Last Jobs List, Installing the RC System, Wiring

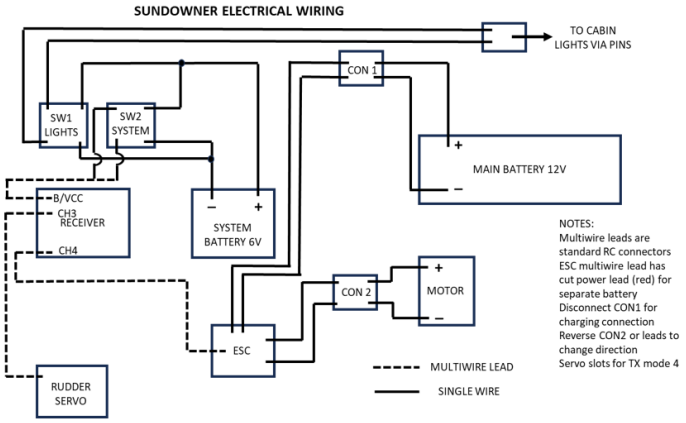
This document was written by Paul Naylor and is published here for FMES online viewing, and was written during 2025.

Sundowner – 26

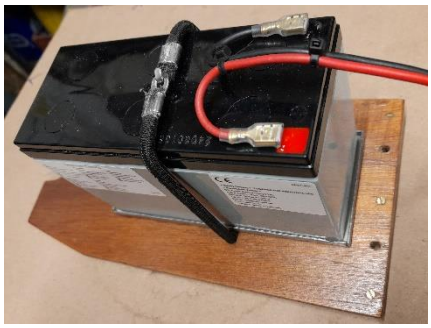
I don't know if you have ever done a 'psychometric test', but I had to use (and do) a lot of these in previous work. There is one well known one by Professor Meredith Belbin on 'team roles' (look him up if interested!). My 'profile' had a weakness of mine called 'completer finisher', which meant was that I did not naturally like paying attention to finishing projects off, and part of my 'self-management' is knowing this and making sure I do it properly! This project is now getting to the completion stage and I know I need to keep going and attend to last items carefully. Part of this is a 'to do' list and I thought I had better write one now: without claiming it is exhaustive, here are the remaining tasks (in no particular order except a few obvious ones):

- Make and fit the aft flagpole.
- Fix the fenders and lifebelts on the boat: these are only 'roped on'.
- Cut some silicon sheet to seal around the wheelhouse like the other removeable hatches.
- Test the RC system, get the wiring done, make sure it all works and check the servo 'throw' suits the rudder (this means getting the 'servo horn' the right size and/or possibly, it appears, some transmitter programming).
- Install the servo and make it's linkage.
- Mount the speed controller and wire the motor and battery up.
- Mount the receiver and it's battery in, with switches and aerial, and disguise it somehow.
- Do a water level check and add ballast, if required (and hope it is not too heavy!).
- Do a few last touch ups and apply the bow name plates and flags.
- Try it out on a suitable patch of water.
- Complete this series of articles!

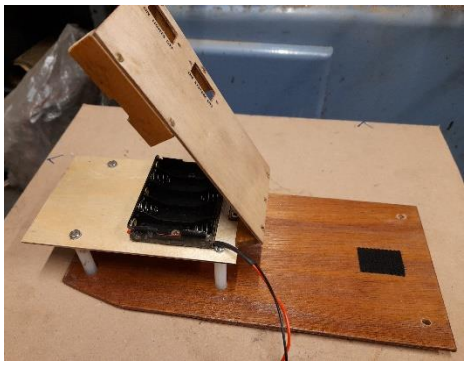
On with the job then. I was not really looking forward to getting the RC gear installed and working, as this means quite a lot of homework and fiddling with connectors etc. However, it has to be done, so I made a wiring diagram both to help me now wire it up, and for the future to remind myself (or anyone else) what goes where. The wiring is a mix of standard RC leads that you can buy in all sorts of configurations to suit, and some more specific arrangements that I have to make to suit the installation. The wiring diagram will be reduced and stuck to the boat somewhere (like under the wheelhouse) so it stays with it.



The two 'platforms' I made when building the hull (see earlier) now come useful, as they determine locations and mountings. The forward platform is intended for the main battery and as such needed to have a means of locating the battery and holding it down. I made up a tray from zinc coated steel (I had some!) bolted to the platform to stop the battery moving around, and some 6mm bungee cord with a homemade clip to hold it down. The battery can be removed with its lead (spade terminals at the battery and a standard two-pin plug/socket on the other end) if required by releasing the clip and lifting it out through the forward hatch, although I have also made up a lead to plug into the two-pin connector to charge it in situ if required. The photo shows the arrangement out of the boat.



Remembering that the receiver and its aerial needed to be mounted as high as possible in the boat and without metal around it, I made a 'mezzanine' shelf on the aft platform that can mount the receiver, its battery and two switches for easy access through the aft hatch. The motor controller (ESC) should be mounted away from the receiver (it is a high current device) and this is mounted also on the aft platform but at the other end. The battery box is bolted in, however the receiver and the motor controller need securing but there are no screw holes in them and the system came with two sided adhesive pads which seemed a little permanent for me, so I am using sticky backed Velcro pads: in the photo you can see the motor controller pad as a black patch, but the receiver is yet to be mounted and the wiring done on the 'mezzanine'. I made a hinged lid to mount the switches on and to access the batteries through the rear hatch, although it can all be removed on the platform through the main wheelhouse 'hatch' (I had to keep checking that this was still possible as I was making it all). All wires to this platform terminate in connectors of one sort or another. The switches are to allow the cabin lights to be switched on independently of the radio system to 'show the cabin off'. The motor controller receiver connecting lead is designed to run from the same battery as the receiver, and it is necessary when using separate batteries to remove this link, so rather than cutting the supply wire on the controller flying lead, I got a short standard servo extension lead and cut the wire on that instead. The lights to the cabin will mainly be used when the boat is static and probably away from water, so the batteries will need a long 'shelf life'. I intend to use rechargeable AA



NiMH batteries for the system (5 of them to get 6 volts until they are flat, but around 7 volts or so newly charged), but these lose about 1% a week of charge ‘on the shelf’: I’ll see what happens in practise, the alternative is to put disposable AA batteries there for display.

While I was waiting for the extension leads for the control system to arrive, I finished off the aft flagpole. This appears to be an extension to the rudder shaft with a bracket to secure it to the handrail (which is why it waited until the handrails were finished).

It comprises a length of brass tube with an inside diameter of ¼” to allow some slop in the rudder shaft (which was 6mm), with a sloppy PTFE ring at the bottom to stop it binding. I was going to solder the bracket onto this tube, but after some trials in position, I decided that it was too easy to distort the location so that the rudder movement stiffened up with potentially a detrimental effect on steering (!) - the handrails have a little spring in them, so I made the shaft as a sloppy fit in this bracket too then the tube either moves with the rudder or not, as it wishes. The result is that this tube simply drops into place, and the flagpole similarly, which is a bit of turned up, dyed and varnished dowelling with a glued-on brass ring to stop it disappearing down the tube. The top of the mast has holes for flag ropes, as for the other masts.