

AVANTI 3m Building Instructions

WING ASSEMBLY

You must ensure you have MAAA (or similar) insurance before flying this model.

Only fly in designated areas and in accordance with all council, government, airport, CASA and any governing body rules. Ensure the model is built correctly and is checked thoroughly before flight. If you are an inexperienced pilot, ensure you have an instructor or experienced pilot with you at all times.

The manufacturer of this model kit takes no responsibility for your actions.

Building is fun but please remember you are responsible for your own health. Almost all adhesives contain solvents and other volatile substances and must be used with adequate ventilation. Ensure you follow all the instructions on the adhesives and equipment being used.

Be careful with CA (superglue) because it can glue your eyelids and fingers together very quickly.

Working with Balsa and Carbon can cause fine dust which must not be inhaled or swallowed.

Always cut and sand Carbon wet and do not blow carbon dust from the building board, remove it with a vacuum cleaner.

Using tools can cause injury.

Operating a model aircraft can cause accidents so you must have insurance before you fly this model aircraft.

Join a club (and the MAAA) and ensure you are properly trained and have an experienced person helping you.

Alan Mayhew, Marcus Stent and Performance Models take no responsibility for any damages and accidents that arise from the construction and operation of this model aircraft. It is the responsibility of the builder and flyer.

Now, on to the fun bit....

Before Starting

Place Food/Cling Wrap (or similar) over the plan before you start
Use a knife to separate parts from the sheet, do not use your hands.
Trim parts as necessary.

Abbreviations

CA = Super glue
RHS = Right Hand Side
LHS = Left Hand Side
L.E. = Leading edge
T.E. = Trailing edge

Wing Assembly

Preparing Parts



It is non necessary to sand the T.E., but if you do, keep the T.E. thickness to 1mm to avoid getting in warps in the T.E. during covering

Slide the '8mm joiner' into the '10mm joiner tube' to act as a guide/support to hold the plug square at the end. Insert the plug so it is recessed by about 1mm.

Remove the '8mm joiner' and glue the plug into the '10mm joiner tube' with medium CA.

Note: If the '8mm joiner' is a loose fit in the tube then you can apply some thin CA to the '8mm joiner', let it fully dry and then fit again. Repeat if necessary. Alternatively, if the '8mm joiner' is too tight, then you can give the OD of the '8mm joiner' a light sand until it is a good fit. 90% of the time the fit is good, but we do get some occasional production variation.

Note: Always sand the OD of the joiners and not the ID of the tubes.



'10mm joiner tube x 57mm' x 8 off

Centre Panel A Construction

Slide ribs A2 and A1 onto the 14mm diam. x 500mm Carbon spar. Separate the ribs, Glue A1 and A2 together on the spar with the ribs square to the spar and the 21mm dihedral brace at the end of the spar. Ensuring the end ribs are square and vertical. Ensure you make a RH and LH side and use the ribs marked RH and LH.



21mm dihedral spacer

Slide to together Ribs A3-A6 and insert the permanent joiner rods into position as shown. Once everything is aligned, glue and clamp the central ribs together and CA the ribs in place. Glue the RH side flat on the board first, then glue the LH side flat on the board. This is a permanent joint.



