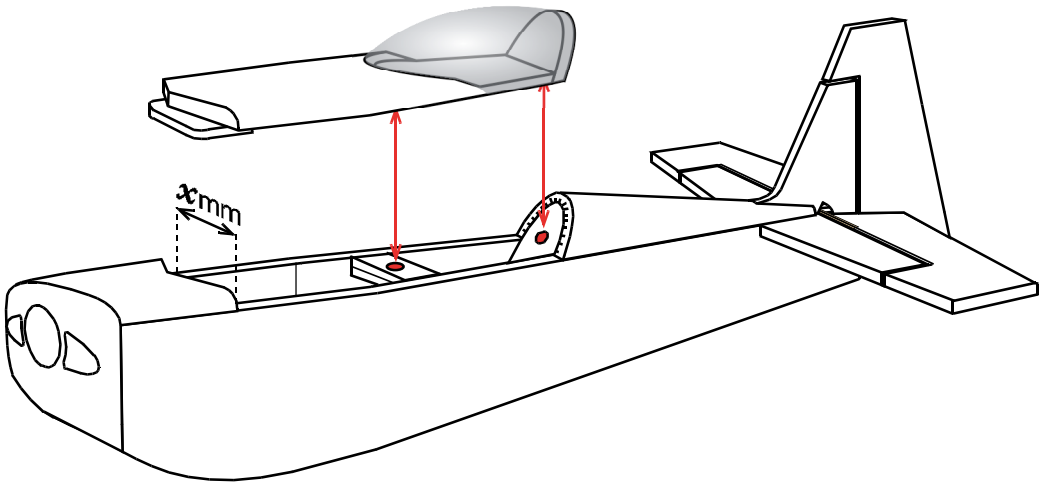
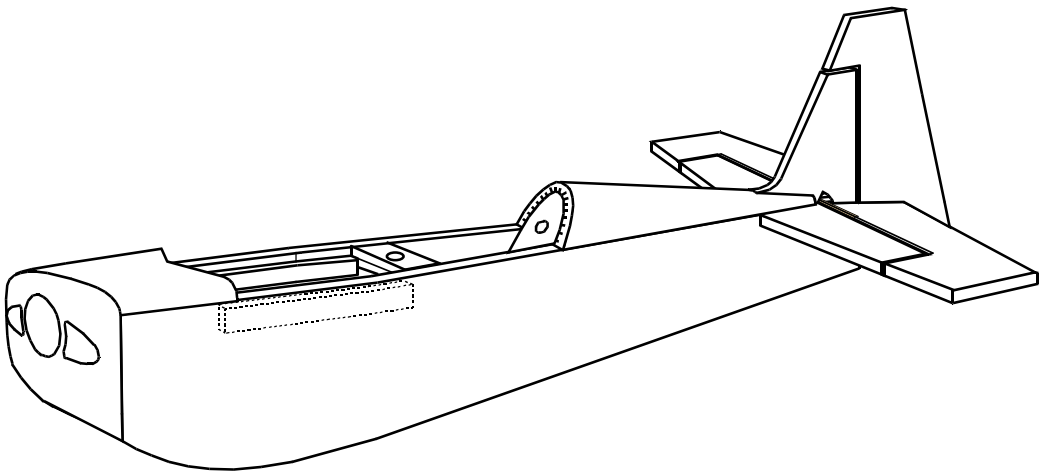
55 Cut a 50 x ***x*** mm panel and glue it to the underside of the hatch on the front end. Make sure it is centralised. Cut out recesses to glue in NEO magnets and washers on matching parts of the hatch and fuselage respectively.
Glue the magnets and washers in with epoxy and cover with a generous piece of clear tape.



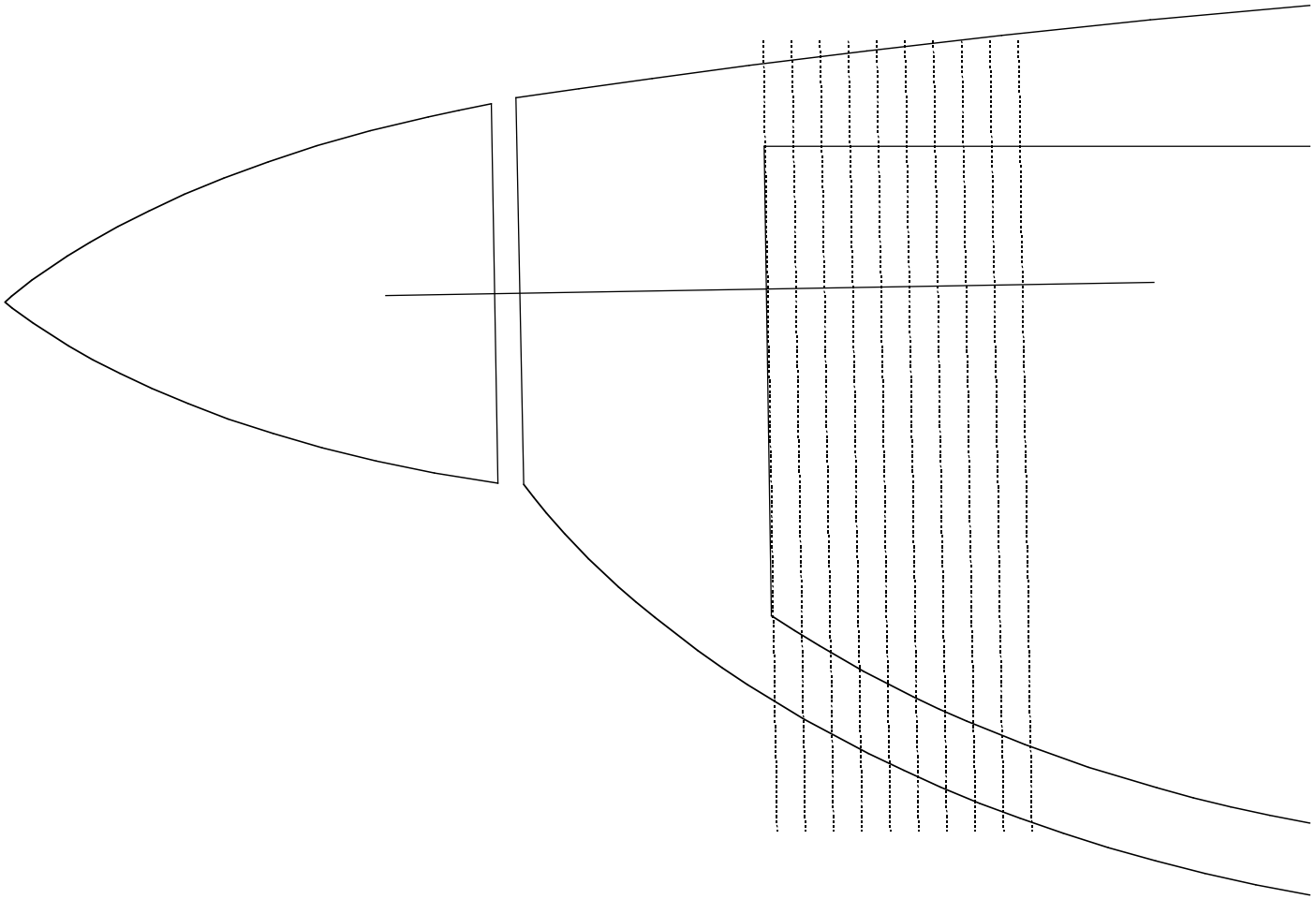
56 Cut two pieces 10 x 25 x 200mm and fit them with PU glue to the inside of the fuselage infront of the brace 10mm lower than the top of the fuselage. Cut a piece of waste material to wedge between them to keep them from moving while the glue cures.



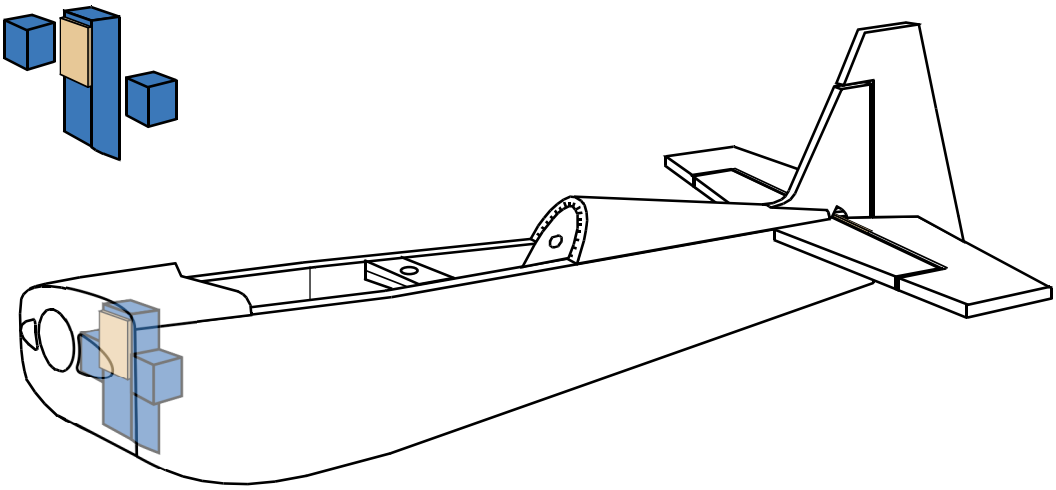
DemonGti's EDGE 540

Motor mount

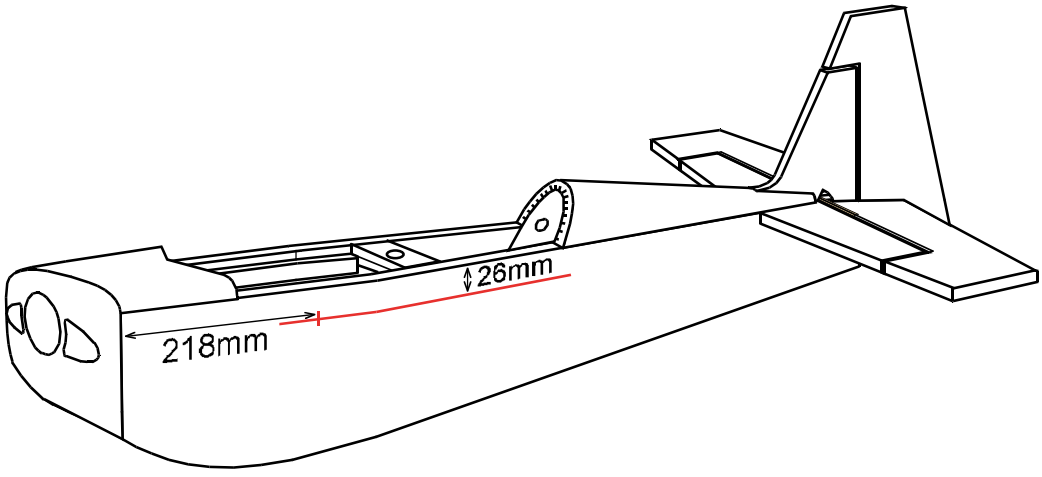
Use this to determine the shape of your motor mount. The total length of your intended motor will determine the position of your mount. Cut appropriate shape from 30 x 50mm dense blue foam to fit fuselage.



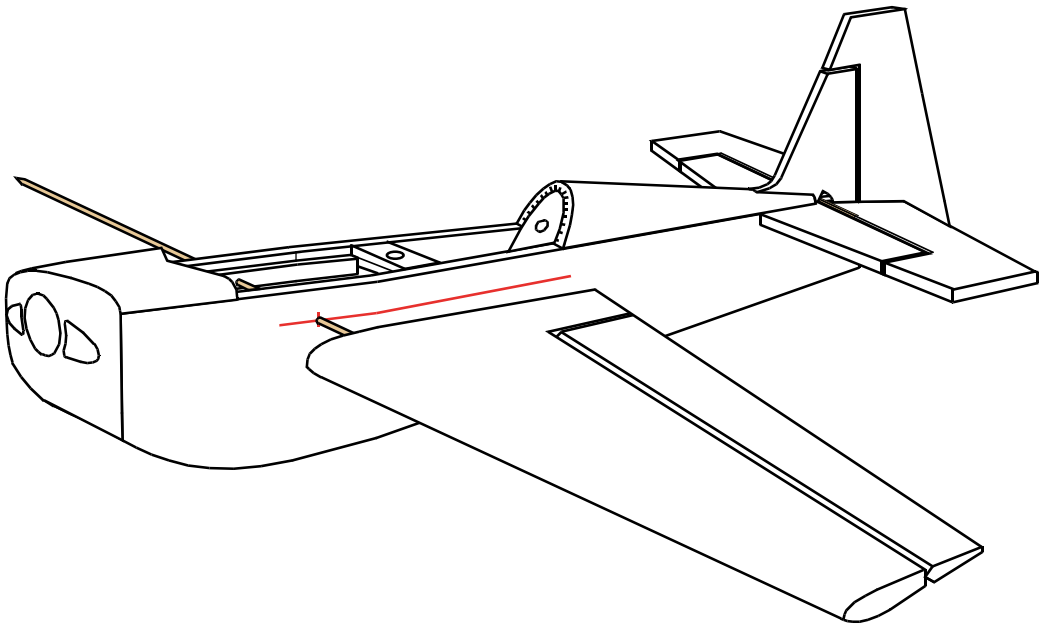
57 Cut and glue a 50 x 50mm piece of 3mm plywood to the front of your motor mount with PU glue. Mark the centre. Cut two equal piece of blue foam to glue on either side of the motor mount to secure the mount in the centre of the fuselage. Dry fit the mount and mark holes to attach the motor so that the motor will end up in the centre of the nose hole. Glue mount assembly in place with PU glue.



58 Measure and draw a line on the outside of both sides of the fuselage 26mm lower than the top of the fuselage. Make a mark on this line 218mm from the nose joint.



59 Sharpen the off-cut of your dowel and with a twisting motion bore a hole through both sides of the fuselage where the 218mm mark is. Now glue the wings to the fuselage making sure the centre of the trailing edge of the wing matches up with the previously drawn line on the side of the fuselage. (don't forget to make a little hole for your servo leads to enter the fuselage) Make sure you get a sufficient amount of glue on the dowel when inserting it into the second wing. Tape in possition to cure.



60 Bend up the landing gear from a 20 x 2mm aluminium flat bar. Follow the diagram on page 36 to get your LG symetrical. Fit ±42mm diameter wheels.

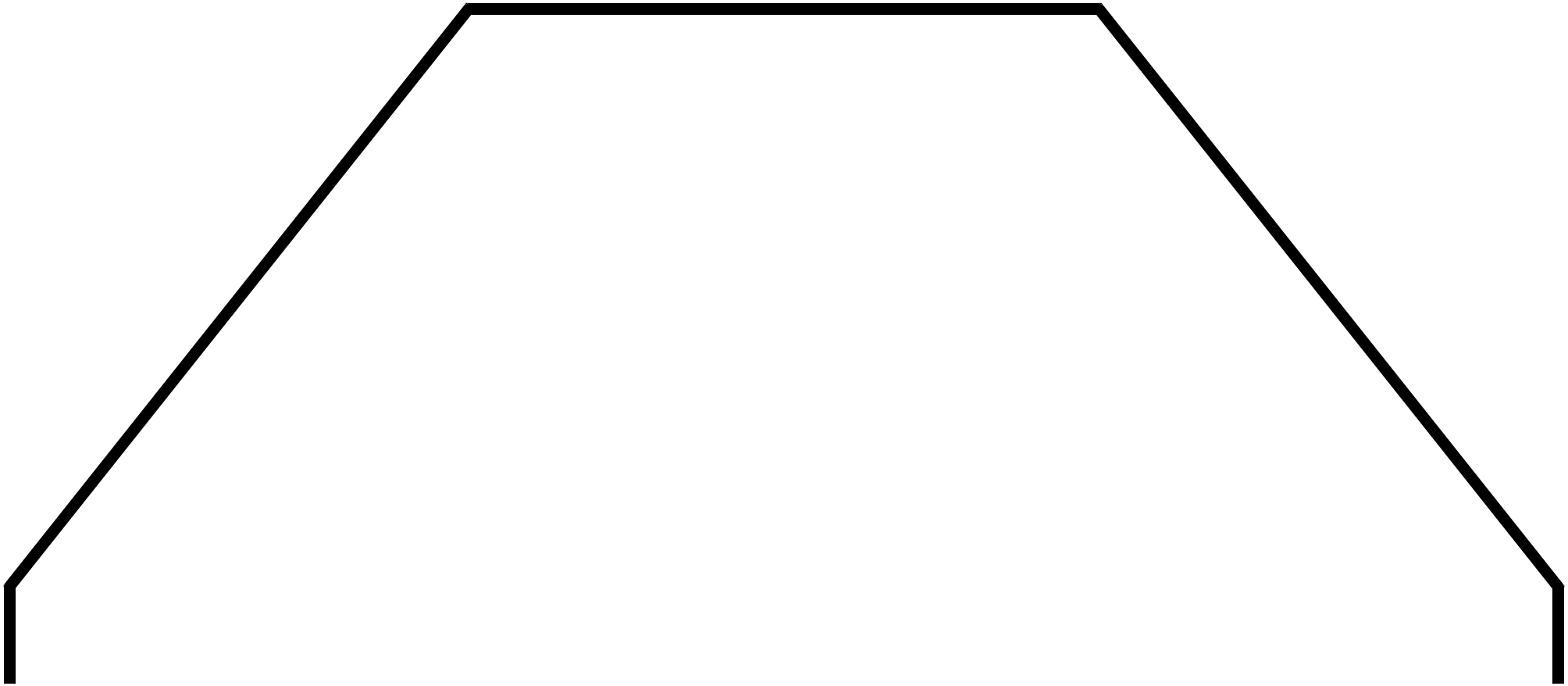
61 Cut and sand the wheel pants if you want to fit them, it is not recomended for grass runways.

