

Airco DH.2 Assembly Guide





Kit Contents

SHEET PARTS	<ul style="list-style-type: none">1 x 2mm laser cut Depron airframe1 x 1mm double printed & laser cut depron wing & tail parts1 x 1mm double printed & laser cut depron fuselage parts1x 200 micron printed & laser cut polypropylene parts1 x polyester sticker sheet1 x 0.8mm plywood parts
LOOSE PARTS	<ul style="list-style-type: none">2 x neoprene tyres1 x vacuum formed ABS plastic cowl2 x 3D printed rudder & elevator pulley1 x 100mm x 3mm Ø plastic tube1 x 200mm x 5mm Ø plastic tube1 x 1.7mm Ø x 12mm brass tube4 x 500mm x 0.4mm x 1mm carbon fibre strip1 x 125mm x 1mm Ø carbon fibre rod1 x profile pilot figure1 x Spectra rigging/control wire2 x Elevator & Rudder torsion rod piano wire1 x Self adhesive ballast strip

Recommended Tools / Glues

Knife or scalpel with fresh blades

Steel rule or straight edge

Sanding stick or sand paper (180 grit if possible)

Tweezers

Needle threader or Microaces Rigging Tool

Needle nose pliers

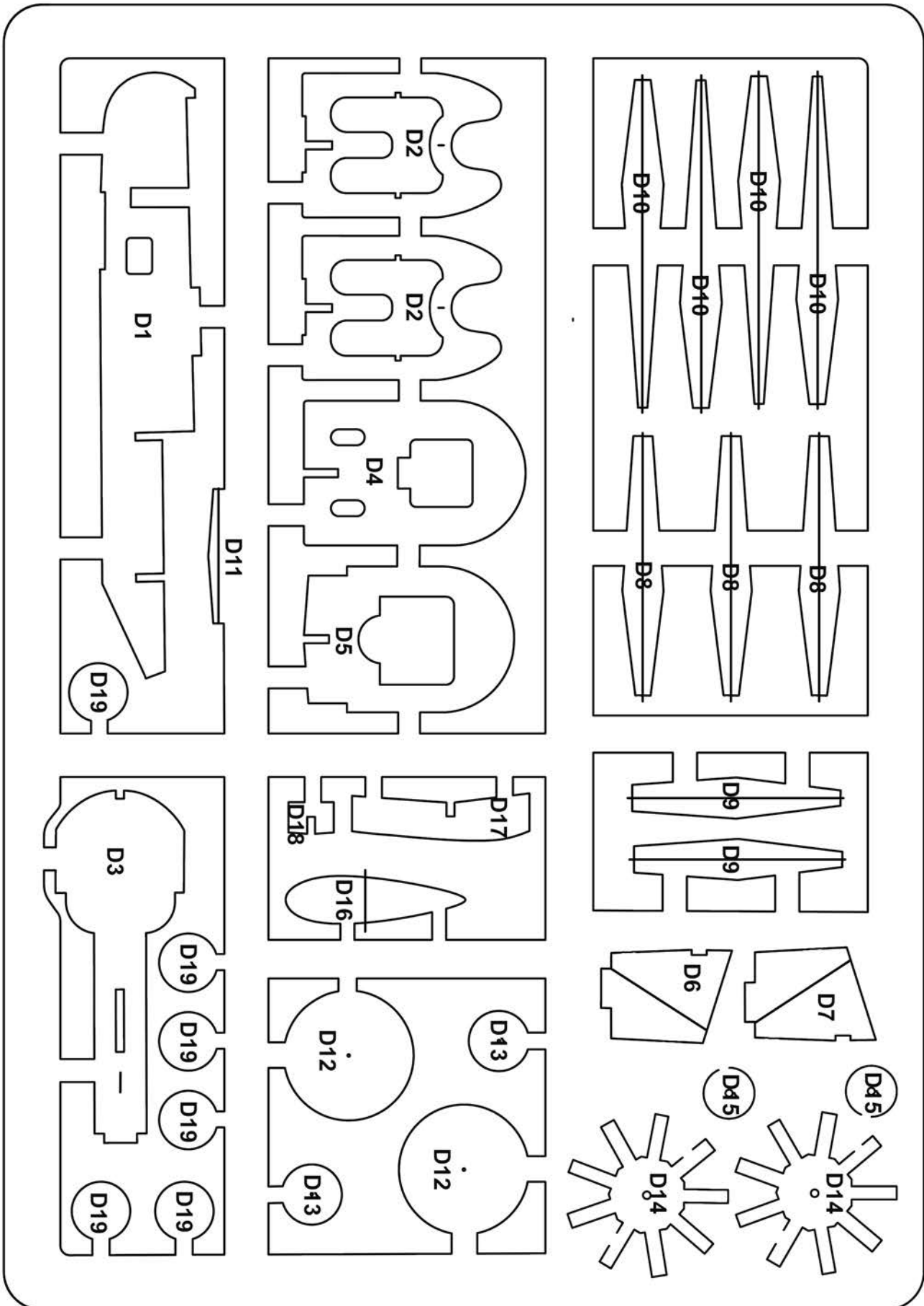
UHU por foam safe adhesive (For foam & plastic)

Aliphatic Resin or Foam safe cyano glue (For rigging & re-inforcement)

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Parts numbering guide for 2mm Depron Sheet



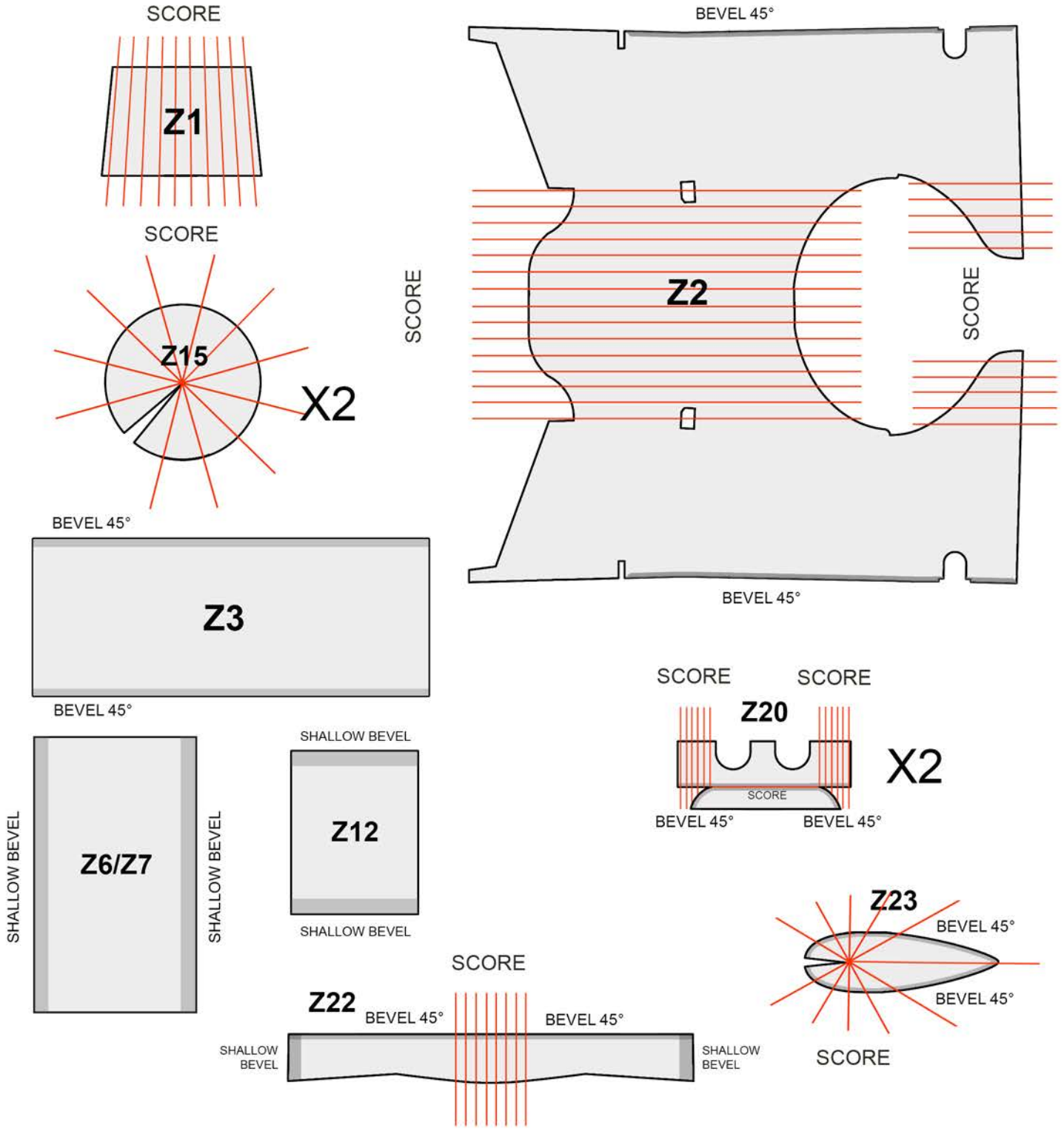


Scoring & Beveling

Method for scoring 1mm Depron

Using a straight edge as a guide, score the Depron with the **reverse** side of a craft knife or a ball tip pen.

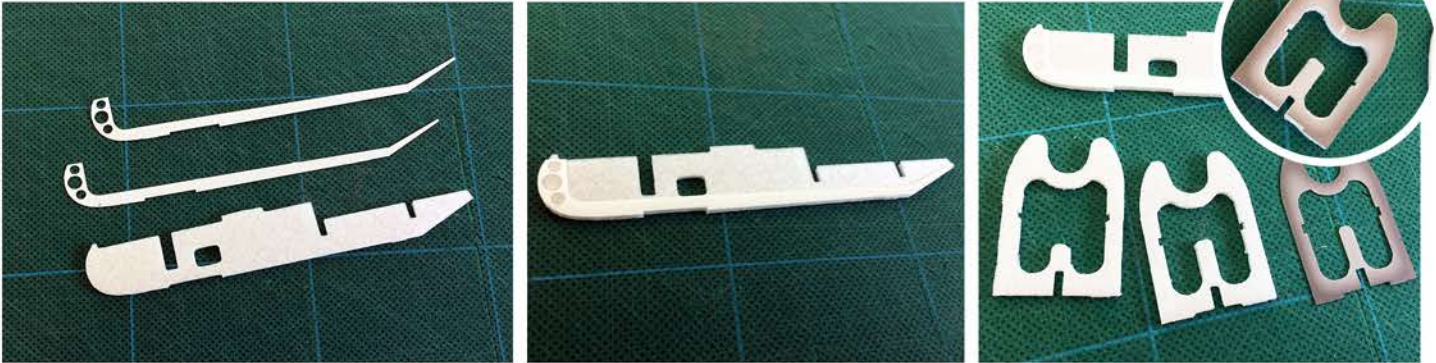
If you haven't used this technique before it is essential that you practice using a scrap or spare piece of 1mm Depron prior to processing any kit components.



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Stage 1 - Airframe



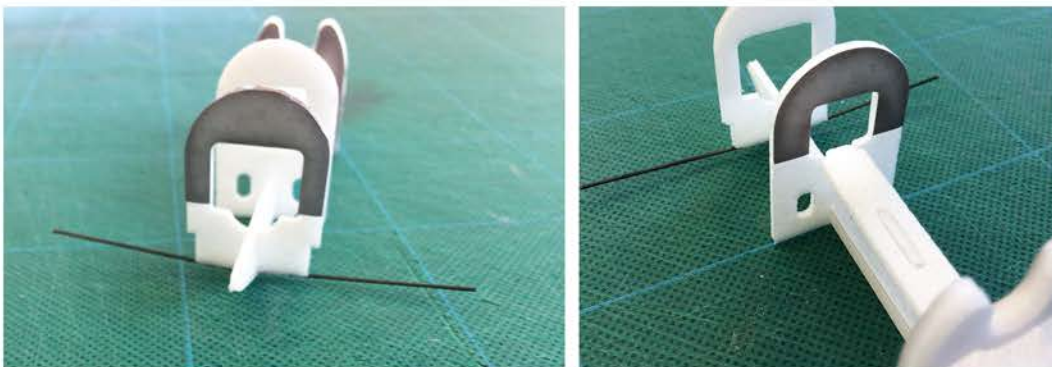
Attach 2 x P1 to either side of D1 at the nose and along the lower edge of the Depron foam part to create the keel.

Remove 2 x D2 from the Depron sprue plus P2 from the sheet plastic sprue. Glue all 3 parts together with the printed surface of P2 outermost to create the bulkhead. (See image above).



Prepare D3, D4 & D5 for assembly. Attach the bulkhead and D4 to the keel as shown above. Slot D3 into this assembly from the front and secure to the top edge of the keel.

Cut 2 x 40mm lengths of 1.0 x 0.4mm carbon fibre strip. Glue each strip to the lower edge of D5 to create the lower wing dihedral brace.



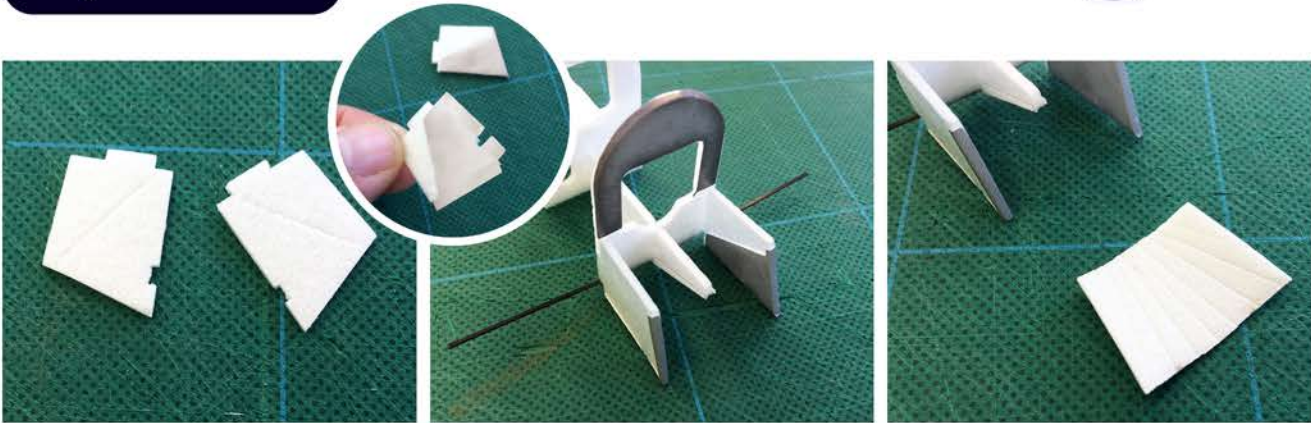
Attach the dihedral brace to the last slot in the keel and adorn with sticker S1 on the rear face.

Attach sticker S2 to the front face of D4 as shown above.

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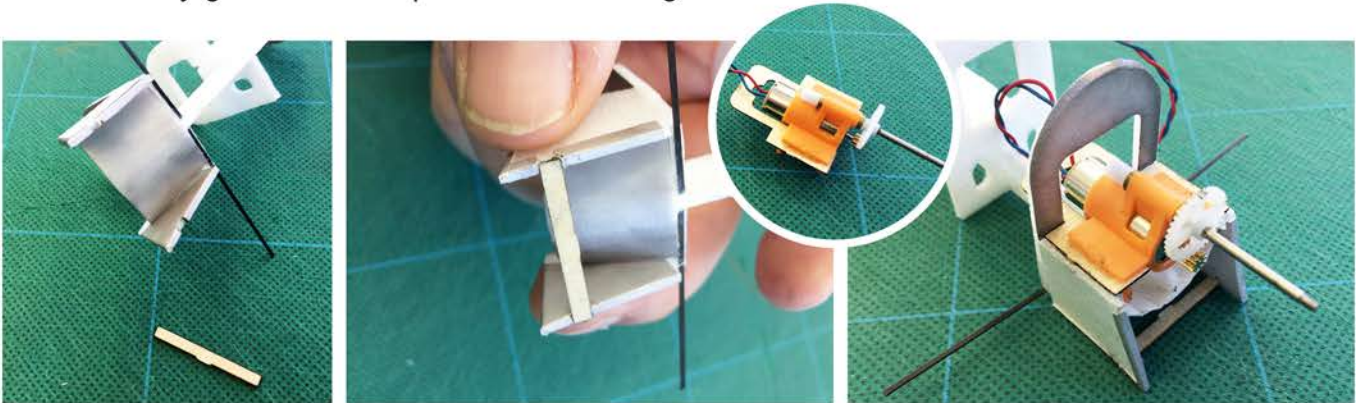


Stage 1 - Airframe



Prepare D6 & D7 by attaching stickers S3 & S4 respectively. Attach D6 to the port side (left) of D5 former at the back of the airframe and D7 to the starboard (right) side of the former.

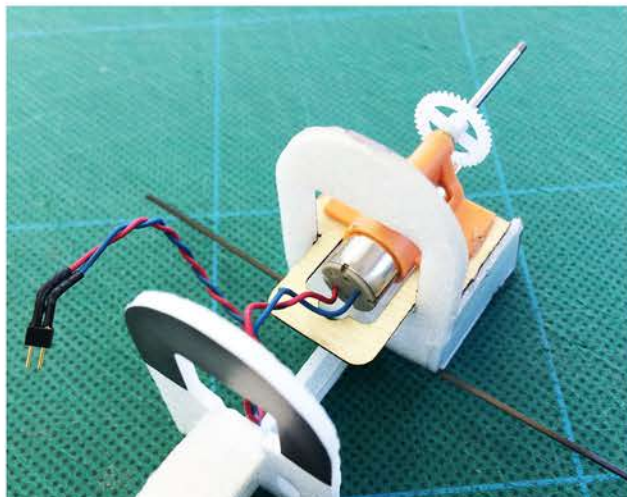
Prepare 1mm Depron part Z1 by scoring on the unprinted side using the scoring guide provided in this assembly guide. Pre-shape Z1 before fitting.



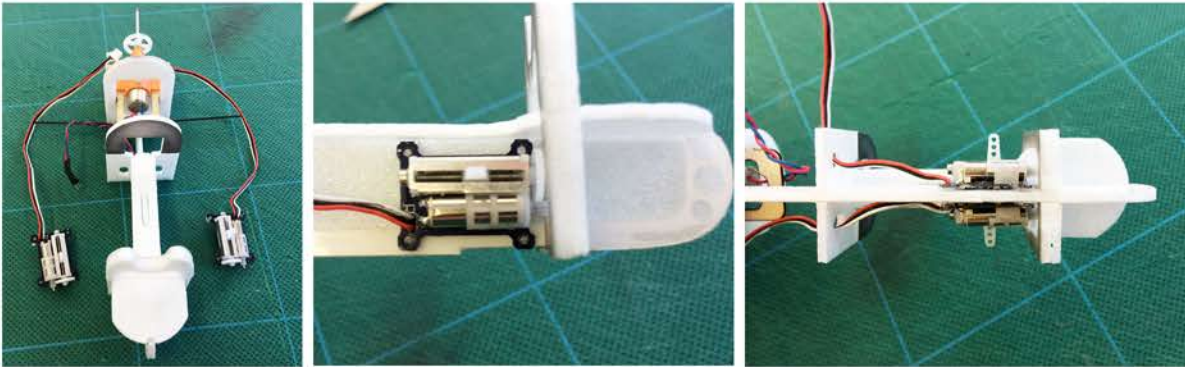
Install Z1, securing the narrow end of the part to the lower edge of D5 and the edges of Z1 at an upward angle against D6 & D7 (as illustrated) forming a curved surface.

