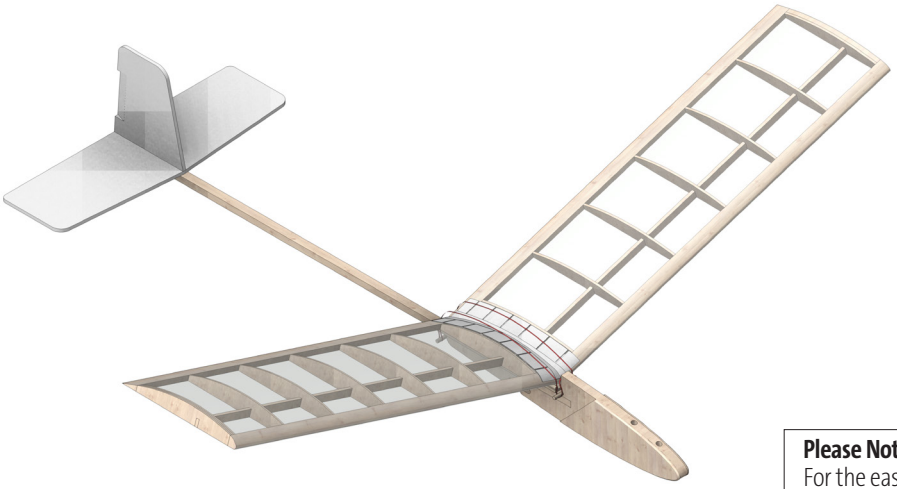
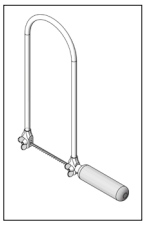
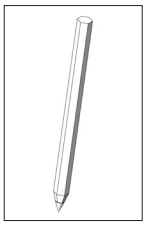
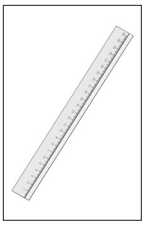
120450
Wind-Flyer

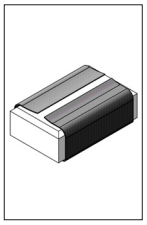


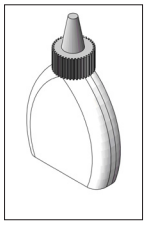
Required Tools:

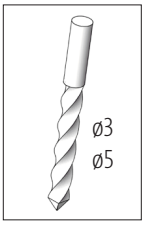

fretsaw or fine saw


pencil


Ruler


sandpaper


wood glue



wood glue

Please Note:
For the easier assembly we recommend a building board size at least 400x150x10.


fixing nails


hairdryer


iron

Please Note

The Opitec Range of projects is not intended as play toys for young children. They are teaching aids for young people learning the skills of craft, design and technology. These projects should only be undertaken and operated with the guidance of a fully qualified adult. The finished projects are not suitable to give to children under 3 years old. Some parts can be swallowed. Danger of suffocation!


