

MST MAGIC 3 f3I All-Round Build Log

Designed & produced by Salahi Tezel magicprocyprus@gmail.com

Tips and information on Facebook <https://www.facebook.com/groups/1646426389021440>

Build by Martin Oldershaw

Designed by	Salahi Tezel
Produced by	Salahi Tezel
Wing span	2mt
Wing area	31.90 dm ²
Length	122.5cm
Flying weight from	ALLROUND 380 - 410gr
Wing loading	11.91g/dm
Aspect ratio	12.53
Wing airfoil	Modified AG series
Centre of Gravity	69-75mm from wing leading edge
Controls	Rudder-Elevator-Spoiler
Info: You can find the building instruction of the MAGIC 3 at our Facebook profile (Magic 2mt F3Res Competition sailplane / Album section) Email: magicprocyprus@gmail.com	

The MST Magic 3 is an evolution of the popular Magic 2 but with improvements in the ease of build, design, and flying performance. This build is for the f3I All Round weight, but there are also electric f5I and super light versions available. The kit includes precision laser cut balsa / ply parts and comes with all the necessary hardware. You will need 9g servos of choice, receiver, battery and covering. The builder can choose between a single spoiler servo in the fuselage with a pull spring system (which is what I did), or a separate servo for each spoiler built into the wing.

For adhesives I mainly used thin cyano, but on occasions medium is better. To laminate parts together I used pva, and for strong areas like the wing bolts area, 2-part epoxy.

The build for the experienced will be very easy and pleasurable, but equally, because the kit is so well thought out and engineered, it is also a good choice for anyone looking for this type of model as a first build. Some care is needed to understand each step, identify the parts as you go, and if you follow the rule of

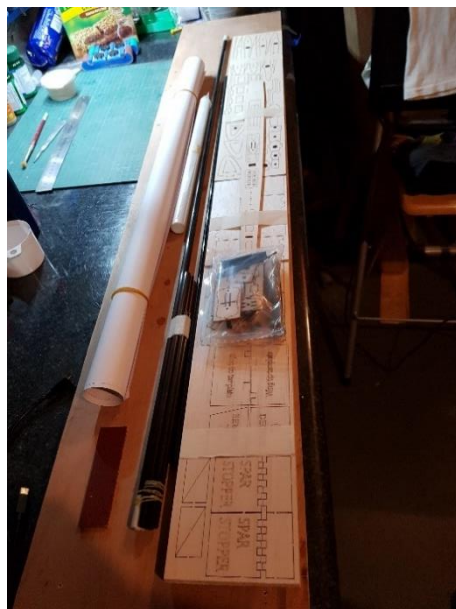
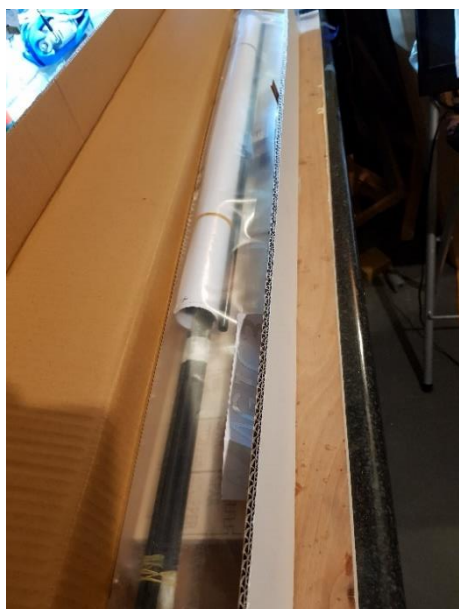


dry fit to get a good fit before glue is applied, you won't go wrong. I will try to give lots of detail with the inexperienced builder in mind, but of course my techniques are not necessarily the best or the same as someone else's.

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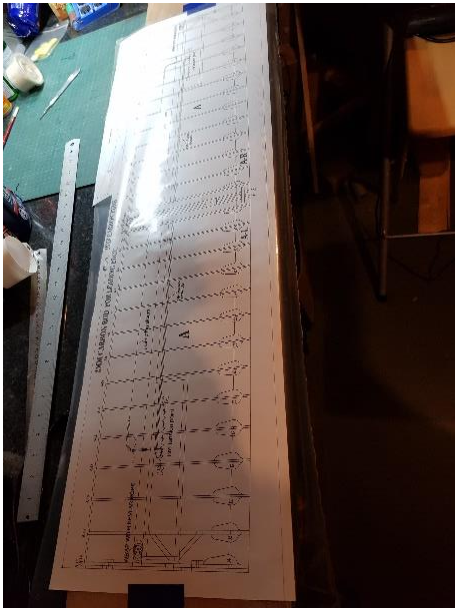
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The kit is very nicely packaged. Two detailed plan sheets, carbon spars, boom, some lovely balsa and ply sheets with the precision laser cut parts, hardware packs, and even some polythene to put over the plan and who else supplies a sandpaper block (Salahi thinks of everything). Most of the parts are easy to remove from the wood sheets by gently flexing and pulling apart, sometimes a knife might be needed, particularly on the ply parts. A gentle sand then gives a good finish.



I started by cutting the plan into sections so that I could fit each piece on to my bench. My building board of choice is 12mm marine plywood and is perfectly flat.

THE WING

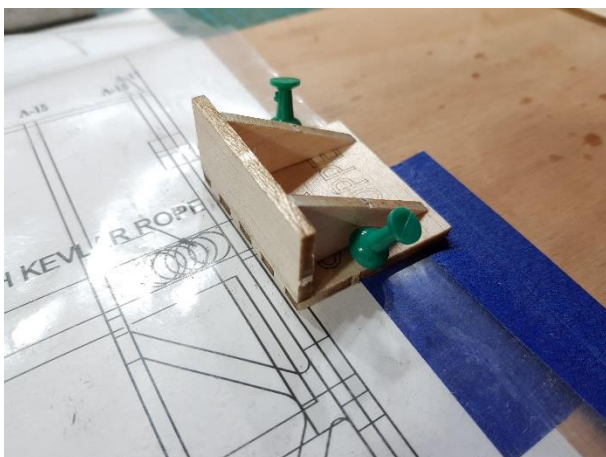


Centre wing section – There is probably the most work here, you can build the sections in any order, but for me I like to get the big jobs done first. I lay the plan out on the building board, fasten in place with painters' tape and then lay the supplied polyethene sheet over the top, also held in place with painter's tape.

Take the 10 X 8 carbon tube, lay over the plan and cut to length. For cutting carbon tube I like to wrap with painter's tape, mark with a pen and then cut with a razor saw. Sand the cranked wing joiners (there are two) to fit nicely into the carbon socket adapters, which also need a sand, so that they fit nicely into the ends of the main spar. The other half of the cranked joiner will socket into the intermediate wings 8 X 6 carbon spars, so might as well sand it all to fit in one go. The carbon socket adapter can be bonded into the ends of the 10 X 8 main spar but DON'T bond in the joiner.



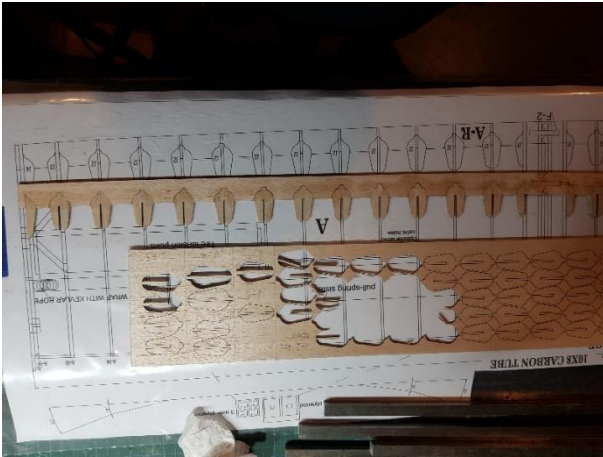
TIP – For those not used to working with carbon, be aware that the dust is hazardous so best to vacuum up regularly and not blow the dust out of the way. Also be aware that it is easy to split carbon tubes if trying to force an oversized part in.



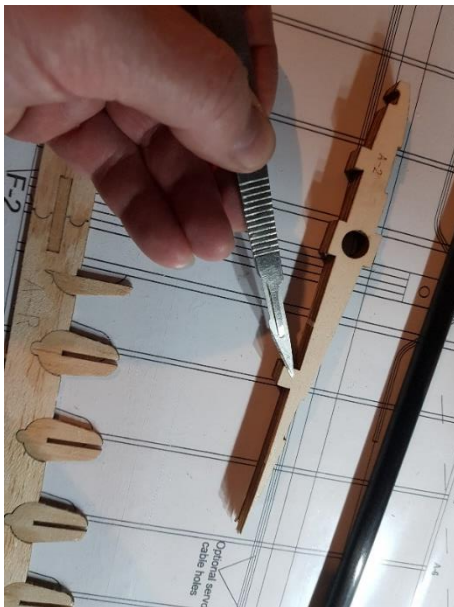
Identify the spar end stopper parts and make up as pictured. A great idea from Salahi and makes jiggling everything together easy.



The center rib is made up by laminating together the two balsa ribs A1 and then sandwiched between the ply ribs A2. Using a slightly damp paint brush I coat the surfaces with pva, using the scrap 10mm spar cut off helps with the alignment. Use weights so that it doesn't warp and dries perfectly straight.



Prepare the trailing edges A-R and A-L with the J1, J2, J3 spears. I assemble upside down on the board, weigh down with weights, and then a couple of drops of cyano on each spear is enough. When flipped back the right way the top should then be perfectly flat.



Now we can slide the ribs onto the 10 x 8 spar. Note that the ribs have sacrificial feet, these help to make assembly accurate and will be cut off when everything is complete. The ribs A-3 to A-15 are slid on to the spar and positioned in place over the plan, also trailing edges can be dry fitted. I align everything accurately and weigh down with weights. (10mm engineering key steel is great for this, it's heavy and very straight). But I

don't fit the end ribs yet. A drop or two of thin cyano can then bond the ribs to the spar.

TIP – Before gluing in the ribs it would have been best to dry fit the spoiler frames, I didn't do this and later had to slightly alter a couple of the notches in the frame. We live and learn!