Prepare ply fuselage brace W1. Glue into the slots on the lower edge of D6 & D7.

Insert & secure the motor/gearbox (LONG prop shaft) into plywood W2 motor mount. Attach the motor & mount to the top edge of D6 & D7 with the rear portion of the mount & motor protruding through the D5 former.



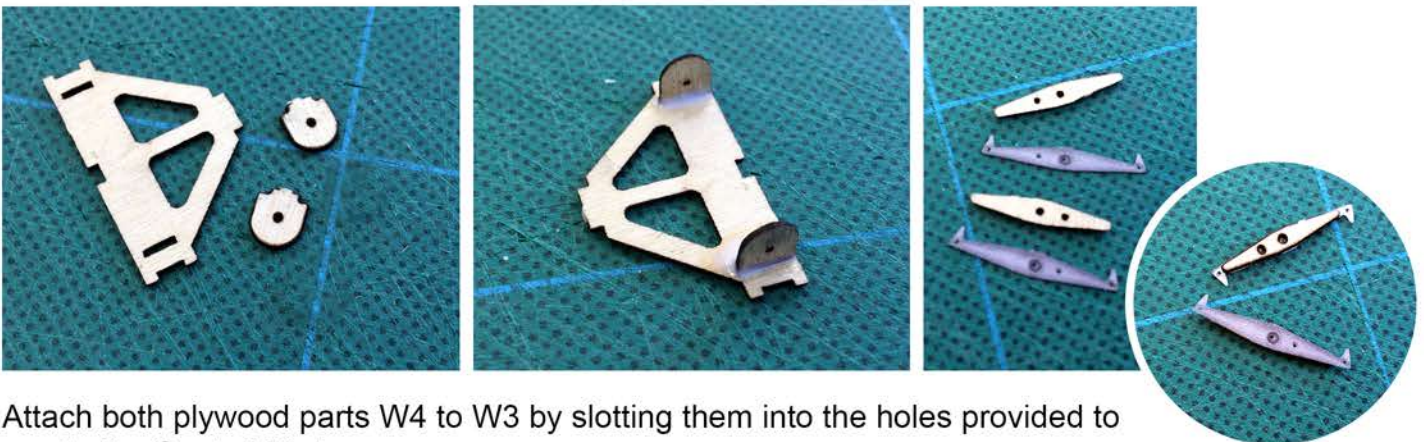
Stage 2 - Controls



Use Left & Right handed linear servos for elevator and rudder control (available from www.microaces.com).

Position each servo on the keel in the position shown above.

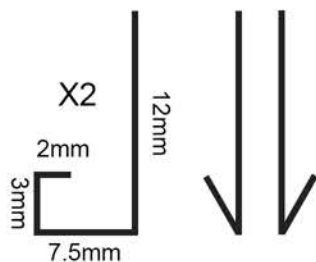
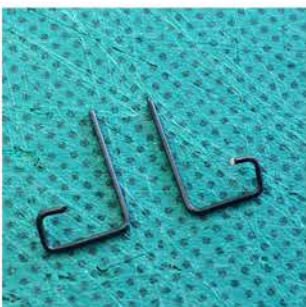
The main chip on the PCB of each servo should fit into the rectangular cutout in the keel. UHU por or similar contact adhesive should be used sparingly to hold the servos in position. Avoid getting glue on the gears of the servos as this can impact on their performance.



Attach both plywood parts W4 to W3 by slotting them into the holes provided to create the Control Plate.

It's recommended that aliphatic resin is used to bond plywood to plywood.

Attach plastic parts P3 and P4 to plywood parts W6 (x2) ensuring the holes cut in both parts line up to create the control arms.



Using the wire provided, create two torsion rods to the dimension given.

Twist the short end of the torsion rod by 30 degrees to the upright. One rod to the left and the other to the right; creating mirrored parts.

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Stage 2 - Controls



Thread the torsion rod through the central hole in the control arm and push the arm to the end, putting the end of the torsion rod through the second, off centre hole on the control arm, creating a Control Arm Assembly.

NOTE the orientation of the arm and rod in the left hand image above and duplicate. Repeat with the other torsion rod and control arm, creating a mirror image of the first control arm assembly.

Secure the control arms to the torsion rods using aliphatic resin or CA glue. Once dry, thread on 2 x plastic washers P5 to sit behind the control arm. Repeat on the second control arm assembly.

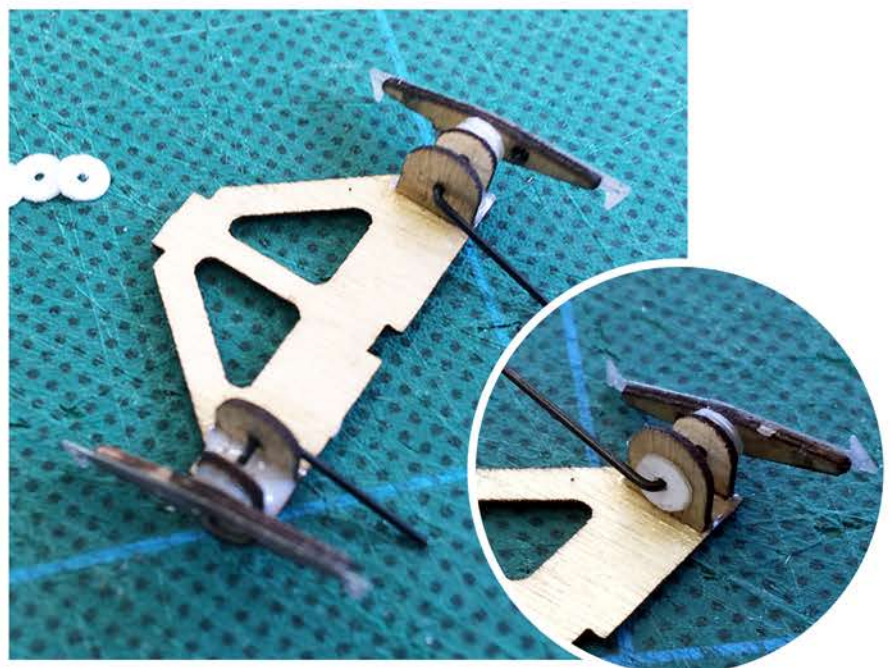
Thread 1 x plywood guide W5 onto each of the control arm assemblies so W5 sits next to the washers.

Thread the torsion rod assembly through the hole in the control assembly plate part W4, glueing W5 of the torsion rod assembly to the open slot in the side of the control plate part W3.

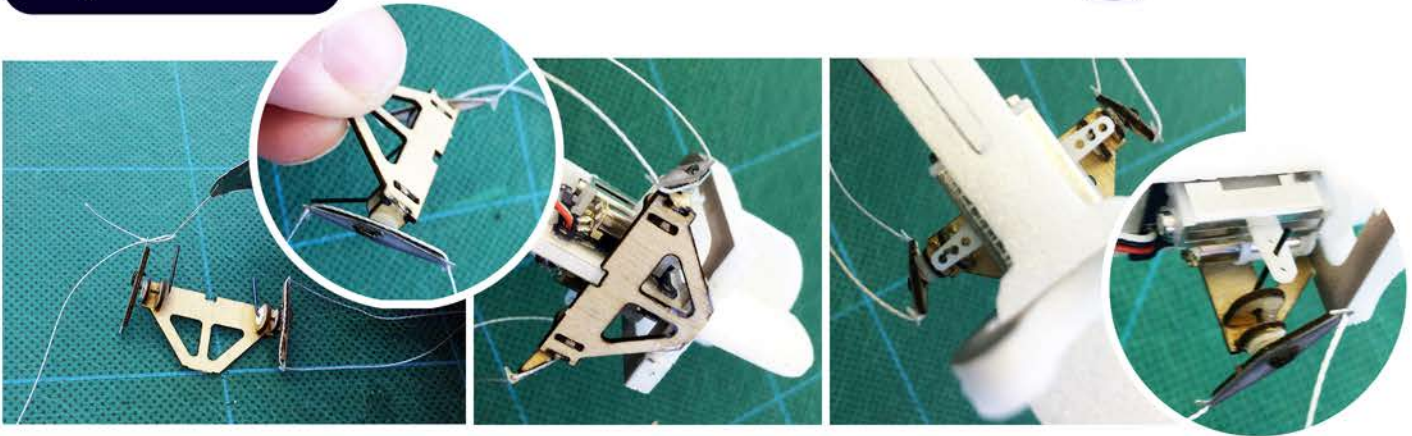
Repeat this on the other side of the control plate.

NOTE: Ensure the orientation of the arms and control plate match the images provided.

Slide a P5 plastic washer onto the inside of where the torsion rod exits Part W4. Repeat on the other side of the assembly.



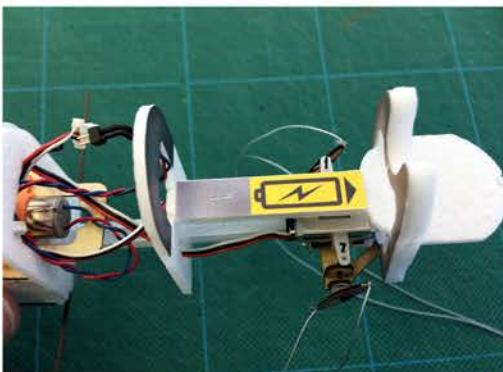
Stage 2 - Controls



Cut a 700mm length of rigging wire from the spool provided. Thread the wire through the holes in the ends of the control arm as shown above.

Pull through until you have even lengths of wire protruding from each tip. Secure the wire in place with a small amount of glue to attach the wire to each control arm. Repeat the process for the other control arm with a second 700mm length of wire.

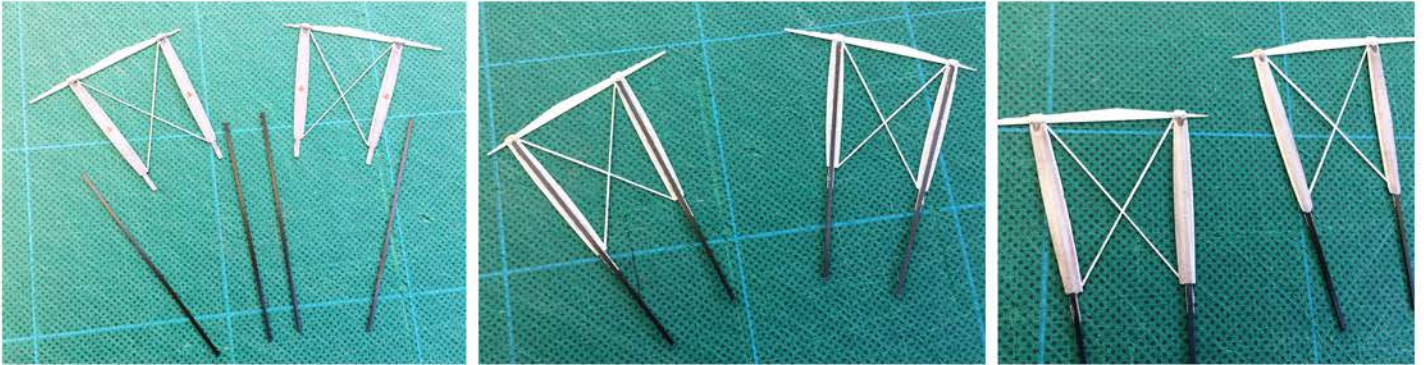
Secure the entire control assembly to the underside of the airframe in the recess provided in the keel. Ensure the ends of the torsion rods protrude through the second hole in their respective servo arms on each side of the airframe.



Secure battery tray P6 to the top of the airframe part D3.

Ensure slot in both parts line up.

Stage 3 - Fuselage

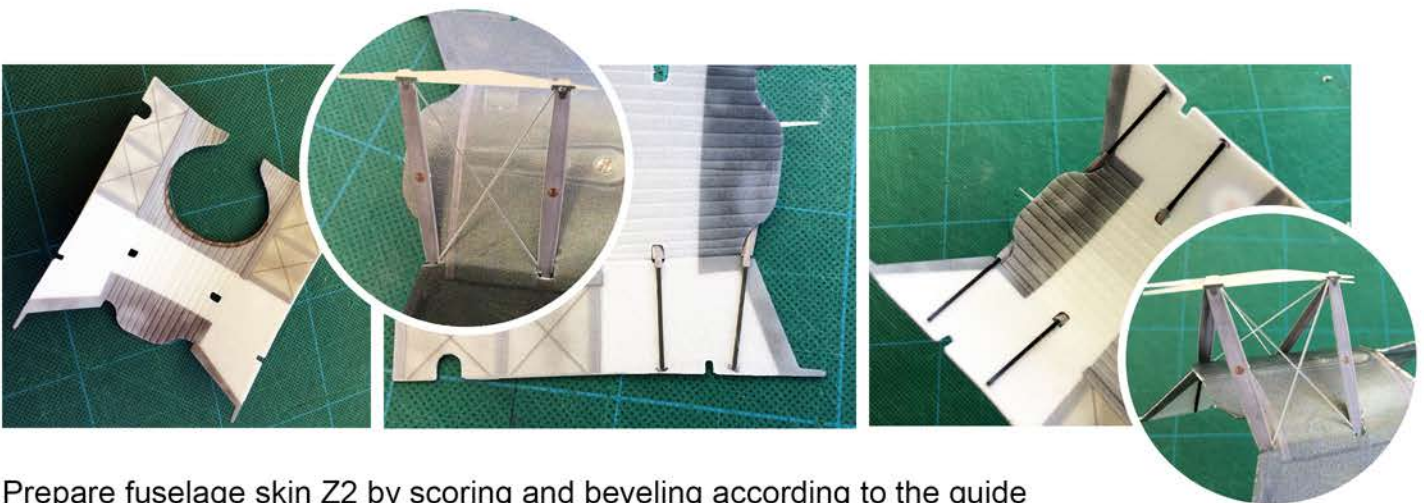


Remove STARBOARD cabane strut P7 and PORT cabane struts P8 from the plastic sprue.

Cut 4 x 58mm lengths of 0.4mm x 1.0mm carbon fibre strip. Attach these to the unprinted side of the cabane struts allowing the excess strips to protrude from the bottom of the struts.

NOTE: Be careful not to cover the rigging holes at the top of each strut with the strips.

To P7, attach the stickers S5 & S6 over the carbon fibre to create the starboard cabane strut assembly. To P8 attach S7 & S8 to create the port cabane strut assembly.



Prepare fuselage skin Z2 by scoring and beveling according to the guide provided in these instructions.

Insert the carbon fibre legs of the starboard cabane strut assembly into the slots provided in the fuselage skin Z2. See illustrations above for orientation and positional reference. Secure the carbon fibre legs to the inside surface of the fuselage.

Repeat the process for the port cabane strut assembly ensuring both cabane struts align well on the exterior of the fuselage.

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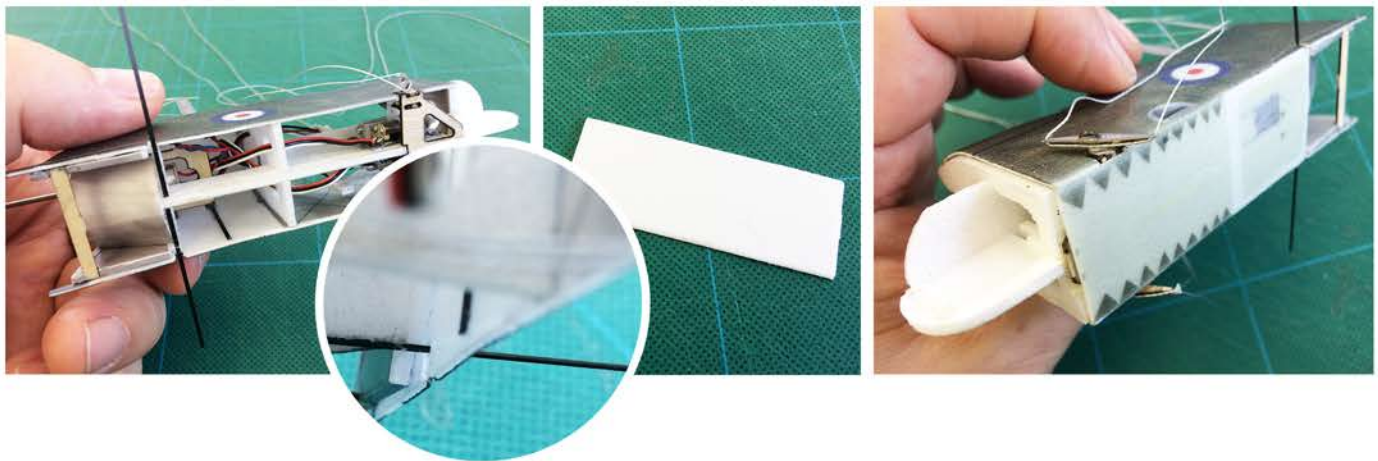


Stage 3 - Fuselage



Ensure all the cable connectors for the motor and two servos are pulled forward into the cockpit area in front of the D4 bulkhead.

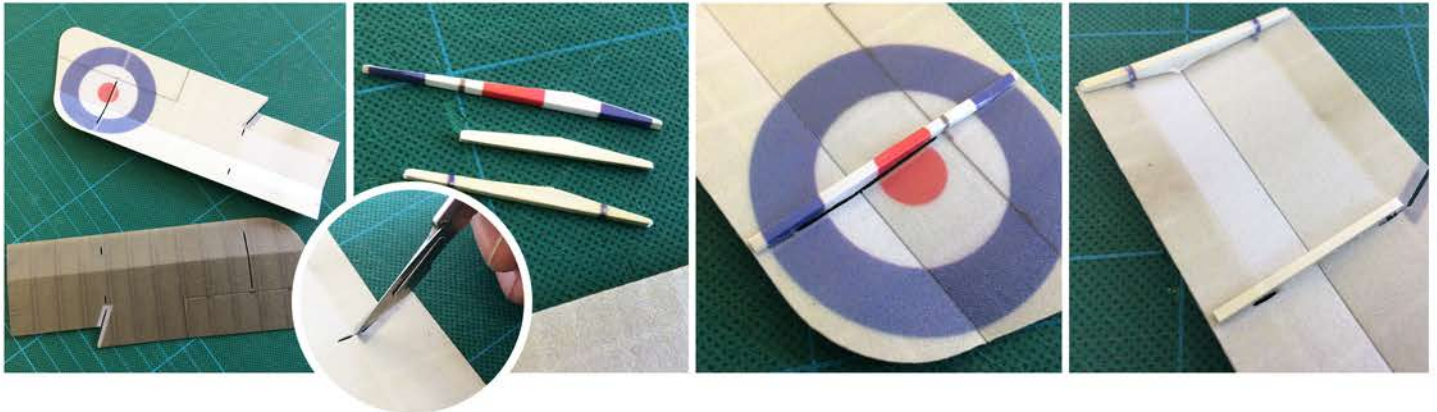
It's advisable to dry fit the fuselage skin Z2 making any minor adjustments required to ensure a good fit. Once satisfied, best practice is to fit one side of the fuselage skin first, let dry, then apply more glue to the contacting surfaces and pull the other side down into position.



