

URSUS XL kit



ASSEMBLY MANUAL

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napolskimniebie.pl
RC model planes flying in Poland

Model plane Ursus was designed as a FPV flying platform. Its main advantages are: high resistance to damages, easy assembly, calm flying characteristics and a big cargo hatch.

Basic data:

Wingspan: basic 1800mm (can be extended to XXL size – 2200mm)

Length: 1154mm

Wing Area: 43,2dm² (52,8dm²)

RTF Weight: 1600 gr(including the weight of batteries)

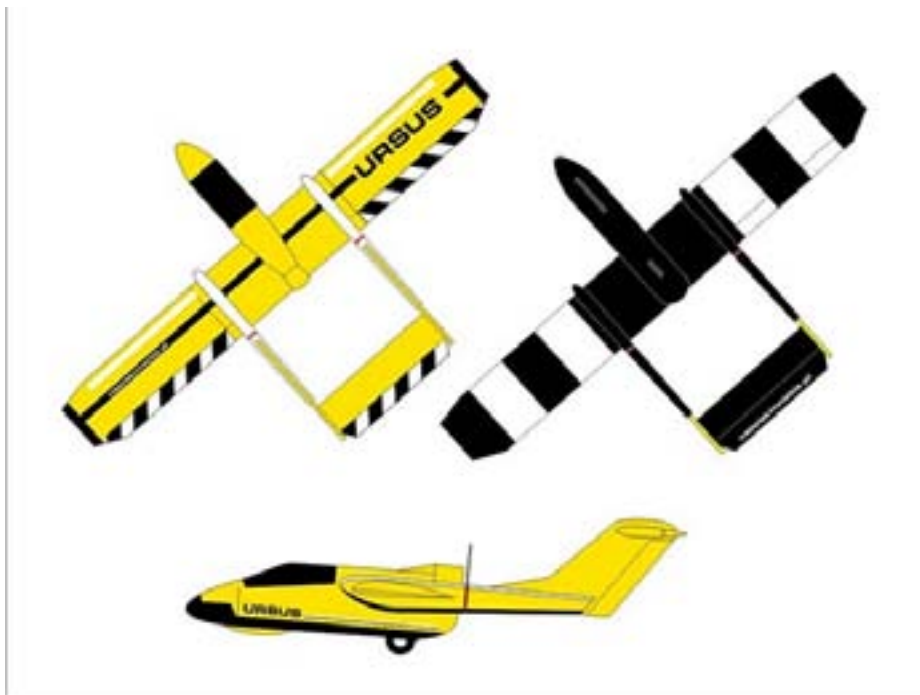
Empty Weight: 1200 gr

Cargo space: 80x80x400mm

Suggested equipement:

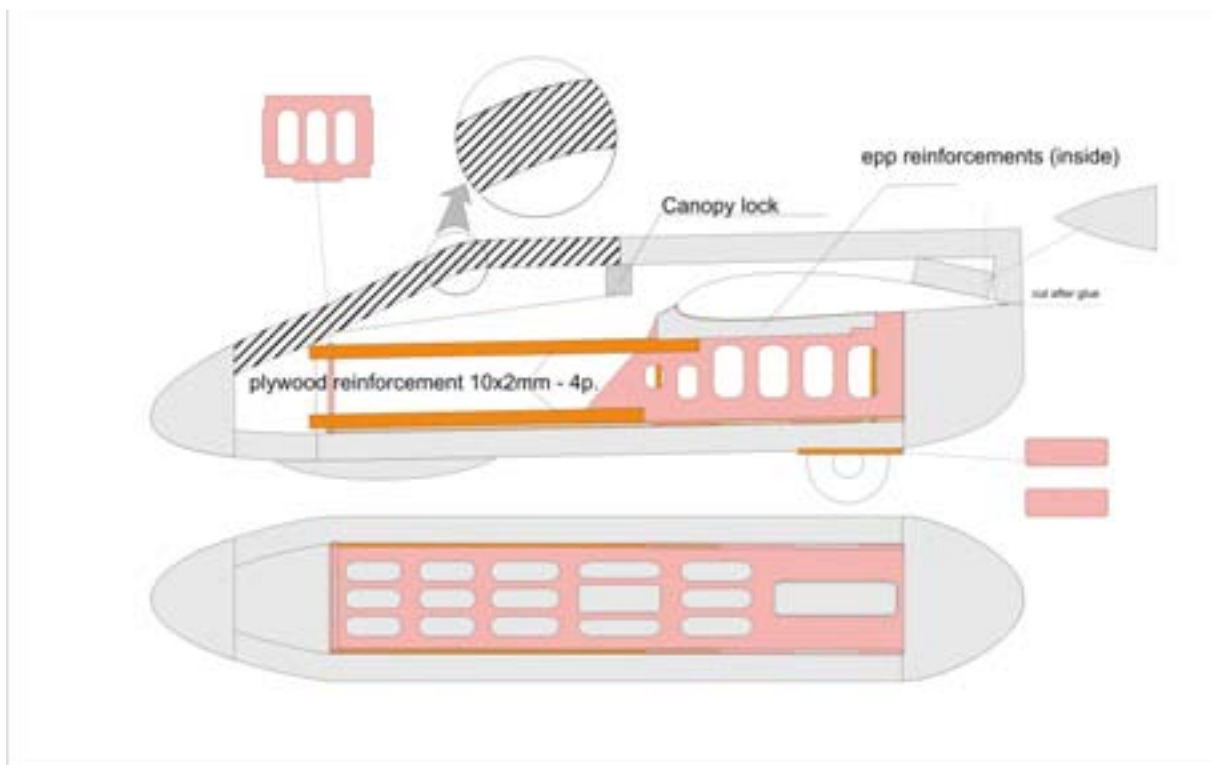
- GE A2814/6T 1400KV (~ 300W) engine
- APC8x6 propeller (or suitable to a chosen engine)
- 25-40A speed controller
- 3 s lipol acu 1750-2200mAh (2 items)
- servo: - ailerons and rudder 4x HXT900 (9gr)
- height:SG-91R 1/2 Metal Tower Pro - Black 11g

