

DemonGti's **EDGE 540**



Wingspan:	1170mm
Flying Weight:	± 850g
Wing Area:	460 sq. inch
Wing Loading:	±9.4 oz/sq.ft

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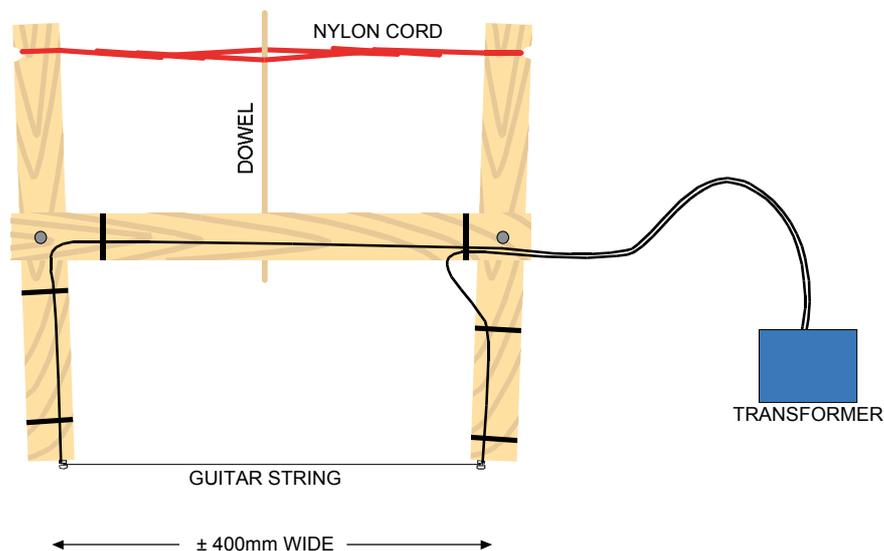
Thank you for showing interest in building my EDGE 540. The build is based on the same build techniques as my BIG FLAT ULTIMATE, so if you managed to successfully build and fly the BFU then this aircraft is definitely for you!

Required:

10mm Polystyrene sheet (2x 600x1200mm)
6mm dowel or carbon fibre tube if you wish
10 x 10 x 80mm piece of balsa
Aluminium flat bar for landing gear
Fast drying solvent free glue (Pritt Power Gel)
Polyurethane glue (Alcolin Xtreme) [PU]
Pump action Atomiser filled with water
Craft knife with a couple of new blades
Hot wire or similar tool that can make wide, straight cuts
Flat sanding block with ± 80 grit paper
Masking tape

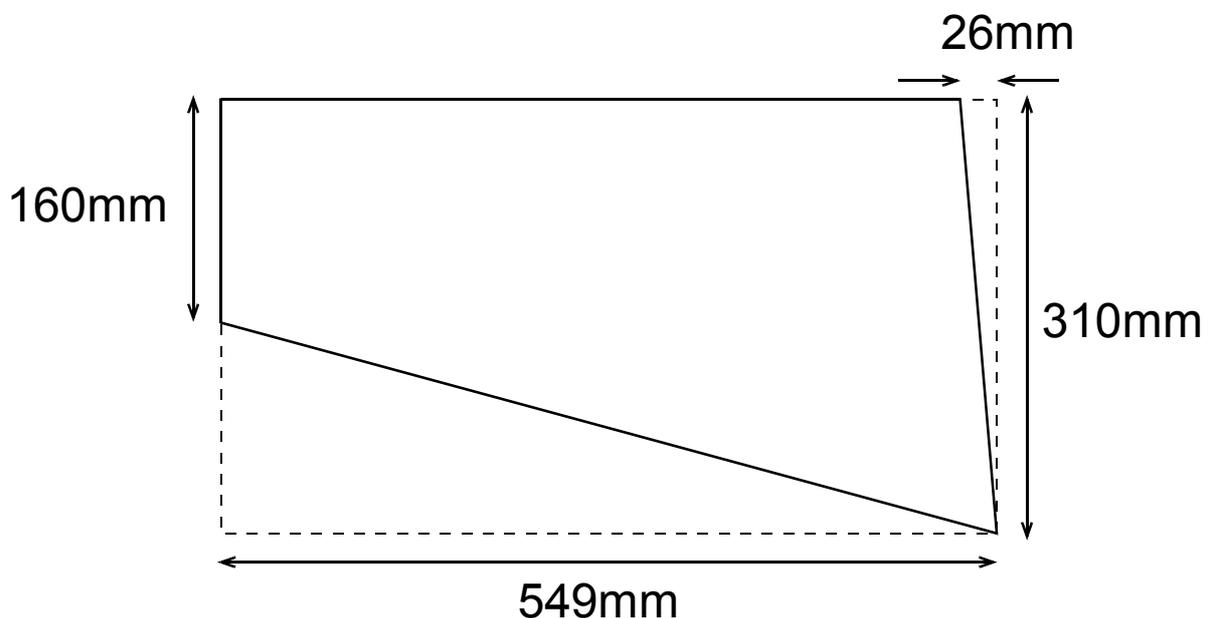
4x 9g servos
2 1/4 inch or 57mm electric spinner
Power system capable of $\pm 300W$
I used a HXT C3536/1000kv outrunner
Turnigy Plush 30A ESC
APC 12 x 6 thin electric propeller
LoongMax 2250mAh 3S Lipo