adhesive tape

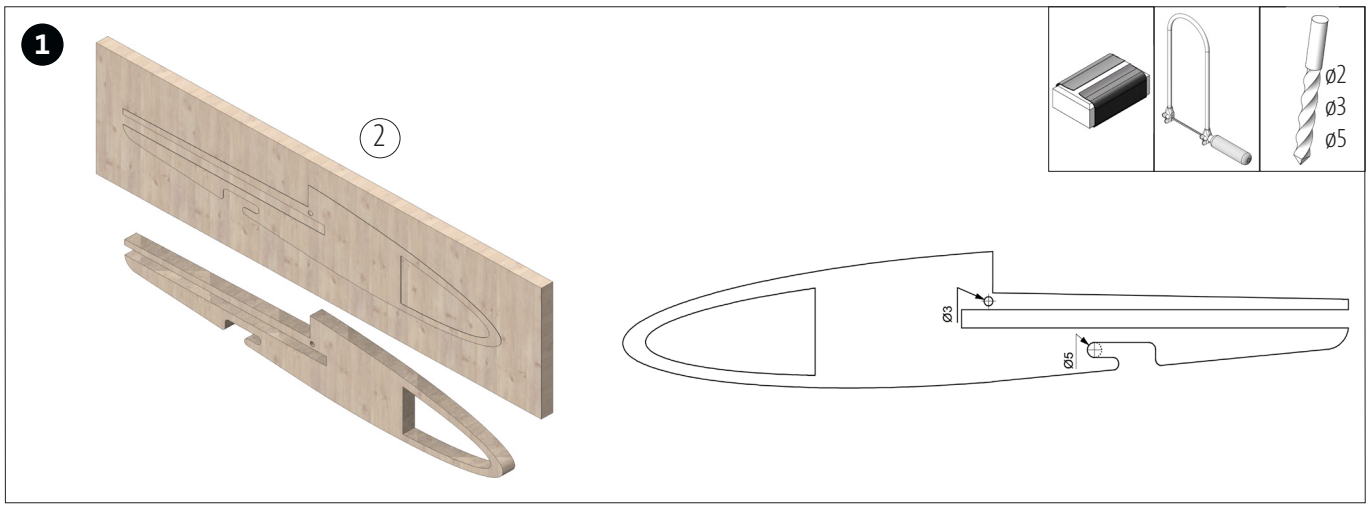

hammer


craft knife

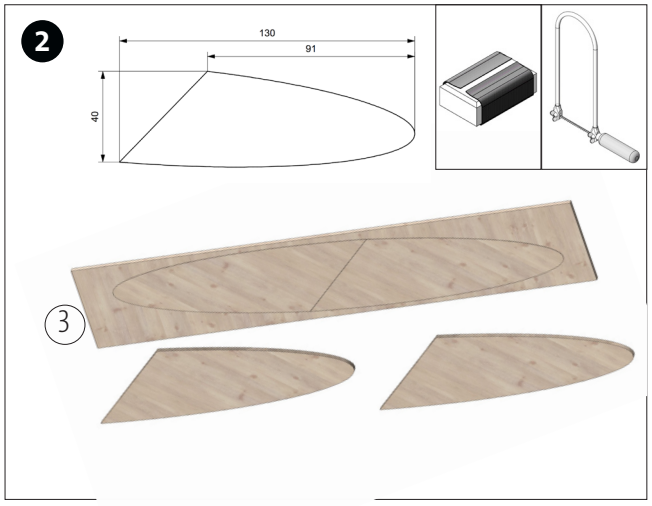

scissors

Parts List	Quantity	Size (mm)	Designation	Parts No.
balsa punched part	1	500x100x2	punched part wings	1
plywood Gabon	1	300x80x8	fuselage nose	2
balsa board	1	250x50x2	fuselage nose planking	3
rigid foam board	1	410x114x3	horizontal and vertical stabilizer	4
wooden strip	1	500x8x6	tail boom	5
wooden strip	2	370x7x3	main longeron wing	6
wooden nose rail	2	375x10x8	wing leading edge	7
balsa end bar	2	375x15x5	trailing edge	8
round rod	2	150x3	bracket rubber band	9
PE film	1	600x457	stretch film wing	10
rubber ring	2	ø3x60	wing attachment	11
steel balls	34	ø3	trim weight	12
middle connector	1		middle connector wing	13

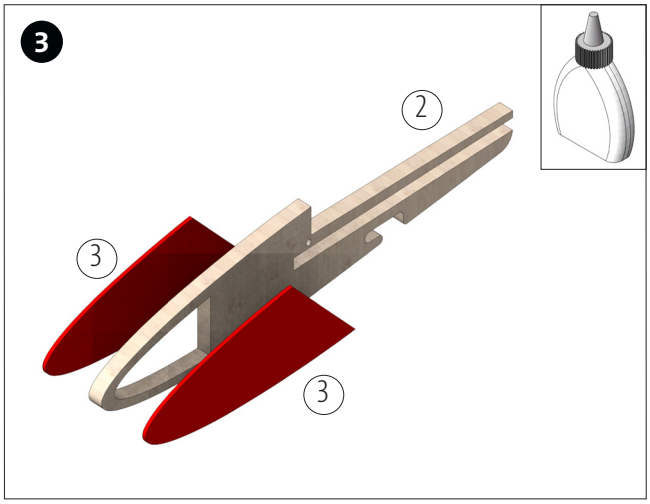
OPITEC



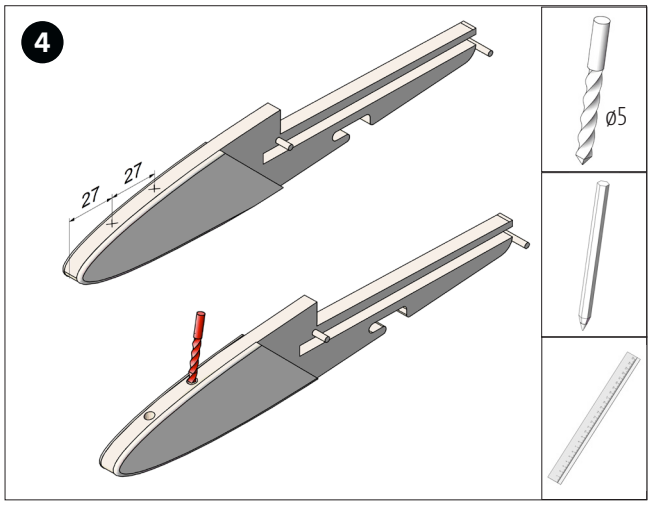
Transfer the template for the fuselage (A) to the plywood plate (2). Drill through the ø 3mm hole. Saw out the fuselage and clean the saw cuts with sandpaper.



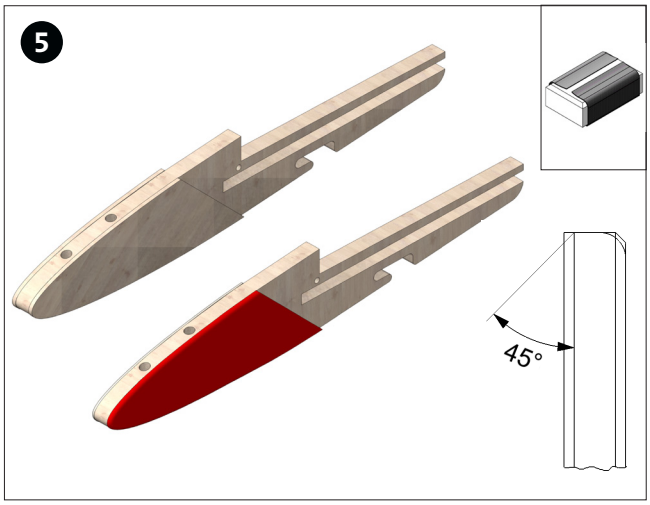
Transfer the template (B) for the fuselage nose planking 2 times to the balsa board (3). Saw out and clean the saw cuts.



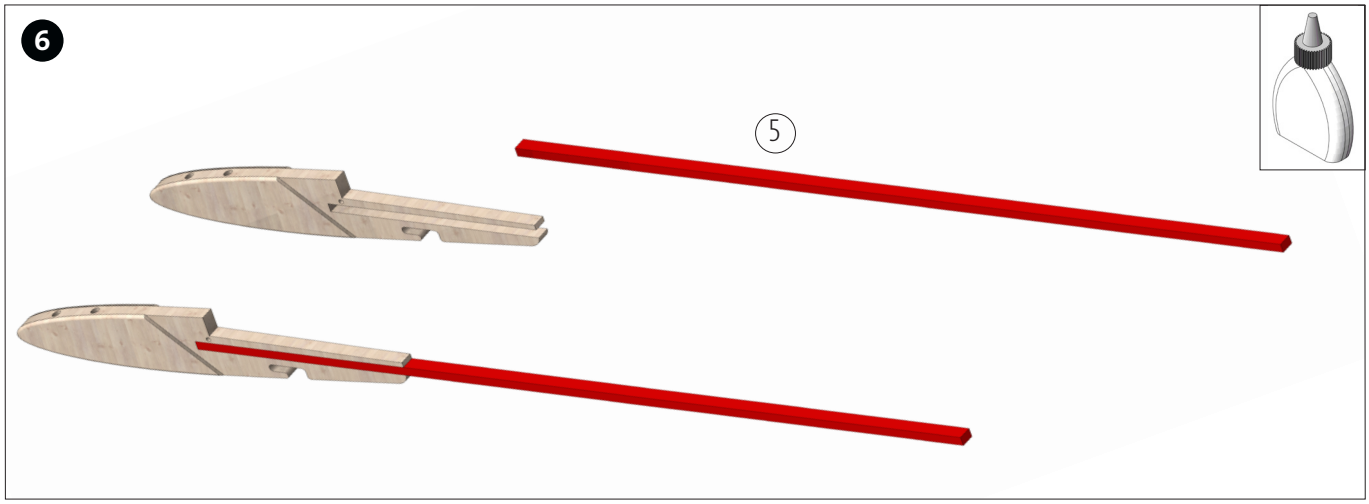
Then glue the two fuselage nose planks (3) onto the fuselage (2) from both sides as shown.



