The model, designed in 1:33 scale, represents the final version of the aircraft, which was to have been the basis for serial production.

The model is faithful to the original, with a few exceptions: the pilot's instrument panel is the product of conjecture and the observer's panel is missing.

The model can be assembled as is (from parts enclosed in the printed issue of CardPlane), or it can be detailed with several additional elements: a better mockup of the engine, more detailed cabin interiors, a bomb sight, bombs (including illumination bombs), etc. The additional parts are available on the www.modele-kartonowe.com website.

BUILDING THE MODEL

Symbols used and general remarks:

1. W - cut out before assembly
2. WS - cut out after assembly
3. @ - roll up tightly
4. Left- and right-hand parts are marked with a L or a R, respectively.
5. Many parts have a cross-section diagram illustrating their intended shape.

As a general rule, it's best to assemble the model in accordance with part numbering.

Before beginning assembly you should:

- Decide whether you want to build the basic version or to detail it with the parts available on our web page
- Study the assembly diagrams and the instructions. Begin assembly only when you are clear on how to proceed.

I. The fuselage

Assemble the fuselage using fig. 1 as a guide.

The fuselage consists of segments wrapped around frames. The segments are attached to each other using joining strips (except for segments 1 and 20, which have their own frames).

Begin building the fuselage by gluing segments 1, 2 and 3 together.

The cabin interiors are next. The cabin consists of parts 4L, 4R and 5, which form a "trough" with a cross-section matching the openings in frames 1a, 2a 1c and 20c. Next, attach the control stick, made of parts 7, 7a, 7b, 8, 8a and a piece of wire cut according to the template provided. Roll up part 7 tightly into a tube, and wrap part 8 around the wire. Form foot supports from parts 9 and attach the rudder pedals, parts 9a, underneath. Attach the seat base, made out of parts 10 and 10a, and assemble the horizontal rudder adjustment lever out of parts 11, 11a and 11b. Finally, make the pilot's seat out of parts 12, 12a and 12b, attaching it to the base (specifically to parts 10a).

Attach the assembled cabin floor to parts 4L and 4R, putting in the compass (part 16), the observer's seat (part 15) and the receiver of the pilot's gun (part 14).

Insert the assembled cabin into the openings in frames 2a, 1a, 1c and 20c.

Now assemble segments 18, 19, 20 and 21. Note that frame 19a is at about a 1.5-degree angle from the vertical. Make the tail end of the fuselage out of part 22 and two parts 22a. Put together the bomb ejector fairings on the sides of the fuselage out of parts 23, 23a, 23b, 23c and 23d and the upper part of the observer's cabin out of parts 24, 24a, 24b, 25, 26 and 27.

Now glue on the coaming around the cockpit (parts 2cL and 2cR) to finish the fuselage.

II. The wing

Fig. 2 illustrates assembly of the wing.

First, put together the framework of the central section of the wing (parts 28, 29, 30 and 31). The ribs (parts 31) are marked with letters that correspond to the markings on part 28. Make sure the trailing edge part 28 is shaped correctly between ribs "a" and "c". It should be bent down slightly on the side of rib "a". The shape of the spars (parts 29 and 30) and the angling of rib "a" should help in properly shaping part 28. Make holes in ribs "a", "b", "c" and "d" large enough to accept a stick (e.g. a kebab skewer), or a sufficiently hard and straight piece of wire. The stick should ensure the correct dihedral of the wing, with the wing tips some 4 to 4.5mm higher than the center (see fig. 8).

After assembling the framework, cover it with parts 32, 32a, 33, 33a and 33b. Glue the joining strips (parts 32a and 33a) to the ribs and then apply part 32. Pay special attention to the leading edge of part 32 - it should be slightly rounded. Next, apply joining strip 33b to part 33, and starting from the bottom, glue it to the central wing section. Assemble the outer wing section the same way as the central section. Assemble both parts by gluing part 39 onto joining strip 33b. Now glue part 41, the spacer between the two wing halves, to rib "a", insert the stick mentioned above and glue the two wing halves together, paying attention to keeping the lower surfaces of the wing tips about 4mm above the central section (see fig. 8). Finally, glue on part 42, finishing off the wing.

Now assemble the pyramid, which in reality supported the wing. First assemble its internal structure from parts 43a, 43b and 43c. Pay attention to part 43d - roll it up into a tube and cut it at an angle using the template provided, so that it fits between parts 43a and 43b (this imitates a part of the pyramid to which the wing was attached). Now cover the openings in part 44 with clear plastic and apply it onto the prepared framework. Glue the pyramid to the fuselage, then attach the wing and support it with struts (parts 45). Attach parts 44a and 44b to the pyramid and apply the wing strut fairings (parts 44bp, 44bt and 45a). Now attach the gun sight (part 46), the side panels of the pilot's windshield and the top windshield panel.

III. The tail

Tail assembly is illustrated on fig. 3.