62 Fit your motor and electronics, set your end points. Paint with water based paint.

DemonGti's EDGE 540

Landing Gear

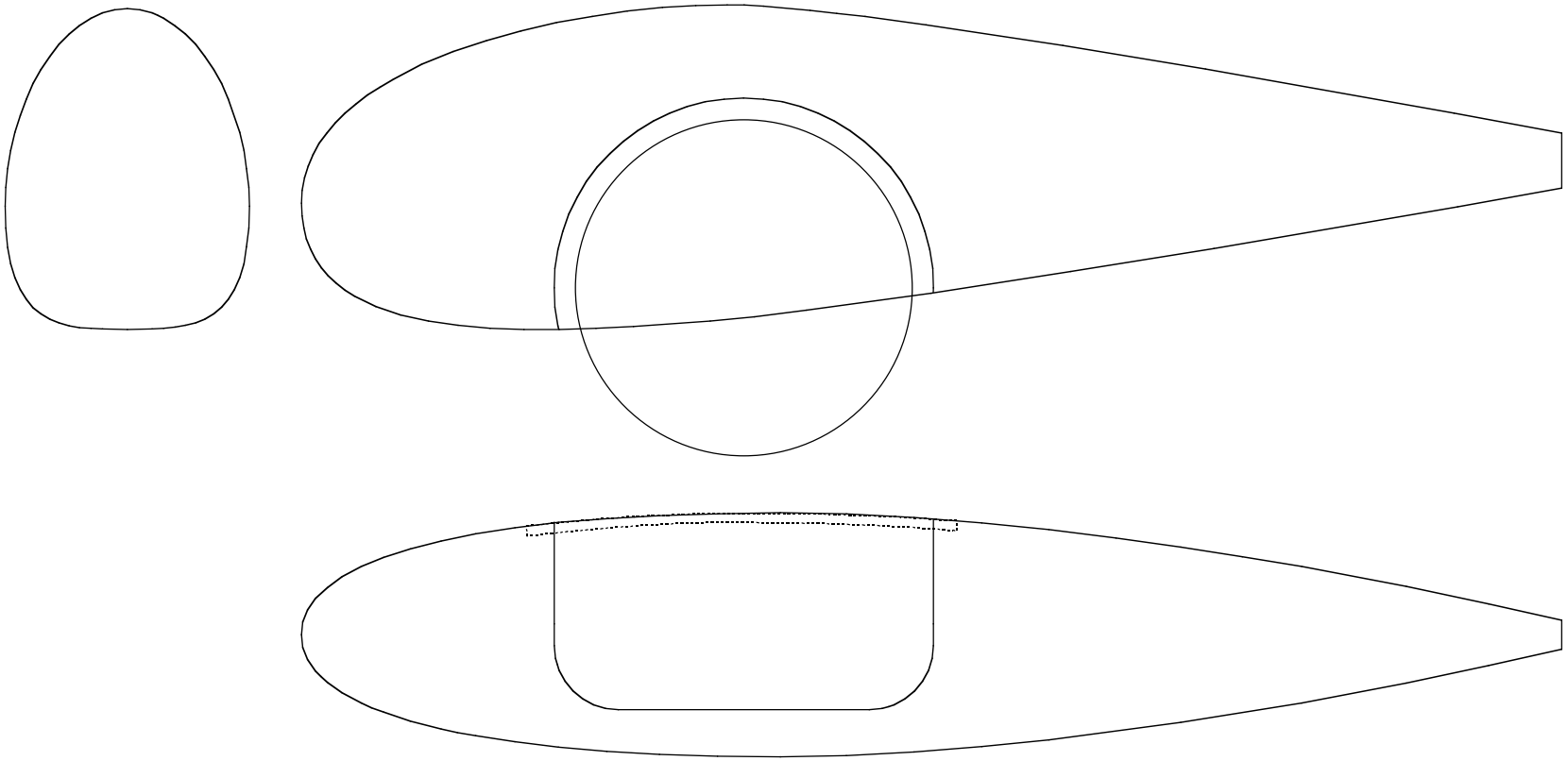
Use this to bend you landing gear to the correct shape.



DemonGti's EDGE 540

Wheel Pants

This is the front, side and top view of the wheel pants. Use this to cut and sand wheel pants to shape. Note: you will need two oppiosite shapes. Close the open side of the pant with thin ply or a 1.5 - 2mm plastic. Use this wood/plastic side to mount pant to landing gear.



DemonGti's EDGE 540

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

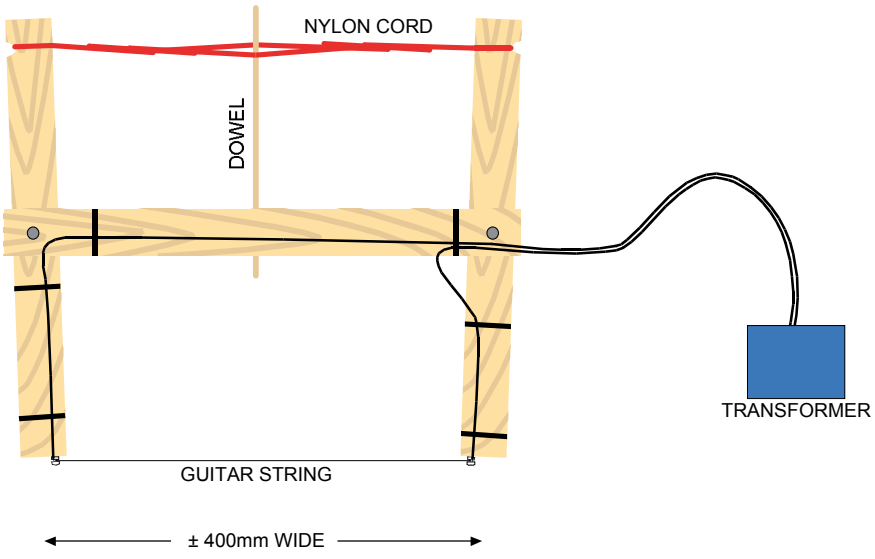
Thank you for showing interest in building my EDGE 540. The build is based on the same build techniques as my BIG FLAT ULTIMATE, so if you managed to successfully build and fly the BFU then this aircraft is definately for you!

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 ± 300W
I used a HXT C3536/1000kv outrunner
Turnigy Plush 30A ESC
APC 12 x 6 thin electric propeller
LoongMax 2250mAh 3S Lipo

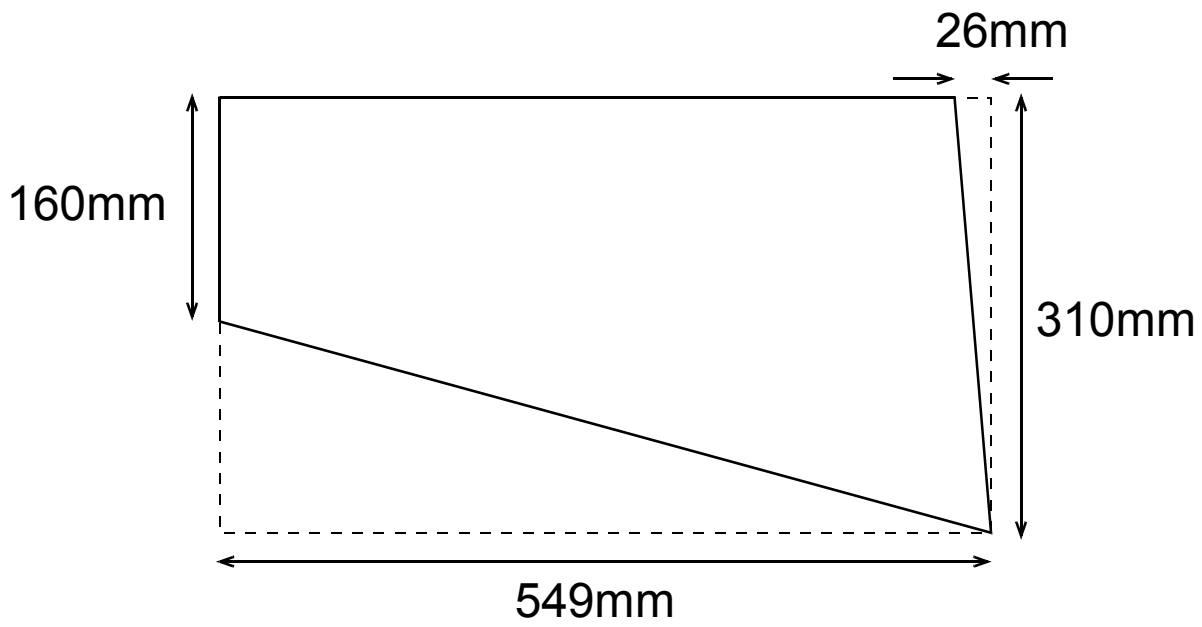
NOTE: I made your own crude hotwire using an "H" frame of wood, a piece of nylon wash line cord for tension, a short dowel, a steel guitar string and a few zip ties.
I powered it using a Scalextrix 12v transformer. It might not be the best way....
but it works.



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.

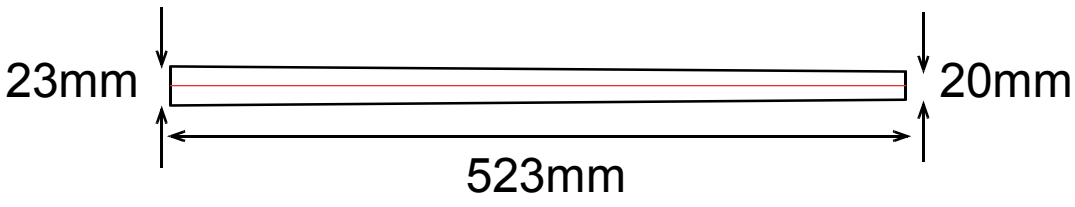
2. Once you have one wing panel, use it to mark out the others.
You need 4 identical pieces



3. Mark a centre line down the entire trailing edge of all 4 wing panels

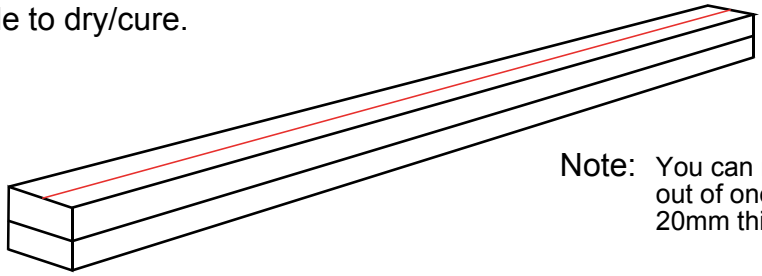
4. Cut 4 tapered strips 23/20 x 523mm (Leading Edges)

5. Mark 2 of them with a centre line



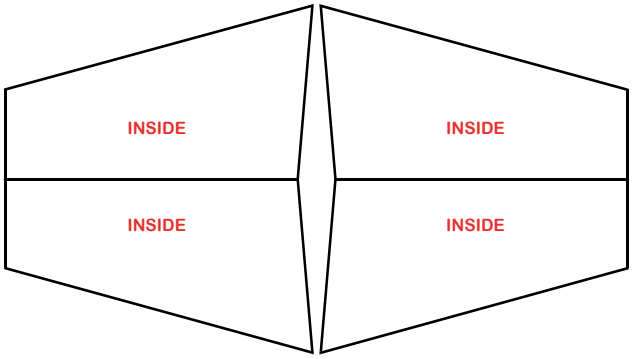
6 Glue the 2 marked strips on top of the unmarkes ones using PU glue.
You can spray water onto the join with your atomiser to speed up the process as water is a catalyst fo polyurethane glue. **(Beware, PU glue expands while curing. Weight parts down with a book or similar to prevent parts from moving)**

Set aside to dry/cure.

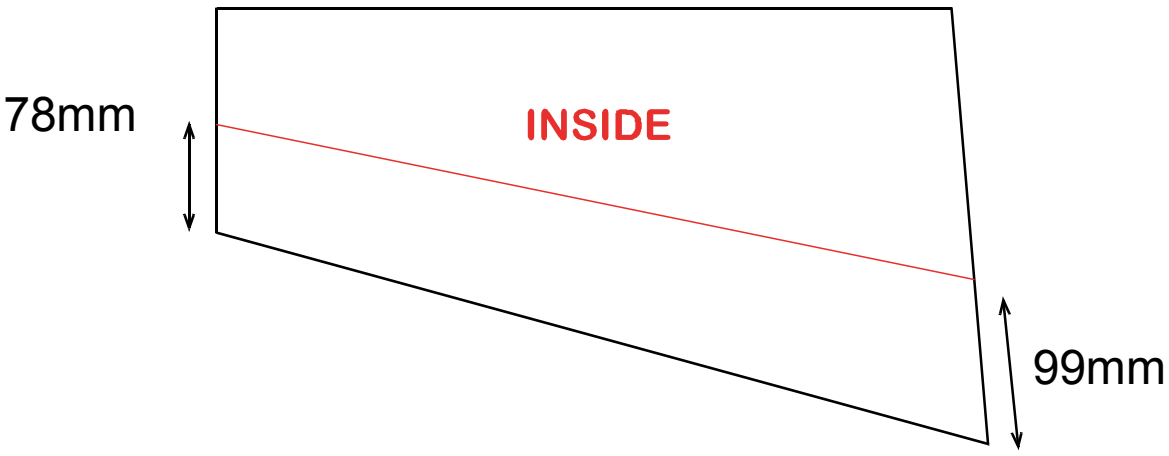


Note: You can make these leading edges out of one piece if you have suitable 20mm thick material

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

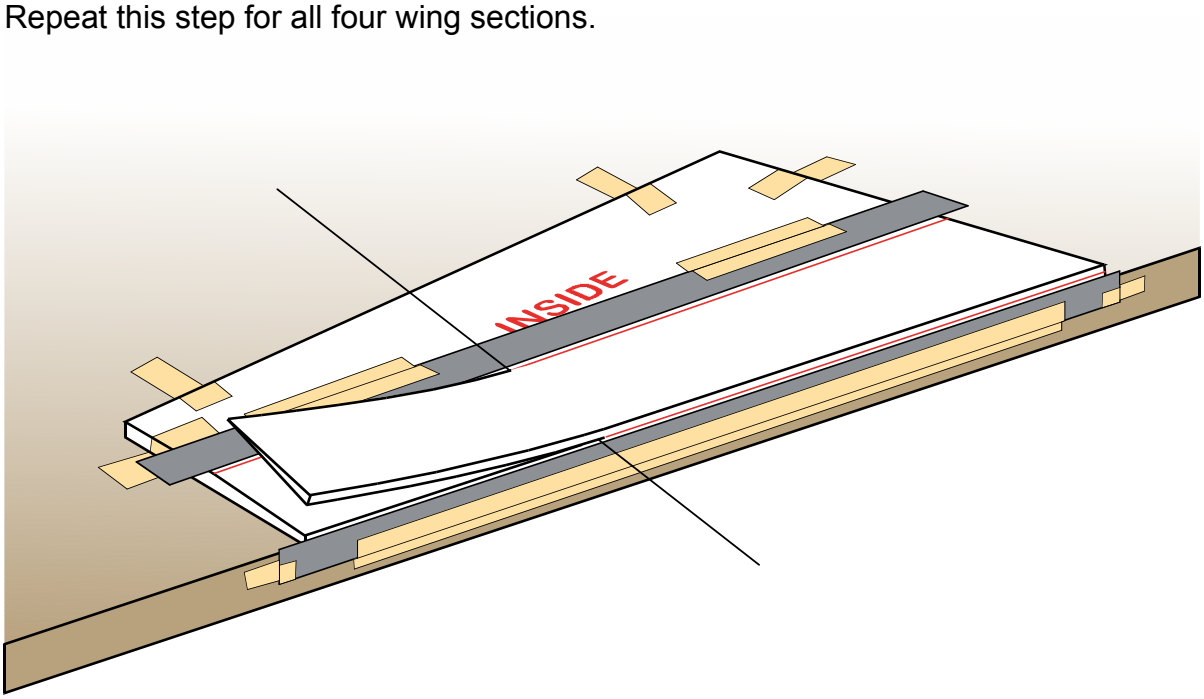


8 Mark from the trailing edge, 78mm on the wing tip and 99mm at the root. Draw a line here. Make sure you draw on the *inside* of all 4 wing panels