How to paint the model – demonstration pattern.



Assembly manual

1. First we make a fuselage. Glue together: two side elements to a bottom one and a back cube (elliptic fuselage closing part).



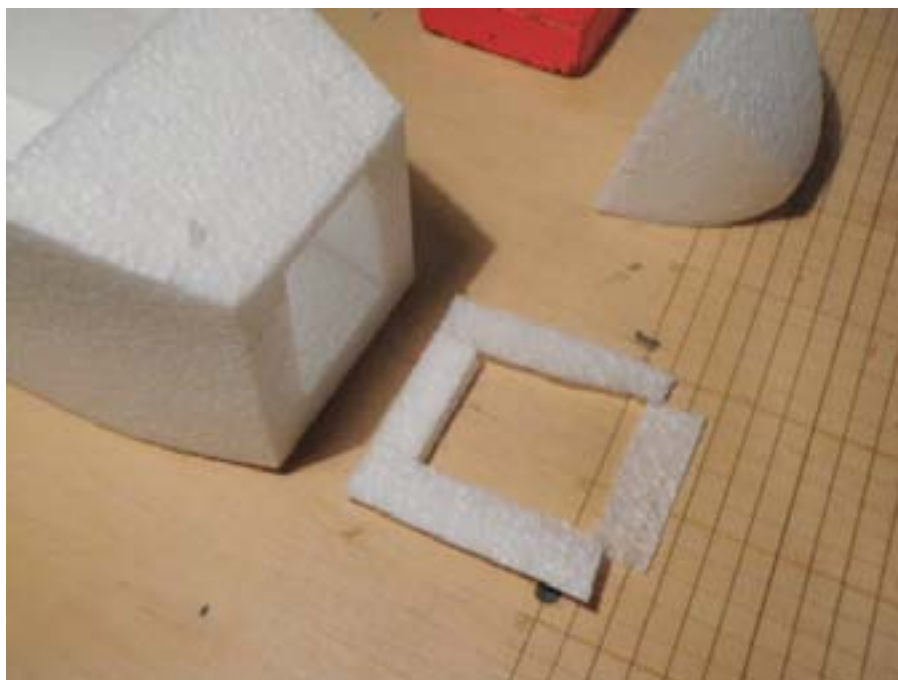
2. Make cuts on the top of the canopy which is closing a fuselage. It will help to arch it.



3. Now we have to glue a cover of canopy. We glue it in the front part and the closing part of the canopy.

CAUTION: At this stage the back part of the fuselage (top) should remain open (glueing area – a section filled with lines – diagram 1). Next we cut off the canopy cover with a sharp knife. Now, inside the canopy in its back part, glue a small element functioning as a canopy lock.