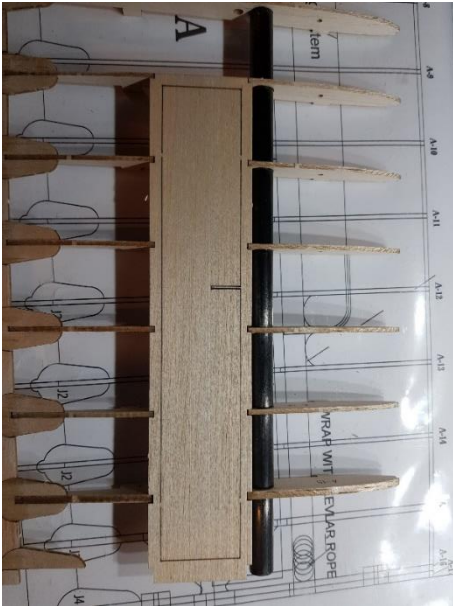


Before bonding the trailing edge, flip the wing over and weigh down near the trailing edge so that tops of the ribs are perfectly flat with top surface of the spears. When happy a drop of runny cyano on each rib to bond together.



The end ribs are made up by laminating together balsa rib A-16 and ply rib A-17. BE SURE TO MAKE A LEFT AND A RIGHT, when assembled, the ply rib should be to the outer face of the wing. I painted on pva and left to set with weights.





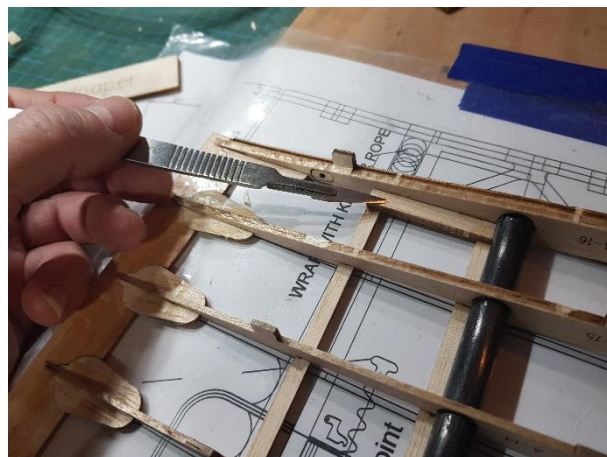
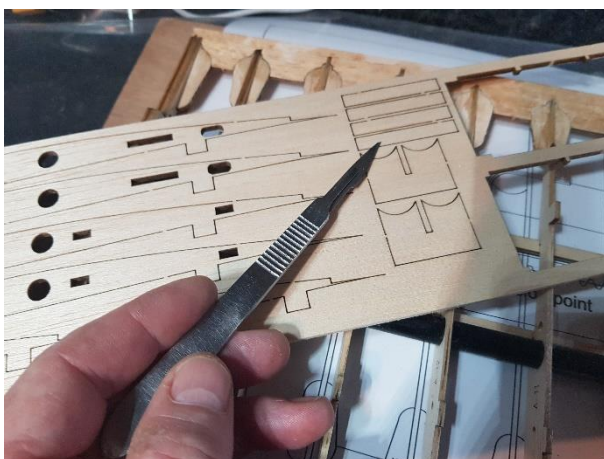
The spoiler frames can now be bonded in place. Make sure the frame is the correct way round with the longer end to the outside. I needed to make a small adjustment in the notches (should have positioned earlier on!). To keep shape, its best that the spoiler stays in the frame and tack the frame to ribs with medium cyano. If thin were used there is a risk of accidentally bonding the spoiler itself. The spoiler can then be removed, and a final bond of the frame can be finished with thin cyano.

There is a choice now of setting the outer ribs of the centre wing and



intermediate wing to 6 degrees, as I did. Or can set the angle to 12 degrees and then no angles on the intermediate wing. Salahi provides jigs for both methods, it's the builders choice. To get the rib to sit at an angle the hole for the spar may need opening slightly with a needle file. Once aligned I bond in place with thin cyano.

Find these four straight pieces on the 3mm balsa sheet and bond in place underneath each end of the spoiler frame.





Find in the hardware pack the wing bolts, aluminium tubes and ply plates. I used a round needle file to open the burrs where the tubes had been cut. The bolts need to fit nicely in the tubes.

Place the ply plates in the centre rib rebates (large hole nearest leading edge) and mark out the holes. Remove plates and drill same sizes as the tubes, keeping drill as upright as possible. Do not open holes in the ply plates.

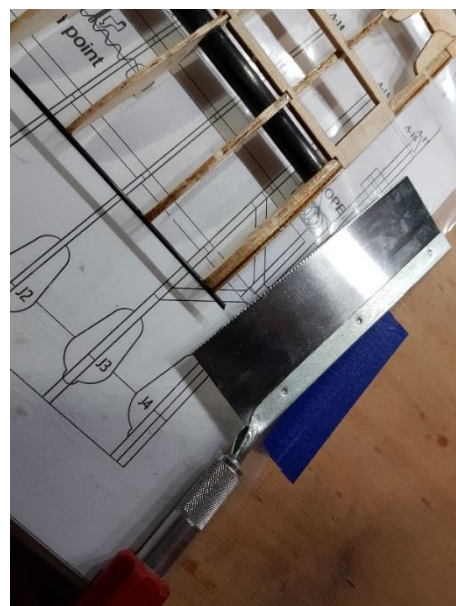


This is a good time to remove the sacrificial feet from underneath the center rib. I removed most material with a razor saw and then finish with the sanding block provided in kit, but you could also use a Dremel.

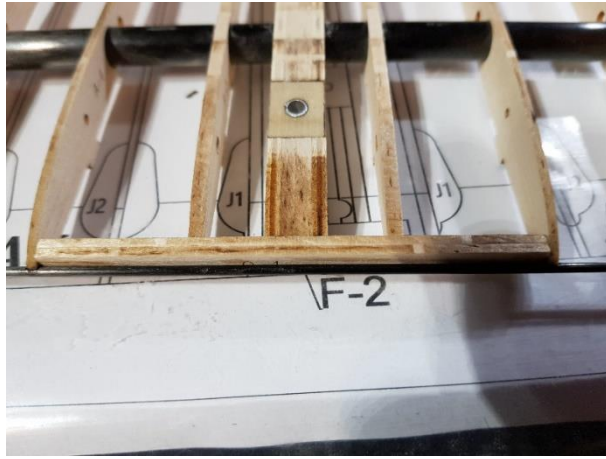
Fit the tubes and align everything over the plan, getting tube positions as accurate as possible, once I know it's going to be accurate, I remove the tubes and then use two-part epoxy to bond back in place. I'm certain that cyano would do a good enough job, it's the builders choice. The ply plates can then be bonded into the rebated area on the top. I do finish with a bit of thin cyano as it will harden the wood around the tubes.



2mm carbon leading edge can now be glued. I tend to work from the centre out, one rib at a time. Holding in place by hand and then one drop of thin cyano at each joint and sets in seconds.

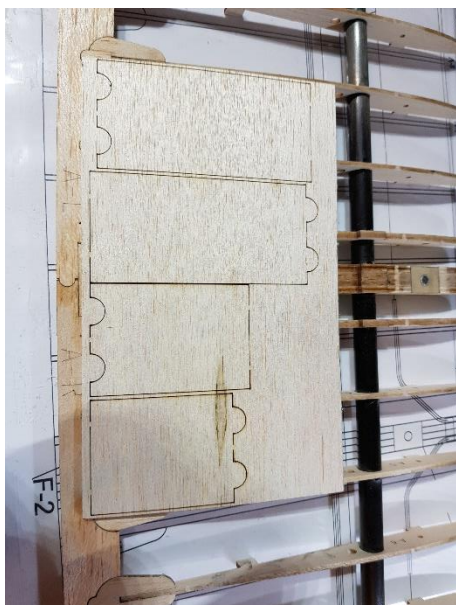


Cut off the overhang with a razor saw so that it ends flush with the rib.



Locate the two balsa strips 0-1 from the 2mm balsa sheet, bond together and align as shown in the photo with the carbon leading edge acting as a centre line and then bond in place

There is some extra material on the ribs, it's there so that they do not break on assembly. It can now be removed with either a Dremel or a razor saw and finished with a sand.



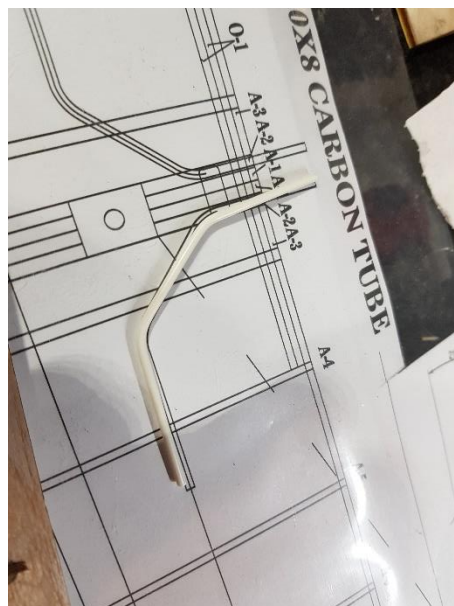
These are the centre sheeting pieces; the two long ones go on top and shorter one's underneath.

The Top sheeting pieces are positioned and bonded with thin cyano from the underside. Then run a drill through the aluminium tubes to make the holes.



If the alluminium tubes are too long, cut and sand flush with the bottom of the rib

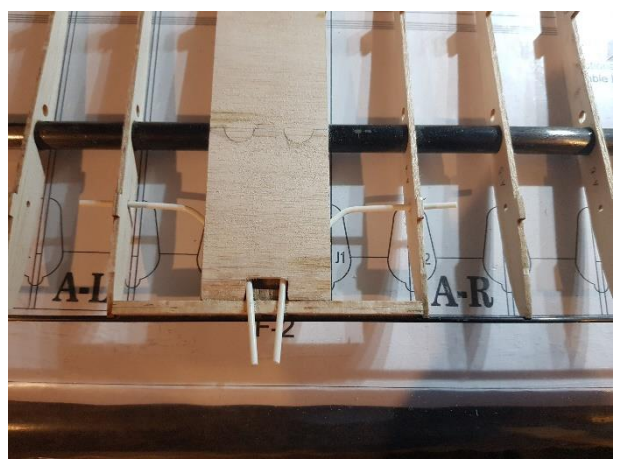
Find the pull spring palstic tubes with the two bends in the hardware pack, lay over the plan and if necessary tweak the bends by hand.