Horizontal stabilizer:

Begin the horizontal stabilizer by assembling its frame, gluing the ribs (parts 50) into part 49, then attaching part 51 and covering the whole assembly with part 52. Now attach the horizontal rudder hinges (parts 51a). Next, glue joining strip 52b to part 21 where part 52a will go later and attach the stabilizer to the fuselage, making sure it is perfectly horizontal. Now apply part 52a, forming appropriately.

The horizontal rudder (part 53) is next. Assemble it and apply the hinges (parts 53a), gluing the whole assembly to the stabilizer.

Vertical stabilizers:

Assemble the vertical stabilizers the same way as the horizontal. Begin with the framework: assemble parts 54, 54a, 54b, 54c and 54d and cover them with

an appropriately profiled part 55. Attach the rudder hinge and control line fairings (parts 55a and 55b respectively). Now attach the assembly to the horizontal stabilizer, inserting the tab on part 49 into the opening in the vertical stabilizer. Make sure the vertical stabilizers are exactly vertical.

Now assemble the vertical rudder, using parts 56 and 56 a to make the framework and covering it with part 57. Attach the rudders to the vertical stabilizers.

IV. Propulsion plant

The assembly of the propulsion plant (the engine, engine fairing and propeller spinner) is illustrated in fig. 4.

Begin with the engine. Glue part 58 into a ring and insert frames 58a. Now assemble part 59, inserting frame 59b. Attach part 58 to frame 59a and insert the whole assembly into part 59. Remember to make holes in frames 59b and 58a for the pin that will hold the propeller spinner. Now make the cylinders (parts 60, 61, 61a, 61b and 61c). ATTENTION: do not attach the valve pushrods (parts 61d) at this stage.

Insert the cylinders into the openings in part 59, gluing them to part 58. Now attach the valve pushrods (parts 61d), inserting them through openings in part 59.

Make the propeller spinner using fig. 4 as a guide. First assemble all the parts except for the tip (the smaller section of part 65), then using a pin attach the spinner to the engine, finally gluing on the previously mentioned part 65.

Now assemble the engine fairing. Make the engine fairing ring from parts 62. The engine fairing sections are marked I, II, III and IV, in front-to-back order. Assemble them using joining strips 62a, inserting frame 63a with ring 63. These parts make up the exhaust collector.

Put together the whole engine fairing using parts 64 and glue the entire propulsion plant to the fuselage. Remember that the centerline of the engine should be angled up from the fuselage centerline by about 1.5 degrees.

Next is the engine air intake fairing – form parts 67 and 68 into a semicircular shape and attach to the bottom of the fuselage in the places indicated. Form the air intake (part 69) according to the diagram and insert into the opening cut out in the bottom of the fuselage.

V. Landing gear

Use fig. 5 and the overall diagram (fig. 8) in assembling the landing gear. Make struts out of wire according to the templates provided.

Wheels:

Make the wheels from parts 73, 74, 74a and 75. First glue together two each of part 73 and 74 and as many parts 75 as it takes to make the wheel about 4.5mm thick, skipping it altogether if necessary. Sand the tire tread down to give it a semicircular profile. After sanding paint the tire black or dark gray. Now glue on part 74a, remembering to make a hole for the axle. Make the wheel fairings out of parts 76 on frames 76a. Cut part 76a along the thick line marking off the shaded area, but being careful to keep the part in one piece. After forming parts 76, glue them to the frame (part 76a) so that they form the wheel fairing. After it is dry, cut part 76a so that the shaded piece comes out. Assemble the wheels and fairings so that the fairings are glued to parts 72a and the wheels turn freely on their wire axles (template I).

Assemble the tail skid and glue it to frame 21a.

VI. Observer's cabin

Make the rotating gun support and guns according to fig. 6.

Begin by gluing parts 81 into a ring, inserting parts 81a and 81b into it. Glue part 80, shaped into a ring, on the inside of this assembly, and cover it on the outside with part 82. Assemble the observer's backrest out of parts 83, 83a and 84 and the handgrip out of part 85 and 85a, and glue them in their place. Now put together the gun support frame using wire formed according to the template provided and part 87 to wrap around the wire. Place the assembly on support 87a and attach part 88.

Make the guns according to the drawing. Glue the assembled gun support in the places indicated on the edges of the observer's cabin, then attaching both guns to it.

VII. Remaining parts

Make the remaining parts according to fig. 7 and the main diagram (fig. 8)

The remaining parts are the ailerons (parts 94) together with their pushrods and trim tabs (parts 94a and 94b - see fig. 8), propeller blades (parts 95 to 98), observer's cabin shield (parts 102, 103a, 103 and 103a), positional lights (parts 101 and 101a), generator (parts 99 to 100) and exhaust pipes (parts 104). Cut an opening for a window in the observer's cabin shield, and glue in a piece of clear plastic sheet between parts 102 and 102a. Before gluing it in, form this part to conform to the shape of the opening in part 26. In reality the shield could be moved up and down, so there is no need to glue it in.

Assemble and attach the remaining parts using the drawings as a guide.

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