4. Cut evenly the front part of the fuselage in order to glue its nose.

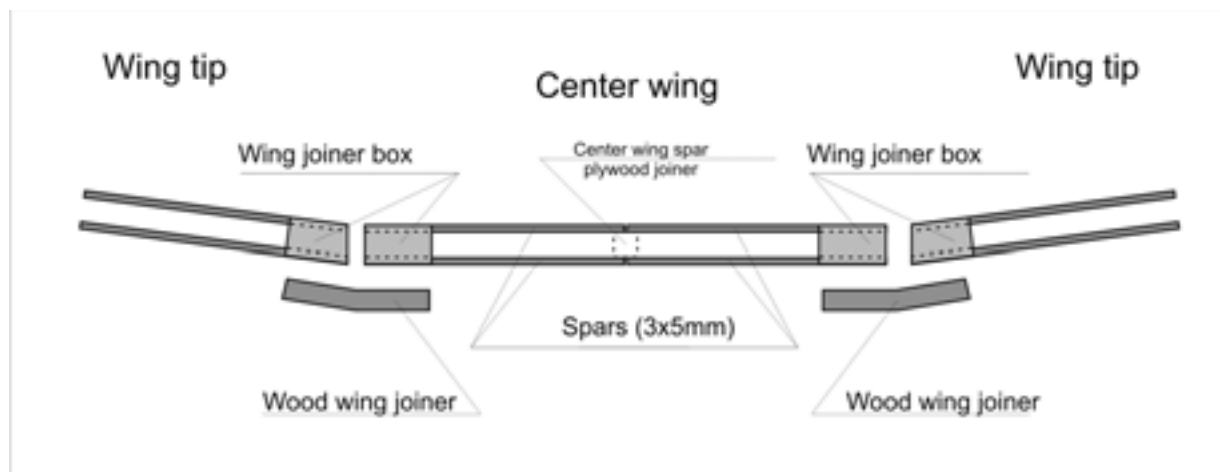


5. Glue inside the plywood reinforcement of the floor and side parts of the fuselage – diagram 1.
6. Now glue inside 4 side wooden slats (10x2mm) which stiffen the fuselage – diagram 1.
7. Glue inside the additional epp foam elements, which increase the surface of the junction of the fuselage and the bottom of the central wing. When dry, cant the edges of the reinforcements of the fuselage inside. The reinforcements will provide better access to the back part of the cargo hatch – diagram 1.
8. In the wings cut out the grooves for spar joiner pockets.
9. In the middle of the central wing where the wooden slats meets cut out foam and glue there a plywood square to “connect” left and right wooden spars.



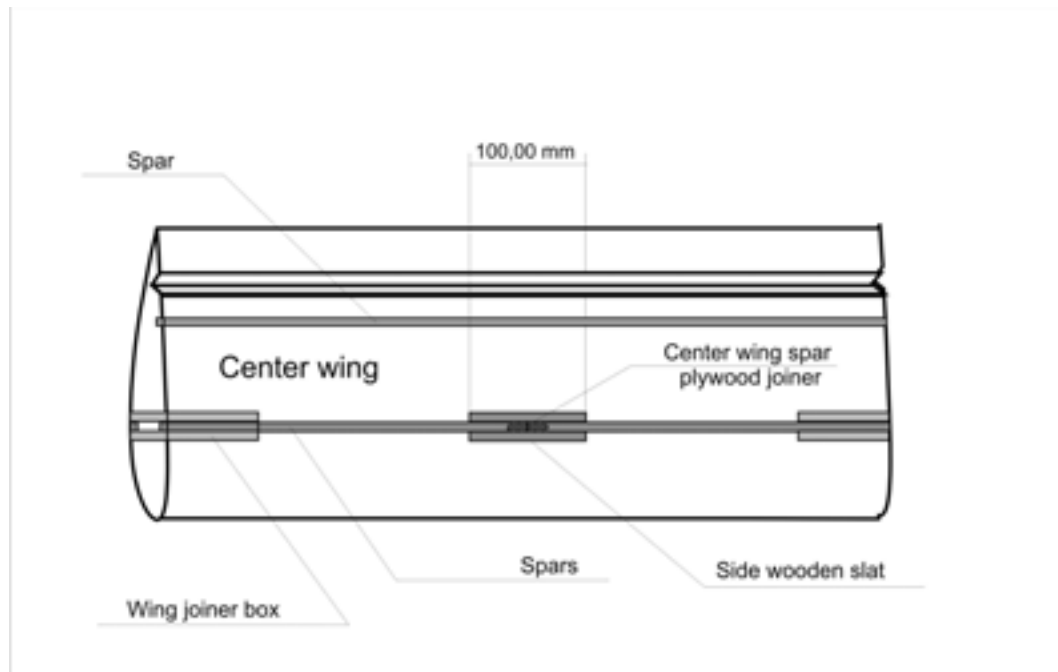
10. Now you have to glue with resin spar joiner boxes and spar slats and which is optional you may glue extensions to the wings (XXL version)

CAUTION: spar joiner boxes in the central wing are rectangular (spar slots 3x5x300, 4 items), while boxes for tips (ending parts) have slanting edges (wings' lift) + slots 3x5x600 – 4 items.