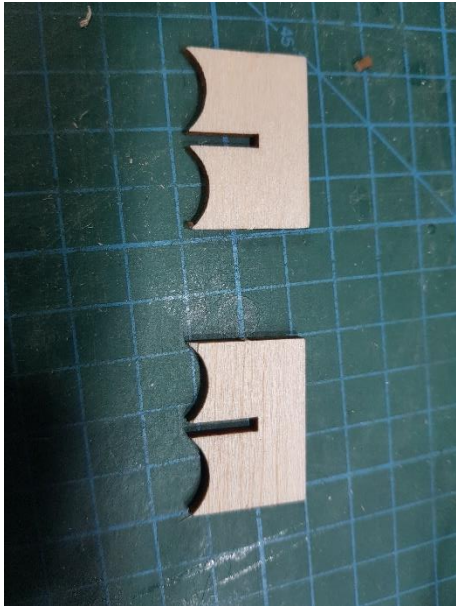
Fit the tubes into the ribs, to get a nice fit I had to remove a little bit of material with a needle file. When happy they can be bonded in place with thin cyano.



The bottom sheeting requires a cut out for the tubes, I also used a needle file to create some grooves. My technique is to paint ribs with pva, place the sheet at an angle that is the same as the leading-edge rib curve, bond to the leading edge with cyano, and then gently bend back to the ribs. Use weights to hold down whilst the pva sets.



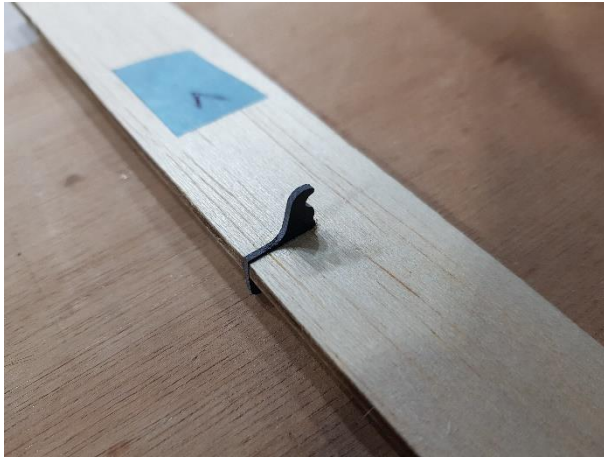
Find these pieces from the 3mm balsa sheet, they are for the 90-degree plastic pull spring tubes at the spoiler position. The All Round has a fatter spar than the electric or super light so it will not sit nicely in place without a bit of sanding. I used a round Dremel sander and pulled across the piece by hand until it was a perfect fit.



Make sure they are in the correct positions as per the plan and bond with thin cyano. In the hardware pack find the two 90-degree plastic tubes and bond in place with bend pointing towards the centre rib. I like to cut flush with a razor saw, it makes covering easier and just looks neat. A final light bit of sanding will finish it off nicely.



The horns for the spoilers must be positioned the correct way round. The hook part should be to the underneath, Salahi has designed a clever elastic band closing system. It's probably easier to bond them in after covering.



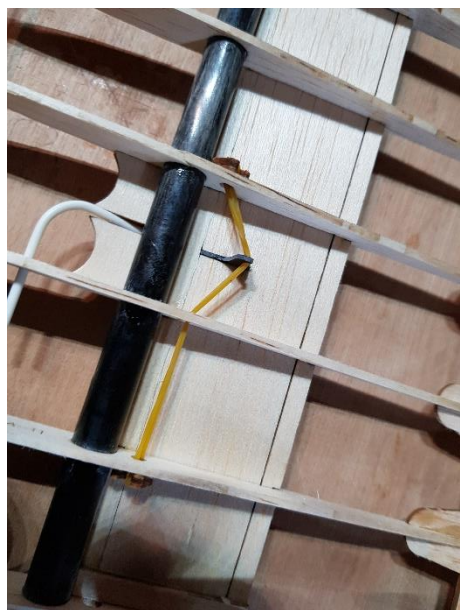
From the hardware pack find the band and ply bows. I file the ply slightly, so that the band does not hook over a sharp edge.



I used bits of cotton to pull the band through the holes in the ribs and then looped over the ply bows.



And this is how it should end up. You can hook the band on to the hook single or double, depending on the closing strength you want. I found for the band in my kit that single is sufficient.



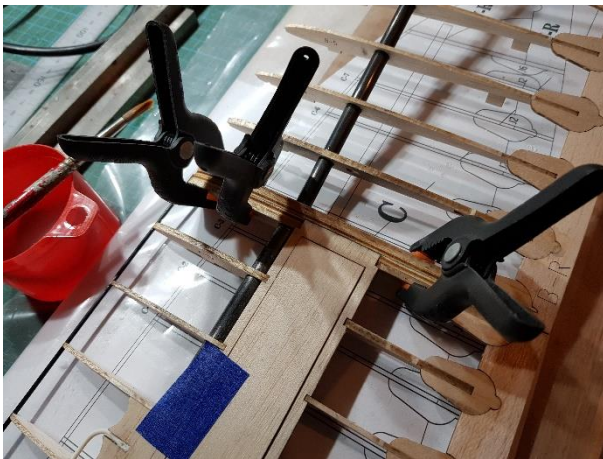
Intermediate wings – Much of the building technique is the same as the centre wing so some things I won't repeat in as much detail.

The ribs B1 and B2 are laminated together, making sure again that there is a left and a right with the ply face to the root. The trailing edges B-L and B-R are made up as before with spears J2, J3, J4, J5. I bond all the ribs other than the end ones. Note that the spar is slightly over length, set the spar so that it's in exact position at the tip end, I dry fit the root rib and then cut flush with a razor saw.



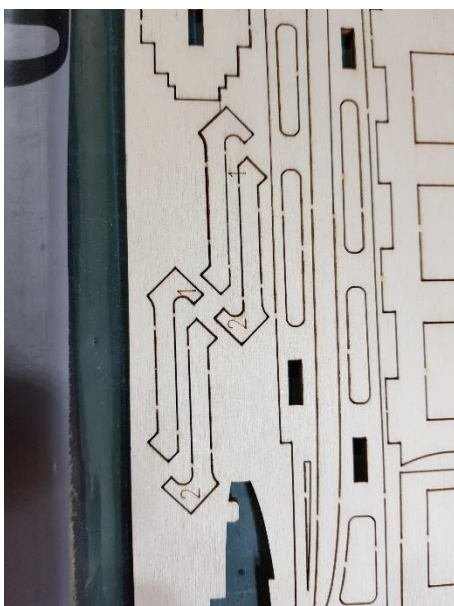


Same technique as before to bond the trailing edge.



With the cranked joiner inserted into the spars I then clamp ribs together and tack root rib with medium cyano, being careful not to glue to centre wing. I then disassemble and finish the bond of the rib with thin cyano.

Locate the ply diagonal braces 1 and 2, position into the slots in the ribs as per the plan, and then drops of thin cyano will secure in place. Parts 1 & 2 are identical so it's not important which way they go.



These ply inserts are for the carbon incident pegs. They can be glued into the ribs at any time but because they can move a bit in the slots, my preference is to make it a last job so that when the wings are put together I can put a peg through the hole for best alignment.

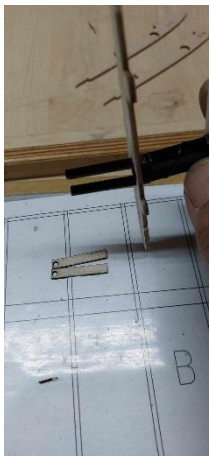
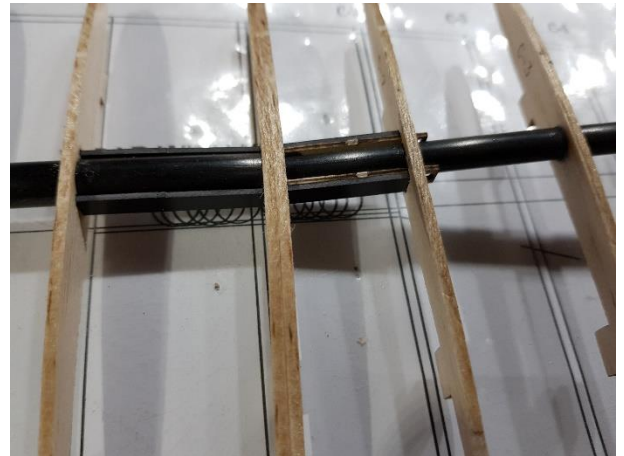


Tip Wings - Build them in the same way as the other wings, identifying parts from the plan, but leave the root rib unglued for now and leave the extra length of spar protrude through the tip rib.

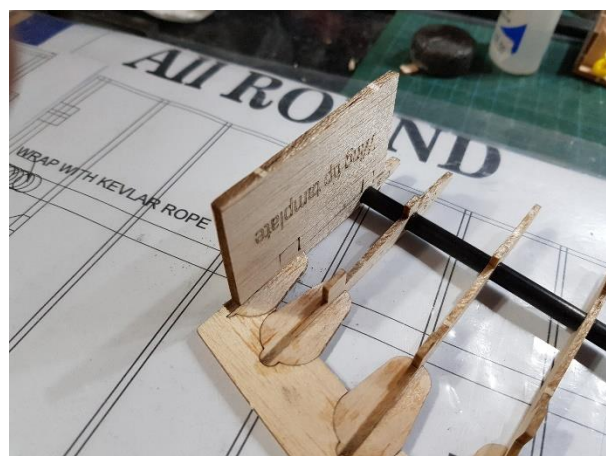
We now start to think about the joining the intermediate wing to the tip wing. A preperation job is to laminate together ribs B-11 to C-1. Make sure there is a left and and right, the plan is clear as to which way round they go.



Salahi has designed a clever system to join the intermediate wing to the tip wing. From the hardware pack find the four flat carbon joiners and the four ply spacer strips. Note that the carbon joiners are not equal in length either side of the crank, the longer side goes into the intermediate wing. Note also that the ply spacers have a slight angle at the ends. The ribs are shaped to allow all these pieces to slide in. Dry fit it all but don't bond yet.



From the 3mm balsa sheet find the wing tip templates and tack glue with medium cyano to the sacrificial feet on the underside of the tip rib C9. By bonding only to the feet it makes later removal easy.