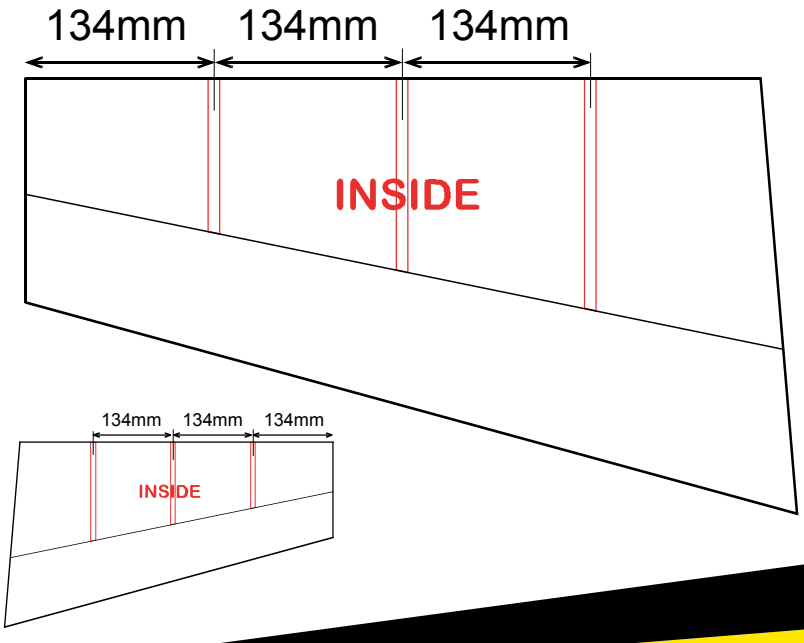


9 Fix two 600mm straight edges to a wing panel with masking tape parallel to the previous lines you made on the inside and the trailing edge. Securing the wing panel to your work surface is a handy way to get this right. Cut this wedge off the wing panel with your hot wire or appropriate tool making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

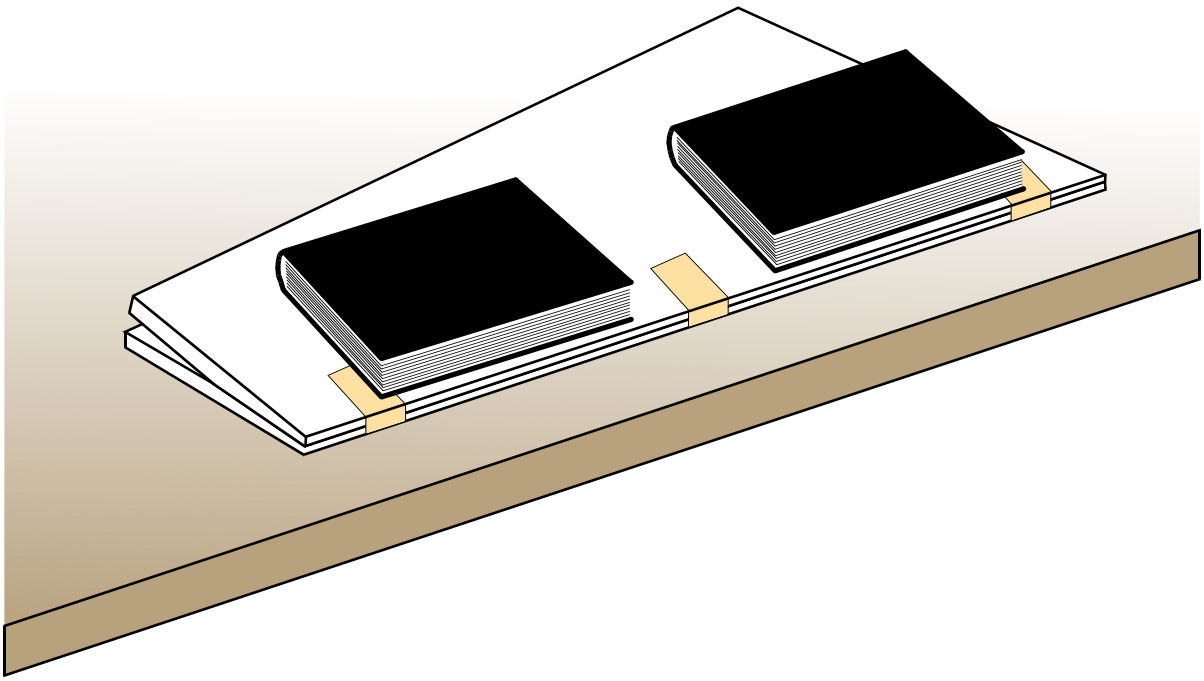
Repeat this step for all four wing sections.



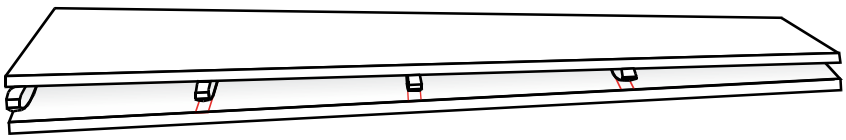
10 On two opposite wing panels, mark four divisions of 134mm, starting from the wing tip. Make a mark 5mm on either side of these divisions and draw lines perpendicular the leading edge.

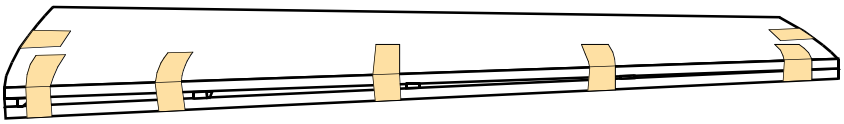


11 Use PU glue to stick the wing panels together where you have just cut them and tape them in place. Use a few books as weight to keep the wing true.



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!)

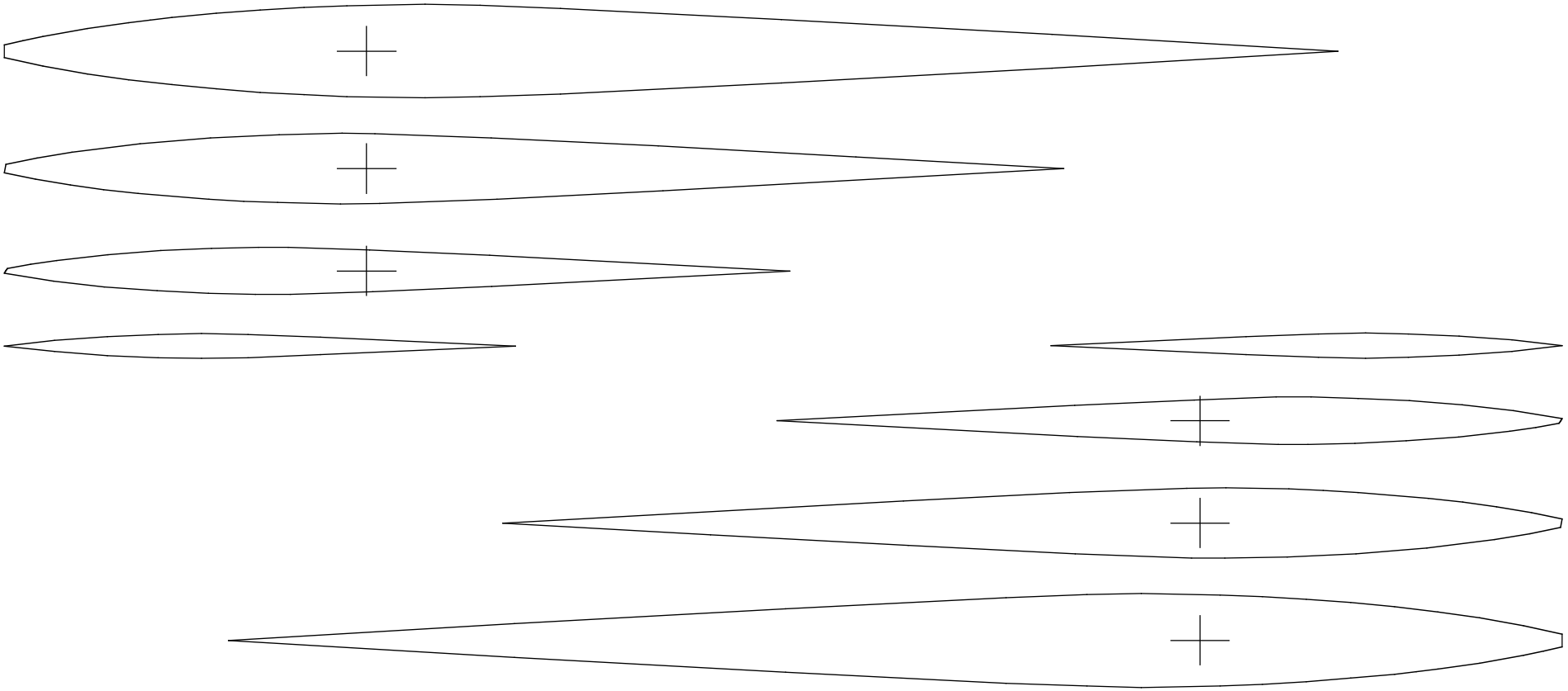




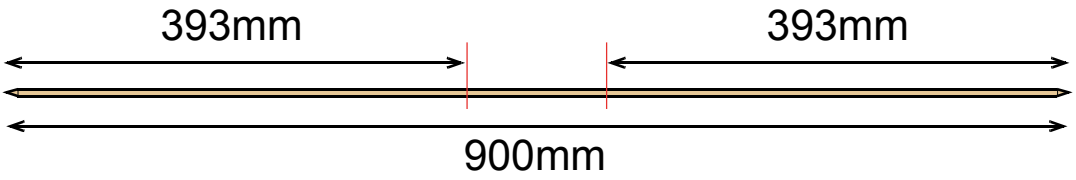
DemonGti's EDGE 540

Wing ribs

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

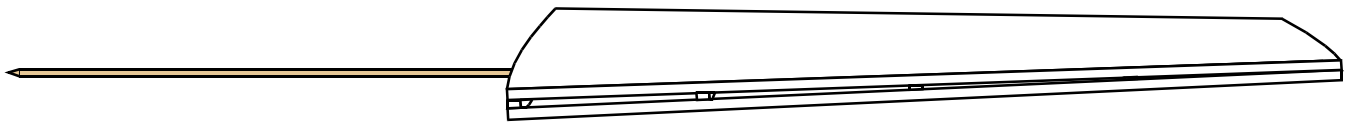


13 Cut your 6mm dowel to 900mm long. Mark off 393mm from each end. Sharpen the ends with a pencil sharpener.

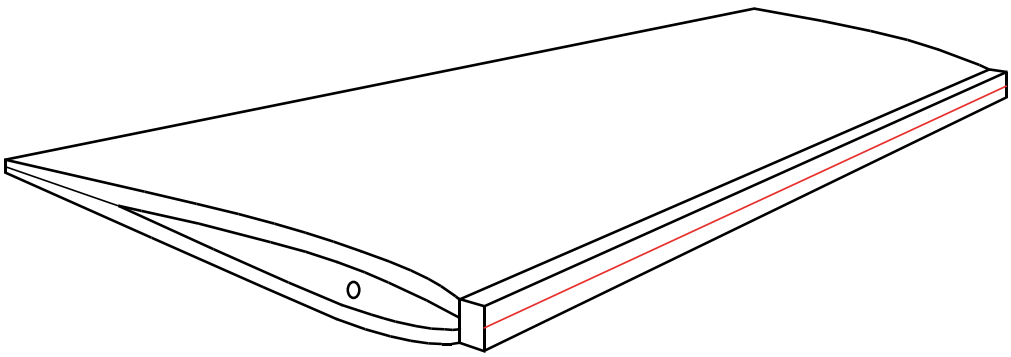


14 While the leading edge of the wing is still open, use a twisting motion to insert the sharpened dowel into the wing through the centre of the "X" on each rib. Bore through the first three ribs from the root but DO NOT bore through the forth rib, just let the point of the dowel pierce it. Remove the dowel.

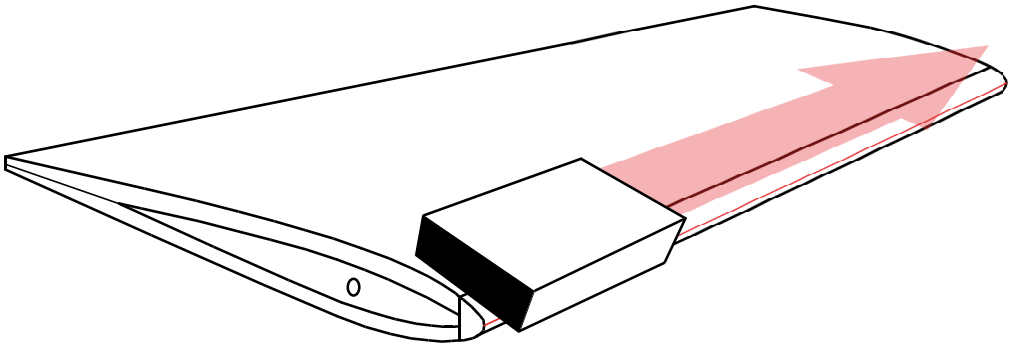
15 Use PU glue to fix the dowel into **ONE** wing. Insert it all the way to the 393mm mark you previously made on the dowel. Allow to cure.



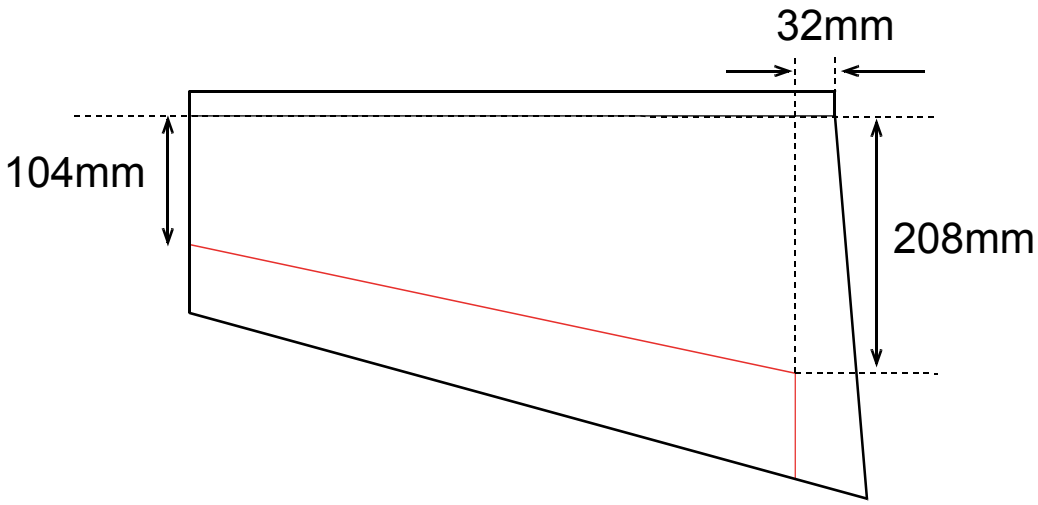
16 Square the open front edge of both wings with your sanding block and secure leading edge in place with PU glue with the previously marked centre line facing forward. Tape in possition to cure.



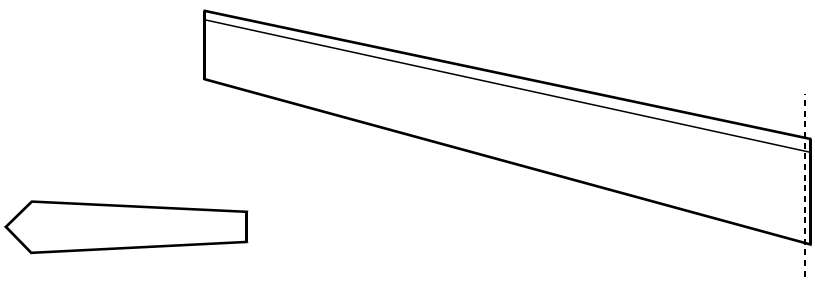
17 Use your sanding block to carefully shape the leading edges of both wings. NOTE: These wings are symetrical so take care to shape the bottom and top of the leading edges as close to equal as possible. Long sanding strokes in **one direction** across the entire wing will help to keep the shape constant.



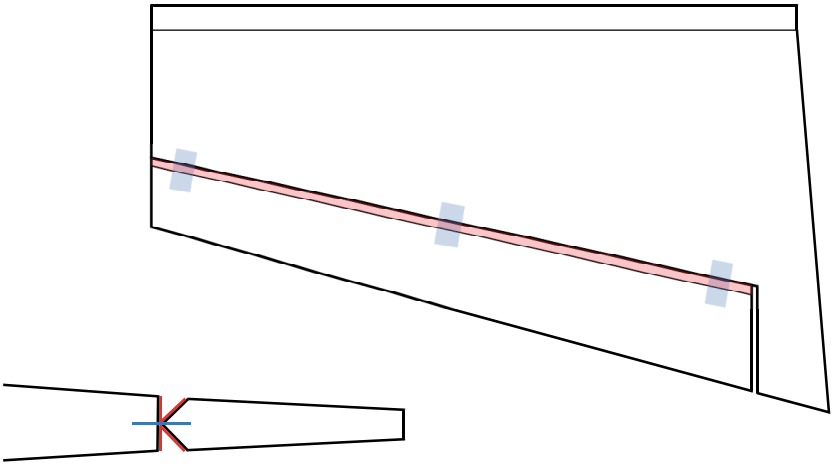
18 Mark out alerons on both sides of the wings. Cut them out carefullt trying to keep the cut perpendicular with the centre plane of the wing.