11. Glue prepared sets into the central, left and right wings. The spar joining point in the central wing should be exactly on the central plywood element (picture above). **IMPORTANT:** After gluing, make sure that the glue didn't get into the spar joiner boxes (from the side of the cuts on the wings).

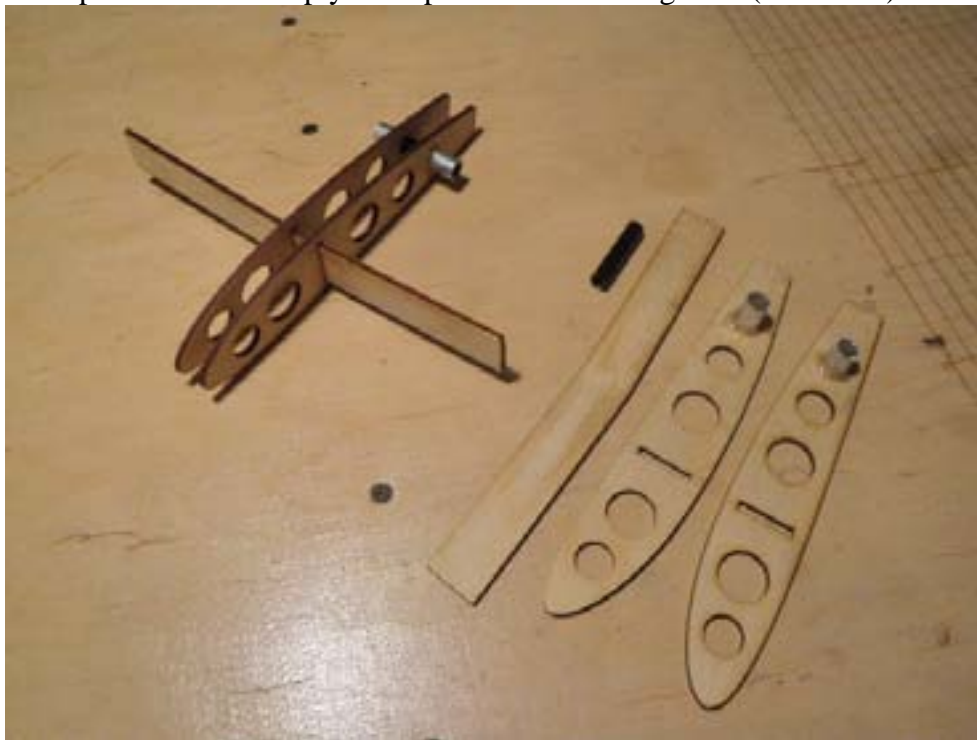
12. When dry, you cut out the grooves on both sides of the slots in the place where the slots are joined and there you glue in smaller joining slots 100mm long (picture below).



13. Glue a rear spar in the central wing (slot 3x5), wing wooden spars (slot 3x5) and aileron wooden stiffening. (slots 2x5).
14. Apply (temporarily) plywood profiles to the wings (inner side) and using a transformer soldering iron with a specially shaped wire, make holes to insert the cable/wire connectors and in the rear hole place for the alignment dowels.



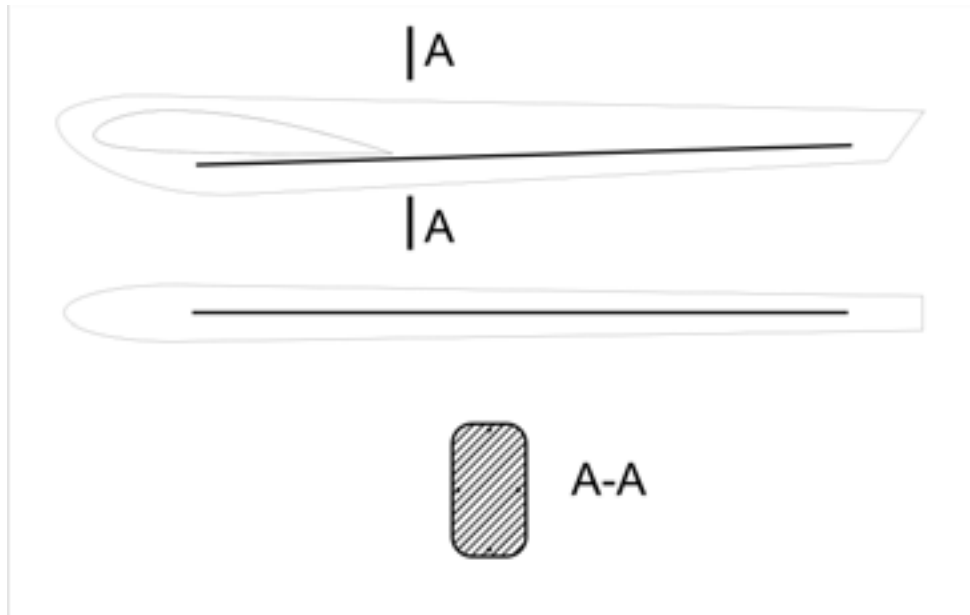
15. Glue alu pilot sleeves into plywood profiles of the wing ends (rear holes) with resin.



