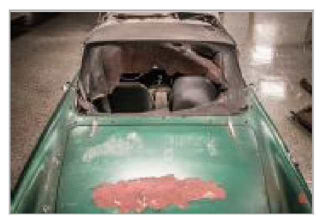



My final lesson for the day is in leading — the process of melting lead and applying it to a body joint. You've heard of "lead sleds"? These custom cars tended to use a lot of it. Tom starts by cleaning the part with phosphoric acid and then "tinning" the sample part by spreading "tinning butter" (solder flux with powdered lead in it) on it and heating it up with the blowtorch. When it turns shiny and sparkly, it's ready. Then he melts the end of the lead rod while keeping the surface hot, spreading the hot lead on the part, bridging small holes with it. Finally, he uses a wooden smoothing tool (coated in paraffin wax to prevent the lead from sticking to the wood) to level out the lead. The better one is with this tool, the less of this pricey lead gets wasted in the filing and sanding process.

We don't have the opportunity to weld my part in today because the fender still needs work, but when the day comes to do so Tom will carefully trim the new and old parts to meet in a perfect straight line, he'll butt-weld them, file and dress the weld (with some lead if necessary) so that you can't tell it's not one piece. He'll then spot weld the flanges in exactly the same spots they were welded before, such that when they're all painted nobody will be able to tell this panel was the work of a middle-aged scribbler (and a gifted body maestro) and not that of a gleaming stamping machine at the Pressed Steel Company of Oxford. It'll certainly be the first thing I check out when I first encounter the finished product.





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