

Tony Ray's Bleriot XI

One of Tony Ray's Micro Aeroplanes

Additional build information from

○ Bleriot XI/ Wing Span: 420mm /Average Flying Weight: 35g / Receiver: DSM2 Micro Receiver / Motor: 7mm Coreless motor / Servo: 1.7g micro servo / Prop: 5.5in or 138mm prop

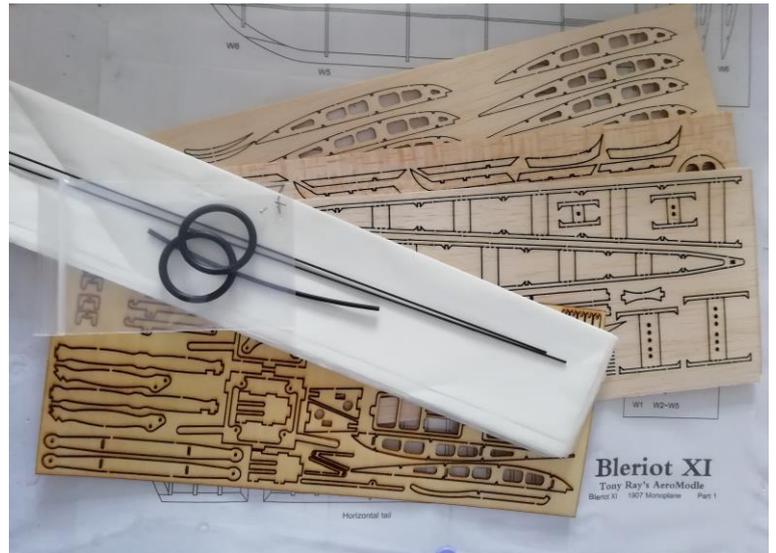


Steve Webb Models

Mini Bleriot XI – Kit Inventory

- **Wood Parts :**
 - Balsawood Sheets *3
 - Basswood Sheets *1
- **Hardware Parts:**
 - Carbon rod *3
 - Micro screw *4
 - Heatshrink tube *1
 - Rubber Wheel *2
- **Paper Parts :**
 - Installation plan drawings *2
 - Covering tissue *1
- **Required Electronics :**

RC Transmitter with at least 3 channels;
Receiver/ESC (If you use Brushless motor)/ Motor: 8.5mm coreless motor with gearbox;
Propeller: GWS4530 or equivalent; LiPo battery



Note: The CoG of this model is very near the front. Please keep the battery as far forward as possible

This is a small model but don't underestimate its complexity. It is suggested that this should not be a first build of a model aircraft. Some prior knowledge would be helpful. However, we've tried to point out any pitfalls and ease the way to making a successful model of the iconic Bleriot XI, the first aircraft to fly across the English Channel from England to France, whether you want to fly it or as a static model.

Before you start

- Some items you may find helpful
 - A sharp, fine modelling knife or scalpel and additional blades
 - Fine nosed pliers or strong tweezers
 - A very fine cross head screw driver for miniature screws
 - A couple of clear plastic containers for holding small parts. Keep your clear plastic, takeaway food containers, they're ideal.
 - Pins and a small building board.
 - In the main I used thin cyano acrylate (super glue) for the well fitting joints and thinly spread aliphatic resin (yellow glue) for sheet to sheet bonds
 - A capillary tube extension for the cyano acrylate bottle to reach awkward glue joints
 - A small sanding board (make one by gluing 2 pieces of 1/16 balsa, 3inch x 1.25inch with grain crossed at 90deg. You can stick a different grade of sandpaper to each side to make a really handy small sanding block)

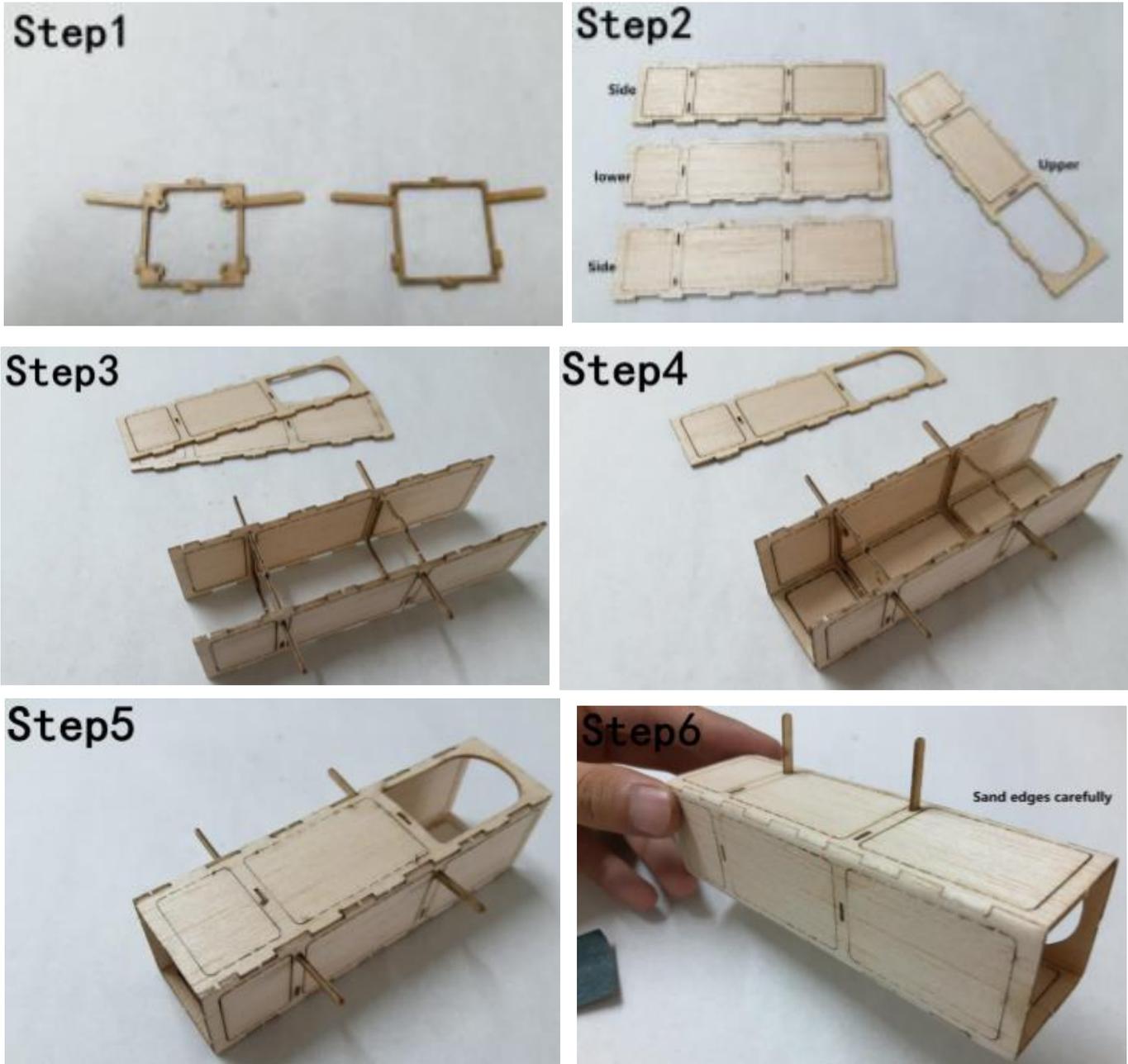
- Read through the notes in conjunction with the pictures in this build document.
- Check each "Step" before you start it. Carefully study the photos in the pictures
- Identify all the parts for each step and remove only these from the relevant sheet by cutting through the tabs in the laser cuts around each item. Use a plastic container to hold them until needed in the step.
- Any offcuts containing other pieces (like the centre of the cowl) can be stored in another plastic container
- Remember, the parts are extremely small and leave very little room for recovery if you get things wrong. However, the standard of the kit makes it less likely that you will make that mistake in the first place.