NOTE: I made your own crude hotwire using an "H" frame of wood, a piece of nylon wash line cord for tension, a short dowel, a steel guitar string and a few zip ties. I powered it using a Scalextric 12v transformer. It might not be the best way.... but it works.

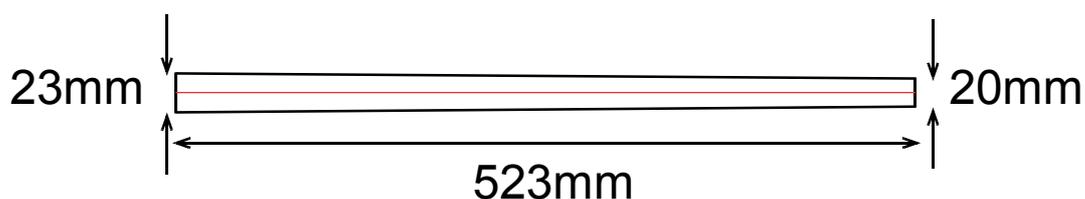


Wings

- 1** Mark out a rectangle 549 x 310mm
Mark the width of the wing tip at 160mm and the angle at which the wing meets the fuselage.
- 2** Once you have one wing panel, use it to mark out the others.
You need 4 identical pieces

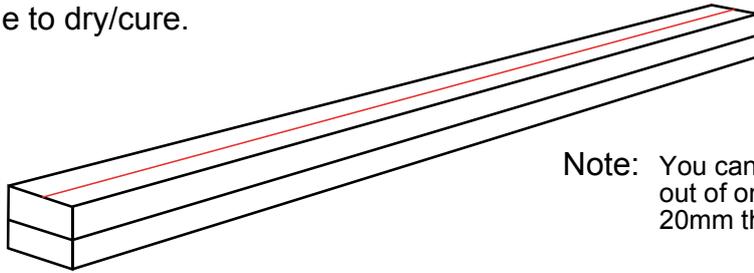


- 3** Mark a centre line down the entire trailing edge of all 4 wing panels
- 4** Cut 4 tapered strips 23/20 x 523mm (Leading Edges)
- 5** Mark 2 of them with a centre line



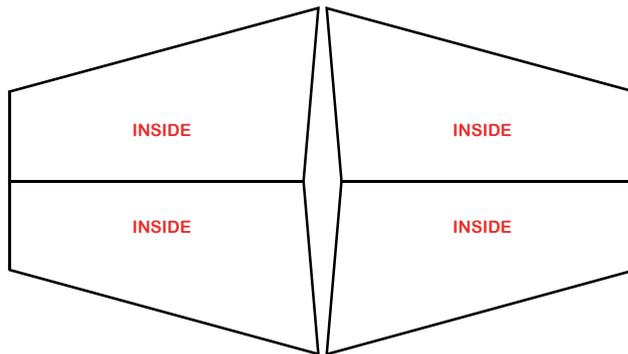
- 6** Glue the 2 marked strips on top of the unmarked ones using PU glue. You can spray water onto the join with your atomiser to speed up the process as water is a catalyst for polyurethane glue. **(Beware, PU glue expands while curing. Weight parts down with a book or similar to prevent parts from moving)**

Set aside to dry/cure.