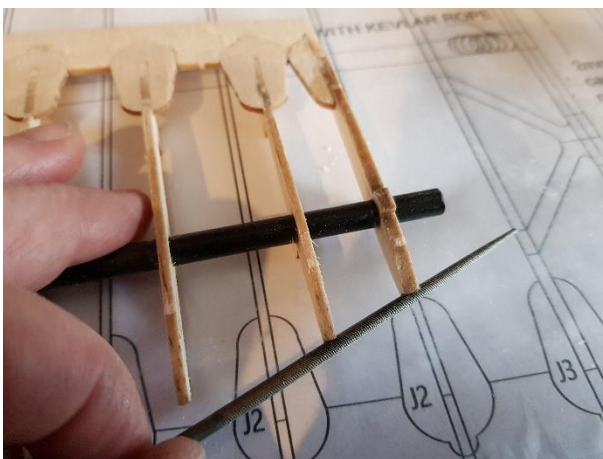




We can now set it all up on the bench, and weigh down. The tip templates will give the precise dihedral angle. When happy that everything is as it should be, thin cyano can be used to bond

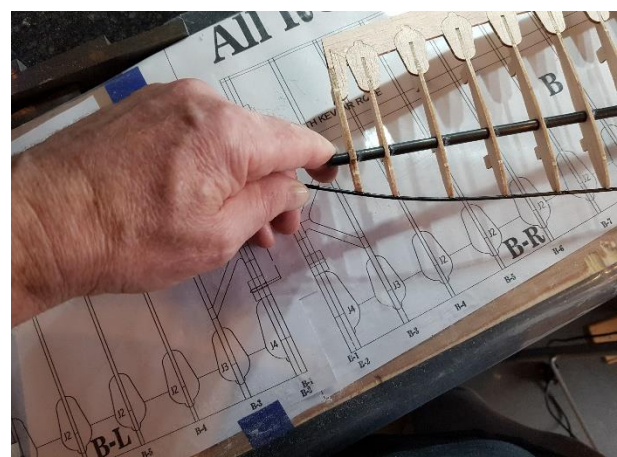
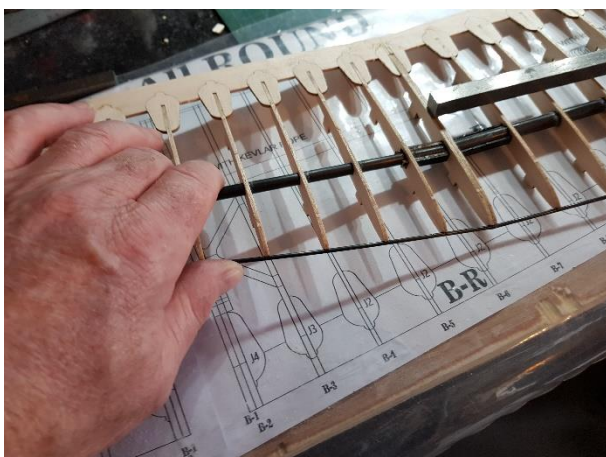
the joiners and the remaining ribs. When all the glue is fully cured I lift off the bench and add additional medium cyano to the underside of the joiner.

The plan shows kevlar string wrapped around both halves of the joiner. I chose not to do this as the join is very strong, I wanted all the supplied string to wrap the ends of the center and intermediate spars where they join. I had a discussion with Salahi on this and he thinks it is still a good idea to do. It's the builders choice.

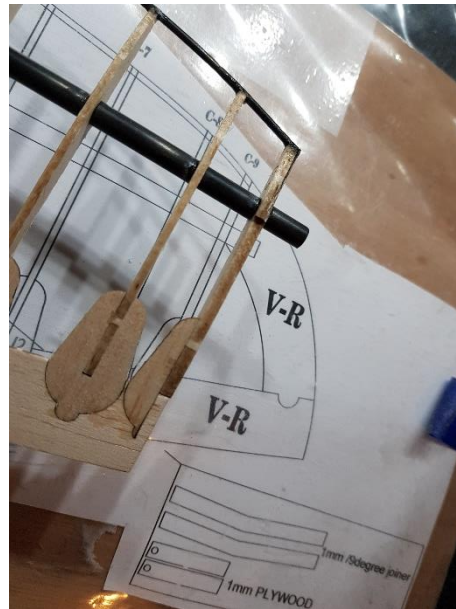


The 2mm carbon rod leading edges can now go on, I shape the tip ribs slightly with a needle file to get maximum bonding surface area.

And then like before I work from the center out

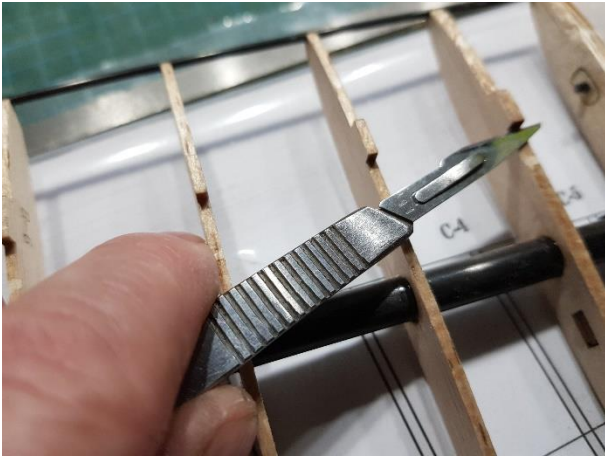


Trim off the leading edge overhangs. I used a razor saw.



The balsa wing tips. Find the parts 1, 2 and 3 from the 2mm balsa sheets, build as shown and laminate together with pva. Bond on to the end of C-9 and sand to shape. Sorry forgot to take a photo here but we are looking for a nice shape to follow the curve of C-9, noting that the underside has a slight under camber. The builder can choose to angle the tip up or leave flat. I chose flat.



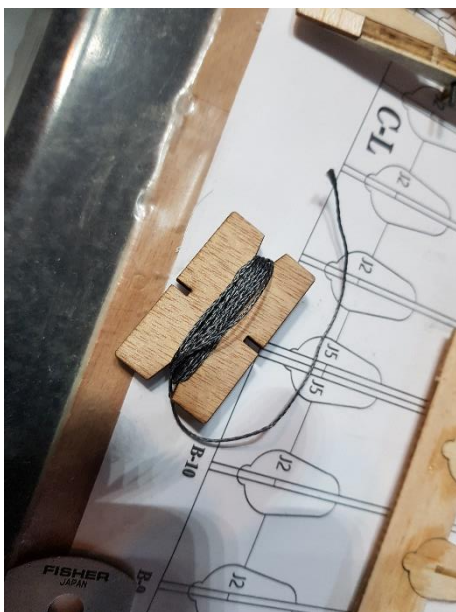


Final jobs for the wing – All the sacrificial feet can be removed, an easy job but be careful not to dig too deep with the knife.



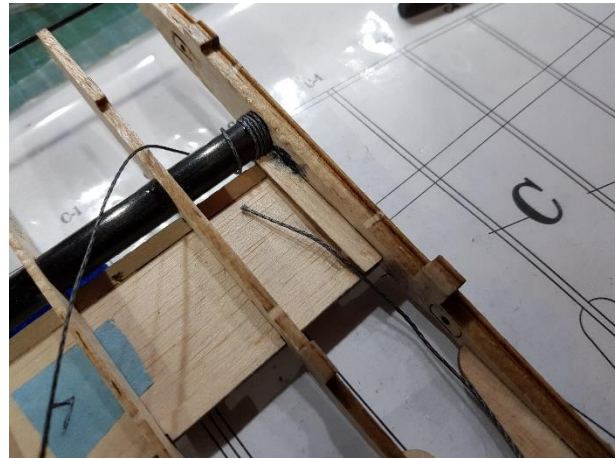
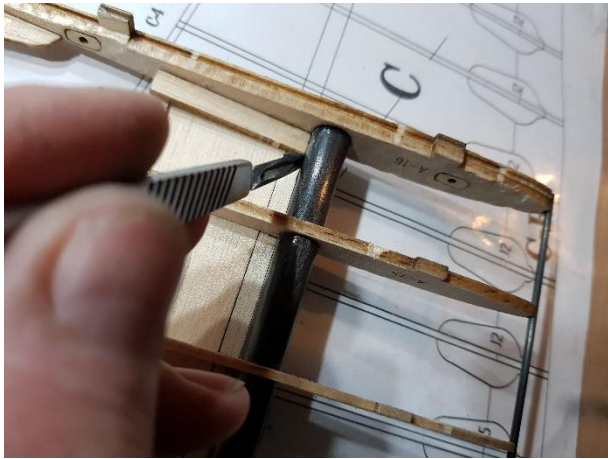
For the incident pegs - Socket in the round cranked joiner in to either the center or outer wing and but together. Cut some carbon 2mm pegs about 20mm long, I sanded a bevel on one end, pushed pegs in place and then tacked with medium cyano to the outer wing. Pull the wings apart and then can finish the bond with thin cyano.

In the hardware pack find the kevlar string, cut in to four sections and wrap the spars on the center and intermediate wings at the ends where they join. Soak

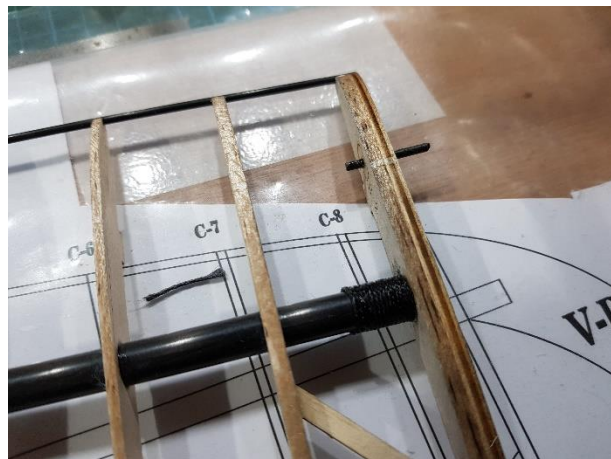
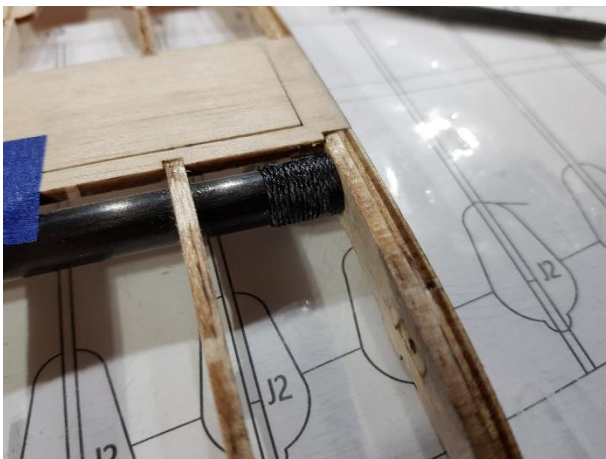


the wrapping with thin cyano. This is an important step, it prevents the spar tubes from ever splitting. To start the wrap I use a clamp (gardening plant clamps are great), once two or thre wraps are done I use a drop of thin cyano and then can remove the clamp.

