ZLIN Z-XII

By
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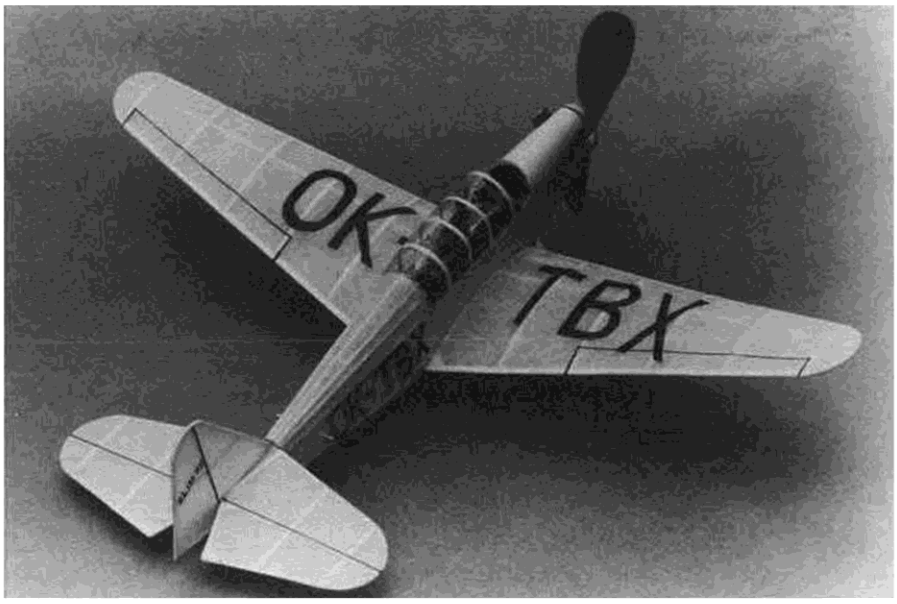

Ready to try a low-wing Peanut? This month's featured model may be just what you're looking for. The full-size Zlin Z-XII was a pre-WWII design by the famous Czech manufacturer and can be considered to be the predecessor of today's high-performance Zlin aerobatic aircraft.

• No airplane nut needs to be introduced to the Zlin family of aircraft. These nimble Czech stunters have delighted air show audiences the world over for many years. The Zlin modeled here is a pre-war version, and could in some sense be called the granddaddy of the modern Zlins.

I first saw this Zlin presented as a quarter-scale R/C ship. It possessed the kind of angular grace common to many pre-war designs that I find very appealing. In addition, it seemed to have reasonably good moments, and was quite colorful. The designer/builder, Mr. Dennis Tapsfield, was kind enough to present a three-view with his construction article, and after a midnight raid on the office Xerox, a set of Peanut-sized reference drawings were produced. After I took a look at the larger drawings, a lot of my enthusiasm evaporated. The wings *really* tapered, the fuselage was *really* skinny, and of course, the tail was too small. On the plus side, the ship had a long nose and some sexy exposed cylinders that could further aid the CG, and it also had quite a bit of dihedral. To overcome some of the problems I found in the prototype, I made the following deviations from scale in designing my version of the Zlin:

• The tail surfaces are enlarged by 30%.

• The amount of taper in the wings is reduced slightly . . . by just over one-eighth inch at the tips.

• The dihedral is roughly 50% greater than that exhibited by the prototype.

• I made no change in the fuselage dimensions, and this means that it's snug in there. I simply decided that the thin fuselage was part of the charm of the ship, and should not be altered (it would be like putting dihedral on a Fokker Tripe). This means *build lightly,* because there's not a lot of room in there for rubber, folks!

Let's get your Zlin flying!

FLIGHT SURFACES

No surprises here. The tips are laminated balsa, and the ribs are sliced in Mooney fashion. The dimensions shown for the spar are approximate. I personally tend to cut my ribs a bit fat, which means that they don't always clear the spar. I cut *tiny* notches in the spar to correct this, and rationalize the procedure by telling myself that this helps lock the structure together. Build the wing flat, and add the dihedral (the breaks are outboard of the root ribs) after the glue has dried. For my own peace of mind, I also added gussets at the dihedral breaks. Make sure the root ribs are truly vertical, so that they will mate properly to the wing saddle . . . and don't forget to add the LG mounts before you remove the wing from the building surface!

FUSELAGE

Again, we'll follow standard Peanut practice, building one side on top of the other (separated by waxed paper, of course), and taking great pains to make each side *exactly,* I mean *exactly,* like the other. A little time now will keep alignment problems to a minimum later. I used firmer stock for the longerons, and lighter stuff for the cross pieces. To avoid wavy stringers, I find it much easier (and neater) to notch the rear formers *after* they're glued in place. I use a piece of taut thread to establish a straight line, and use a new, *sharp,* double-edged razor blade to cut the notches. After the stringers have dried, I then "scallop" the formers between the stringers. A small drum-shaped bit in a Dremel works well for this.

