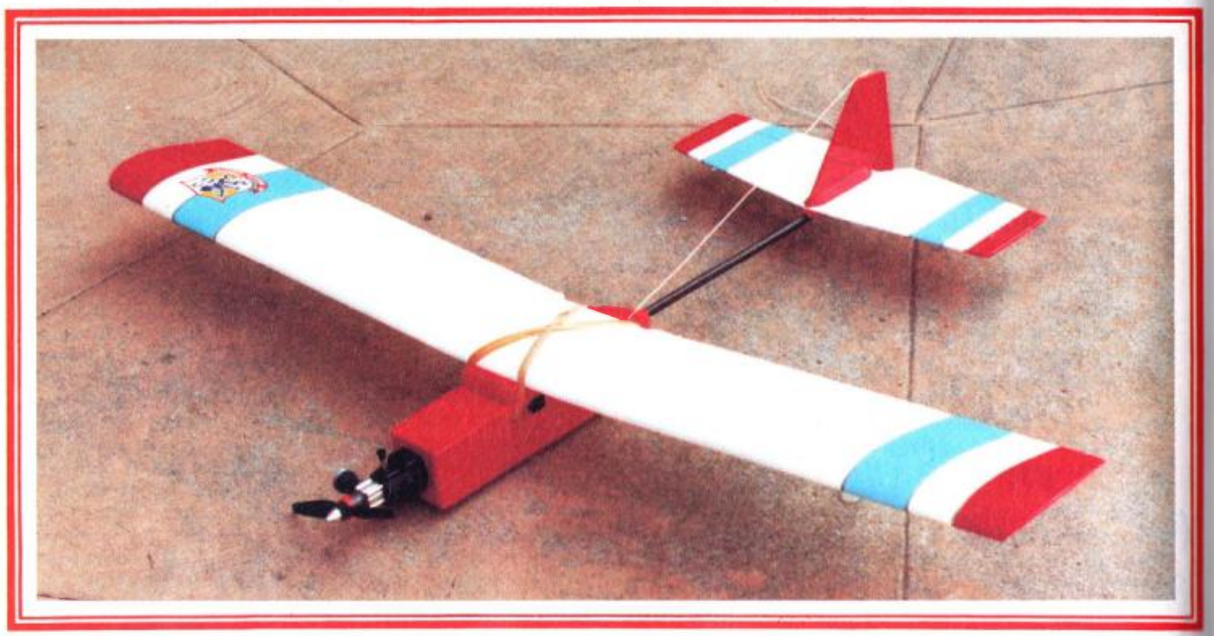
# CRICKET



We see articles and editorials in just about all of the model magazines about how to get more people, both young and old, interested in this great sport. Some of us are living on Social Security, and some are going to school and can't afford the high priced models on today's market. There is a lot of talk about this problem, but not much action.

I see kids and also oldsters go out and buy models for fifty to seventy-five dollars, and work a week or two building them or putting them together, whichever the case may be, and take it out and demolish it the first flight. Not many in the class I just mentioned can afford this and very soon become disgusted and give up.

Well, here is a plane (I can call it a plane because it flies, but it surely isn't a model of anything) that can be built for about $20.00, and in about two evenings by almost anyone. It is very docile with any of the reed valve Cox .049 engines, and quite hot with a T.D. or a Medallion. It weighs about 20 oz. all-up flying weight. If crashed, it can be repaired in one evening and ready to fly the next day. It is hand launched and slides in on the grass on its belly. If crashed so badly that it can't be repaired (and I can't imagine that happening) some of the parts will still be usable and the loss will not be so great.

## CONSTRUCTION

Begin construction by carefully laying out **all** the parts to be cut from the 1/8" balsa sheets **before** you begin cutting. There is plenty of wood if you are careful.

Next, cut out all of the balsa parts, the two fuselage formers (F-1 and F-2) from the 1/8" birch plywood, and the four boom support pieces from the 3/8" balsa. We're now ready to assemble the parts.

