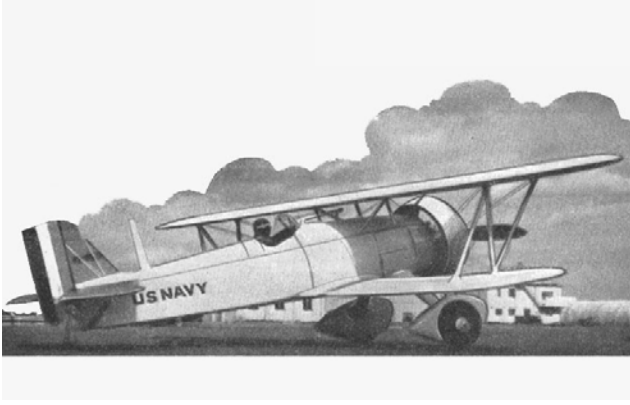


Curtiss XF-7-C3 Seahawk



A 1 in. = 1 ft. Scale Control Liner for 3.5 – 5cc engines W. Esposito.

Model Aircraft Magazine June 1956

The XF-7-C3 Seahawk is a not so well-known edition of the fabulous Curtiss Hawk series, which set the standard for fighter aircraft the world over for more than 20 years. This particular version was developed mainly for the export trade, and saw service in South America and the Orient. However, the U.S. Navy did become interested, and tested the machine, thus the designation. There is not very much data available on this aircraft, and the colour scheme and marking are taken from the standards of the era.

The model is built to a scale of 1 in. to 1 ft., giving it a wing span of just over 32 in. and an area of 273 sq. in. Power is an O & R 0.29 which fits the cowl nicely, and is just the right length to put the prop at scale distance from the firewall. A 9 1/2 in. prop is scale, too. All up weight is 25 oz.

Cowling and Lower Wing: Now to get down to work. First, the engine speed ring. Cut 16 pieces of part C-1 from 3/8 in. soft balsa. Measure the maximum diameter of the ring on the plans, and lay out a circle with a compass to that diameter. This will be used as a guide for all work on the cowl and nose block. Build up the laminations for the ring on the circle you have just laid out, being careful not to get all the butt joints of each segment in line. Allow to dry thoroughly. Sand to shape and apply plenty of filler. This part, along with the large wheel spats, is the eye catcher, and should be well finished. It is built first to allow the filler to shrink into the seams and then more filler is applied. It takes a lot of sanding to get it looking good,

but it's worth it. You can work on this between other jobs while the cement is drying.

Next, the lower wing: This has to be ready to mount at an early stage. Cut out the leading and trailing edges, and lay out the rib stations along the length of the edges, and notch. Cut the ribs from 1/16 in. medium sheet, except for the two ribs at the strut stations these are 1/16 in. ply. Cut away the sections of the leading and trailing edges as shown. Insert the ply ribs into the proper notches in the trailing edge and line up. Now cement the leading edge in place, and insert the rest of ribs, checking constantly for alignment. Cut the tips to outline shape and cement into position. Add the gussets at the corners and about an ounce of lead to the starboard tip; the upper wing is built in the same manner later on.

Both wings can be built in the hand without pinning down to the table. Exercise extreme care in cutting the scarf joint splices for the leading and trailing edges of the upper wing. The center section of the trailing edge will have to be made from flat stock, as the joint prohibits the use of pre-formed stock for this. Remember to notch the edges at an angle for the upper wing, due to the sweepback. After all the ribs are in place, add the strut sockets as shown on plan.

Fuselage: Cut the box sides and spacers front 1/8 in. hard sheet, and score the sheet sides on the inside at the point where the taper begins in the top view. Insert the spacers at stations 2, 3, 4 and 5. When dry, draw the tail ends together, glue, and insert the rest of the spacers. Make sure that the box is perfectly square. Decide what engine you are going to use—I used an inverted O & R 0.29, radially mounted, but a Frog 500 will do just as well. Drill the firewall to take the crankcase studs, making sure that the crankshaft is on the aircraft center line. Solder the crankcase nuts to a piece of tin and fix to the back of the firewall. Mount the firewall.

