

BOMBER AIRCRAFT LWS-6 ŻUBR

ASSEMBLY INSTRUCTIONS

The model can be made in three basic versions of varying difficulty:

1. Simplified – using parts found in this issue of CardPlane, but without interior details, landing lights, landing gear bays, and without ailerons and flaps as separate elements. In this case sheet 13 is not needed (part numbers 501 and up), and neither are parts marked with a “p”. Not all of the marked openings should be cut out, particularly in the fuselage and engine nacelle trusses.
2. Standard – using all the parts in this issue of CardPlane.
3. Advanced – using additional elements, to be found on our web page, www.modele-kartonowe.com. These include detailed engines, bomb bays with bombs, and a more accurate interior.

Decide on which version you want to build before starting construction. In the simplified version, the model is relatively easy to build for even a beginner (though due to its size, it is rather work-intensive). The standard version requires more work and experience, especially due to the necessity of cutting out openings in many parts, which weakens them and requires more care on the part of the modeler. Additionally, many interior elements must be placed in the fuselage, which is not entirely simple. The advanced version is meant for experienced model builders.

Regardless of the version selected, before beginning construction, analyze the instructions and construction diagrams until there is no doubt about how to proceed.

The following symbols are used:

- W – cut out before assembly (regardless of version)
- WS – cut out after assembly (regardless of version)
- Wp – cut out before assembly in the standard or advanced versions
- WSp – cut out after assembly in the standard or advanced versions
- – roll up tightly
- p – by the part number (besides parts on sheet 13) means that the part is meant for the standard or advanced versions.
- u – by the part number means that the part is meant for the simplified version
- L – by the part number means the part is for the left side of the plane
- R – by the part number means the part is for the right side of the plane
- * – means that the part should be backed with 1 mm cardboard
- Many parts are accompanied by cross-section diagrams according to which they should be formed.

NOTE: the model design assumes that all framework elements will be backed with 1 mm cardboard. Using cardboard of a

different thickness may create problems during assembly. Also, remember that gluing these elements onto cardboard will make the whole thicker than 1 mm (by the thickness of the paper and glue). This may cause some slots to appear too narrow. They should be widened, if necessary, after test fitting. Such small variance from 1 mm thickness should not affect assembly.

Fuselage

The fuselage is divided into four parts: front center, rear center, front and tail.

Begin assembly with the front center section. Assembly is illustrated on fig. 1, or fig. 1a for the standard version. Begin by assembling the framework out of parts 1 to 7 (and parts 8p and 501 for the standard version). Part 7 keeps right angles between frames 1, 2, 3 and longerons 4, 5 and 6.

In the standard version, build the interior of the pilot's cabin as shown in fig. 1a. After gluing all the parts to the cabin floor, form and attach part 515, “spot-gluing” it in several places to the edge of the floor plate. This will later make it easier to fit it to part 9. Now glue on parts 516, 517, 518 and 519.

Attach the skin: parts 9 and 10. In the standard version, cut out the opening for the pilot's cabin and the windows on the right side of part 9. These windows should be backed with clear foil.

NOTE: before gluing on the joining strips (parts 9a, 10a and 10b) and skin segments (parts 9 and 10), they should be dry-fitted carefully, making sure they will fit correctly to frames 1, 2 and 3. These frames were designed to be slightly loose, and therefore could appear too small, but this is meant to make gluing on parts 9 and 10 easier.

Now continue with the rear center section of the fuselage, using fig. 2 for reference.

Begin by building the framework out of parts 11 to 25. Remember to cut out the openings in parts 15L, 15R and 16, and about removing the marked section of part 17 if building the standard variant. For this version, also remember to glue part 520 (the radio) to part 15L as marked, and the seat (parts 521 to 524) to part 17. This seat is made the same way as the pilot's seat. Part 521 forms the base to be glued to part 17.

Next, attach part of the skin: parts 26, 27a, 28a, 27 and 28. Parts 26, 27 and 28 have a bit of excess material at the edge. After dry fitting them (pulling quite hard), cut off the excess material sticking out over frame 16 from all of these parts, and only then glue them on.

NOTE: glue on part 26 so that its rear edge falls exactly on frame 12, which should make the front edge of part 26 stick out about 5 mm in front of frame 11. This will make it possible to glue this section of the fuselage to the front center section, and in particular to glue part 26 to joining strip 10b. Before attaching part 26, glue joining strip 29a to it.

For the standard variant, cut out windows in parts 26 and 27 and back them with clear foil.

Next, attach parts 30 and 31 by their edges edge, using frame 19 as the “joining strip”.

Remember to form part 31 into the cross-section shape indicated by the diagram that adjoins it. In order to do this, score the lines representing the triangles at the edge of this part from the back to make them easier to bend.

NOTE: For the standard variant, cut out windows in parts 30 and back them with clear foil.