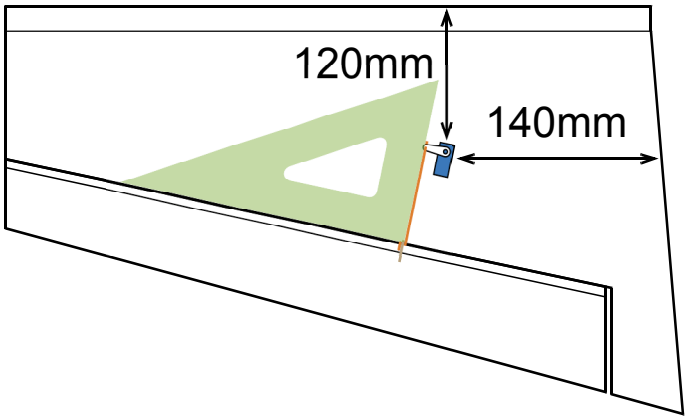
19 Remove 2mm of material from the inner end of both ailerons and bevel leading edges the same way we did for the rudder of the BFU.



20 Hinge ailerons with plastic/polycarbonate and seal the hinge gap with half inch clear tape. All of the control surfaces on the Edge 540 are hinged in the same manner as the rudder of my Big Flat Ultimate. I am not going to go into any detail on hinging in this build guide. If you are unsure, please download the build guide for the BFU from the RC Groups forums.

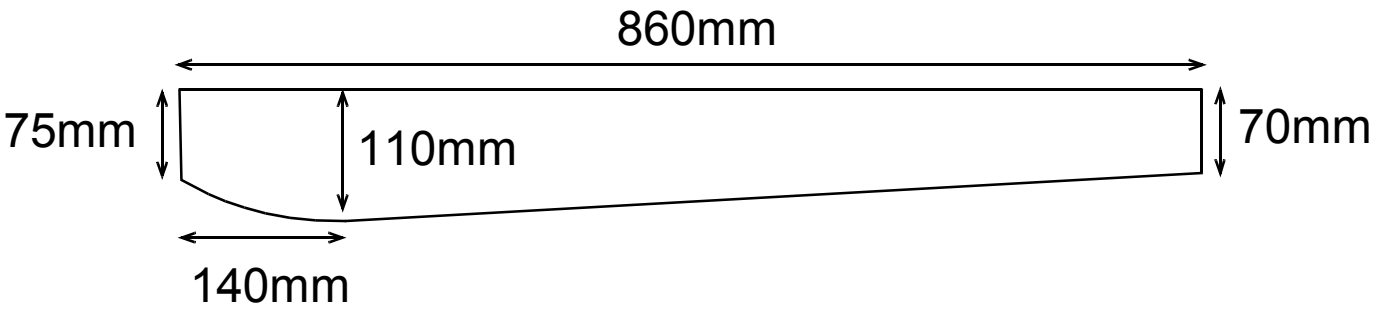


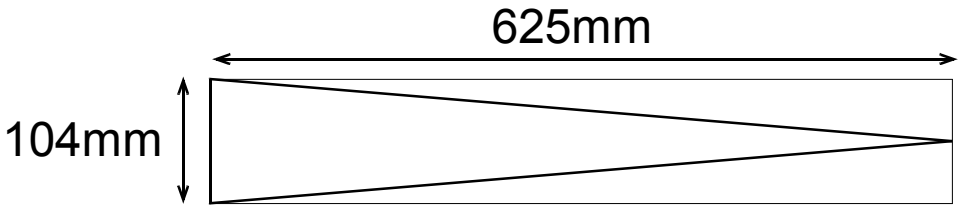
21 Now is a good time to fit control horns and servos to the underside of the wings. The position is not too critical, try to fit your servos perpendicular to hinge. The distance from the fuse depends largly on the length of the servo leads and wheather or no you will use servo extension leads or not. Cut holes for the servos and glue them in with Pritt Power Gel.



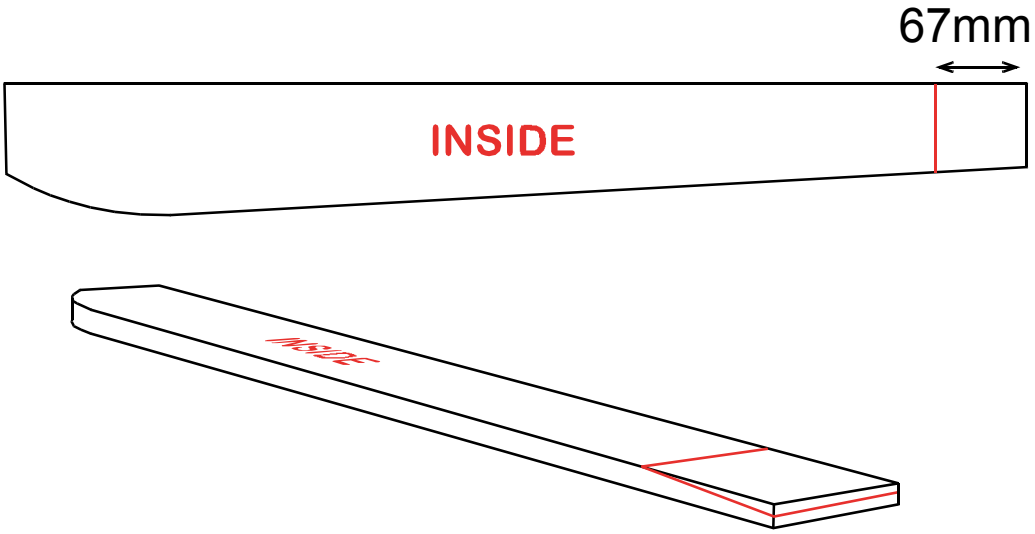
22 **Fuselage**

Cut out the two fuselage sides and bottom as follows.
Print page 12 to get the curve of the nose accurate.





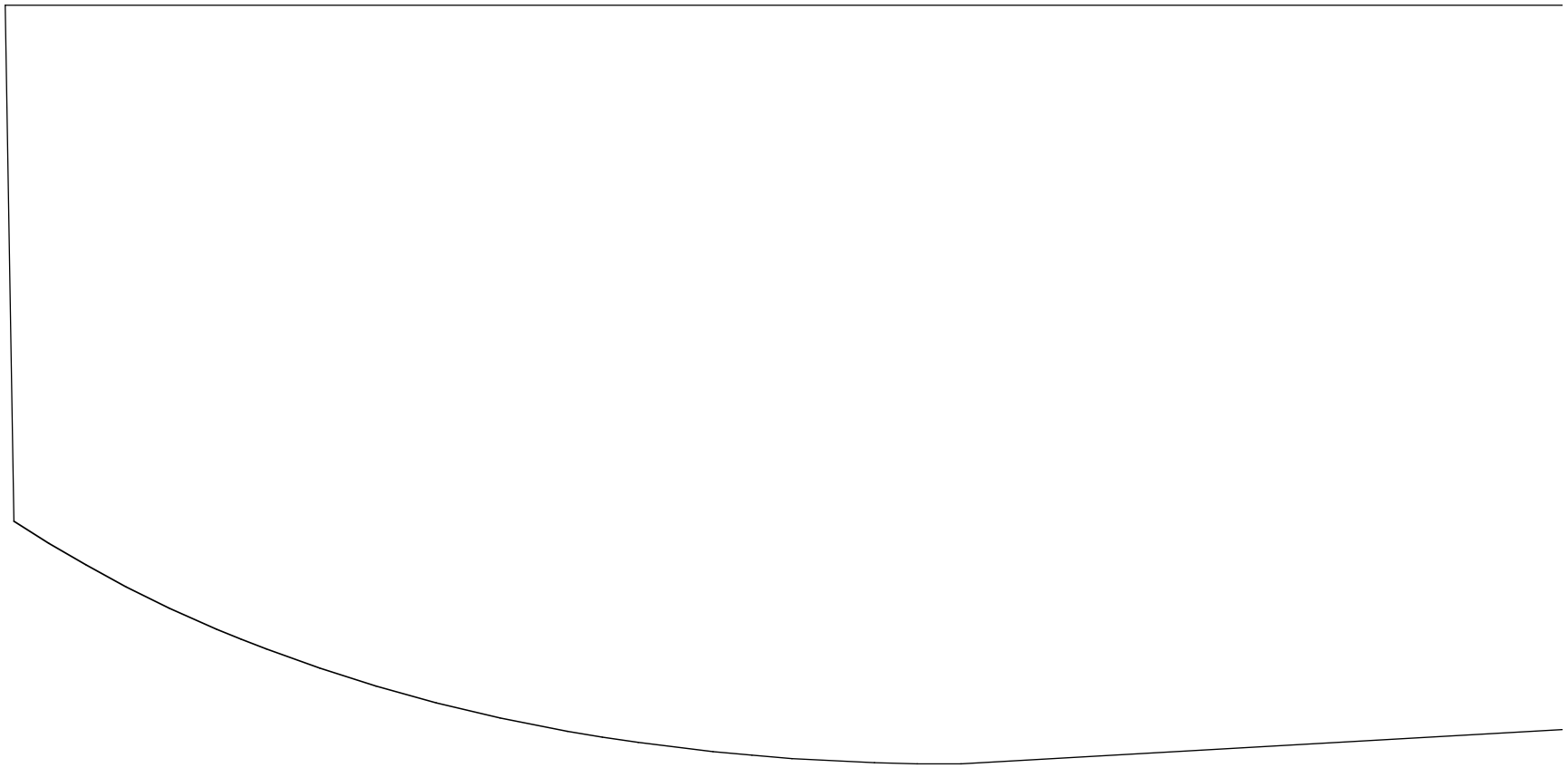
23 Cut a wedge off the inside tail section 67mm from the end and to the centre line of the tail, the same way the BFU fuse was cut.



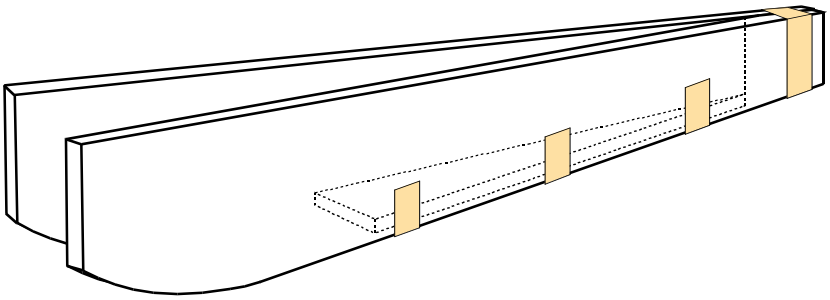
DemonGti's EDGE 540

Fuselage nose shape

Print this page and use it to get an accurate shape to the front of both fuselage sides.

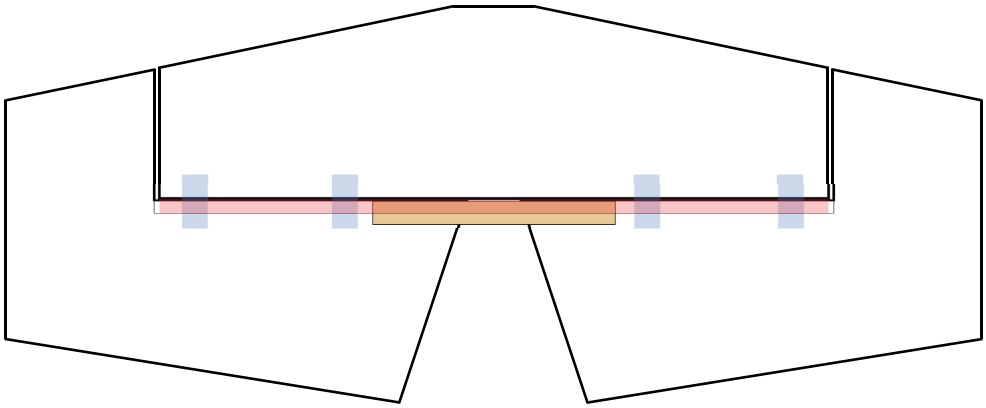


24 Glue fuselage tail ends together and secure bottom in place with PU glue. Make sure fuse is square, tape in possition to cure.



25 Print out page 14, 15 and 16 and cut out pieces.

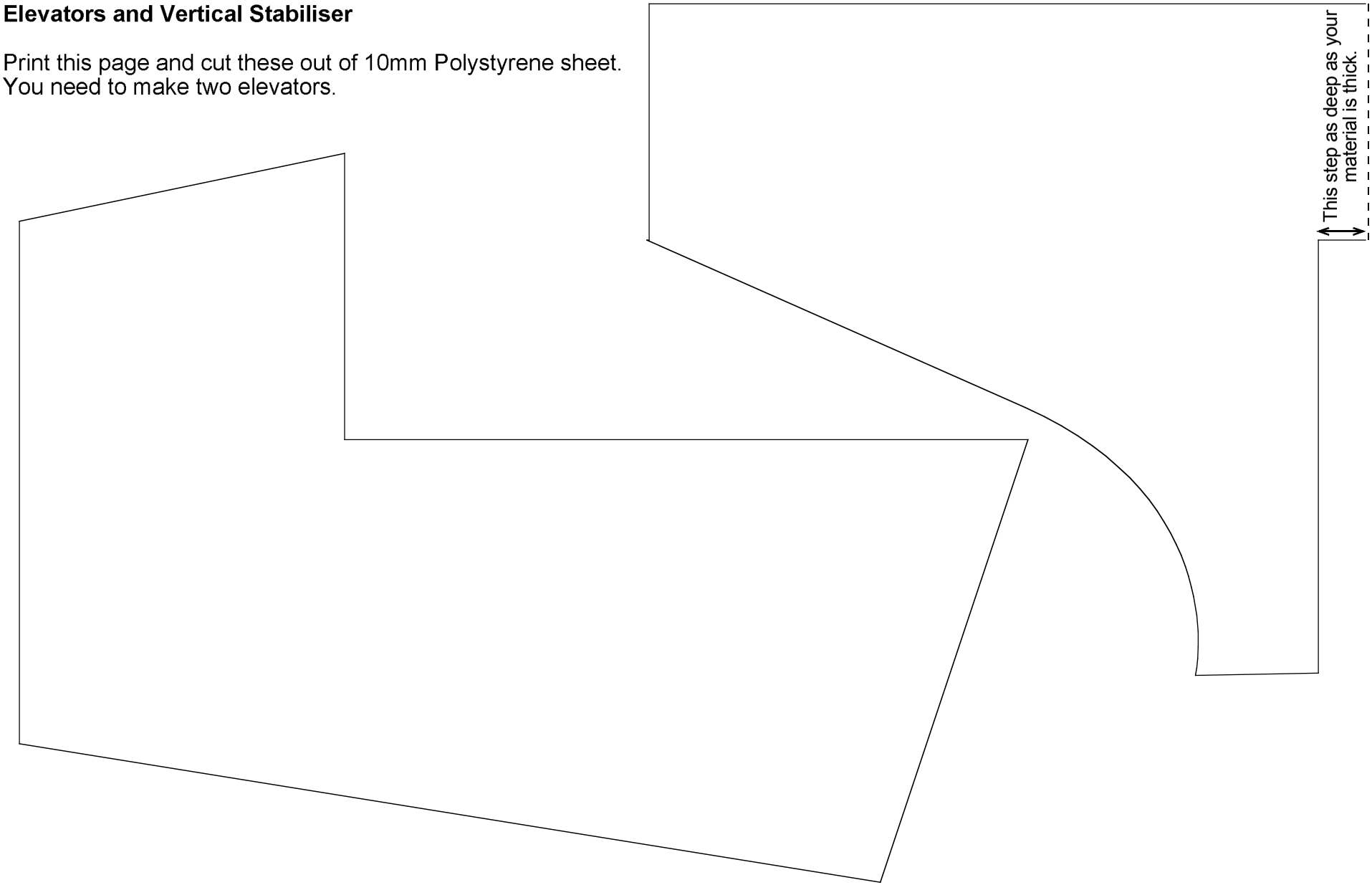
26 Assemble horizontal stabilizer and elevators. Bevel and hinge elevators the same way as the ailerons. Use a 10 x 10 x 80mm piece of balsa to join the two elevators.