The build

Not all of the steps need clarification, this does not mean they aren't important. Make sure you check them as you go through the build.

IMPORTANT: It is recommended that you cut 2 of the lengths of carbon rod at 200mm before starting. This is for the front lower spar in the wings. Cutting them now ensures that you don't end up having used too much of one of the rods necessary for the wings.

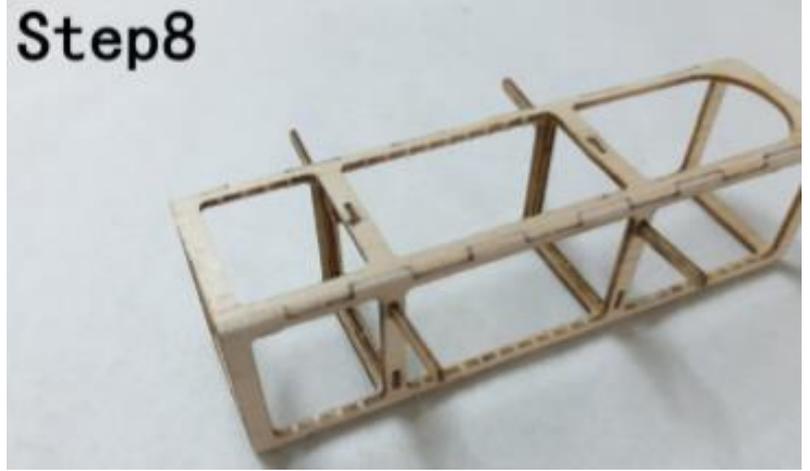
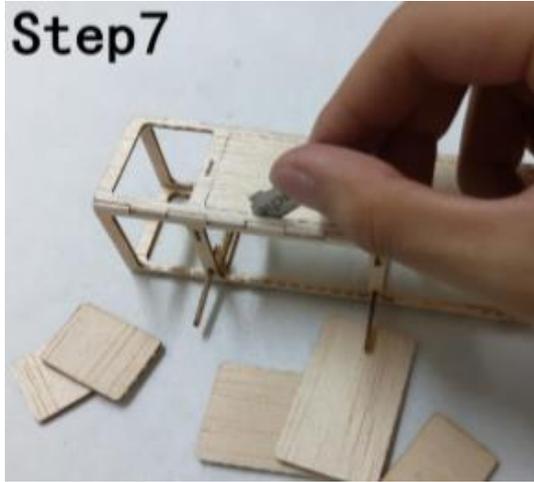
Part 1 – The Fuselage



Steps 1 to 6

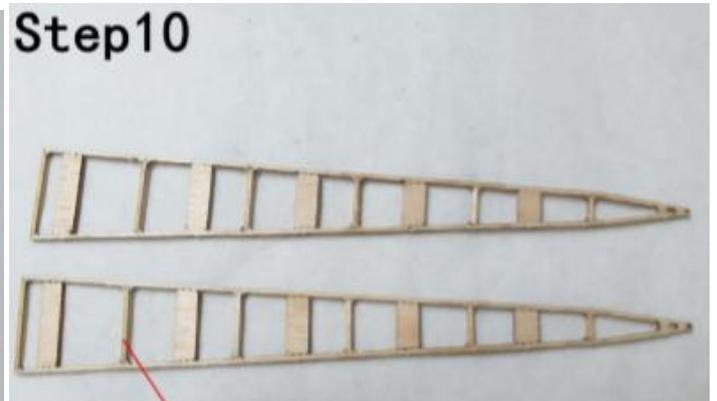
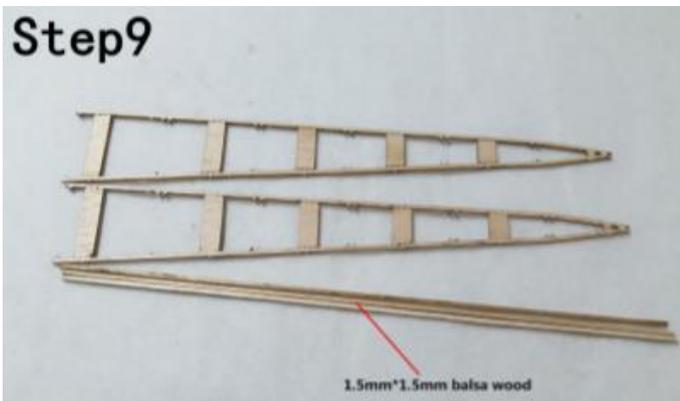
- Although the fuselage box is straightforward to build it is very delicate, particularly after the removal of the centre pieces. The remaining strips between the edges are cross grained and fragile.
- Remove the 2 formers from the basswood sheet followed by the balsa wood sides of the fuselage box.

- Carefully glue the formers into the sides of the box, making sure that the one with 4 small holes is fitted in the forward slots.
- Fit the top and bottom parts and once fitted snugly together, apply cyano to the inside of all side joints.
- Carefully sand the edges to a gentle curve as shown.



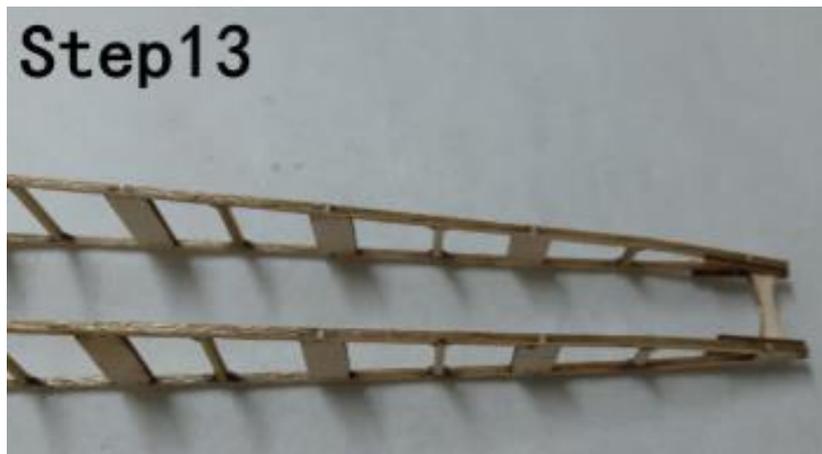
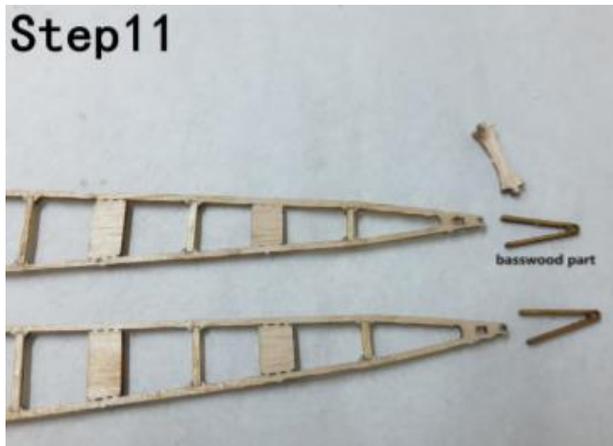
Steps 7 and 8

- Very carefully, remove the centres of the top, bottom and sides. You need a fine blade, patience and a gentle touch!