**Quick to build and fun to fly. .049 powered using Ace R/C's foam wing.**

**By Art Bigelow**

Because the Cricket is so simple and easy to assemble, we are going to keep the construction notes to a minimum. If you get to a point where you have a question, refer to the notes on the plans and the photo captions, and you shouldn't have any problems.

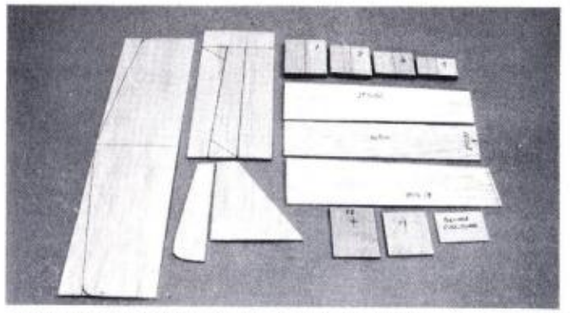
**Fuselage:**

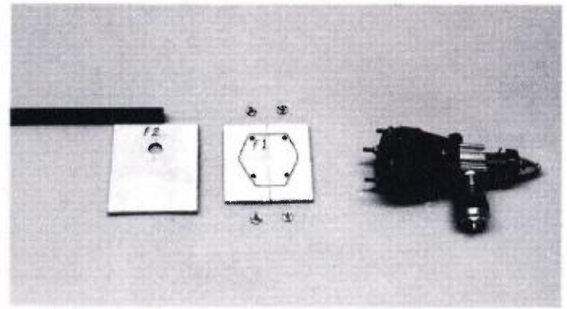
When cutting out the fuselage sides, note that the sides are tapered for the proper wing incidence (small end to the front). Also, you will find it's easiest to cut two left hand sides first; then simply trim 1/8" from the **front of one** and you will have a left and right. Be sure to mark the sides left and right, and when adding the 1/8" x 1/4" balsa reinforcement pieces, allow a 1/8" space at the front and back for F-1 and F-2. Prior to installing the F-1 and F-2, drill the holes for mounting the engine, and the hole for the boom.

Once the basic fuselage box is framed up, set it aside and assemble the four 3/8" balsa blocks that form the boom support. The quickest way to make this piece is to glue all four blocks together as shown on the plans, carefully aligning them, and then drill the boom hole using a drill press. (Be sure the table is square with the drill bit or the boom alignment will be off.) **Note:** The exact diameter of the boom (arrow shaft) is not critical, and you could use a slightly larger or smaller arrow shaft if the 3/8" diameter shaft is difficult to locate in your area. Just remember that the two inner NyRods must pass through the hole in the center, and that the boom must fit snugly in the boom support blocks and F-2.

Prior to gluing the boom/support block assembly in place, carefully check the boom alignment. The boom must be parallel with the **bottom** of the fuselage, and centered in the fuselage. Minor adjustments can be made by sanding the balsa block where it contacts F-2. When satisfied







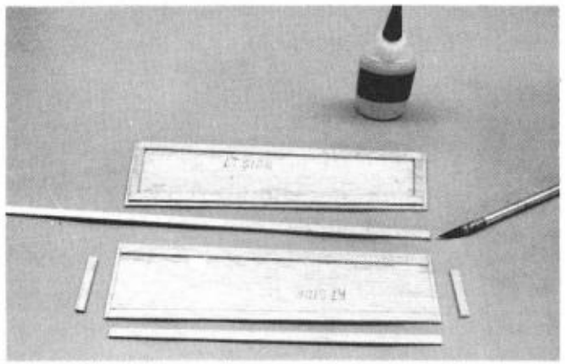
*LEFT: Balsa and plywood parts are all very easy to cut to shape. RIGHT: 1/8" birch plywood is used for main fuselage formers/firewall. Drill all holes prior to assembly. Blind nuts used to mount engine to firewall. Cox .049 Dragonfly engine used.*

