



The "Simplex" on its way up for another max, being towed by young Tom Stalick, its builder, Pappa Bob launching.



"See all my pretty ribs and spars?" Ship has a knack for finding and staying in thermals. Span is 71 inches.

THE SIMPLEX A/2

By BOB STALICK . . . Get into the intrigue of A/2 Nordic flying with a model that is highly competitive, yet easy to build and trim.

- The Simplex was designed to do two things: 1, build and trim quickly and easily, using minimum amounts of materials; and 2, to be competitive in A/2 Glider competition.

It is both.

The original glider was built in 1974 to replace my aging and worn A/2's. At it's initial contest, it was trimmed and proceeded to max during the first 3 official flights. On the fourth flight, it got itself worked into a good sized thermal and took off across the wilds of the Hillsboro flying site . . . never to be found again.

The second glider was built by my younger son, Tom, who had had it with the A/1 gliders he had been flying, and was ready to move up to something a bit larger and easier to fly. This model is featured in the accompanying pictures. Tom qualified in A/2 at the 1975 Semi-Finals, held this year in Tacoma, with his model of the Simplex.

The ship has an almost uncanny ability to seek out lift, and to center itself in it . . . I have never seen it spin-out. Several times, it has been circling low to the ground . . . below 50 feet, and has bumped into lift and worked its way up into the air again to max. In fact, with the erratic towing that Tom sometimes manages, most of the credit for his placing in every contest entered must go to the glider. It is about as goof-proof a glider as I have ever experienced. A good part of the credit must go to the airfoil, which is pirated and changed from the Lively Lady, and more credit should

be placed on the wing planform and layout, which is copied from Hugh Langevin's Osprey. Together, this is an excellent combination.

Convinced? Good. Try it for your first A/2. In fact, if time is a problem, you may want to try it for your next A/2. It builds fast.

Fuselage construction: The fuselage is built very similarly to the Starduster. Using light weight 3/32 sheet 36 inches long, cut both fuselage sides from it. Pin one side of the plan and using Wilhold, glue the 36 inch long 1/8 x 3/8 long-gerons in place. Notice that they are in a straight line . . . no bends needed or wanted. When dry, glue in the 1/8 x 3/8 uprights where shown. If you plan to use a circle tow device, make that decision now (I recommend the Max-Aid unit, sold by National Free Flight Society, 4200 Gregory St., Oakland, CA. 94619, for \$8.50). If not, use a regular FAI Models Supply Hook Assembly as shown on the plan. With the standard hook, a 1/4 x 3/8 hardwood block must be glued in place as shown.

Glue other side of fuselage in place.

All of the above description assumes that you are using a very straight building board . . . because if you're not . . . you now have a bent fuselage.

Next, cut out 2 pieces of 1/16 plywood to the shape shown. Also cut 2 pieces of 1/16 balsa as shown. The balsa follows the outline of the plywood, except it is about 4 inches longer, extending onto the fuselage boom, as indicated. Glue the balsa sheet to either side



Proud owner and builder of the Simplex shown on this page, Tom Stalick.

of the fuselage as indicated. Glue the plywood sheet over the top. Fair both the balsa and the plywood into the fuselage (This can be done more easily prior to gluing to the fuselage).

Cap the nose with a piece of hardwood block (pine or bass), sand and shape the entire fuselage. Round the corners of the boom.

Fill in the area above the top long-geron and between the plywood balsa overlay with scrap balsa. Sand to shape.

The wing is next: Cut out all wing ribs, using a plywood template. All ribs are identical. Cut out 1/16 or 1/32 plywood reinforcement ribs. Trim the stock trailing edge to shape. Notch the trailing edge to receive the ribs. Block up front of trailing edge 3/32. Pin leading edge in place. Put in necessary wash-out as indicated on plans. Glue ribs in place using Hot Stuff. Do not add plywood ribs at this time. Block up each

tip 6 inches for dihedral, and glue wing panels together, using gussets as shown. Add all spars when dihedral joint is cured. Do not forget to add the tapered spar as shown . . . this adds tremendous strength and flexibility to the wing and is imperative if you plan to use a circle tow system. Add all triangular gussets to rib trailing edges, tips, etc. add and shape wing tip blocks.

Take the plywood ribs and very carefully drill them (using a drill press if available) where shown on the plans. Drill the holes slightly oversize (3/16 front and 5/32 rear)

Next, slide a 12 inch length of brass tubing into the ribs front and rear and line all of them up on the tubing. Pin the wing panels in place so that they butt up against each other. Place the ribs in their respective places (they are still on the tubing, remember) and when they are all lined up, glue in place, using Wilhold or epoxy. Only when completely cured, unpin the wings and remove the brass tubing.