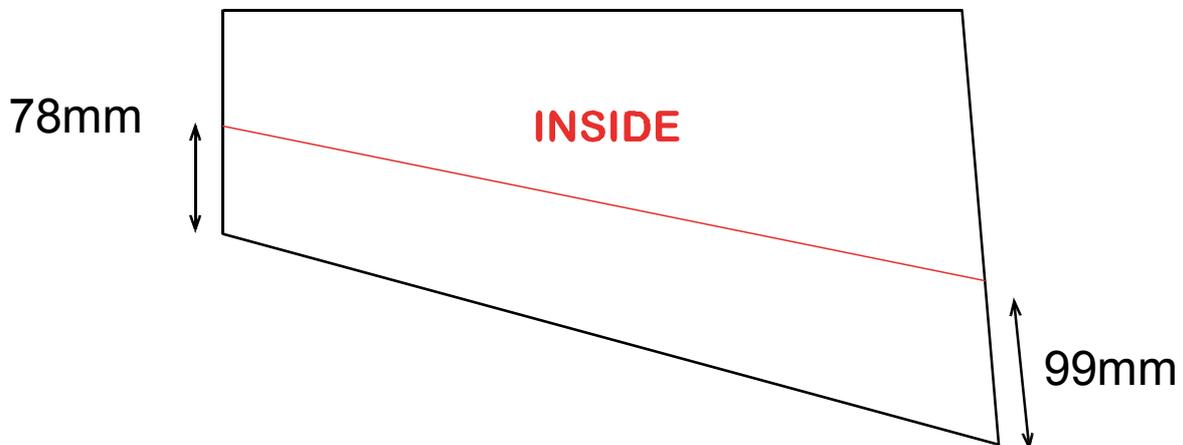


Note: You can make these leading edges out of one piece if you have suitable 20mm thick material

- 7** Lay the wing panels out as pictured and mark all of them with "inside".

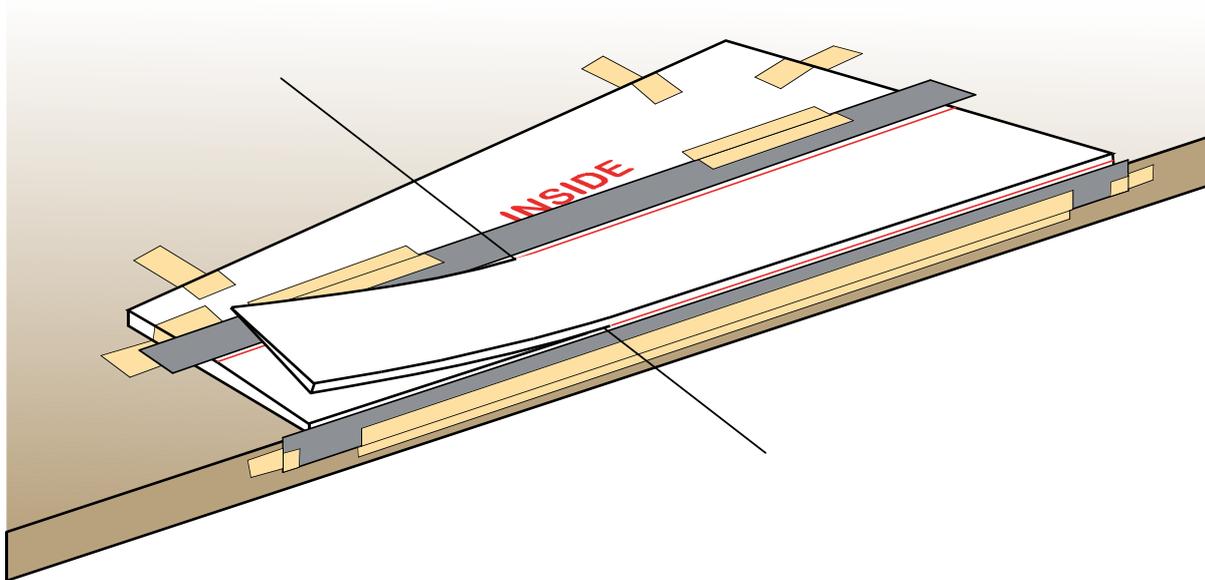


- 8** Mark from the trailing edge, 78mm on the wing tip and 99mm at the root. Draw a line here. Make sure you draw on the *inside* of all 4 wing panels