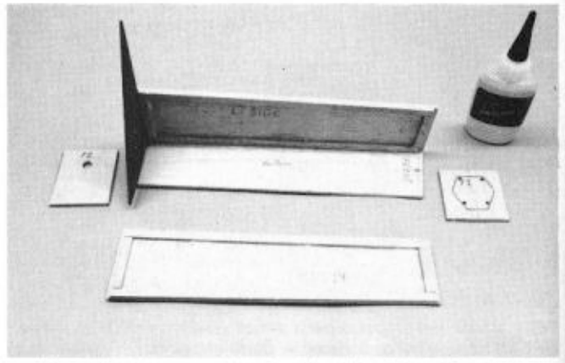
### Material List

To build a Cricket, you will need the following materials:
Ace "Wizzard" foam wing kit
1 — pc. 3/8" x 3" x 12" balsa
2 — pcs. 1/8" x 4" x 36" balsa (med. to hard)
2 — pcs. 1/8" x 1/4" x 36" balsa
1 — pc. 3/8" x 36" balsa triangular stock
1 — pc. 3/16" dia. x 8" hardwood dowel
2 — pcs. .042" dia. music wire
1 — pc. 1/8" x 2¼" x 6" birch plywood
1 — pc. 1/16" x 6" x 12" birch plywood
1 — roll low temp covering material (optional)
1 — pr. mini control horns
1 — pr. Snap-R keepers
1 — pr. (screw type keepers for servo end)
1 — pc. inner nylon pushrod (guide for steel pushrods)

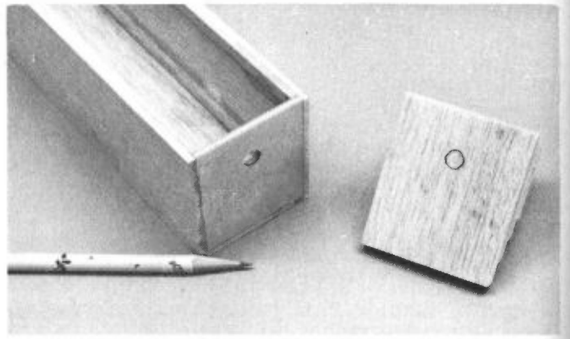
Wing available from Ace R/C, P.O. Box 511, Higginsville, MO 64037, (816) 584-7121.

**CRICKET**
**Designed By:** Art Bigelow
**TYPE AIRCRAFT** 1/2A Sport/Trainer
**WINGSPAN** 41 Inches
**WING CHORD** 6 Inches
**TOTAL WING AREA** 244 Sq. In. (Approx.)
**WING LOCATION** Top of Fuselage
**AIRFOIL** Semi-Symmetrical
**WING PLANFORM** Constant Chord
**DIHEDRAL EACH TIP** 1 Inch
**OVERALL FUSELAGE LENGTH** 30¼ Inches
**RADIO COMPARTMENT SIZE** (L) 9½" x (W) 2" x (H) 2¼"
**STABILIZER SPAN** 15 Inches
**STABILIZER CHORD (incl. elev.)** 4¾ Inches (Avg.)
**STABILIZER AREA** 70 Sq. In. (Approx.)
**STAB AIRFOIL SECTION** Flat
**STABILIZER LOCATION** Top Of Boom
**VERTICAL FIN HEIGHT** 4 Inches
**VERTICAL FIN WIDTH (incl. rud.)** 5¼ Inches
**REC. ENGINE SIZE** .049
**FUEL TANK SIZE** On Engine/1 Oz.
**LANDING GEAR** NA
**REC. NO. OF CHANNELS** 2
**CONTROL FUNCTIONS** Rudder & Elevator
**BASIC MATERIALS USED IN CONSTRUCTION**
Fuselage ..... Balsa, Ply, Fiberglass Boom
Wing ..... Foam (Ace R/C)
Empennage ..... Balsa
**Wt. Ready To Fly** ..... 23½ Oz.
**Wing Loading** ..... 13.8 Oz./Sq. Ft.