DemonGti's EDGE 540

Elevators and Vertical Stabiliser

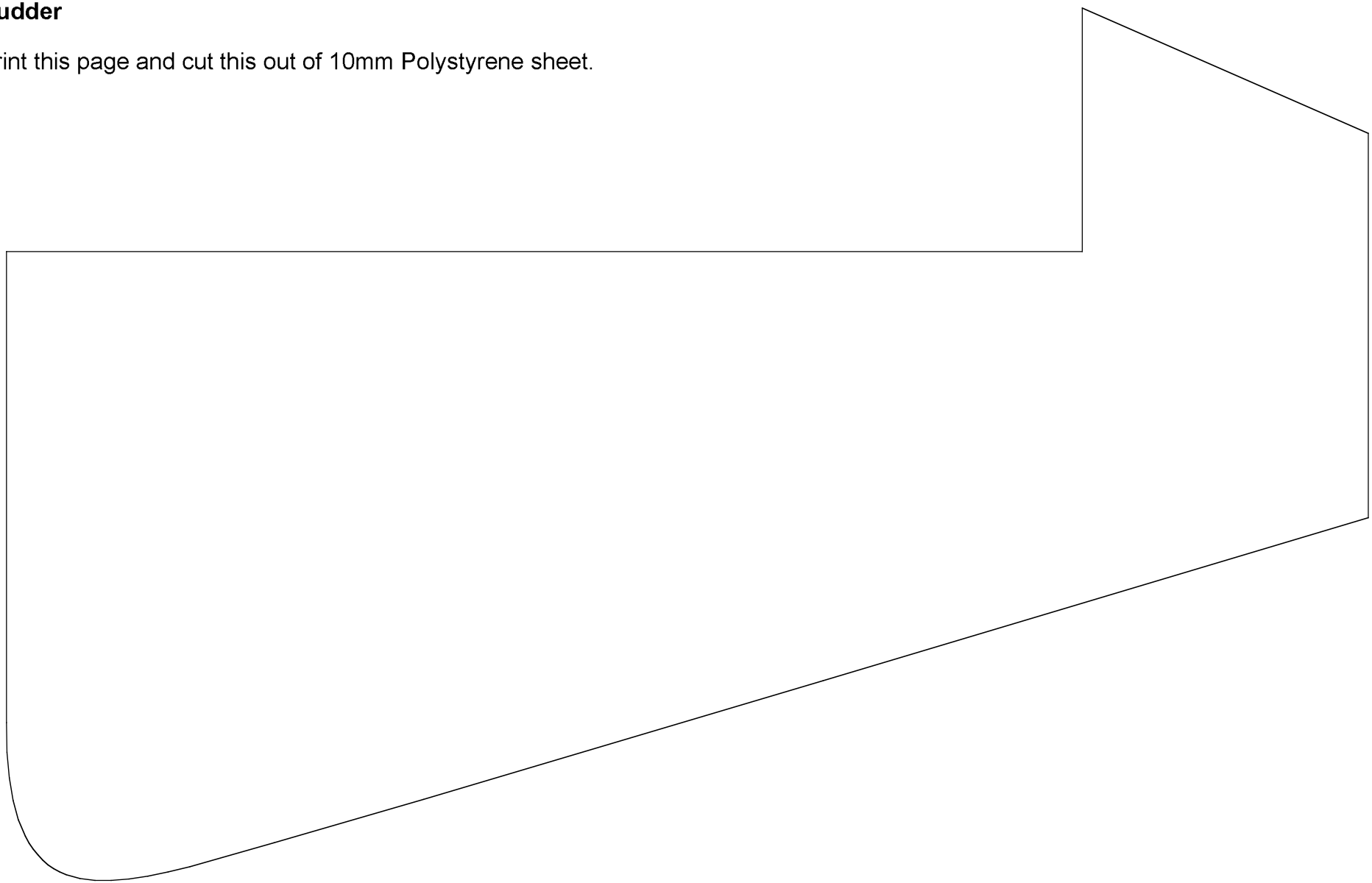
Print this page and cut these out of 10mm Polystyrene sheet.
You need to make two elevators.



DemonGti's EDGE 540

Rudder

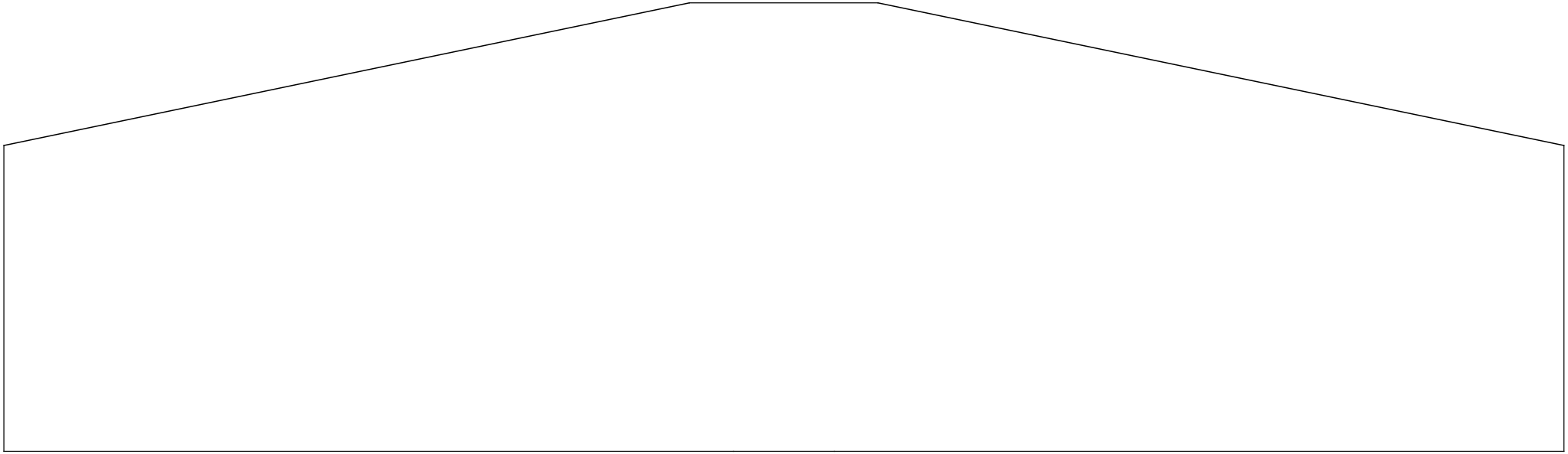
Print this page and cut this out of 10mm Polystyrene sheet.



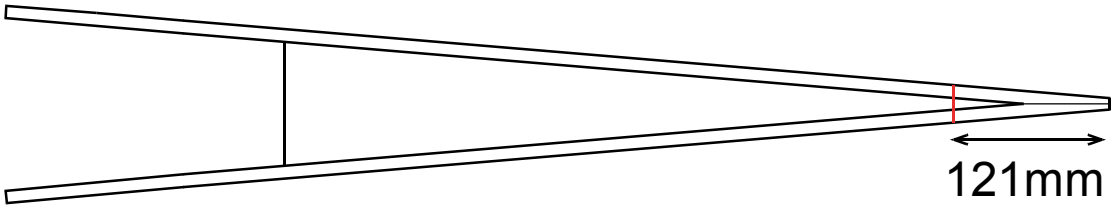
DemonGti's EDGE 540

Horizontal Stabiliser

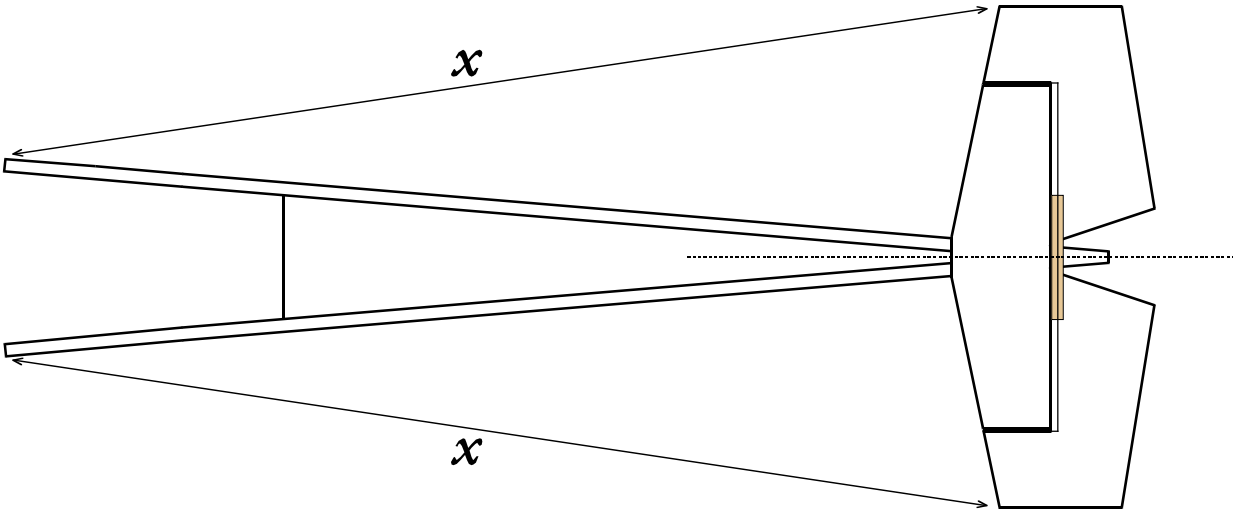
Print this page and cut this out of 10mm Polystyrene sheet.

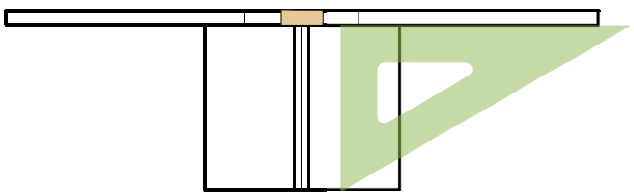


27 Cut out the seat for the horizontal stabiliser 121mm long from the tail of the fusesage. The depth must be accurate, as deep as your material is thick.



28 Now attach the horizontal stabiliser assembly to the fuselage with Pritt. Make sure it is centred and square with the fuselage. Use your 90° set square to check for squareness against the side of the fuselage.

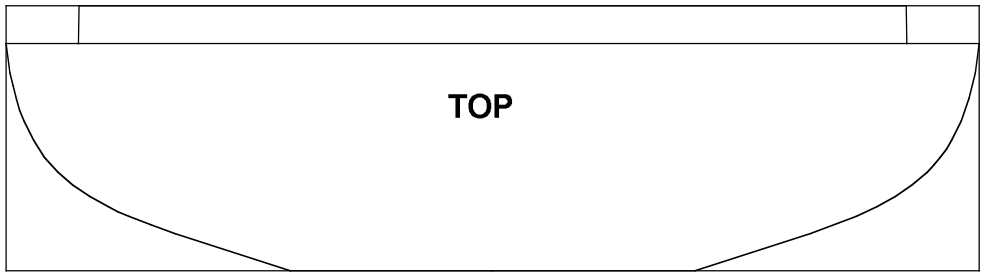


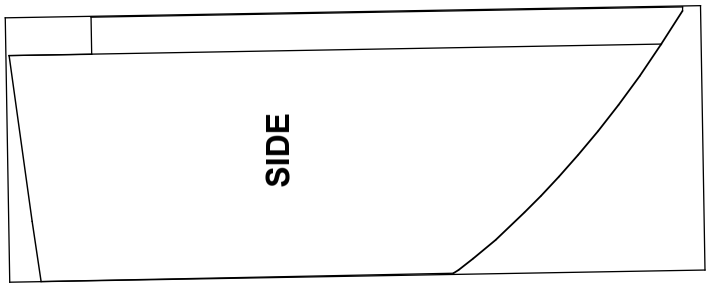


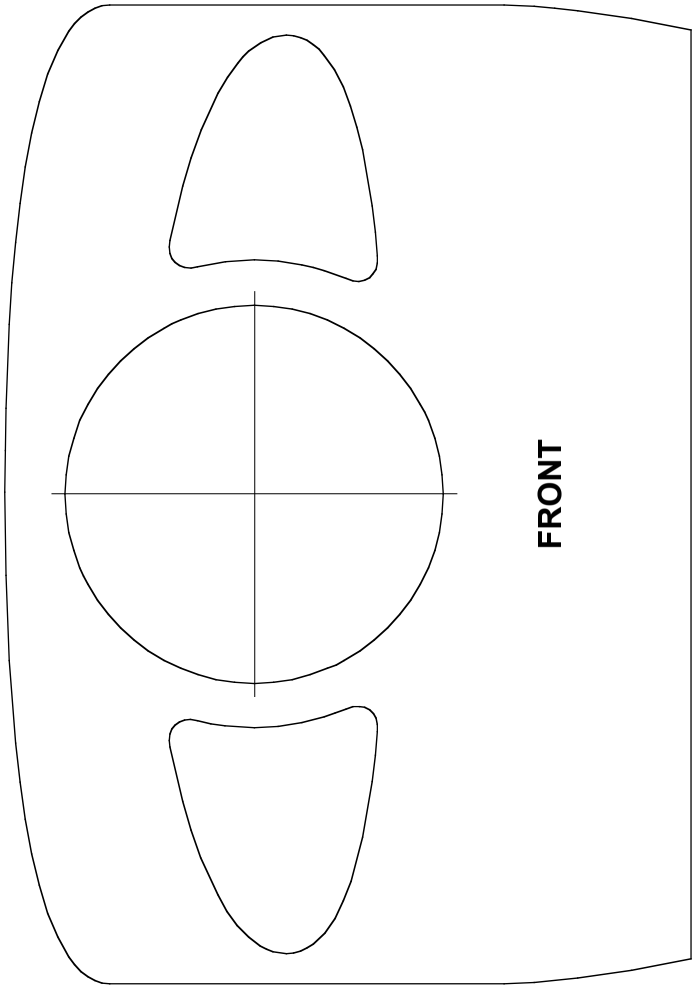
DemonGti's EDGE 540

Nose Shape

Print this page and cut and roughly sand this out of 35mm Polystyrene sheet or 4 pieces of 10mm Sheet sandwiched together with PU glue.
Final sanding will be done later when nose is fixed to fuselage.



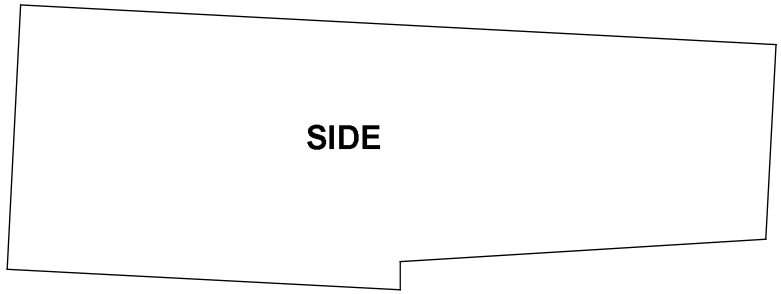


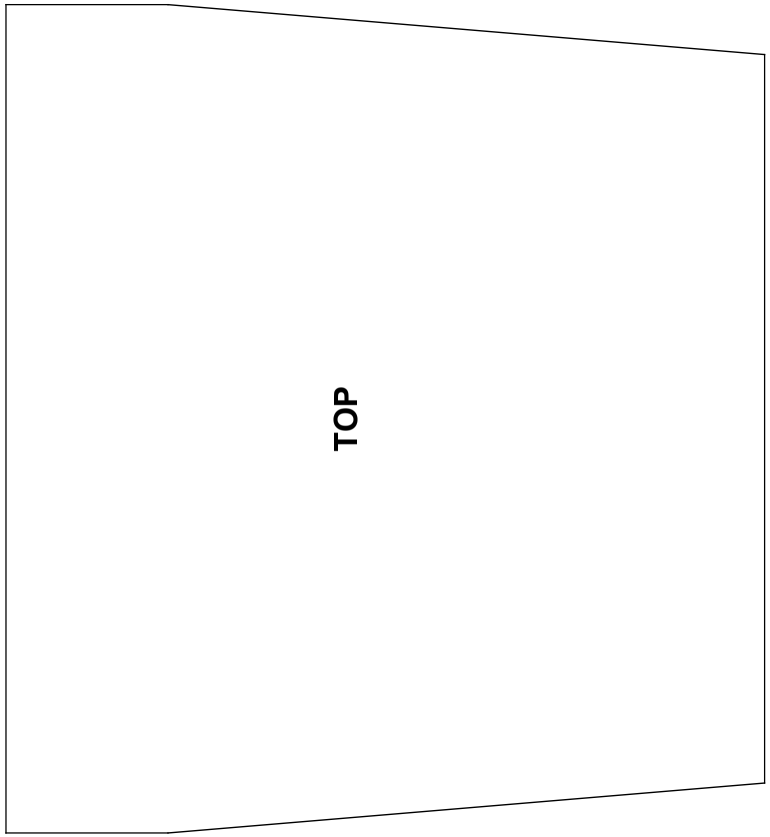


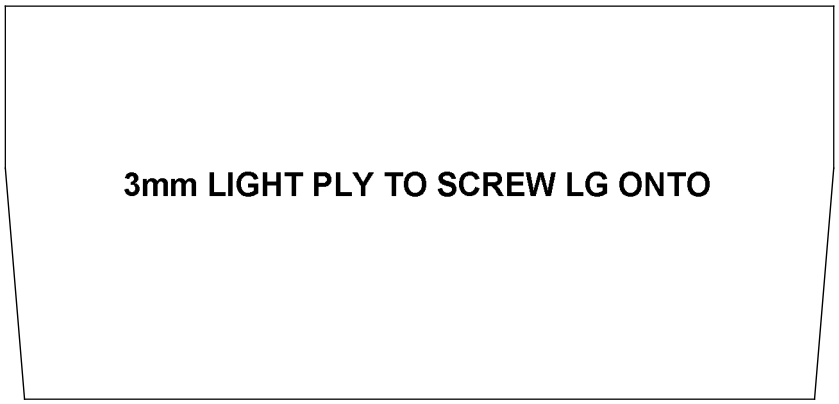
DemonGti's EDGE 540

Landing Gear base

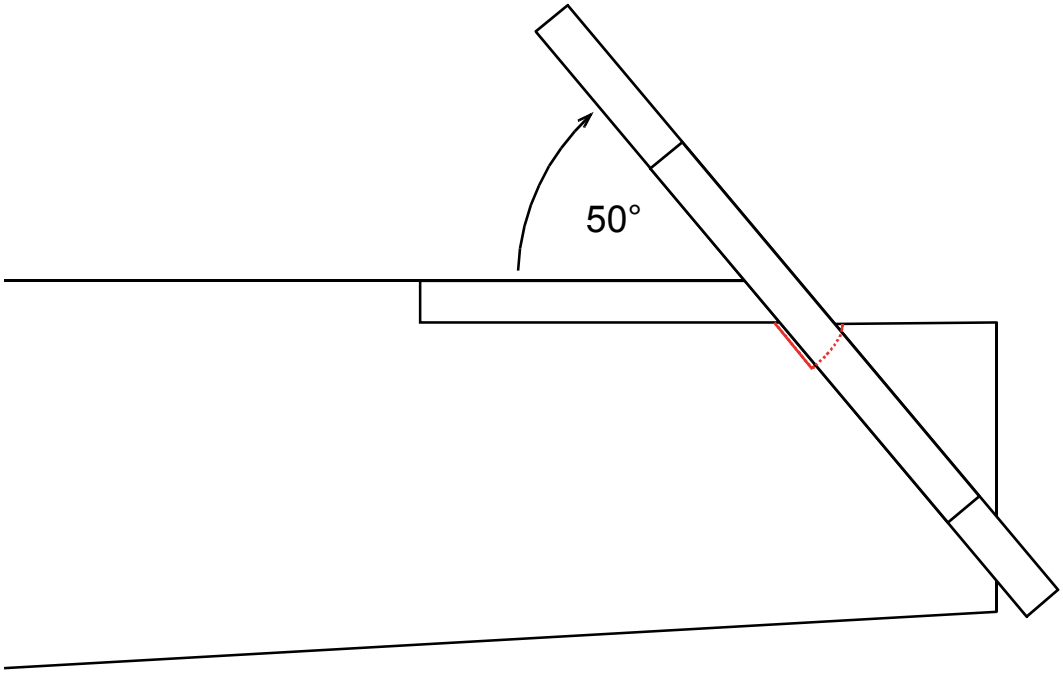
Print this page and cut this out of 35mm Polystyrene sheet
or 4 pieces of 10mm Sheet sandwiched together with PU glue.
Also cut out a piece of 3mm light ply wood to act as the base to which you will screw the landing gear.