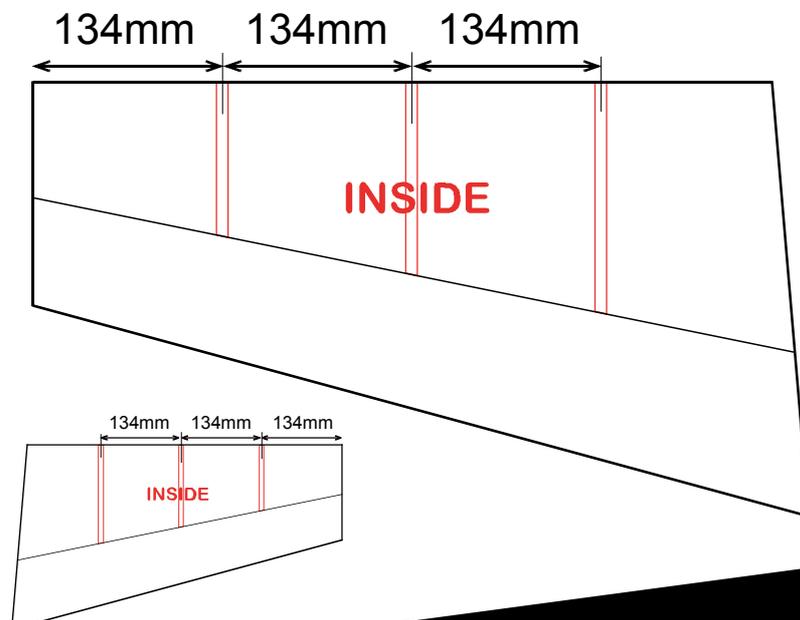


- 9** Fix two 600mm straight edges to a wing panel with masking tape parallel to the previous lines you made on the inside and the trailing edge. Securing the wing panel to your work surface is a handy way to get this right. Cut this wedge off the wing panel with your hot wire or appropriate tool making sure that the cut will be on the lines.

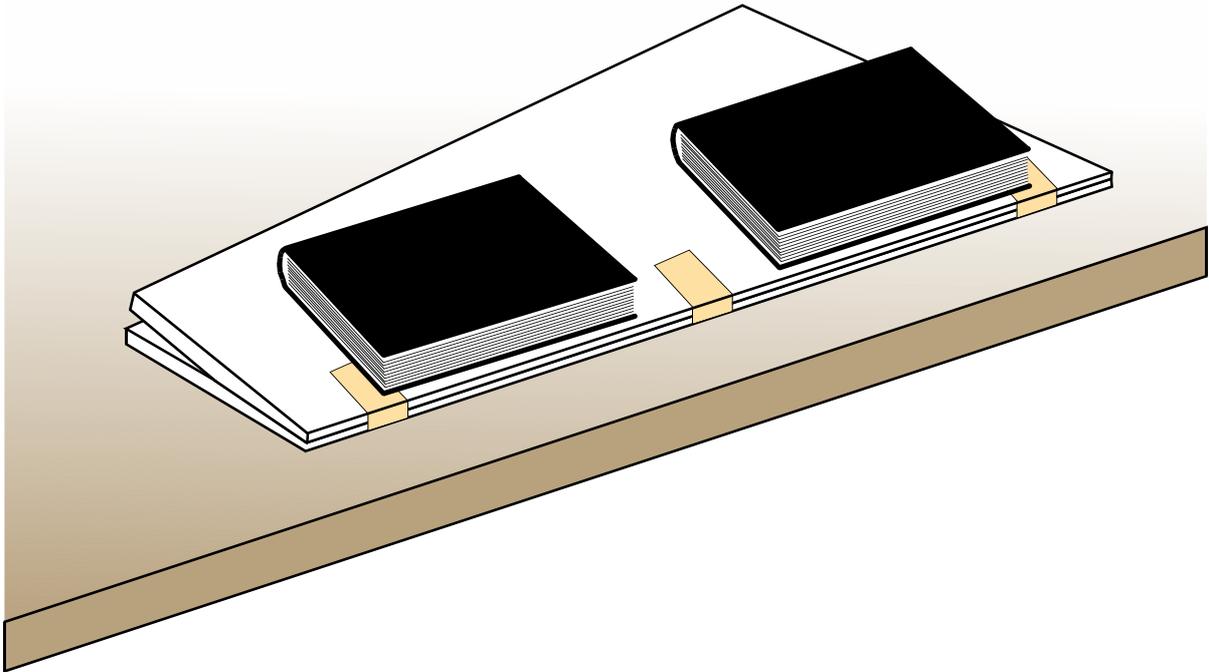
Repeat this step for all four wing sections.