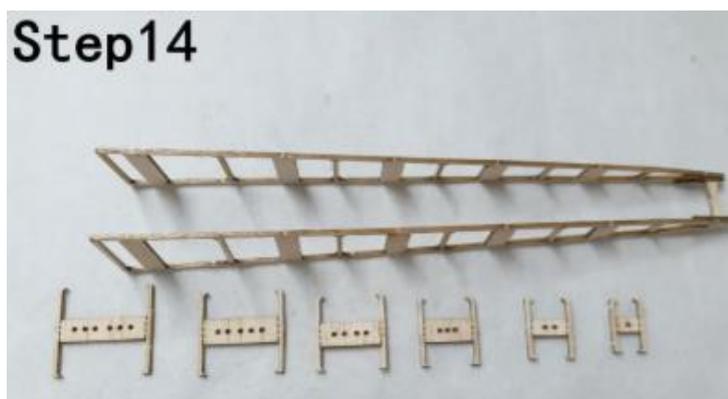
Steps 9 and 10

- Remove the fuselage top and bottom sections from the balsa sheet along with 2 of the 1.5mm square stringer pieces. These are from the thicker set of stringers.
- Cut and fit the cross pieces as shown. If you have little wastage, you should use just over 1 length of stringer.

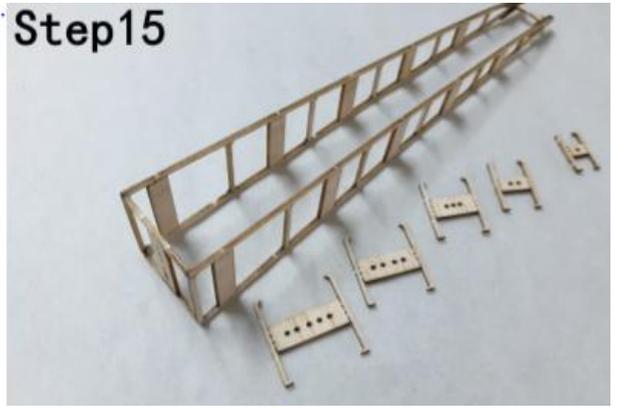


Steps 11 to 13

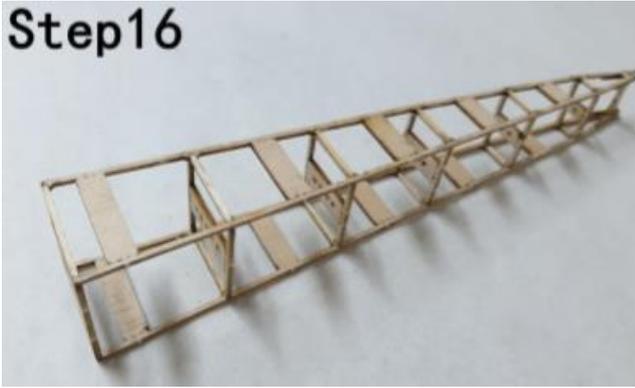
- Remove the 2 small "V" shaped reinforcing pieces from the basswood sheet and glue them to the ends of the top and bottom parts.
- Remove the tail post from the balsa sheet and glue between the 2 ends with the "V" pieces inwards. Make sure the small hole is not obscured or blocked with glue



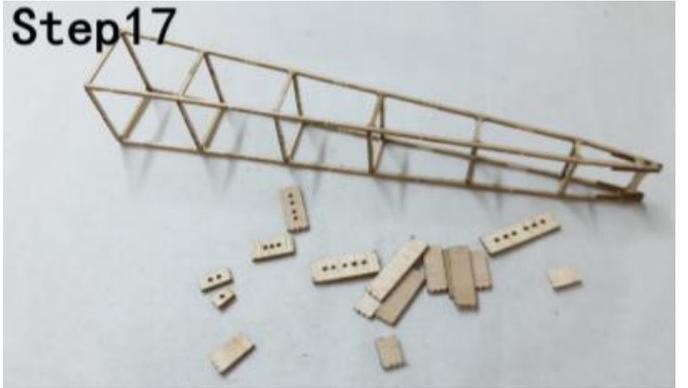
Step15



Step16



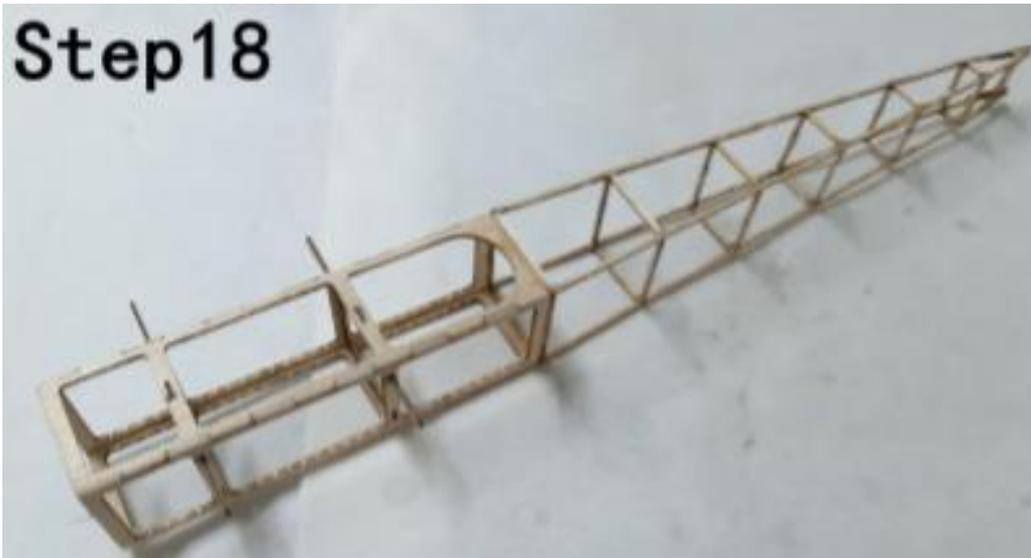
Step17



Steps 14 to 17

- Remove the cross piece formers from the sheet and glue into place. Make sure the whole assembly is square with the vertical tail post.
- Very carefully remove the centre pieces from the formers

Step18



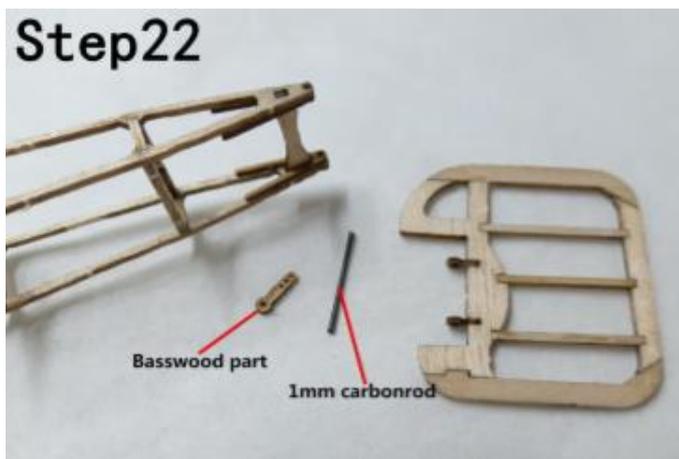
Step 18

- Glue the rear fuselage assembly to the front, keeping the tail post vertical in relation to the front box sections.