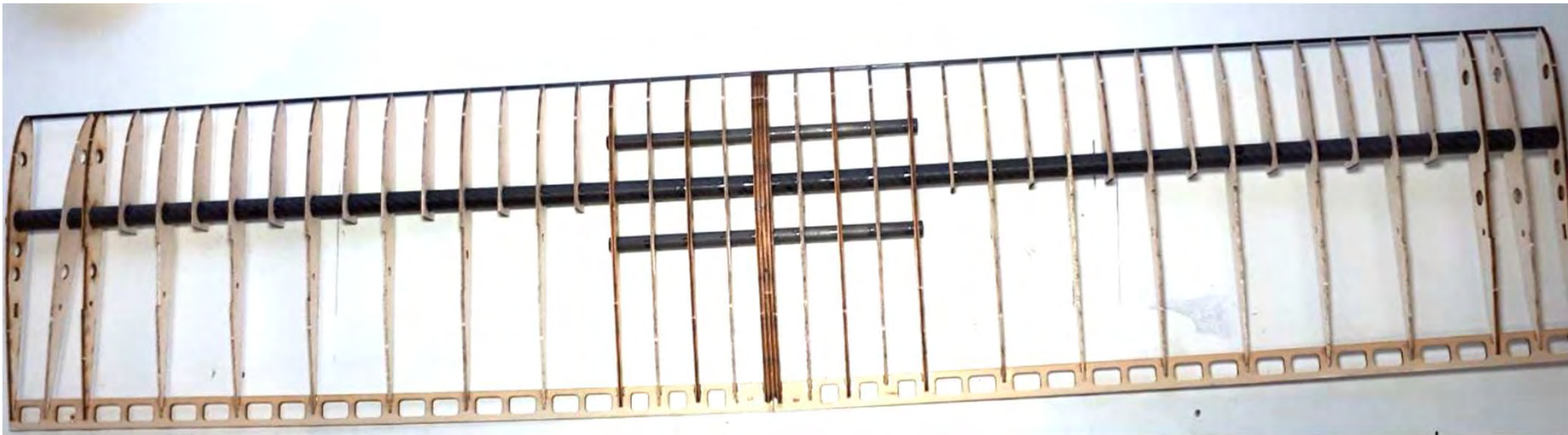
Centre Panel A Construction

Slide the remaining ribs onto the spar and align over the plan. Add the LE, TE and joiner tubes. The dihedral in the centre means you need to finish one side of the wing first and then the other. Start with the RHS and hold it down with weights and pins.

Glue the ribs to the L.E., spar and T.E. Use thin CA to wick into the balsa and then apply medium CA to form a fillet.

Do NOT glue ribs A20, A21 and A22, just dry fit.

Repeat for the LHS.



Centre Panel A Construction



Glue in the place spoiler surround plates using the spoiler as a guide.

Glue in place the spoiler servo mounting plate

Glue in place S RH and S LH and trim to be flush with the bottom of the wing. These stop the wing rocking on the fuselage.

Drill the 4mm hold down bolt holes between A1 RH and A1 LH (in a drill press if possible). There is a groove in the ribs to aid alignment. The bolt holes are square to the bottom of the wing.

Tip Panel B Construction

Slide all the ribs in place and align over the plan.
Dry fit the 10mm diam. joiner tubes.
Hold the wing flush on the building board with weights.
Glue ribs B4-B32 in place on the spar, L.E and T.E.

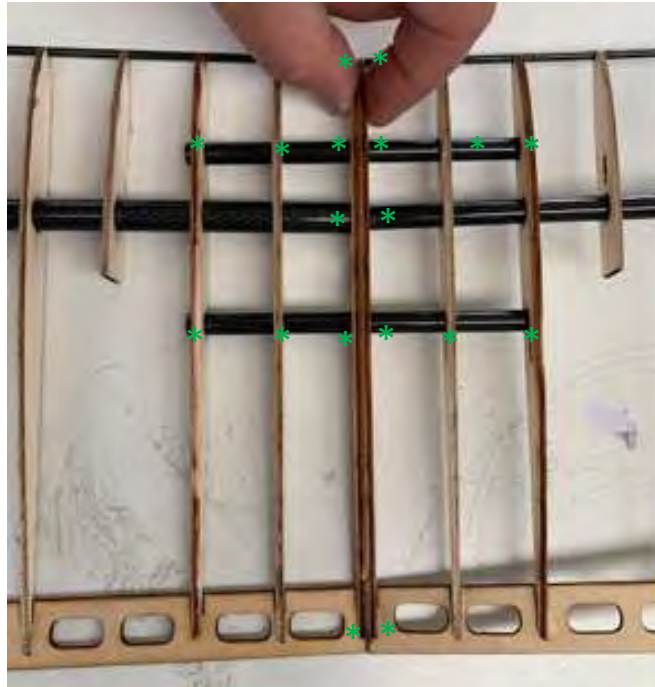
Do NOT glue the ribs B1, B2, B3, B33, B34 and B35, just dry fit.

The aileron 6mm tube needs to be fitted after the wing has been made.
Slide the aileron tube in from rib B34.
Glue the tube in place as shown.



Panel A to Panel B Joiner installation

1. Slide Centre Panel A and the Tip Panel B together using the 2 x 8mm diam. x 104mm joiners.
2. The entire assembly should self align as shown. Use the dihedral spacers to hold the dihedral at 76mm from the building board.
3. Slide the panels apart again and check the tubes are fully engaged and sitting flush with the end ribs. Adjust if necessary.
4. Slide the panels back together again. Repeat until happy.
5. Squeeze the 2 end ribs A22 and B1 together as shown until they are flush with each other. A small gap in the L.E or T.E. is OK.
6. Use MEDIUM CA, **not thin CA**, to tack the system in place, only glue in the locations shown *. This avoids glue getting glue into the joiners.