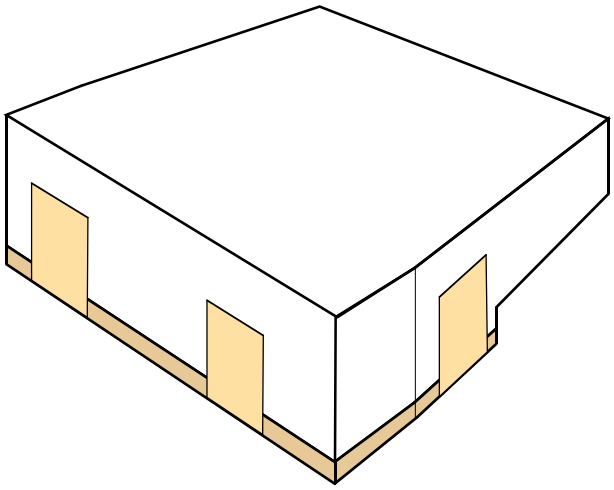




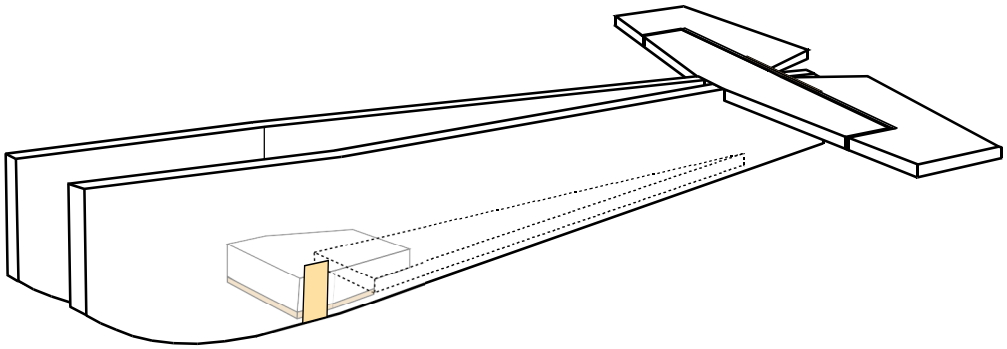
29 Trim out space for the elevator to have at least 50° of movement.



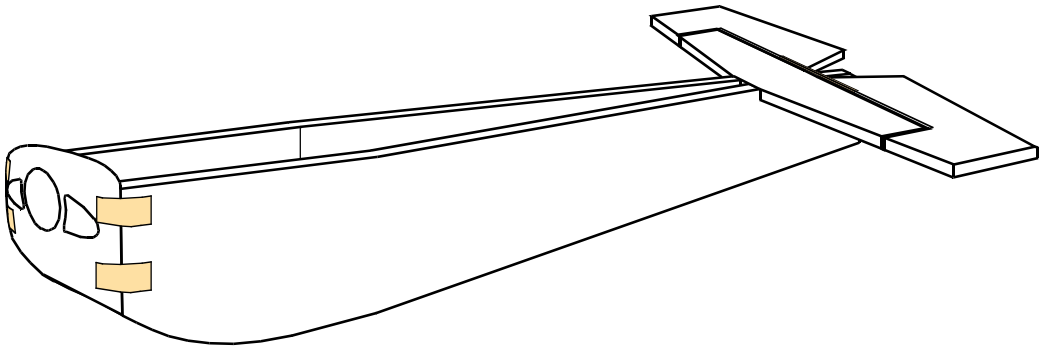
30 Use PU glue to attach 3mm ply wood to the LG base.
Secure with tape and leave to cure.



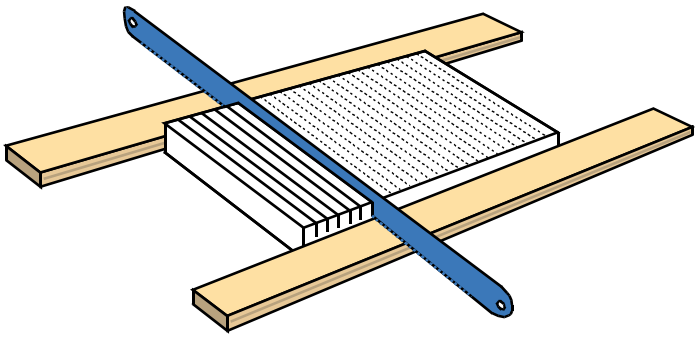
31 Fix landing gear base in place with PU glue and tape secure.



32 Fix nose to front of fuselage with PU glue and tape in possition to cure.



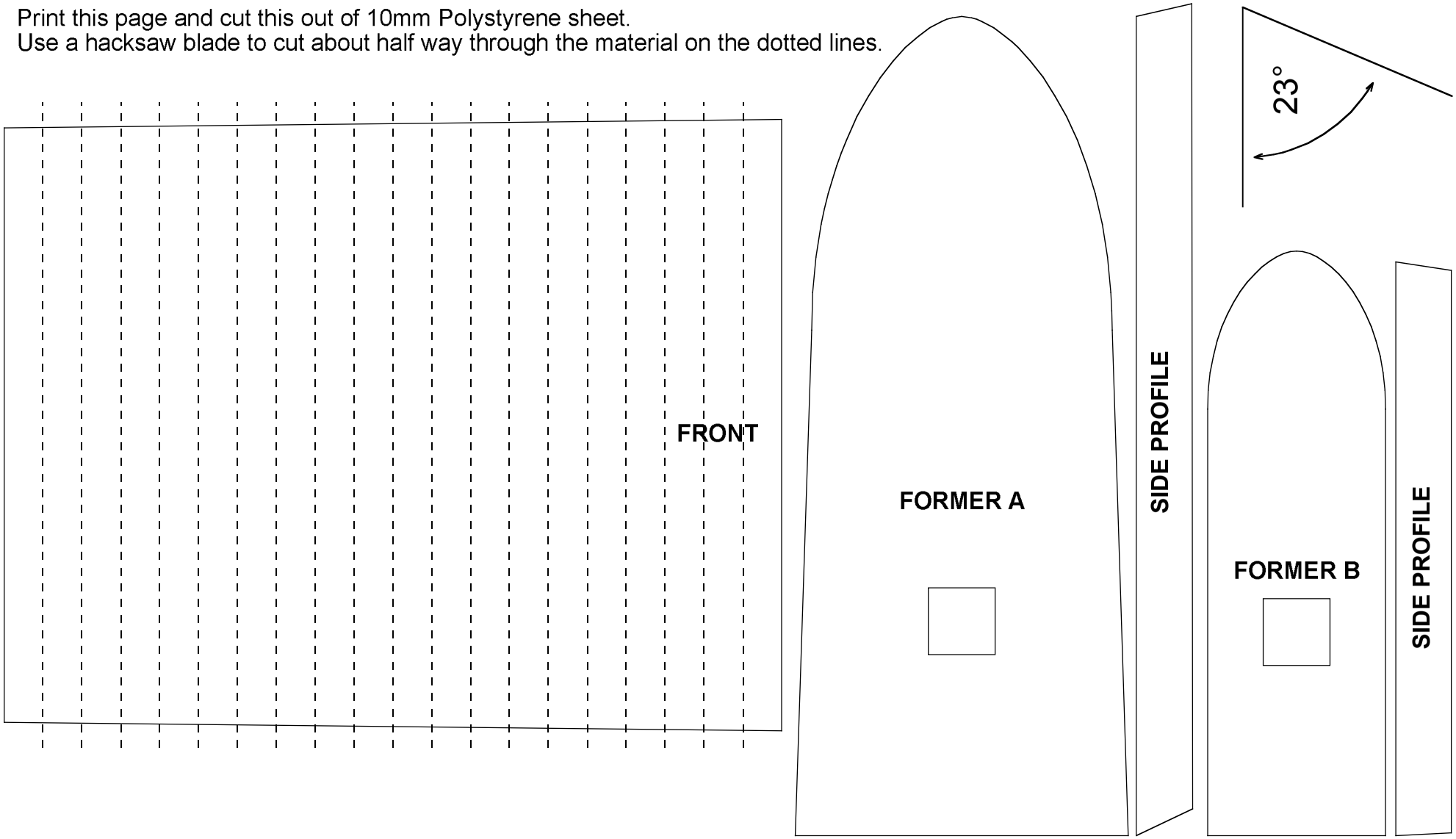
33 Print page 22 and prepare the panel by cutting half way through the thickness of the material with a corse hacksaw blade on the dotted lines. An easy way to do this is to use a ± 5mm thick piece of plywood etc. on either side to prevent the blade from cutting deeper than you want. The cuts allow the sheet to bend to take the shape of the nose of the plane.



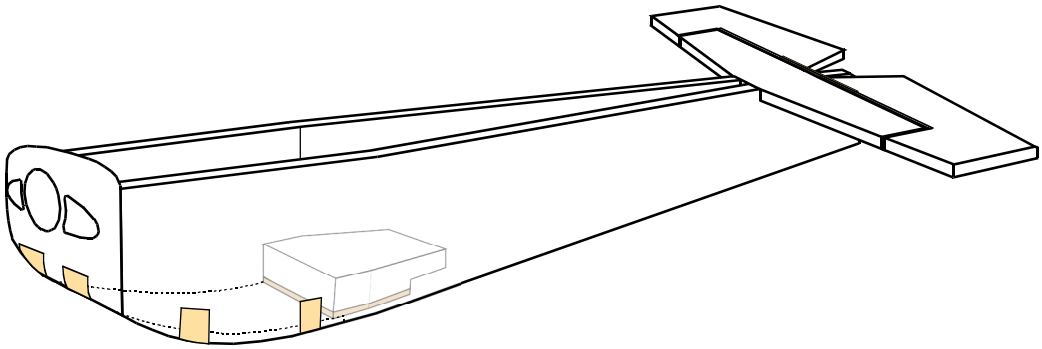
DemonGti's EDGE 540

Nose to LG filler and Fuselage formers

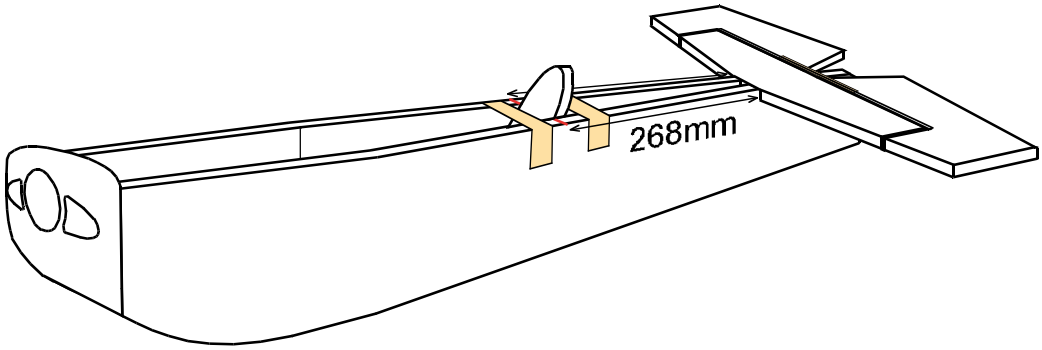
Print this page and cut this out of 10mm Polystyrene sheet.
Use a hacksaw blade to cut about half way through the material on the dotted lines.



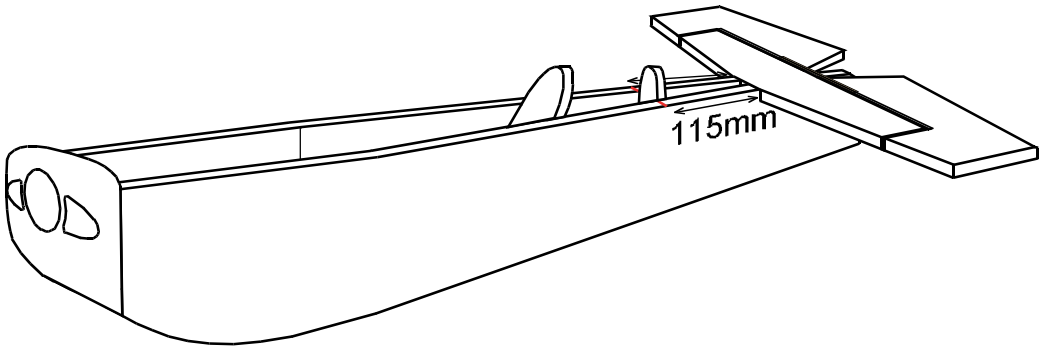
34 Glue in the filler piece with PU glue and tape in possition. There will be an overlap onto the wooden LG mount (cut grooves face inward)



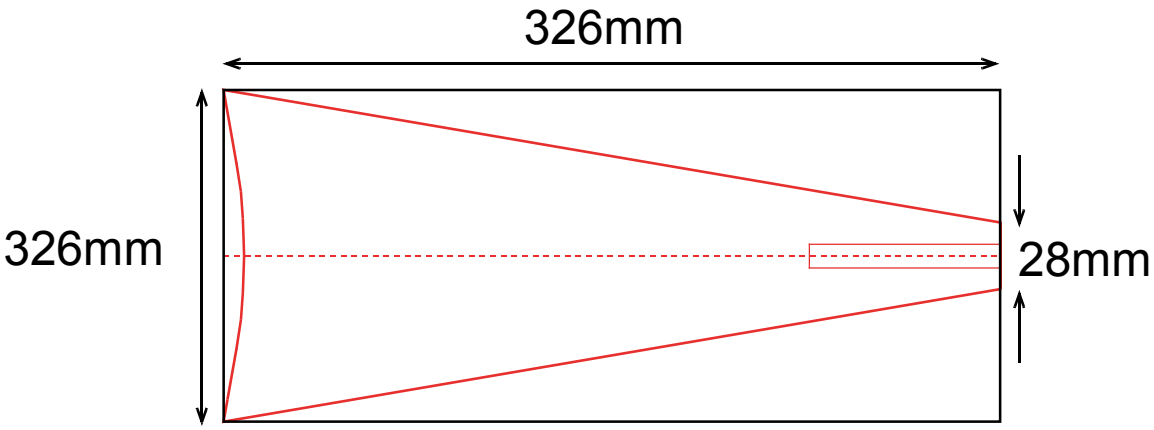
35 Measure 268mm from root of horizontal stab. and draw a line on both side of the top of the fuselage. Use the “angle” from page 21 to glue Former A into place with PU glue (Behind the line). Tape fuselage sides together infront and behind the former to cure.



