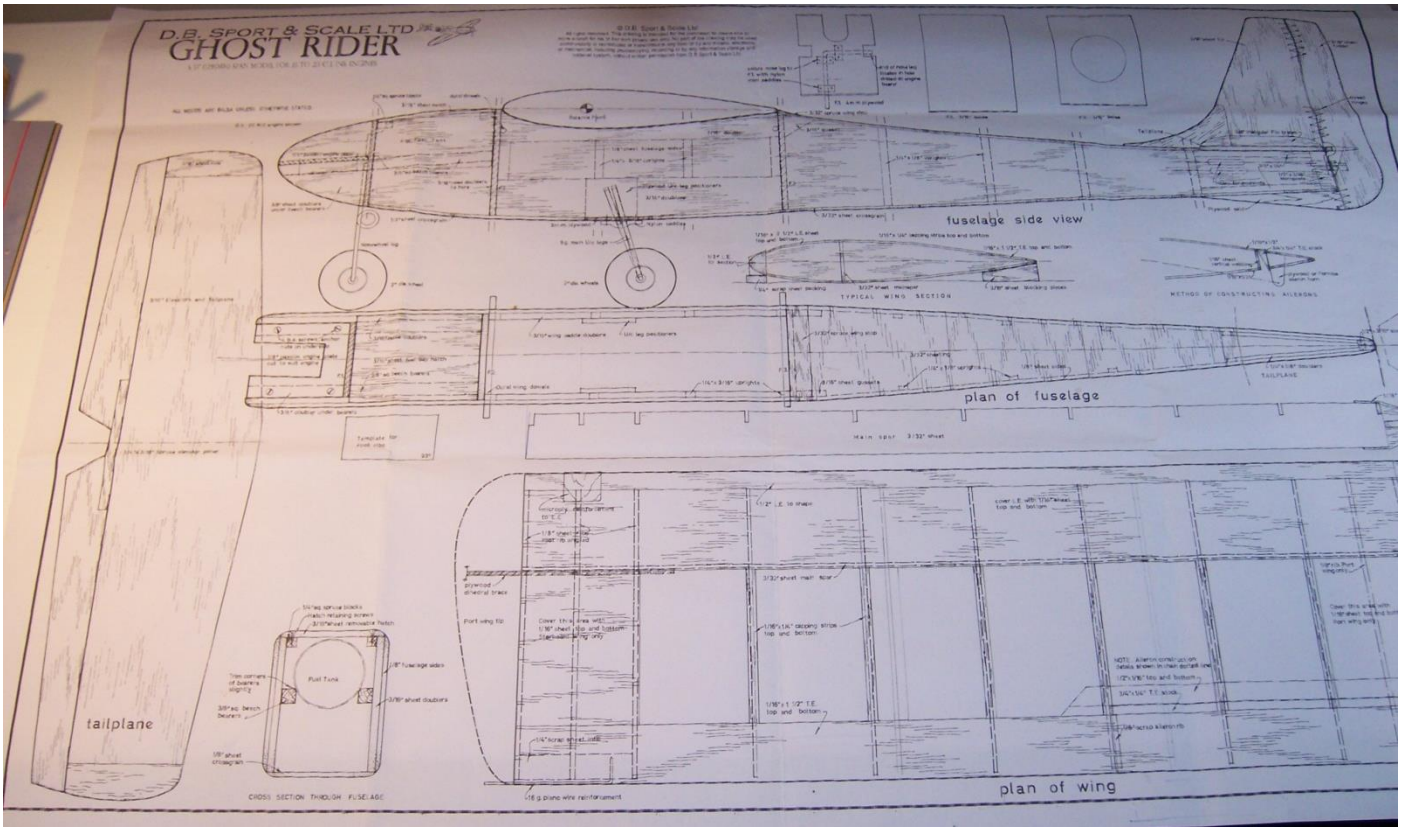
DB Ghost Rider 50 build log

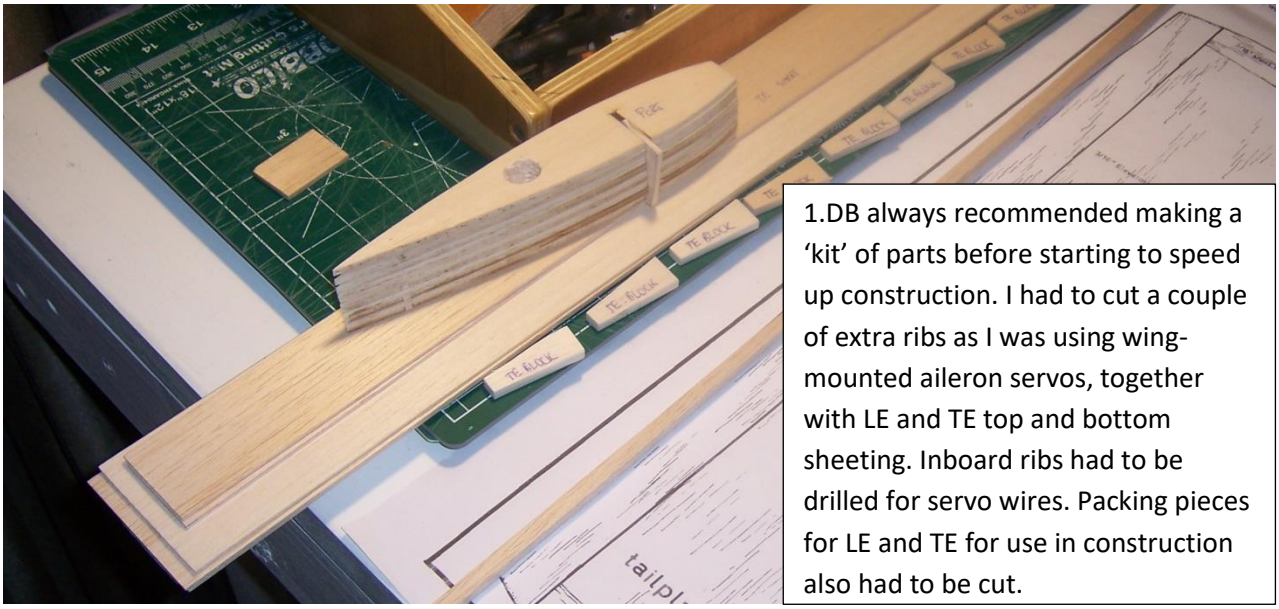
The original Ghost Rider 38" design was published in 1968 as a 'pocket-sized aerobatic model' for use with Galloping Ghost RC systems and .09cu.ins (1.5cc) motors. This was immediately followed by the larger Ghost Rider 50, which was then modified and re-published for 3-4 channel proportional radio control as a follow on model from the Tyro Major basic trainer design using the same sized .19 to .25 cu.ins motors, and it is this design that I have used for my build.

The plan and set of wing ribs were purchased from DB Sport & Scale in the UK – I thoroughly recommend them if you wish to do a traditional build from a plan or a kit. They have a good range to choose from.

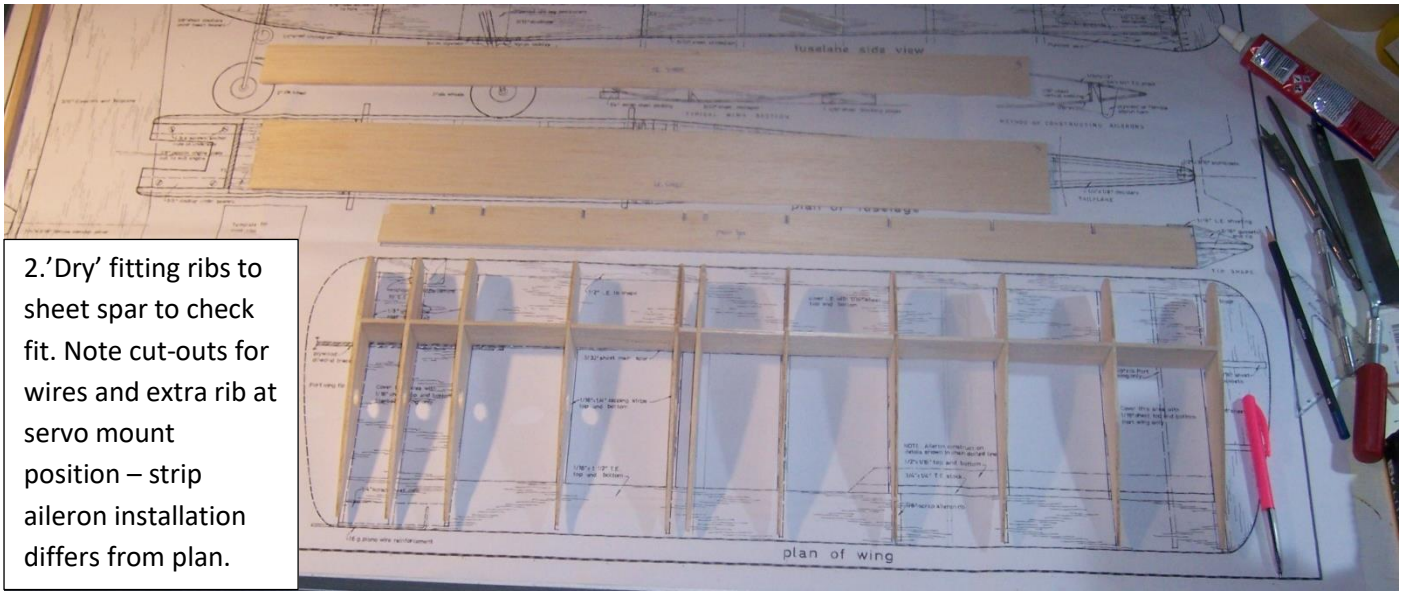


The older plan and build article is also available on the Outerzone website.

I chose this model as my second electric scratch-build as I wanted a fairly compact general purpose sport model for use at Kendall Park which was relatively straightforward to fly, had good aerobatic performance and which could use standard 2200mAH battery packs. I've built and flown a Tyro Major glow model in the past which was a terrific flyer, so Ghost Rider seemed to fit the bill.