7. Allow to dry
8. Separate the panels and remove the joiners. Add more medium CA to each of the joiner tubes to get a good bond to the ribs.

Tip Panel C Construction

Slide the ribs in place and align over the plan. Hold with weights or pins. Glue ribs C2-C7 to the spar, L.E and T.E.

Do NOT glue C1 and C2, just dry fit.



Tip Panel C Construction

Add the ply tip piece and glue in place flush on the building board.



Add the supplied carbon rod.
Then glue on the 3 balsa tip pieces (2 shown).



Sand to shape.

Repeat for the
other wing tip.

Panel B to Panel C Join

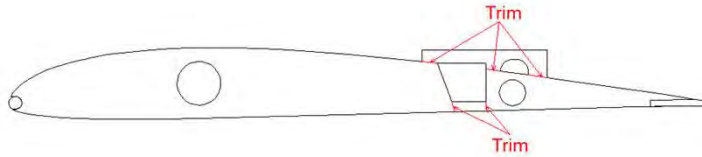
1. Slide Tip Panel B and Tip Panel C together using the 7mm diam. X 104mm carbon tube.
2. The entire assembly should self align as shown. Use the dihedral template at the very tip of the wing to hold the dihedral at 21mm from the building board.
3. Squeeze the 2 end ribs B35 and C1 together until they are flush with each other.
4. Check the spars are engaged in the ribs and adjust if necessary.
5. Slide the assembly apart slightly and apply medium CA between B35 and C1 and slide the panels back together again. Clamp until dry.
6. Glue the joiner tube and ribs to complete assembly.

This is a permanent joint.

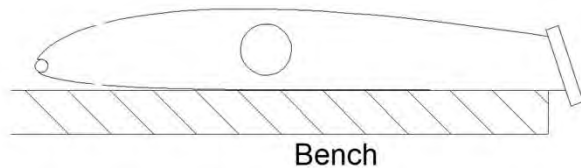


Aileron Construction

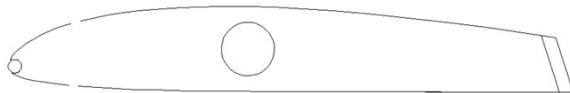
Slice off the extra rib support pieces to remove the ailerons from the wing.



Gently sand the ribs to remove any rough edges. Weigh down the main wing with the wing trailing edge hanging off the edge of the bench. Glue the wing trailing edge facing to the ribs.



Once dry, trim the top and bottom of the wing trailing edge facing flush with the ribs.



Repeat the process for the ailerons leading edge facing.

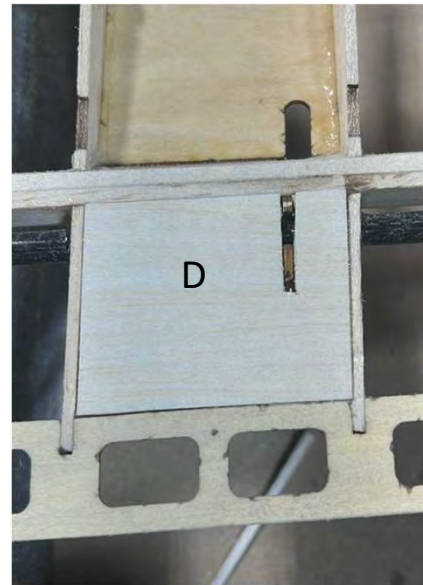
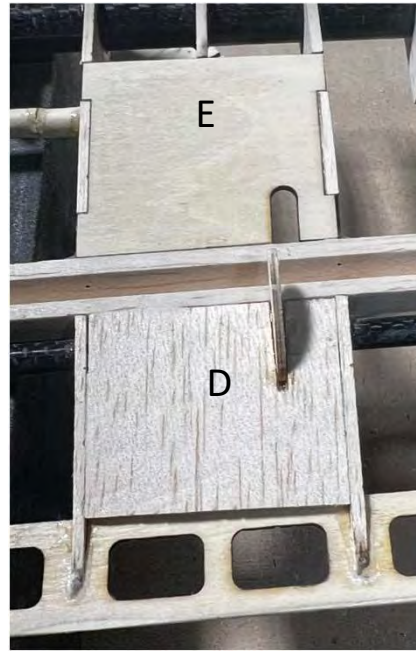


Aileron Construction

The aileron facings should now match the contour of the ribs



Install the aileron servo mounting plate E and horn support D.
File a small radius under support D, if necessary, to fit over the carbon tube.



