





## Civy Boy 74

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cement into place in the fuselage sides. While these fuselage sides are pinned down to the plans and drying, cut the wing saddle from 3/16" sheet balsa and from 1/8" sheet cut the stabilizer saddles. When the fuselage sides are dry, separate the two and cement the cross pieces in place between the two sides, using pins and small rubber bands to hold while drying.

From the plans it can be seen that bicycle spokes and nipples are used to hold the firewall to the fuselage. Two spokes and two nipples are required. These can be obtained from your local bike shop.

From 1/16" plywood cut the sub-firewall; after sanding the front of the fuselage box with a sandpaper block to make sure it is square and flat, cement the sub-firewall into place. Cut two bike spoke fuselage anchors from 1/16" plywood and cement in place where indicated on plans. Drill two holes 5/32" diameter in sub-firewall as shown on plans and install the bike spokes—cut to proper length, of course. Note: at least 1/2" of the spoke length is bent to hook behind the 1/16" plywood used to anchor these spokes. Cement firmly in place. The end of the threads on the bike spokes should protrude 1/16" through the 5/32" holes in the sub-firewall.

Cut firewall from 1/4" plywood. Drill two holes—one in each side, as in the sub-firewall, 5/32" diameter. The two bike spoke nipples should fit these two holes. The nipples must thread on to the bicycle spokes protruding through the sub-firewall. The firewall can be removed from the model at any time by simply unscrewing the two spoke nipples with a screw driver. This is a neat and clean system. After flying is over for the day, the builder can remove the entire motor unit from the ship for cleaning or transit. The two bike spokes also serve another fine purpose, if the model is to be operated on spark ignition. See diagram on plans. In such a case, the bike spokes are part of the wiring circuit, allowing the builder to have the facilities of a removable firewall and not having to have a separate jack plug to connect to the ignition timer, which most builders prefer to place back along the fuselage.

At this point we have the fuselage box frame finished, with firewall and sub-firewall installed. Check the pylon blank to make sure it is dry, then shape it to a symmetrical section, viewing from the top view. Sand the bottom of the pylon straight and even with a sandpaper block, making certain that you have not more than 3/16" incidence built into the pylon. Notch the pylon base to fit fuselage cross members and cement into place; the wing saddle can now be cemented in place on the pylon. Check pylon and saddle for alignment with fuselage, and pin securely until dry.

Add the fuselage stringers (1/8" x 1/2"), as shown on plans. If 3' lengths of wood are used, the stringers will have to be spliced. Again, it is best to stagger the splices to insure strength. The fuselage has two side stringers 1/8" x 1/2". Note that the top side stringer travels all the way to the stabilizer trailing edge. The lower side stringer stops at the leading edge of the stab. Taper the stringers with knife or sandpaper from about the midway point on the fuselage to 1/8" x 3/8" at the leading edge of the stab saddle position, continuing the taper on to the very end of the fuselage. At this time

cement stabilizer saddle in position. Check the drawing and cement the two small balsa blocks about 1" in from the end of the fuselage. Carved to shape, these small blocks form the rear end of the fuselage. Before planking the fuselage, insert 1/8" x 1/4" strips along entire pylon base from nose of ship to the rear end of pylon, to receive the top side fuselage planking. The grain of all planking should be placed perpendicular to the longerons and stringers. Plank the rear section of the fuselage with 1/16" sheet, and the front or nose section with 1/8" sheet. The pylon fillets are shown full size and should be made from soft pulpy balsa 3/32" thick. Sand a long taper, or bias, all around the fillet edge and cement in place.