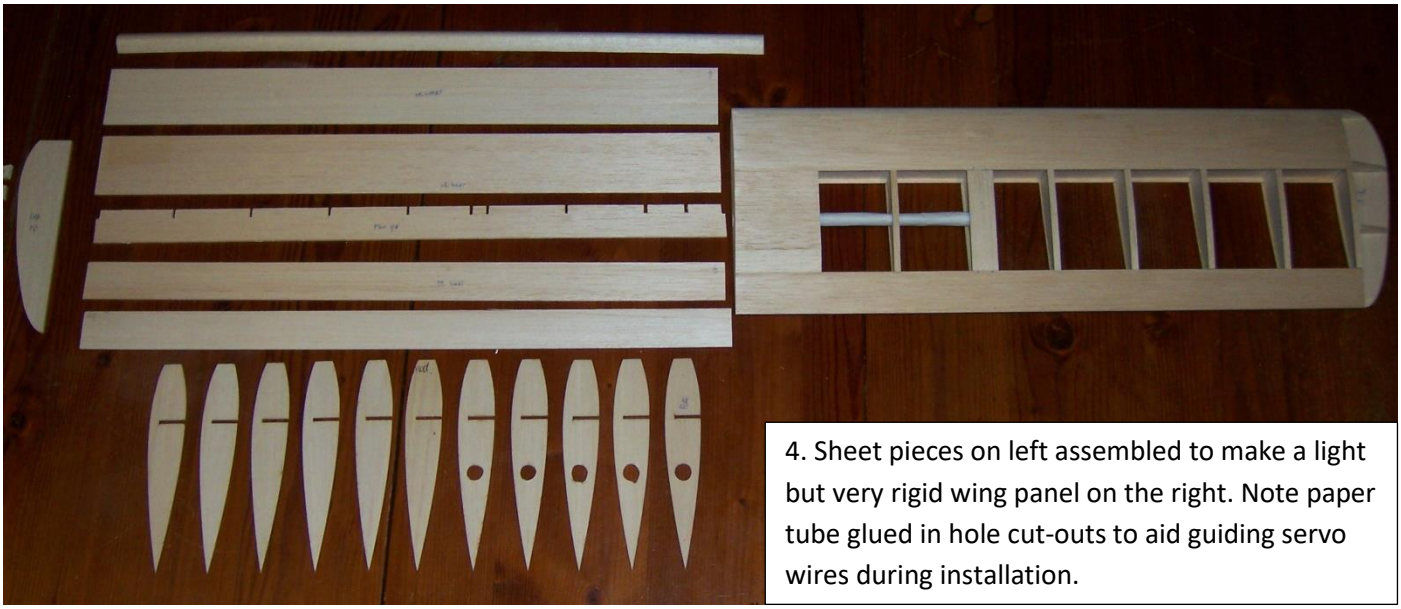


1.DB always recommended making a 'kit' of parts before starting to speed up construction. I had to cut a couple of extra ribs as I was using wing-mounted aileron servos, together with LE and TE top and bottom sheeting. Inboard ribs had to be drilled for servo wires. Packing pieces for LE and TE for use in construction also had to be cut.



2.'Dry' fitting ribs to sheet spar to check fit. Note cut-outs for wires and extra rib at servo mount position – strip aileron installation differs from plan.

3.Gluing ribs to spar over plan. Gladwrap protects plan. Carefully cut packing pieces supporting TE cater for aligning symmetrical wing section accurately over plan

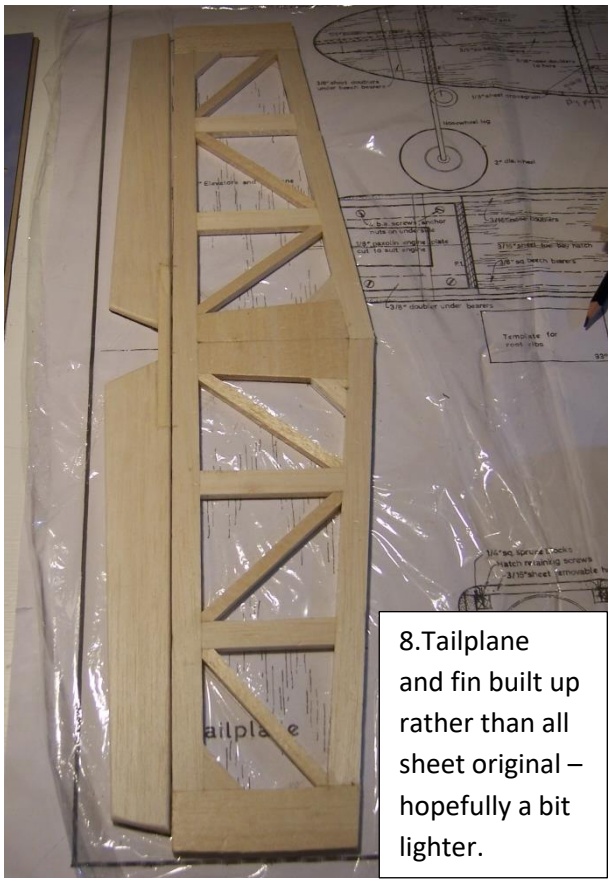


4. Sheet pieces on left assembled to make a light but very rigid wing panel on the right. Note paper tube glued in hole cut-outs to aid guiding servo wires during installation.

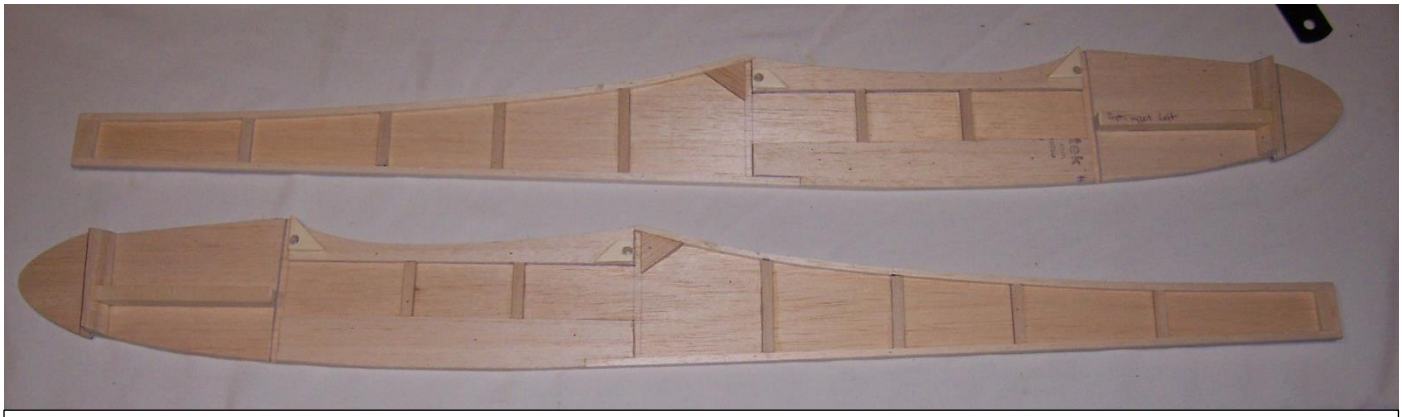
5.Two panels initially butt-glued at centre, taking care to make sure they are properly aligned.

6.Cutting through wing sheeting to install dihedral brace before reinforcing centre join with PVA-soaked glass cloth bandage. Note cut-outs for mini-servos and wires.

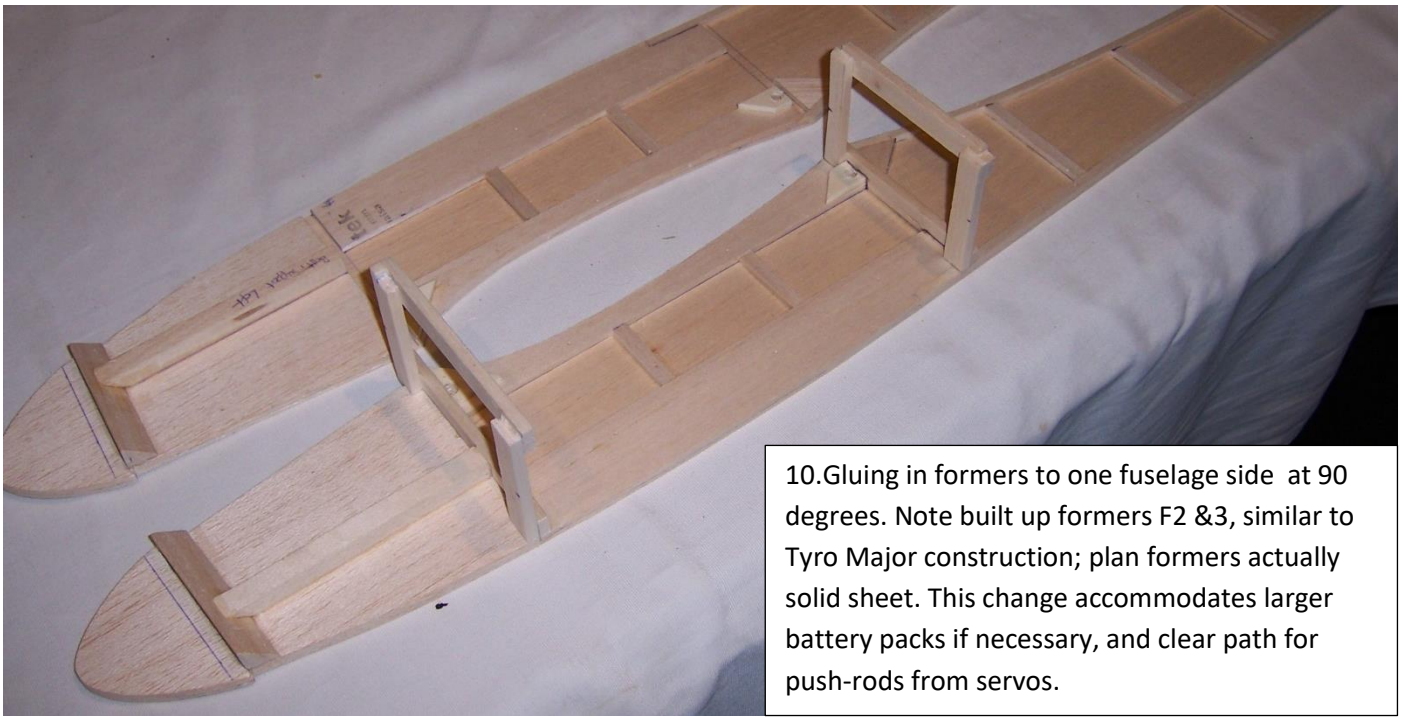
7.Ailerons cut out and extra wood fitted for support – this took time to carefully sand and get a good fit.