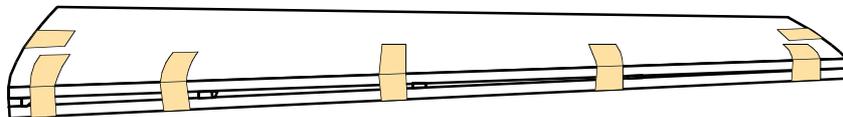
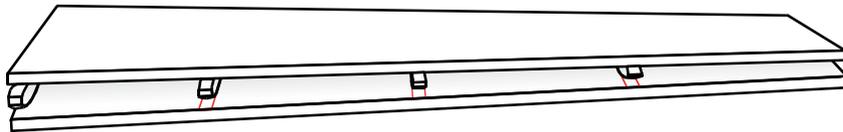
- 10** On two opposite wing panels, mark four divisions of 134mm, starting from the wing tip. Make a mark 5mm on either side of these divisions and draw lines perpendicular the leading edge.



- 11** Use PU glue to stick the wing panels together where you have just cut them and tape them in place. Use a few books as weight to keep the wing true.



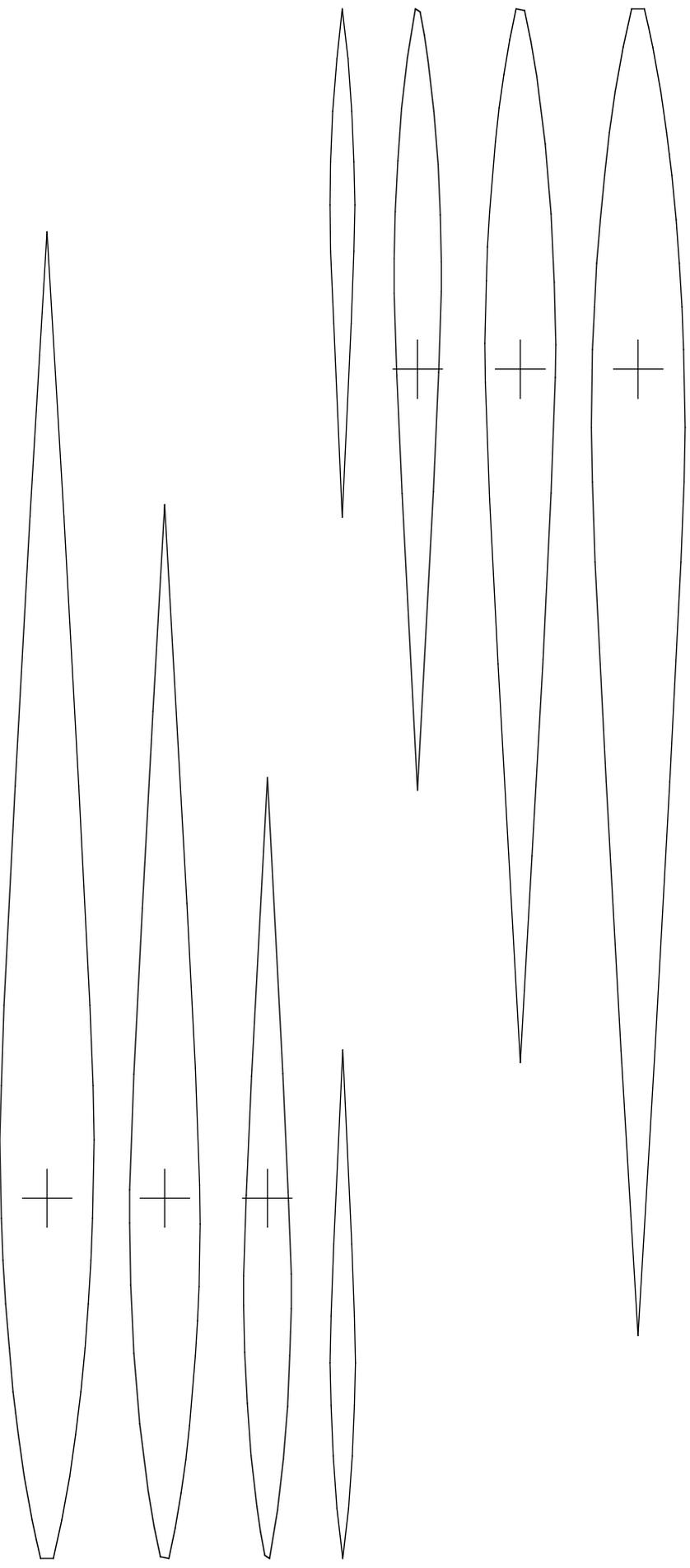
- 12** Print out page 7 and cut out the wing ribs. Using PU glue, insert ribs into the wings using the previously made lines as a guide with the "X"s facing the wing root. NOTE: there is no rib at the wing tip, it just gets glued directly together. Tape the wing closed to keep it secure while the glue cures. You can spray on water to accelerate this process. Take care to glue the wing true, try not to introduce any twist when you tape them to cure. (If you use water, do not get the masking tape wet!)