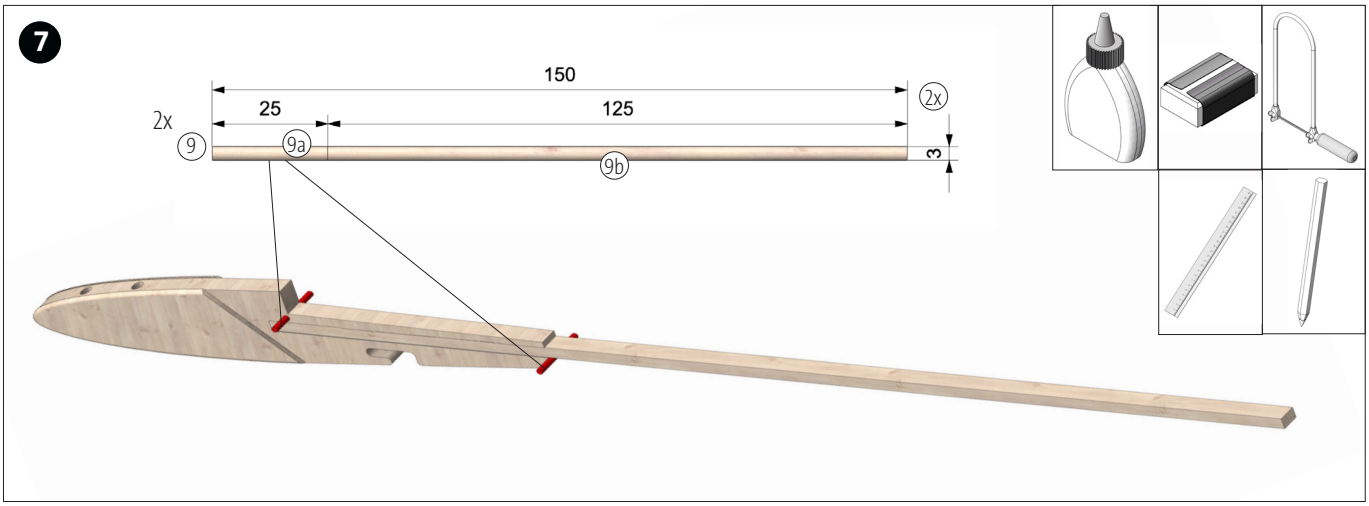
Measure the distance between the holes in the fuselage nose and drill through to the filling chamber (ø 5mm) as shown.



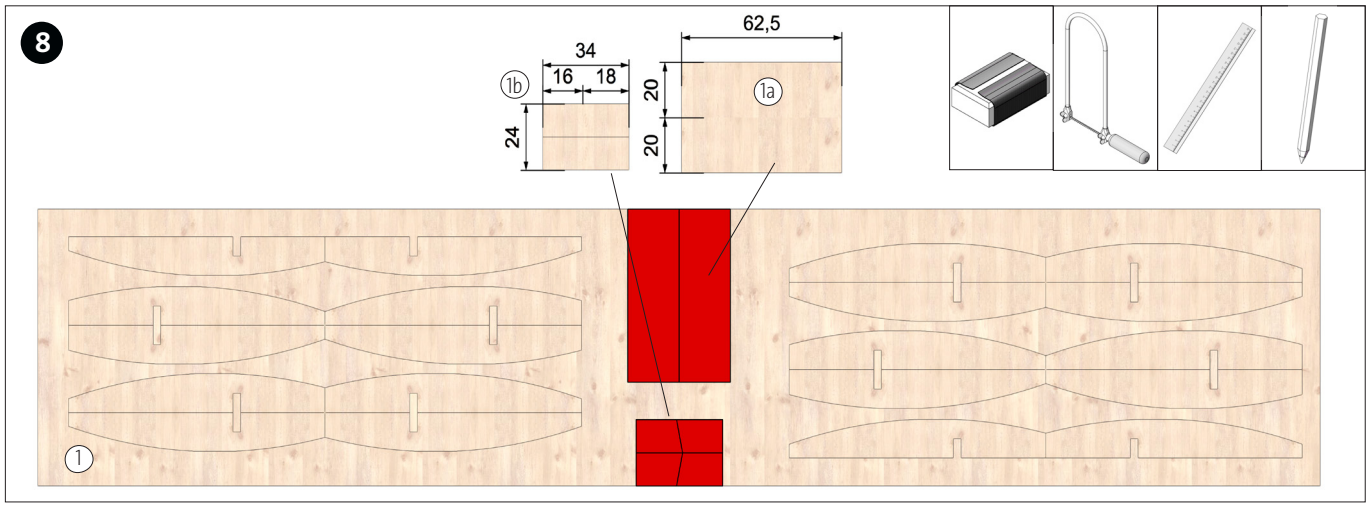
Round off the edges of the fuselage nose (see detail).



