EASY 200

From Laddie's Easy 100, comes his Easy 200. A good flying bipe with simple construction.

By Laddie Mikulasko

The Easy 200 is a model for anyone who would like to have a biplane with good flying characteristics and simple construction.

I started tinkering with the idea of a biplane version of the Easy 100 (RCM July, 1988), after I was totally satisfied with all aspects of the high wing design. I wanted to have a pleasant looking model, with simple lines and easy construction. For this reason, I chose a cabin type arrangement. I just took the Easy 100 plan and, with a black pen, I drew a new fuselage shape. Basically, I raised the fuselage height just enough to get the necessary clearance between the two wings, without spoiling the looks. Subsequent flights showed no ill effects of two wings being relatively close together.

My original Easy 200 had ailerons on both wings. The second version has them on the top wing only. As can be expected, the four aileron version is faster in roll, but the two aileron version handles nicely, as well. It is up to you, which version you prefer. Despite being a bipe with thick wings, the model is surprisingly fast when flown wide-open. The landing speed is very slow. Gusts have little effect on the model.

With a clear conscience, I can recommend this airplane to any beginner to learn on, and to anyone else who might find this model a good plane to take to the field for enjoyable flying.

Enough of the virtues of the Easy 200; let's start on construction. Here, I'm tempted to reprint most of the Easy 100 article, but I don't want to be accused of "cheating," so here it is fresh, for the Easy 200. To help keep the construction notes brief and easy to follow, the various parts are numbered and called out on both the construction article and plans.

The fuselage can be started first. Trace the fuselage sides (1) on a sheet of lite ply and cut them out. Glue on the top and bottom longerons (2) and, in the area where the top wing is going to sit, glue on spruce saddles (3), to give that area more support. While the glue is drying, cut out all of the formers. In former (F-1), drill the holes for engine mount, blind nuts, throttle control exit, and fuel lines.

Cover the plan with clear plastic.

Position the fuselage sides over the plan and glue in formers (F-3) to (F-7). After the glue is dry, glue in (F-2) and (F-1). Keep checking that the fuselage is straight. Sheet the top with sheeting (13). Flip the fuselage upside-down and glue in landing gear blocks (6). The bottom block should have a double width groove to accept two landing gear wires side-by-side. Glue on the bottom sheeting (13).

Sand the fuselage until smooth. Round the fuselage corners. The cowl can be made now out of fiberglass or built-up balsa.

The balsa nose is easier to make for the majority of people. Screw the engine mount to the firewall and mount the engine, without its muffler. Cut out the front ring (F-1a) (12), and tape it to the back of a 2½" spinner plate, in two spots. Put some 1/16" balsa spacers between the ring and the spinner plate, so that the spinner will not rub the ring when the engine is running. Mount the spinner plate on the engine. Cut out the left and right cowl sides (8). Cut the hole in the right side one, so that the engine head and mounting lugs can go through it. Glue

the sides to the ring and to the firewall. Add the top and bottom triangle stock on the inside (9). Glue on the top and bottom sheeting (10). Remove the engine, and sand the nose to the contours of the ring and the rest of the fuselage.

Cut out the tail surfaces and sand them smooth. In the top fuselage sheeting (13), cut the 1/4" wide slot and glue in the fin (15) and sub-fin (16). Next, glue on the stabilizer (18).

Make the tail wheel assembly now. Take 1/16" O.D. piano wire and insert it into 1/16" I.D. brass tubing of proper length. Make a 90° bend in the wire at the top to go into the rudder later on. Push this wire down the rudder hinge line until the wire punctures a hole in the stabilizer. Use this hole as a centering spot for the plywood insert (20) to support the brass tubing in place. Cut an opening in the stab to accept this support, and glue in. Now, glue the brass tube to this plywood support.

