

SPITEFUL

BY JACK HEADLEY



The Spiteful is the latest model in a rather casual series of slope soarers, and was built primarily to have both a good soaring and a complete aerobatic capability. Earlier models in this series tended to be more functional designs, so for this latest model some semi-scale appearance was introduced. Although by no means scale, the lines are based on the Supermarine "Spiteful," which was the ultimate development of the better known "Spitfire." The "Spiteful" arrived just as WW II was disappearing, so little production was achieved. The prototype was actually a Spitfire fuselage with a new laminar flow wing, which had an almost parallel center section with straight tapered out panels, and these lines are incorporated into the design.

The model, as we mentioned earlier, was to be both a slope soarer and an aerobatic type, so careful attention was paid to obtaining both minimum drag and weight, plus providing adequate control power. The prototype showed that all these objectives were achieved. A negligible amount of ballast was required, the wing loading remained low enough for soaring in light breezes, and the control power was sufficient for both inside and outside loops, inverted flight, and consecutive rolls, plus various combinations of all of these (my favorite kinds of maneuvers). The reasonably thick symmetrically sectioned wing proved to be very rugged, and no tendency toward wing flutter has been noticed. If you're looking for a little more challenge in your slope soaring, try this model, or if you would like the basic idea, but a different scale appearance, read on.

After the prototype was completed, and in the air, my flying buddy, Kevin Flynn, decided to make his own version. Using the same wings, he added different blocks to the basic fuselage box and produced a semi-scale Me 109. Carrying this idea a little further, we then sketched out a couple of other outlines, a P-51 Mustang and a Japanese Zero as future possibilities. These alternate configurations, plus the 109, are shown on Sheet 2 of the plans. The Spiteful wing and the fuselage box are common to all versions, and small modifications to the various balsa blocks are used, as we said before, to produce the different fuselage shapes. Alternate tailplanes and elevators are also shown, if you want to get a little more "scaley." (Ed's note: scaley . . .?)

So if the Spiteful shape doesn't turn you on, maybe one of these others might. Whichever version you choose, and I hope you will choose one (then Don might buy more of my articles), all are built in the same way, so read on for the construction notes and details.

The fuselage, as shown, was designed to be a minimum envelope around a Kraft radio, and it's possible that other brands of radios may not fit, so now is the time to check this and make the necessary modifications.

Begin construction by cutting out the basic fuselage sides and frames from 1/8" sheet, then cement these, plus the nose block, together. Add sheeting to fuselage bottom (and, if required, install the NyRod), followed by the top sheeting. Medium soft balsa blocks are added, top and bottom, plus 3/16" sheet doublers. Plenty of work with the sandpaper block, transform the original boxy fuselage into an elegant shape. A small balsa block is required for the radio hatch cover, and this is attached with MonoKote or Solarfilm hinge. The cockpit cover is added later during the covering operation. The wings use a symmetrical airfoil, and a small amount of dihedral mainly to prevent them from looking as if they had anhedral.

Only the right hand panel is shown on the plans but, as both basic wing halves are identical, both can be built directly on the drawing. My own system for building wings of this type is to first pin down, onto the plan, the lower main spar, and also a scrap length of 1/4" square balsa about an inch forward of the trailing edge. Cement all but the two root ribs into place on the main spar and, at the rear, pin down the ribs to the 1/4" square piece. This way the ribs are located in approximately the correct position. Add the upper main spar, the upper 1" x 3/32" trailing edge and the 1/8" x 3/8" leading edge piece. Now remove the whole thing from the plan, and cement into place the remaining 1" x 3/32" trailing edge.

Make the other wing panel in the same way and to the same stage as discussed above. The two panels can now be joined together with the aid of the wing joiner, which should be made from hard 1/4" sheet balsa. Make sure that no warps are introduced at this (and the next) stage.

Fill in the remaining root ribs and make the seating for the aileron servo. The leading edge and center section sheeting are now cemented into place, followed by the 1/16" sheet webs between the main spar and also to close up the trailing edge. Again, we emphasize at this stage, to watch out for built-in warps, for once the sheeting and webbing is in place, it's almost impossible to remove them. The final items to install are the capstrips on the ribs, the true leading edge, and the blocks on the wing tips. Finally, sand everything smooth ready for covering.

The ailerons are cut from 3/16" sheet, and are attached after the wing had been covered. On the prototype we used Solarfilm type hinges, spaced about five inches apart, but whatever system is used, be sure that the ailerons can operate freely.

The tailplane is made with an outline and center section, cut from 3/16" sheet, with four "ribs" made from 1/4" x 3/16" strips. The vertical is made in a similar way. The elevator is cut from 1/8" sheet with a joiner made from a strip of 1/8" x 3/8" hardwood.

Sand all these items to their final shapes, then cover the tailplane (except for the gluing area on the bottom of the center section) and the elevator, then hinge together. Cement the tailplane to the fuselage, then attach the vertical fin, together with the 1/4" triangular gussets. Make sure that adequate clearance exists for the elevator joiner at this stage, then cover the vertical fin.

For once I had some definite ideas of how to do the radio installation, rather than my usual style of building the model, then pushing the radio components in somewhere. The basic aims were, first, to use the radio to balance the model exactly (no additional lead ballast), secondly, to have easy access to all adjustable items, and lastly, direct aileron linkages with no bellcranks.

Almost all of these objectives were achieved, about one ounce of lead nose ballast was needed after the first flights, and this was buried permanently in the nose block. Access to the controls was found to be quite satisfactory, and the simple aileron hook-up worked beautifully.

As mentioned before, if you've a different radio in mind for the model, check before building any item to make sure everything will go inside the Spiteful. If you've never flown Pattern aerobatics from a slope, try it just this once. You might just get converted from that noisy, air-polluting fuel guzzling monster.

And don't tell me you don't have slopes where you live — they are just about everywhere if you take the time to look for them. □

SPITEFUL

Designed By: J.W. Headley

TYPE AIRCRAFT

Aerobatic Glider

WINGSPAN

58 Inches

WING CHORD

10" (Avg.)

TOTAL WING AREA

580 Square Inches

WING LOCATION

Low Wing

AIRFOIL

Symmetrical

WING PLANFORM

Double Taper

DIHEDRAL, EACH TIP

1/2 Inch

O.A. FUSELAGE LENGTH

36 3/4"

RADIO COMPARTMENT AREA

(L) 8 5/8" X (W) 1-3/16" X (H) 2"

STABILIZER SPAN

20 Inches

STABILIZER CHORD (incl. elev.)

5 Inches (Avg.)

STABILIZER AREA

86 Square Inches

STAB AIRFOIL SECTION

Flat

STABILIZER LOCATION

Top of Fuselage

VERTICAL FIN HEIGHT

5 3/4 Inches

VERTICAL FIN WIDTH (incl. rudder)

5" (Average)

REC. ENGINE SIZE

NA

FUEL TANK SIZE

NA

LANDING GEAR

NA

REC. NO. OF CHANNELS

Two

CONTROL FUNCTIONS

Ailerons and Elevator

BASIC MATERIALS USED IN CONSTRUCTION

| | |
|---------------------|------------------|
| Fuselage | Balsa, and Ply |
| Wing | Balsa |
| Empennage | Balsa & Hardwood |
| Weight Ready-To-Fly | 28 Oz. |
| Wing Loading | 6.6 Oz./Sq. Ft. |