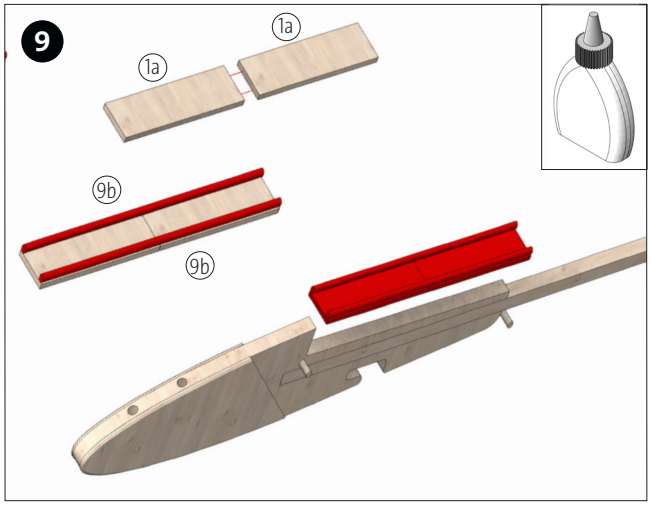
Glue the tail boom (wooden strip part 5) into the longitudinal opening of the fuselage. Allow the glue to dry well.



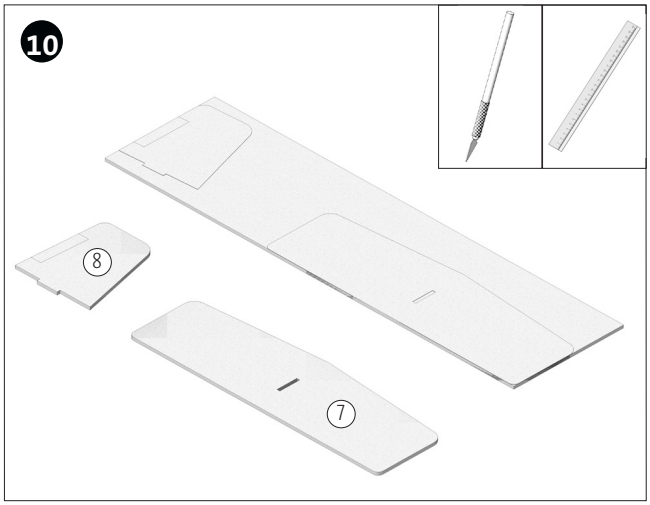
Cut 25 mm from each round bar (9) as shown above. Glue the two 25 mm pieces (9a) centered to the fuselage. One in the hole in the fuselage and the other at the end of the fuselage under the tail boom.



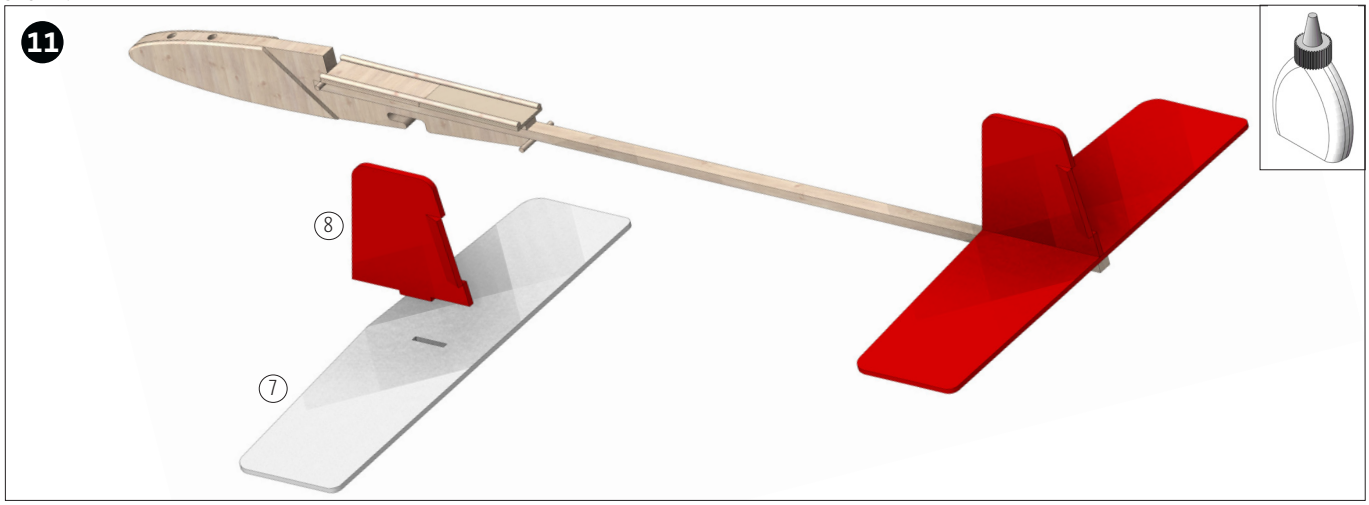
Remove all wing punched parts out of the balsa board (1). Transfer the template for the wing support (62,5 x 20 mm) and the template for the spacers (C) to the free centre of the board (1) and saw out the parts. Clean the saw cuts.



Glue the wing support (1a) as shown. Then glue on the two round rods (9b). Glue the finished wing support centered onto the fuselage as shown.

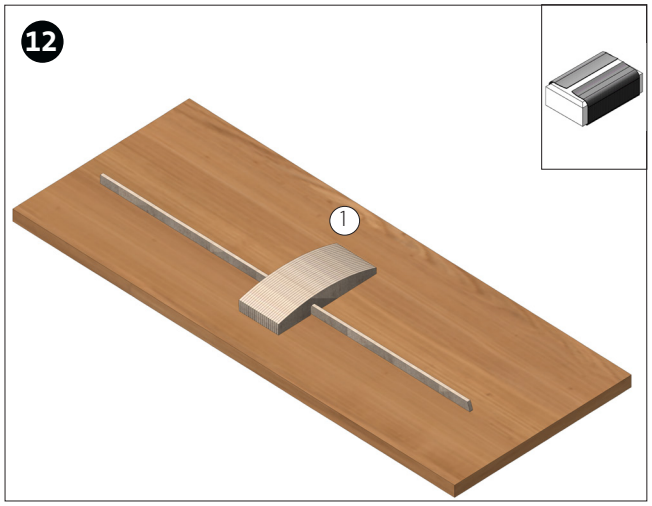


Transfer the template (G/H) for the horizontal (7) and vertical (8) stabilizers to the hard foam plate (4) as shown and cut it out.