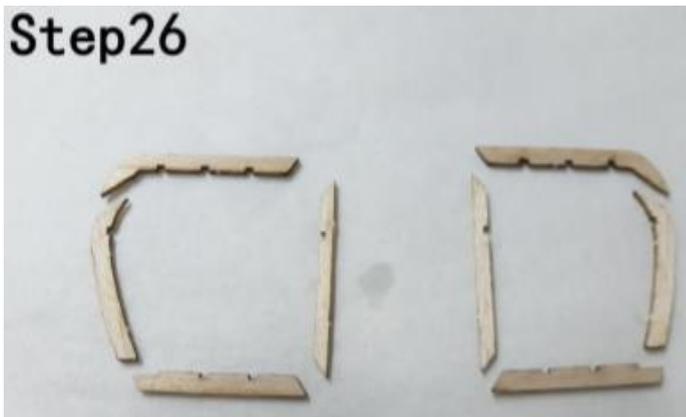
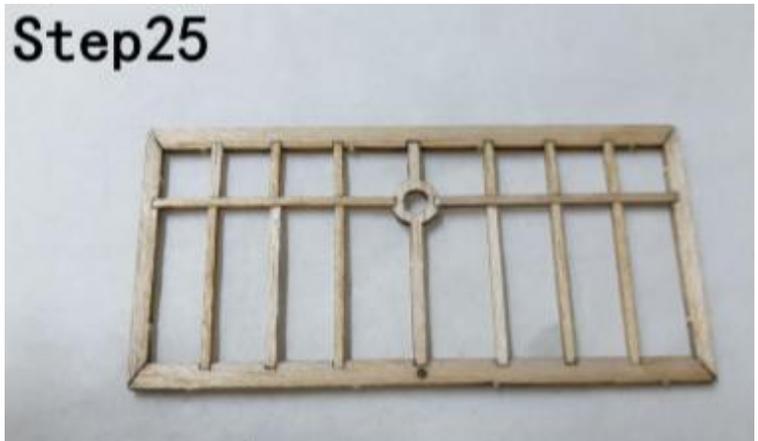
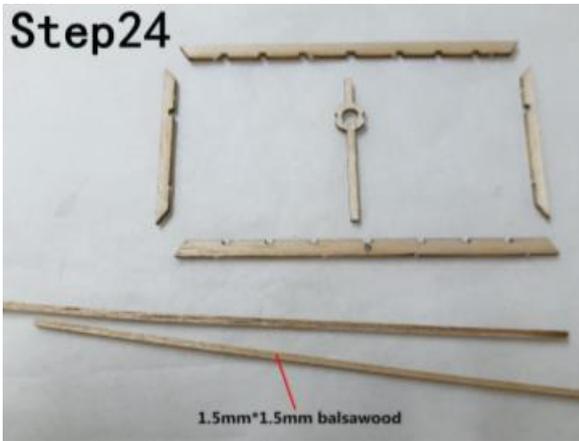
Steps 19 to 21

- Remove the rudder parts from the balsa sheet and glue together. This can be done over the plan if necessary but the parts are self jiggling
- Cut and fit the cross pieces from the 1.5mm stringer
- Remove the 2 small hinge pieces from the basswood sheet and glue carefully into the slots in the front of the rudder, making sure they are centralised and in line with each other.



Steps 22 and 23

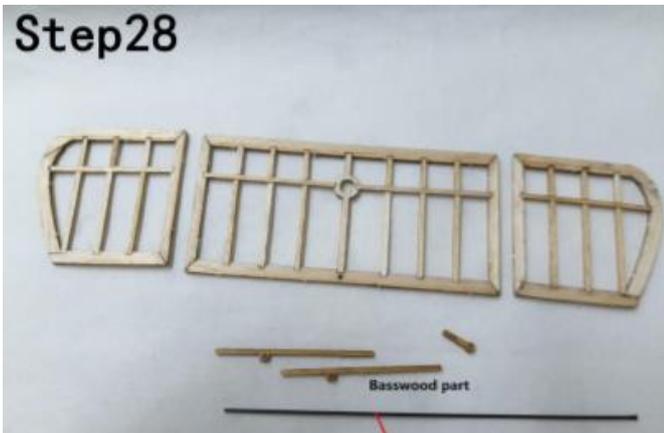
- **These steps can be completed after covering the model if preferred**
- Remove a control horn from the basswood sheet
- Cut a short length of carbon rod to fit through the hinges and between the top and bottom of the rudder
- Pass the rod through the hinges and the control horn, with the horn above the top hinge and glue the hinges and the horn to the rod making sure no glue gets on to the fuselage ends where the rod passes through them.



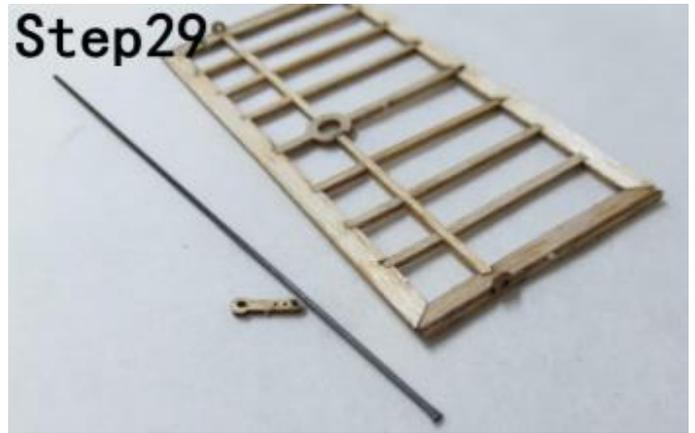
Steps 24 to 27

- Remove the parts of the tailplane and elevator and build in the same way as the rudder

Step28



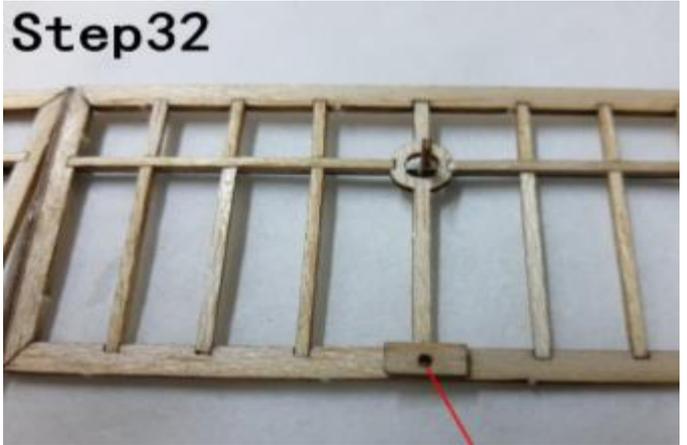
Step29



Step31



Step32



Steps 28 to 32

- If you intend to cover the model you can leave this section to the end of the build after covering, or you can cover the tailplane before fitting the moving parts
- Remove the necessary parts from the basswood sheet.
- Cut the 3rd carbon rod to a length of 120mm, saving the off cut
- Glue the 2 hinge guides to the ends of the tailplane and pass the rod through them making sure to remember the control horn. This fits in the centre with the end through the central hole and needs to be glued to the carbon rod
- Cut 2 lengths of heat shrink tube to fit over the ends of the carbon rod and shrink onto the rod. Make sure the rod turns freely.
- Put a drop of superglue on the end of each tube to fix securely to the rod.
- Line up the tailplane and tips on a flat surface with space for the horn to project downwards so the tips line up exactly.
- Glue the heat shrink tube, making sure no glue gets on the hinge point on the end of the tailplane.
- Glue in place the “gasket” to the trailing edge