To wrap the center wing spar I had to notch out a gap. On an earlier stage these could have been positioned slightly forward, if I build another Magic 3 I will do this.



Finished job

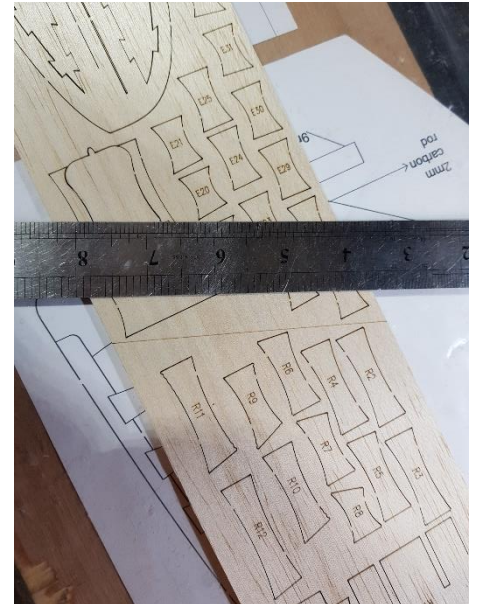


And the wing is finished.

Elevator and Fin

These are so easy to build and I think a work of art in the way Salahi has designed them.

The parts for both the elevator and rudder are all on one 3mm balsa sheet. To keep the shapes I prefer, and think common practice, to build whilst the frames are still in the sprue. There is an etched diagonal line to separate them, it makes sense to cut the sheet along the line so that they can be built separately.



Starting with the elevator I removed all the internal parts but left the frame still in the sheet.

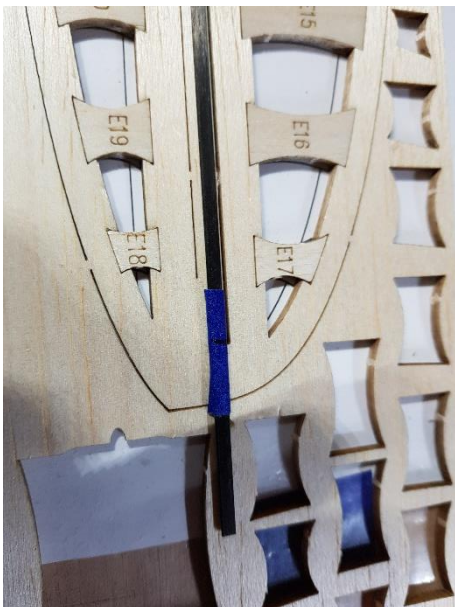


For clarity, there is a ply part in the hardware pack and a part from the balsa sheet that is the same shape, scrap the balsa piece, it's the ply part you want. The side with the groove goes to the underside.

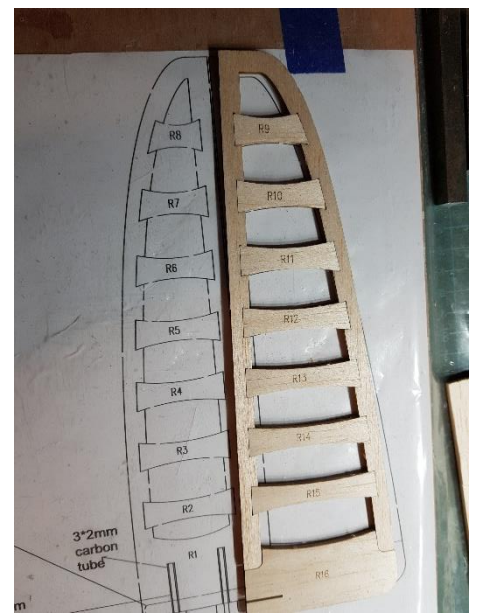
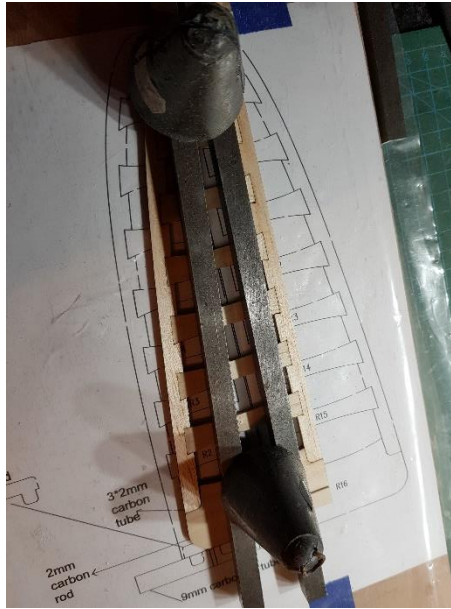
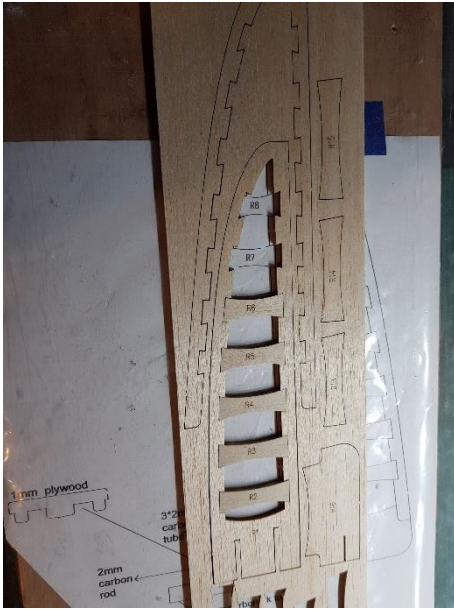


Identify the parts as per the plan and position them accordingly. Follow the numbers and you can not get it wrong, it completely self jigs. Best to keep the elevator still attached until everything is finished. Once happy, I hold down with weights, the engineering key steel ones are ideal for this, and a drop of thin cyano at each joint will secure.

Find the 3 X 1mm carbon spar and cut to length. I inserted in the slot a tiny amount, ran a fillet of SuperPhatic glue on each side and then pushed fully home. For belt and braces I flipped over afterwards and ran a few drops of thin cyano along the spar line.



Build the fin and rudder in the same way



From the hardware pack find the 3 X 2mm carbon tubes and 2mm carbon rod. The rods may need some sanding to fit into the tubes, it's important that it's not



a sloppy fit, but should be able to push in without too much force.



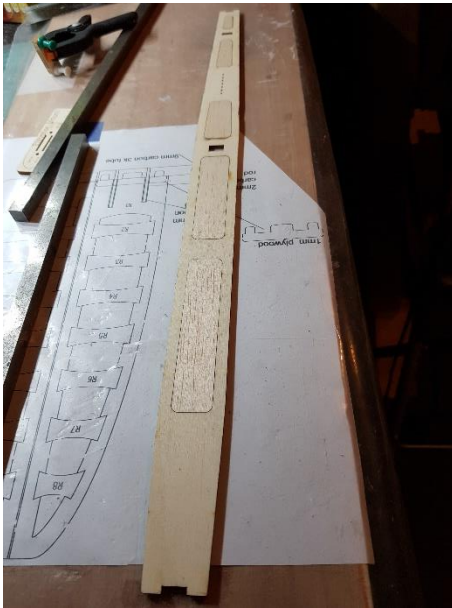
And then on a flat surface push the tubes into the slots and bond with thin cyano.

Fuselage

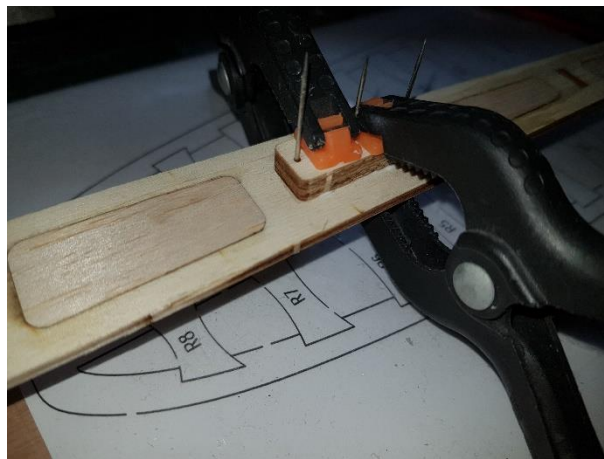
Laminate together the two ply doublers for the tow hook. I inserted pins to keep



the holes aligned and then bonded together with pva.



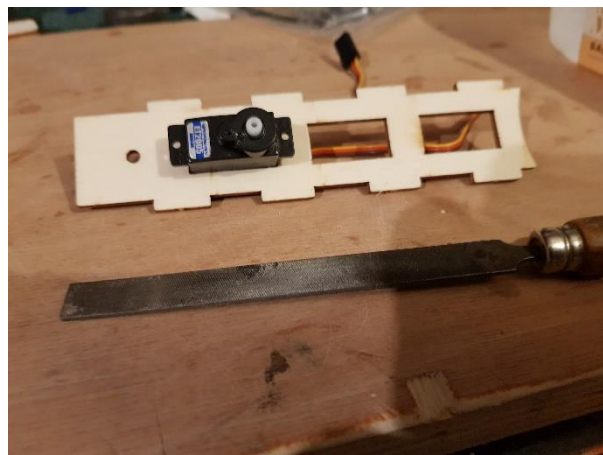
Take the Ply fuselage bottom, find the balsa pieces from the 3mm balsa sheet and bond in to the holes



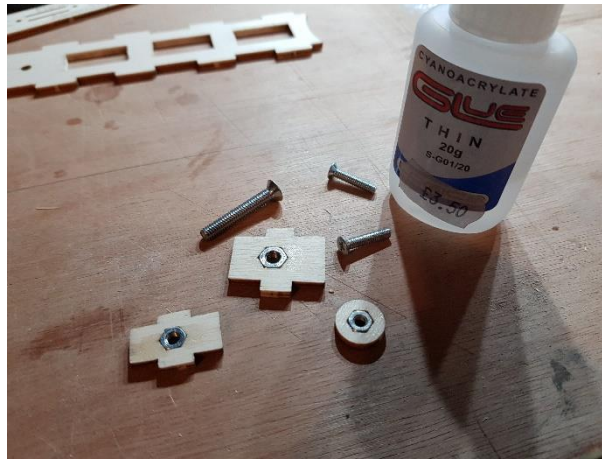
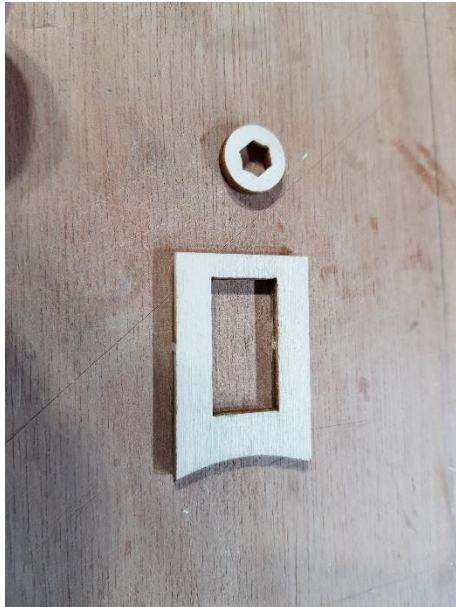
with thin cyano. I used pva to bond on the tow hook doublers, using pins to keep the holes aligned.