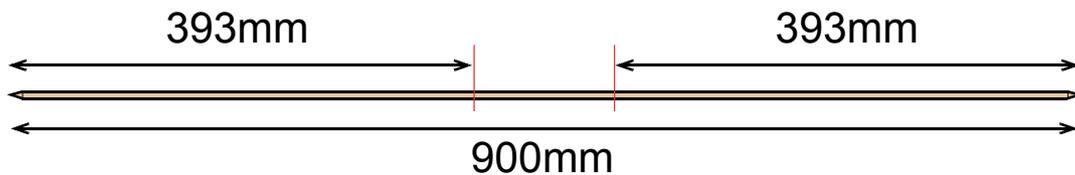
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Wing ribs

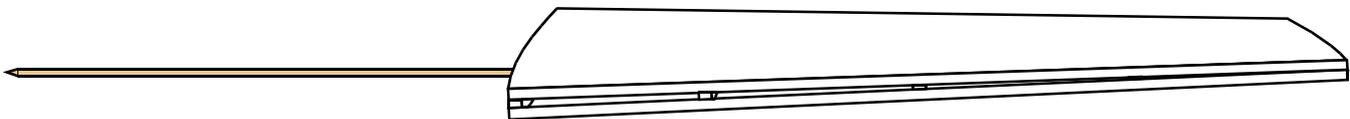
Print this page and cut these out of 10mm Polystyrene sheet.
Mark the centre of the "X" on each rib.



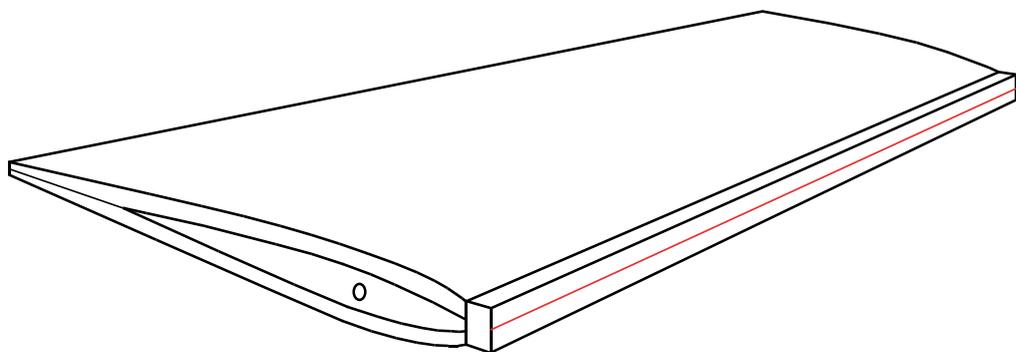
- 13** Cut your 6mm dowel to 900mm long. Mark off 393mm from each end. Sharpen the ends with a pencil sharpener.