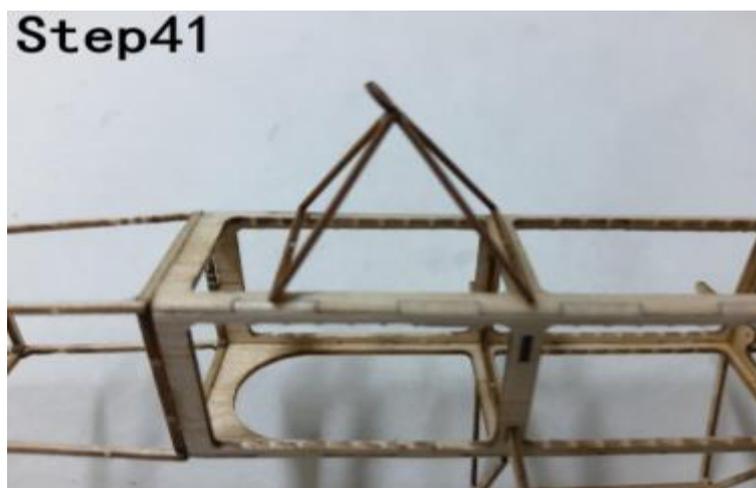
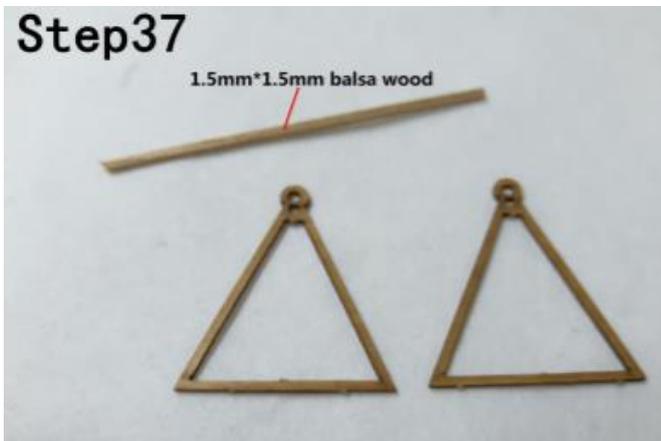
Step 33

- Illustration of rear end configuration. Only glue together at this stage if you intend to use the model as a display piece without covering material. Leave the assembly until after covering the model, particularly if you intend to fly it.



Steps 34 to 36

- Remove parts of the tail skid assembly from the sheets. The 2 small curved pieces are balsa, the rest are basswood.
- Assemble the parts as shown and glue in place below the rear of the fuselage.



Steps 37 to 41

- Start by selecting the parts for the upper wing wire supports. Use the thicker (1.5mm) stringer for the cross piece.
- Glue together on top of the fuselage in front of the fuselage cut out.
- Select the parts for the lower support and glue together below the fuselage area as illustrated.

Undercarriage

Step42



Step43



Step44



Steps 42 to 44

- remove the parts of the undercarriage frame from the basswood sheet
- Glue together as shown



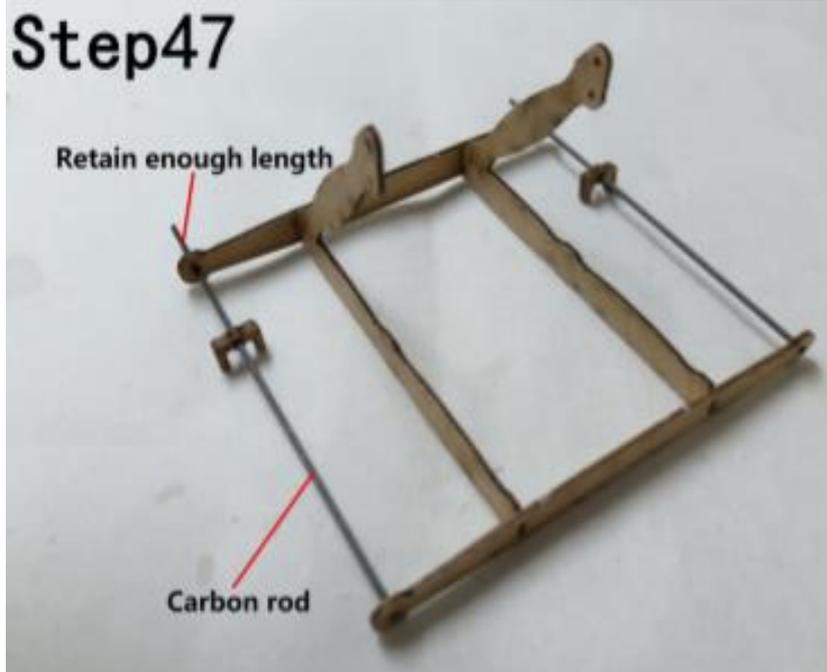
Steps 45 and 46

- Select the parts for the top suspension mounts
- Make up 2 pairs of double thickness. Ensure the holes are in line



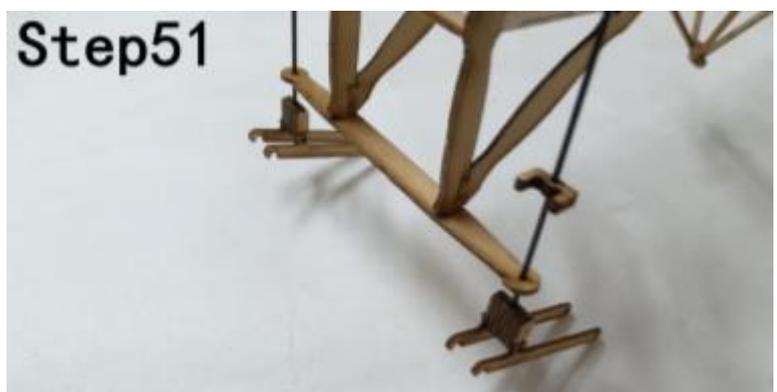
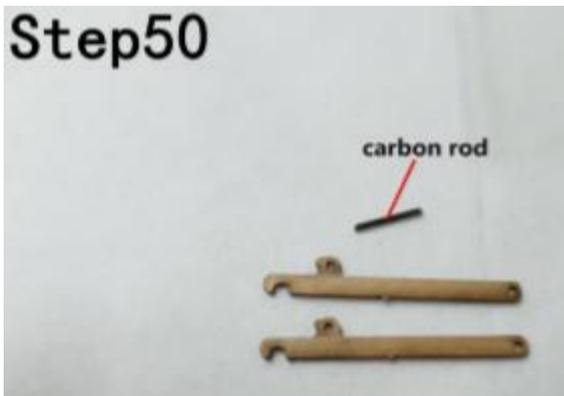
Steps 48 and 49

- Remove the 14 small pieces of the top suspension mount. Make sure you keep them as separate sets of 7
- Assemble the 2 sets as shown, with the slotted part centrally and the 2 small parts at the outside. Make sure the holes line up.