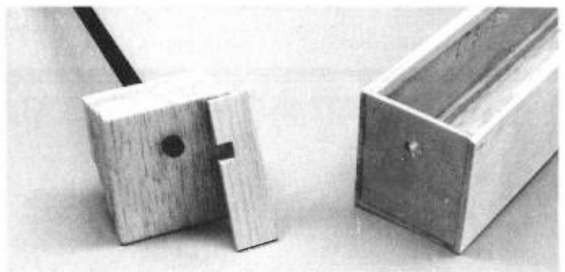


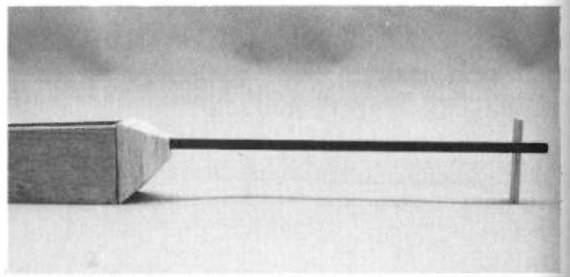


*LEFT: 1/8" x 1/4" balsa reinforcement is glued to inside of fuselage sides. Allow 1/8" clearance at front and back for F-1 and F-2. Note: Be sure to make one left and one right fuselage side. See note on plans for engine offset. RIGHT: Glue left and right sides to bottom. Be certain that sides are facing the proper direction and are square with the bottom. Note: The front of the fuselage is shorter than the rear to provide the proper wing incidence.*

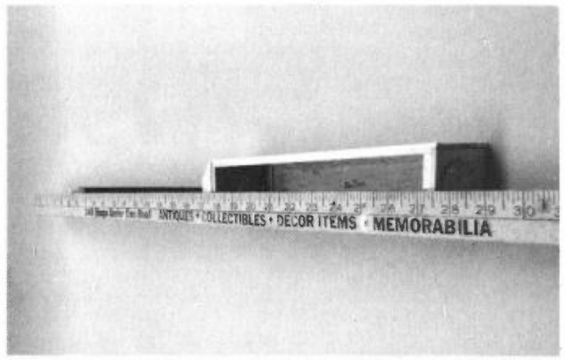


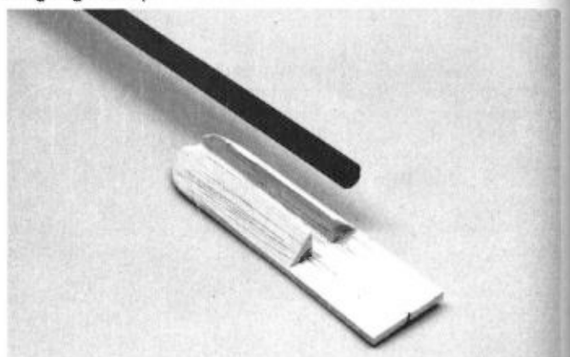
*LEFT: With F-1 and F-2 glued in place, add the 1/8" x 1/4" balsa cross braces as shown on the plans. RIGHT: 3/8" balsa sheet blocks can be glued together and drilled as an assembly using a drill press, or each block can be drilled and then glued together. In any case, be certain to drill the holes square to the F-2 former, or the boom will be out of alignment.*





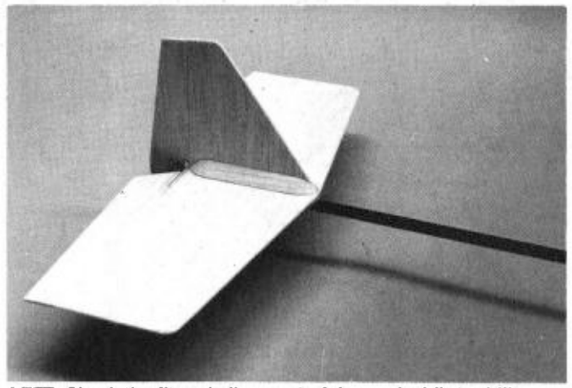
*LEFT: 1/8" scrap balsa is used for a jig to help align the boom during assembly. The notch in the scrap should be exactly the same height as the boom hole in F-2 when measured from the bottom of the fuselage. RIGHT: With the fiberglass boom inserted into the F-2 former and balsa support block, check for proper alignment. The boom must be parallel with the bottom of the fuselage and centered from F-1 to the tip of the boom. (Be sure fuselage is on a flat surface when checking alignment.)*