If possible when attaching Z2, overlap the fuselage skin by ~0.5mm on the underside of the forward bulkheads as the lower fuselage skin needs to recess in for a perfect fit.

Bevel the edges of Z3 as indicated in the Bevel and Scoring Guide. Z3 forms the floor of the fuselage and simply attaches as shown above. Take note of the orientation of the print to ensure it is attached correctly.

Stage 4 - Lower Wing

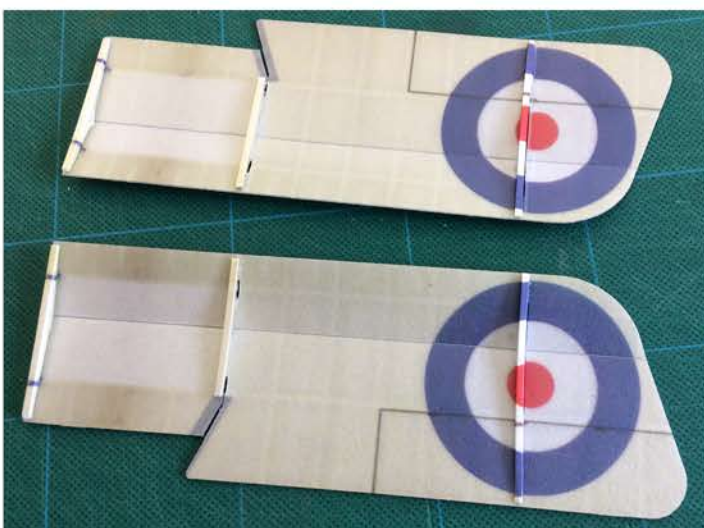


Remove Starboard Lower Wing Z4 from the sprue and pre-form it by folding along the score line. Also cut through the small score line on the trailing edge of the wing at the point where the cord of the wing reduces. (See 'call-out' illustration above)

Prepare the wing ribs for the lower starboard wing by wrapping D8 with sticker S9, D9 with S10 and D10 with S11. Stick the wrapped wing ribs to the underside of the wing at the following points:

- D10 locates at the outer position on Z4 with the slot in the wing on the outside of its location.
- D9 locates in the middle position with the 2 slots on the outside of its location.
- D8 locates on the inner wing position flush with the inner edge of Z4.

NOTE: Avoid gluing at the apex of the wing rib D8 as the carbon fibre dihedral brace will need to push through at this point.

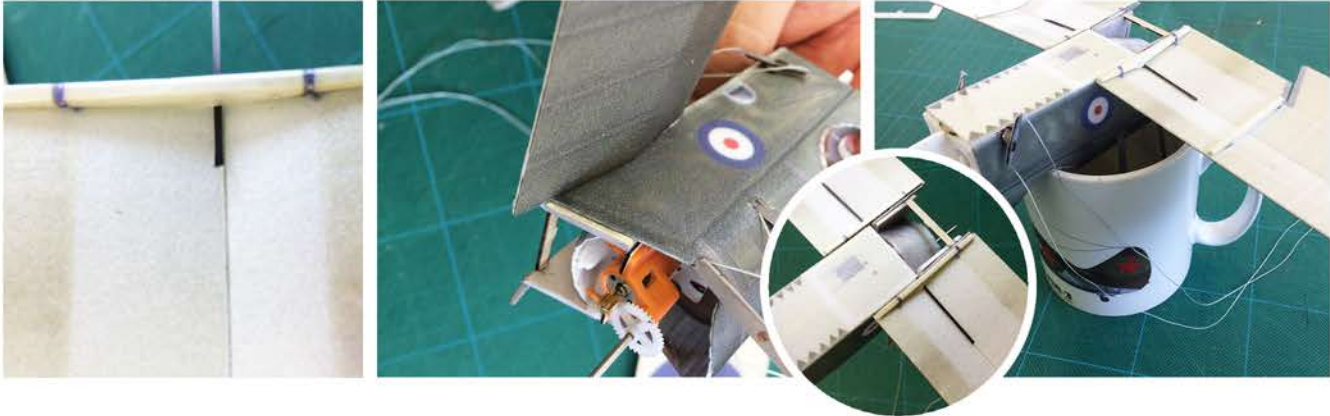


Repeat the process with Port Lower Wing part Z5.

Use rib stickers S9 on Depron rib D8, S12 on D9 and S13 on D10.

Add the ribs to the port wing ensuring that glue is omitted from the apex of the D8 rib when fixed to the inner edge of the Port Lower Wing part Z5.

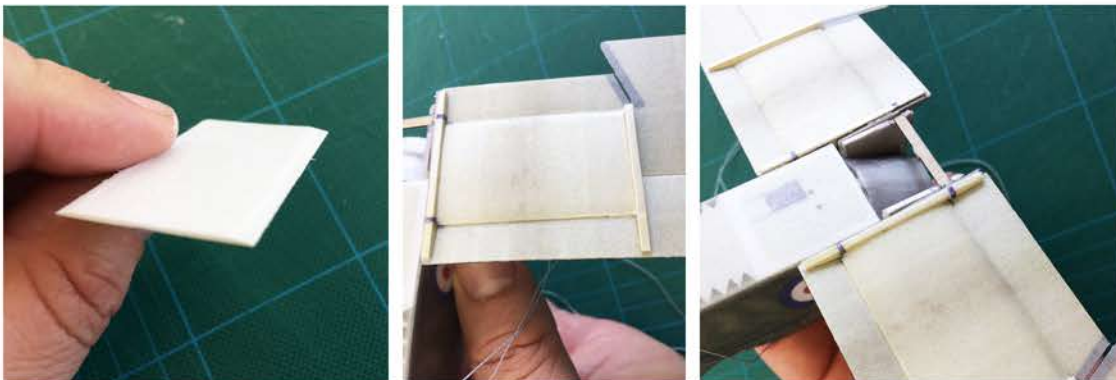
Stage 4 - Lower Wing



To attach the lower wings to the fuselage, slide the carbon fibre from the dihedral brace between the wing skin and apex of D8 rib.

Glue the inner surface of each wing to the root on the fuselage and the carbon fibre brace to the underside of the wing.

Set aside to cure. The use of a mug can work well for this task!



Prepare the starboard wing underside part Z6 according to the bevelling guide. (Sand the edges of the un-printed side of the part).

Attach Z6 between the inner and middle rib on the underside of the lower starboard wing. Some trimming may be required to ensure a snug fit.

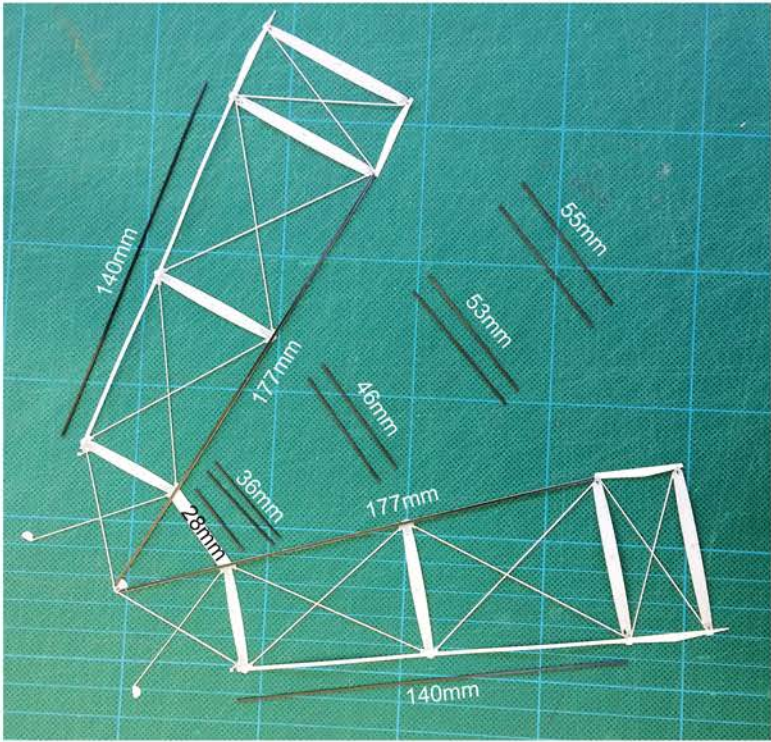
Repeat the process with Z7 for the underside of the lower port wing.

NOTE: Z6 & Z7 are important to the structure of the model as they reduce the twist from the unusual rear fuselage arrangement AKA the 'Bird Cage'.

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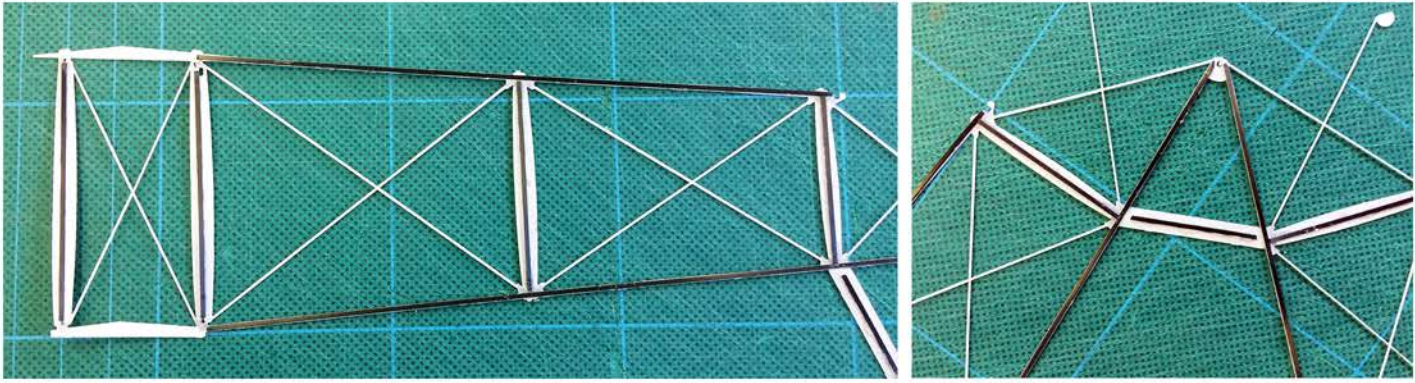
Stage 5 - Bird Cage



Cut the following lengths of carbon fibre from the 1.0mm x 0.4mm strips supplied.

- 2 x 177mm
- 2 x 140mm
- 2 x 55mm
- 2 x 53mm
- 2 x 46mm
- 2 x 36mm
- 1 x 28mm

Use the image on the left as reference for the location for each specific strip.



Using contact adhesive (such as UHU por) attach the carbon fibre strips to the inside (un-printed) of plastic part P9 in the locations shown above for the starboard side of the bird cage.

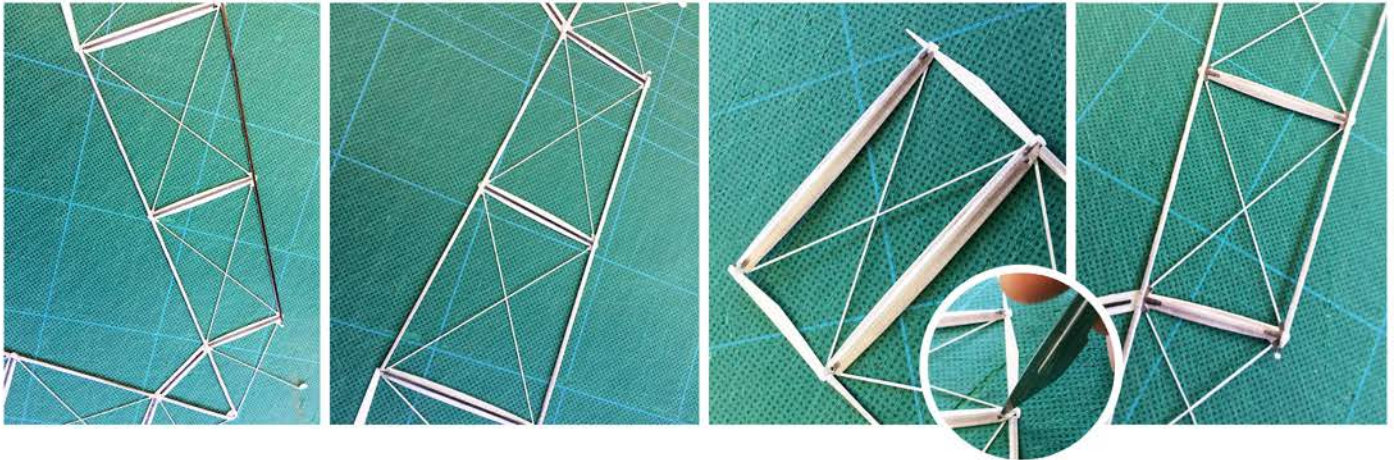
NOTE: Take care with placement so as to avoid covering up any rigging holes.

If you are able to butt the joins on the two upright rear spars with the strips running longitudinally, then this will add to the rigidity of the final structure.

Repeat the process on the port side of P9.

Place the 28mm peice of carbon fibre strip centrally on the rear cross member of P9 ensuring there is a gap either end. (See image above right). This will allow the structure to fold in the following assembly steps.

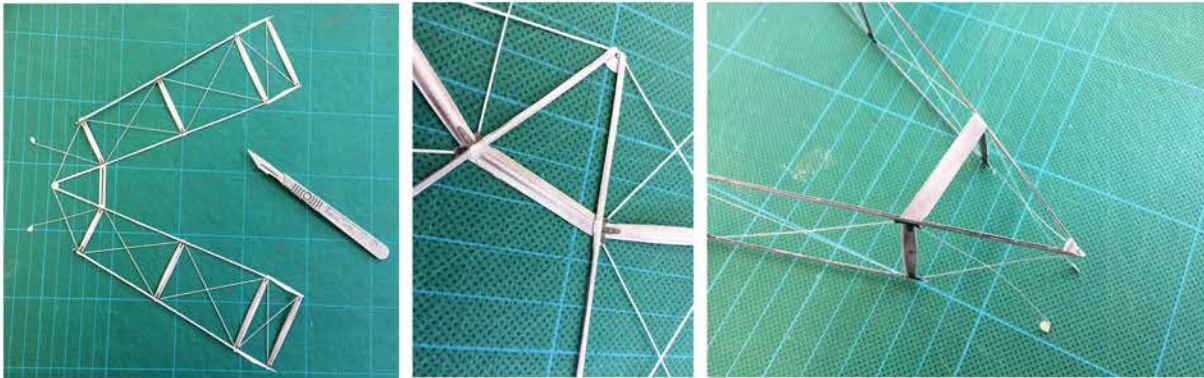
Stage 5 - Bird Cage



On the starboard side of the bird cage assembly cover the carbon fibre on the longitudinal rails with stickers S14 on the lower rail and S16 on the upper, shorter rail.

Add S18 to the leading interplane strut and S19 to the trailing interplane strut at the front of the bird cage assembly. Cut through S19 with a sharp blade to ensure rigging wire will be able to pass through the lozenge shaped hole at the top of the strut. (See circular call out image).

Cover the rear struts with S20 and S21 as shown above right.



Repeat the process on the port side of the bird cage assembly using stickers S15 & S17 on the rails and S22, S23, S24 and S25 on the uprights.

Cover the carbon fibre on the bird cage cross brace, at the rear of the structure with sticker S26.

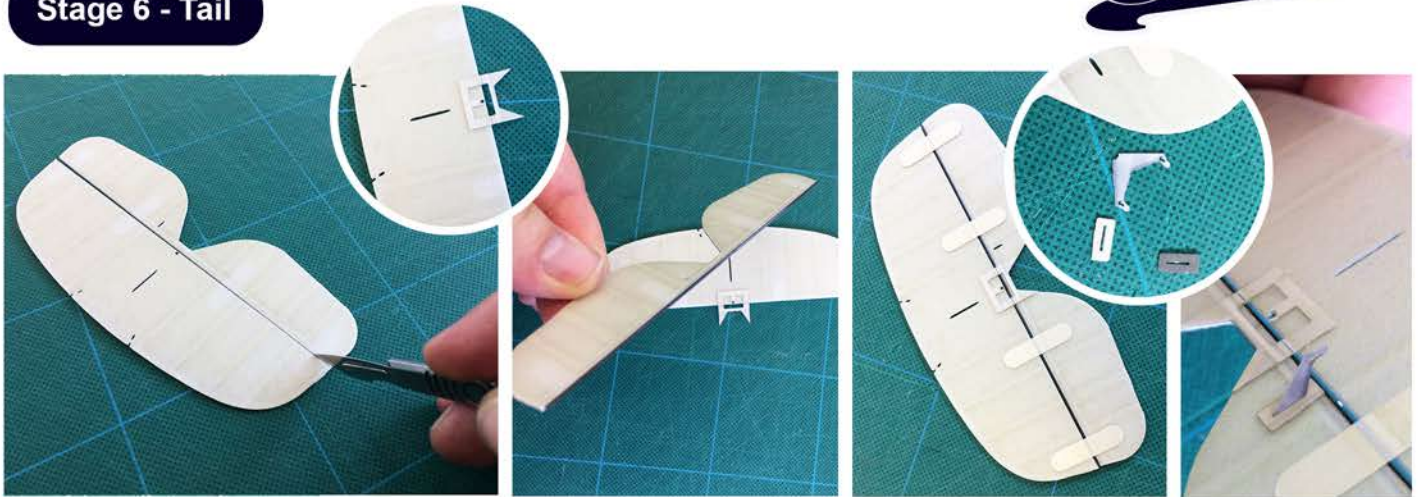
At this stage you can bend the sides of the birdcage at the point where they meet the cross brace. Both sides of the cross brace and the rear tail triangle are both pre-scored so should conform to this process.

NOTE: Due to the scoring, the material can be weakened in this area. It is advised that a small amount of aliphatic resin or CA is run into the join between brace and sides to restore strength to this area while holding the frame in position (reference above right image).