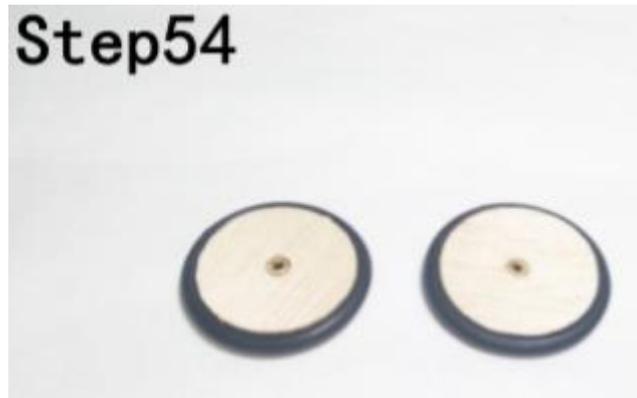
Step 47

- Cut 2 carbon rods to 75mm
- Study the illustration noting that the rods protrude through the bottom cross member of the frame
- Thread the rods through the ends of the frame cross beams and the upper suspension mounts. Only glue the top ends at this stage, they should be flush with the top of the frame



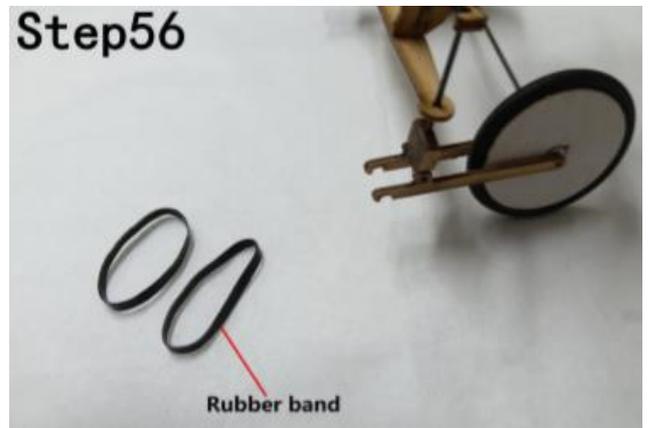
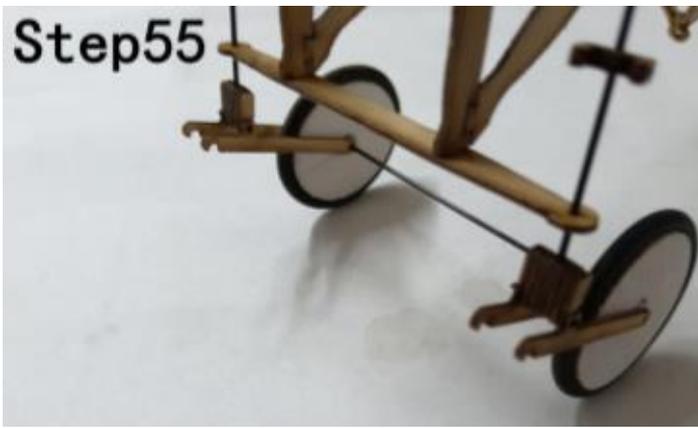
Steps 50 and 51

- Remove the 4 undercarriage arms and cut 2 rods to approximately 8mm
- Thread the rods through the undercarriage blocks and glue the arms to each end of the rod. They should be flush with the recess in the block and no glue should get into the block. The arms should be free to turn and should be stopped at the angle shown in the illustration by the shape of the arm within the recess.
- The blocks should be glued on to the protruding ends of the carbon rods.



Steps 52 to 54

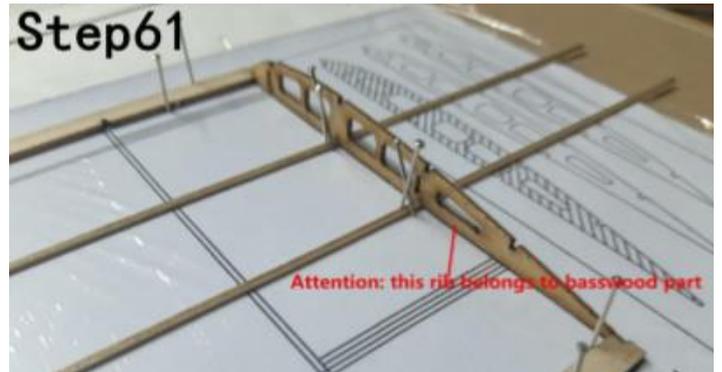
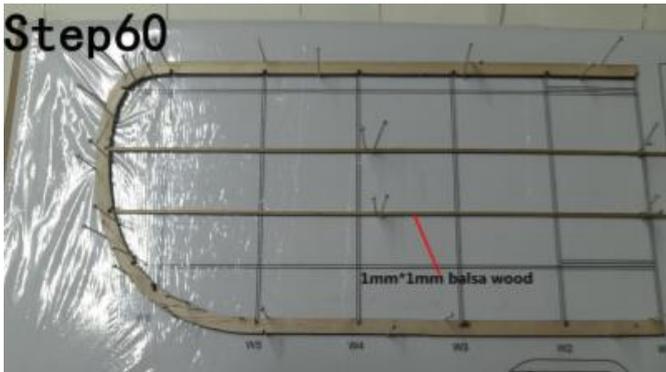
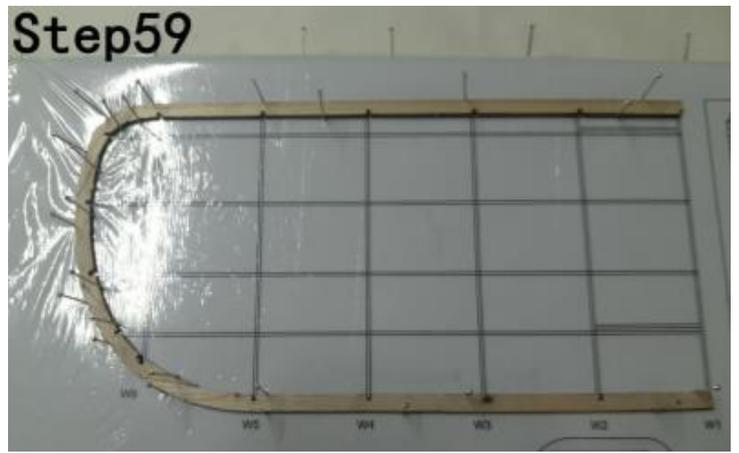
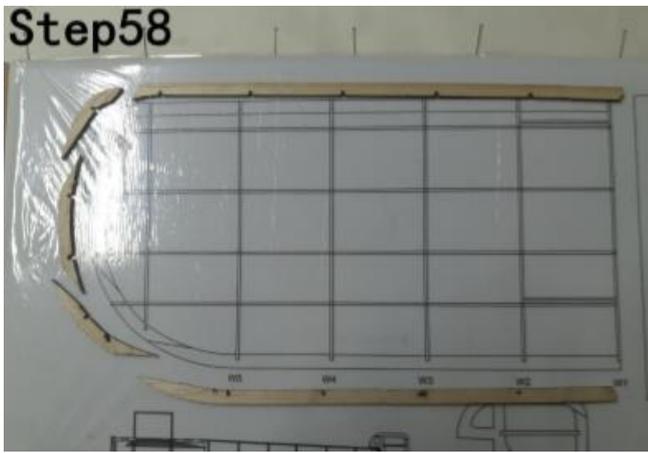
- Make up the wheels from the balsa parts
- Glue the centre ring between the outer sides, with the grain at right angles on each step.
- When thoroughly dry, fit the tyres taking care not to damage the “rims”



Steps 55 to 57

- Cut a piece of carbon rod to at about 85mm
- Pass this through each arm and each wheel as shown
- Secure the rod at each end with a small piece of heat shrink tube or by superglueing carefully so that the wheels rotate freely.
- Find 2 (or 4) small rubber bands ("Loom" bands work well)
- Fit these from the hooks at the front of the undercarriage arms to the top suspension mounts and slide the upper mounts to adjust the suspension.
- When the suspension feels right, glue the upper mounts.
- Glue the whole assembly to the front of the fuselage (this is easier left until after covering).

