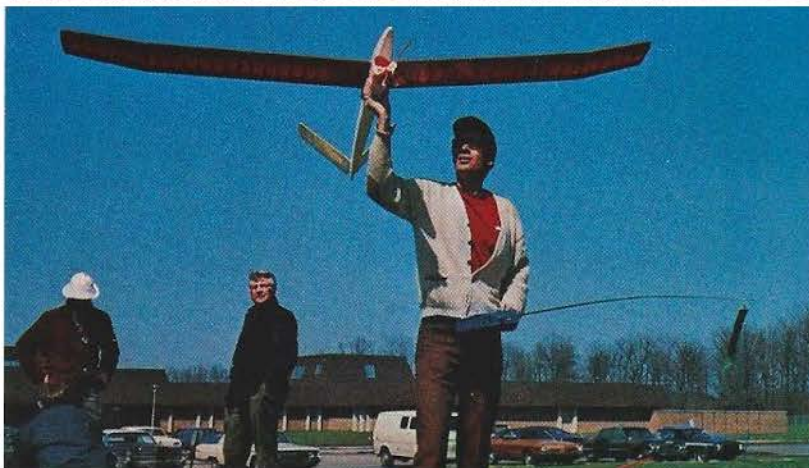


BARRACUDA

A simple to build, light weight, easy to fly Standard Class competition sailplane of maximum allowable size. Although highly competitive for the proficient flyer, the Barracuda can easily be trimmed out as an ideal soaring trainer. If you're bored with roaring .60's and the greasy kid stuff, step up to the world of Silent Flight.



To me (and apparently many others) there is nothing so beautiful in the world of modeling as a sailplane floating gently in a sun-drenched summer sky.

I had known this thrill from having flown free flight models some twenty years ago but having switched to R/C in the early fifties, I had somewhat forgotten it. Eventually I became bored with roaring .60 engines and the sameness of every pattern flight. When this happened I cast around for something new and discovered R/C soaring. I built a home-brew special with a free flight wing and an .09 engine up front (no one told me about electric winches) and rediscovered the pleasure of thermal hunting.

The next winter I built a Cirrus and learned a lot about R/C soaring. Learning how to make a Cirrus go where you want it to is an accomplishment in itself. I finally flew the plane to fourth place in Open Class Precision at the 1972 Nats. This contest, incidentally, taught me that it is much easier to win in Standard Class than in Open since two thirds of the contestants enter Open Class.

In order to have a competitive plane to fly in Standard Class contests, I designed the Barracuda around certain parameters:

1. Simple to build.
2. Light in weight, yet strong.
3. Easy to fly.
4. Proven flat bottom airfoil.
5. Maximum allowable size.

All these criteria were achieved and a truly great model developed. The plane is truly competitive in Standard Class yet is simple to build and fly for the beginner making it an ideal trainer. The vee-tail was used for several reasons, including lightness, ease of installation (no flying stab to worry about), simple construction, and ease of transportation. The fuselage is just a reinforced box with no formers needed; wing mounting is by rubber bands for simplicity sake, the wing is strong enough for any type launch (we use Soaring Enterprises electric winch and reel), yet is easy to build since all ribs start from the same pattern.

Several of the planes have been built by modelers in the area and all have performed well.

To start construction, order the full size plans and then go to the hobby shop and get the following:

BALSA

- 10 - 1/16 x 3 x 36
- 1 - 3/16 x 3 x 36
- 5 - 3/8" triangular stock
- 3 - 1/4 x 1/4 x 36
- 6 - 1/16 x 2 x 36
- 6 - 1/8 x 1/4 x 36 spruce

MISCELLANEOUS

- 1 - 1/8 brass channel
- 1 - 1/4 hardwood dowel
- 1 - 3/32 plywood
- 1 - 3/16 I.D., 7/32 O.D. brass tubing
- 1 - 3/16 music wire pushrod hardware to suit.

Start by cutting the root ribs from 3/32" plywood. Drill these for the 3/16" I.D. brass tubes. Make rectangular rib blanks from 1/16" sheet and stack them between the two ply root ribs, and carve and sand enough ribs for the two wing panels. Now take a piece of 1/16" x 3" balsa sheet and split it down the middle for the trailing edge. Pin the bottom leading edge and trailing edge sheet to the plans and glue the main spar (1/4" x 1/8" spruce) to the sheeting. Glue in all wing ribs and the top spar, glue on the top trailing edge sheet and let the whole thing dry overnight on a flat surface. A flat wing is of paramount importance in a glider. Now, install the brass tubes in the wing with epoxy, using scrap balsa to fill between the brass tubes and the wing spars. Put the shear webs and fill blocks in before the epoxy dries. Now, install the rest of the shear webs in the wing. Never omit these from any glider as they contribute immensely to the strength of the wing, yet add almost no weight.

To build the outer wing panels, trim a standard W-1 wing rib from the bottom spar notch to the point shown on the plans for the particular rib you are making. These trimmed off ribs give 1/4" of washout to the wing tips and improve the appearance of the wing by giving tip taper. When building the tip panels, build flat on the leading edge sheeting to insure proper washout. Join the tip panels to the main panels with a scrap spar joiner. Don't bother with shear webs in the tip panels as strength is not needed here. When bending the 3/16" music wire joiners, use a vise and hammer and bend it without heat. Now, the hard part is over.

Start the fuselage by cutting out the sides and side doublers from 1/16" sheet. Glue on the triangular stock and, using contact cement, glue the fuselage doublers to the fuselage sides. Make 4 or 5 X-Acto saw cuts in the triangular stock where shown on the

plans to facilitate the front fuselage bend. Now, carefully cut out the servo trays from 3/32" plywood. You may use the sliding servo arrangement, as shown (don't be afraid, in gliders it works just great) or use one of the new ruddervator "mixers" such as the Airtronics Vector Director.