Now attach parts 32 and 33, then cut out the openings for the machine guns and insert parts 32a and 32b. Finally, attach part 34. Parts 32, 33 and 34 should be formed similarly to part 31.

Next, attach the rear center section of the fuselage to the front center section, using joining strip 10b, ensuring their proper alignment. Glue on part 29.

Use fig. 3, fig. 4 (showing the entire fuselage) and fig. 5 to build the front section of the fuselage.

Begin by building the framework out of parts 35, 36, 37, 38, 38a, 38b and 38c. In the standard version, glue part 520 to frame 35, part 522 to frame 36, part 521 to frame 37 and part 523 to frame 38. Attach the whole assembly to frame 1.

NOTE: frame 35 is tilted back (see fig. 4). In attaching the above assembly to frame 1, make sure frames 36 and 37 are precisely horizontal, which will ensure the correct angle for frame 35.

If building the standard version, now make the commander's cabin. Begin by attaching parts 524L and 524R. Attach the compass, part 525 to part 524R. Glue part 526 to frame 37 and build the commander's seat from parts 527, 528, 529 and 530.

Then proceed to cover the element. In the standard version, cut out the windows in part 39, then back them with clear foil and attach parts 531L and 531R on the inside. After attaching part 39, glue in the bomb release lever assembly (parts 532, 532a and 532b) using the opening in frame 37. Now cover the bottom (parts 40 and 40a) and top (part 41). Make the pilot's cabin canopy out of part 42, in the standard version cutting out the windows and backing them with clear foil.

At this stage you should begin seeing what a “genial monster” this plane was.

Now continue with the tail section of the fuselage using fig. 6 for reference. Begin by assembling the framework out of parts 43, 43a, 44, 44a, 45 and 46. Then cover this assembly with parts 47 and 48 and attach it to frame 14.

NOTE: part 44 has to be shifted down in relation to part 16 (see fig. 4)

Now assemble the front and rear turrets.

Build the front turret using fig. 7 for reference. For the simplified version, use parts 49, 50a, 50b, 50c, 50d, 51L and 51R. Part 49 has some extra material, which is meant to allow it to be fitted precisely to the edges of frames 35 and 37. Butt-join this part – it should not cover frames 35 and 37, and should be an “extension” of parts 39 and 41. Use parts 50a and 50d to make the glazed “ball” of the turret. Attach parts 51L and 51R, which imitate the fabric “bags” that sealed the openings for the gun barrels, to part 50c. For the simplified version, glue parts 52 (the gun barrels) into the openings

in parts 51L and 51R, attaching the sights (parts 52a) to them. It would be wise to attach the barrels and sights only once the rest of the model is built.

In the standard version, cut the out openings for the glazing and the machine guns in parts 50a to 50d, then back them with clear foil and parts 534a to 534d. Back part 49 from the inside with parts 533. Mount the guns before attaching the “glazed ball” (made of parts 50a to 50d, 51L, 51R and parts 534a to 534d).

Make the machine guns based on fig. 8. The guns for the front turret are made from parts 535 (the only differences from the rear ones is the size of the sights). After assembly, attach them to the turret ball using parts 536 and 537 (see fig. 7). Insert the whole assembly into part 49.

Make the rear turret as shown in fig. 9. In the simplified version, build the turret from parts 53 (turret base), 54 and 55. Attach part 55 to part 54 as a sort of a “roof”. Finally, put on part 55a. In this version, insert the machine guns (parts 56) into the openings in part 32. Make the machine guns the same as those for the front turret.

In the basic version, the turret consists of two subassemblies. Make the lower part first. Cut out the “windows” in part 54 and attach it by its lower edge to the turret base, part 53. Next, glue on parts 538a, 538b and 538c; back part 538c with clear foil and attach part 538d to it. Now use the tabs on part 54 to cover the edges of parts 538a to 538d. Attach part 539 on top, then build the machine gun support (see fig. 9) out of parts 540, 541, 542 and a piece of wire bent to a shape shown in template A or B – depending on whether the guns are to be raised (template A) or lowered (template B). If the guns are to be lowered, the top part of the turret should also be lowered as far as it will go. Now you can make the top of the turret and insert it between the machine gun support and the base of the lower part of the turret.

Vertical stabilizer

Use fig. 10 for reference in building the vertical stabilizer. First, build the framework out of parts 57, 58a to 58h, 59 and 58a. Cut a slot for frame 25 in part 58a, then cover the whole assembly with parts 60 and 60a. Glue part 60b between part 60a and the upper section of part 60. Take particular care to correctly shape part 60.

After attaching the stabilizer, cover its base with the fairing – part 60c. Begin assembling the rudder by building the framework, composed of parts 61 and 61a to 61d, then cover it with part 62. In the basic version, before gluing on part 62, cut out the black fragment – the opening for the hinge. Next, attach part 546, the hinge, to part 59a, only then attaching the rudder to the stabilizer.

