12732

PULL-Q a/1 nordic

Get into competition free flight with this easily built A/1 Nordic towliner. Fuselage is made of sheet balsa, soaked in warm water, and formed over a pool que . . . thus the name.

By JEAN ANDREWS

This ship owes its existence to the publishing of Bob White's Wakefield in the June 1972 issue of MODEL BUILDER' After building two of them, we found we had a couple of balsa tapered tubes left over. Pull-Q was virtually designed around these tubes, and since the physical lay-out of this towline is very similar to White's ship, which was nick-named "Pool Cue" (for the shape of the tail boom,) we had no choice but to steal the name for this towliner also.

One of our pet peeves is writers and kit-builders who refer to the smaller A/1 gliders as "Beginner's" models. It's been our experience that a good-performing A/1 glider is more difficult to build, transport, trim and tow, than the larger and more-forgiving A/2's. Pull-Q is NOT a beginner's model, although it can be built and flown successfully by modelers with a few A/2's under their belt. It will be much more sensitive on tow than some other ships, though, so beware. More on this later . . .

CONSTRUCTION

We prefer to lay up the wing on a new model first, to get the 'routine' parts of building out of the way. The plans are laid out so all three sections of the wing are built over the one drawing, so note where the two outer wing sections end on the plan.

Cut all wing ribs from medium-hard 1/16th sheet. The wing sections were built inverted over the plans in the following manner: First the spar was pinned down over the plans, and the ribs fitted to it. Then attach the hardwood leading edge, and finally the trailing edge, formed from sheet wood or stripped from 1/4 inch tapered glider wing stock. Use whatever method you desire: the above was the easiest we could come up with for such a deeply-undercambered airfoil. The center section main spar is hardwood, the two outer panels have balsa main spars. After the center section is assembled, and removed from the plans, lay up the two tip sections and allow them to dry. The center section of the center wing panel is covered top and bottom with 1/16 inch soft sheet. This is set in flush by trimming the ribs down to suit.

Finally the three sections of the wing are joined, with 5 1/2 inch dihedral braces, we used scrap pieces of leading edge stock to bridge the dihedral breaks. Keep the weight down out here . . . the joints should be string, but it's unnecessary to make them any stronger than the wood structure.

The stabilizer is fairly easy to build. As in A/2's, build it light and plan on strapping it to a piece of 1/4 inch sheet when not in use, to keep it warp-free.

Fuselage construction is begun by wetting two pieces of medium-soft 1/16 inch sheet wood in warm water for a couple of hours. These can be rough-tapered, from 3 inches at one end to 1 1/2 inches at the other before wetting if desired, although we didn't. Form the tapered tubes around a pool cue blank, available from most sporting goods or specialty stores for about three dollars. Wrap them with elastic athletic bandage and allow them to dry thoroughly.

Remove the tubes from the form and inspect them carefully for signs of splitting, particularly around the small end. Use the better of the two tubes for the full-length fuselage. Trim the seams carefully and cement it along its entire length. Allow this to dry while the other tube is cut off at about the fourteen inch point from the large end. Coat the outside of this short section with epoxy, roll it as tightly as possible around your finger, and insert inside the outer tube until the end is flush with the front of the fuselage tube. Release it and allow it to expand to contact the other tube, helping it with a pencil from the inside, until it contacts the inside of the body tube completely. Now insert 1/8 x 1/2 inch spruce keel, carved to fit the shape of the body, and epoxy it in place. The aluminum or plywood nosepiece and the hardwood side pieces, hollowed to accept trim ballast, complete the front of the body.

Install the stab platform before cutting the slot for the vertical fin. The body tapers to flush against the fin, so stab platform helps hold the proper taper in the body tube forward of the stab.

Make up the wing pylon, as shown on the plans, and measure carefully to yield a 1/4 inch higher leading than trailing edge on the wing. When the pylon is installed, this will result in a wing leading edge 3/16 inch higher than the trailing edge.

Finish the fuselage completely, except for the installation of the pylon, by installing the auto-rudder hardware, dethermalizer goodies, and so forth. Install the stab and balance the fuselage assembly, then install the wing pylon with epoxy, with the balance point located as shown on the drawings. With this method, only a minimal amount of ballast will be necessary to trim the completed ship. Note that the pylon extends to the keel in the body, and wood screws that secure the towhook penetrate the pylon. This directs towing loads to the pylon, rather than the fuselage, and allows a lighter body without sacrificing strength at this point

The original model was covered with light-weight Japanese tissue. We used an old trick with which may bear repeating here; use nitrate-based dope to prepare the frame work for covering with a minimum two coats on the underside of the wing ribs, and for applying the tissue. After careful water-shrinking, use *butyrate* dope for the finish coats, and the covering will not pull away from the underside of the wing ribs.

FLYING

Contest-tuning any towline glider is a long involved process, so stay with the machine and be certain that it is performing as well as possible.

The original Pull-Q is set up for "Solo" flying. The hook is located farther back than would be required for normal two-man flight, so the model will 'kite' up on a one-man launch from the reel. As a result, the model will tow docilely until all line is out. Thermal-searching with all line out is difficult because the ship tends to release too soon, so we hold back about twenty feet of towline. When the glider which normally stays at about eighty degrees in dead air, gets into lift and comes up directly overhead we let out the last of the towline before releasing it. This way, small 'bumps' won't disconnect it.

Make up a separate towline for your A/1's. The extra five or so feet allowed, (A/1 towlines are measured without tension applied), will many times spell the difference between a max and a short flight in marginal conditions.

The model is stable in both dead and turbulent air, and the flexing-wing construction makes it pretty much goof-proof in windy weather. We hope you'll enjoy the success the machine is capable of achieving.

#12732