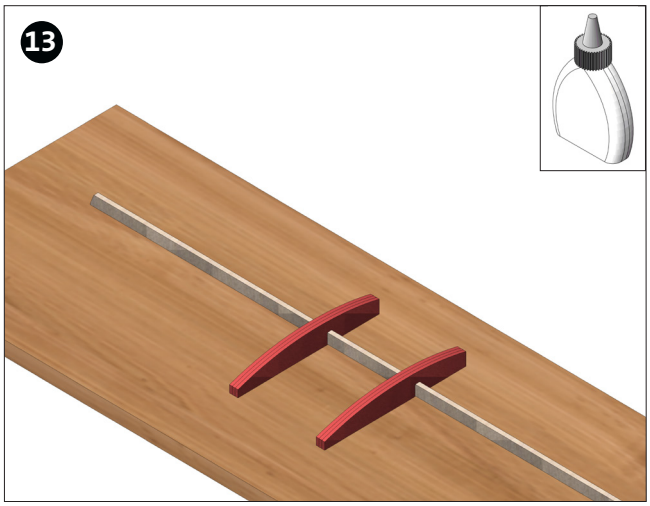


Glue the vertical stabilizer (8) orthogonal to the horizontal stabilizer (7). Allow the glue to dry. Then glue the tailplane centred and flush with the edge of the tail boom (5) as shown.

Note: Align parts well in longitudinal direction, otherwise the model will fly an unwanted curve. Also pay attention to the horizontal alignment!

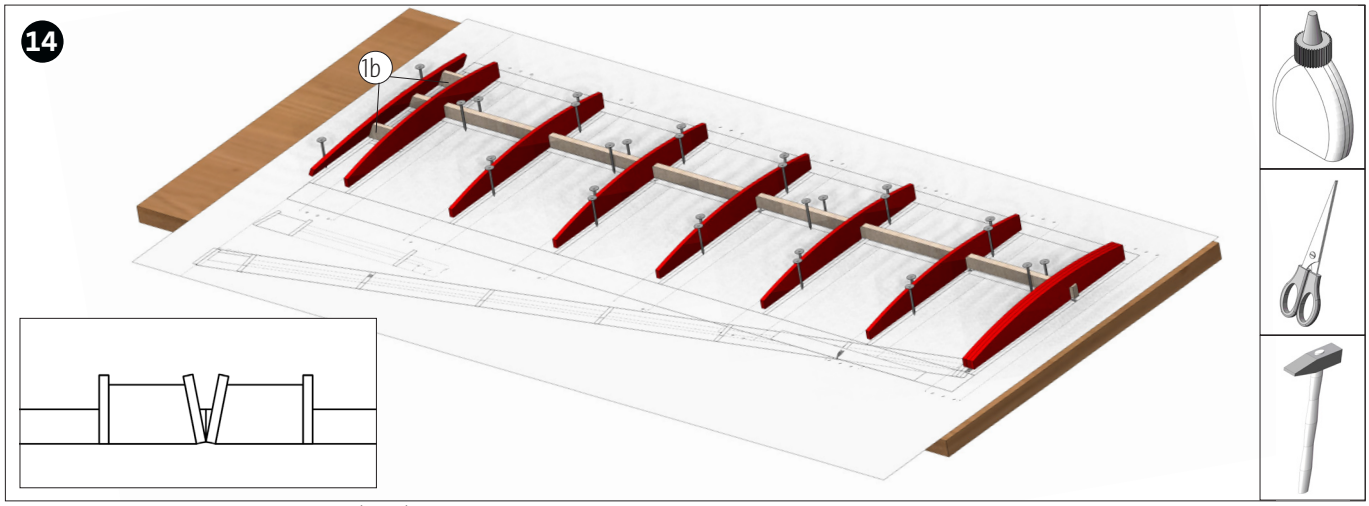


Attach the punched parts (1) to a main longeron (6) as shown. If the punched parts have different lengths, align them front and back with sandpaper and sanding block to the same length. Correct large irregularities!



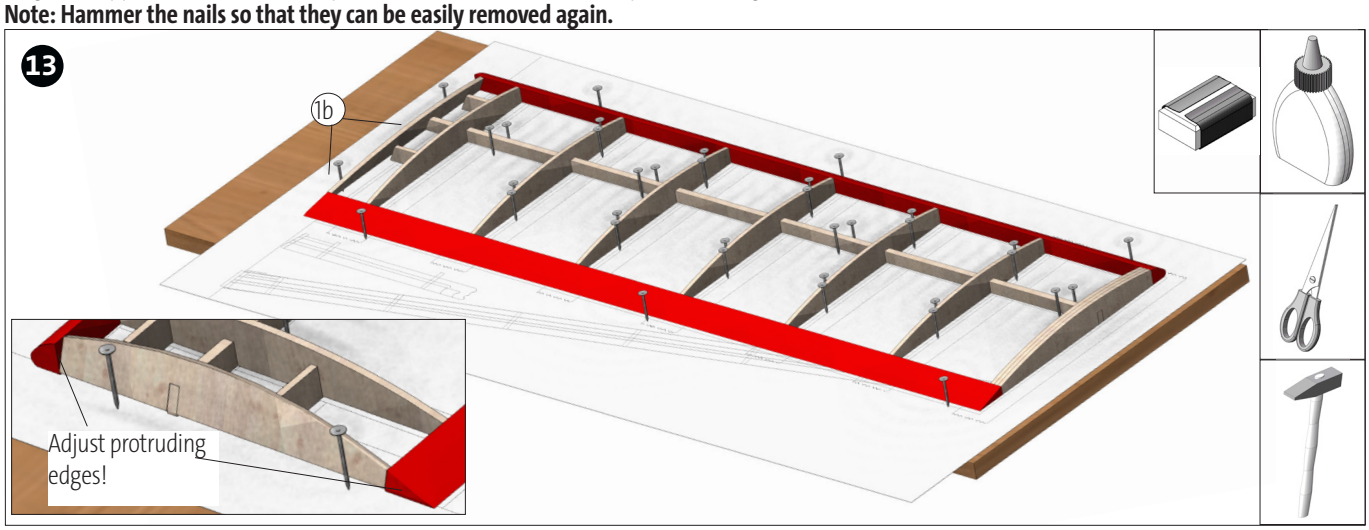
Then glue three ribs congruently together. Repeat this process twice.