Add support D to the underside of the aileron, using the horn as a guide.

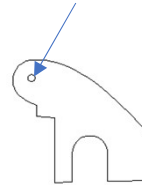
Make the 'access hatch' from the supplied 2 x 0.6mm ply pieces sandwiched together. Glue in place on the bottom of the wing.

Finishing Construction



Add the supplied supports A RH, A LH, B RH, B LH at the end of panel A and end of the panel B. This prevents the covering from distorting the end ribs

Add magnets to the end of the centre panel and tip panels ensuring the magnets are in the correct orientation for attraction.

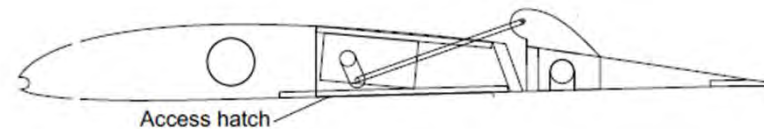


Use a small piece of 1.2mm pushrod wire in a cordless drill to drill the correct size hole in the Aileron horn.



Add a drop of thin CA (Superglue) to harden the hole, then re-drill to form the correct size. This forms a durable bearing surface for the pushrod.

Cover the wing before installing the horn for a neater finish.



Aileron servo detail

Install the servo and use the supplied 1.2mm wire to make the pushrods.

Covering

If you are using transparent covering, you can give the entire wing a light sand with a 300 or 400 grit sandpaper on a long sanding block to remove the burn marks caused by the laser cutting.

When covering, wrap the film from the T.E. around the L.E. and back to the T.E. in one piece.

Do not apply the iron to the carbon L.E. or the film may not shrink properly around the L.E. afterwards.

Tack seal all edges on medium heat first.

Then seal all the edges with high heat.

Then carefully shrink with the base of an iron or a heat gun set on low. Move carefully and apply minimum heat to shrink the film to the final shape.