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Stage 6 - Tail



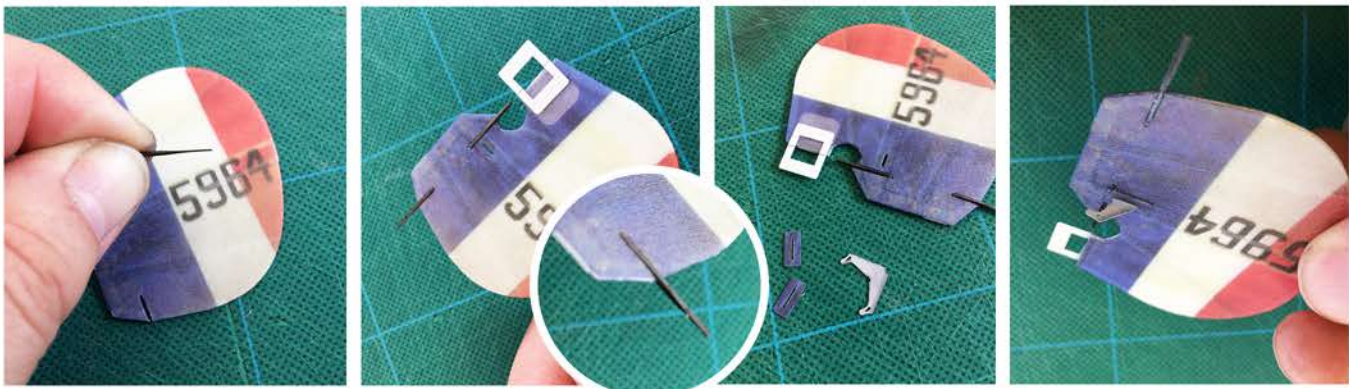
Separate the elevator and horizontal stabiliser of 1mm Depron part Z8 by cutting down the laser cut score.

Attach plastic elevator hinge P10 to the centre of the trailing edge of the horizontal stabiliser ensuring the 1mm holes line up on both parts (see circular callout image above).

Cut a 138mm long piece of 1.0 x 0.4mm carbon fibre strip and attach to the leading edge of the elevator.

Re-join the elevator and horizontal stabiliser by attaching the central elevator hinge P10 plus four S27 hinge stickers positioned as shown above. **NOTE:** leave a ~0.5mm gap between parts to allow free movement of the elevator.

Attach control horn base plates P12 & P13 to either side of the elevator lining up the slots. (P12 - top & P13 - underside). Push control horn P11 through the slot until an even amount of the part is visible on each side of the elevator. Secure in place with a CA glue or aliphatic resin.

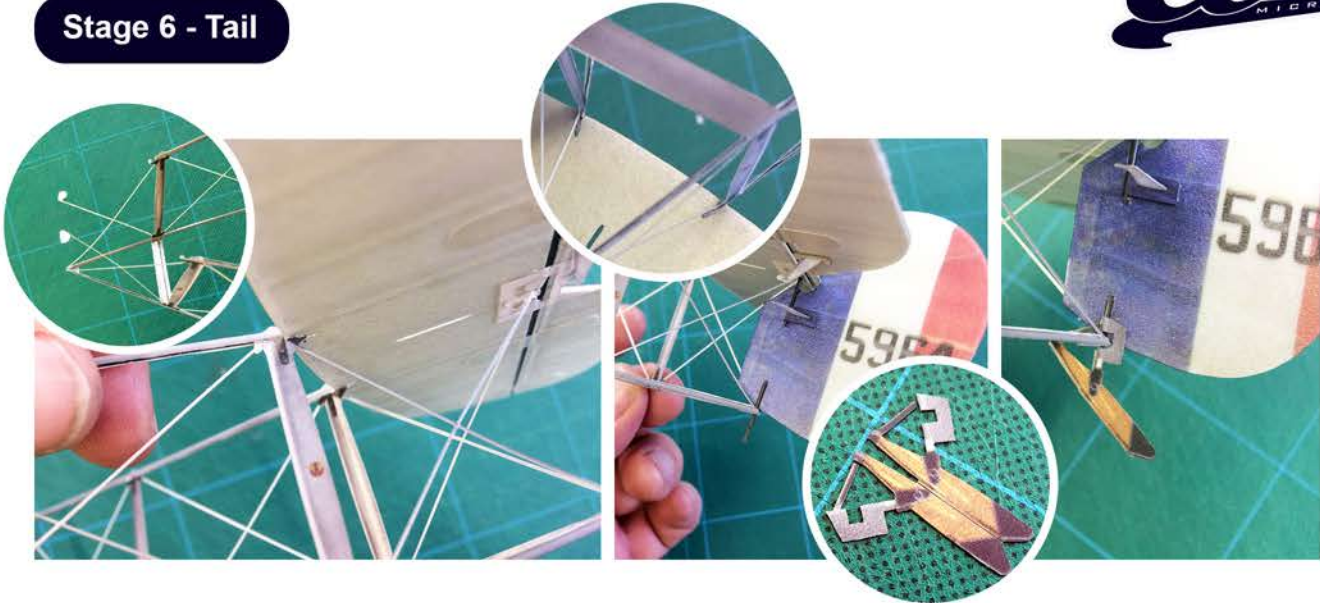


Remove the rudder Z9 from the 1mm Depron sprue. Prepare 2 x 14mm long carbon fibre rods from the 1mm Ø stock provided. Using a sanding stick create a tapered flat point to one of the rods using about 7-8mm of the rod to accommodate the taper.

Insert the tapered rod in the lower slot in the rudder with the tapered end protruding and the other rod into the upper slot. Attach the plastic rudder hinge P14 to the rudder as shown in the images above.

Attach control horn base plates P17 & P18 to either side of the elevator lining up the slots. Push control horn P16 through the slot until an even amount of the part is visible on each side of the rudder. Secure in place with a CA glue or aliphatic resin.

Stage 6 - Tail



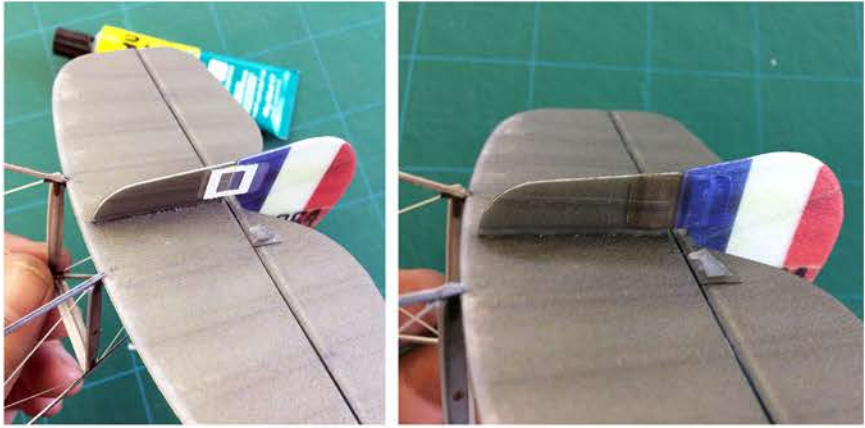
Prior to installing the tail parts onto the 'bird cage' fold the small semi-circular tags on the end of the free rigging wire. (As shown in the first circular call-out image above).

Attach the horizontal stabiliser/elevator assembly to the bird cage by slotting the small tabs at the top of the rear struts (of the bird cage) into the slots provided at the leading edge of the horizontal stabiliser.

Attach the semi-circular tags on the end of the free rigging wire into the spaces in the plastic hinge part P10 attached to the trailing edge of the horizontal stabiliser.

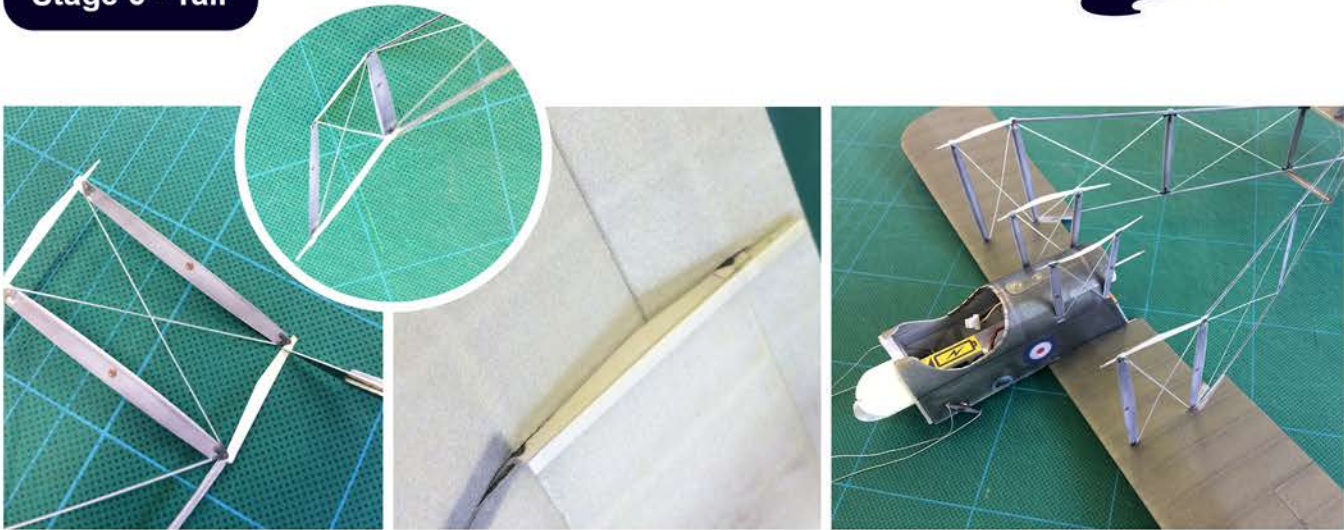
Insert the lower carbon fibre rod of the rudder assembly through the hole in the triangular section at the rear of the bird cage. Lift the elevator/horizontal stabiliser and slot the upper carbon fibre rod of the rudder assembly into the hole at the rear of the horizontal stabiliser.

Pre-fold tail skid P15 and install onto the tapered end of the carbon fibre rod as shown above.



Install vertical stabiliser Z10 into the pre-cut slot in the horizontal stabiliser. Attach the plastic rudder hinge P14 to Z10 and the installed rudder and cover with hinge sticker S28 as shown above.

Stage 6 - Tail



On the print side of the first strut (port & starboard) on the bird cage there is a score line running across the lower wing rib portion of the plastic part P9 close to the front of the assembly.

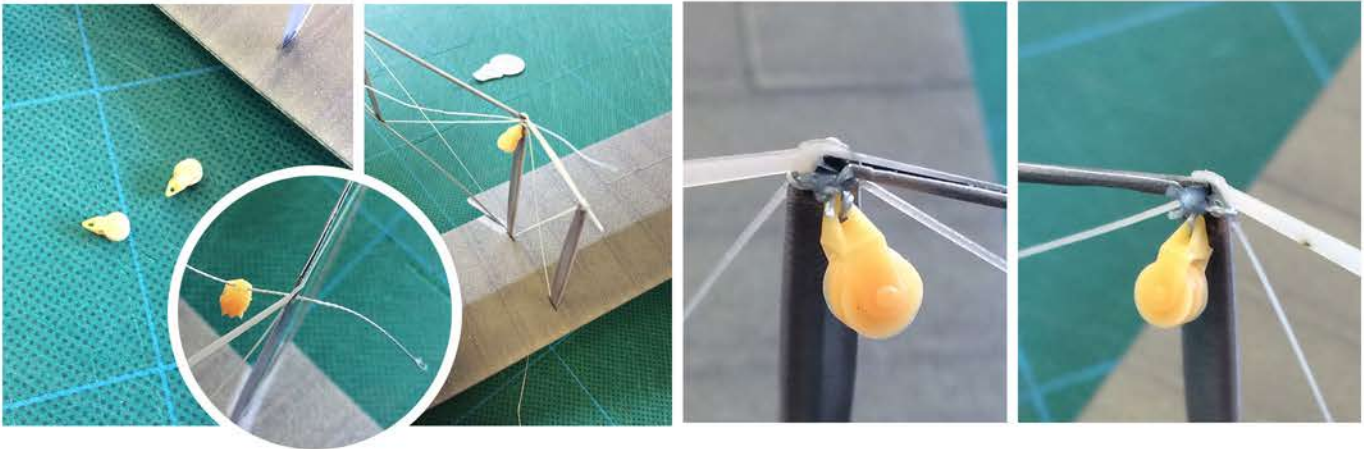
Use this score as a guide to cut across the rib on both sides of the bird cage and separate the bottom of the forward strut from the assembly and releasing the wing rib part of the assembly ready for attachment to the lower wing.

Pre-bend the wing struts inwards at the front of the bird cage. Create this bend at the rear of the trailing strut so the struts on each side of the assembly run parallel to each other.

Attach the bird cage to the lower wings by sliding the released lower wing rib parts (port & starboard) of P9 along the OUTSIDE of the middle wing ribs of either wing.

Then push the lower part of the first struts through the slot provided in the lower wing (port & starboard) so that the previously cut plastic rib portions meet again underneath the wing, along the outer face of the middle wing rib.

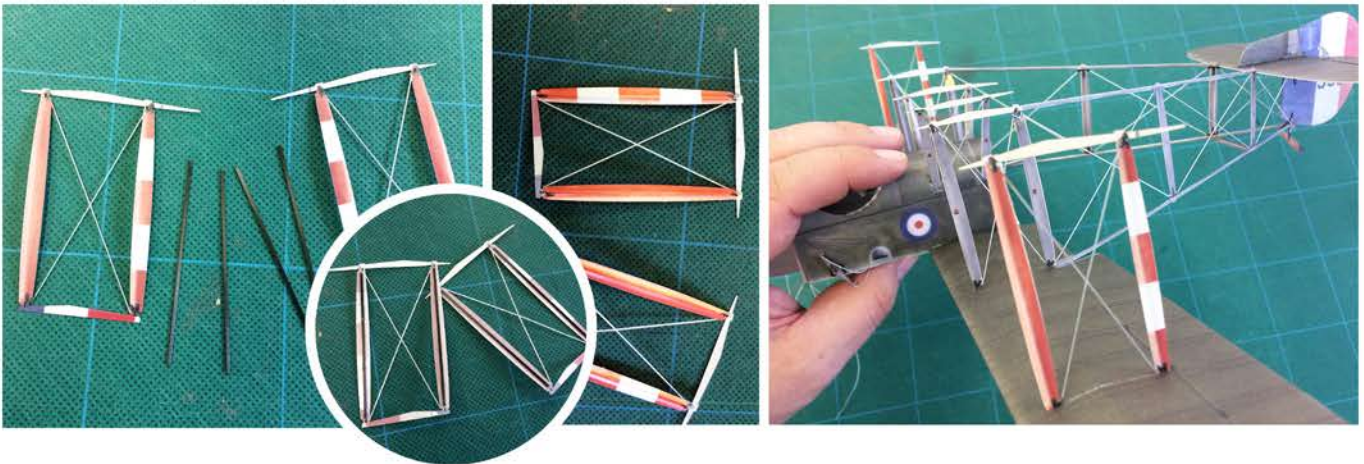
Stage 7 - Struts



Attach the 3D printed pulleys to the inside of the port and starboard trailing strut on the bird cage.

Use a short length of the supplied rigging wire. Pass it through the end of the pulley and pass both ends of the wire through the lozenge shaped hole in the top of the strut. Pass the ends back around the top of the strut and tie off so the pulley sits tight against the strut.

Secure the wire with aliphatic resin or CA adhesive. Trim off the excess rigging wire with a new blade. Repeat for the other side.



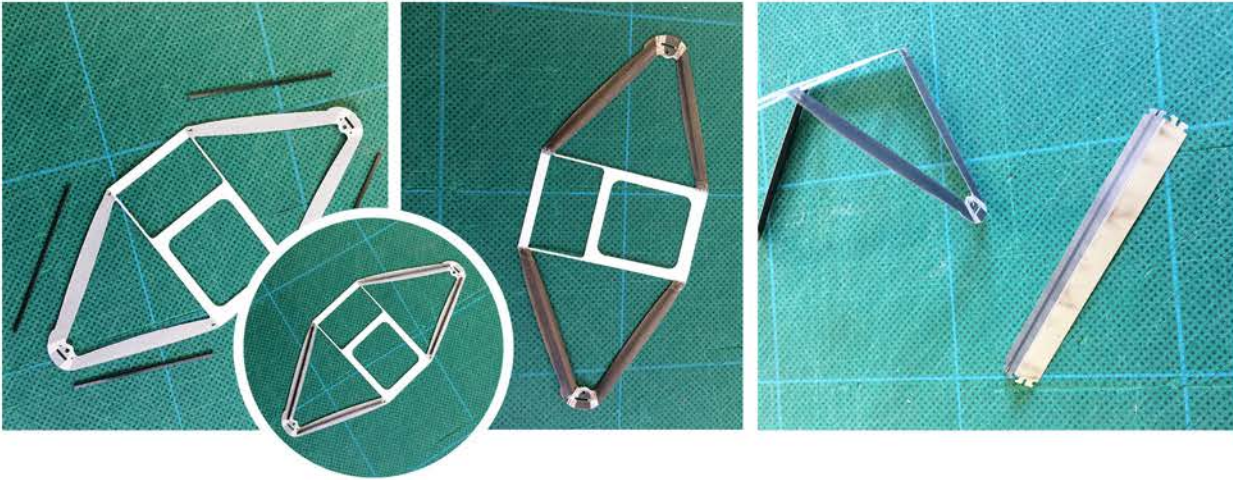
Cut 4 x 54mm lengths of 1.0mm x 0.4mm carbon fibre strip and fit to the uprinted side of the outer interplane strut parts P19 & P20. **NOTE:** ensure that the carbon fibre doesn't cover the pre-cut rigging holes.

Cover the carbon fibre on P19 with stickers S29 & S30 and P20 with stickers S31 & S32.

Insert the struts into the outer slots in the lower wing. P19 is the starboard strut and P20 is port. The lower part of the strut assemblies should sit next to the outer surface of the wing rib to which it can be attached.

Ensure that both the outer struts line up well with the other installed struts before fixing in place.

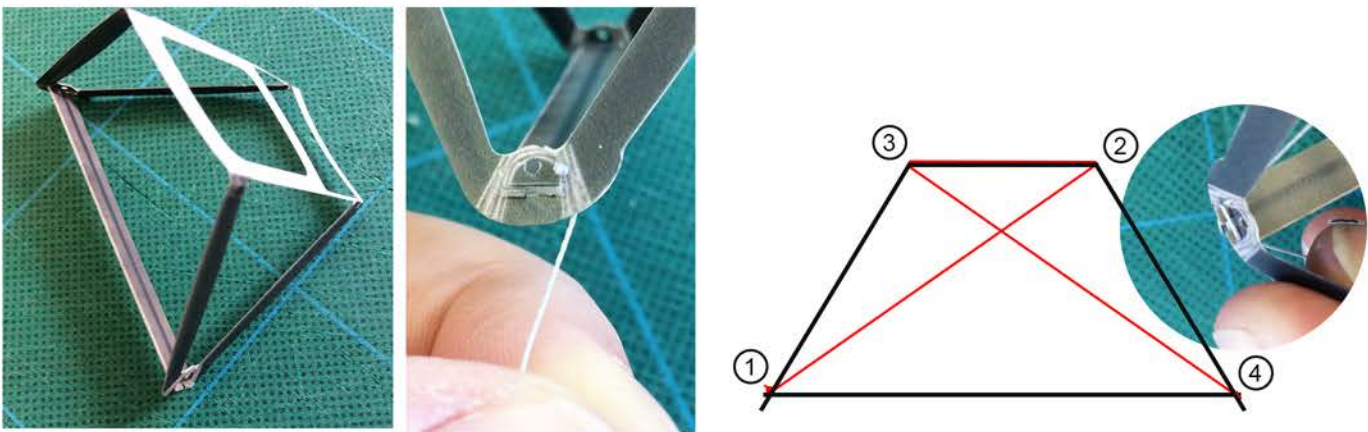
Stage 8 - Undercarriage



Remove undercarriage part P21 from the plastic sprue. Cut 2 x 42mm lengths and 2 x 40mm lengths of carbon fibre strip. Attach the shorter lengths of carbon fibre to the front legs and the longer lengths to the rear legs.