16. Glue the plywood profiles to the sides of the central, left and right wings. Make sure that the holes in the plywood profiles for the spar joiners properly fit to the joiner boxes.

17. With a knife cut the tailbooms to make 5mm deep grooves and with CA glue the glass rods as shown below.

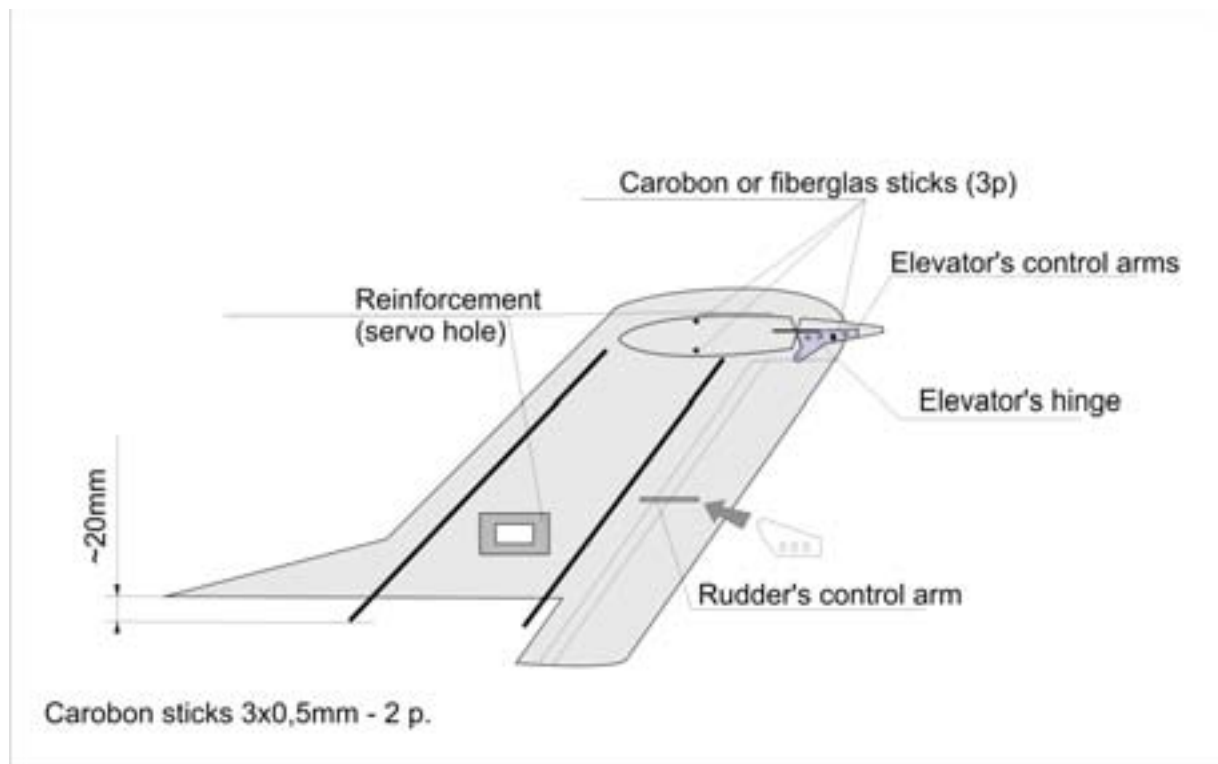
You may round off the edges of the back bars (tailbooms) by cutting off the excess of the material with a sharp knife (45 degrees angle). Cut off the formed edges again and sand down a surface with sandpaper (100).



18. Glue two glass rods into a horizontal stab (at the top and at the bottom of the horizontal, in 1/3 of the chord).



19. Glue two carbon flats in to the rudders. Cut out a square hole to insert the rudder's servo and strengthen it with a plastic element. Glue the rudder's control arms.