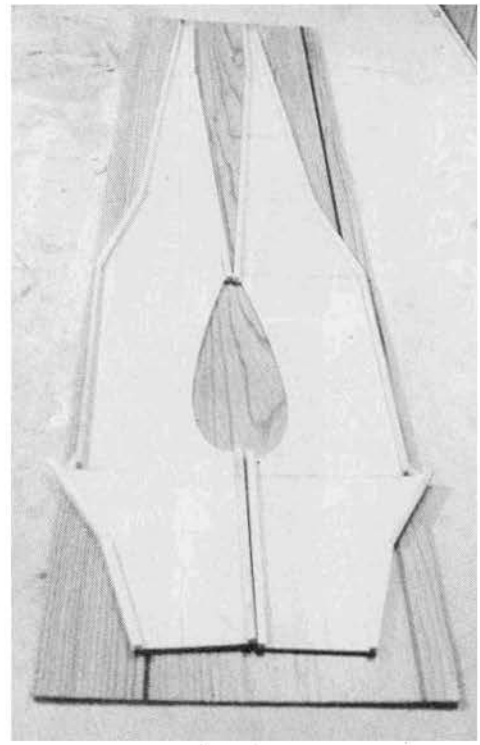
Glue on the wing hold-down blocks (4 & 5). Now, put the fuselage aside.

To build the wings, cut out all of the ribs and dihedral braces. Because the bottom wing has no dihedral, it can be built in one piece, right over the plan.

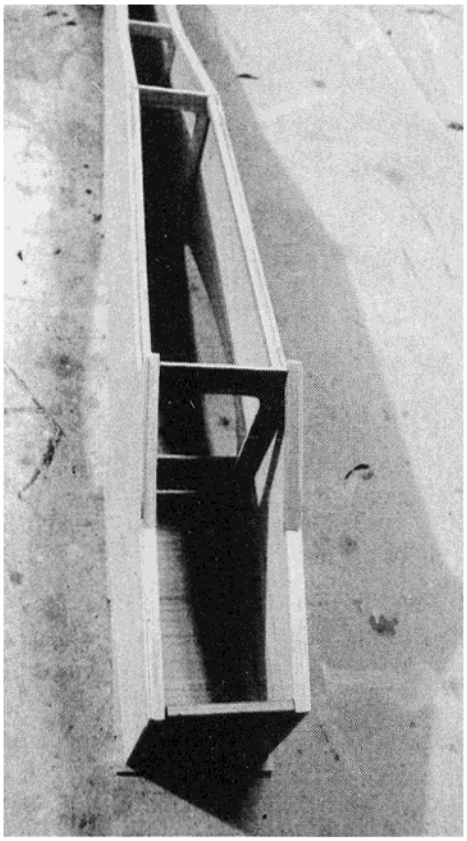
Pin the bottom trailing edge sheeting (24) and leading edge sheeting (23) to the building board. Glue the bottom main spar (21) to the leading edge sheeting. Glue all of the ribs to the leading and trailing edge sheeting. Glue in the top main spar (21) and leading edge (22). At this time, do **not** glue the bottom leading edge sheeting to the leading edge yet. Glue in plywood dowel supports (26 & 27). At the rear, between the two root ribs, glue in the plywood compression plate (32). Now, the top trailing edge sheeting (24) and leading edge sheeting (23) can be glued on.

After the glue is dry, remove the wing from the board and finish gluing the leading edge sheeting to the leading edge (22). Sheet the center section of the wing, top and bottom, and glue on all of the cap strips. Glue on the tips (30).

