Miss Daytona build – 21

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

This article is a little out of sync as I am treating the engine build as a long-ish project with gaps while I think about what to do and acquire bits and pieces… and (trying to) learn soldering aluminium and so on. As a result, there a number of bits and pieces still outstanding that I am using as 'fill ins'.

One aspect is the location and arrangement of the RC gear, and hiding it suitably in the hull. There is only one small hatch and a large gap, so a lot is 'on show', and RC gear is not prototypical!

I was going to hide the RC receiver behind the petrol tank on the right-hand side. This tank (and the similar one on the left side) is visible and needs to look like a metal tank. I have some copper foil (or bronze – it is very springy - I am not sure which) that would look good as a tank, so I will make a suitable structure and then glue this foil to it for looks. The snag is that I remembered that the receiver and its aerial needs to be free from metal screening to enable a reasonable range, so it is no good mounting it there after all. Fortunately, it is small and light, and so I can mount it underneath (and on) the hatch in the foredeck which is a good place for the aerial too. This means that I can get on with the tanks without worrying about the receiver access or mounting. There is still a location of a battery to consider (see later), and this depends on the capacity and voltage I go for. Maybe I can fit these either behind the tank on the left side, under the left rear deck or in the space above the step. The last place has the advantage that it is easy to remove without dismantling other bits, like the drivers 'platform'.

The result of this deliberation is that I think I can make the petrol tanks without worrying about what goes behind them as long as they are removeable.

The 'tanks' will not be closed cylinders though to save weight and leave access behind, so after casting round for a lightweight way to make the half cylinder shape, I settled on using some styrene bathroom waste pipe that I had of the required diameter. I cut these bits out to fit easily and present sufficient shape to represent the tanks, then glued styrene sheet (modellers 'plasticard') to the ends with solvent glue. The photo shows the result after cutting and gluing, and with some hardwood supports glued to them to mimic the bearers and hold them upright. The notches in them are to 'dodge' the frames under the deck and on the bottom (and can't be seen when in position). This sort of accessory for the boat is really modelling and not model engineering as it does not have a function, is made of the wrong materials and is half missing. It, like others on the boat, however are essential for appearance and so justify my time at least!

After applying the foil and some detail, they seem realistic enough: the photo shows the left-hand side one in place (the right one is there too but you can't see it in the photo!). I used impact adhesive for the foil: the edges are awkward as the foil is very springy and will not easily bend, and it is also very sharp. I filed the edges visible at the ends and applied a little paint to hide any small gaps. They currently just push into place, I may have to make something to keep them there in due course.

I then spent a little time (again) researching batteries. I have settled on LiPo batteries as the modern high efficiency types, and a bit more looking at various forums and websites seems to suggest that I run the motor at 7.4 volts (ie 2 LiPo cells) to keep the maximum unloaded revolutions 'down' to c20,000RPM. This implies a higher current to maintain power. I need the batteries to be able to provide a peak of power to get the boat on the plane to start with, then it might be a little less to 'cruise'. There is then still an option to vary the propellor size to optimise things. This means to take care of the 'C' rating of the batteries to make sure they can provide this peak. It seems that a 'middle of the road' approach means batteries with a '20C' continuous rating, peaking at '40C', would be OK (the calculation is the amps/hr rating times the C value gives the current permitted by the battery). The next issue is the capacity and this depends on the power required on average – and I have little idea what this might be beyond some very broad estimates I found that seem to be between 55 and 90 watts per kilogram of weight to get a 'speedboat' type boat 'on the plane'. For *Miss Daytona*, I am expecting it to tip the scales at around 2.3kg, so that means say 200 watts… or around 27amps. Since the motor is OK up to around 45 amps it seems, then it should be OK as long as the battery can provide this. There are very many batteries available (eg from 'Overlander Batteries') of different configurations and physical sizes. Narrowing down the choices resulted in maybe a c3Amp/hr battery (which will not take long to discharge at 27 amps…around 6 minutes of full speed run). I made up cardboard models of the ones like this available to test locations (see photo – the big central one is 134mm x 45mm x 15mm). The result of this work is a main conclusion that the 'engine' I am making needs to be very easily removeable to allow access, probably to the space behind the step which will then take a few of these options – that is OK as long as I don't bolt it down but clip it in somehow. None of the options I found will fit behind the fuel tanks though or anywhere else really. I could use two matching batteries in parallel with some care in use and charging, but they would still need to be fitted in.

Another job to be confronted was the rudder and control wires and pulleys, which, so far have not been fitted in place. I needed to fit the 'outside gear', that I had already made (see previous article), including piercing the hull for the control wires so that I could see where the routing had to be for the internal layout. I started by fitting the parts I had made, including some 'bushes' to fill holes in the hull for the wires. I used M2 stainless steel fixings for all of this, obtainable in handy packs of different lengths for a reasonable price. This was reasonably straightforward and the results are shown in the photo (so far without wires). The holes through the hull are not easy to see as the outer pulleys hide them, and you can see I have installed the propeller

shaft and a nylon commercial propeller – my stainless-steel attempt, I decided, was too heavy and likely not very efficient. I also added a water-cooling outlet bush which is clearly visible. This is prototypical, and I thought of making a dummy, then decided that I had better make it potentially functional for reasons slowly entering my mind as a result of scoping the batteries and a choice of electronic speed controller to suit them and the motor. More on this later.

This assembly allowed me to work out where the internal control wires had to run. I had already decided about the right-hand wire (ie pull to turn right) since that attaches directly to the rudder servo, the fun was getting the left-hand wire to nearly the same place across the boat behind the driver's seat. More pulleys were required, and I made them on a single assembly mounted using the rudder frame bolts for alignment. The wire will run essentially parallel to the brass channel that can be seen in the photo, and I may try to make a tensioner device in this run to make assembly (and disassembly for maintenance) easier. I temporarily attached a piece of the intended Bowden cable (0.75mm diameter stainless steel and plastic coated) to see if it managed the radii around the pulleys. It seemed OK but the force required to pull it tight enough might be too much, so I may have to come down a size (you can get 0.5mm diameter) to be sure. If it is not reasonably tight, the rudder might 'flutter' with the spring caused by the curves. I am not worried about the strength or stretch, so maybe this might be better. In the final analysis, I could use a woven 'rope', which will be much more flexible.