The remaing parts in the ply sheet are for the fuselage. I next work on the servo tray, firstly I take my servos and file the holes slightly to make sure

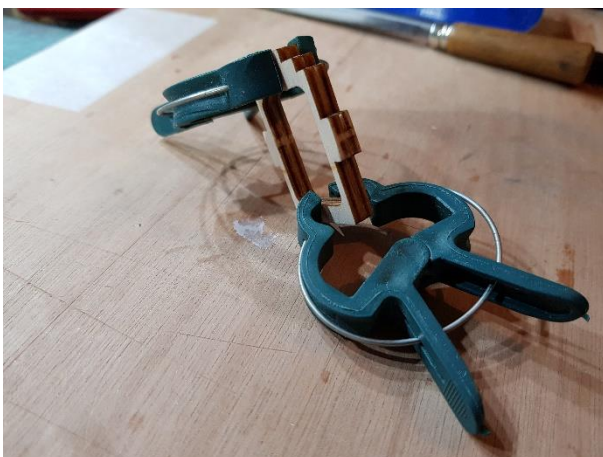
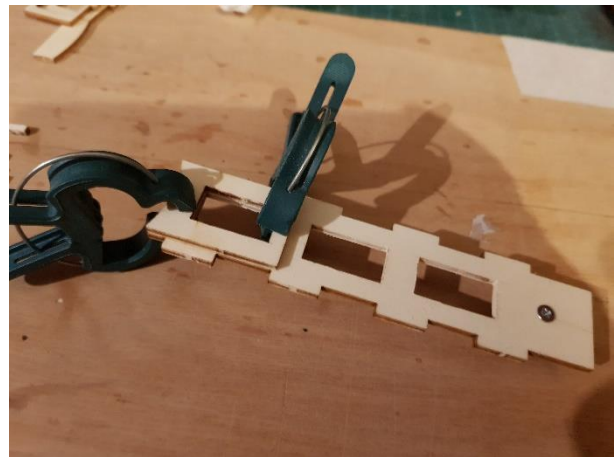
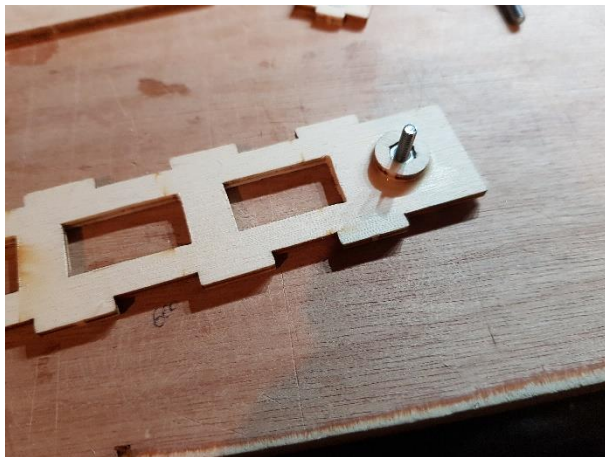


they fit well. Much easier to do now before installed.



Find the ply parts for servo stand off doubler and the ply holder for the ballast bolt nut. I bond the nut in place and

whilst at it find the ply wing retaining pieces and bond those nuts in aswell. The ply is thicker than the nuts so keep one surface flush. I then bond the ballast nut part to the underside of the tray, clamping in place with the bolt. On the topside, bond the servo stand off.

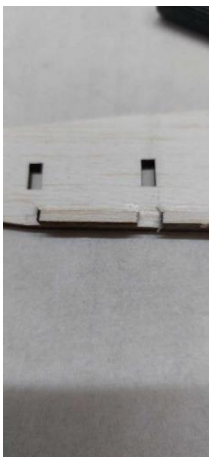


There are two ply former pieces the same, laminate them together to make one thicker former. This one is positioned in the middle of the fuselage at the wing leading edge position.

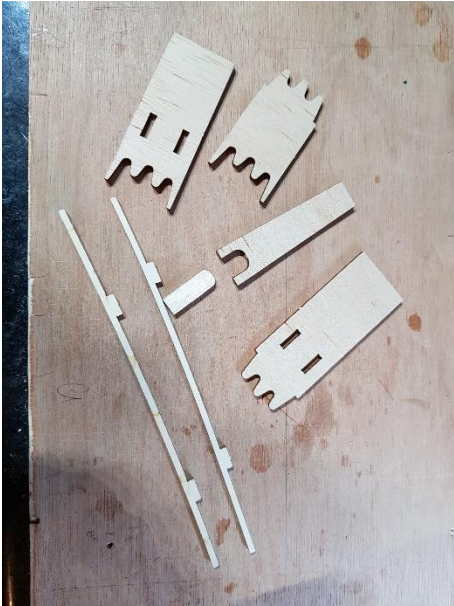
Prepare the two balsa fuselage sides by bonding on the longerons. I use a flat edge to keep flush with the edges and then tack with medium cyano, I then remove the straight edges and finish with thin. Make sure you do a left and right side!



Notch the longeron for the former to fit, a square needle file is perfect for this job. When assembling it's important that the deeper slot on the former goes to the top. I assembled the sides, the four formers and base together, tacking with medium cyano and when happy finished with thin cyano. The assembly is easy to get straight, the parts and slots are accurate so it self jigs. I lightly sanded at the front to make sure it's all flat



I now built the canopy hatch cover, the longerons are ply, the other pieces are balsa. Bond the piece with the U shaped slot inside the nose of the fuselage, it sits inbetween the sides, it should curve nicely with the longeron profile. A balsa top sheet sits on top, sorry forgot photo but it should be obvious and can be seen later on.



Bond together the three pieces for the cover. Then to make the underside bond in place the ply longerons and balsa tongue. I used thin cyano.



Find the ply piece with the hole for a magnet. Find two magnets in the hardware pack and bond one of them in to the plate, flush with the top and then bond the plate in to the fuselage

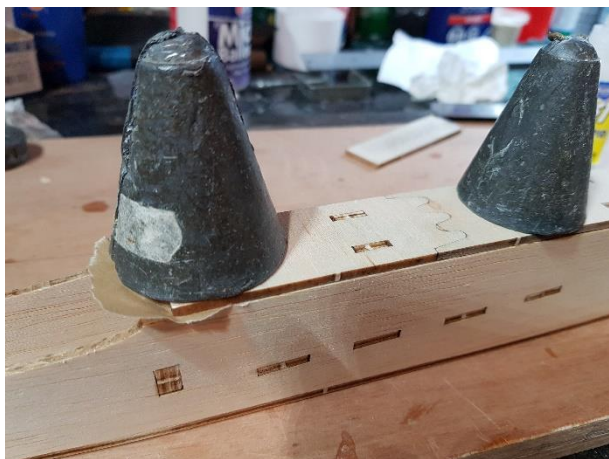
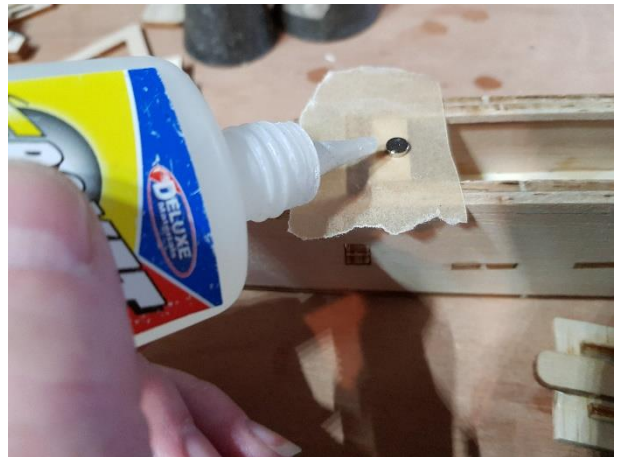
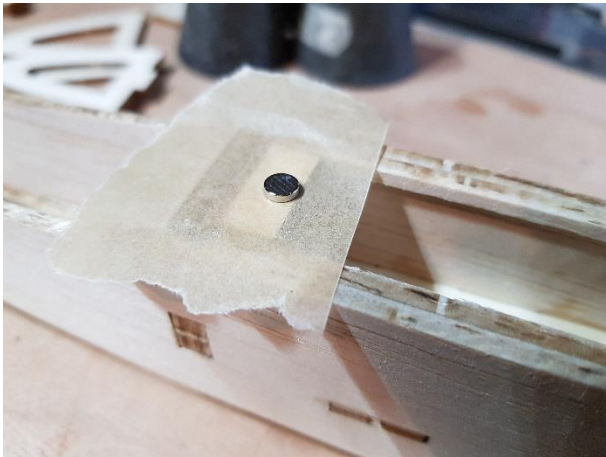


I used the magnets strength to keep in place the second one, then fitted the hatch and pushed down with a little pressure, just enough to indent a shape in the wood.

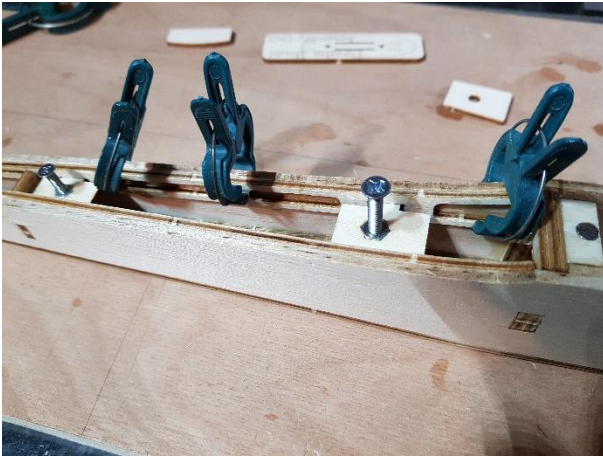


With the mark in the wood I shape out a hole for the magnet to sit in.