Install the fuel tank, followed by the ply landing gear platform, then the tail wheel struts, tailplane and vertical fin and the center section wing struts. These struts are bound and glued to the 3/8 x 1/2 in. cross pieces indicated on the plan. Sheet the lower wing roots with 1/16 in. and the fuselage with 3/32 in. as

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shown. Mount the engine and build up the nose block around it, taking care to glue the nose block to the firewall lightly as it will be removable. Remove the engine and carve the block to rough shape.

Now cement the fuselage formers into position. These are cut from 1/8 in. sheet and sanded to cross section, then filled in between with 1/8 in. sheet at the indicated stations to imitate stringers. Note that the lowest stringer on the fuselage side is set at an angle and runs along the edge of the box.

Now build up the landing gear spats and struts. Drill a piece of tin to take the bolts which will hold the removable spats and struts together, and solder these to the outside of the wire strut as shown. Cut the ply doublers to shape and bolt into position. Be sure that the parts do not stick together. This can be done by placing some wax paper between the separating parts. Glue the sheet which forms the main portion of the spats to the ply. Build up the main strut from 1/8 in. hard balsa laminated. Run the wax paper up between the separating parts. Build up the fillet where the strut joins the spats, then the fillet at the fuselage. Note that the upper fillet is separate from the strut. Leave plenty of room at the upper fillet for the wire strut to move around. Carve and sand to shape. Note that the top edge of the spats is a sharp edge anti not rounded.

Add at this time the rudder and elevator. The rudder should be offset as shown (to the outside of the circle). Make the elevator in two pieces and glue to a 3/16 in. dowel for a spar. Mount the horn. Install the elevator before the rudder. Don't forget to make the push rod the exact length, at the same time ensuring that you can adjust the horn movement as necessary.

Now give the whole works a good sanding. Apply a mixture of dope and talcum powder for filler and get all the seams and joints concealed. If you wish, cover the sheeted sections with tissue. Note the fillets at the lower wing root and at the vertical fin. These can be made from balsa or plastic wood. Get them smooth and unbroken.

Before sheeting the fuselage, bend and solder the ends of the center section wing struts with wire.

Leave enough space between the turns of wire to wrap with string.

Upper Wing and Detail: Build the upper wing now, and when dry slip into position and check for alignment. Both wings arc set at zero degrees incidence and neither has any dihedral. If care has been exercised in mounting the center section struts and in shaping them, the wing should line up perfectly. (Note: The layouts for the wire parts on the plan are flat shapes. The upper ends of the struts should be perfectly vertical after the struts have been installed.)

Do not permanently mount the upper wing at this stage. Cut the N struts from 1/16 in. ply. Add 1/16 in. balsa to each side and sand to a streamline shape. Mount a ply line guide on the inside of the left strut. Wrap the struts with tissue. Add the 1/8 x 3/16 in. balsa struts to the center section wing struts and wrap with tissue. Check the struts and sockets for fit. Shape the radio mast from 1/4 x 1/2 in. balsa, and wrap with tissue. The gunsight is made from 3/16 in. dowel and drilled to take 1/16 in. dowel for the supporting struts. Drill the upper wing leading edge to take the 1/8 in. dowel machine guns. The aileron struts are made from 3/32 in. dowel or wire. The flying wire vibration damper is 1/16 in dowel.

Build up the crash pad around the cockpit, and install the windscreen. Make the tail wheel yoke from sheet aluminium, and wrap the tail wheel strut with string to imitate a spring.

Finishing: Now make a final check to see that all planked and sheeted areas and blocks are nice and smooth and no seams showing. All O.K. ? Give another coat of filler and another sanding. It may look good, but the faults show when the coloured dope is applied. Cover the model, using either Modelspan or silk. Silk will take the finishing better and is naturally tougher. Apply at least five coats of clear dope. (Seven would be better.) Sand lightly between every second coat with number 400 wet or dry sandpaper, used dry. Now for seven coats of coloured dope. Mask off the areas that are different colours. Use the dope thin and sand every other coat with number 600 wet or dry, used wet. Wipe the model off well before applying the

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next coat. Rub the final coat with rubbing compound to a high gloss. Take it easy, though, if you've used tissue. Apply the trim and markings, insignia and letters. All markings except for insignia are black. Use either dope, masking out the lines, or transfer trim.

