

Zlin Z-37T Agro Turbo

Simulated crop dusting awaits

by Laddie Mikulasko



In the 1960s, the agricultural industry in Czechoslovakia needed a way to spread pesticides on its crops, so in 1961, the design work for a crop duster was taken on by two Czechoslovakian companies, Let Kunovice and Moravan.

The first prototype of the full-scale Zlin Z-37, which had a nine-cylinder radial engine, flew in the spring of 1963. A large number of these airplanes were exported to countries around the world.

In 1981, a prototype of the turboprop version, Z 37T, was flown. Production ended in 1994 with only 51 having been built. More information is available on the internet.

In the 1980s, I built my Z-37 version, powered with a .60 glow engine. It had working flaps, crop-dusting capabilities, and flew well. Twenty years later, I built my electric-powered Zlin Z-37T

turboprop version that is presented here. This model has functional flaps and a hopper that holds baby powder.

Having a hopper full of baby powder is neat because when the hopper door is open, a nice-smelling stream of powder is visible as it's escaping. To unsuspecting eyes, it looks as though the model is on fire.

Building the Fuselage and Tail Surfaces

Cut out all of the formers. On the top of formers F4 and F5, cut along the dotted line to remove their tops. Formers F1, F2, and F3 have temporary supports that are holding them at proper height while the fuselage is being built upside down. Cut these supports from the formers, but then reattach

The author with his completed Zlin Z-37T Agro Turbo.

them to the formers with masking tape.

From 1/8-inch balsa sheet, cut out the fuselage sides (1). Pin the balsa side to the building board and glue the top longeron (2) and the bottom longeron (3) to the fuselage side. In the back of the fuselage, between the longerons (2) and (3), glue the balsa sheet (4) to the longeron. Glue all of the diagonal members (5) between the top and bottom longerons.

Build the other side of the fuselage to the same stage. Pin the fuselage sides standing up on the building board right over the plans. Glue in all of the formers between the fuselage sides. Ensure that former F2 is square with the building board and that former F13 has 1/16-inch inside-diameter tubing (21) attached

AT A GLANCE ...

SPECIFICATIONS

Skill level:	Intermediate
Wingspan:	56 inches
Weight:	48 ounces
Power system:	300-watt brushless outrunner with a 3S 3,300 mAh LiPo battery

to it. Glue in all of the crossbraces (6) between the fuselage sides.

Glue the bottom sheeting (7) to formers F2 through F5, and the bottom sheeting (10) to formers F1 and F2. Glue the stringers (8) to both sides of the fuselage. Remove the fuselage from the building board and glue all of the top formers to the fuselage, including the top of formers F4 and F5.

Glue the top sheeting (9) to formers F1 through F4. Glue the preshaped balsa block (11) in the shape of the cooling inlet to former F2. Glue the balsa sheeting (12), (13), (14), (15), (16), and (17) to the cockpit formers. At the back of the fuselage, glue the sheeting (18) and (19) to formers F13, F14, and F15.

Behind the cockpit, glue the stringers (20) to the top of the formers. Glue the cone to former F15.

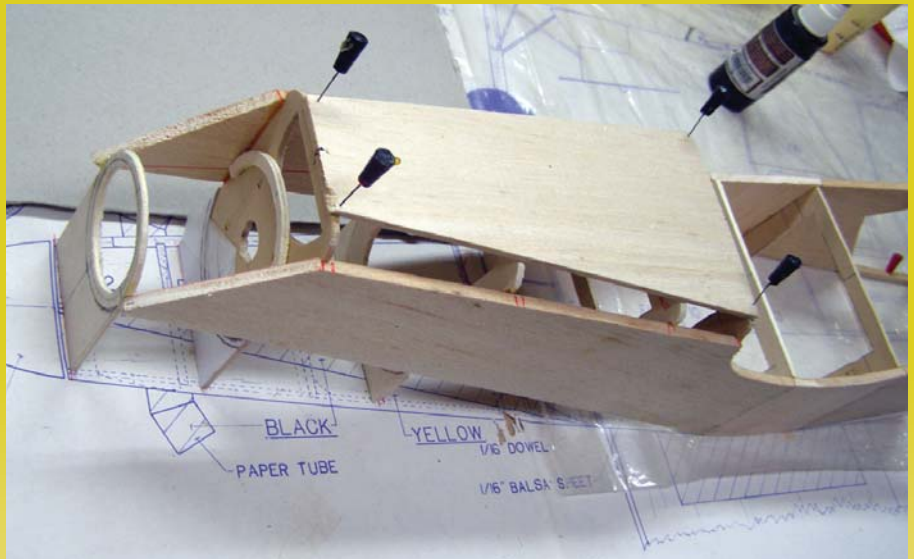
Make the tail wheel assembly by sliding $\frac{1}{16}$ -inch piano wire into the tube (21). Bend the piano wire (22) to the shape shown on the drawing. From a $\frac{1}{8}$ -inch balsa sheet, cut out all of the tail surfaces. Glue the stabilizer (23) and the fin (24) to the fuselage.

