



by HARRY WILLIAMSON

► The *Ringmaster* is a tried and proven stunt ship that originally took to the air in the summer of 1947. In the four years that have passed since that day, we have built many of these ships and with some changes, structurally and aerodynamically, have produced the version you see here.

This design has been scaled up for the big "Sixties" and down to the tiny "A" jobs. Regardless of the size, it has proven its ability. Speed, strength, appearance and full-pattern ability are its features. Although designed for the K & B 29, the version shown on the drawings has also been flown with the McCoy 36 and will turn in a very creditable performance when flown with O & R 23's.

Construction is conventional and quite simple, even for the less experienced. The wing is of the single I-beam spar type, with sheet covered leading and trailing edges. Fuselage construction is a glorified box with flat sides and bottom and a rounded, planked top. Engine mounts that extend two-thirds of the wing chord, offer that much-needed strength in a crackup.

Fuselage Sides: Select two pieces of 1/8" hard sheet balsa and cut out the fuselage sides. Two nose reinforcement pieces are made of 1/16" plywood and cemented to each side. Hardwood mounts, 3/8" x 1/2", are cemented in place and additionally strengthened with #2 flat-head wood screws, through the mounts and into the plywood. Cut out each side for the wing and lay both halves aside.

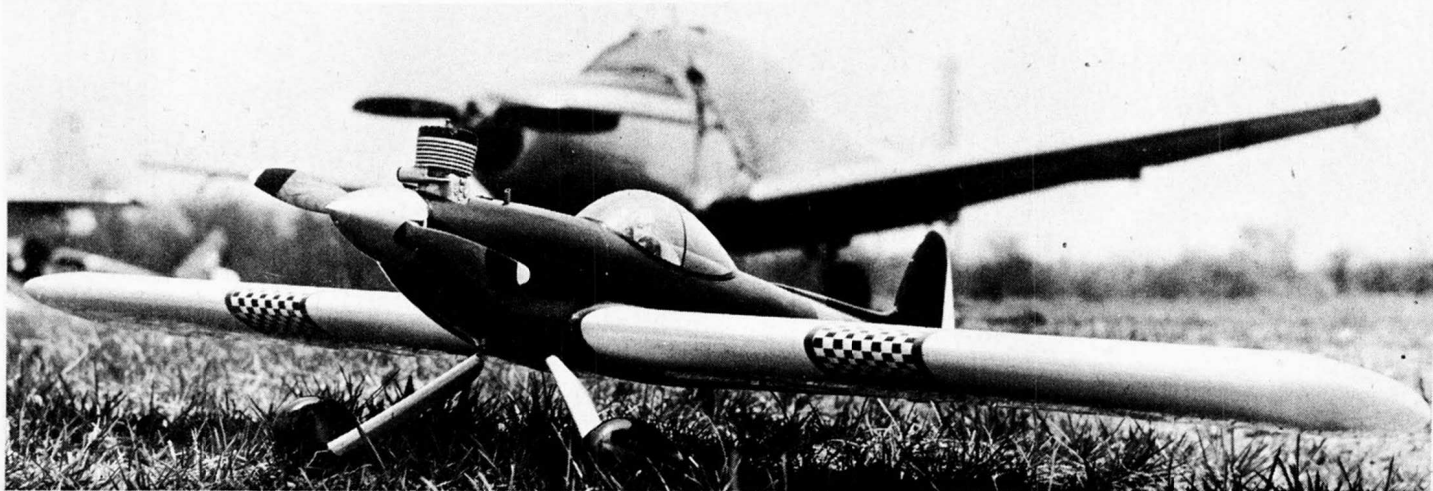
Wing: This part of the airframe, since it takes all the flight loads in those violent maneuvers, requires a great deal of care to obtain maximum strength and efficiency. Cut out 20 ribs from 1/16" hard sheet balsa and sand to shape. Two pieces of 1/8" x 1/2" hard balsa strip form the upper and lower halves of the I-beam spar. Pin one piece of 1/8" x 1/2" to your workbench and cement the ribs in place. Before allowing the cement to harden, cement the lower half of the trailing edge to the ribs and correctly align the assembly. After sufficient drying time has elapsed, the top half of the spar and the leading

Built in all sizes from AA jobs to big "60's," the *Ringmaster* has proved its ability. Wing construction features an I-beam, sheeted edges; fuselage has sheet sides, extra long motor mounts.

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Ringmaster

edge may be added. The hard wood bellcrank mounting block should be drilled and fitted between the center ribs. Install the bellcrank, pushrod and run the lead-out wires through the left half.

Complete the I-beam spar at this point by adding 1/16" sheet balsa compression members between the upper and lower spars and snugly between the ribs. Cover the leading edges and center section with 1/16" soft balsa and carve the tips from solid blocks. Hollow the left tip only and cement both tips in place after running the lead-out wires through the aluminum tubing.

Rudder, Stabilizer and Elevators: The rudder and fairing are cut from 3/16" medium balsa and sanded to shape. Stab and elevators are made of 1/4" sheet balsa and shaped to a symmetrical section. The .040-dia. wire control horn is formed and cemented to each elevator half and the hardwood strip, with silk or aircraft fabric cemented over it.

Fuselage Assembly: Cut out all the formers required and bend the landing gear from 1/8" wire. Assemble the landing gear to the firewall and begin the final assembly by slipping the fuselage sides on the wing, as shown in the sketches. Bring the two sides in and slip the firewall and former #4 between them. Center the fuselage on the wing and cement together. Lay the structure on a flat surface and allow to dry.

Now, add the plywood nose ring, #1 and the remainder of the fuselage formers, slipping them over the pushrod and at the same time adding the plywood fair-lead to former #5. Locate your engine in the nose, drill out the mounting holes and solder four nuts to tin-can metal and cement these to the underside of the mounts. The fuselage is now planked, the sheet bottom added and the nose and cowl blocks carved and fitted in place. The cowl should be hollowed to suit your particular engine and gas tank installation.

Lay the stab and elevator assembly in place on the rear of the fuselage and solder the pushrod to the control horn. Check the con-

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trols for freedom and sufficient movement. The stab is securely cemented to the fuselage and the rudder and fairing added. Sand the fuselage industriously and cover the entire ship with *Silkspan* or silk. The cowl alignment pins should be located and installed in addition to the cowl hold-down bolt.

Make the tank from .008 thick shim brass as shown on the drawings or select a commercial tank of the correct size. The tank is held in place with wood screws as shown on the drawings. For appearance, wheel pants and gear fairings are hard to beat. Properly made and installed, they will take a lot of contest punishment and still add sparkle and class to the old wagon.

Finishing: Two coats of wood filler with a fine sanding between coats will enhance the beauty of your version. Several coats of colored dope will give a light and durable finish. Cement a bubble canopy of generous size over the cockpit and fair the edges with a strip of silk. To simplify our trimming problem we chose Hobby Decal *Checkerboard* with *Trim Film* stripes. Two coats of Stanzel's *Tuff* hot-fuel proofer were used to protect the finish. The original ship sports a black-and-white paint job with red plastic spinner and trim.

Flying: The model should balance near the wing spar and requires about one ounce of weight in the right wing tip. Initial flights may be attempted on .012 dia., 52' lines that are lengthened to 65' for all-out air work.

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