Forming Sheet Metal #1

A demonstration on forming a fender shape by edge shrinking sheet metal.

Introduction

Wray takes us through the process of forming a shape with compound curves, which in this case happens to be a rear fender for a classic Jaguar XK automobile. As Wray eplains, this technique may be applied for any purpose whether it's sculpture, furniture or something else.

Chris Ray - editor

This is my wireform reinforced buck or form which was made by first making a wireform (1/4" dia.hot roll wire)inside of a good original fender. A paste wax was applied to the inside of the original fender,the wireform reinstalled, and then bondo is spread around the wires using a putty knife.

Wireforms such as this can be quickly made so that you can copy original shapes very accurately. If you were making a original sculpture, you would first make the original design, then make a wireform/bondo mold of it.

Once you have the mold you can make many very accurate copies which can be used if you want to make a symetrical pattern, or if you want to make a series of one particular shape.

This is the steel blank (.040" thick) which is cut oversize about 1" all around, this gives you a little extra metal to play with.

The blank has been rolled on the bench , to make it sort of fit the buck.

Shrinks have been taken on the edge using a simple tucking tool. By shrinking the edge you develope shape very quickly, but it looks messy.

The shrinks have been hammered down (this is all cold working no heat necessary).

Now the interior of the panel has been roughly hammered out to finish the approximate shape.

A new series of edge shrinks have been taken to further develope the shape.

The rough shape is developed and now the buck must be used as a guide to action. By clamping the panel to the buck, low spots will reveal themselves. Low spots are raised by hammering and then wheeling them smooth. At this point minor imperfections in the smoothness of the panel are of no concern. The object is to keep making slight progress on each fitting and adjustment.

The refinement process continues. A magic marker is used to outline the areas that need raising. In order for the buck to do it's job the panel must be clamped around its outer

edge. If an edge is allowed to be free you will get a false reading and quite likely raise an area that doesn't need it.

The shape is almost fully developed, all that is left is further refinement, and smoothing.

The panel is starting to shine up , the wheel imparts it's polished surface to the surface of the panel.

The fender section is now conforming to the buck very well and it is very smooth. The next step is to form the wheel opening joggle and also to turn in the lower rear edge lip, which has a varying radius.

The fender is clamped tightly to the buck and then a wood former is used to reveal the wheel opening joggle and also to start forming the lower lip.

The fender has been bolted to the buck along it's attachment edge. These holes are in the exact location and were copied from the original fender when the buck was made. This type of molded wireform buck allows you to see how the fit is coming, because you have full access to the backside. It also allows you to index or locate and form details in their correct locations. It also allows easy clamping. Clamping zones or pads can be made on the inside of the buck.

The forming of the wheel opening joggle is progressing. The forming is done where the fender is clamped tight with the pads. A diamond shape pattern of stretch has to take place in this zone in order to form the joggle and still have everything sit right on the buck.

This is a detail shot of the refined joggle. A steel caulking tool is now used to sharpen the inside edge of the joggle.

The lower lip of the fender is slowly rolled over with a slapper while it is clamped. Tucks are taken on the inside edge to shrink the inner edge. If the shrinks are not taken, the panel will resist forming.

This is a detail of the finished wheel opening joggle.

Here's a detail shot of the finished lower lip and the wheel opening joggle.

Here's the finished rear fender section. To make the complete fender a front section would

be made seperately, then the two sections would be welded together. I have ground the surface with a 4.5" body grinder using a 120 grit disc.

A 120 grit disc removes very little material, the grinder is just floating on the surface.By grinding the surface you prepare it for painting. The fine scratches give the paint something to hold onto. The heat from the grinding disc also stress relieves or normalizes the the surface,and smoothes out any surface irregularities.