Building the Wing

Cut out all of the ribs. The full-depth balsa main spar (24) is made from three parts: the center part and the two outer pieces. Glue the outer pieces to the center piece to create one solid spar as shown on the plans. Glue the $\frac{1}{16}$ -inch balsa sheets together to make six skins for the wing. Use masking tape to join the outer skins to the center skin.

Copy the location of the main spar and all of the ribs onto all three bottom skins using copying paper. Glue the main spar to the wing's center skin (25). Glue ribs W1, W2, and W3 to the main spar and to the bottom sheeting. Glue all of the hardwood and plywood blocks to the ribs and to the bottom sheeting.

Remove all of the pins from the center section of the wing. Pin the main spar of the left outer panel (26) to the

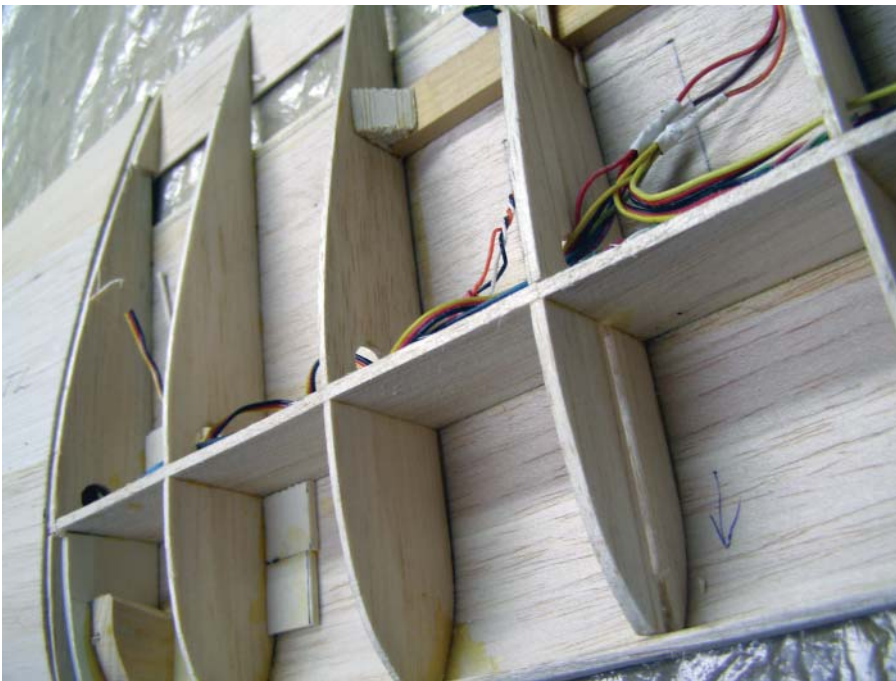
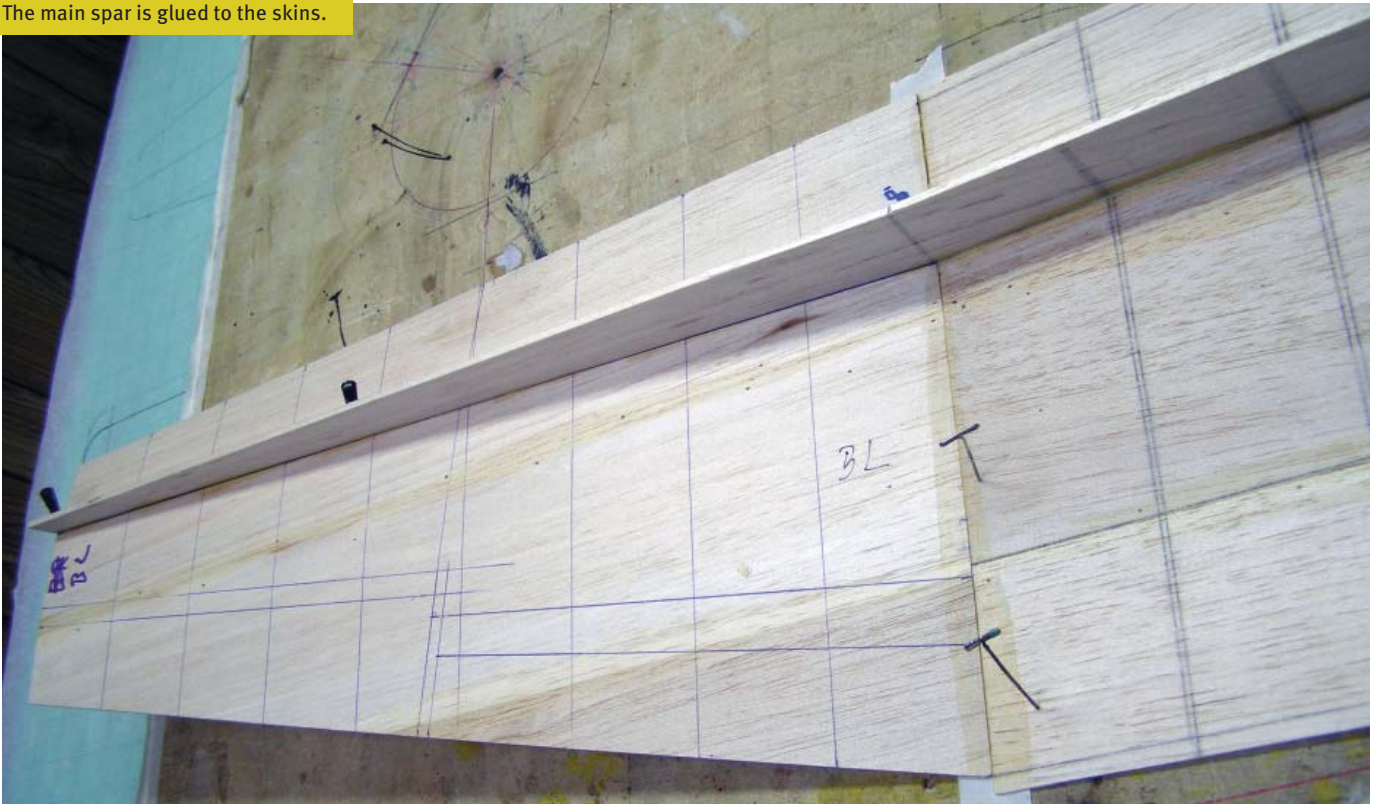


