Rufus - Making a New Engine Mounting Bracket.

Introduction:
Although the chassis was old and with surface rust in places it was in reasonable condition with no deep pitting. The exception was the left hand front engine mounting which had been broken and badly welded. I decided to renew it.

***

Removing the old bracket:
The best method to remove the old bracket is with a thin slitting disc in an angle grinder. I started by cutting away most of the bracket to gain access, then cut as close to the main chassis as I could, this left me with a matchbox sized plate that was secured to the chassis rail with a continuous bead of weld on all four sides.

Once at this stage there is no easy way and I just ground away the weld bead until the metal plate came away. The aim is to remove all traces of the old bracket and its weld bead without thinning the main chassis rail. Patience is a virtue on this job.

Chassis sans left hand front engine mounting bracket.

***

Making a new bracket:
My first port of call was to approach Mark at NG cars on the off chance that he had inherited a box of brackets when he purchased the NG business, alas no joy. Then I decided to reproduce the original bracket and made a sketch for my friend Adrian (a Director at a local metal fabrication company) to fold up a suitable blank from metal plate, but then I had a Eureka moment (what was the point of making a duplicate bracket to one that had already failed?) and I decided to make a totally different, but stronger, bracket. To enable it to be a perfect fit l used the front engine mounting plate as a 'Jig' this will ensure that the new bracket is dimensionally correct and is welded in the correct position.

I started by making a new flat plate (from 3mm thick material) to support the rubber mounting; after shaping and drilling it was bolted to the rubber mounting on the front engine mounting plate. The front engine plate (complete with rubber mountings) was then bolted to the right hand chassis bracket. The front engine plate was then levelled up and solidly secured in place with a selection of clamps.

The new flat plate is fitted to the rubber mounting.

The mounting (‘Jig’) in position.

All levelled up and ready to make the box section support.

All that was needed now was a piece of box section steel to bridge the gap between the new piece of 3mm flat plate and the chassis. Sounds easy doesn't it? But where the box section joins the chassis it has to be cut at a compound angle. Where the other end joins the 3mm thick plate it is a straightforward angled cut.

I could take all the measurements and cut the box section to shape and hope it would fit, but I know from experience that the chances of success are slim. The solution was to use cardboard to make a template.

The box section I am using is some old metal I had lying about, it is 1-1/2" x 1-1/2" x 1/8" thick. First I cut a strip of cardboard 1-1/2" wide then taking a piece I cut it so that it was an exact fit at the forward end of the metal support plate. This cardboard template is shown in the photo below

The shaped cardboard template.

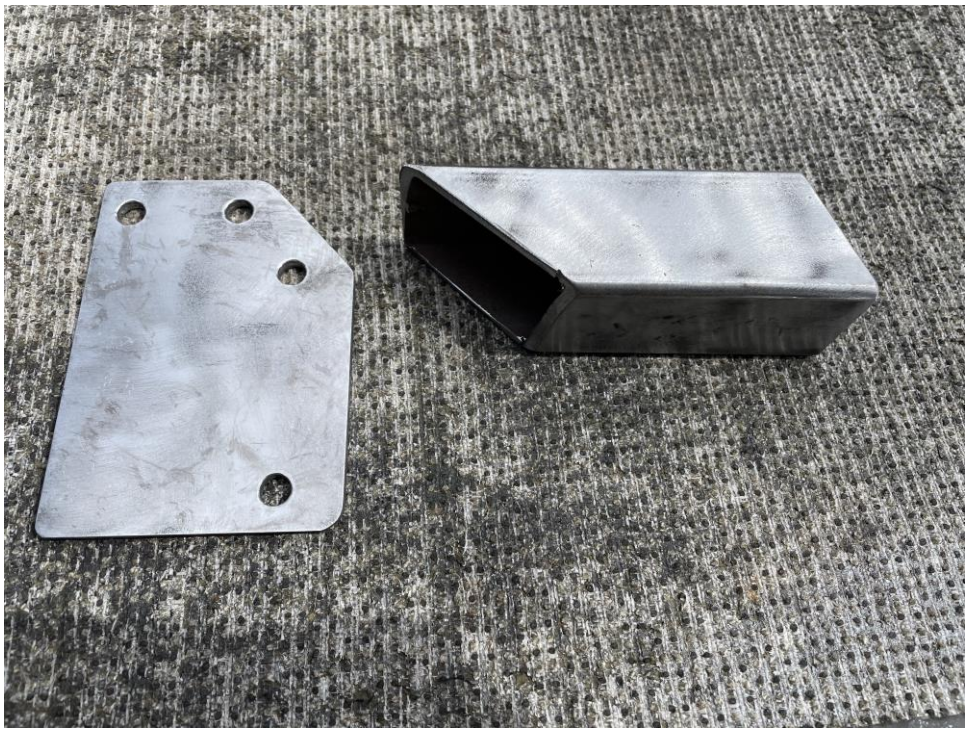
Moving the cardboard template 1-1/2” towards the rear of the chassis revealed that it needed to be 7mm longer in that position.

The top angle is a simple angle in just one plane, so using the cardboard template I set up the jaws of my mechanical hacksaw to the correct angle and made the cut.

Cutting the simple angle.

Next the cardboard template was laid on the metal box section and a line was marked on it to indicate where it needed to be cut at the other end. The template was then positioned on the other side of the box section and another line drawn 7mm away from the template. The ends of the two lines were than joined across the unmarked faces and cuts were made along the four lines with a metal slitting blade in an angle grinder, this rather drawn out procedure produced the compound cut on the end of the bracket that is welded to the chassis. A final fettling had the bracket ready for welding following which the paint and mill-scale was removed from the box section and flat metal plate respectively with a poly-strip pad.

How it all goes together.



All fettled and ready for welding.

The new engine bracket is now ready for welding to the chassis but before that I am going to buy two new rubber engine mountings which will improve the accuracy of the ‘Jig’.

***

Summary:
Halfway through making the engine mounting bracket I realised that I was practically duplicating the brackets on Emma my TD; this was not intentional.

As the left hand side original bracket has already failed I have decided to replace the right hand side bracket as well. I will do this after I have welded the new left hand bracket in place so that it can support the ‘Jig’ while I do the other side.