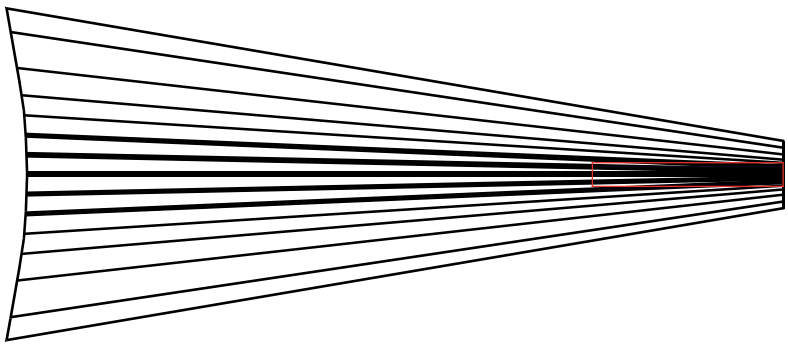
36 Measure 115mm from root of horizontal stab. and draw a line on both side of the top of the fuselage. Insert Former B with PU glue perpendicular to top of the fuselage also behind the line you made.



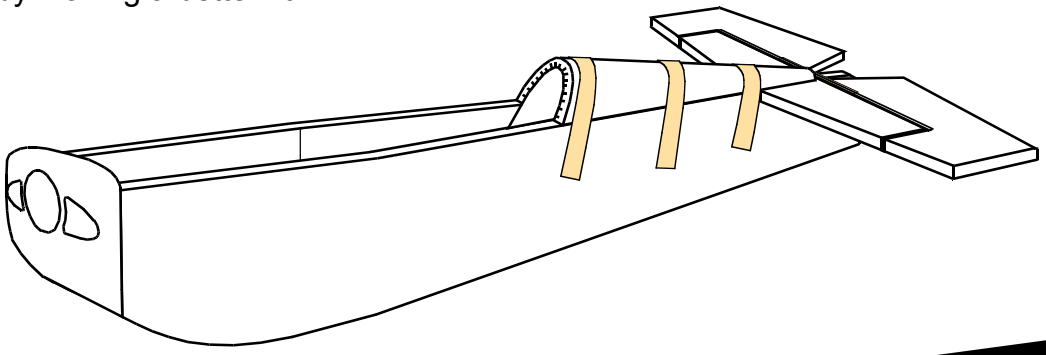
37 Cut out a rectangle from your 10mm material measuring 139 x 326mm. Mark the centre and draw a mark 14mm on either side of the centre on one end. Mark a 10 x 80mm section where the vertical stabiliser will fit. The shape on page 25 should be used to get an accurate curve for the canopy end.



38 Cut out the panel but **not** the notch for the vertical stab. Use the same technique as before to cut grooves on one side of the panel. Follow the diagram bellow, the thick lines represent actual "V" cut out to allow the panel to bend more.



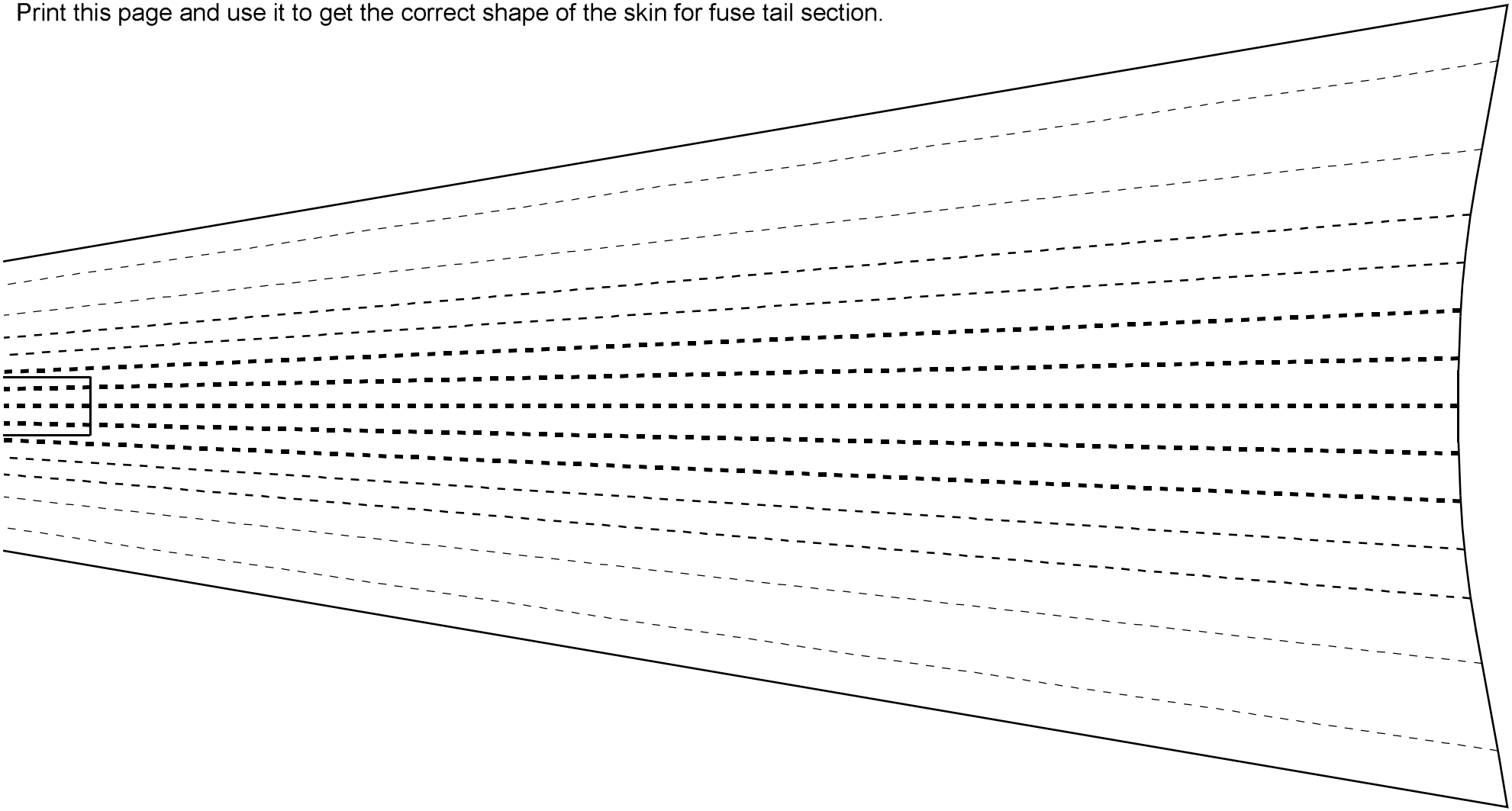
39 Drizzle PU glue into the cut grooves and fit to the fuselage. Tape in possition to cure. Any gaps will be filled by the expanding PU, if the panel appears too small just tape down securely over the areas where the formers are to force them to compress a little and thereby making a better fit.



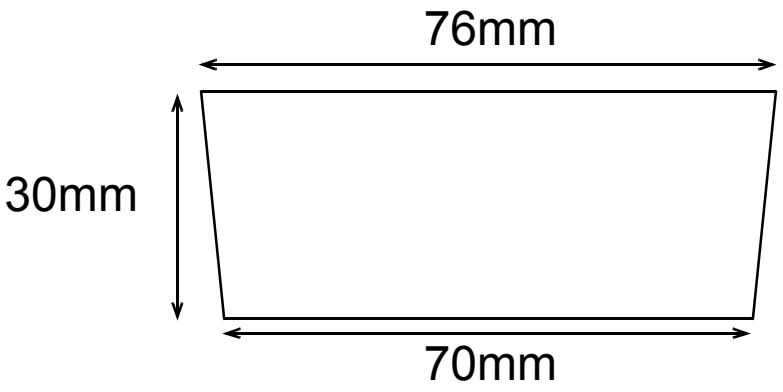
DemonGti's EDGE 540

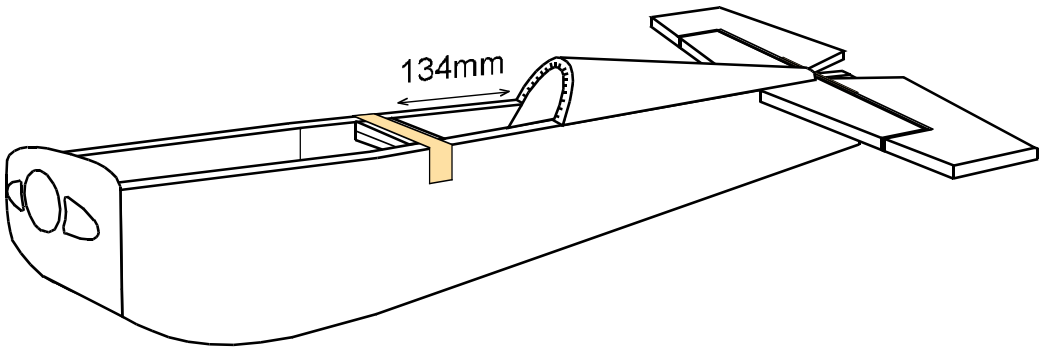
Fuselage skin

Print this page and use it to get the correct shape of the skin for fuse tail section.

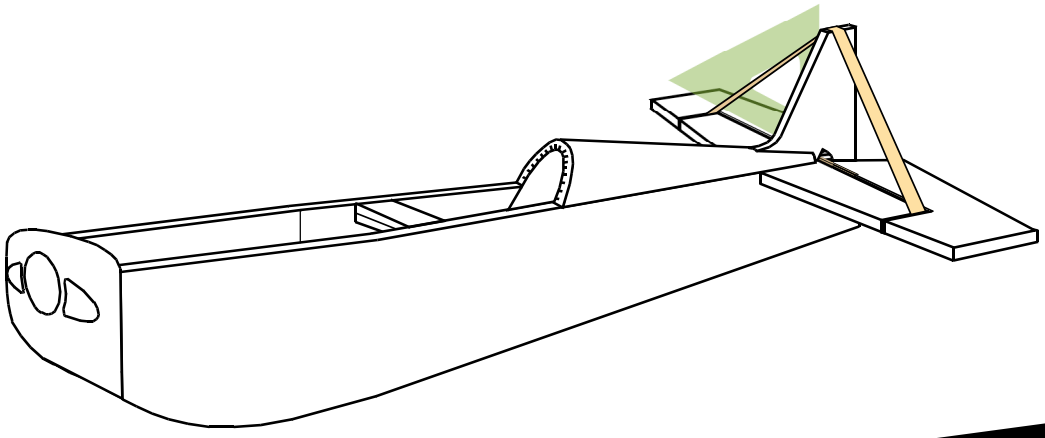


40 Cut out **two** pieces measuring 76 x 30mm and glue them together. When set, cut a 3mm wedge off either side and glue it into the fuse 134mm from the 'canopy' end.



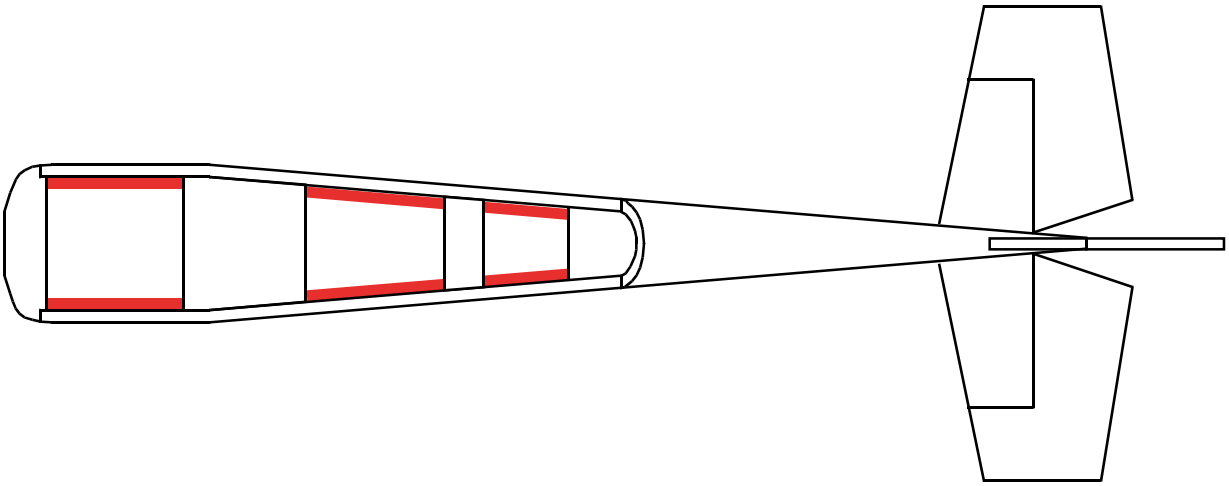


41 Now cut out notch for the vertical stab and glue it into place. Before you glue, dry fit the stab and mark and cut the clearance hole for the elevator to get it's full movement. Don't forget to use your set square to get the stab. 90° to the horizontal stab. and flush with the end of the fuselage, tape lightly in possition to cure.



42 Bevel, hinge and seal rudder joint as with the BFU.

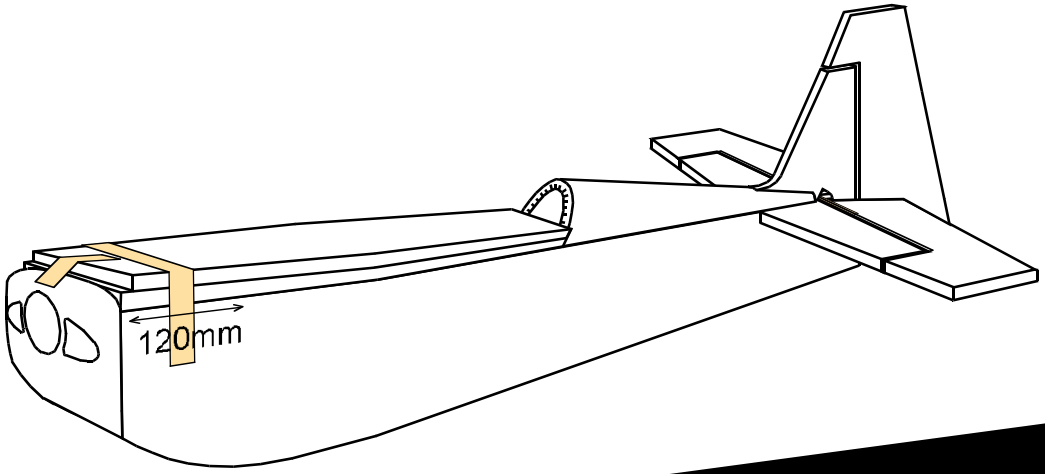
43 Cut two strips 10 x 10 x 225mm and two strips 10 x 10 x 115mm.
Glue these inside the fuse to strengthen the join between the sides and the bottom as later you will be cutting a bevel off the bottom edges of the fuse.



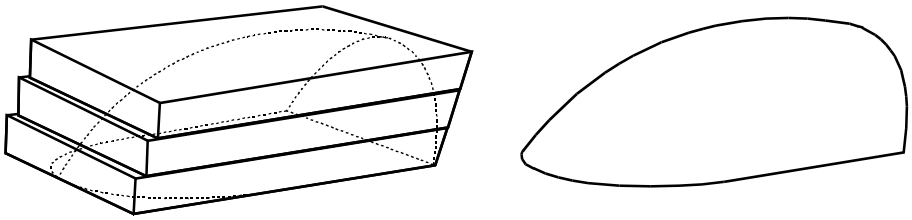
44 If you have an appropriate canopy or are going to fabricate a canopy from a plastic bottle and and a wooden jig, then please proceed to step **49**.

If not, cut out two pieces of material 486 x130mm and using the previous 23° angle as a guide, cut one short end off at 23° of both panels.
Glue panels together with 23° side nice and flush, weight with some books to keep flat while the glue cures.