Attach S38 and then S39 over the carbon fibre on the starboard leg of the undercarriage assembly. Attach S40 then S41 over the carbon fibre on the port leg of the undercarriage assembly.

Bend the legs at the the point where they meet the centre piece. Fold axle streamlining part P22 along the score line and glue the two sides together.



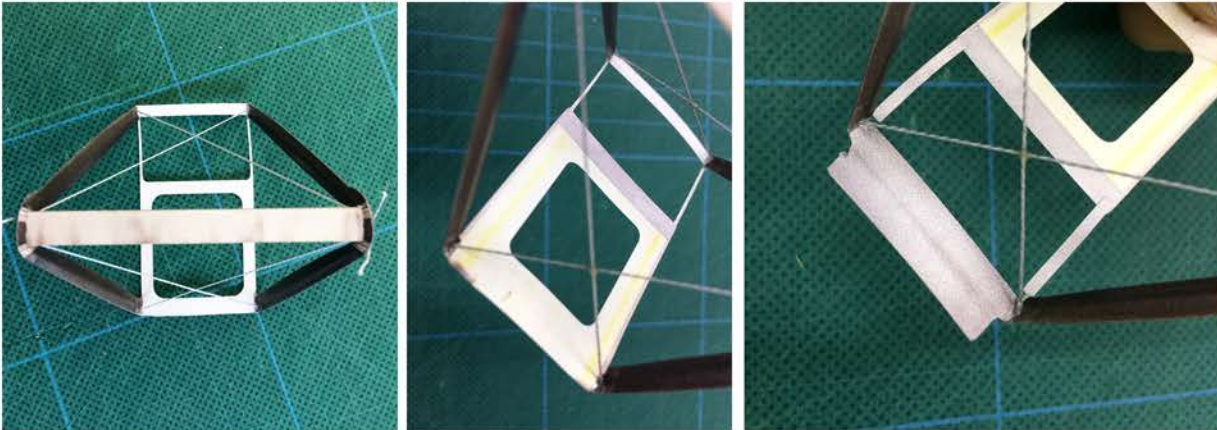
Insert the ends of the axle streamlining part through the slots provided in the lower legs of the undercarriage legs.

Cut a 600mm peice of rigging wire and knot at one end. Pull the un-knotted end through forward hole at position 1 shown on the diagram above.

Sequentially thread the the rigging wire through the holes provided until the final forward hole 4. Loop the wire around the protruding part of the axle streamlining part P22 and secure with aliphatic resin or CA glue. Trim excess wire with a fresh blade once glue has set.

NOTE: Secure in place ONLY when you have tensioned the rigging.

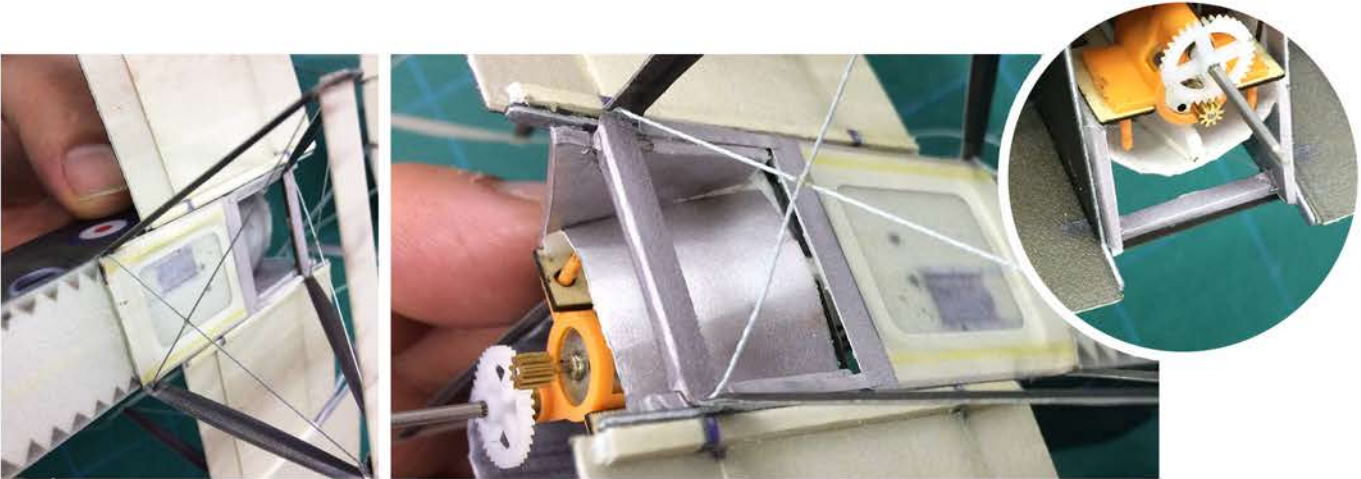
Stage 8 - Undercarriage



Repeat the process of threading a 600mm piece of rigging wire through the rear part of the undercarriage assembly using the holes provided. Use the same method as previously explained.

Attach sticker S42 to the centre part of the undercarriage assembly. **NOTE:** wetting the sticky side of the part will allow some adjustment to aid positioning.

Add S44 x 2 to cover the thin portions of the assembly and S43 to cover the rear-most cross section. Note the orientation of the sticker in the image above. **DO NOT** fold S43 sticker over until the undercarriage is installed onto the fuselage.



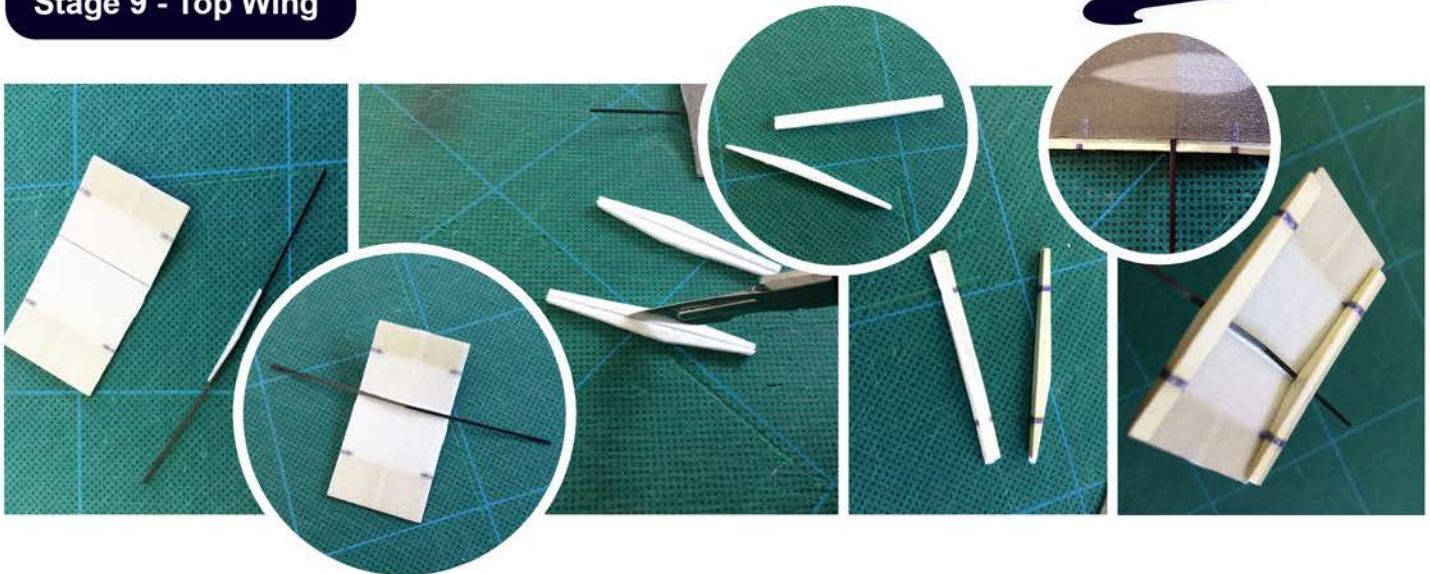
Attach the undercarriage assembly to the underside of the fuselage in the position marked by the absence of print, also matching the fuselage structure to that of the undercarriage assembly structure.

You can now wrap the sticker S43 over the cross member at the rear of the fuselage.

Airco DH.2 Assembly Guide



Stage 9 - Top Wing



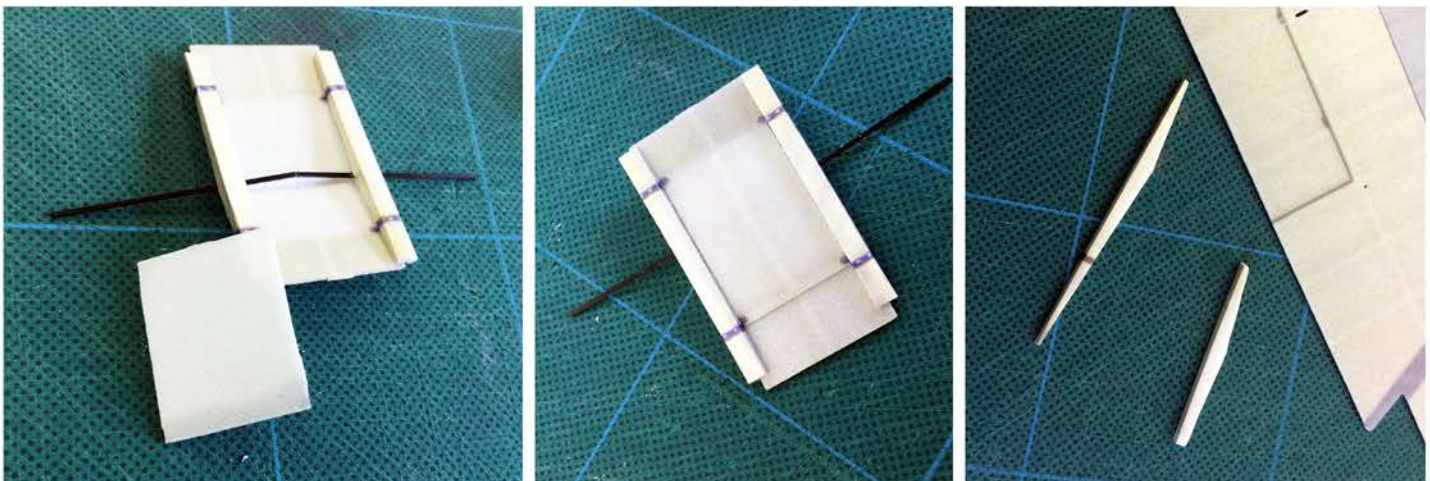
Remove Z11 and D11 from their respective sprues. Use the pre-cut score on the underside of Z11 to put a slight bend into the part.

Cut 2 x 40mm lengths of the 0.4mm x 1.0mm carbon fibre strip and stick them onto the sloped sides of D11, meeting in the middle. This creates the dihedral brace for the upper wing.

Attach the dihedral brace to the underside of Z11 on the score line.

Prepare 4 x D8 ribs and glue together to make 2 pairs of double thickness ribs. Wrap these in 2 x S33 stickers.

Attach both rib assemblies to either side of Z11 ensuring a 2mm overlap on the outside of the edge of Z11.



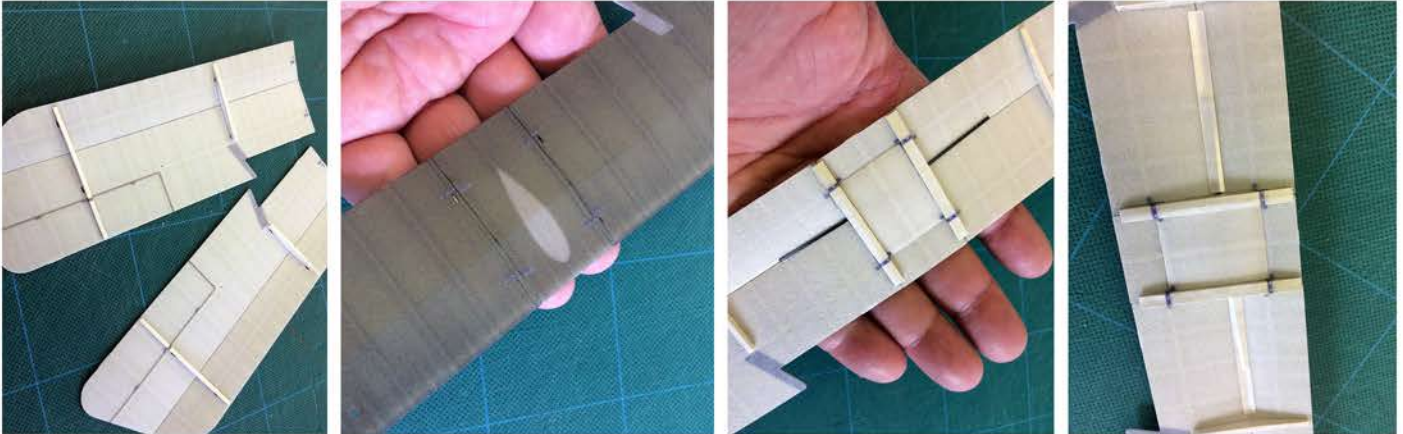
Prepare Z12 using the sanding guide provided.

Attach Z12 to the underside of Z11 covering the pale area in the centre of the part.

NOTE: Test for fitting initially and carefully trim the sides of Z12 if required using a sharp blade.

Prepare rib 2 x D10 and wrap in 2 x S36 and rib 2 x D9 and wrap in S34 & S35.

Stage 9 - Top Wing



Attach the shorter ribs to the centre rib positions marked on the upper wing parts Z13 & Z14 ensuring that the pale side of the stickers wrapped around them face outwards.

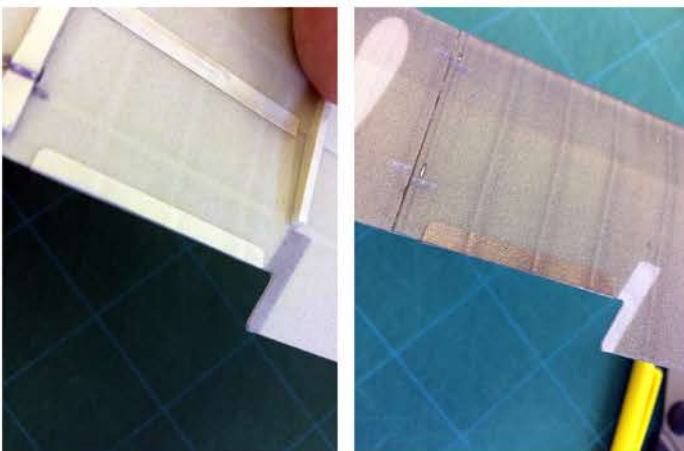
Attach the longer ribs to the outer rib position marked on the upper wing parts Z13 & Z14.

NOTE: For both sets of ribs, ensure the ribs are positioned as close as possible to inside edge of the strut slots cut into the wings. Do not cover the slots with the ribs and clear any excess glue that may spread over the slots too.

Attach both of the wings to the centre section assembly created in the previous step. Ensure the carbon fibre brace runs up the scored part of each wing.

Place sticker S37 (x2) over the exposed carbon fibre on the underside of each wing.

Support and set aside to allow the adhesive to dry.

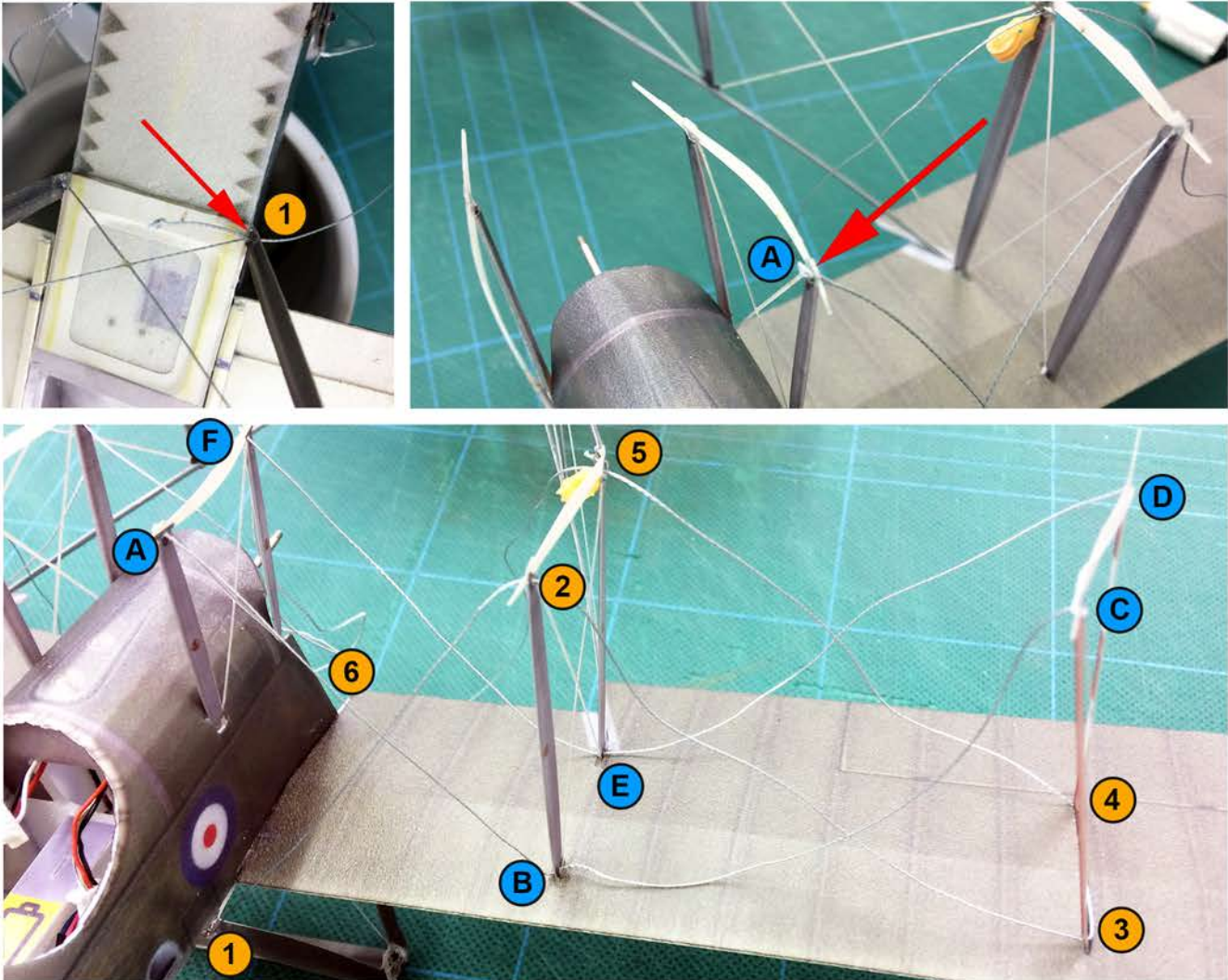


Attach sticker S45 (x2) to the trailing edge of the upper wings at the narrow, inboard section.