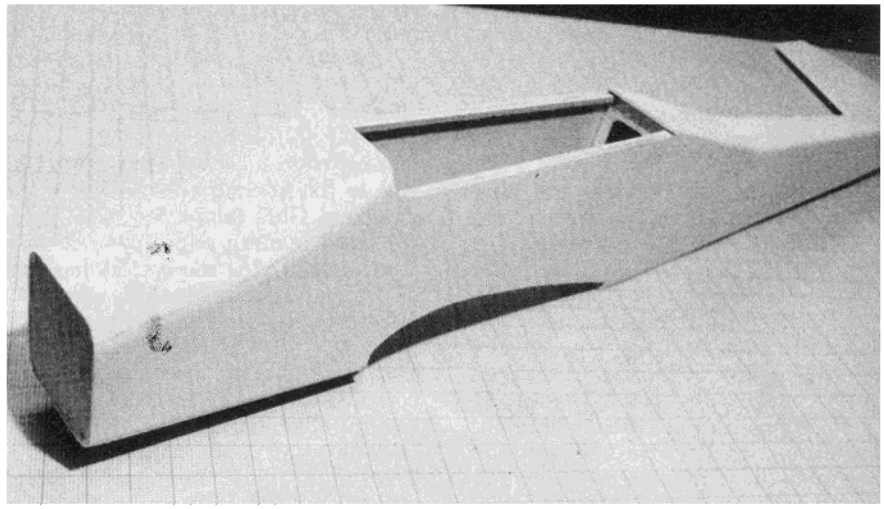
Sand the wing to your satisfaction, ready for covering. Glue in the dowel (28) and, on the bottom of the trailing edge, glue on the plywood plate to support the wing bolts.



The fuselage sides with longerons glued in place.



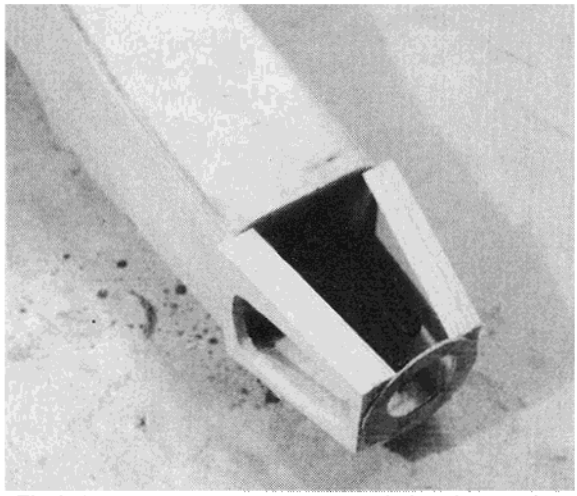
The fuselage assembly before top sheeting is glued in place.



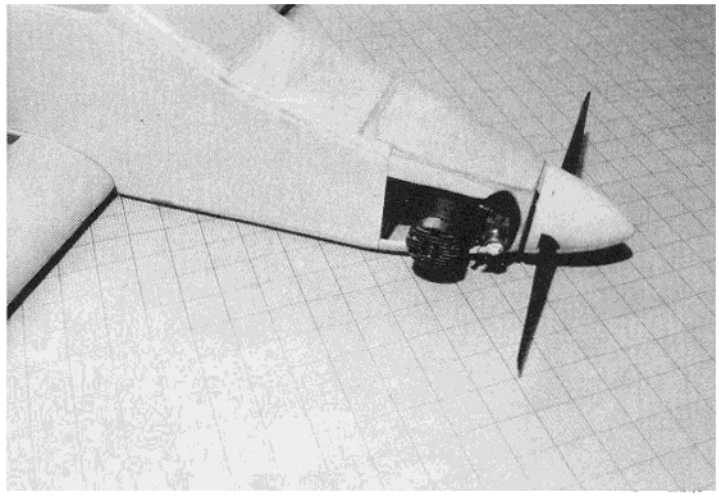
Notice rounded corners, helps give smooth lines to fuselage.

The top wing is built in two halves. The building sequence is similar to the bottom wing, except that the trailing edge spar (37) is glued to the bottom trailing edge sheeting (39). After the left and right halves of the wing are built, glue in the (33) dihedral brace to one half of the wing, along with the balsa brace (38) at the trailing edge. At the front, glue in plywood doubler (34) and dowel support (35). (See isometric view, if not clear.)