8.Tailplane and fin built up rather than all sheet original – hopefully a bit lighter.

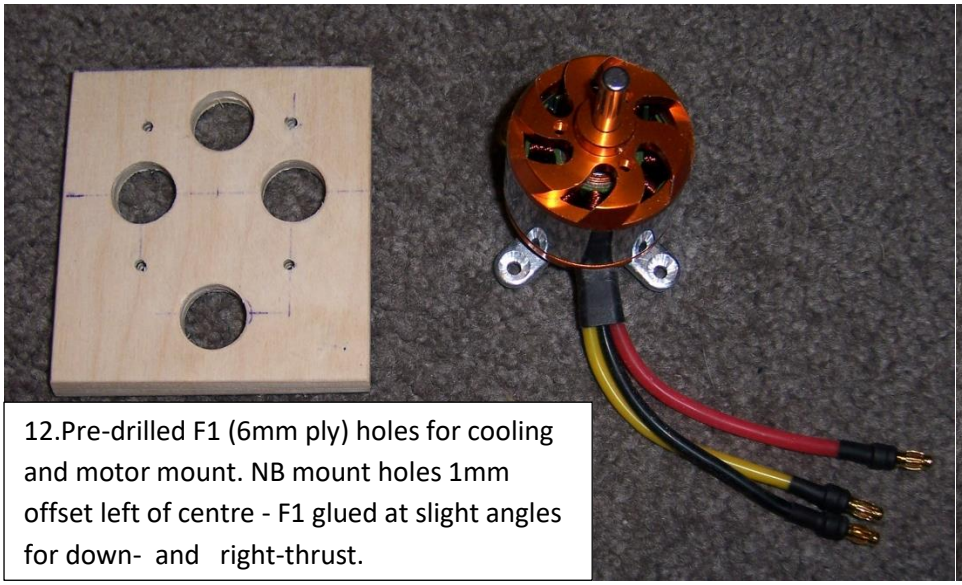


9. A typical David Boddington construction method; fuselage sides prepared with all doublers, gussets longerons and uprights pre-installed before sides go together. Note, I chose to use thinner wood for sides, added the longerons and changed the nose structure to reflect the electric installation. What look like engine bearers are in fact battery pack supports. A triangular section corner reinforcement is included for the plywood engine mount former. Lite-ply gussets have been added for the wing mount dowel holes.

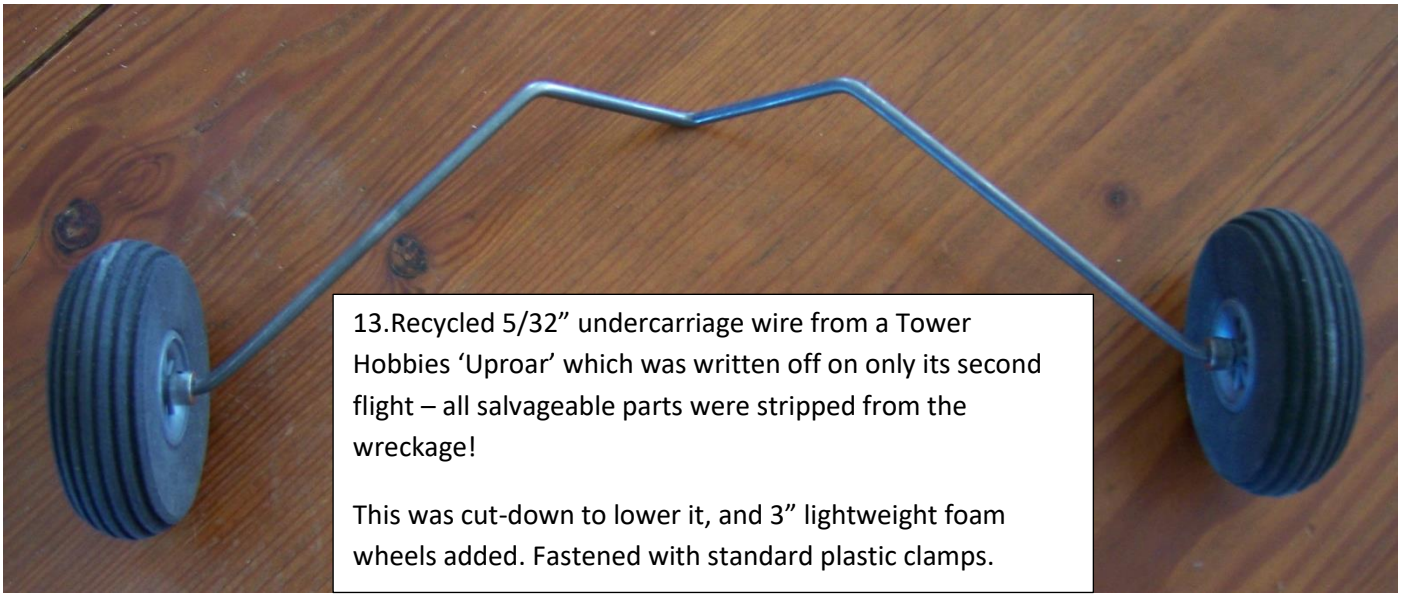


10.Gluing in formers to one fuselage side at 90 degrees. Note built up formers F2 &3, similar to Tyro Major construction; plan formers actually solid sheet. This change accommodates larger battery packs if necessary, and clear path for push-rods from servos.

11.It's always nice part way through a build to assemble the main components to get a feel for the end result you are aiming for – encouraging!



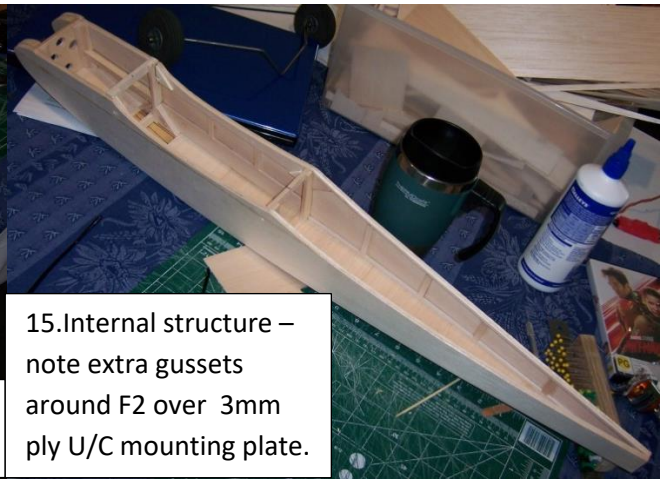
12.Pre-drilled F1 (6mm ply) holes for cooling and motor mount. NB mount holes 1mm offset left of centre - F1 glued at slight angles for down- and right-thrust.



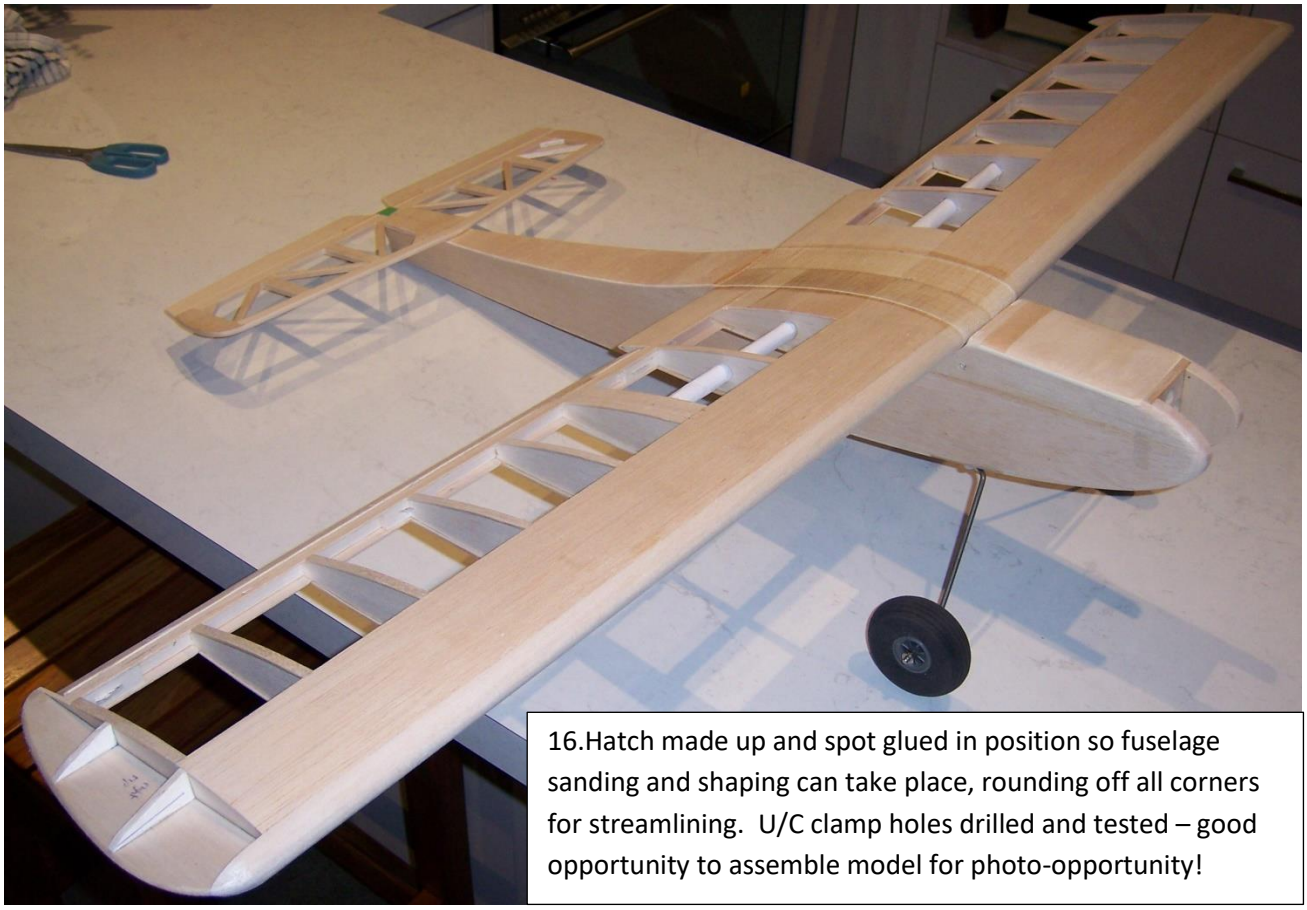
13.Recycled 5/32” undercarriage wire from a Tower Hobbies ‘Uproar’ which was written off on only its second flight – all salvageable parts were stripped from the wreckage!

