Rufus - Making a New Engine Bracket Part 2:

Introduction:
My previous article described making a new left hand side engine mounting bracket and how I was going to use the front engine plate as a jig to weld it in position. I then discovered a small crack in the right hand bracket. This caused me to have a rethink on the whole job, as a result I had a complete change of plan as described below.

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The Updated Plan:
Sometimes you have a 'Eureka' moment and I recently had one; nothing in that you might think but some are better than others. With a lot of cars it just doesn't pay to make too many changes, after all how can a mere mortal make a better car than a multi billionaire manufacturer with dozens of designers working on the project. Rufus is in a different league; i.e. I got him cheap with a lot needing doing. He's also not a pedigree breed, similar to a Jack Russell, a bit of a mongrel, but nevertheless very good (or maybe excellent) in his own way. Despite employing sixties technology mechanicals and updated eighties chassis fabrication there's nothing wrong with the basic NG concept. So what can be improved? One area is the engine and although I like the standard 'B' Series I always remember driving my brother-in-laws 2200 LandCrab and being impressed by the six cylinder engine. In the back of my mind I harboured the idea of fitting a straight six, or possibly a Mazda MX5 four cylinder engine. With this in mind I decided to make the original engine less of a permanent feature; this would be achieved by having modified engine mounting brackets that were bolted to the front subframe mounting points, rather than welded direct to the chassis. Checking the subframe mounting bolts revealed that they were long enough to facilitate the additional brackets and still enable the fitment of Ny-Loc nuts.

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Further remedial work:
The first task was to grind off the right hand engine mounting bracket and make a new one which was a reverse image of the left hand side I had previously made and described in the earlier article.

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The new Jig:
As part of the new master plan involved the removal of both existing mountings I decided to make a new jig. This was much more involved than the original jig and consisted of the refurbished gearbox and engine block** complete with front and rear adapter plates.

Note.
*** I had started overhauling the engine which was completely stripped so just used the bare block fitted with the adaptor plates.*

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With the chassis set on blocks etc. and the gearbox crossmember bolted to the chassis the gearbox was fitted in place using new gearbox to crossmember mountings. Next the engine block was lifted into place and bolted to the gearbox. Previous measurements had confirmed that the top of the engine mountings were 100mm above the chassis rail at the top front corner and the engine was evenly spaced side to side giving a measurement of approximately 70mm between the outside of the chassis rail and the top of the engine mounting bracket.

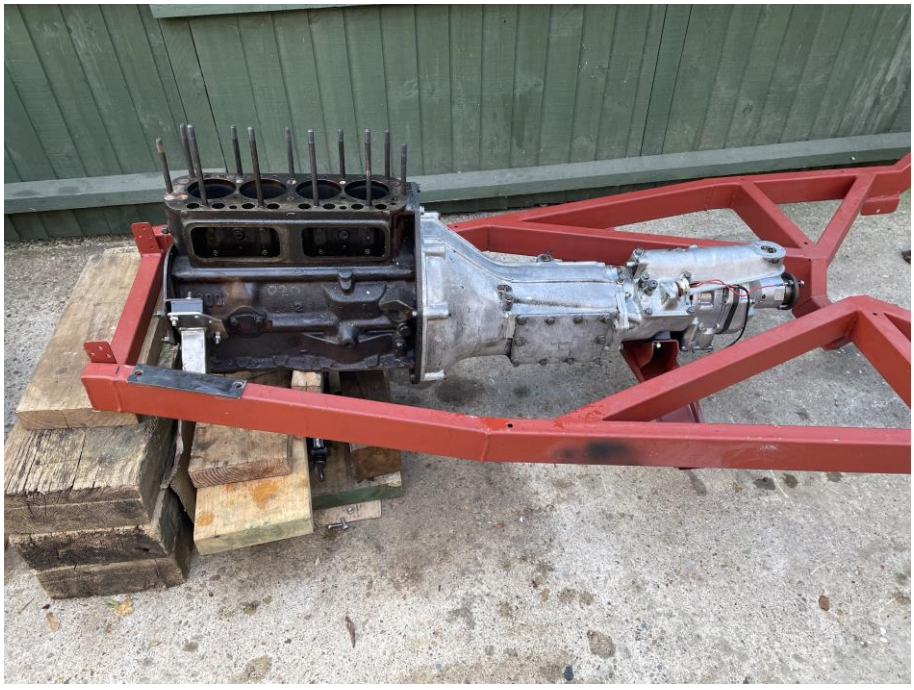
With the engine correctly set for height I offset it to the right hand side by 5mm, this would not be noticeable but would give me a little more clearance for the front carburettor air cleaner. Both new chassis brackets were then trimmed so they just fitted inside the chassis rails when bolted in place.