Note: Do not glue the triples to the main longeron!



Cut out the template for the wing half (D,E,F), glue it together at the dividing lines and fix it to the building board. Now glue the ribs and the spacers (1b) to the middle section on the longeron according to the template and fix with nails. Glue the middle rib diagonally to the main spar against the diagonal supports (1b). The inclined position later results in the V-shape of the wing.

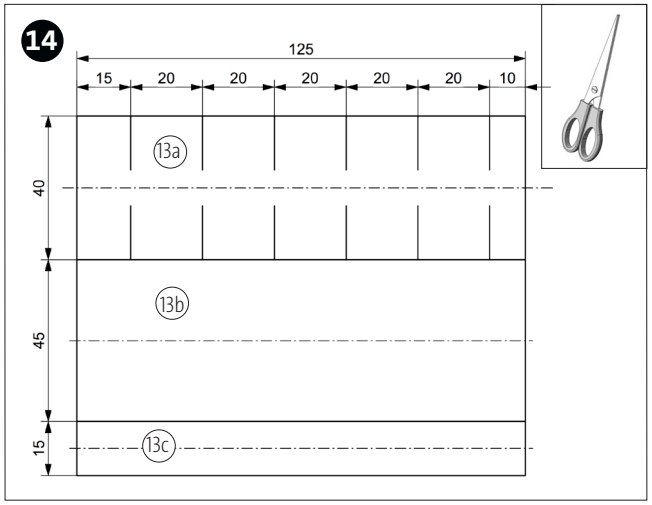
Note: Hammer the nails so that they can be easily removed again.



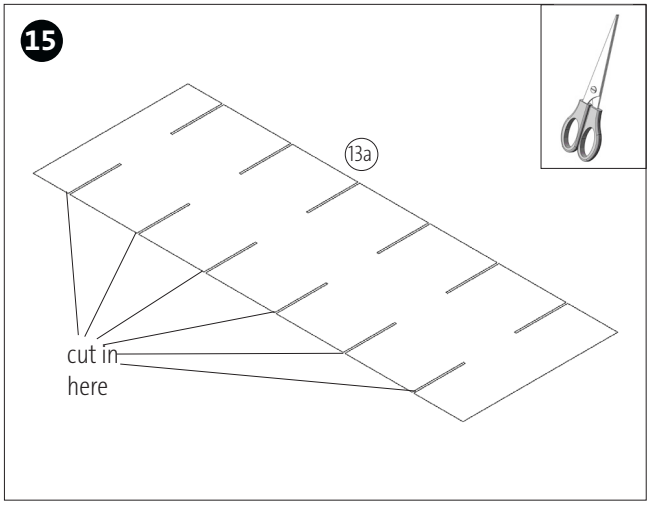
Glue the nose rail (7) and the end rail (8) to the ribs as shown.

Note: Do not glue to the surface! Assemble the second wing according to the instruction as well..

Plane the protruding edges of the nose and end rail flat at the bevel.

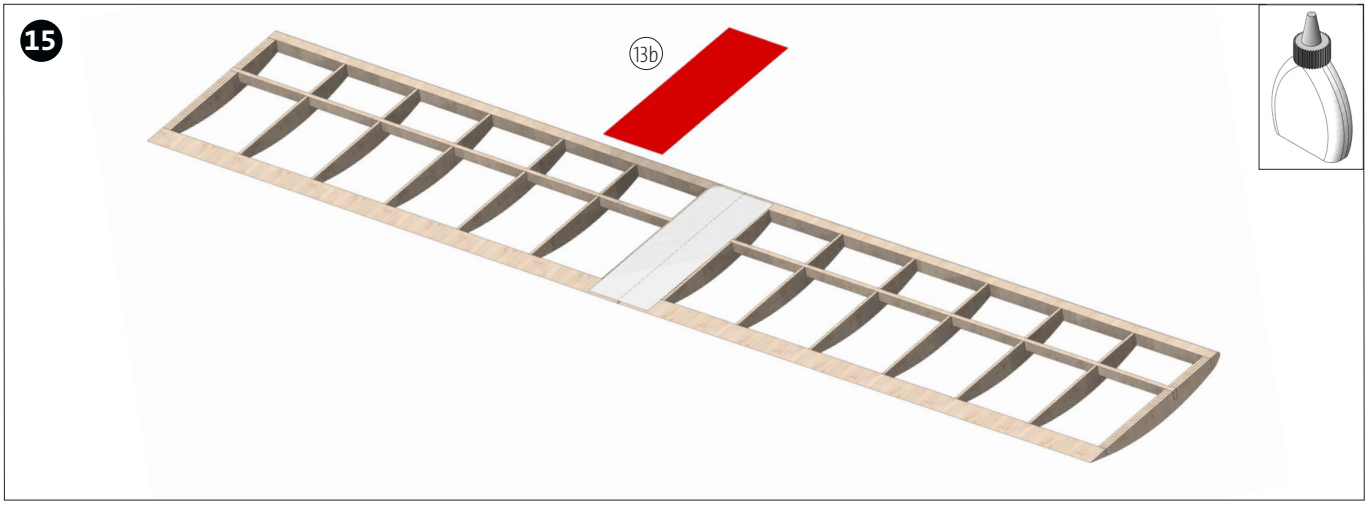


Cut out the template for the middle connectors (I).