Wrap the sticker over the trailing edge, matching the colour and pattern of the sticker to the wing as closely as possible.

NOTE: The stickers help to protect the wing against prop strike.

Stage 10 - Rigging



Cut 2 x 500mm lengths of rigging wire. Knot the first length and thread through the top of the forward undercarriage strut **1**. **NOTE:** Using a Microaces Rigging Tool (A.K.A. a needle threader) makes this task easier.

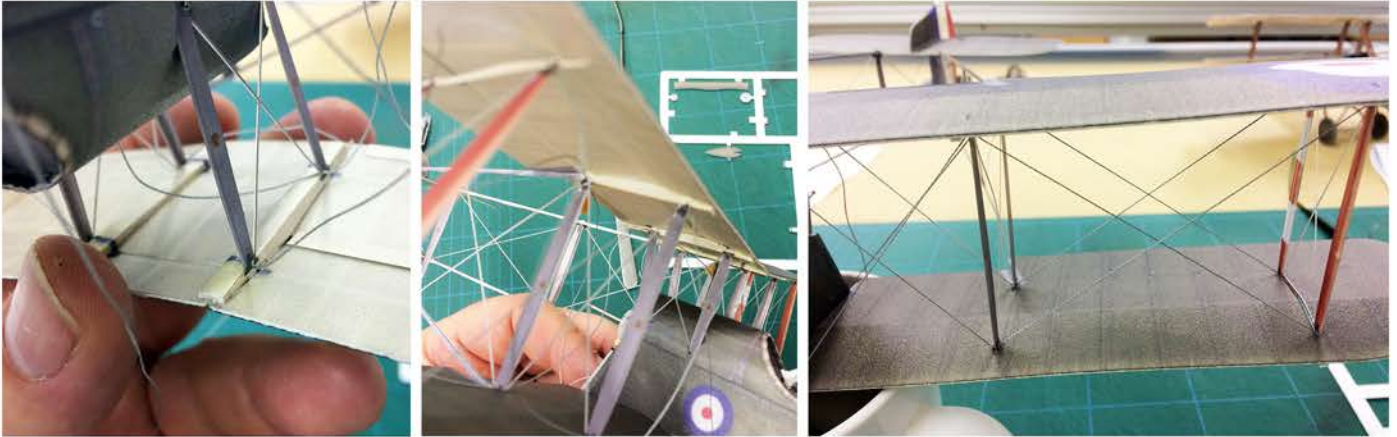
From the top of the undercarriage strut **1**, thread the wire through the top of the leading inboard interplane strut **2** then the bottom of the leading outer interplane strut **3**. The rigging wire then threads through the bottom of the trailing outer interplane strut **4**, back up to the top of the trailing inner interplane strut **5** then down to the junction between the wing and the rear of the fuselage **6**. (Although this can be left loose at **5** until the rigging is tightened).

Knot the second length of rigging wire and thread through the top of the forward interplane strut **A**. Take the thread through the bottom of the leading inboard interplane strut **B** and up to the top of the leading outer interplane strut **C**. The rigging wire then threads through the top of the trailing outer interplane strut **D**, down to the bottom of the inner trailing interplane strut **E** and back up to the top of the trailing cabane strut **F**.

Repeat the process above using another two 500mm lengths of rigging wire for the other side of the aircraft.

NOTE: At this stage of the build keep the rigging loose until the top wing is attached.

Stage 10 - Rigging

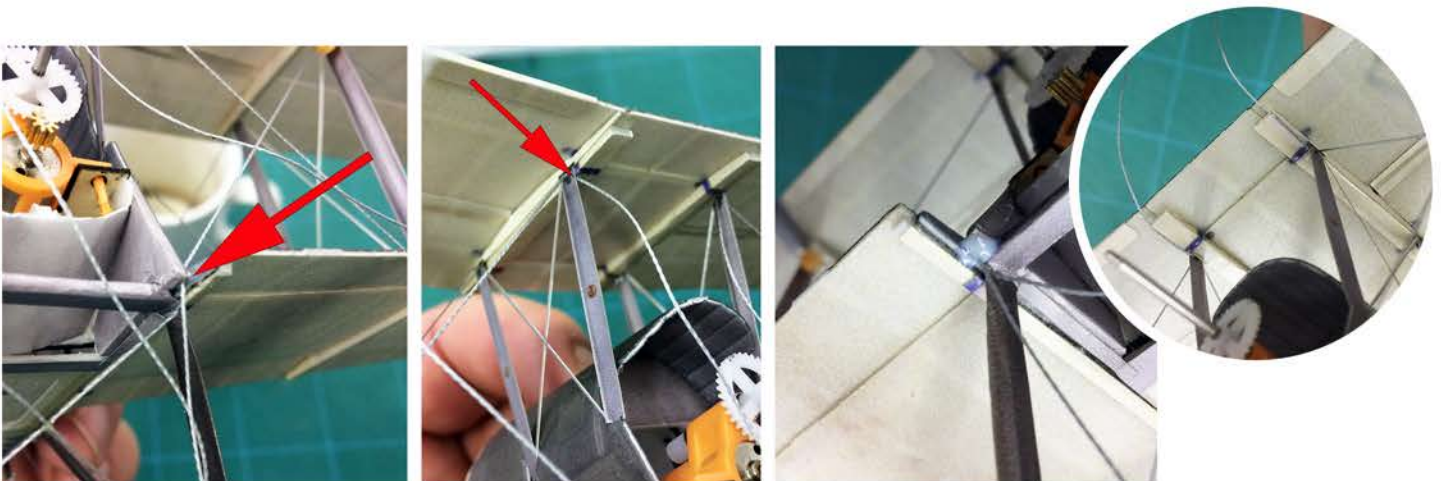


Attach the upper wing. **NOTE:** It's worth conducting a dry run on this process to make sure everything lines up.

First attach the cabane struts of the fuselage to the outer surface of the top wing's inner ribs. Ensure the tabs at the top of the cabane strut assemblies enter the corresponding slots in the wing.

Repeat this process moving outwards to the inner interplane struts on both sides then the outer interplane struts. **NOTE:** the struts always sit on the outer surface of the corresponding ribs.

Once the wing is installed the rigging can be tightened. Do this using tweezers or similar, follow the sequence that the rigging was installed. As the rigging tightens, the specially shaped rigging holes should grip and lock the rigging wire wherever it passed through one.



It is essential for stable flight that as much twist is eliminated from the wings as possible. This can be done by adjusting the rigging tension at various points.

Once satisfied lock the ends of the 4 rigging wires at their end positions, shown above with the red arrows, and add a drop of aliphatic resin or foam safe CA to secure them in position.

Once the adhesive has cured, trim the excess wire using a fresh blade.

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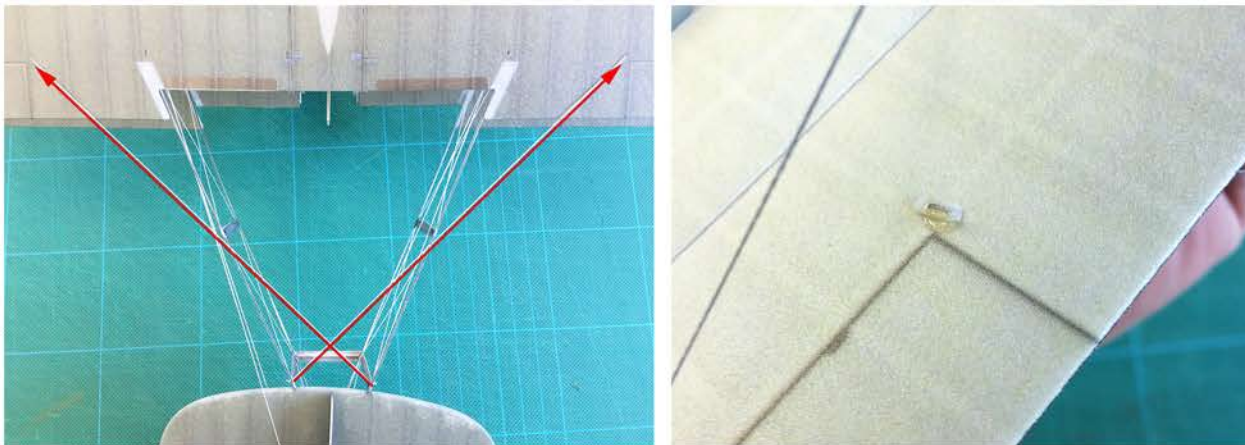
Stage 10 - Rigging



Cut 2 lengths of rigging wire 300mm long. Knot one end of each length and thread through the eyes located in the lugs at the rear of the bird cage, just in front of the leading edge of the horizontal stabiliser. (See image above left)

Cut 2 x P25 from the plastics sprue and glue to the underside of the top wing over the 2 small holes located near to the corner of the aileron graphic on either wing. ensure the narrower part of the hole in each P25 part points rearward.

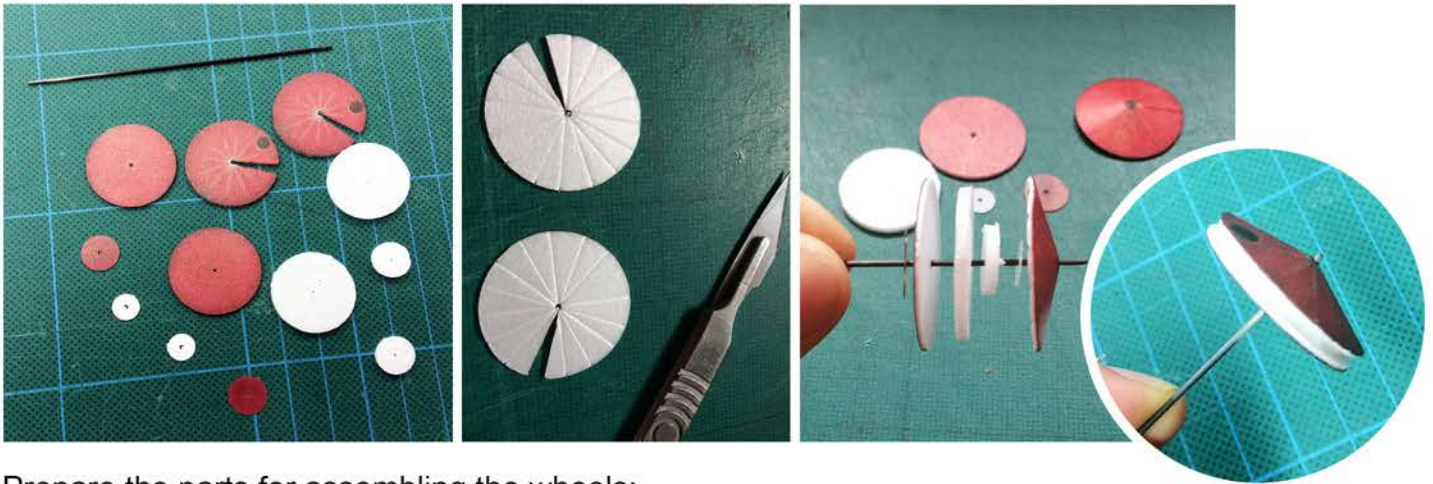
Use a needle threading tool (AKA Microaces rigging tool) to pull the rigging wire through from the top of the upper wing.



Cross the 2 rigging wires and pass to the opposite upper wing. Pull through and lock off on the P25 parts. Adjust the tension on both wires so that the tail is parallel with the wings and stabilised.

Glue the wires on the underside of the wing using aliphatic resin or foam safe CA. Once the glue has thoroughly cured, remove the excess wire with a fresh blade.

Stage 11 - Wheels



Prepare the parts for assembling the wheels:

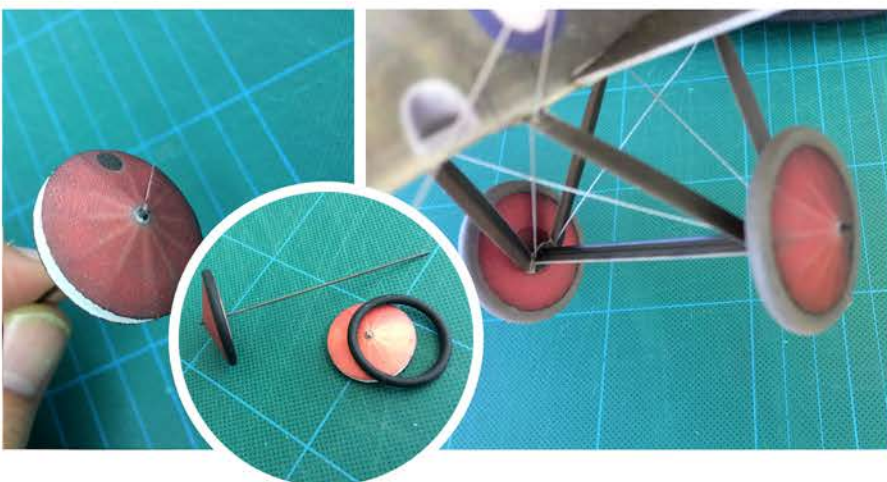
2 x Z15, 2 x Z16, 2 x P23, 2 x P24, 2 x D12 & 2 x D13

Cut an 85mm length of 1.0mm carbon fibre rod to form the axle. Sand lightly at the ends to form a blunt point to make it easier to slide the wheel parts on.

Score the unprinted side of 2 x Z15 and fold the scores. Glue the edges of the V together to form cones from the two parts.

Thread the parts onto the axle P23 | Z16 | D12 | D13 | P24 | Z15. Glue the parts together using a generous amount of adhesive (UHU por is recommended), utilising its contact adhesive properties to bring the parts together. Repeat the process for the other wheel. Allow the adhesive to fully dry.

NOTE: Do not glue the wheels to the axle at this time.

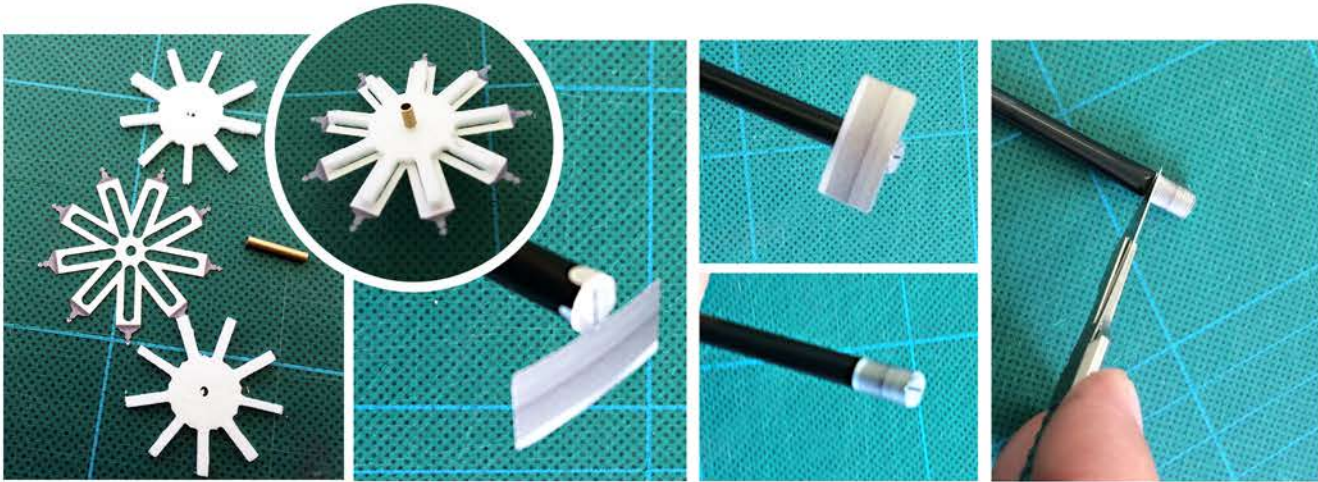


Before installing the wheels onto the undercarriage, glue one of the wheels to the end of the axle. Install the tyres onto the rims of the wheels.

NOTE: A drop of foam safe CA wicked around the inner rim; where the tyre meets the wheel can help retain the tyre onto the wheel if required.

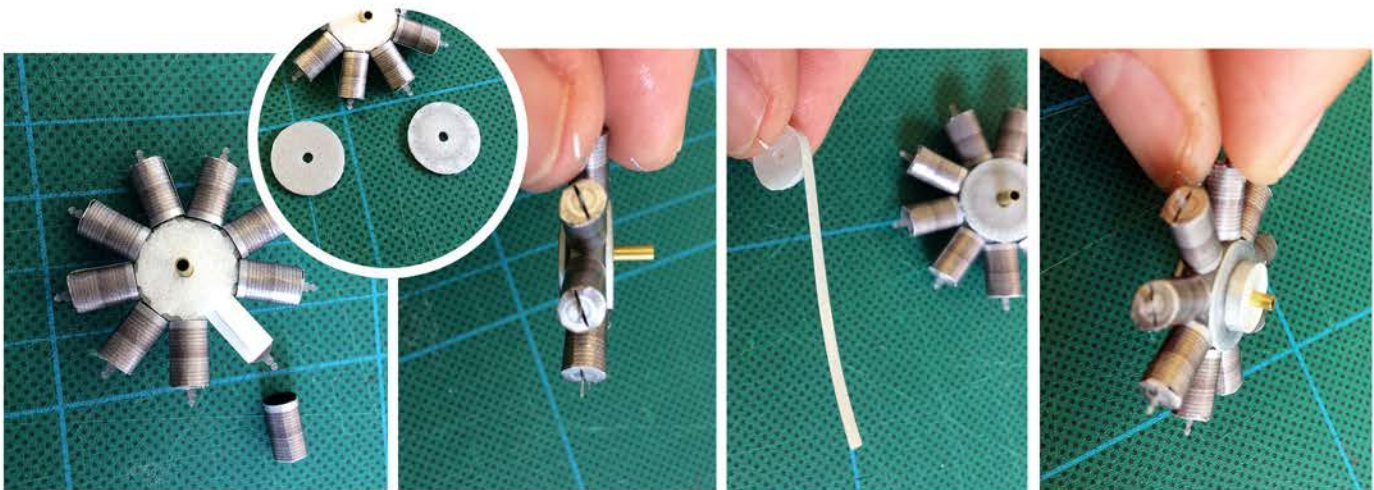
Slide the axle through the pre-cut holes in the undercarriage and secure the other wheel to the free end of the axle. The wheels should be installed so the axle together with the wheels spin freely on the undercarriage.