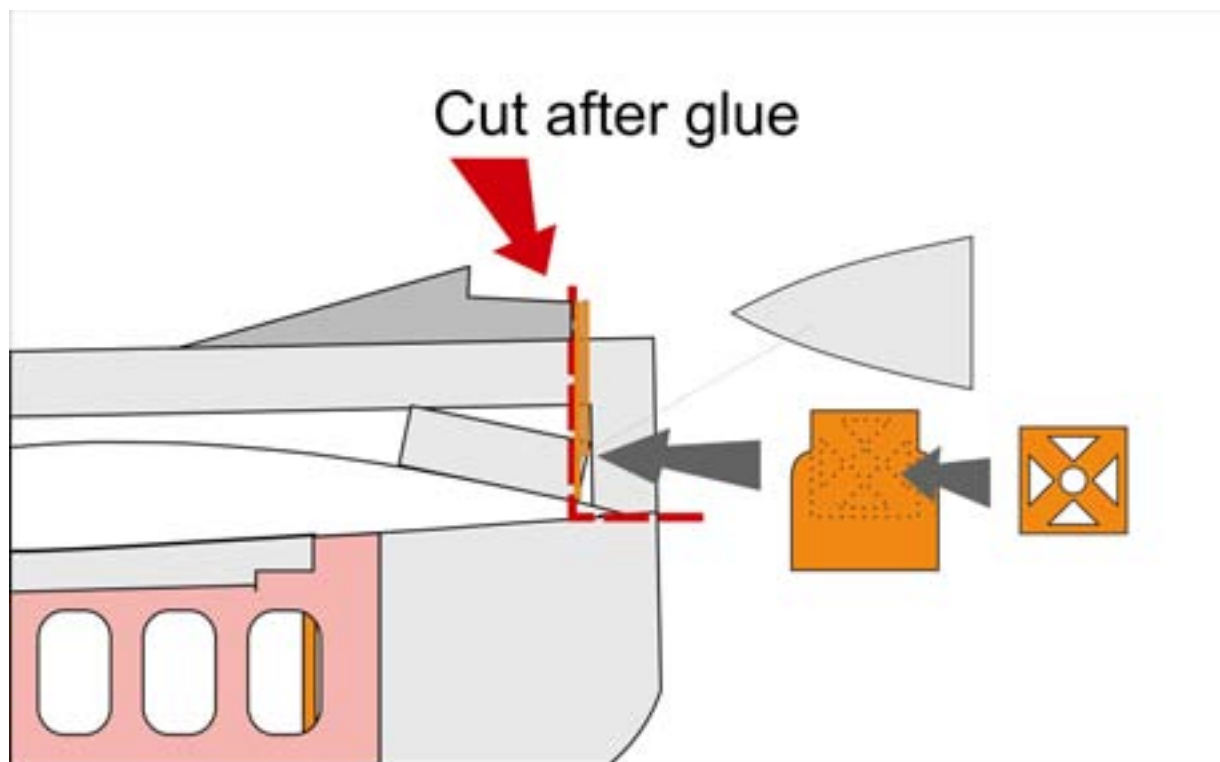
20. Glue rudders to tailbooms - paying attention to symmetry.

21. Cut the tips (ends) of the horizontal stabilizer. You can round off its edges (optional).
Cut out a hole for elevator servo.

22. Cut the elevator fin down to 475mm long and cut its both ends (45 degrees angle). Glue exactly in the middle of the elevator a drive arm and then a glass rod (one or two – it depends on how much you want to strengthen it). Join the elevator fin with the horizontal stabilizer with three plastic hinges (see picture below in point 31).

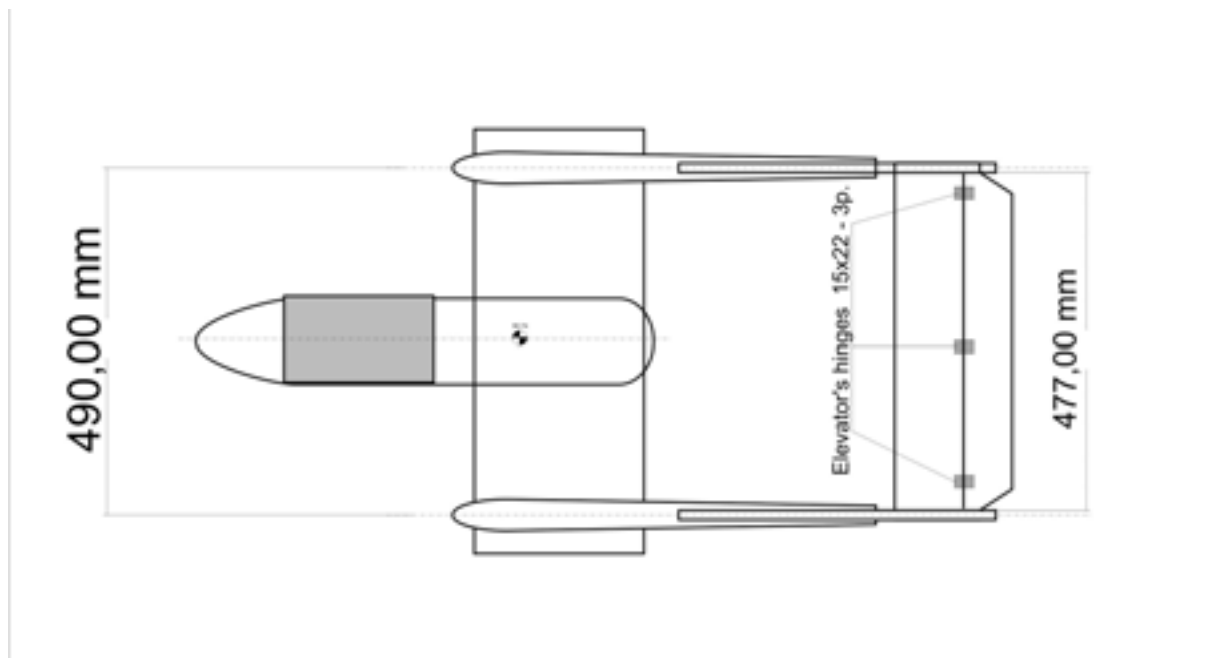
23. Mark the middle of the central wing. Glue it to the fuselage. Next, stick a triangle EPP element to strengthen a top back end (tip) of the fuselage (picture in point 1) and the ends (tips) of the fuselage sides.