This was cut-down to lower it, and 3” lightweight foam wheels added. Fastened with standard plastic clamps.

14.Cross grain sheeting of fuselage.

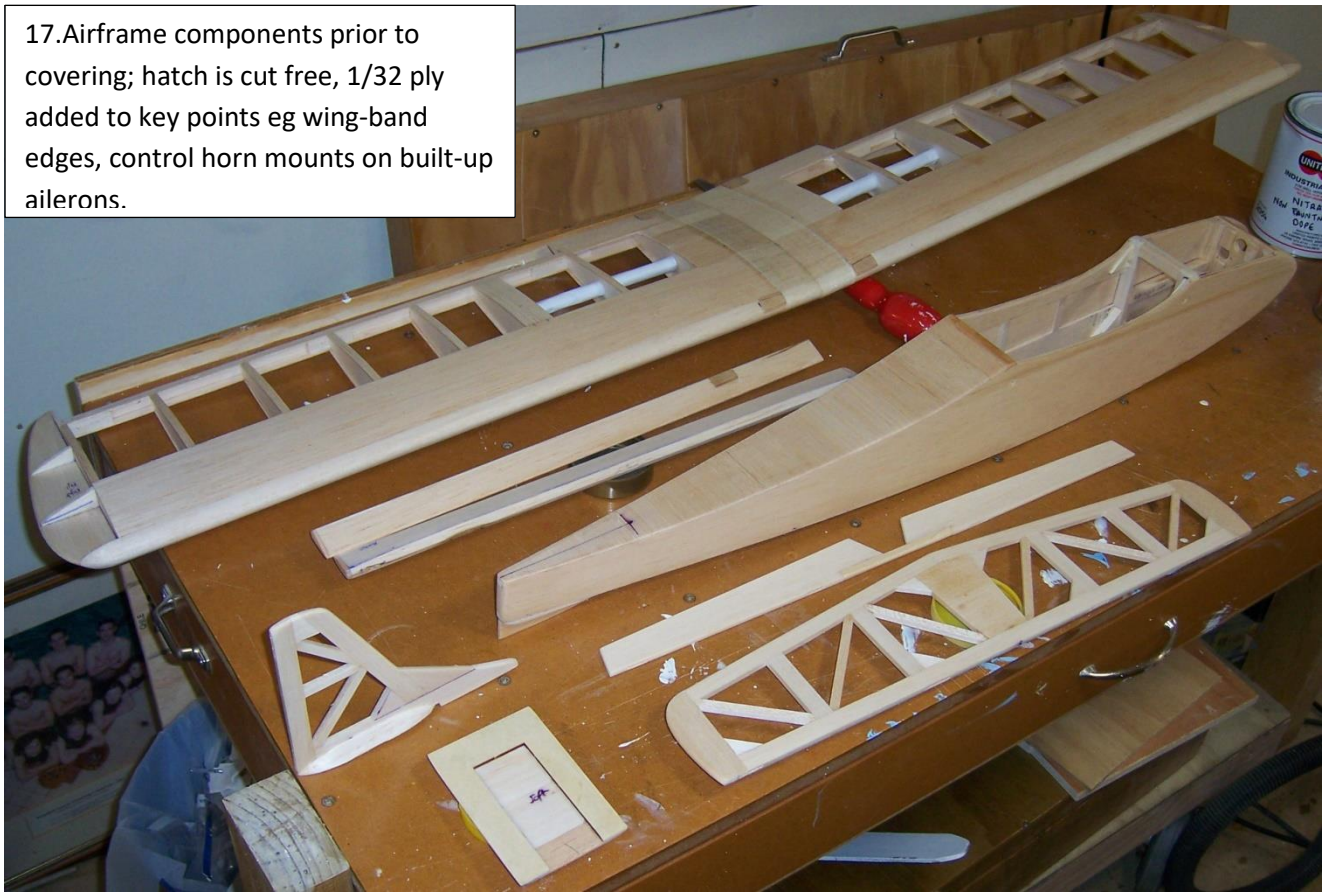


15.Internal structure – note extra gussets around F2 over 3mm ply U/C mounting plate.

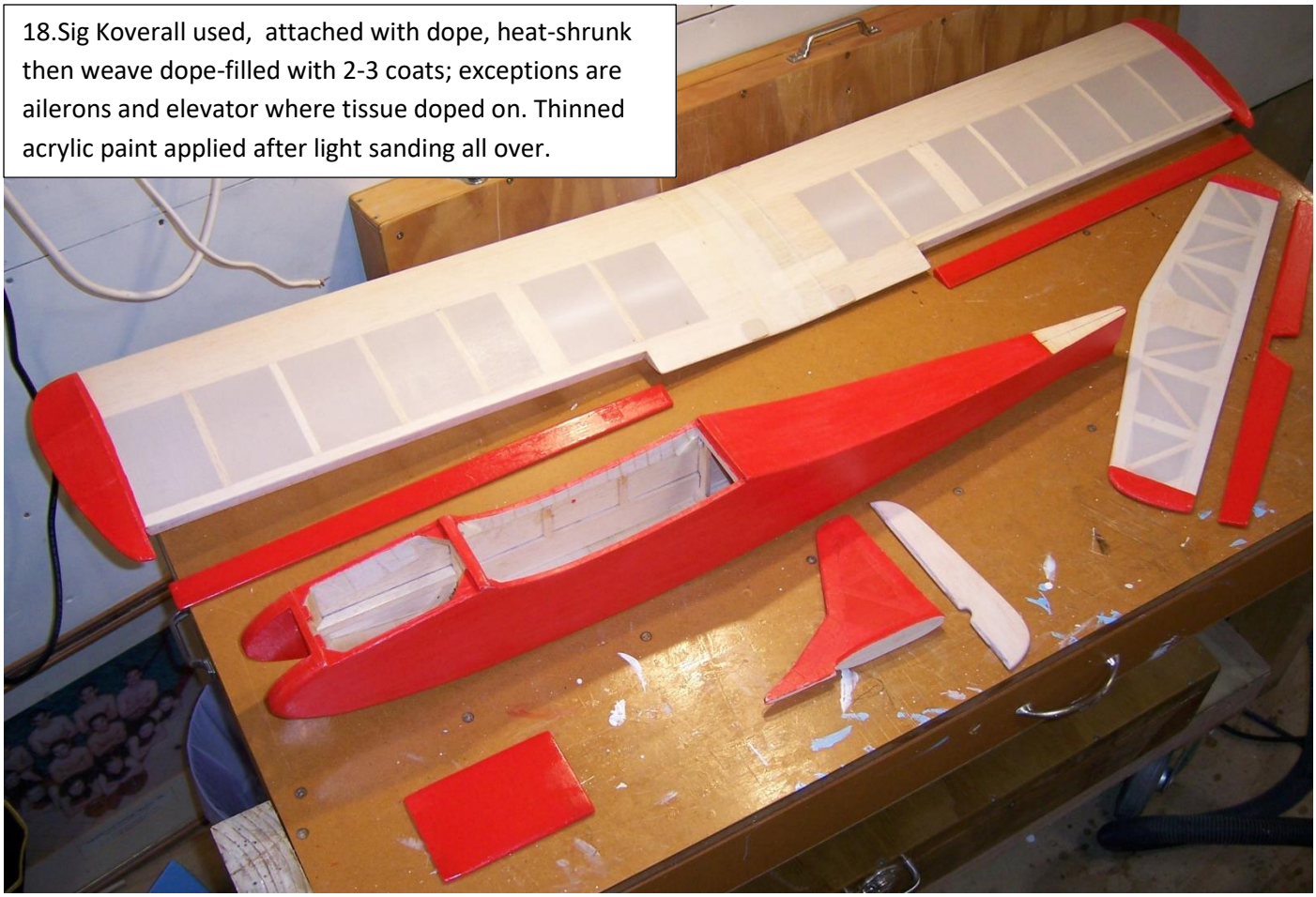


16.Hatch made up and spot glued in position so fuselage sanding and shaping can take place, rounding off all corners for streamlining. U/C clamp holes drilled and tested – good opportunity to assemble model for photo-opportunity!

17.Airframe components prior to covering; hatch is cut free, 1/32 ply added to key points eg wing-band edges, control horn mounts on built-up ailerons.