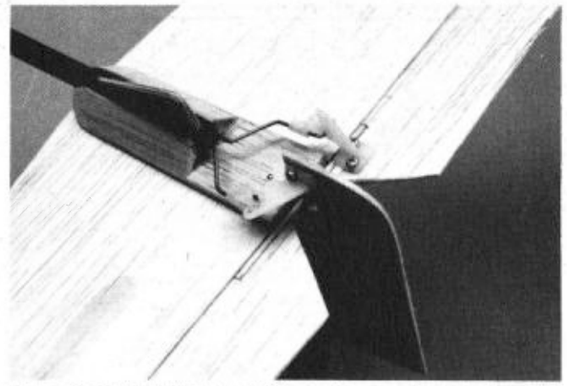


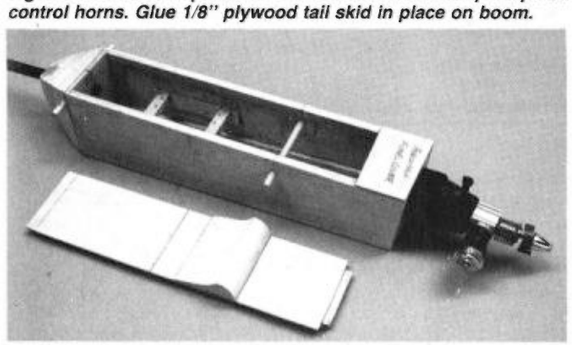
*LEFT: Use straightedge to align boom with fuselage. RIGHT: Make up stabilizer mount using 1/8" balsa base and 3/8" balsa triangular stock. Align the stab mount so that it is square with the wing mount, and glue in place using CA cement.*

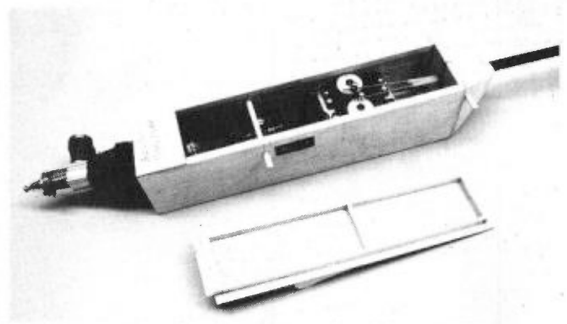






*LEFT: Check the fit and alignment of the vertical fin/stabilizer and make up the vertical fin support blocks. Do not glue the assembly together until after all parts are covered. RIGHT: Make up the pushrods and temporarily install the control horns. Use Snap-R Keepers at control horns. Glue 1/8" plywood tail skid in place on boom.*





*LEFT: Drill 3/16" dia. holes in the fuselage for the wing dowel. Install the servo mounts and make up access hatch from 1/16" plywood. Balsa block is shaped to support the wing leading edge, and is glued in place after covering. RIGHT: Install radio gear and check for proper control travel. Note that inner Ny-Rod is used as a guide for music wire pushrods, and to separate them. Screw type retainers used to attach pushrods to servo output wheels. The 1/16" plywood access hatch is stiffened using 1/8" x 1/4" balsa.*

with the fit/alignment, glue the whole assembly to the fuselage using 15-minute epoxy to allow time for final alignment. Allow the epoxy to thoroughly cure before moving the assembly.

Next, make up the stabilizer mount as shown on the plans. Be sure that the two 3/8" triangular blocks are a snug fit on the boom, and lightly roughen the boom with a piece of sandpaper where the stabilizer mount will attach. Carefully align the stabilizer mount so that the stabilizer will be square with the wing, and glue it in place using CA cement.