Stage 12 - Rotary Engine



Cut parts P26 and 2 x D14 and locate the 12mm brass tube supplied. Fit the tube through the central hole in P26 and then fit and fix the D14 parts to the back and front of the assembly.

Create the engine cylinders by wrapping the top of the 5mm diameter plastic tube with an S50 sticker. Follow the steps illustrated above for best practice. Repeat 8 more times to create 9 cylinders.

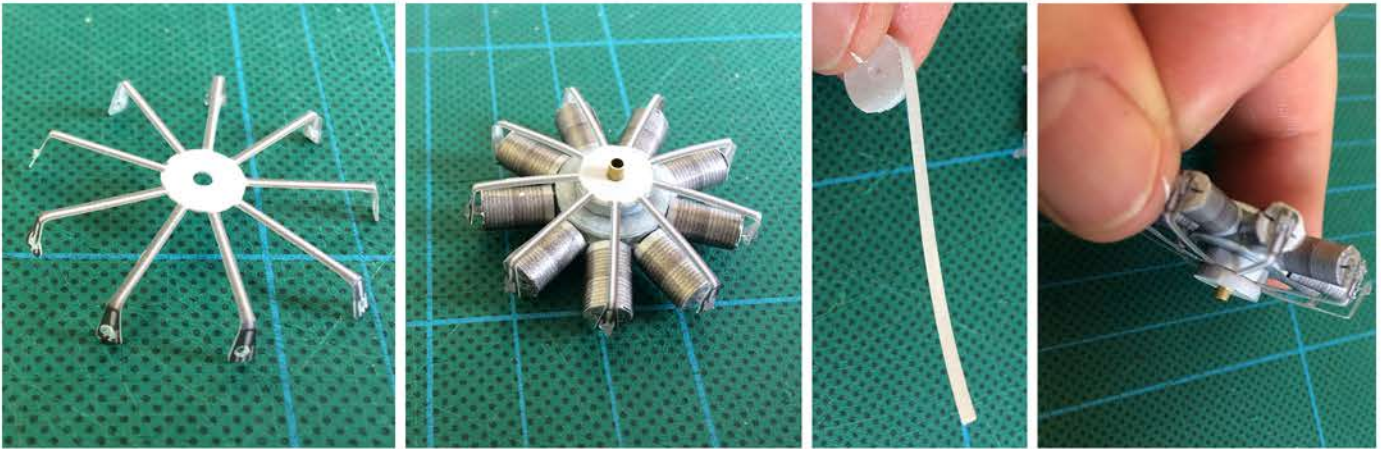


Install and secure the cylinders onto the motor assembly, slotting the plastic part through the pre-cut slit in the cylinder sticker top.

Slide 2 x Z17 onto either side of the assembly and secure with the detailed graphic facing outwards. Displace the brass tube so the majority of the exposed area is protruding from the front of the motor assembly.

Wrap one of the sticker S51 around the edge of one of the D15 parts and slide this over the brass tube at the front of the assembly and secure in place.

Stage 12 - Rotary Engine



Fold the ends of the con rod part P27 at right angles. Install P27 onto the front of the engine assembly and secure. Slot the protruding parts of each cylinder through the slots in the ends of the rods on P27. Secure each rod end in place with a drop of CA or aliphatic resin.

Wrap the edge of another D15 part with sticker S51 and install and secure onto the front of the engine assembly.



Remove Z18, P28 & P29 from their sprues.

Install Z18 then P29 onto the front of the engine assembly and secure.

Install P28 onto the back of the engine assembly and secure.

Set to one side for installation later on in the build.

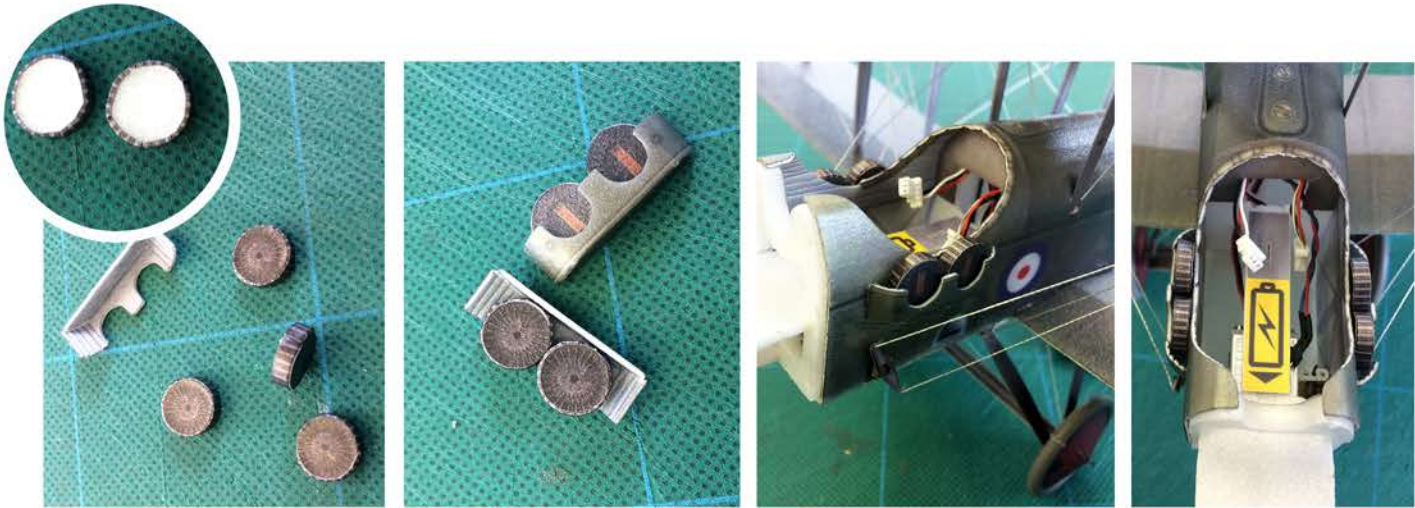
Stage 13 - Scale Detail



Gather the parts Z20 x 2, Z21 x 4 and D19 x 4 to create the port & starboard twin Lewis gun magazine holders.

Using the scoring & bevelling guide, prepare Z20 x 2 for shaping. Fold and glue to create two magazine holders.

Attach (Z21 to D19) x 4 to create the Lewis gun magazines and cover the edges of each with S54 x 4.

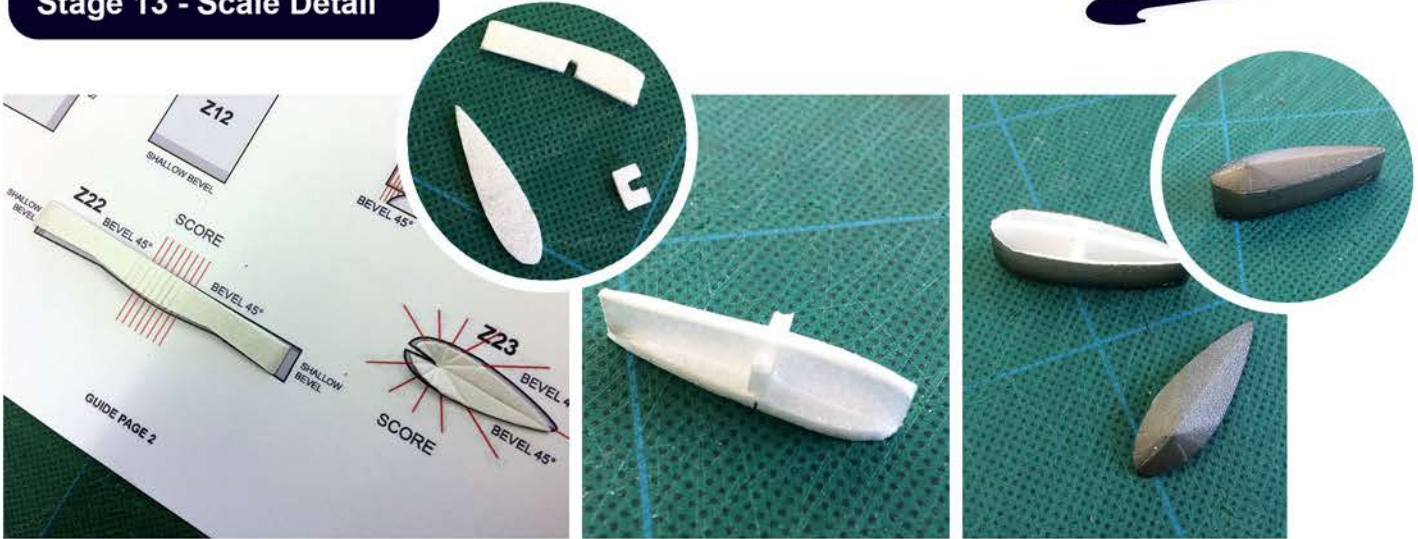


Fold the edges of the S54 stickers over the edge of the magazine then cover the back of each magazine with an S53 sticker.

Install the magazines into the holders as shown above and then attach the magazine assemblies to either side of the fuselage.

NOTE: There should be a feint dotted line to indicate position of each magazine on the sides of the fuselage.

Stage 13 - Scale Detail

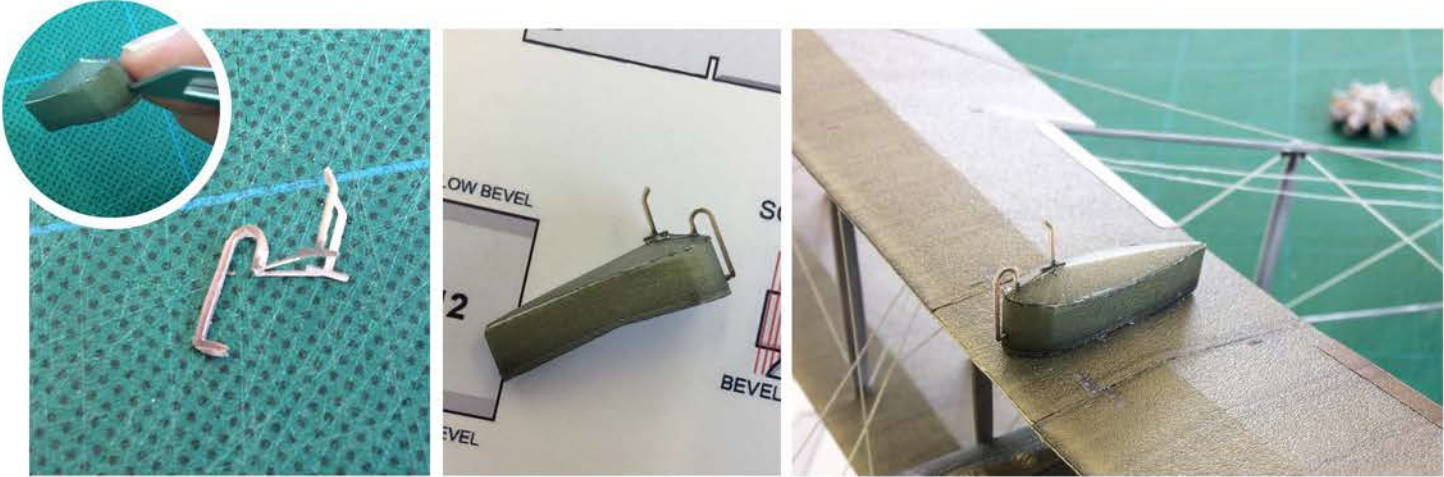


To create the emergency gravity fuel tank score and bevel Z22 and Z23 according to the guide. Assemble the tank's inner frame using parts D15, D16 & D17 as shown above.

Close up the V-shaped gap at the front of Z23 by first shaping the part; bending the foam at each score line and then glueing the gap together.

Bend each score and shape Z22. Wrap it around the frame with the base of Z22 flush with the bottom surface of the frame. Bring the ends of the part together at the rear of the structure.

Attach Z23 to the top of the assembly. It's worth dry fitting first and making any fitting adjustments by sanding the inner frame before finally glueing it in place.



Create a small slice at the base of the tank, on its front face, using the tip of a hobby knife.

Fold P30 and glue the two halves together. Insert the pointed tip of the lower tube of P30 into the slice created on the tank and secure the rest of the part along the centre line of the tank. (As seen in the images provided).

Mount the tank on the upper wing of the aircraft in the position marked.

Stage 13 - Scale Detail



Gather the parts to build the Lewis machine gun; P31, P32, P33, Z21 and D18.

Wrap one end of the supplied 3mm Ø clear plastic tube with sticker S52 and trim the tube to the end of the sticker to form the machine gun barrel jacket.

Fold parts P31, P32 & P33 and glue the halves together.

Glue Z21 & D18 together, wrap the edge with S54 and back with S53 to form the Lewis gun's ammunition magazine.

Slide P32 over the muzzle end of P31 and slide back to the breech. Insert the tab on P31 through the slot in P32 to secure.



Slide the barrel jacket over the muzzle of the assembly until it makes contact with P32. Cap the end of the barrel with P33 and secure all parts in place.

Using a craft knife create a slot in the underside of the magazine assembly. Attach the magazine to the machine gun by pushing the tab on the topside of P31 into the newly formed slot.

Put aside for installation later in the build.

Stage 13 - Scale Detail

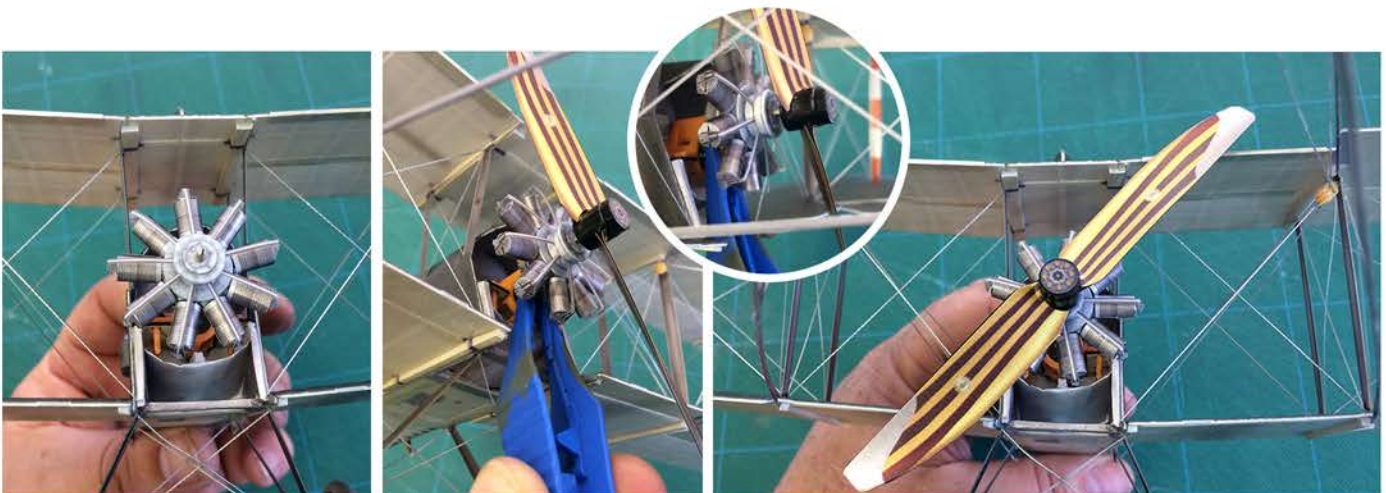


The recommended prop for the Microaces Airco DH.2 is the GWS4530R reverse pitch prop. This provides the correct direction of thrust with the motor turning in the direction it was designed to. **NOTE:** Using a normal pitch prop and running the motor in reverse may severely shorten the life of the motor.

Remove the nipple from the front of the prop adapter and attach P34 to create the prop boss.

Wrap each prop blade with a prop sticker. It is recommended that the stickers are floated onto each blade with application fluid; a mild, soapy water or (our preferred method) using 'tongue' water. This allows for adjustment during installation.

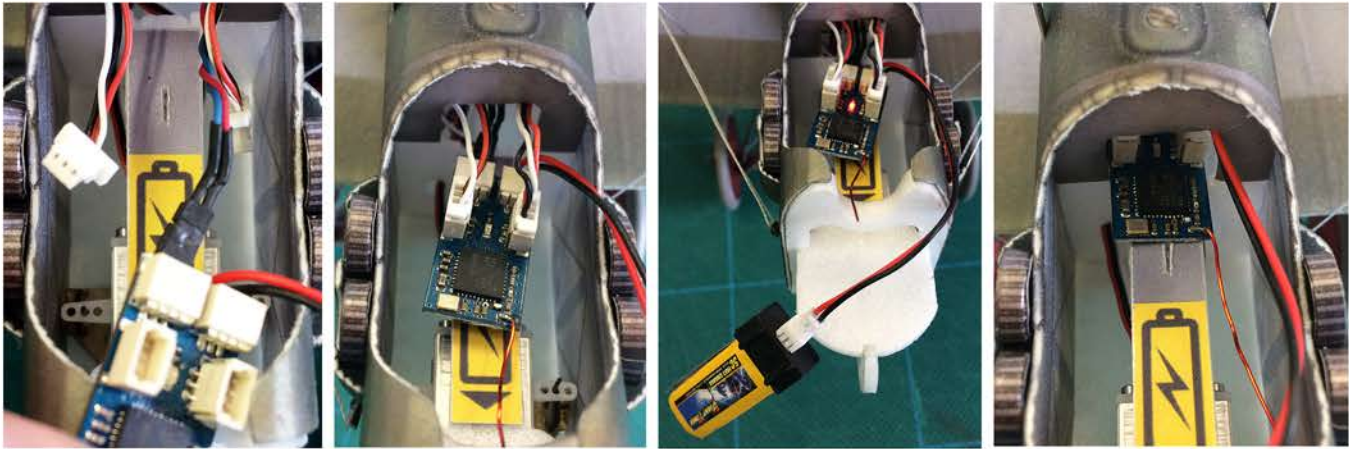
Set aside and allow the application fluid to dry before finessing the sticker installation.



Slide the dummy rotary engine over the prop shaft with the face of the motor facing the rear of the aircraft.

Using tweezers, hold the prop shaft steady while winding the prop on in a clockwise direction. Tighten until the motor is held in position and moves with the prop rotation.

Stage 14 - Controls



The recommended receiver for the Airco DH.2 is the Microaces Plug and Play Micro 4-7 channel receiver pictured above.