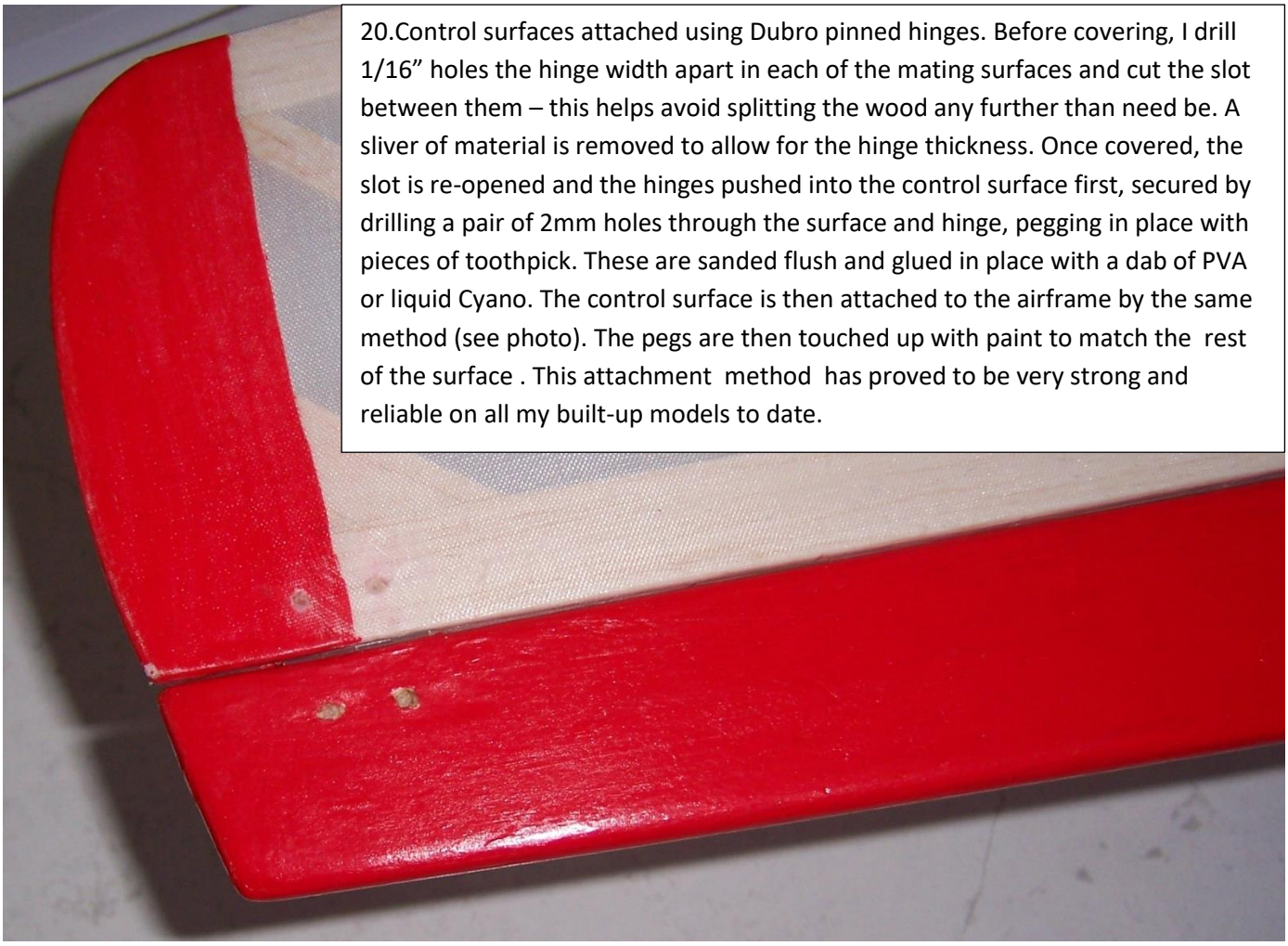


18.Sig Koverall used, attached with dope, heat-shrunk then weave dope-filled with 2-3 coats; exceptions are ailerons and elevator where tissue doped on. Thinned acrylic paint applied after light sanding all over.



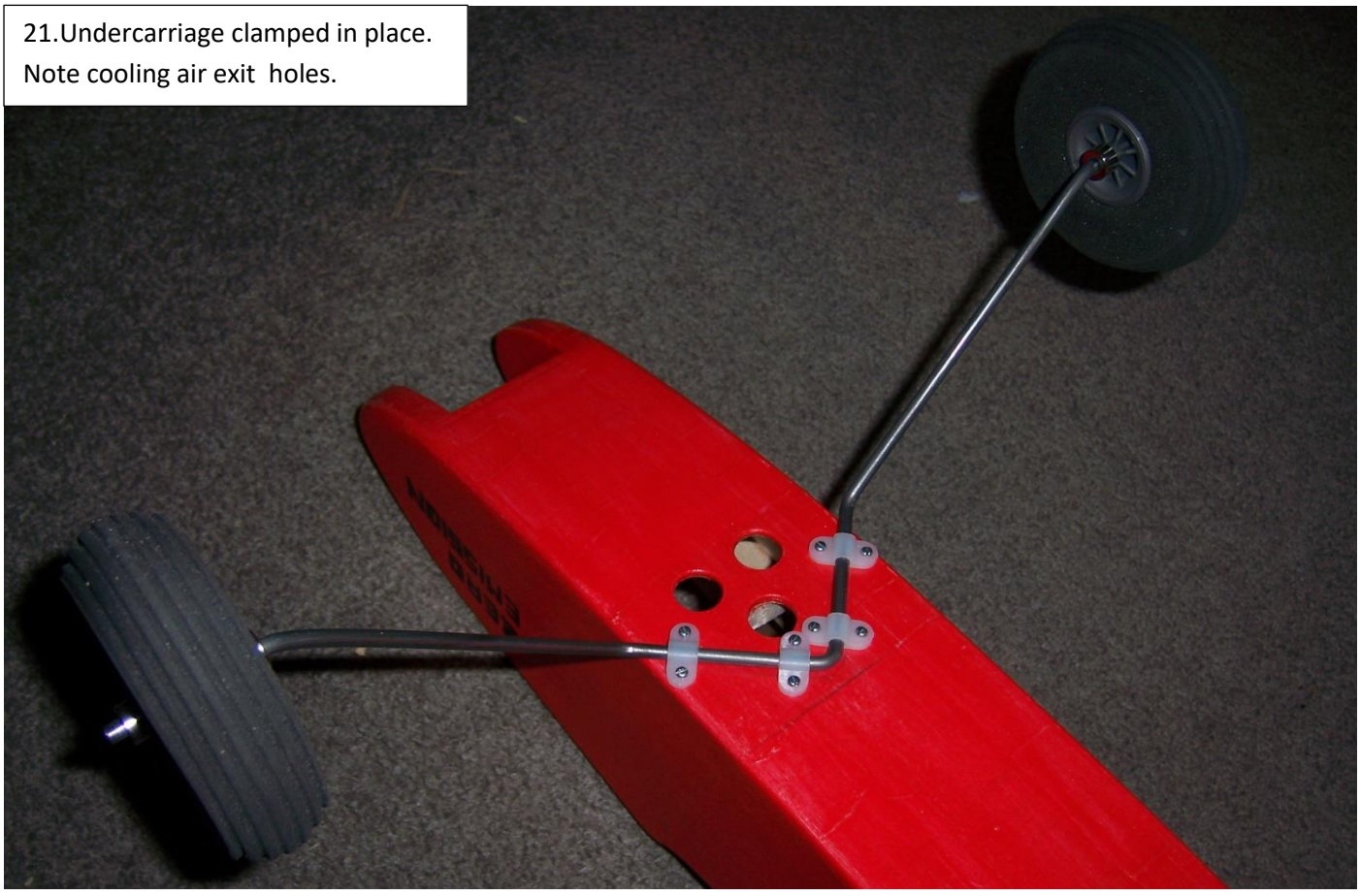
19.Fin glued carefully at 90 degrees to tailplane using PVA – mating surfaces pierced with mapping pin, multiple holes created allow glue to deeply penetrate wood fibres. Left overnight.

Tail assembly glued to fus. using 24hour epoxy - gap-filling qualities allow for any discrepancies between mating surfaces eg fin to fuselage. For this operation, wing is seated in position so that tailplane can be checked for parallel alignment. Centreline carefully marked to help accurately position tail assy. Again left overnight.