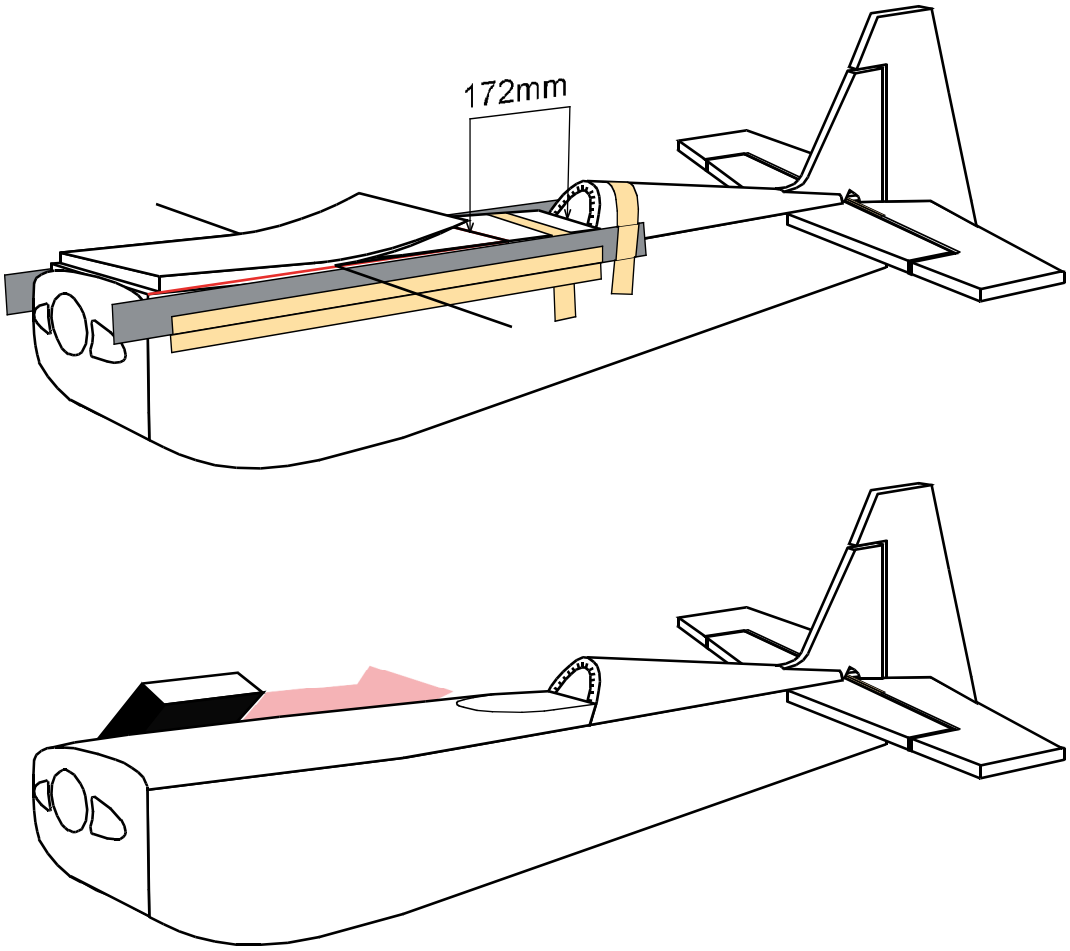
45 Place this double panel onto the turtledeck of the plane and mark out shape of fuse. Cut to fit. and glue in possition, secure with tape. **(Note: only glue 120mm of the front of the turtledeck to the fuselage.)**



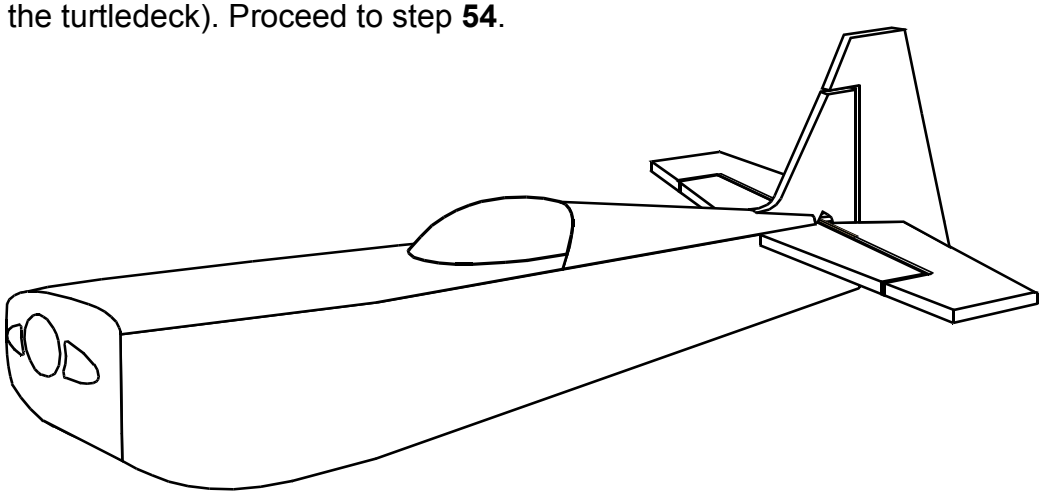
46 Cut three more pieces 170 x 100mm also with a 23° angled end. Draw a radius on the non angled end and cut round. Glue these 3 pieces together keeping the angled side nice and flush. When dry, sand to shape to fit fuselage.



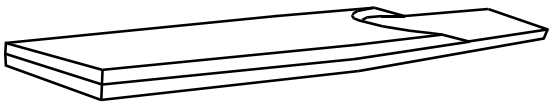
47 Tape a straight edge to both sides of the fuselage, inline with the top edge of the nose and about 172mm from the end of the canopy. Hot wire this wedge off the turtledeck. Use you sanding block to sand the corners round and blend into the nose.



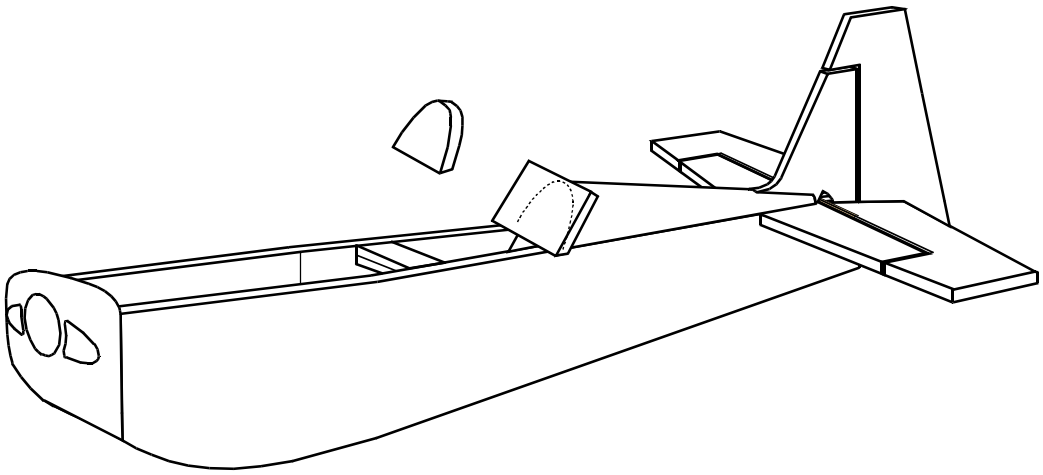
48 Glue shaped canopy to turtledeck with Pritt glue (glue only the underside of the canopy to the turtledeck). Proceed to step **54**.



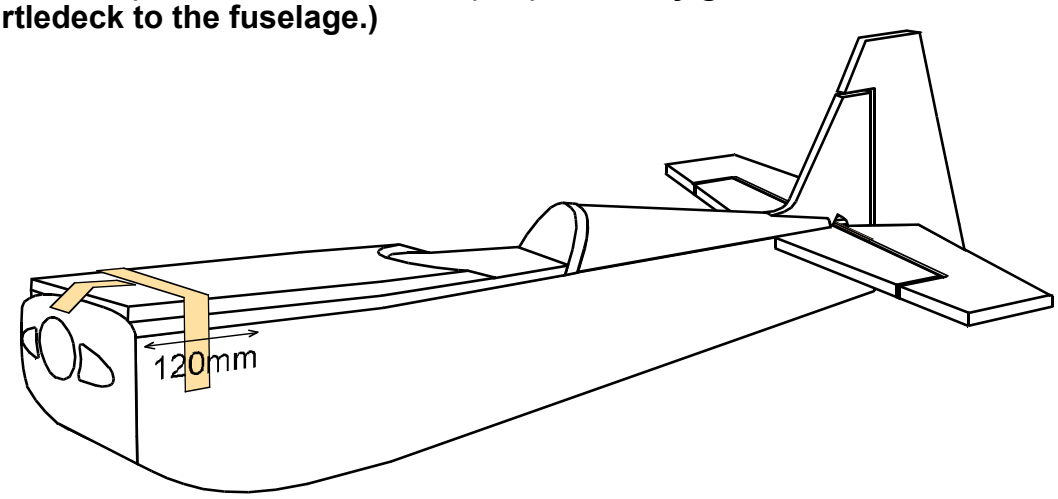
49 Cut out two pieces of material 476 x130mm and using the previous 23° angle as a guide, cut one short end of one panel off at 23°. Dry fit one panel flush with the nose and mark the shape of the fuselage, cut to fit. Transfer this shape to the second panel. Mark off the shape of your canopy onto the top of the second panel and cut on this line. Glue panels together and weight with some books to keep flat while the glue cures.



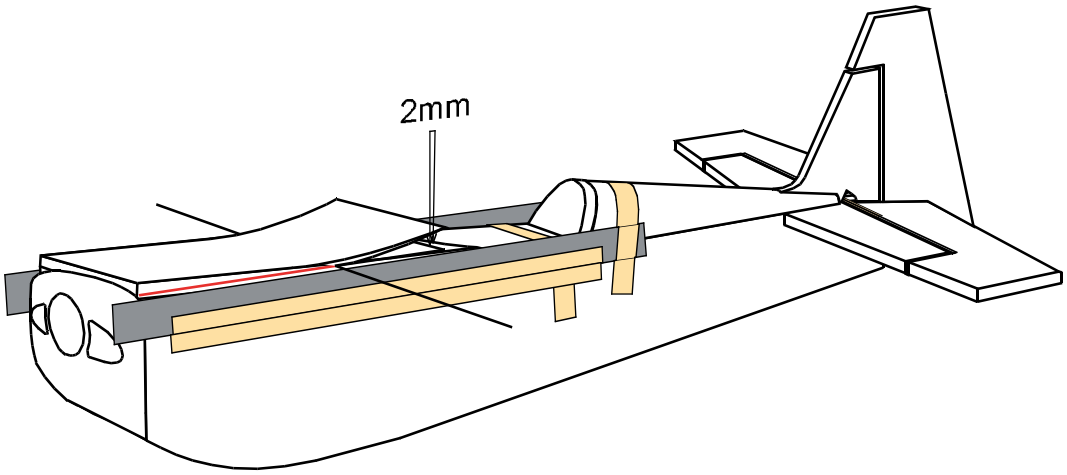
50 Cut out a rectangle 80 x 60mm with a 23° angle on one 80mm side. Hold this piece against the canopy end of the fuselage and mark the shape, cut to fit then glue to the canopy end of this double panel.

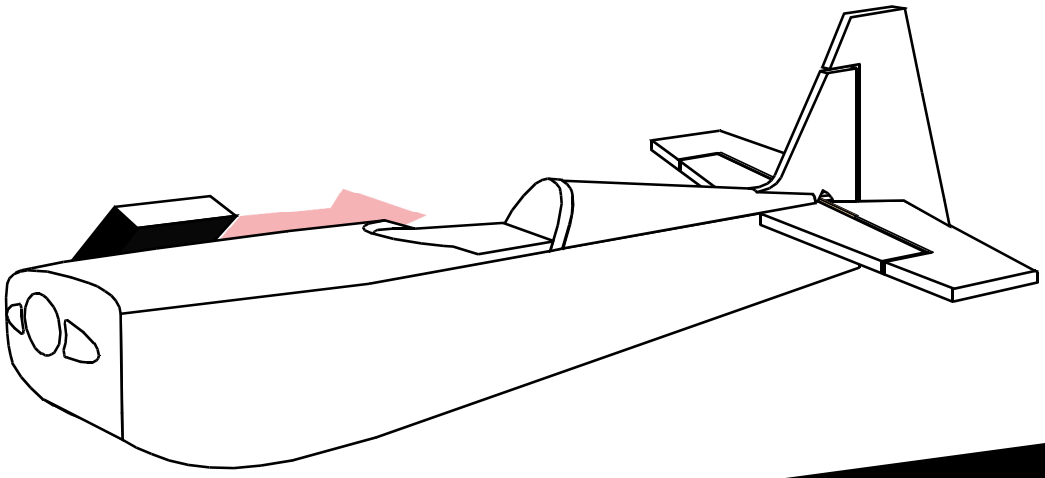


51 Glue turtledeck in possition, secure with tape. **(Note: only glue 120mm of the front of the turtledeck to the fuselage.)**

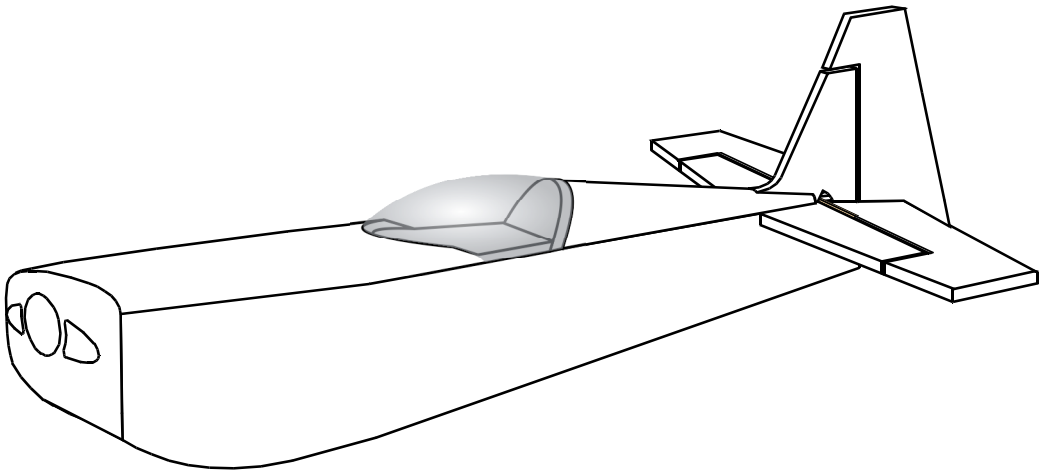


52 Tape a straight edge to both sides of the fuselage, inline with the top edge of the nose and about 2mm from front of the canopy. Hot wire this wedge off the turtledeck. Use you sanding block to sand the corners round and blend into the nose.

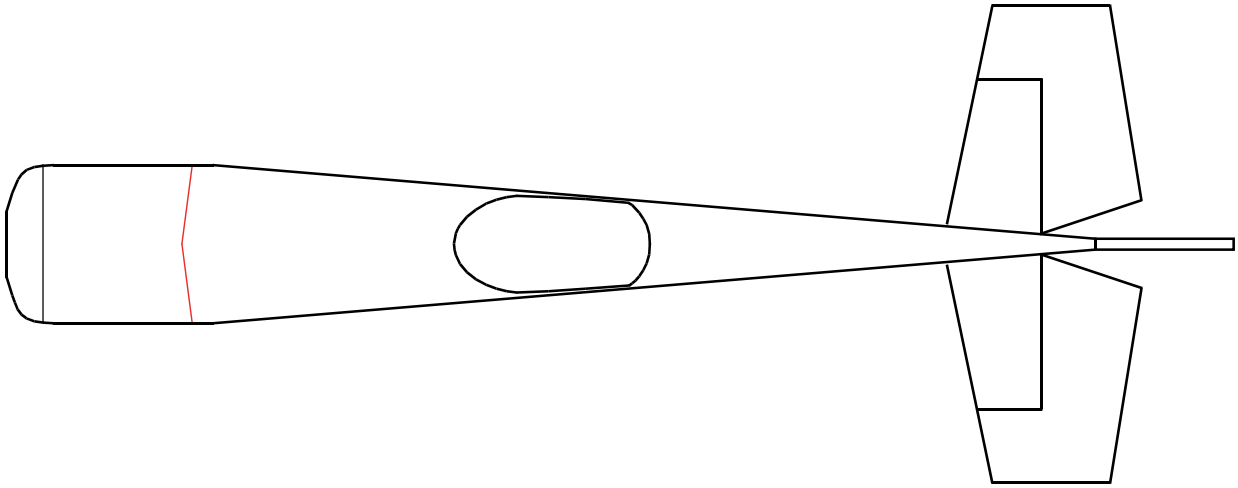


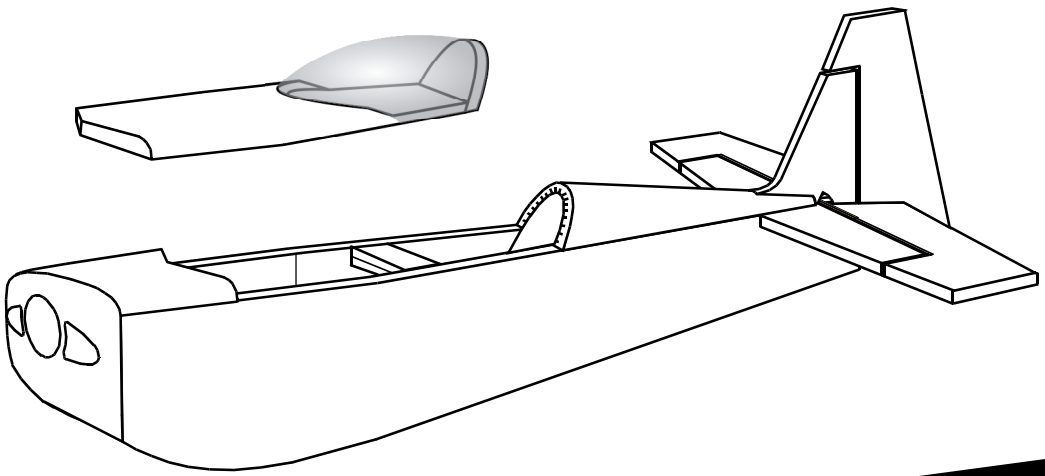


53 Glue your canopy in place with Pritt gel and tape in possition to dry.



54 Carefully cut through the turtledeck 2mm beyond the 120mm mark to free the hatch. You can cut a straight line but cutting a wide "V" will keep the removable hatch centred





Addendum

581 Tape two straight edges to the bottom and side of the fuselage as shown (you may have to do this step in two parts if your straight edges are not long enough). Start at the tip of the tail and end 15mm away from the corner of the fuselage at the landing gear mount. Cut this bevel with a sharp craft knife. Blend the newly cut bevel into the roundness of the nose with your sanding block. Repeat on the other side.