The Wings



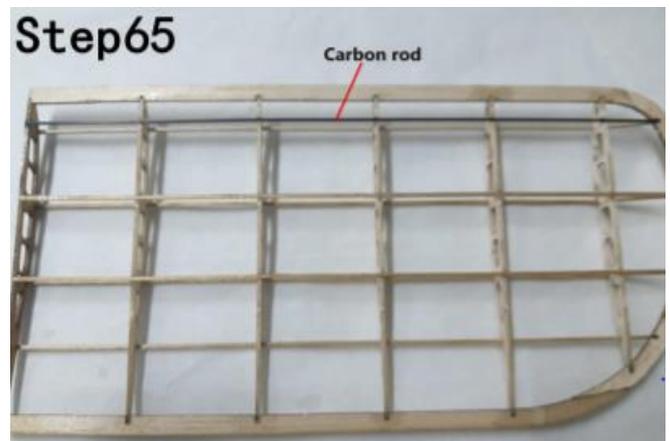
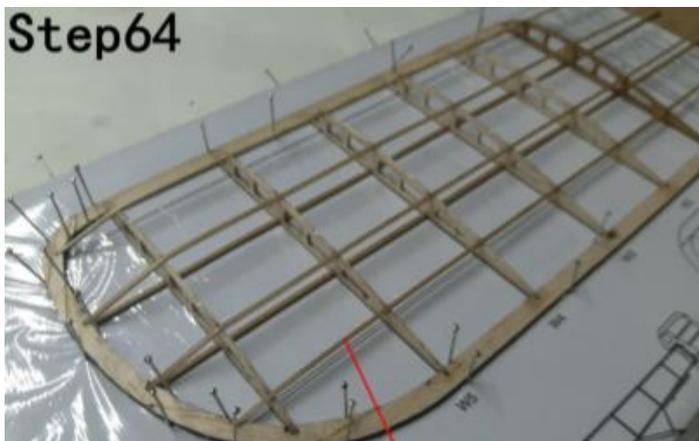
Step 58 to 61

- Remove the parts for the outline of one wing
- Over the plan, pin the leading and trailing edges and build and glue the tips
- Add the two 1mm square spars (from the thinner stringers) where indicated. Glue them to the ti
- Remove the inboard rib from the basswood sheet and glue in place as shown. Ensure it is vertical.



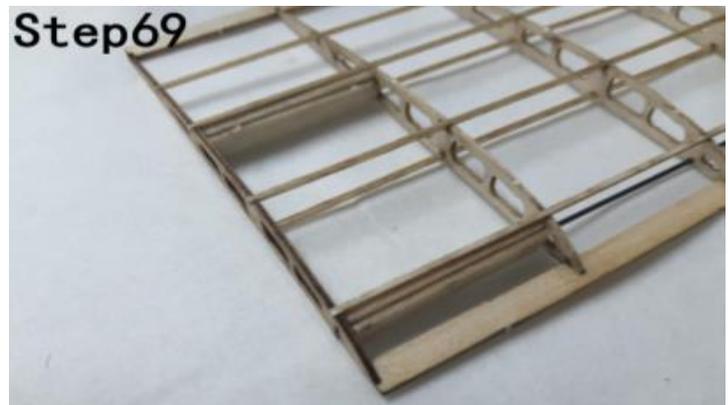
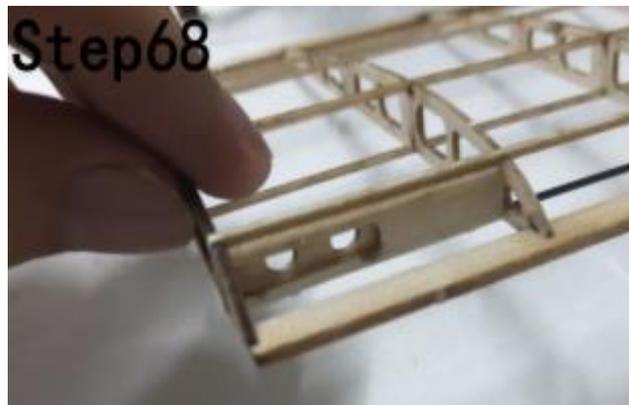
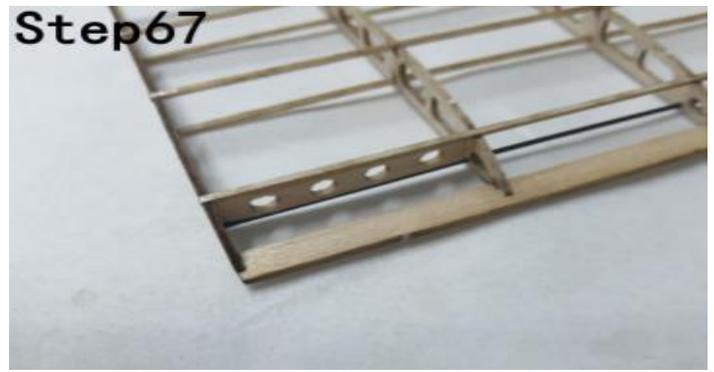
Steps 62 and 63

- Remove the 5 ribs from the balsa sheet and glue in place over the ribs.
- Note that there are 4 of the larger size and 1 shorter for the tip.



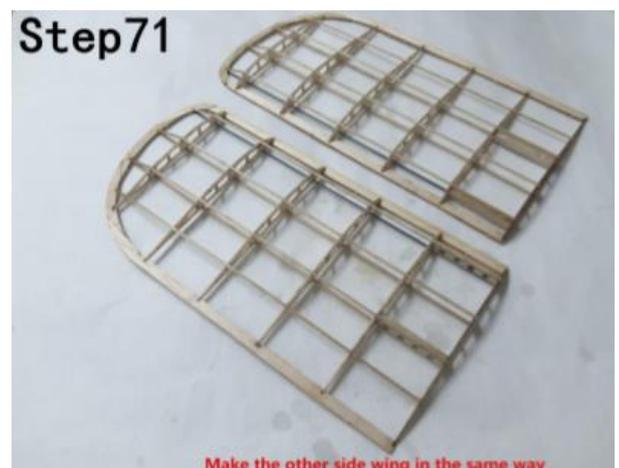
Steps 64 and 65

- Carefully glue the upper spars in place. The spars share the slots in the tips with the lower spars. Try to keep the front and rear spars level with the top of the tip segments.
- Glue them into the tip leaving them resting in the slots in the outer rib without gluing to the spar yet. The spar will project upwards over the wing.
- Gently crack the spar while pressing down into the slot in the next rib. Glue into these 2 outer ribs.
- Complete each spar by pressing carefully into the remaining rib slots and gluing.
- When dry, remove the wing from the board and glue in the remaining wooden spar at the rear of the wing, and the carbon fibre front spar.
- When dry, cut all the spars flush with the inner rib.