There is nothing more ugly than a model of a radial engine aircraft with an empty cowl, so let's build a dummy engine. Sand a strip of 1/2 in. sq. balsa to round section and cut into 1 1/4 in. lengths. Wrap the end 3/4 in. of each piece with 1/32 in. sheet, cross grain, to a diameter of 3/4 in. Sand this to ball shape for the cylinder head. Add the rocker boxes made from 1/8 x 1/4 in. balsa. Wrap the cylinder with string to imitate fins, and paint matt black; the rocker boxes are aluminium.

Mark off the positions for the cylinders on the nose block—they are 40 deg. apart, starting at the top. Lay the speed ring on the circle that you laid out earlier and center the nose block in it, rear edges and surfaces down. Now, by cut and fit, cement the cylinders into place to both the nose block and ring.

Make sure that the fit is good and that the cylinders line up perfectly. Insert the push rods, which are 1/16 in. dowel painted aluminium, and the intake and exhaust manifolds, which arc fuel tubing also painted aluminium. Mount the dress snaps that hold the whole works to the firewall. There are four, evenly spaced around the block. Make it a tight fit to the firewall. Shape the carrier hook from 1/16 in. wire and paint with alternate red and white stripes.

Final Assembly: Now for the final assembly. With the method outlined here, we avoid the old bug of model biplanes—painting between the wings. You should have spread out before you the following items: a fuselage, complete with lower wing (which is finished), landing gear, tail assembly, center section wing struts, gunsight installed, tail hook installed, radio mast installed, wind shield, the whole works colour doped, finished and fuel proofed ; the upper wing, completely finished, with markings and insignia and machine guns installed and fuel proofed; one nose block, engine and ring assembly, two N struts, two aileron connecting struts (all fuel proofed), wheels, and a spool of white thread for the rigging.

Also the flying wire vibration dampers, two each, ditto. All parts are fuel proofed with the exception of the small areas where the joints will be.

Take some string and soak in glue. Hang up and wipe off the excess. When dry, wrap between turns of wire on the ends of the center section struts and apply more glue. When dry, this should be a force fit into the sockets in the upper wings. Be careful that it is not too tight or you will split the sockets.

First install the bracing wires between the center section struts and the fuselage. Note that all wires on the wings arc double. Stick the thread into the planking and wrap around the struts—a dab of cement will hold them. Next, stick the threads into the fuselage at the landing gear strut fillet; these are the flying wires. Next, the landing wires: loop around the ends of the center section struts, and cement. Leave the wires long enough to reach out to the N struts with some over. Work fast, but be careful.

Apply glue to the lower ends of the N struts, and slip into the sockets in the lower wing. Wrap the landing wires around the strut, between the fillet on the strut and the wing. Pull snug and press the strut home. Now apply cement to all the upper ends of all the struts. Slip the upper wing into place and do the same with the flying wires. Press the wing down on to the struts and pull the wires tight. When dry, install the aileron connecting struts. Touch up the fuel proofed areas, solder on the wheels, mount the engine, snap on the nose block—all done !

Colour scheme: The upper surface of the upper wing, and the lower surface of the bottom wing, the tail surfaces and the speed ring around the engine are yellow. Everything else is very light grey or aluminium. Cylinders are black as well as all markings and lettering. Insignia, of course, are red, white and blue. Fly on 50 ft. lines, with the controls set at the least sensitive position. Do not apply full up on take-off—let it fly it self off. Just keep the tail from getting so high that it noses over. The first time I flew it, it flipped over on its back without even roiling—and I mean flipped -from a standstill to inverted at 1 ft. off the ground, in less than its own length, so watch it.