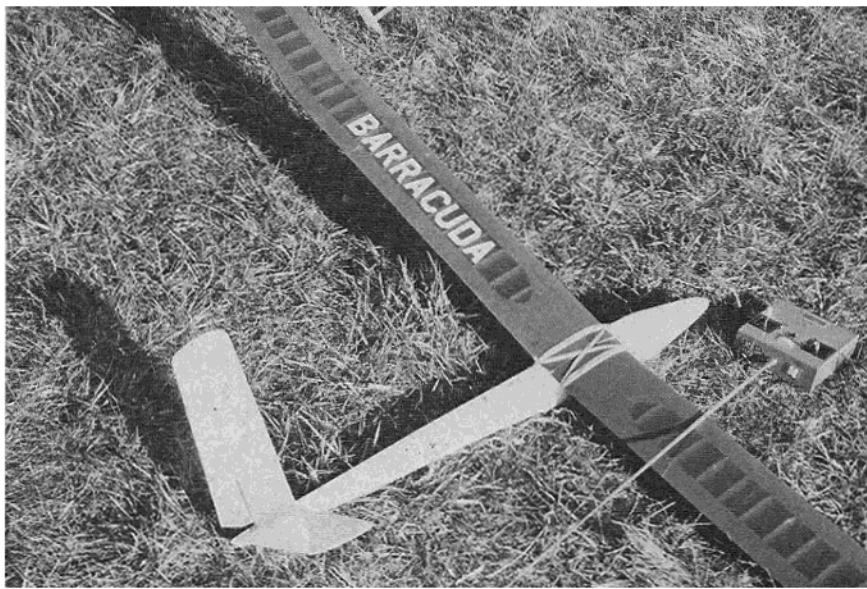
Cut to length the 1/4" balsa spacers and glue these to the fuselage sides. They can be removed later if in the way. Using fast drying epoxy, glue the brass channels in as shown. Now check for a good sliding fit on the servo tray. Too loose is better than too tight.

Install the bottom and top fuselage sheeting in the widest part of the fuselage before pulling the fuselage sides together at the nose and tail. This insures that the slider rails will stay parallel. When the sides have been pulled together and glued, add the rest of the sheeting and the nose block. Now, sand everything well, install the hardwood tow hook mount and birch dowels, cut in the wing incidence as shown on the dotted line, and install your radio. Since there is no hatch to worry about, just slide your battery pack and receiver as far into the nose as you can get it.

Start the ruddervator construction next. Cut these from 3/16" soft balsa and glue to a piece of scrap 3/8" triangular stock. Be sure to line them up squarely. Use epoxy glue here. Split a piece of 3/8" triangular stock down the middle, glue one of these pieces to either side of the ruddervators as shown in the rear view. You should now have a nice flat bottom surface to glue to the fuselage. For hinges I always use mylar strips pinned and epoxied in place.

Glue the whole assembly to the fuselage and cover with MonoKote or Solarfilm. Make up pushrods to length and install the control horns. In this set-up you will want all the rudder throw you can get and a minimum of elevator throw. Install your tow hook and skid at this point. Now you're ready to fly.

As shown on the plans the C.G. is rather far forward. Start hand glides with the C.G. as shown and adjust wing incidence and C.G. for the best glide. Remember, the best glide is not the one that goes the farthest, but rather the one that stays up longest. Once past the hand glide stage you are ready for the winch. The tow hook location shown on the plans is the dead-air location. You may wish to move it forward for windy conditions. When using a winch (or Hi-Start) the



The author's original Barracuda prototype. Radio is old F & M Quasar.



ABOVE: John walking with his Barracuda. Note proper launch angle. BELOW: One of many Barracuda's flying - - - this one has hundreds of flights.



most critical moment is that just after the model leaves your hand. If anything bad is going to happen this will be the time! To prevent all these bad things, do this: Turn on the radio and check all controls; hold the airplane in one hand and the transmitter in the other with your foot on the winch switch. Point the nose of the airplane up at an angle of 45 degrees and run the winch till the plane nearly pulls out of your hand. Now, let the plane go and grab the transmitter stick, hold about two-thirds up elevator and steer a straight course with the rudder. If the plane veers off to the side, remember to keep on the winch and steer back to a straight course.

Running the winch too fast during the launch only wastes your line, while running it too slow will result in stalling out and separating from the tow line too early. Either of these situations is bad since you do not get maximum height from your launch. Run the winch so as to keep the tow line stretched tight. It is actually this stretch in the line that you are using to launch your ship.

On a good launch, on an average day (5-10 mph wind) you should use no more than 150 feet of line, thus getting over 840 feet of altitude. Really it's not hard and it's not magic, it does take a little practice and it helps to know what to expect. (Which is why I wrote all this, since there are thousands of sailplane modelers who are using power-pods simply because they have no idea how any other launch works.)

Let me say this - once you've flown using an electric winch you'll never want to use anything else.

But back to the Barracuda. Once you're up, if you're flying in dead calm evening air, you should get around three minutes air time from a good launch. Much more than this and you've run into some lift. Less than this indicates your Barracuda is not properly trimmed. You want to fly just on the edge of a stall, but never actually stalling out. When you do hit some lift (indicated by a sudden turn or a sudden stall for no apparent reason) just start circling in it. The thermal will take you up. These are the flights you will really enjoy. You'll find that your Barracuda will outfly most of the competition and at least keep up with the rest. Good luck and good lift. □