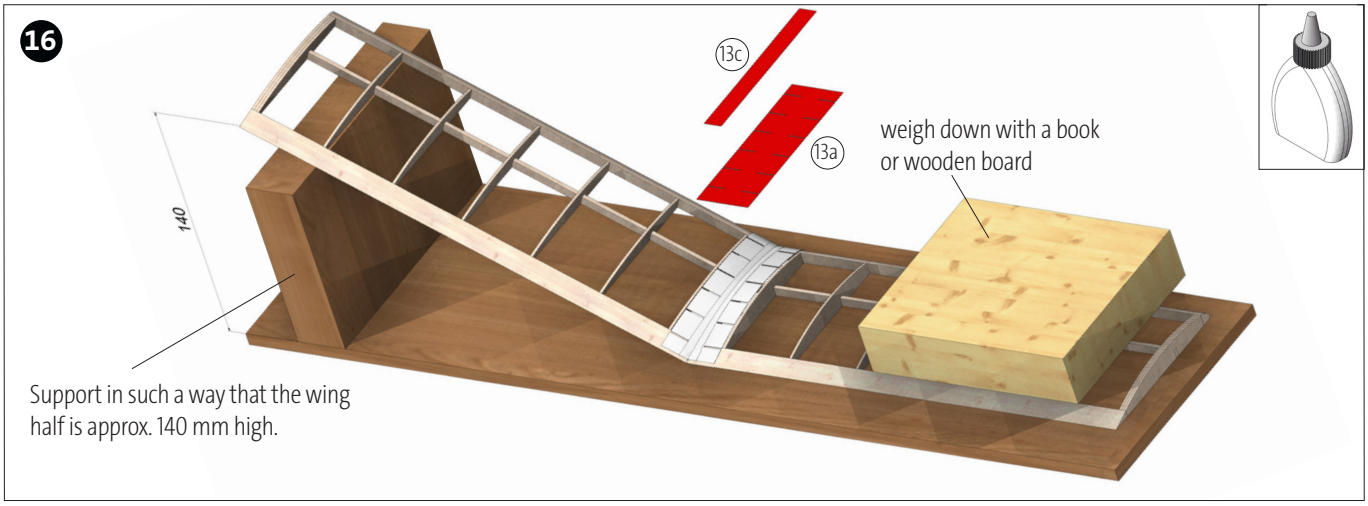
Cut in the top middle connector at the crosslines.

15



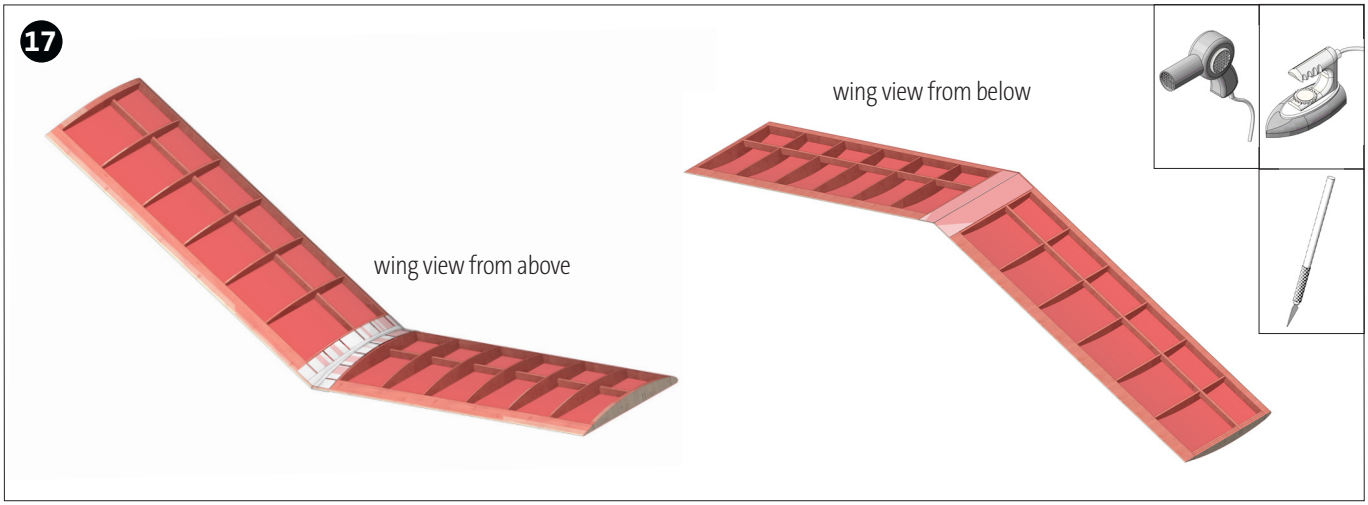
Turn the finished wings and put them together at the middle as shown. Glue the middle connector (13b).

16



Turn the wing, lift one half upwards and glue the two skewed ribs together. Glue the upper middle connector (13a) onto the middle of the wing and fix it with the narrow middle connector piece (13c).

17



The enclosed covering film is coated on the rough side with a hot-melt adhesive. This is activated by ironing and sticks the foil to the wooden parts during cooling. The film also becomes transparent during this process.
Cut the covering foil into four pieces of 150 x 455 mm each.

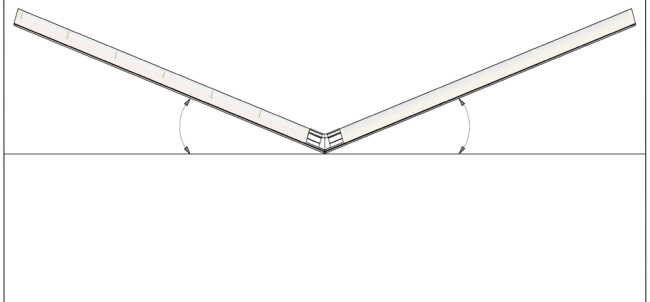
First the upper sides of the wing halves are covered. The half to be covered must always lie flat on the flat building board during ironing to avoid distortion and twisting.

Place a piece of the film on the support surface with the smooth side up and align it evenly.
Heat the iron to "nylon" setting.

First "score" all ribs at the highest point by carefully pressing on the iron. Start from the middle of the wing. Make sure that no wrinkles form. Now iron on the foil step by step along the ribs. Start again in the middle of the supporting surface.
Finally, edit the end bar and the leading edge.

Allow to cool briefly. Then iron the foil around the edge of the end slat and the nose slat until slightly above the tip of the nose.
Cut off the foil residues cleanly with a cutter knife.
Proceed in the same way with the underside. Always check the wing for distortion by placing it on the building board.
If the entire wing is covered, the foil must now be tightened.
For this purpose, the wing is evenly blow-dried with a hair dryer at the highest setting (or a hot-air gun at the lowest setting). The outer edges must not be heated at all.
If, despite all due care, a delay has occurred, this can be remedied by warming up and carefully counter bending.