24. Close the top part of the fuselage with a piece of EPP. Cut the fuselage top end in a straight line to get a flat surface in order to glue a wooden engine mounts.

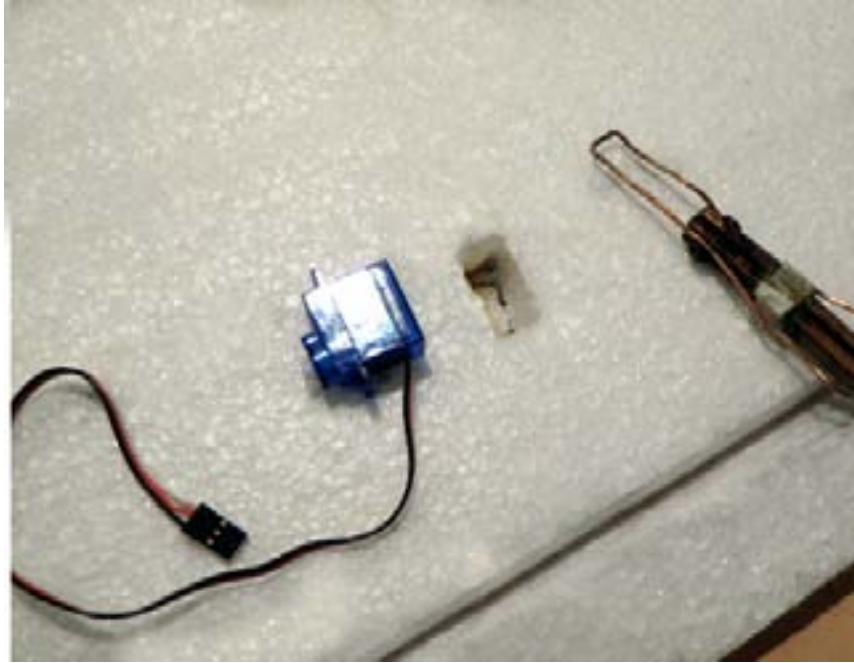


25. Glue together two elements which are a base of the engine cowling and after giving them a profile shape, glue them to the top of the fuselage (optional picture above).

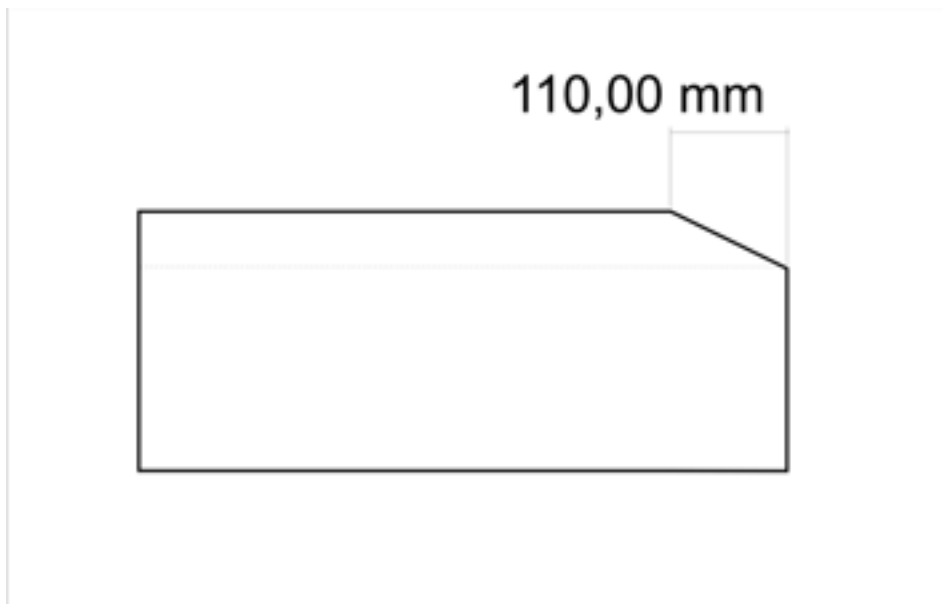
26. Round off all the fuselage edges (as it was in case of the tailbooms).
Canopy lock was left for Your invention
27. Glue a wooden engine mounts and a reinforcing element (openwork square).
28. Stick the 2 plywood parts for wheel and the under the nose skid previously covered with a piece of polyester.
29. Assemble the central wing with the tailbooms and the horizontal stabilizer. Glue together all the elements paying attention to the proper angles between all of them and tailbooms parallelism.