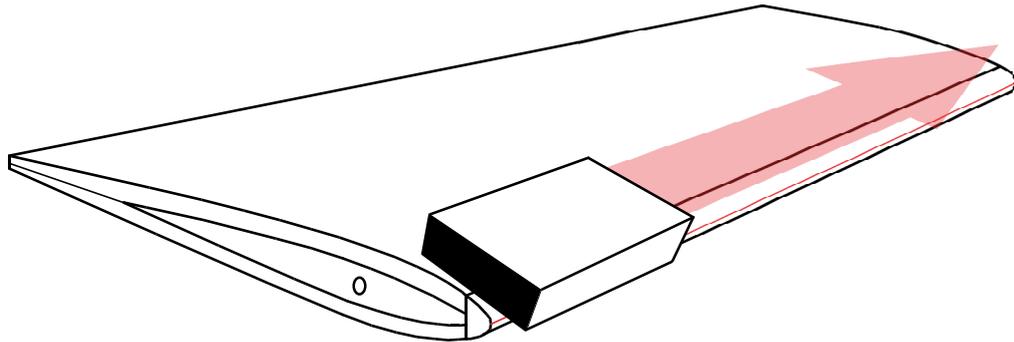
- 14** While the leading edge of the wing is still open, use a twisting motion to insert the sharpened dowel into the wing through the centre of the "X" on each rib. Bore through the first three ribs from the root but **DO NOT** bore through the fourth rib, just let the point of the dowel pierce it. Remove the dowel.
- 15** Use PU glue to fix the dowel into **ONE** wing. Insert it all the way to the 393mm mark you previously made on the dowel. Allow to cure.



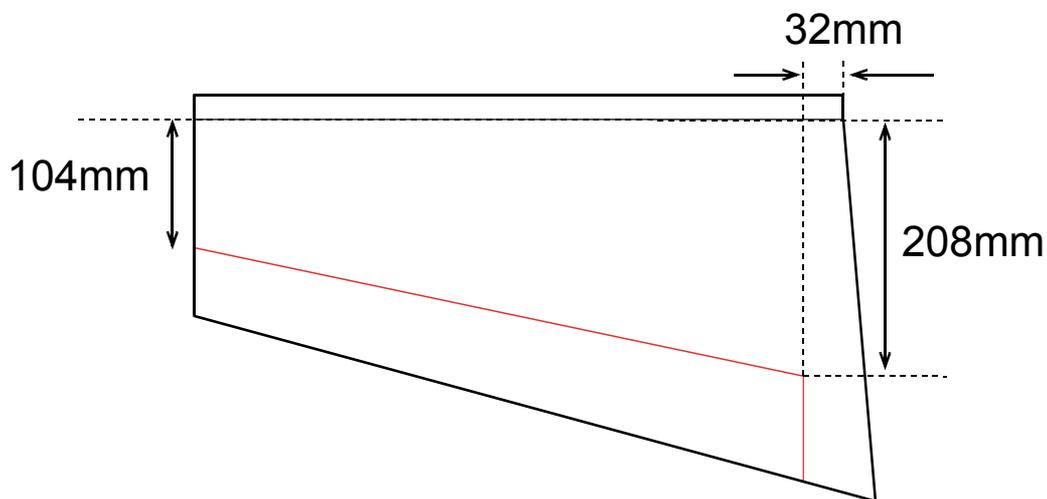
- 16** Square the open front edge of both wings with your sanding block and secure leading edge in place with PU glue with the previously marked centre line facing forward. Tape in position to cure.



- 17** Use your sanding block to carefully shape the leading edges of both wings.
NOTE: These wings are symmetrical so take care to shape the bottom and top of the leading edges as close to equal as possible. Long sanding strokes in **one direction** across the entire wing will help to keep the shape constant.



- 18** Mark out ailerons on both sides of the wings. Cut them out carefully trying to keep the cut perpendicular with the centre plane of the wing.



- 19** Remove 2mm of material from the inner end of both ailerons and bevel leading edges the same way we did for the rudder of the BFU.