The fuselage is being built upside down. Take note of the temporary support for formers F1 and F2.



The bottom skin panels are temporarily held together with masking tape. The location of the main spar and the ribs is transferred from the drawing to the bottom skins.

The main spar is glued to the skins.



The landing gear support blocks are glued in and the servo extension cables are pulled in.

building board. Glue the main spar and ribs W4 to W13 to the main spar and to the bottom skin. Glue the sub-LE spar (27) to the ribs. This sub spar should be sanded on an angle to follow the contour of the ribs. Glue the bottom sheeting to the sub-LE spar.

Pull in the extension wires for the

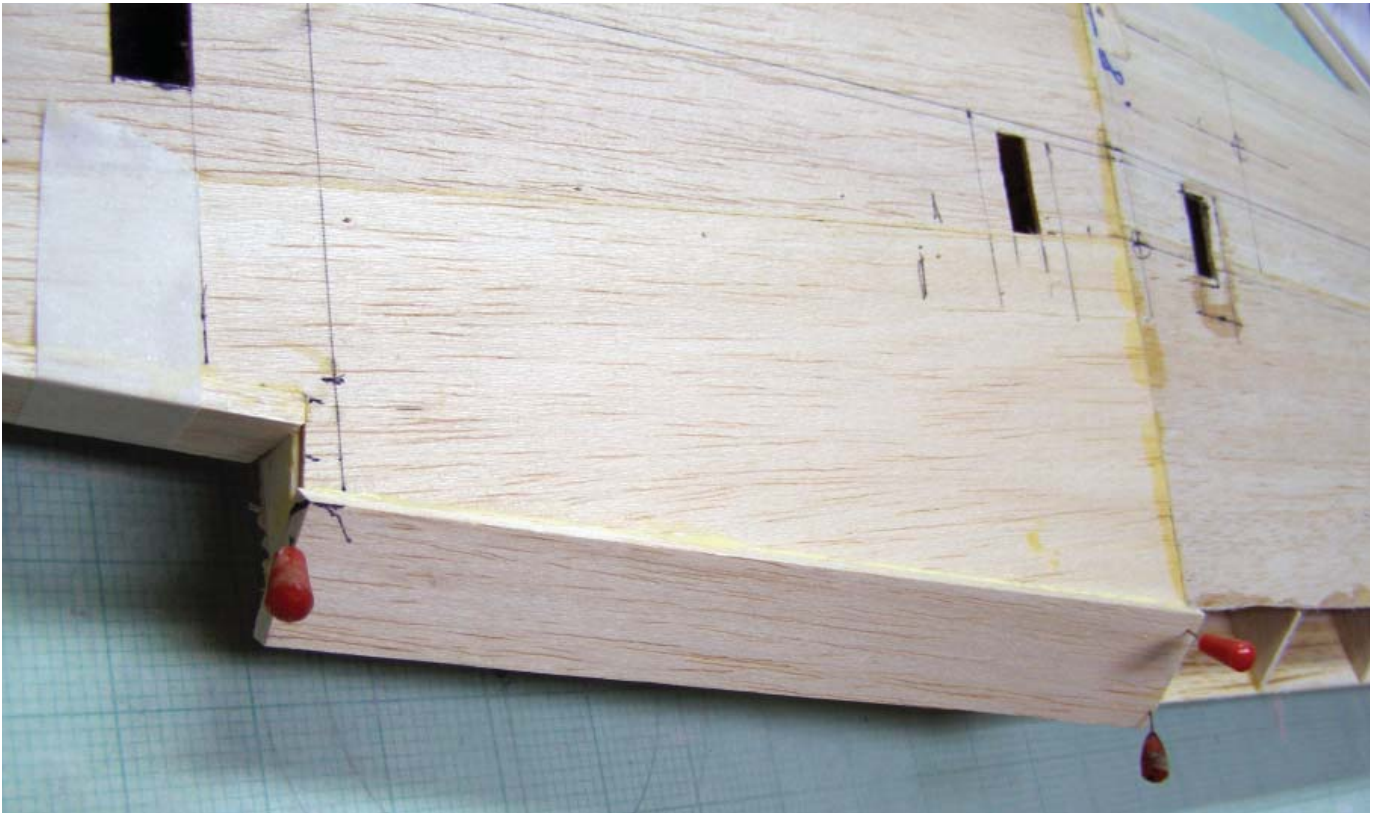
aileron between W1 through W9 and the wires for the flap servos between W1, W3, and W4. Glue the top skin (28) to the ribs and to the spars. Remove the pins from the left wing and pin and glue the main spar of the right wing to the bottom skin (29). Glue ribs W4 to W13 to the main spar and to the skin.

Glue the sub-LE to the ribs. Pull the extension wires into the right wing, and then glue the top sheeting to the right wing. Remove all of the pins holding the right wing to the building board.

Pin the center of the wing to the building board and glue on the top sheeting. Glue the capstrip (30) to the wing's LEs. Next, mark the separation lines for the aileron and the flaps and separate them from the wing. Glue the aileron hinge spar (32) and the flap hinge spar (33) to the wing. Inside of the ailerons and flaps, glue the plywood plates to support the control horns. Glue the LE (34) to the aileron and the LE (35) to the flaps. Cap the ends of the ailerons and the flaps. Sand the wing.

On the bottom of the wing, drill holes into the hardwood blocks for the landing gear legs (39). Drill the holes in the plywood blocks to support the landing gear struts (40). Drill the holes in the plywood strip (36) that will support the wing bolts. Drill one hole in the wing's LE for the dowel and glue the dowel to the wing.

In the bottom of the wing sheeting in the location shown on the plans, cut out the openings for the servos. Glue the winglets (37) to the wingtips. In the