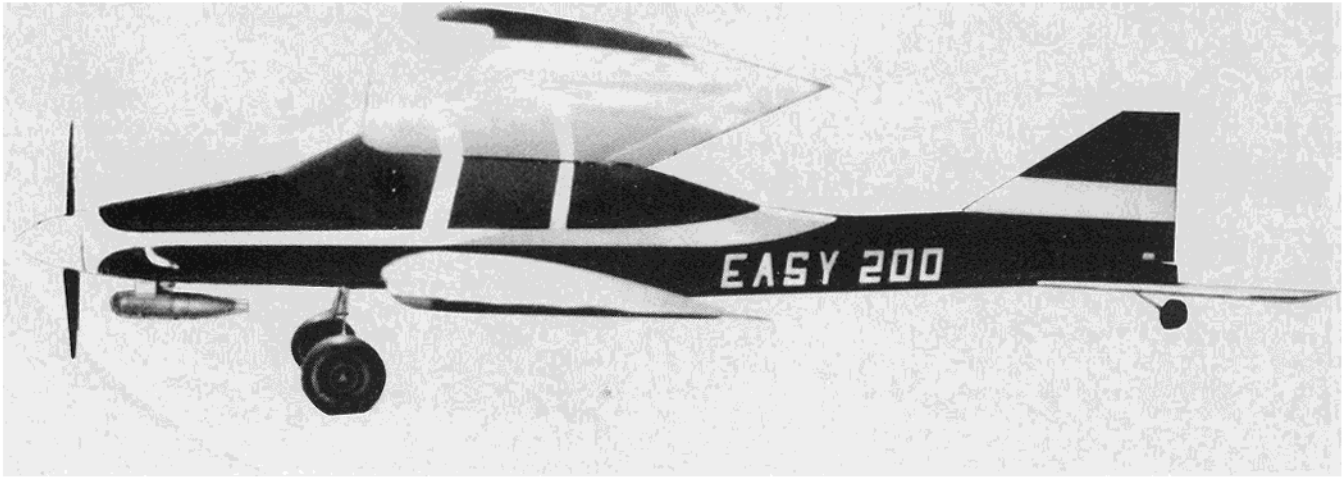
After the glue is dry, pin this half of the wing to the board and slide the other half onto the braces for a trial fit. Place a 1½" block under the tip rib of the raised panel. When satisfied with the alignment and fit, slide the two panels apart, apply adhesive and reassemble them checking the alignment again before the glue sets up. Before removing the wing again,



The balsa nose (cowl) is built up from balsa sheet and triangular stock.

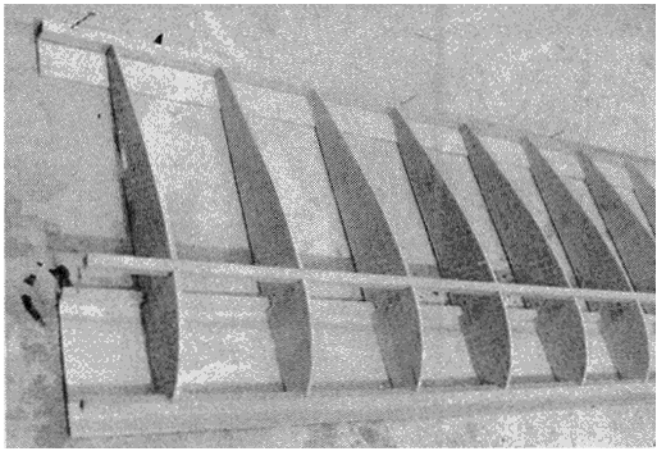


The engine is checked for fit. Allow adequate room to remove/reinstall engine.