Assemble both wing tip outlines after the curved parts are cut from 1/4" sheet. Cement well. Laminate the leading edge and around the tips of the wing with 1/4" sheet. While the tips are drying, cut the wing ribs by making templates from full size patterns. Wing center section ribs are cut from 1/8" sheet; dihedral break ribs are also made from 1/8" sheet. All other ribs are from 3/32" sheet. Wing spar sizes are indicated on the plans. Note that the wing tip spars are tapered from rib No. 5. All dihedral breaks in the wing are made by laminating spars. Assemble the wing after ribs are cut and notched, spars cut to length and tapered, and wing tip outlines are dry. Lay out complete outline of one wing, then slide ribs on to the spars one section at a time, and cement into place. Do not cement the dihedral break ribs in place on the spars until the wing frame is dry. Block up wing to required dihedral (see plan), and cement the overlapping spars and the 1/8" dihedral break ribs. Shape the leading and trailing edge to conform to the airfoil, and the wing tip outlines to conform to the airfoil ribs. Add 3/16" sheet hard balsa gussets to leading and trailing edge dihedral breaks. Plank top and bottom center section of wing with 1/16" sheet as shown on plan. Sand the whole job thoroughly.

The stabilizer is very simple to construct. Stab tips are made by laminating 1/4" sheet and 1/8" sheet as shown on plan. Cut the curved parts for the stabilizer tips to plan form, then add leading and trailing edge stock. Plank bottom center section of stab over the plan. Cut and cement the lower cap strip ribs into place. Splice the stabilizer spars at the center section. Spar sizes are, from leading to trailing edge, 1/8" x 5/8", 1/8" x 5/8", and 1/8" x 1/2". Note: these spars begin a gradual taper from rib No. 5 (see plan) to each stab tip.

Cut rudder outline pieces from 1/4" sheet balsa, using 1/8" x 1/4" for rudder spar and ribs. Add 1/8" square on each side for rudder ribs, and shape the rudder to symmetrical airfoil shape. Sand rudder and cement into place on stabilizer. See drawing for fitting the stabilizer cone to the fuselage.

I covered my own models with Japanese tissue and after two coats of clear dope, I applied whatever numerals necessary; the license number was cut from black Japanese tissue. If tissue numerals are used, dope them on after the second coat so that they may receive the same gloss as the covering. As an added hint, black tissue numerals are far superior to decals in the respect that they do not chip, crack, or peel off. I used 10 to 12 coats of clear dope, with 10% castor oil added to the last two coats to prevent warps.

Test flying and adjustments: Before test gliding the Civy Boy, check to see if

it balances slightly nose heavy by holding it at the trailing edge of the wing. This is a good condition. If it is tail heavy, add a little weight to the nose. Also check to see that you have no more than 3/16" incidence in the wing, the stabilizer being set at zero. Before test flying, add six degrees down thrust in the engine installation.

The Civy Boy flies equally well to the left or right; I usually fly my own to the right under power, and also glide to the right.

Use of "wash in" in the wing panel toward which you circle under power is recommended. This gives the model a nose-up spiral with no hint of spiralling down. With this configuration it is advisable to make the ship glide toward the same direction it climbs. This will encourage a nice flat recovery at the end of the motor run. It has been felt by some observers that a long-momented model with a trailing edge C. G., such as the Civy Boy, does its best flying in calm air or little wind. This the designer does not agree with. Many contests have been won by this long-momented design on rough windy days. More contests have been won in the wind than in the calm, due to general or local weather conditions. However, the flying proficiency that a model exhibits on a windy day depends upon the amount of time spent on adjustment by the flier. Any model requires a slightly different adjustment for windy day flying than it does for flying in calm, balmy weather.

It is suggested that the Civy Boy be trimmed with less positive incidence for windy weather. In the author's opinion, this sort of adjustment applies to almost any model airplane free flight design. Place a small strip of 1/16" sheet balsa under the leading edge of the stab, thus decreasing over-all incidence to 1/8". If the builder does not desire to tamper with the incidence, try balancing the model about 1" forward from the trailing edge of the wing. This will enable the model to glide two to three miles per hour faster; when flying in a gusty wind this will tend to dampen the slight stall that any model may exhibit when it turns from the downwind leg into the wind.

For those who wish to give the design a try, installation of a good dethermalizer is virtually a must. When this article was written I had already lost four Civy Boys since April of this year—one Civy Boy 74, two class B versions, and one class A flown R.O.W. What is the author building now? Better dethermalizers for certain!