Wings

The wings are nearly identical. They differ only in the spars: the right one has a tab at the end that should be inserted into the opening in the left one. Begin by building

the framework, using fig. 11 as reference. Make sure to keep the wing from warping during assembly. In the basic version, cut openings for reflectors in parts 66.

In the simplified version, apply the wing skin, parts 70, 71 and 72, without modifications, using joining strips 70a, 71a, 70b and 71b. (use the latter two only in the simplified version). Glue joining strips 70b and 71b about 1 to 1.5 mm from the trailing edge, taking care in profiling the tips, i.e. parts 72. (see fig. 12).

In the basic version, cut out the openings for the flaps and ailerons (marked with black lines) in parts 70, 71 and 72, and an opening for the reflector in part 70 (based on fig. 11). Also cut out the black elliptical exhaust pipe outlets on top of the wing and insert the exhausts rolled from parts 82.

Make the ailerons and flaps based on fig. 13, then roll parts 71c to make the position lights and glue them into the openings in the leading edge of the wing (parts 71).

Mount the wings using the spars and strengthening the whole assembly with a 1 mm diameter stick or wire, inserting it into the openings in the ribs.

NOTE: *The wings should be assembled so as to make their top surfaces precisely horizontal when viewed from the front (see overall schematic).*

Engine nacelles and engines

NOTE: *pay attention to the placement of frames 84, 85, 87 and 90. As the lower surfaces of the wings are raised towards the tips, these frames are not attached horizontally. (see fig. 14). Frames 84, 85, 87 and 90 should be cut out along the inside of their outlines – they will be a bit loose, but this will later make covering them easier.*

Begin by assembling the middle section of the framework, using parts 83 to 88 (in the basic version, cut off the parts marked with a “Wp”). Dry fit the skin – parts 90 and 91, remembering that joining strips 90a, 90b and 91a will still need to fit in. Next, cover the assembly with the skin. In the basic version cut out the black areas – landing gear bays. Glue together parts 89 and 90, and cover them with part 92. Assemble part 95, inserting joining strip 95a and frame 94. This produces three “sections”: part 95 with its frame, the middle segment covered with parts 90 and 91, as well as a portion of the rear section: frames 89 and 90 covered with part 92. Dry fit all three to the wing, and if everything fits, glue them together and attach to the wings (I recommend beginning with the middle section).

NOTE: *the mounting tab in part 83 is purposely made too long. This is meant to make assembly of the forward section easier. If assembled properly, frame 94 should not extend to the end of this tab.*

The only remaining part is the rear part of the nacelle, part 93. If making movable flaps, cut off the tip of part 93 and use part 93a, gluing it to the flap. It should be formed and glued in such a way as to slide into part 93 when the flap is lowered.

Assemble the engine using fig. 4 for reference. Before attaching it to the nacelle,

insert the exhausts, parts 102 and 103, as well as part 104 – the air scoop.

Horizontal stabilizers

Make the horizontal stabilizers as shown on fig. 15. After assembling the stabilizers (using parts 105 to 108), mount them on the fuselage using a 1 mm diameter stick or piece of wire. Now make the elevators (parts 109 to 111) and glue them to the stabilizers. Finally, attach the struts – parts 108a and 108b.

Main landing gear

Make the main landing gear using fig. 16 for reference. In the basic version, first mount the main struts, which are built around a wire frame. After covering the wire, which should be bent to a shape shown in template C, with parts 114 and 114a and gluing on part 115, roll on part 117 and attach part 116. Attach the whole assembly to frame 84 in the place indicated by a black rectangle. After gluing the tightly rolled up part 120 between frames 86, attach parts 118. Finally, attach part 119 (in the rear, to part 118a). Make the wheels from cardboard circles. The tires should be 9.5 mm thick – for each wheel, cut five circles out of 1mm cardboard in addition to parts 112a and 112b. After assembling the wheel, sand the tires to a round shape and paint black. Mount the wheel on the strut as shown in fig. 16.

Finally, attach the landing gear bay covers – parts 90c.

NOTE: *In the simplified version, use different templates for the landing gear struts: use template E instead of C and F instead of D. Cut out openings in parts 90 for parts 114 and 118, and in frames 80 for the wires bent according to Template 1. Mount the whole assembly referring to fig. 17.*

Remaining elements

Make the tail wheel as shown in fig. 18. It is mounted on a rocker (part 122) to frame 54 and a shock absorber (part 124) to longeron 43.

Make the propellers as shown in fig. 19. To achieve the correct profile, use parts 128 (a to d). Before gluing together parts 128, shape and glue together parts 127a and 127b. Mount the propellers so that part 127a (gray with a black tip) faces forward. The propellers rotate to the right (looking from the front).

Make the antenna post (part 131) and wire attachment on the stabilizer (part 132) as shown on the overall diagram. The antenna post can be strengthened with a piece of wire. The overall diagram also shows the way the airspeed transmitter (part 133) and the tail position light (part 134) should be assembled.

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