When I mated the sides together, I used "false bulkheads" (located at stations 3 and 4) to preserve alignment. I've simply never been able to make squares and jigs work on tiny, floppy Peanut fuselages, and with false bulkheads and slow-firing CA glue,

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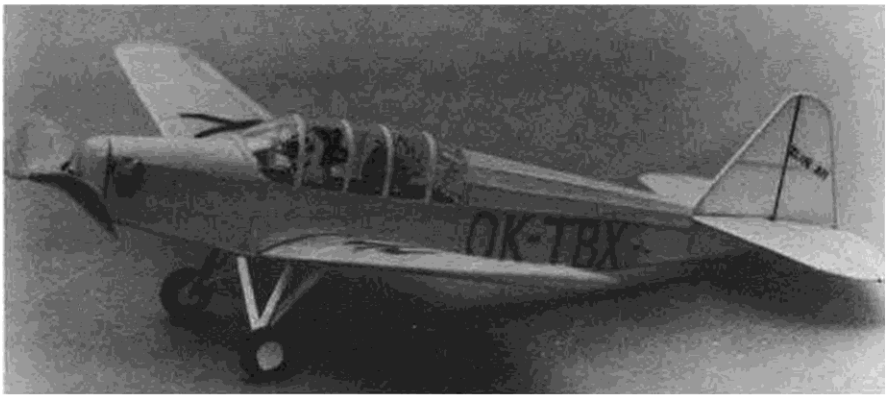

Dauntless aeronauts Calvin and Hobbes exude confidence prior to another thrilling flight. The author chose to retain the short scale landing gear, which necessitates a small diameter prop; builders looking to improve the duration may want to lengthen the gear and use a larger prop.

you can build "in the air," checking alignment as each cross piece is inserted. On the other hand, most of the people to whom I've explained this process are appalled (or worse, amused) by it, so if you have a better system, by all means use it. All the sheet in the nose is 1/32-inch soft, light stock.

PROPELLER

I felt that the short landing gear was also part of the "character" of the Zlin, and elected to leave its length alone. This dictated a small prop, and in the interest of saving a bit of weight, I decided to carve one. The blank shown will produce a 4-inch diameter, 6.8-inch pitch prop with a pitch-to-diameter ratio of 1.7. This is a bit more than I like to carve, but is not really excessive. I carve my props from a jealously hoarded supply of 22 lb. stock. I prefer the heavy stuff because a thinner, more efficient prop can be carved from it, a prop that still has enough strength to take a battering. I wish I had an easy solution for prop carving, but I don't. I make the blank, bush the prop-shaft area with a 1/8-inch birch dowel, and cut away everything that doesn't look like the prop. Start with the back surface (a sanding drum mounted in a drill press can speed the rough carving), progress to the delicate use of a *sharp* knife, and sand and sand and sand. . . . If you don't care about ROG's, a Peck 4-3/4 inch plastic prop should work fine.

MISCELLANEOUS

The only wire in the landing gear is in the front legs (.008-inch music wire), and it is hidden behind the gear fairings. The wheels are made from three crisscrossed laminations of 1/16-inch balsa. The outer two laminations are "donuts," while the inner is solid, and contains a 1/16-inch birch dowel bushing. The landing gear wire protrudes into the inside of the donut, and is kept from slipping out by a *tiny* glob of epoxy. The epoxy trick works better if you let it get a bit gummy before you try to apply the glue, and better still if you mask off the inside of the wheel with a tiny disk of waxed paper. After the whole works has dried, tear out the waxed paper and cover the mess with a "hubcap" made from bond paper to which tissue has been doped.

I vacuum-formed the canopy using a vacuum former I built from *Model Builder* plans (No. 4763). It works like gangbusters, and I highly recommend it. I've learned a cute trick associated with vacuum forming. Fabricate the form in the usual manner, and sand well. Don't take any special pains with finishing it, however. Then pull a canopy over the *un-lubed* form. Now, trim off the excess plastic and *leave the canopy in place on the form.* Then lube the plastic-covered form with Pam and pull a *second* canopy over the first. The first canopy makes a beautifully smooth surface over which to mold the "real" canopy, and this procedure is *much* faster than trying to get a really smooth, heat-resistant finish on the balsa form.

The little Czech four-banger was fabricated from the contents of my junk box: thread, scrap balsa, and some thin aluminum tubing.

COVERING AND FINISHING

I used yellow Peck "Superlight" tissue to cover the Zlin, and made the registration numbers from blue Peck tissue. I apply dope with an airbrush. I like to thin it by about 75% and try to barely mist on a coat. The lines for the control surfaces were drawn with a fine tip "Sharpy" permanent marker . . . the only brand I've found that doesn't bleed through the dope, or rub off.

FLYING

Peanuts are cranky. Low wing Peanuts are even crankier. That caveat aside, the Zlin is reasonably easy to get flying. My