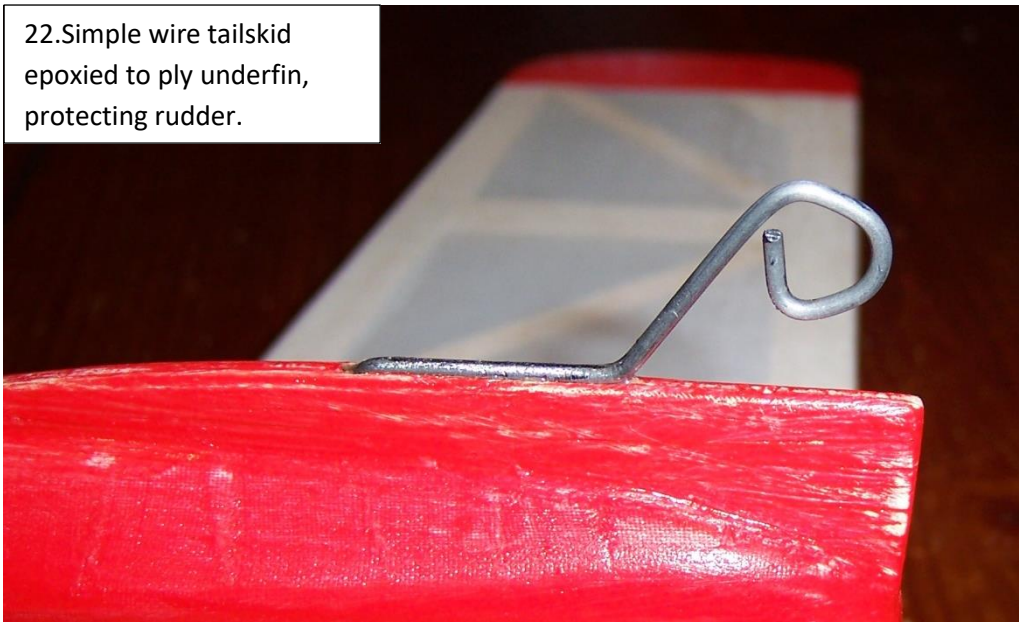


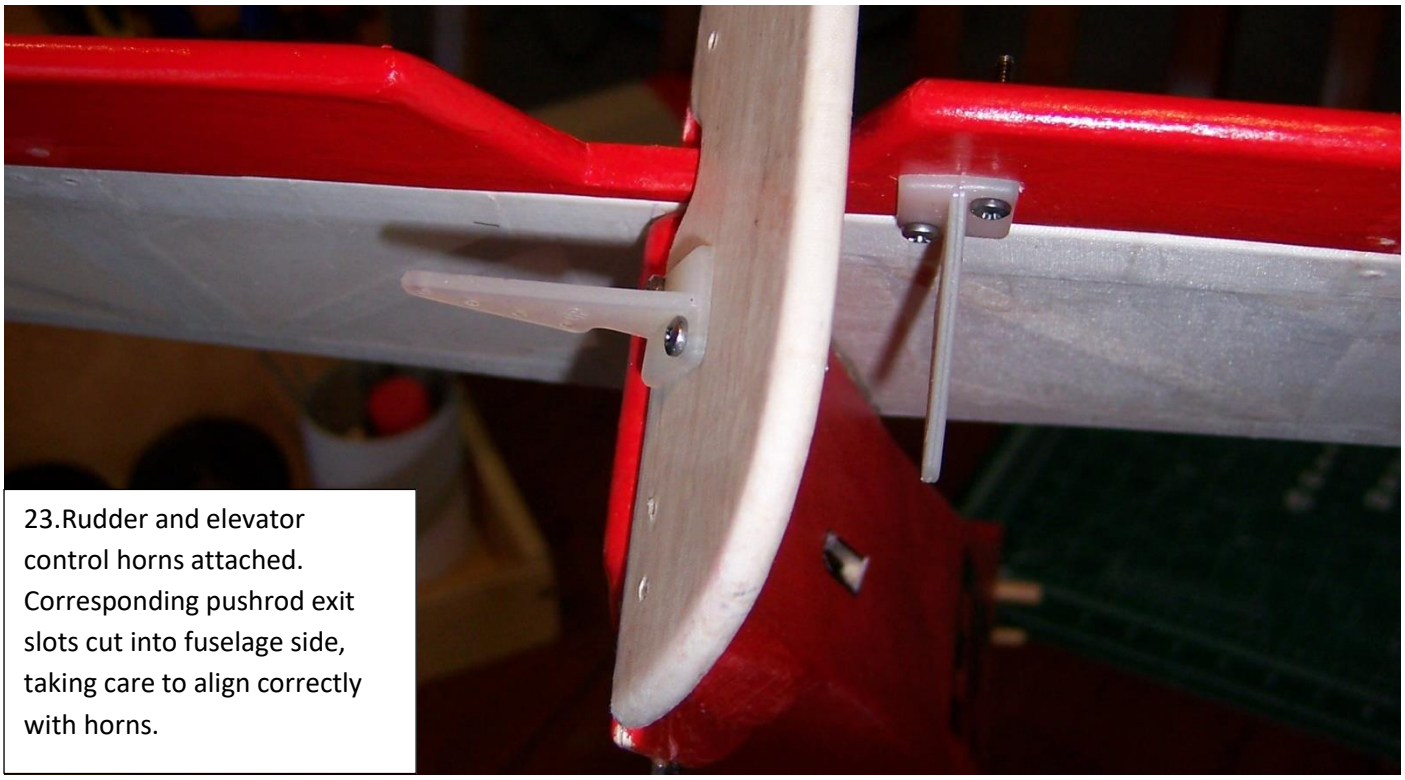
20.Control surfaces attached using Dubro pinned hinges. Before covering, I drill 1/16” holes the hinge width apart in each of the mating surfaces and cut the slot between them – this helps avoid splitting the wood any further than need be. A sliver of material is removed to allow for the hinge thickness. Once covered, the slot is re-opened and the hinges pushed into the control surface first, secured by drilling a pair of 2mm holes through the surface and hinge, pegging in place with pieces of toothpick. These are sanded flush and glued in place with a dab of PVA or liquid Cyano. The control surface is then attached to the airframe by the same method (see photo). The pegs are then touched up with paint to match the rest of the surface . This attachment method has proved to be very strong and reliable on all my built-up models to date.

21.Undercarriage clamped in place. Note cooling air exit holes.



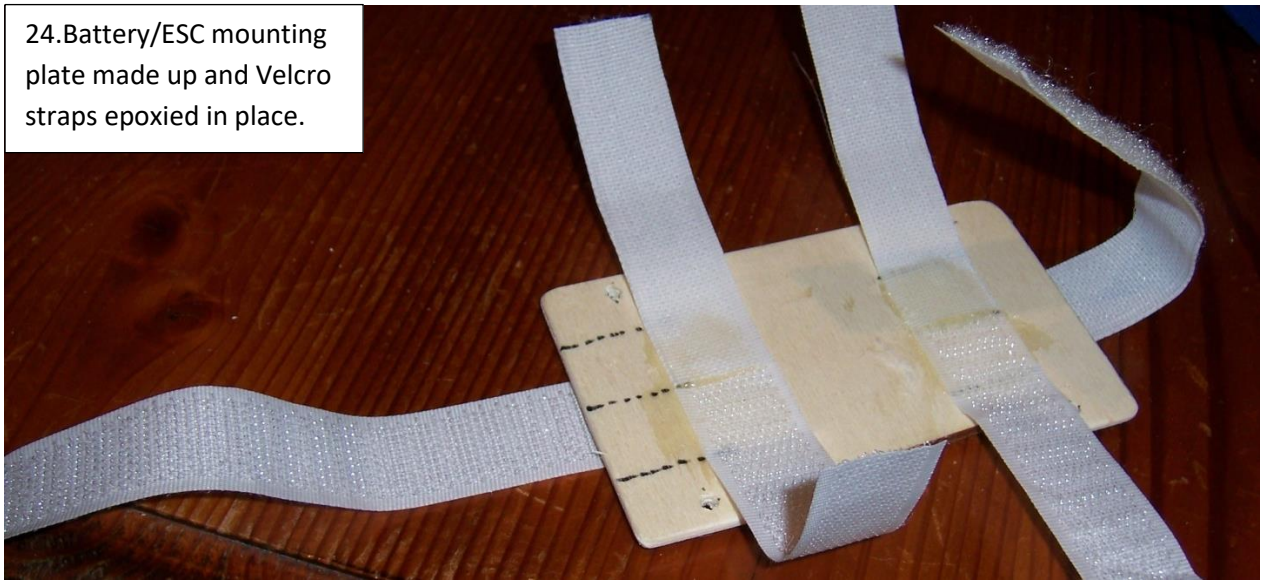
22.Simple wire tailskid epoxied to ply underfin, protecting rudder.