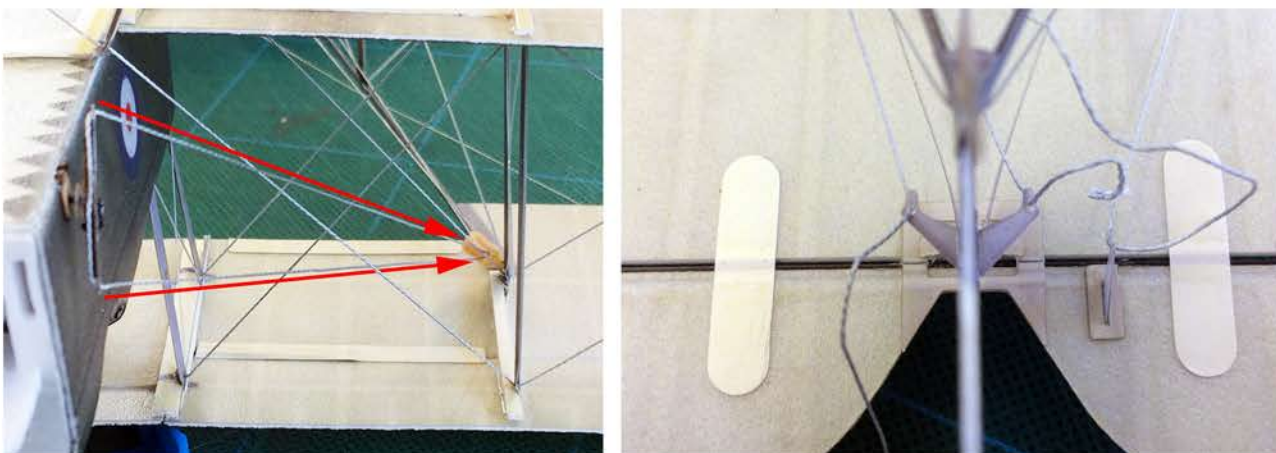
To install the receiver (Rx) first plug in the motor lead to the black socket on the Rx. **NOTE:** The correct orientation for the connect as seen in the left image above: red is right, blue is left.

Connect the two servos into the two upward facing sockets. Each servo should use the socket on the same side as itself.

Power the Rx up and if not already bound, bind to your transmitter (Tx). The starboard control arm should provide rudder control (in place of ailerons) and the port control arm should provide elevator control when moving the sticks on the Tx. **NOTE:** Hold onto the model and carefully throttle up on the Tx to ensure the motor/ESC is functioning correctly.

DON'T FORGET TO CENTRALIZE ELEVATOR AND RUDDER TRIM

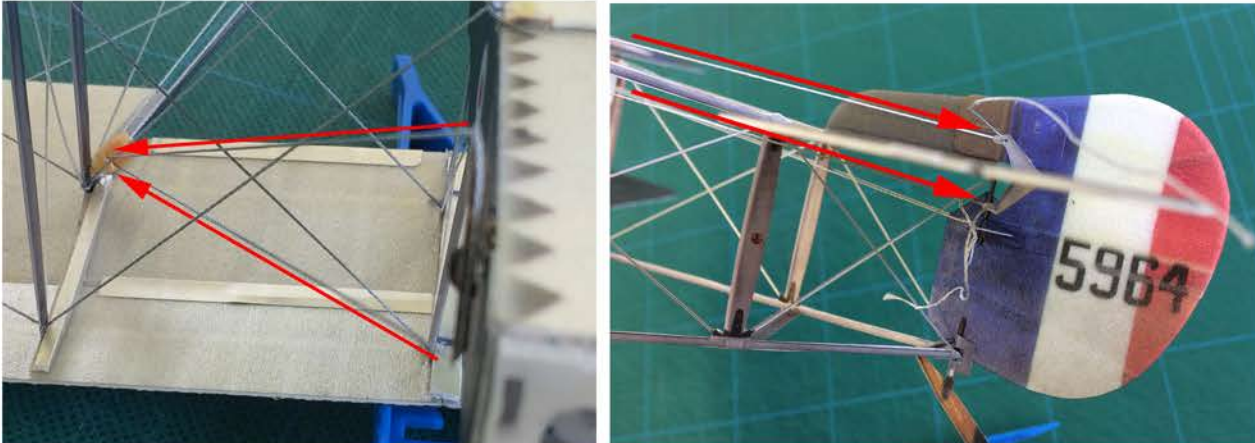
Once functionality of the controls is satisfactory move the wiring, connectors and half the Rx into the cavity behind the cockpit area and so the Rx clears the slot in the battery plate. There should be no need to secure the Rx as it should remain in place without adhesive.



Thread the control wires from the starboard side, through the 3D printed pulley on the inner interplane strut. **NOTE:** route the wires so they are clear of other wires and structures.

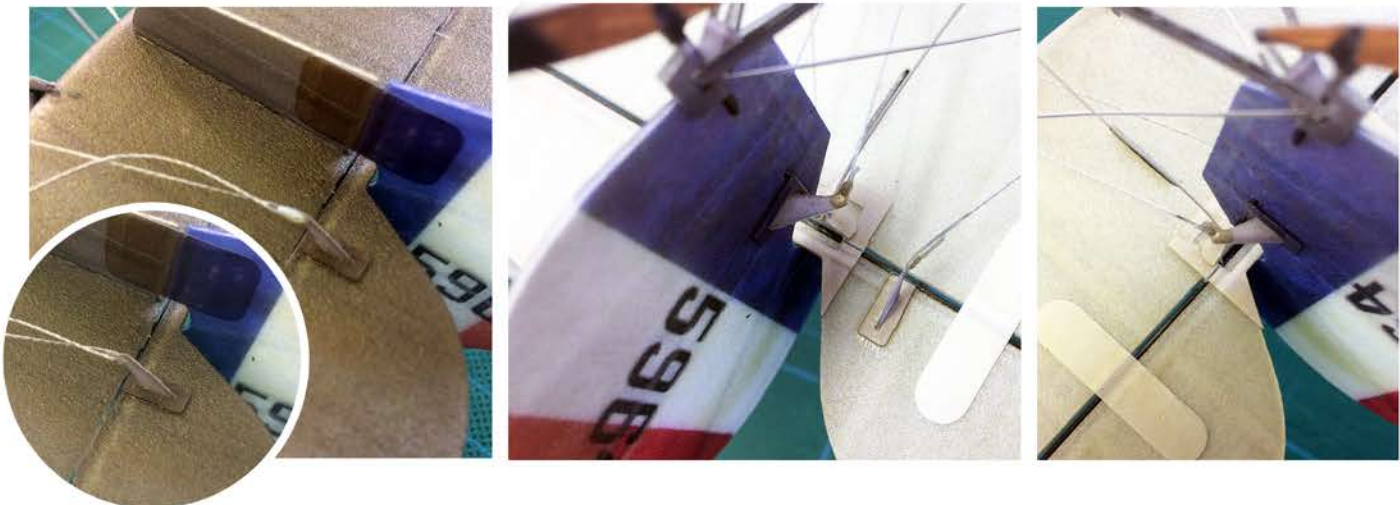
Run the control wires to the tail of the aircraft and thread one through the *rudder's* port control horn and the other through the *rudder's* starboard control horn. **NOTE:** route the wires so they are clear of other wires and structures.

Stage 14 - Controls



Thread the control wires from the port side, through the 3D printed pulley on the inner interplane strut. **NOTE:** route the wires so they are clear of other wires and structures.

Run the control wires to the tail of the aircraft and thread one through the elevator's upper control horn and the other through the elevator's lower control horn. **NOTE:** route the wires so they are clear of other wires and structures.



Pull one of the elevator control lines taught and lock it into the corresponding control horn by pulling the line back on itself. **NOTE:** DO NOT OVERTIGHTEN - just enough tension to create a very small deflection in the control surface toward the connected side. Overtightening can cause the tail to skew!

Glue the control wire to the control horn with a small amount of aliphatic or foam safe CA. Let it cure completely before tensioning and securing the opposite wire on the other side of the elevator. **NOTE:** Be aware of the twist that can occur from over tensioning. Keep a keen eye on the alignment of the tail during this tensioning process.

Repeat the process on the rudder to tension the control lines.

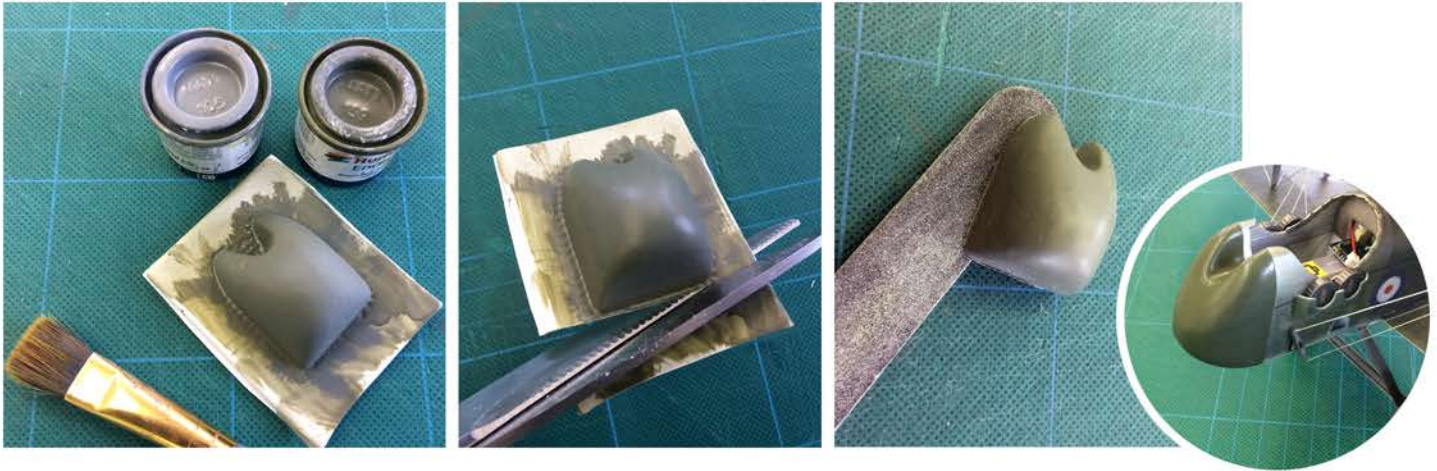
Using a fresh blade, *carefully* trim the excess line from the rudder and elevator control horns.



Stage 14 - Controls



Stage 15 - Finishing touches

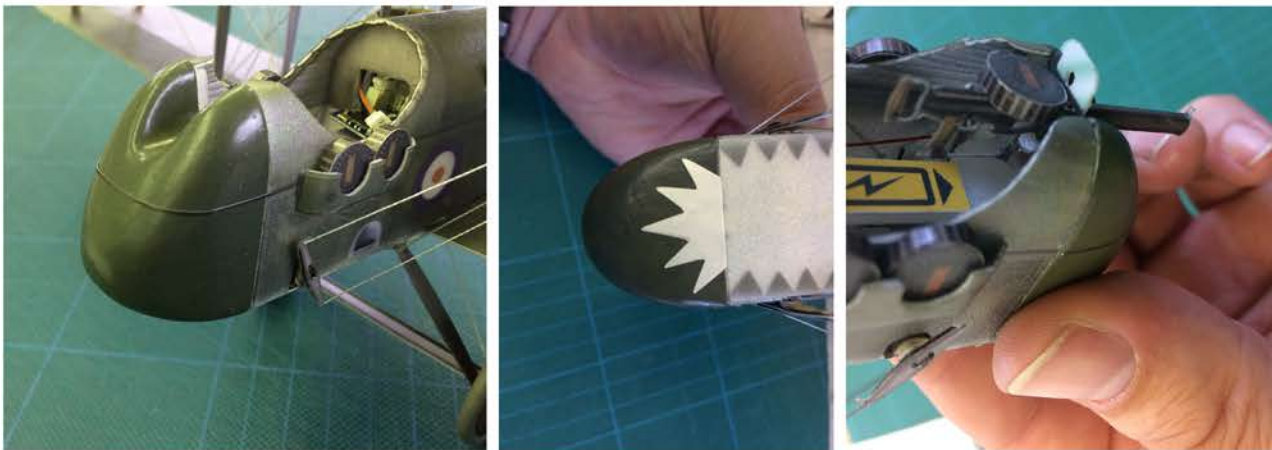


Paint the supplied polystyrene vac formed nose. The suggested colour is a mix of Matt Ocean Grey and Matt Khaki Drab in ratio of 4:1 grey to green. Enamel or acrylic paint can be used.

A protective matt or eggshell varnish is also recommended if available.

Cut the part from the excess material. This can be achieved with scissors to roughly remove the excess then a craft knife and sanding stick to finish the edges.

Attach the nose to the front of the fuselage.



Wrap sticker S55 around the nose cone to create the continuation of the seam from the main fuselage. Attach sticker S56 to the underside of the nose cone as shown above.

Attach the Lewis gun to the front bulkhead by pushing the forward facing tab of the machine gun support structure into the slot in the centre.

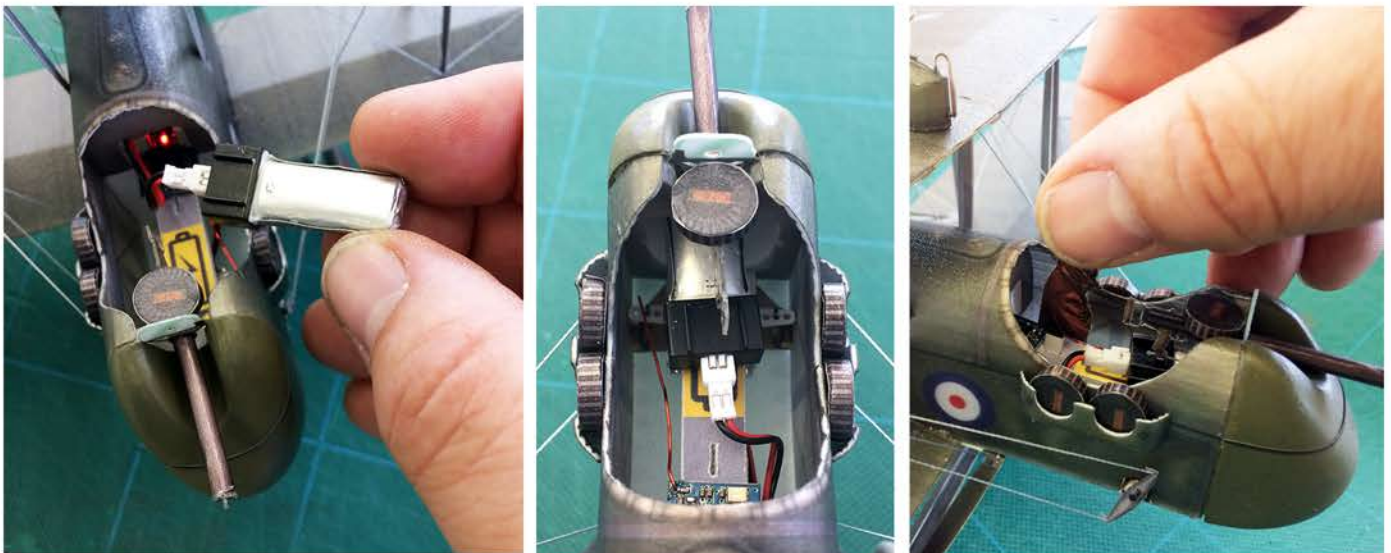
Stage 15 - Finishing Touches



Cut the profile pilot figure supplied , fold and glue the two halves together.

The pilot can be installed at this stage by pushing the tab on the base of the pilot into the slot in the battery tray. However, it is designed to be removeable to facilitate easier battery installation and extraction.

Stage 16 - Battery Placement

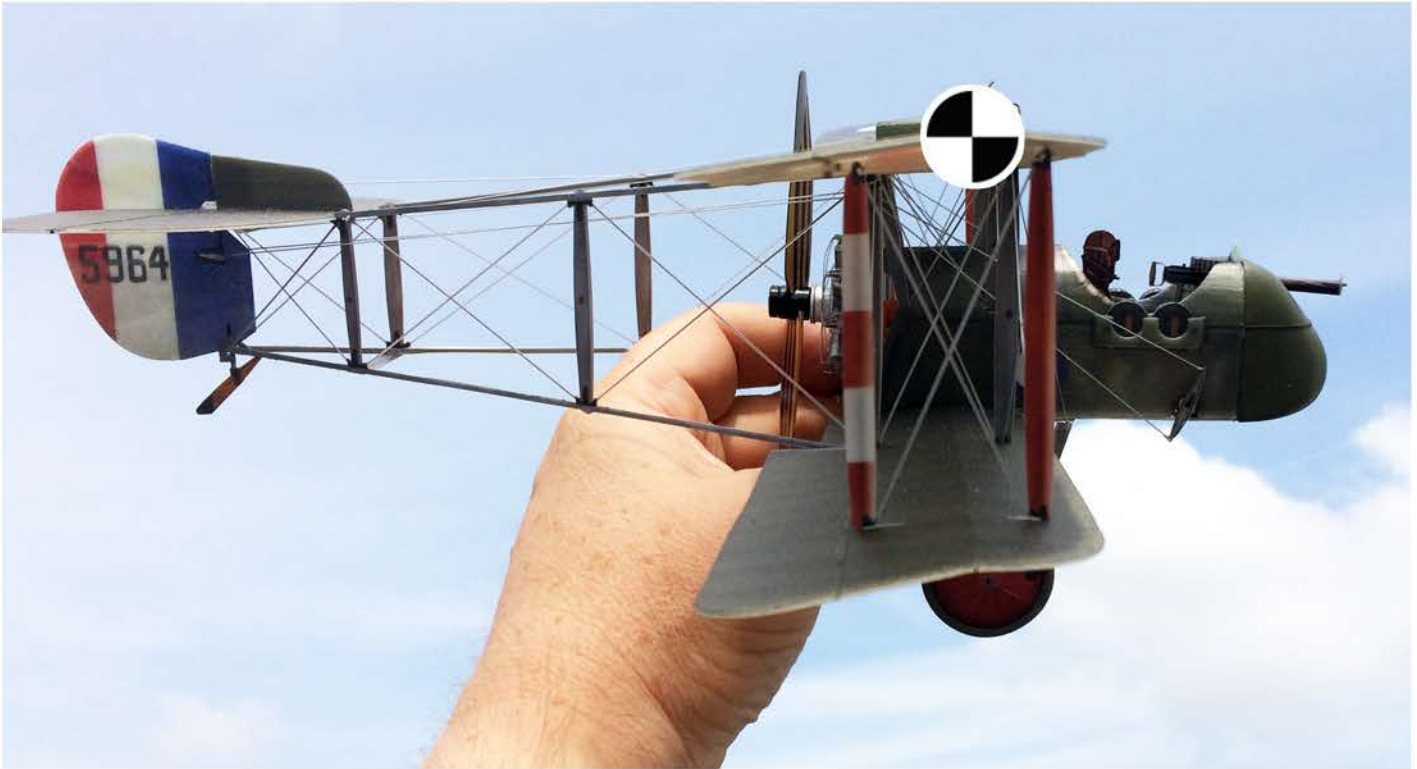


The recommended battery for the Airco DH.2 is a 100mAh or 130mAh Lipo.

To facilitate an easy installation, remove pilot figure, plug battery into the Rx battery connector and insert the end of the battery into the cavity in the nose of the aircraft.

Re-install the pilot into position.

Stage 17 - Centre of Gravity



With battery installed, the Centre of Gravity should be located on the crease of the top wing.

The Microaces Airco DH.2 normally builds slightly nose heavy.

After initial test glides or the maiden flight, if the model requires tail weight, a good position to add it is onto the rear cross member show in the picture opposite.



Happy Flying!

Airco DH.2 Assembly Guide