18 Lateral weighing.



Place the wing on the table and balance it. It must tilt evenly and slowly on each side. If this is not the case, glue steel balls (12) to the edge under the lighter side to compensate..

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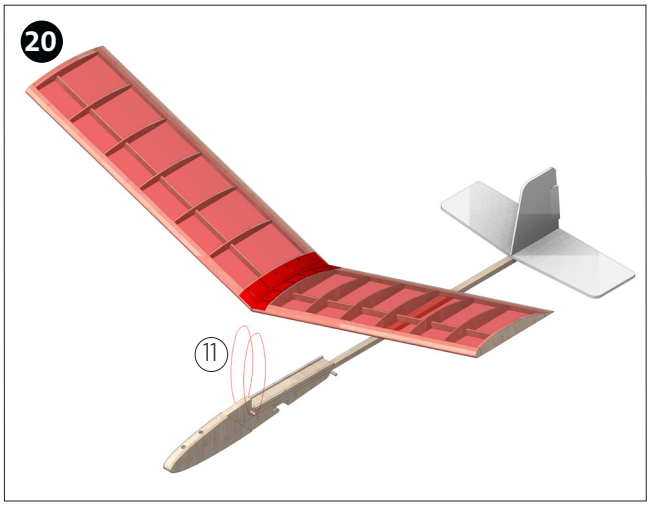
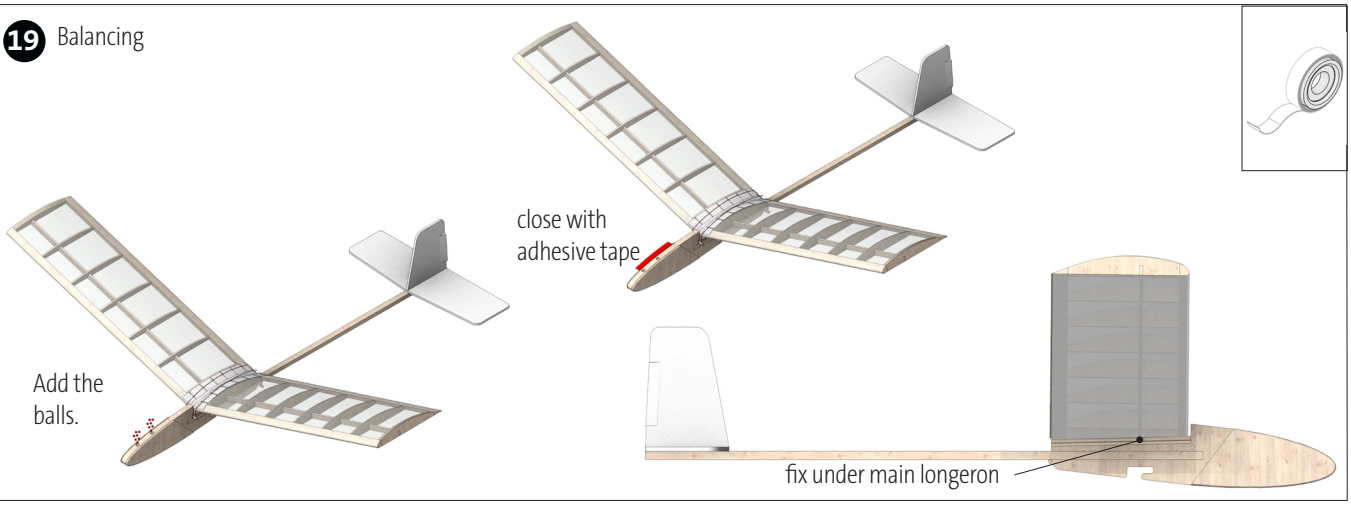


Place the wings on the wing support, hook the rubber rings (11) into the front holding rods (9), tighten them over the wing centre and fix them to the rear holding rods by hooking them in.

19 Balancing



Support the wing under the main longeron with two fingers or spread pliers. Put as many balls into the chamber as necessary until the model points slightly downwards into the glide path with the fuselage nose. Then seal the holes with adhesive tape. The model is now ready to fly.

Test Flight:

The Wind Flyer 2 is a lightweight model that should only be flown in calm or light wind. Choose a windless day to fly in and, if possible, search for a slightly sloping, obstacle-free terrain.

In wind always start exactly against the wind. Grasp the model behind the raised hook with two fingers and start with a slight impact against the wind in the gliding trajectory. This must be practiced!

Note: 1 It is assumed that the weighings are correct.

If the model is not gliding correctly, a strip of cardboard approximately 15 mm wide and 25 mm long must be glued under the end strip (the setting angle is thus reduced). This must happen so often, until the model shows a safe and quiet gliding flight.

If the gliding flight is too steep, a cardboard strip must be glued under the nose strip (the setting angle is thus increased).
This must happen so often, until the model shows a safe and quiet gliding flight.

If the model is flying a banked curve, then an aileron will be cut on the inside of the wing as follows:
- Cut an 8 mm deep incision, starting from the wing outside, at 25 mm and 105 mm into the end strip. The longitudinal section is only about 2 mm deep from the top side (see wing drawing).

Note: 1 Score the longitudinal cut only, do not cut through!

Then the aileron is broken down about 1 mm or more until the model flies straight ahead.

Then secure the aileron with a few drops of glue.

If the model flies a curve without transverse tilt (a rudder curve), the rudder must be controlled as follows:
- The fin, as it is called the fixed part, has already received the lower and upper incision during construction.
- Now a 1 mm deep incision is made on the inner side of the curve to connect the upper and lower incisions and the rudder
Broken about 1 mm or more to the outside of the curve until the model flies straight ahead.

Note: 1 Score the longitudinal cut only, do not cut through!

- Then secure the rudder with a few drops of glue.

The launching is carried out with a 25 m or 50 m long line.
If you don't have launching experience yet, you should get in contact with an experienced model pilot who will certainly be happy to help.