Place a piece of kitchen grease proof paper between the two magnets, a spot of medium cyano on the top one and then fit the hatch and weigh down. When certain the glue has cured the hatch can be removed and the magnet is in place, a drop of thin cyano will give it some extra bond.



Assemble the wing doublers dry, do not bond in the nut plates yet, they should be able to slide in the slots



bond the doublers in place, I used thin cyano, being careful to not get any glue on the nut plates, they should still move freely so that they can be aligned with the wing at a later stage. All the gaps in the doublers allow glue to be applied and will be strong.



The nose is made up with three ply pieces laminated together, the one with the tongue is in the middle and locates in the slot in the front former. Make sure you fit it the correct way up, there is more curve on the top than the bottom.

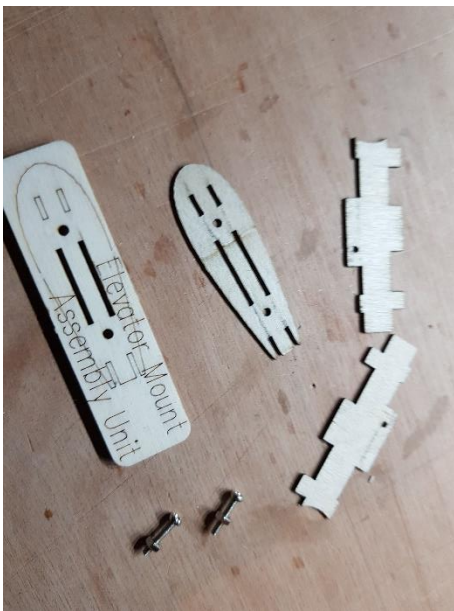


There are then six balsa cheeks, three either side. When it's finished it can be sanded to a nice shape. I do this at the very end.

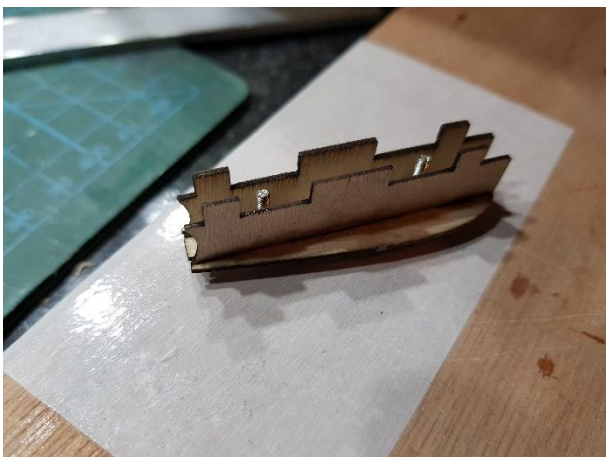
The Boom

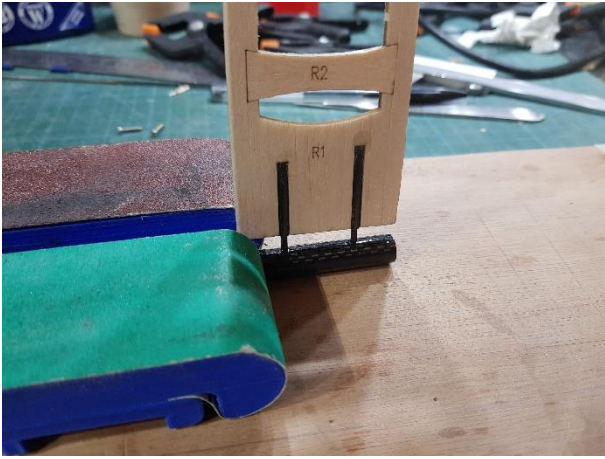
The 9mm carbon 3k boom should be 70cm in length. My kit is pre production and needed cutting down but I believe future kits will have the correct length provided. If it does need trimming, make sure that you trim at the end without the CNC routed cuts.

I started by preparing the elevator pylon mount. There is a very nice jig supplied to help assemble this. Bolt the mounting plate on to the jig with the screws and nuts from the hardware pack. Align the nuts so that the flats are to the sides and a spot of medium cyano to secure only the nuts at this stage. For fine work I like to put a spot of glue on the end of a cocktail stick.



The sides can now be tacked in place, being careful to not glue to the jig. When cured, the finished the assembly can be removed from the jig, fit the carbon peg found in the hardware pack and some spots of thin cyano on the all the joints will make it strong.

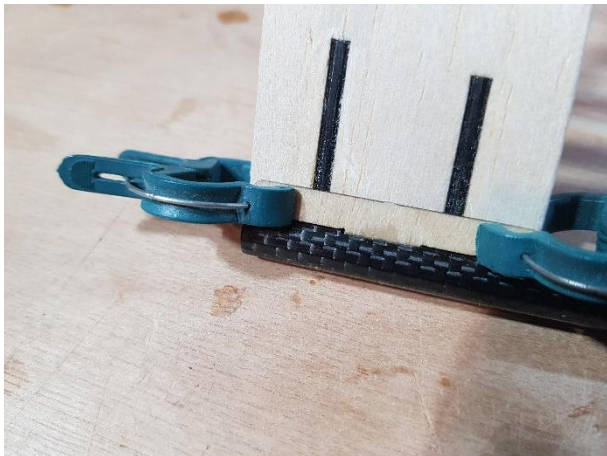




If you haven't done so already make sure that the 2mm carbon pegs are a nice but not sloppy fit into the tubes in the fin. Important to note that the topside of the boom has pre cut slots for the elevator pylon mount. I prefer to cut the pegs to length first and then jig up in place so that the fin is not pushed fully down. The pegs can then be bonded without fear of

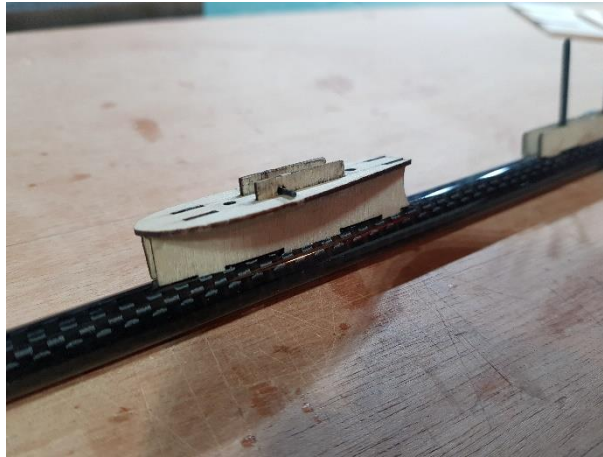
accidently bonding the fin in place.

We can then fit the ply cheeks, again keeping the fin not pushed fully down so that we only bond the cheeks to the boom and not the fin.



And this is what we should end up with.

Dry fit the elevator pylon in to the pre cut slots in the boom, do not glue until it is properly aligned and I will explain how I did it.



You could use squares for this, but in my experience a lot of squares are not perfectly square. I fit the fin in place, bolt the elevator to the pylon mount and then rig a plumb line and rotate the boom so that the fin is exactly vertical with the line, then I use a spirit level and adjust the elevator so that it is exactly horizontal. I took a lot of care here to get everything exact, and when happy I tack the pylon with small drops of medium cyano, applied with a cocktail stick, and then check again. Finally I can remove the fin and elevator and finish bonding the pylon with drops of thin cyano.





Finished job

To install the pushrod snakes, I drilled a couple of small holes and then opened up slots with a needle file. It's important that the slots are not too small and pinch the tube, make sure the forward one is the correct side for the way you built the elevator. The rudder snake can go further back on the other side. I bond both in place with medium cyano.



Wing bolts and tail alignment

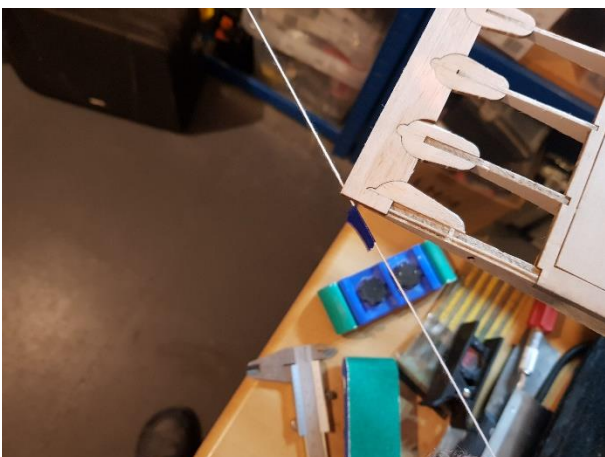


The nut plates are to be tacked in place with some long setting glue. I used SuperPhatic which gives about 20 minutes working time, as long as you are prepared that should be enough.



Dry fit the boom pushing into the two rear fuselage formers. Do not bond, just position so it looks as correct as possible, we align properly later. Bolt the center panel wing on, but not too tight, we need to be able to move it around. Make up some string and tie a non slip loop (look up a bowline) and hook it over one of the fin pegs.

Hold the string to a rear end corner of the wing, I made a flag out of painters tape in approximately the correct place to help me identify the length. Then go to the other side and move the wing around until both sides have identical string length, then nip the bolts up a bit tighter, only enough so the wing doesn't move, and leave until the tacking glue has set. The wing can then be removed for the next step.



Now find the two top ply plates and bond in place. I used two part epoxy here as it's an area that needs strength, winding the bolts down as clamps until the epoxy has set. Once its cured I remove the bolts and for belt and braces finish with some drops of thin cyano

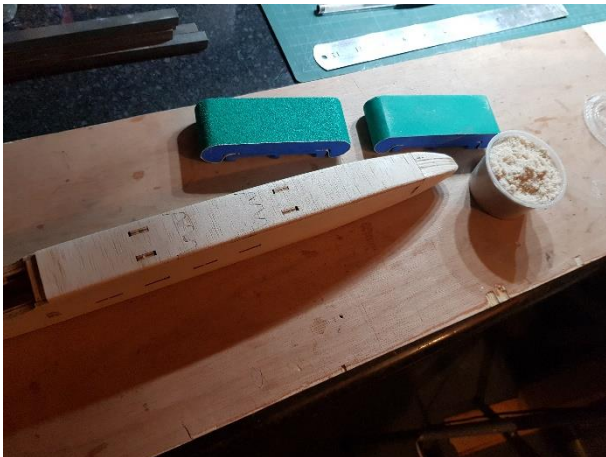


When certain all the glue has cured we can bolt the wing back on and align tail with the wing. I did this by eye, twisting the boom until the elevator was exactly in line with the wing.