Steps 66 to 69

- Remove the parts for the wing support box from the balsa sheet. There is a very small difference in width between the parts with holes in (box rear) in each set. The narrower ones are for the front box.
- Fit the box rears between the spars just rearwards of the slots in the end rib. Make sure they are flush with the rear of the slot and do not obstruct it.
- Fit the forked piece with the open end against the rib and in front of the box rear. Again, make sure there is no obstruction to the slot.
- Glue the front, solid piece of the box over the forked piece.



Steps 70 and 71

- Build the second wing in the same way as the first.

Electronics holder

Step72



Step73



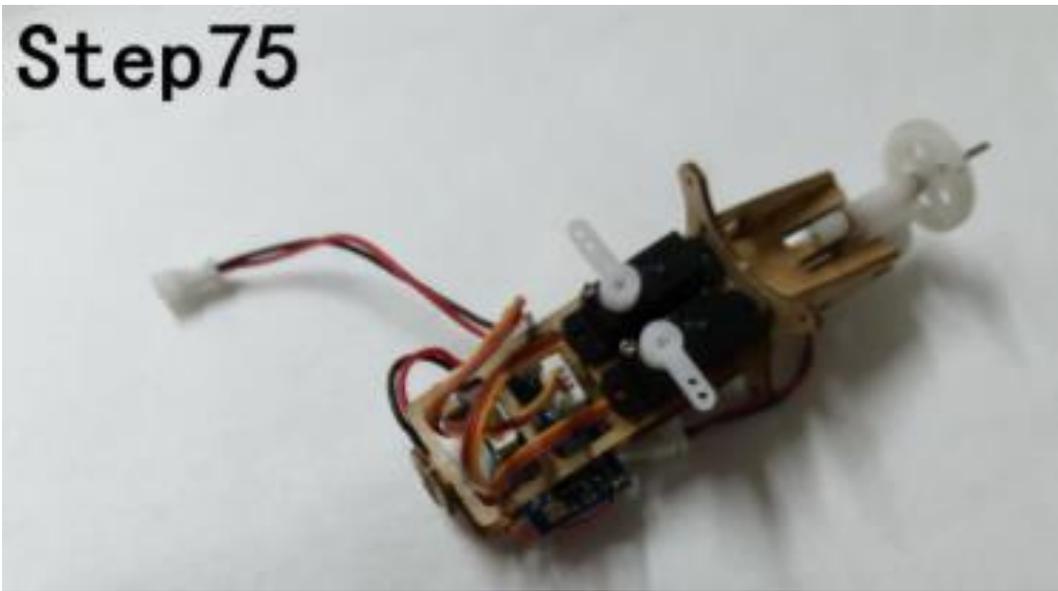
Step74



Steps 72 to 74

- Remove all the parts from the basswood sheet
- Glue together the 2 forked pieces, ensuring that they line up exactly
- Fit this forked assembly into the 2 triangular pieces and the bulkhead as shown in Step 73, then glue.
- Slot in the top and bottom of the support box behind the bulkhead and fit the end piece, then glue making sure they are all square

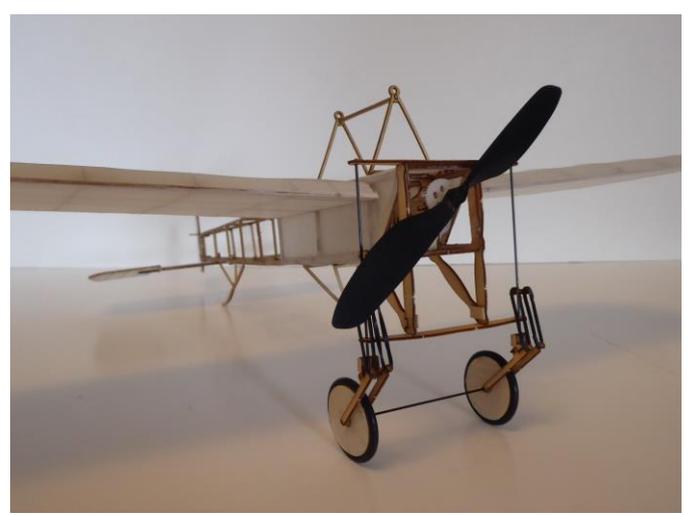
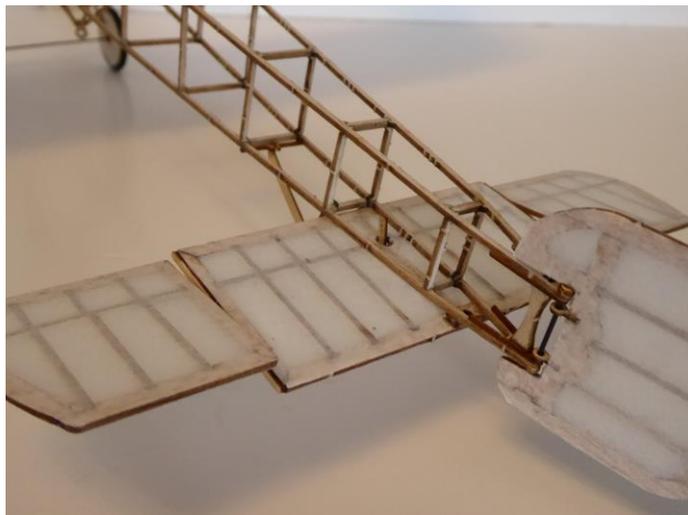
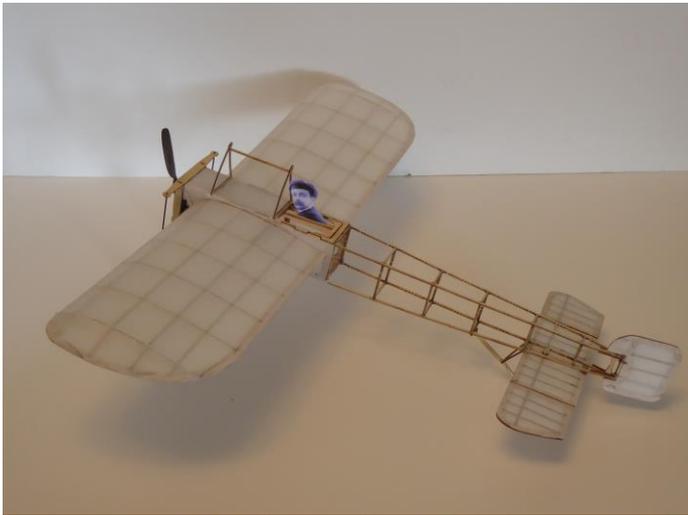
Step75



Step 75

- This is a typical assembly using two 1.7gm servos and a suitable receiver/speedo block. You can also use a Parkzone type combined servo/speedo/receiver block or a donor unit.
- The motor and gearbox have a square hole in the plastic mount, just above the motor, this fits over the central tongue on the motor mount.
- The assembly is screwed into the front of the fuselage against the front former using the 4 micro screws. The motor goes below the gearbox.

Photos of the completed model built while writing these instructions:



If you enjoyed building the Bleriot XI

Thanks for your support come from Tony Ray. He is a college student who's mad about micro balsa aircraft and continues to design traditional micro scale models making them affordable without compromising component and material quality. This gives an unparalleled building and flying experience.



Other Tony Ray models available from Steve Webb Models

- Mini Sopwith Camel
- Mini P51 Mustang
- Mini Fokker EIII Eindecker
 - Bleriot XI
 - Etrich Dove (Taube)
- **Coming Soon – Avro 504**