The new jig.

A piece of flat 4mm thick plate was then placed against the chassis, positioned next to the brackets and a line drawn with a felt tip pen onto the bracket box section. The brackets were then removed and the box section of the brackets ground off down to the felt tip pen lines.

Right angled plates were made from 4mm thick steel plate and drilled to suit the chassis holes that take the subframe mounting bolts. The chassis brackets were then bolted to the new engine mountings and the previously bent right angle pieces of 4mm thick plate were pushed in between the chassis and the new chassis brackets and lined up with the suspension bolt mounting points.

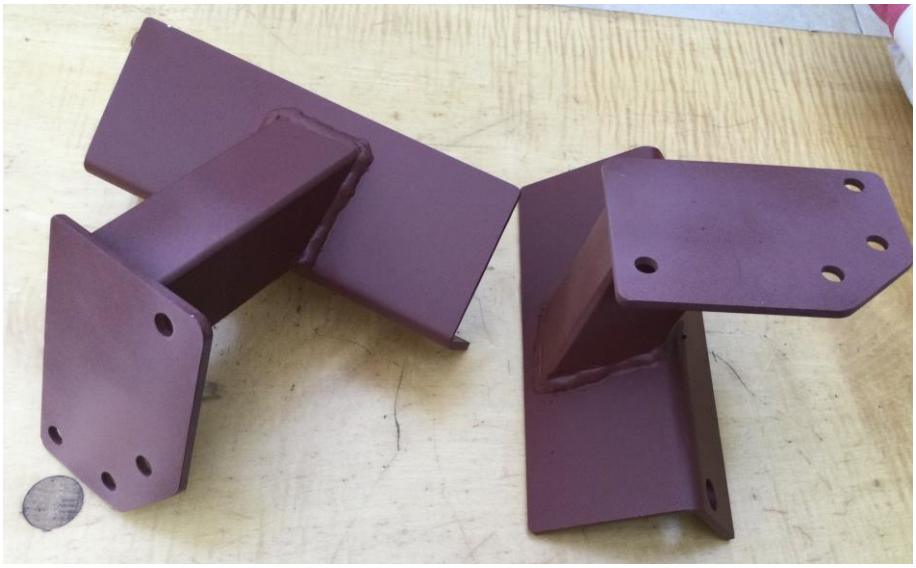
After tacking the brackets to the right angle plates the bracket assemblies were removed and welded up on the workbench. After a further trial fitting on the chassis they were again removed followed by the engine block and gearbox.



The modified engine mounting brackets.

The last job at this stage was to apply a coat of red oxide to the bare sections of chassis. Followed by scuffing down with a Scotch pad and a further coat of red oxide. The same treatment was given to the engine mounting brackets.

Ready for the black topcoats.



All ready to receive the black topcoats.

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Summary:

I think that Nick Green, the designer and original proprietor of NG Cars, was too good an engineer to incorporate engine mounting brackets that broke up in normal use. When I stripped Rufus for refurbishment I discovered that the propshaft yokes were out of line, this results in the propshaft speeding up and slowing down twice in every revolution which must have caused quite severe vibration; I am assuming that this is what destroyed my engine mountings; and most likely caused the car to be abandoned for the last 26 years.

By sheer coincidence my brackets have ended up very similar to the engine mounting brackets on the later cars; it wasn't planned it's just how it ended up.

I feel that mounting the engine brackets on the existing subframe bolts will be an improvement, first it will enable their complete removal making future engine/gearbox replacement much easier, and second I will be able to fit a different engine without grinding the existing brackets off the main chassis rails.