To bond the boom in place A couple of drops of thin cyano on the rear former and rear fuselage sides is enough and then the wing can be removed and the other former can be bonded in the same way.

The rear fairing top and bottom balsa pieces can be bonded in place and sanded down to a nice shape. I like to leave a little bit of meat in place but some might prefer to sand all the way to the boom. It's personal preference.



I finish sanding the rest of the fuselage. I like to keep sanding dust, when mixed to a paste with pva it makes an easy to sand light weight filler.



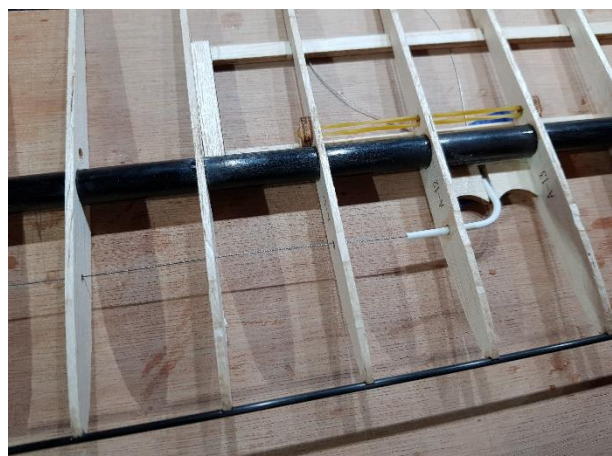
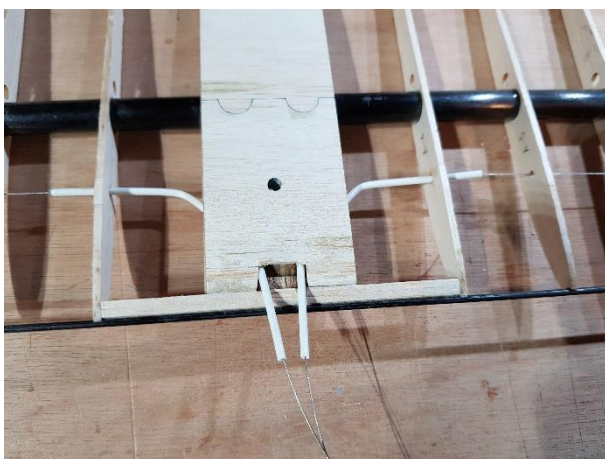
We also need to bond on the wing fairing. A piece of grease proof paper keeps the glue away from the hatch cover. Some shaping will be needed so that the wing leading edge sits nicely underneath it.

Spoiler Pull strings



The parts are in the hardware pack. Find the hook, wire strings, and the four ferrules. Cut the strings in half, decent scissors should do the job. Thread the ends through the ferrules, then the loop of the hook and back through the ferrule again, then crimp the ferrules. There are special tools for this which I don't have so I use side cutters, but be careful not to use too much force or you can cut right through. I also use a small drop of medium cyano for added security. Notice that the shorter leg of the hook has a steeper angle, this is the side that will go in to the servo horn.

The strings can then be threaded through the center tubes in the wing, through the holes in the ribs and then out through tubes at the spoiler ends. When covering is complete and servos are in installed, the strings can be attached to the spoiler horns using the ferrules as before. Once you have the servo installed and model covered, place the hook in the servo arm, then on one of the spoilers thread the string through ferrule and spoiler horn, and whilst operating the servo set a length that opens and closes the spoiler and then crimp. When happy, do the same with the other spoiler but setting it up so that it matches the movement of the other one.



Covering

I used Oraltight iron on film for the whole model with a mixture of opaque and transparent colours. For this log I won't go in to too much detail, there's plenty of tutorials around. But if new to it I urge you to read and follow the instructions that come with your film. Dust free and the right tools helps a lot. Cover Grip is useful on leading and trailing edges. I like using a rotary cutter and always a new blade in the knife. A small quilters iron is also very useful.



And just like that, the Magic it is done!

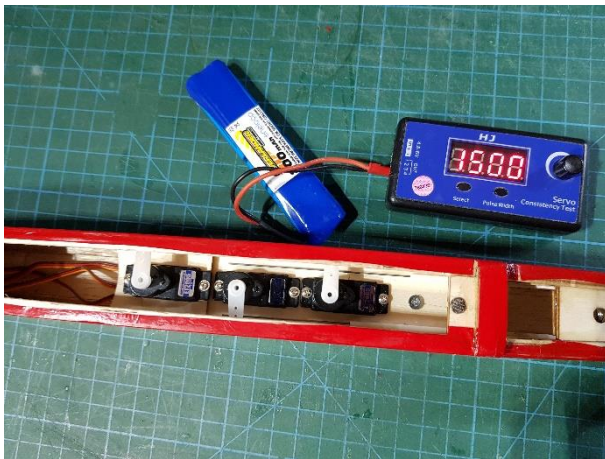
I side hinged the rudder and top hinged the elevator.

Servos and linkages

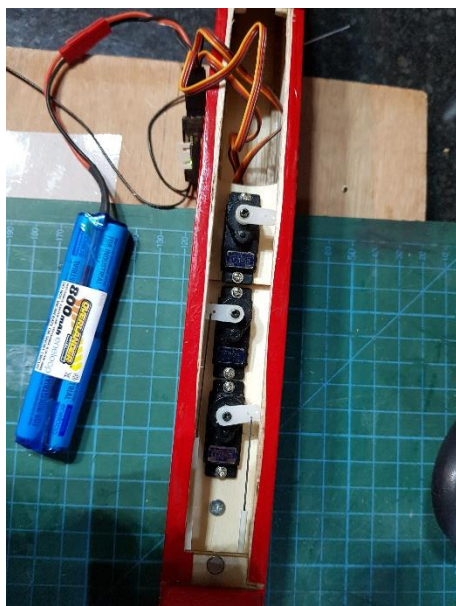


In the hardware pack there are horns for the rudder and elevator. Before bonding in place I roughed them up a bit with sandpaper and drilled an extra hole. When positioned in place a drop of thin cyano will secure them.

The servos are secured in place with screws from the servo pack. I center the servos on a tester and position the horns as near to 90 degrees as the splines



allow. I drilled an extra very small hole in the elevator and rudder horn, the ones in the supplied servo arm are too big.

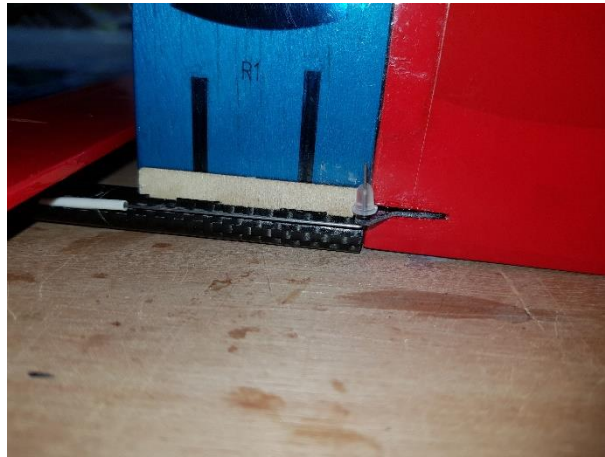


Bend Z's on the piano wire rods and install in the servo arms. With the receiver connected I tweak the radio sub trims.

And then at the elevator and rudder horns bend the wire to 90 degrees at the point where the control will be centered, the wire will need trimming but leave a long enough leg so that it's impossible for the wire to pop out of the horn. In



the hardware pack there are some earring retainers that will also help to keep in place. Install the



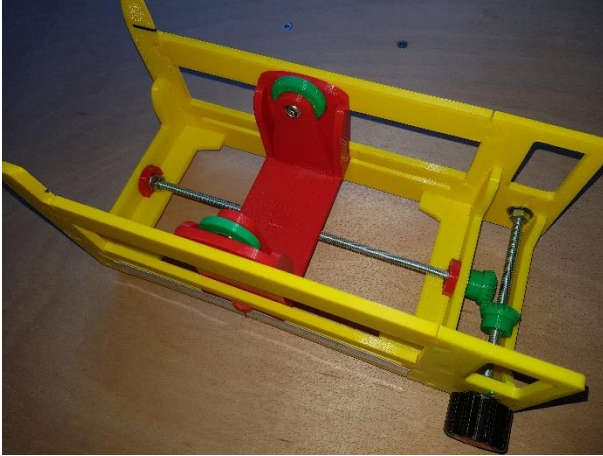
reciever, for the battery I am using a 4s AAA 800mah NiMh and put this in to the nose.



Everything is now installed.

CG and Ballast

With the AAA 4s NiMh battery the CG on my model came out at 74mm and had an AUW of 400g. For initial flights I decided to take the CG forward to 71mm which required only 1g of nose weight.



I made up an 80g ballast stick out of four 20g drilled bullet fishing weights. They are positioned so that when installed it takes the CG forward to 69mm.



Salahi uses metal strips that can double up together. The bolt is provided on the servo tray so the builder can make their choice.

Settings & Flying

The maximum throws are Rudder 30mm either side and Elevator 9mm up & down. You can fly at this but it's a good idea to use Flight Modes so that not only can individual elevator trims be set, but also movements can be limited with dual rates. For example, very little elevator is required to turn the model so might as well have a thermal mode and limit the movement. These are the settings I initially set but am still tweaking so treat it as a base to get going and then experiment.

FLIGHT MODES	Trim	Elev D/R	Rudd D/R	Notes
Cruise	0	0%	0%	
Thermal	2 clicks up	70%	70%	Trial & error but think the elev especially could be less
Speed	3 clicks down	80%	80%	
Spoiler	3mm up max	0%	0%	I use proportionally mixed on throttle stick

I thank Salahi for giving me the opportunity to build a pre-production kit, I have enjoyed the build, and the flying performance is excellent. The Magic 3 launches well off the bungee, it can fly slowly when you want it, but also fast to cover some sky. The spoilers are very good, after coring a thermal I put them out from a great height and the model was down quickly and was very controllable for a precise landing.

I would highly recommend this model to anyone, whether you want an all-out competition model or one just to have some fun with, it will tick the boxes.