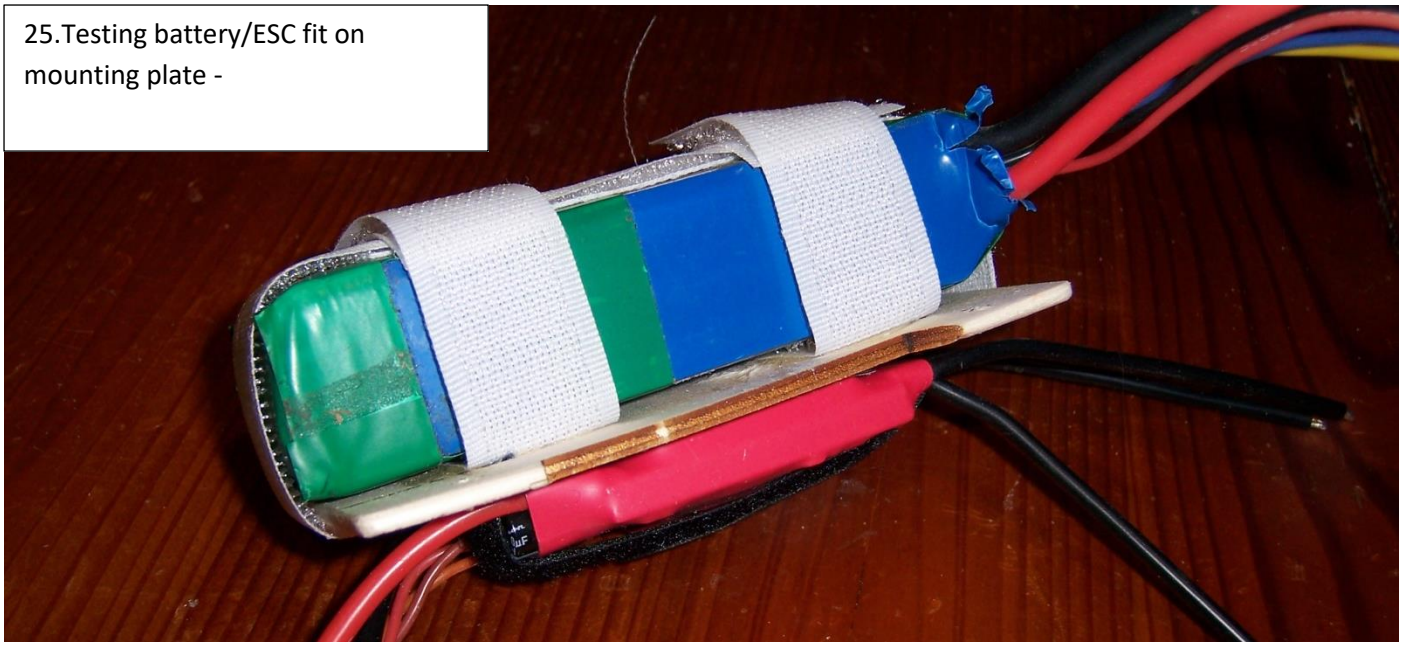


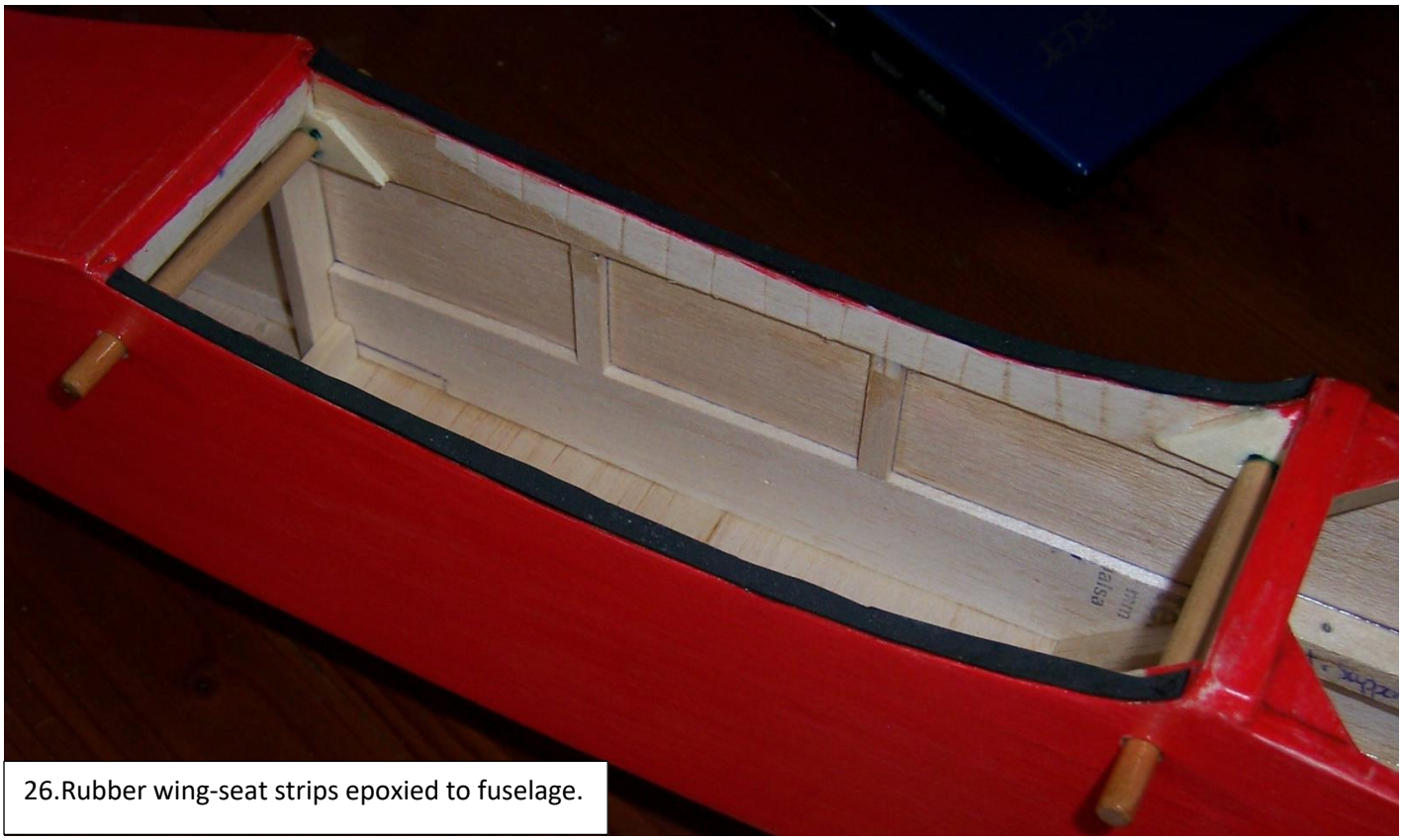
23.Rudder and elevator control horns attached. Corresponding pushrod exit slots cut into fuselage side, taking care to align correctly with horns.

24.Battery/ESC mounting plate made up and Velcro straps epoxied in place.

