Miss Daytona build – 19

This document was written by Paul Naylor and is published here for FMES online viewing, and was written during 2026.

Although this article appears after the previous one and continues the engine manufacture, in fact, the work on a number of bits and pieces was interleaved, so my progress on everything at this point was a little more haphazard than the articles suggest: as you will read, the aluminium soldering process was not conducive to motivation.

The next bit to add to the engine is the supercharger spiral casing, which is not straightforward. In the end, I tried a few experiments with hammering bits of aluminium and decided I could probably bash it round a former if I made one the right shape. As it 'appens, I had a bit of scrap brass tube 1.5" diameter and ¼" wall thickness that seemed a good starting point. With combination of the lathe, mill and several files, I made a representative 'scroll' and proceeded to beat a bit of aluminium plate round it. It is made easier by the fact that the real one has all the complication on one side and is 'flat backed'. This was quite a satisfying little journey and the result is as the photo, the brass former on the left and the resulting casing on the right (after some 'off former' work and soldering it to a flat back).

The next step is to make the bearing housing and air/fuel inlet pipe in the centre (including the stiffening webs which should be fun) and the outlet pipe at the end of the scroll. This is bringing up the first brush with the large pipework all too visible around the engine. The exhaust pipe at least is black in colour and I can make this from brass or copper (to assist the lots of soldering required) if I watch the weight, but the air and fuel inlet pipes are aluminium and have very tight bends. I will not even attempt to bend 8 or 10mm pipe to these radii, so I am hoping that I can mitre and 'modify' two pieces and solder them together then file them approximately rounded, and with this in mind, I have ordered some 1mm wall thickness pipe of varying diameters. As an interesting aside, the air/fuel inlet arrangements of the real engine comprise the single centrifugal supercharger mounted between the inlets to the cylinders and the carburettor, which seems to be mounted low down at the front of the engine, with a large pipe (c3.5" in real life - mine will be 10mm) from the carb to the supercharger. It must make starting it quite involved given that distance for the mixture to go (especially if everything is cold) from carb to engine, but at least the supercharger will make sure it is well atomised. The photo shows these arrangements on the engine in the real boat.

For those not aware, a supercharger differs from turbochargers (which came later in engine evolution owing to

the more extreme materials required to withstand the heat of exhaust gases amongst other things) in that it is driven by gears from the crankshaft rather than a turbine spun by the exhaust. Modern engines use either method (eg Jaguar's supercharged XKR engine or very many other turbo types from 'hot hatches' to Bentley's W12 engine) but with direct fuel injection closer to the engine. It is an engineering shame (for those of more vintage years!) that all this will be superseded by an electric motor - progress I suppose.

The bits and pieces for the supercharger came together – with a little more turning of small round parts on the lathe – and I decided how I would 'do' the webs. The photo gives it away (including the token number of webs compared to the real thing) and the pictured result is bolted together with an M3 stud. This will also secure it to the front of the engine and will be all hidden by the large inlet pipe with a tapped hole in it for the stud end. The webs are not yet secured other than a mild riveting action when I tapped them into the hacksawed slots in the bush. I will NOT be soldering the webs (if it was brass I would – here solder would be too lumpy, unpredictable and hard to clean up), but probably use epoxy or even superglue when I assemble it finally. The rest of the assembly had one too many soldered joints and I had some difficulty getting it back together again when it fell apart. There is one more joint to do as well, the outlet pipe from the hole at 9 o'clock, which will be epoxied in place! This may also be a candidate for some filler of some sort...

One thought struck me making this lot bit by bit from aluminium... if I ended up painting it, it will be indistinguishable from plastic and could be a topic of a 3-D printed plastic structure. That would be a tempting project if I was a little younger and was prepared to invest in the necessary equipment – youngsters, get weaving!

The pipe came, so I started to try to make the inlet pipe using 10mm OD pipe. It struck me that more than one mitre on the pipe *nearly* all the way through will help with a smoother bend (and the 1mm wall thickness allows some filing to smooth it more), and I made up a pipe in this manner with three bends - that was the easy bit. The photo shows the 'bent' pipe pre-soldering, and it looks very promising. If it was brass or copper, no worries about the solder penetrating and filling the 'cracks', but can I get the solder to flow here? No chance, although by putting liberal amounts of solder in the pipe and heating it all gently until it melted seemed to work in places, but with no consistency. I also put some epoxy glue in the pipe and with *gentle* heat caused it to flow into all the cracks. That was more promising from the point of fixing the bends, but the cracks are still very visible. I might give it one more shot by scratching another bent pipe as it is heated and with solder in blobs on it to see if the scratching effect (with a stainless-steel brush) helps it flow, but if that fails, the first attempt will be filed up and painted! I suspect that the flux does work to some extent but not unaided: all of the examples I can find on the internet use a scratching technique BUT how do you scratch the inside of a crack??

Since the first attempt at least held together even if all the cracks did not fill up, I carried on with it by adding flanges and a 'carburettor'... these were all epoxied in place though. When mounted on the engine it looks OK (cracks apart) although I need to decide on the finish. I have yet to add the pipe for the outlet: that has a sharp 90-degree bend that I made in the same way as previously and have tried to fill with solder using a scratch brush but with no greater success. I confess that I have simplified the design at this point: the supercharger outlet in real life feeds a pipe that is joined via a coupling (as is shown in the photo earlier) and another bend to the *centre* of the inlet manifold (for good reason - to try to balance the pressure to all cylinders a bit), whereas I have decided to connect it to the front end of the manifold. The scheme looks plausible, just not scale and not as efficient either! I did this because, to be frank, I was struggling to use the aluminium solder in places where large blobs and lack of penetration were not suitable, epoxy is difficult to disguise and I was fed up trying to get the solder to flow. As it is, the supercharger and pipe to the carburettor are now painted after filling the cracks with car body pin hole filler to hide the pipe bends...VW silver seemed to be a reasonable look alike, especially if I 'weather' it a little later – see the photo later.

I also made up the inlet manifold for the engine: no bending, just fitted joints and I managed to get the pipes to stick together with solder enough to be filed and fitted, although the weight of the solder probably exceeds the weight of the pipes (the big internal blobs!). This is highlighting a minor (for now) problem in that the engine main bits are light, but it is the ancillaries that are adding the pounds. I put an 8BA bolt in each pipe clamping the mounting plate to the main pipe though to make sure it held together (and add a bit more weight).

The photo shows it all fitted to the engine in the boat, with a piece of black heat shrink tube yet to be applied to join the supercharger to the manifold when I finally assemble it. The manifold is bolted to the engine with M2 bolts – nuts outside. The bolts that are visible in the 'V' between cam covers are part of the spark plugs!