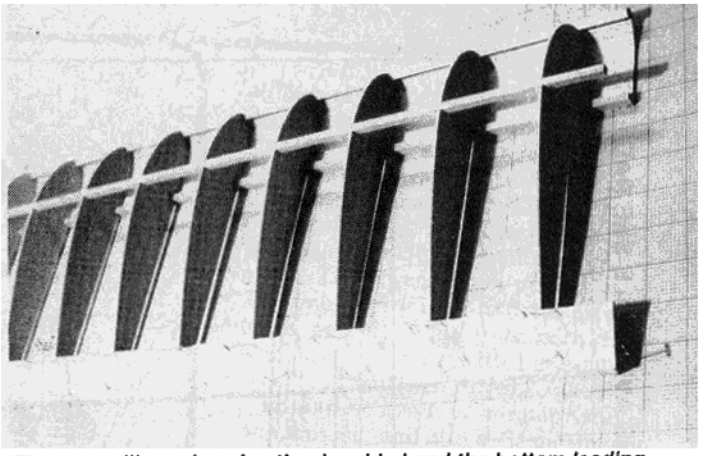


EASY 200

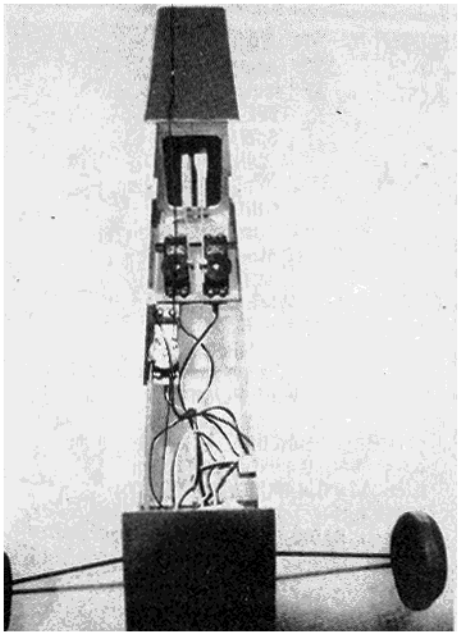
Designed By:
Laddie Mikulasko
TYPE AIRCRAFT
Sport Biplane
WINGSPAN
57¾" Top; 45¼" Bottom
WING CHORD
12¼" Top; 11¾" Bottom
TOTAL WING AREA
1230 Sq. In.
WING LOCATION
Biplane
AIRFOIL
Clark Y (mod.)
WING PLANFORM
Constant Chord
DIHEDRAL EACH TIP
3/4" Top; 0" Bottom
O.A. FUSELAGE LENGTH
54½ Inches
RADIO COMPARTMENT SIZE
(L) 12" x (W) 3" x (H) 4"
STABILIZER SPAN
20 Inches
STABILIZER CHORD (incl. elev.)
6½ Inches (Avg.)
STABILIZER AREA
130 Sq. In.
STAB AIRFOIL SECTION
Flat
STABILIZER LOCATION
Bottom of Fuselage
VERTICAL FIN HEIGHT
7¾ Inches
VERTICAL FIN WIDTH (incl. rud.)
9½ Inches (Avg.)
REC. ENGINE SIZE
.40-.45 2-stroke
.40-.60 4-stroke
FUEL TANK SIZE
10 Oz.
LANDING GEAR
Conventional
REC. NO. OF CHANNELS
4
CONTROL FUNCTIONS
Rud., Elev., Throt., Ail.
BASIC MATERIALS USED IN CONSTRUCTION
Fuselage ..... Lite Ply, Balsa, & Spruce
Wing ..... Balsa, Spruce & Ply
Empennage ..... Balsa
Wt. Ready To Fly ..... 96 Oz.(6 Lbs.)
Wing Loading ..... 11.2 Oz./Sq. Ft.