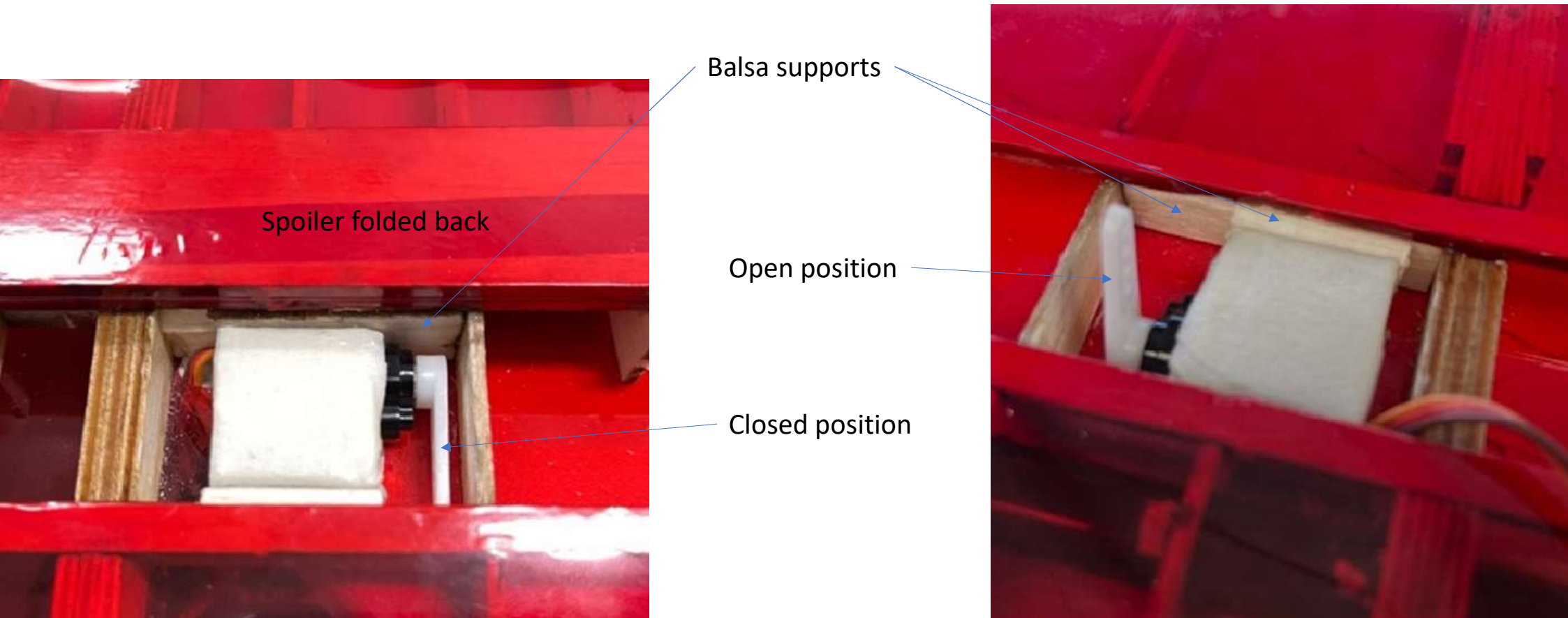
Aileron Hinging

Hinge the ailerons using your favorite hinging method. Ensure there is at least 20mm of up travel without binding.

Spoiler Servo Installation

Thin spoiler servos can be mounted on the supplied spoiler plate. If your servo is very thick then you can use balsa supports to attach the servo. Remove the mounting tabs from the servo if needed and wrap in 2 layers of masking tape and CA in place.

Ensure the servo arm is in the correct position for closed and open positions.



Spoiler Servo Installation

Tie 2 x supplied rubber bands into approx. 2/3 and 1/3 loops. Cut and discard the 1/3 loop.

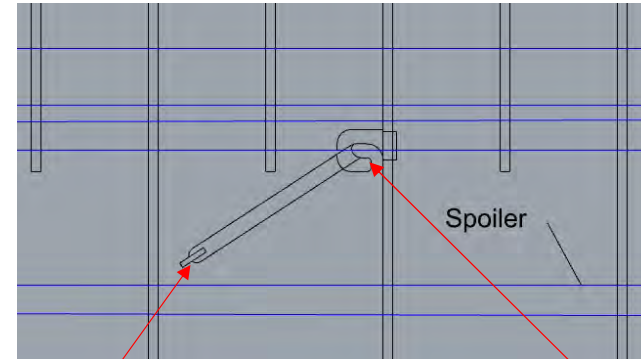


Discard

This shows the LH rubber band position with the spoiler open. Only light tension is required when closed.

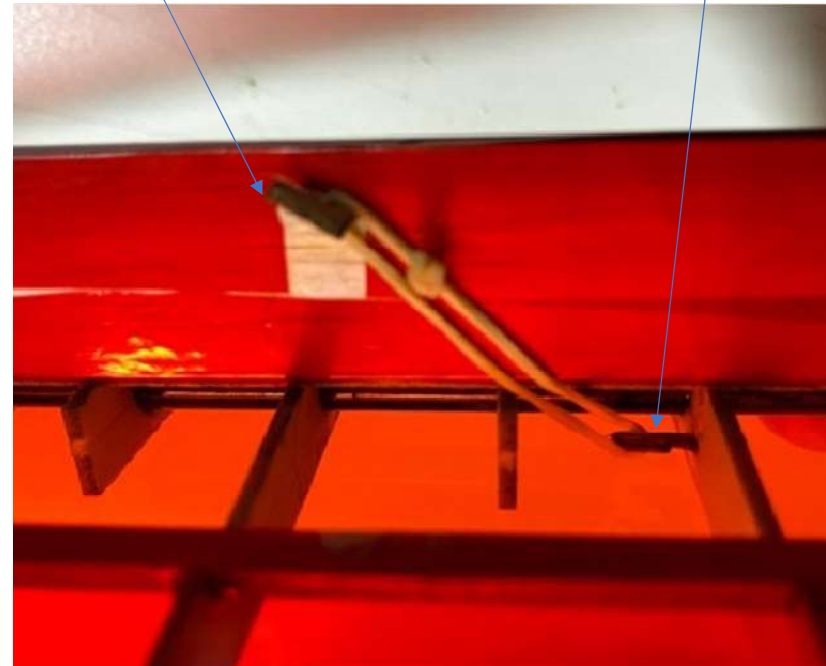
Repeat for RHS side

Plan view, spoiler closed. LHS shown.



Spoiler Hook 1

Spoiler Hook 2



Wing Assembly, is now finished.

See the Avanti fuselage instructions for further setup information