30. With a soldering tool we make aileron servo's seats, paying attention to the length of the wires. Their endings must be long enough to be led out through plywood ribs and connected with rods in the central wing. We stick drive arms into ailerons.



31. Cut the wing ends from the side of the ailerons.
Ścinamy końcówki skrzydeł od strony lotek



32. Mount all servos, extensions cables put to the EPP.

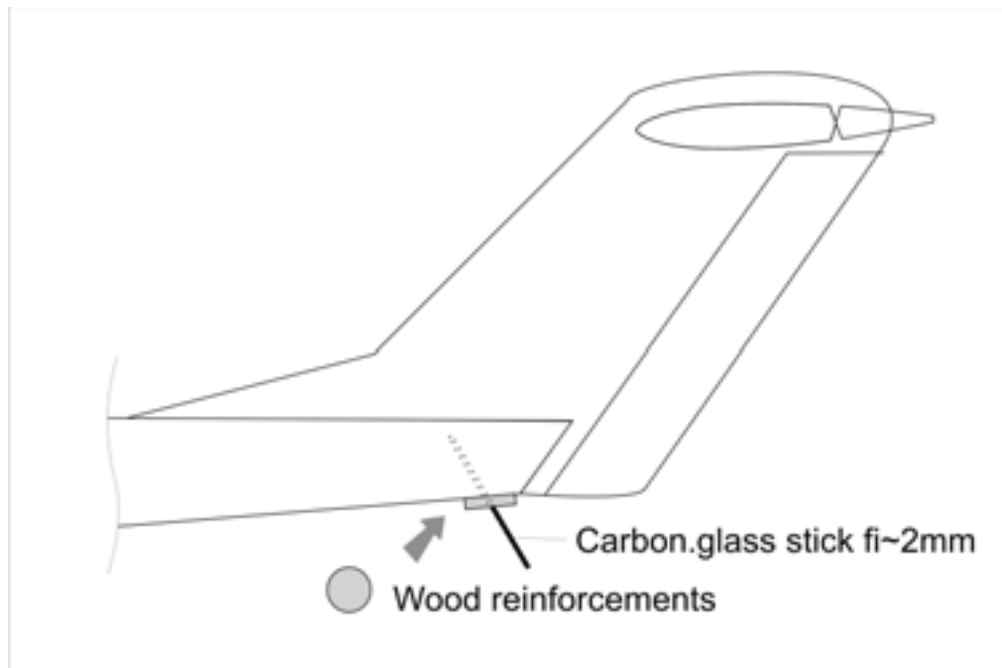
33. Connect all horns to the servos with a pushrod made from attached metal rod.

34. Mount motor and ESC. Glue the engine cowling (optionally). The motor axis (direction) must be the same as the model axis in vertical and horizontal positions. In case of other propulsion, it might be necessary to regulate the engine during test flights: model should climb after adding throttle.



35. Tighten up the wheel shaft (metal rod) mounts. Then mount the wheel. It is recommended to use spacing sleeves between the wheel and the mounts.

36. Glue round plywood reinforcing elements to the ends of the tailbooms. Drill them at an angle and stick in short glass bars working as tail skids.



37. Install RC and FPV equipment.

38. Center of gravity:

- wing span 1800mm: 58-77mm from leading edge
- wing span 2200mm: 50-70mm from leading edge

How to use the model plane.

This model plane is not a toy. It can be a potential source of danger because of its size and weight. It must be used according to law and safety regulations. The underage should only use it while attended by adults. It would be a good idea to take out an insurance policy as the constructor is not responsible for the damages caused by the model plane.

Wish you a lot of high flights.

I would also like to encourage you to share your opinions on the model modifications on a discussion forum www.rcgroups.com