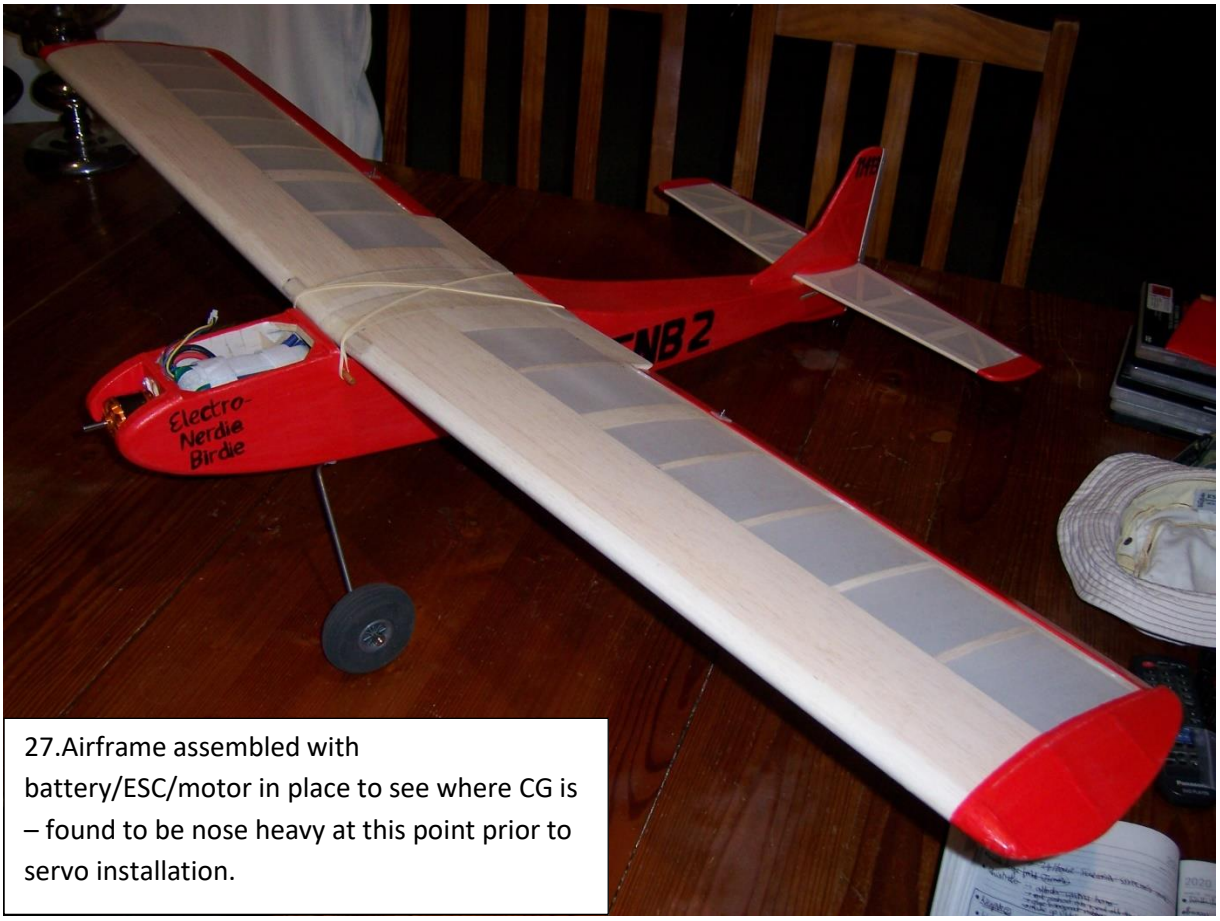


25.Testing battery/ESC fit on mounting plate -



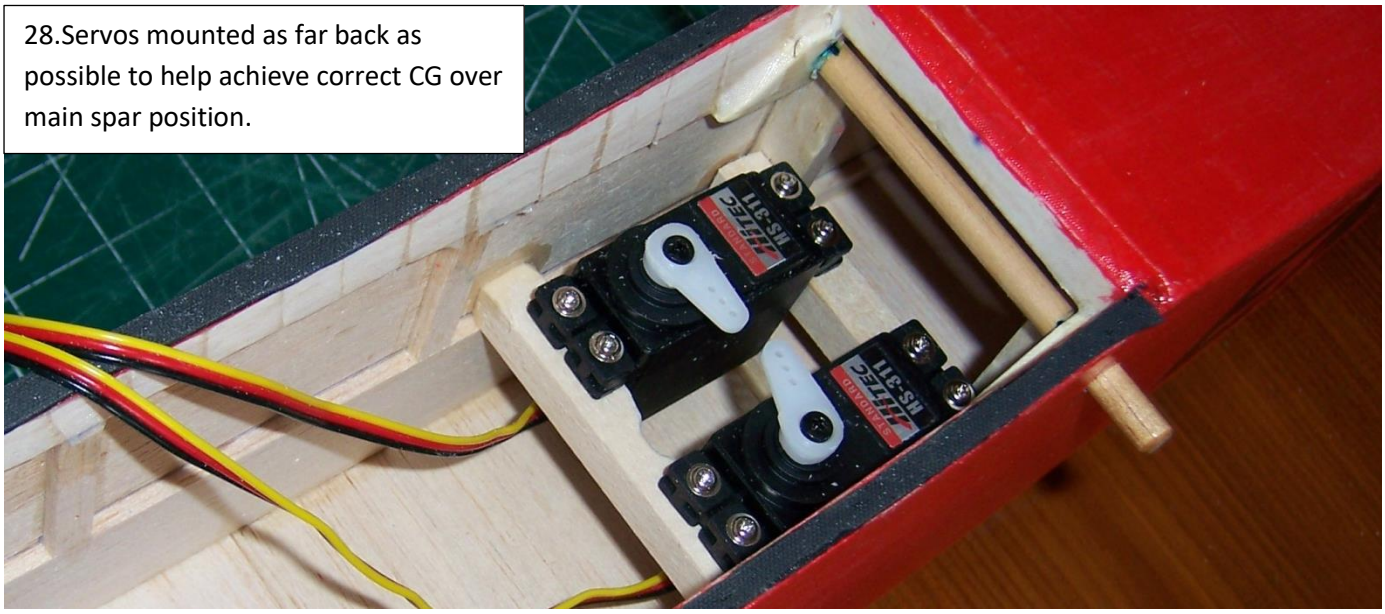


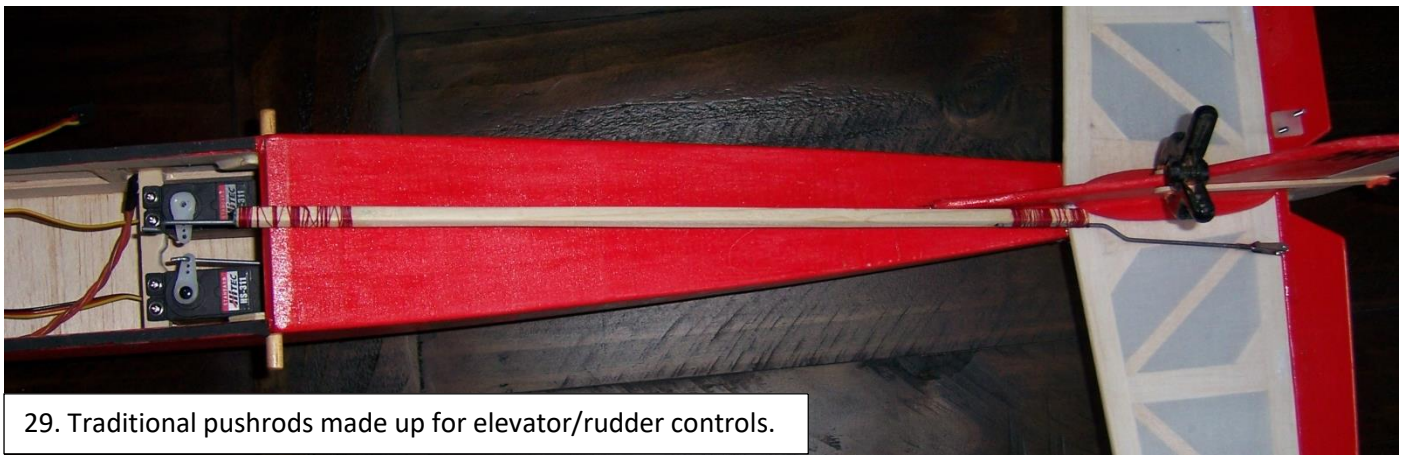
26.Rubber wing-seat strips epoxied to fuselage.



27.Airframe assembled with battery/ESC/motor in place to see where CG is – found to be nose heavy at this point prior to servo installation.

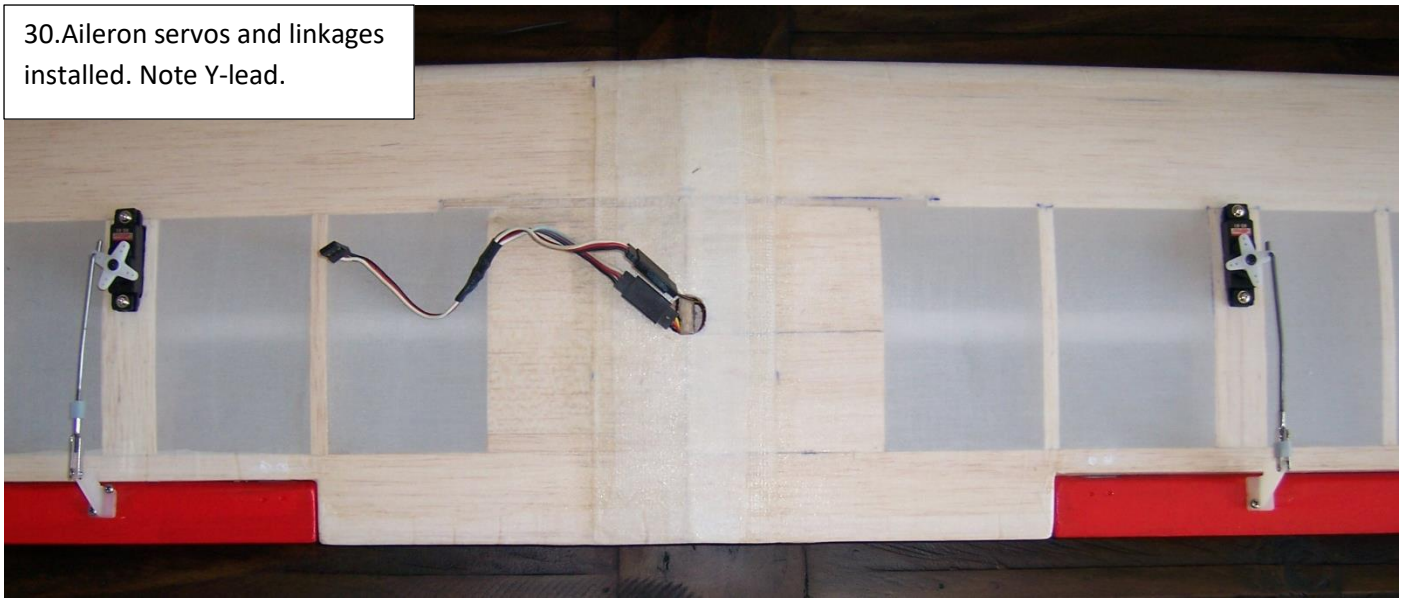
28.Servos mounted as far back as possible to help achieve correct CG over main spar position.

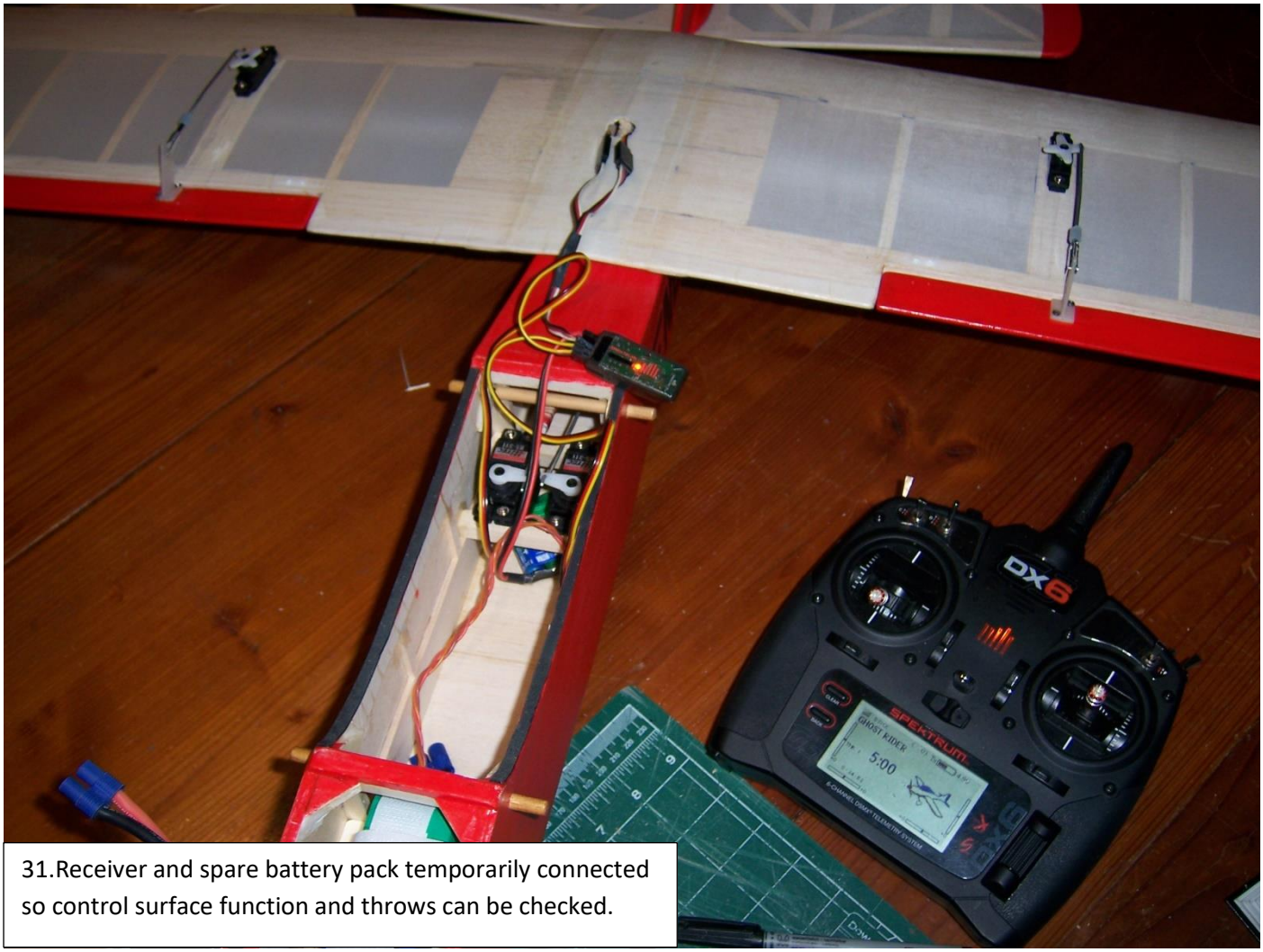




29. Traditional pushrods made up for elevator/rudder controls.

30.Aileron servos and linkages installed. Note Y-lead.





31.Receiver and spare battery pack temporarily connected so control surface function and throws can be checked.

32.10x6 prop balanced and fitted – this may change to 9x6 or 10x4 after initial flight testing.

33.Hatch wire retaining dowels epoxied in place, screw holes drilled and piloted, hatch screwed in place.

34.Pre-maiden flight photo. With battery fitted, model balanced on the main spar as per plan without extra weight.

The final stats were as follows;

Wing span 51", chord 8.25"

Final weight with battery – 2lbs 8.8oz (2.55lbs)

Wing loading approx. 14.3oz/sq.ft

Motor used – Turnigy Aero drive D3536/8 1000KV

Propellor used on maiden Master Airscrew 10x6 scimitar

ESC Turnigy Plush-32 40Amp

3s 2200mAh Lipo battery allows 8-10mins flight-time, depending on throttle.

After 5 flights, model has certainly lived up to all expectations as a great little sport model to 'chuck in the car and go', much more satisfying than foamies that use the same battery packs, perhaps because it is a 'scratchbuilt'.

I would thoroughly recommend the Ghost Rider as a follow on from a basic trainer such as the Tyro or Tyro Major, or if you are a more experienced pilot who wants a good general flying sport model.

Nick Ward