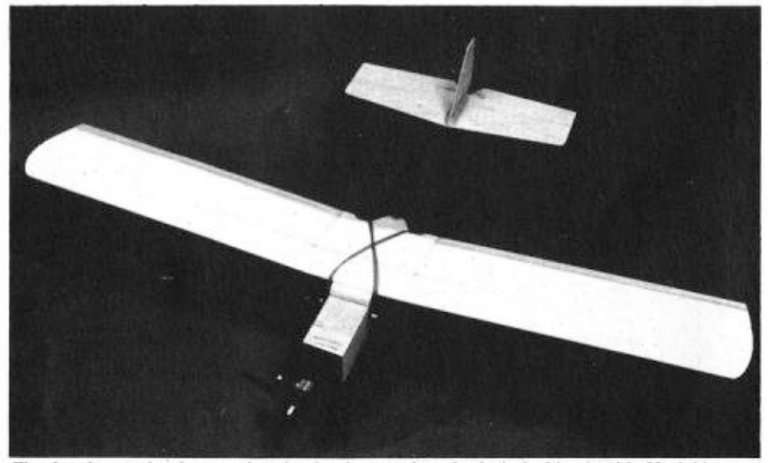
**Stabilizer/Vertical Fin:**

Sand all of the tail pieces to the shape shown on the plans. Join the two elevators together using a piece of 1/8" dia. dowel. Temporarily install the control surfaces (tape will work fine). Carefully mark the centerline for the vertical fin on the top of the stabilizer, and the location of the stabilizer mount on the bottom. Also at this time, make up the two 3/8" triangular balsa support blocks for the vertical fin, and pin the whole assembly in place on the stabilizer mount.

Temporarily install the control horns for the rudder and elevator. Make up and temporarily install the two .042" steel pushrods and then glue the 1/8" plywood tailskid in place on the boom. With this completed, it's time to install the radio gear, wing dowels, and make up the top hatch assembly.