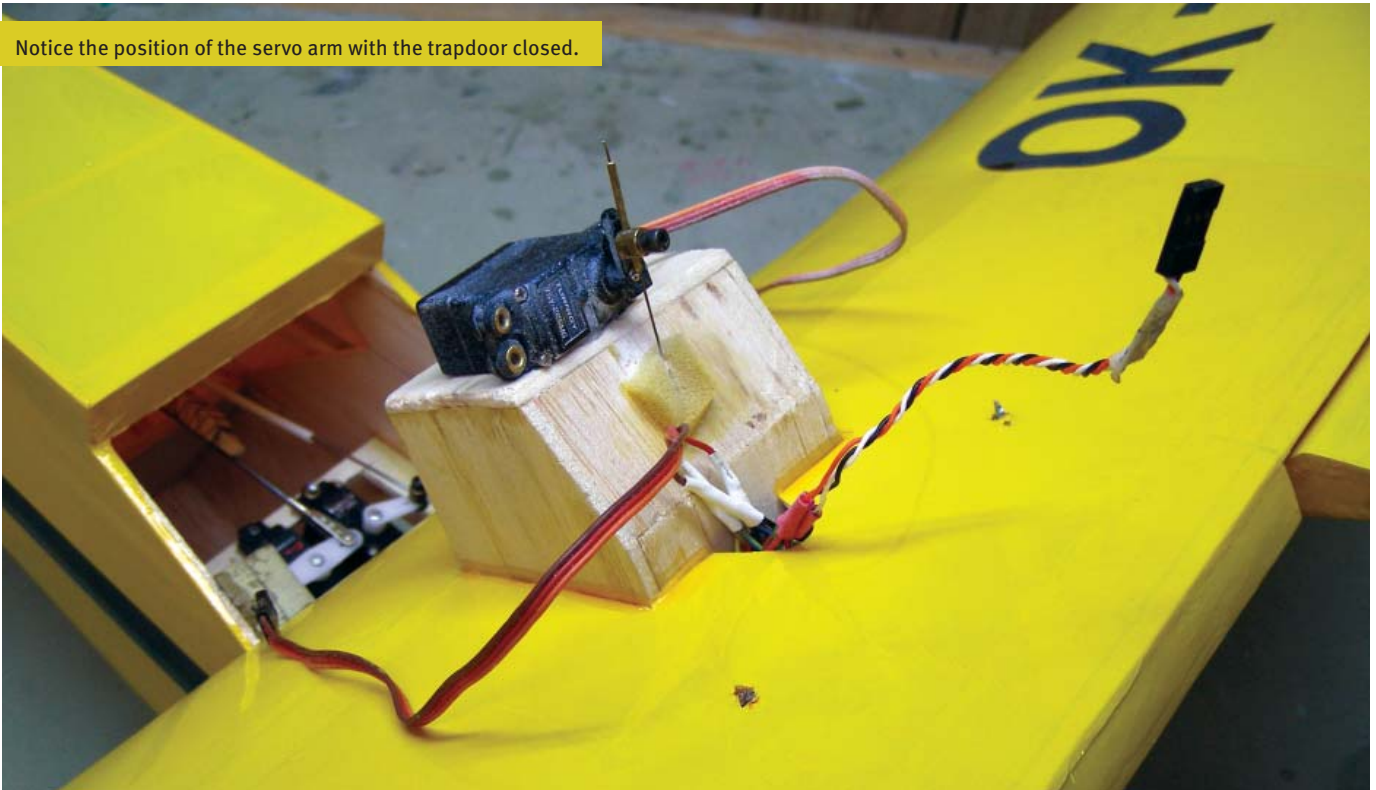


The hinge spars are glued to the completely sheeted wing.

The author covered the Zlin with UltraCote using a colorful scheme that he found on the internet.



Notice the position of the servo arm with the trapdoor closed.



center of the wing, glue the balsa filler block (38) to the hinge spar to close the gap between the wing and the fuselage.

Make the Landing Gear

Cut and bend $\frac{1}{8}$ -inch piano wire for the main leg (39). To make the landing gear support struts, bend the $\frac{1}{16}$ -inch piano wire at one end to make the eye. Bend the other end so it will fit into the hole in the plywood plate, as shown on the drawing. Slide the eye of each strut onto the landing gear leg and the other end of the support strut into the hole in the plywood plate. If both struts fit on the main leg, solder them to the leg.

Completion

If you want to do crop dusting, make the holding bin as shown on the plans. Cut out the opening in the top and bottom sheeting of the wing. Glue the bin to the wing. The powder will be released through the trapdoor. The dummy spreader is glued to the trapdoor after the model is finish.

Install all of the servos, horns, and the pushrods. The motor is installed through the opening in former F1.

If you have installed the crop-dusting bin, adjust the control arm on the servo located on top of the bin so that when

the door closes, the servo arm is vertical. This way, there is no load on the servo. With the bin full, the center of gravity should be in the location shown on the drawing.

Flying

There isn't much to state because the airplane does not have any bad habits. It is a stable-flying model. When operating

the flaps for the first time, reach a good height to test the flight characteristics. The flaps are not necessary to fly or land. Good luck. 🛩️

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SOURCES:

Turnigy
www.turnigy.com



The hopper holds baby powder for simulated crop dusting.