Next, cut the tubing to length as shown on the plans, and slide the tubing onto 1/8 diameter wire (front) and 3/32 diameter wire (rear). This wire is 8-3/4 inches long. Now, epoxy the tubing into the plywood ribs, using the wire to join the two wing halves together while the epoxy cures. Use plenty of epoxy.

When all is completed, sand the entire wing . . . remove any lumps and bumps. Glue in the 1/16 sheet center where indicated. Add plywood cap ribs at each root as shown. Sand again. Pre-dope the entire wing structure, sand lightly, and dope again. Cover with Japanese tissue, using nitrate dope. The center section of the wing may be double-tissue covered for strength. Adhere the undercamber well, so it doesn't pull loose.

The stab is simply constructed and straightforward. The only unusual feature is the d.t. hold-down location, which is explained later in this article. Cover the stab with Japanese tissue, and give 3 coats of thin dope.

The fin and rudder are cut from 1/8 light-weight C-Grain balsa. The hinge is the plastic Klett-type hinge used by R/C types. Rudder stops are available from FAI Models Supply.

When the fin and rudder are complete, epoxy to the top of the fuselage. Cover the fuselage with Japanese tissue

and give 4 coats of clear dope. Drill the wing wire holes as shown on the plan. Slide the previously cut music wire wing tongues in place . . . 1/8 in front and 3/32 in back. Epoxy wires in place in the fuselage. Before the epoxy cures, slide the wings into location . . . this will set the wires and wing location for all time . . . now is the time to line things up so that wings are at right angles to the fuselage in all directions. When the epoxy is 90% cured, removed the wings and set the rudder aside. You may need to sand down the wing wires to remove any epoxy that might have adhered itself to them.

Cut the stab mounts from plywood as indicated. Glue in place.

Form all wire parts and glue in place, using epoxy or Hot Stuff.

Install the timer and the towhook. Using cotton fishing line for d.t. and Auto-Rudder . . . about 20 lb. test . . . drop them through the holes shown in the fuselage . . . you may need to "fish" them through the fuselage boom, using very fine music wire. Since there are no bulkheads in the fuselage behind the wire trailing edge, the boom is essentially a hollow tube and the lines should drop into place without meeting any obstructions. Notice that the rear stab platform hangs over the rear edge of the fuselage and that it has a hole drilled through it. The d.t. line passes through this hole . . . after it passes through a wire saddle in the open rear-end of the fuselage.

It's now time to rig the stab to accept the d.t. line. Place the stab on the stab mount. Mark where the rear stab platform touches the stab itself and cut a piece of 1/32 plywood to match. Using epoxy, glue this piece of 1/32 ply directly to the bottom of the stab where it contacts the stab mount. Glue a similar piece of plywood on the top of the stab directly over the piece you've glued on the underside. Drill (carefully) a hole through both pieces of plywood . . . and through the stab center rib. This hole must be large enough to allow the d.t. string and the retaining wire to pass through. Epoxy the wire stab hooks in place on the top center of the stab as shown.

Assemble the complete model. It must balance as shown. Add lead in the space behind the timer until the balance is obtained. Weigh the model . . . it must

weigh not less than 410 grams. It won't. You will need to add ballast in the section of the fuselage under the center-of-gravity until it meets minimum weight. The original needed almost 5 ounces of ballast to bring it up to weight . . . this is in addition to the nose-weight added.

Flying: When the c.g. is in place, as described above, it's time for the first test flights. Set the rudder for a right hand turn. Start with about 1/4 to 3/8 offset. Hand-glide. It should show a slight right turn and no tendency to dive. If it dives, shim up the t.e. of the stab about 1/64. Continue shimming until it has a flat glide with slight right turn.

Now, set the auto-rudder so that it points straight ahead or very slightly to the right.

Set the tow hook so it is 1 inch in front of the center-of-gravity. Hook up the auto-rudder and d.t. system.

Tow the model into the wind . . . move rapidly for the first 20 feet . . . and then slow down and watch over your shoulder to see what is happening. It should tow straight. Slight variations to the left or to the right may be corrected with rudder offset. If it cranks over to one side and will not right itself, move the towhook forward a bit. If it climbs shallowly and weaves about on the line, move the hook back. Experiment for the best setting and mark that location. There will need to be slight adjustments made for wind conditions, but most of your flying will be done within a 1/4 inch of the setting you have made during this testing time.

I have always used Tatone timers on my A/2 gliders and find them to be reliable and easy to use . . . but they are susceptible to dirt. A cleaning now and then in alcohol does wonders. Slight oiling afterwards will keep it running for years. I recommend them highly. On this model, if you don't use a d.t. timer, you will lose it when the first thermal comes through.

You will find the Simplex to be a very competitive model, and it should win some hardware for you . . . beginner or expert.

If you have any questions about yours, drop me a line care of MODEL BUILDER . . . include a self addressed stamped envelope, and I'll be happy to answer.

Happy thermals. ●

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