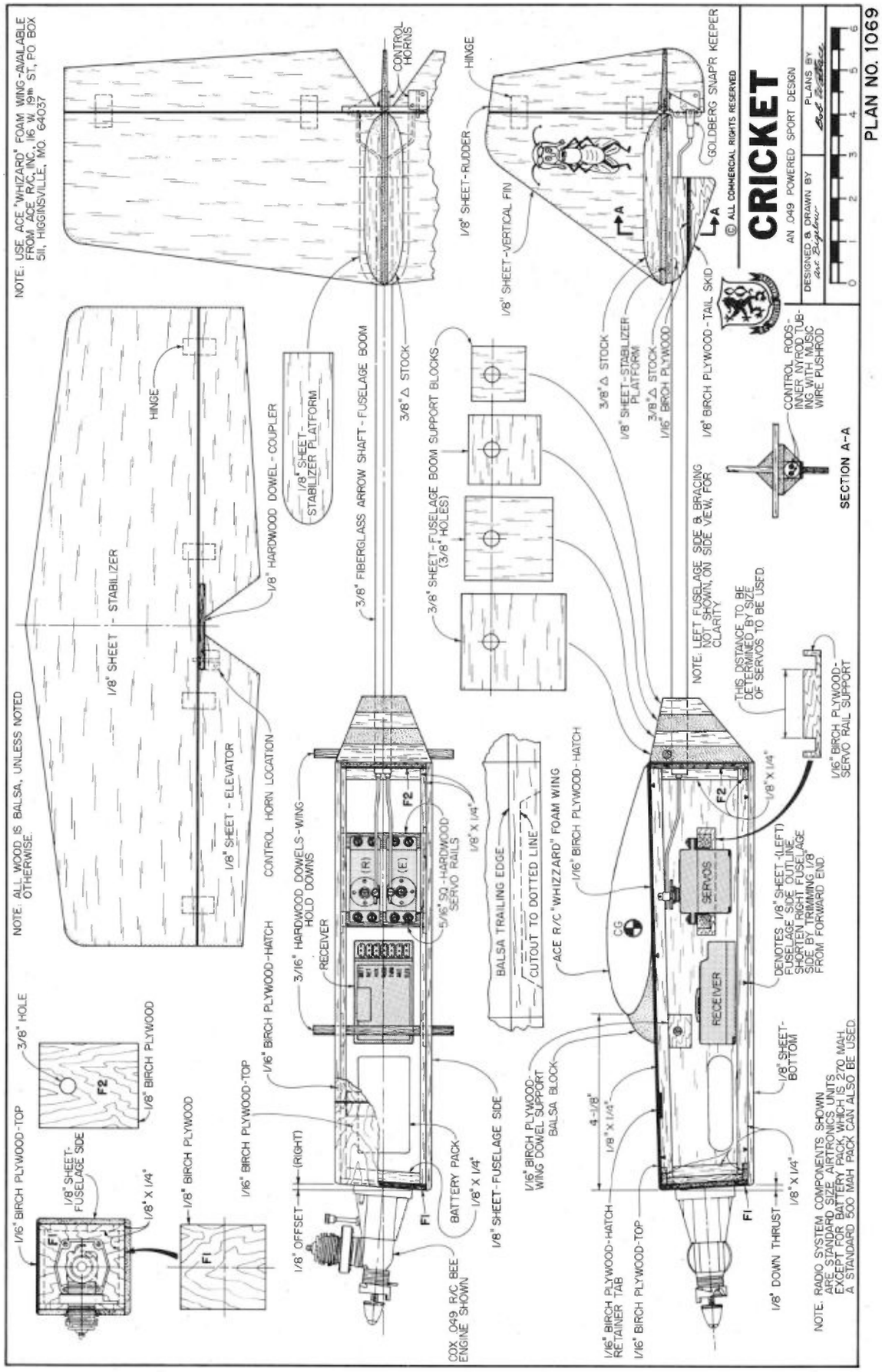
**Radio Compartment:**

Make up the servo mounting rails and 1/16" plywood supports. The component location shown on the plans should be about right for any radio installation, but their position can be moved fore or aft as required. The top hatch and forward fuselage cover are cut from 1/16" plywood. The forward piece is glued directly on top of the fuselage, while the hatch is removable for access to the radio equipment. Note that a 1/16" plywood tongue holds the hatch at the front, and the wing/rubber bands at the rear. Also, a 1/8" x 1/4" balsa frame is glued to the bottom of the hatch as a



*The Ace foam wing is completed using instructions included with wing kit. Model is now ready to cover/seal against fuel.*

FULL SIZE PLANS AVAILABLE SEE PAGE 280




stiffener, and to help keep the radio compartment free of the "engine goo." The balsa leading edge block is made up from scrap balsa and shaped to match the wing.

**Wing:**

Since Ace provides a complete set of instructions with the wing kit, there's no need to cover that here. The only addition to their instructions is to notch the center section balsa trailing edge to provide a better support for the rubber bands. To do this, simply measure inward from the dihedral joint 3/4" on each side, and approximately 1/2" forward of the trailing edge, and remove that portion of the balsa trailing edge (see note on plans).

**Final Assembly:**

Give the entire airframe a final sanding and cover or paint all the wood/foam parts. When gluing the stabilizer and vertical fin in place, be sure to remove the covering from the contact areas. Also, using a pin to perforate the contact area, will help strengthen the glue joints. Carefully align the tail assembly and glue it in place. Install the hinges, control surfaces, pushrods, and radio gear. **Note:** After the pushrods are installed, secure the inner NyRods to both ends of the boom with thick CA cement or epoxy. Also, be sure to wrap the battery and receiver in protective foam. With the engine and all radio equipment in place, check the C.G. at the point shown on the plans, and move the battery fore or aft as necessary until the model balances correctly.

To help protect the bottom of the fuselage from damage on landings, a rubber skid (like used on sailplanes) can be installed.

Check to be sure the controls are moving correctly with the stick movement. The suggested control surface travel is: rudder 5/8" left and right; elevator: 1/4" up and down.

**Flying:**

The Cricket is a smooth, easy flying airplane that is great fun to fly. With a standard reed valve Cox .049 engine, it has a good climb, is very stable, and responds well to control input. After the engine stops, it has a nice flat glide to help bring it home. When launching your Cricket, set the mixture a little on the rich side, and hand launch it straight out into the headwind. Good luck and happy landings.

□