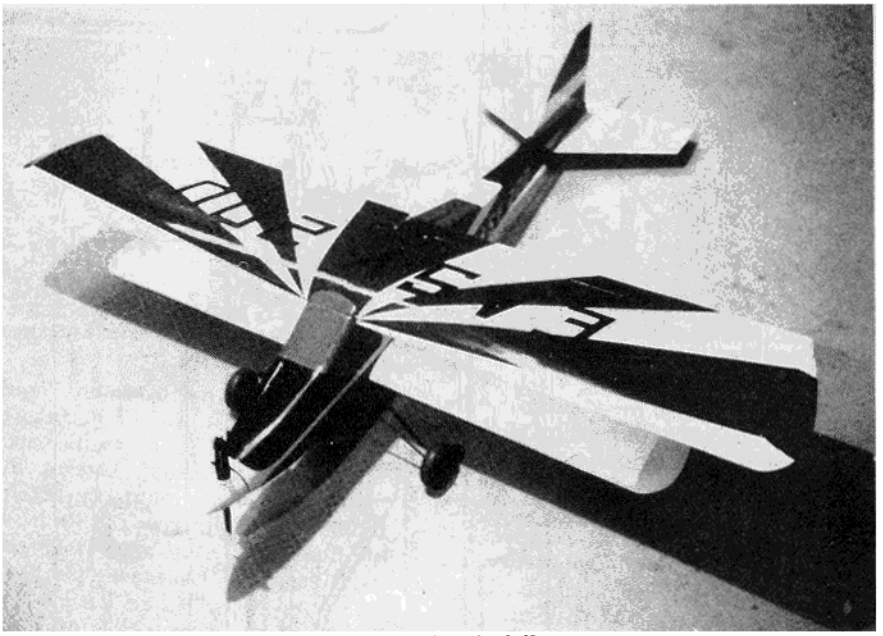
The top wing assembly is begun.



The top trailing edge sheeting is added and the bottom leading edge sheeting is glued in place.



Radio installation; plenty of room for nearly any equipment.



The model is ready to go in the air. Make it colorful!

sheet the top center section. Glue on all of the top cap strips.

Remove the wing, sheet the bottom, and cap the ribs. Glue on the wing tips and sand the wing, ready for covering. Glue on plywood plate (36) to support the wing bolts on top of the trailing edge so that it extends 2" past the trailing edge.

Install the aileron torque rods. Make the ailerons (40) out of 3/8" sheeting, or trim from commercially available stock.

Position the top wing on the fuselage and, after the alignment is checked, drill two holes right through plywood plate (36) into the hardwood blocks (4). Do the same thing with the bottom wing.

To make the landing gear, bend the 5/32" piano wire to the shape shown on the plan. Drill the hole in each vertical landing gear block (6). These holes must be offset so that the landing gear wires can sit in the groove of the bottom block side-by-side.

At the rear of the fuselage, make a slot for the rudder pushrod exit.

The model can be covered now. I prefer to cover all of my sport planes with iron-on materials like Balsa USA Aerospan. Once the model is covered, install the hinges. For at least three years I have been using Easy-Hinges now being sold by Sig. They are easy hinges to install and I have never had one fail. You must use thin cyanoacrylate glue to hold them in the slot.

Before the rudder can be attached, the tail wheel assembly must be installed. Insert the wire into the brass tubing from the top. At the bottom, slide the 1/16" I.D. wheel collar and tighten the set screw. With pliers, bend the wire back and bend the end to accept the tail wheel. Install the rudder.

Install the landing gear with its two clips holding it in place.

Install the engine and fuel tank. The radio should also be installed now.

Attach the wings to the fuselage. I prefer to use 1½" #6 self tapping screws to hold the wings on, but of course, you can use nylon wing bolts if you prefer them.

Check the Center of Gravity against the plan. Move the battery, if needed, to get the balance as shown.

Check all of the controls and adjust the throws so that the elevator has 3/8" to 1/2" up and down, aileron moves 1/2" both ways. The rudder can have up to 1" throw.

Once the engine is running, taxi the plane into the wind and go for a take-off. Even on a grass surface, the model lifts off with no effort. It is rock steady, even on windy days.

The Easy 200 will do most maneuvers. Landings are easily done with or without power.

I hope that the Easy 200 will be your favorite model to take to the flying field.

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