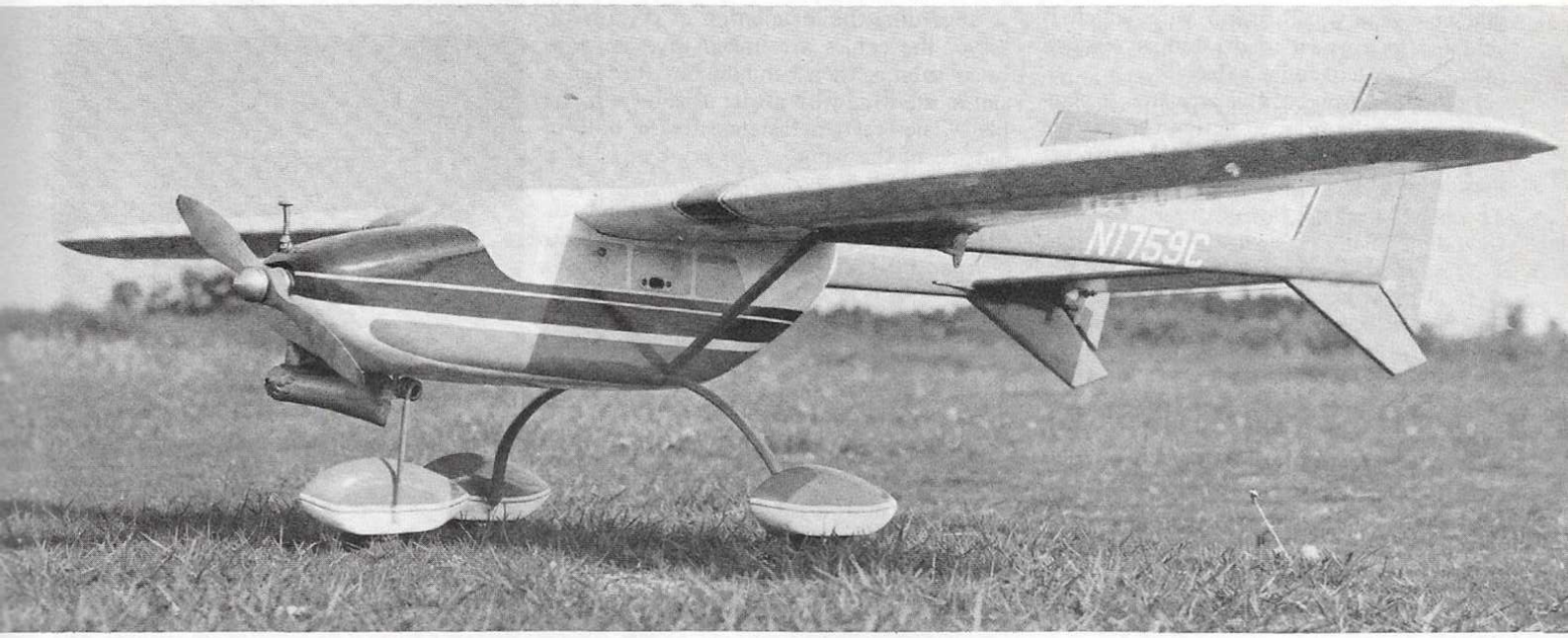
Our Canadian cousin, also the author, poses with his fine-looking and different machine that flies as well as it looks—it's almost scale, as well!

Air Master

BY GERRY PRONOVOST . . . No, it's not the Skymaster, but it closely resembles the Cessna "Push-Puller" enough to give it its name, which is almost synonymous!



Another view of the Air Master at rest—note the distinctively curved main landing gear, which should absorb some rather severe landings!

• Does the name sound familiar—like Skymaster? Well, a little history might be appropriate. The inspiration for this model came from a particular picture in the 1974 *World Aircraft Directory* which included in its pages pictures and data of various corporate aircraft, used to fly executives and material to and from specific destinations at their companies' convenience. One of the shots was a Cessna XMC (Experimental Magic Carpet). This plane was designed with the 100-hp Contintental 0-200 as a pusher configuration, and showed a marked resemblance to the Skymaster, except that it lacked an additional front engine.

The overall appearance and twin booms of this aircraft lured me into designing a model of it, with the modifications of a tractor engine up front for ease of handling, and a more practical C/G location. I chose a semisymmetrical airfoil at the wing roots and a fully symmetrical one at the tips. Performance later proved this to have been the right choice. (The airplane is as equally at ease flying inverted, as it is right side up, inside and outside loops are a cinch, and four-point rolls are well within its capabilities.)

For ease of transportation, the two outer panels are detachable by disconnecting the

Wing is built in three sections, 2 outer panels and a center panel that support booms.

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aileron clevises and removing the straight pin which locks the two sections together. Another innovation is the steering mechanism: My steering device is very simple and operates from the rudder servo in the wing, eliminating the need for a second servo. (The rudder servo, being fastened to the wing, would have necessitated this in the fuselage to activate the steering nose wheel. (That's OK if you're an electronic genius!)

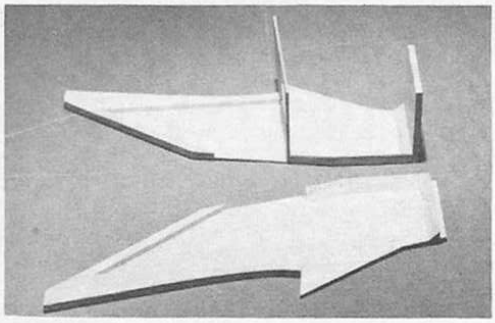
This only requires a short length of brass tubing and 1/16" piano wire. First bend a 90 degree flat at one end of the tubing and cut it to make a fork (see drawing detail). As you lower the midsection onto the fuselage, you engage a 1/32" piano wire which is soldered to a wheel collar, and serves as a retainer for the rudder cable.

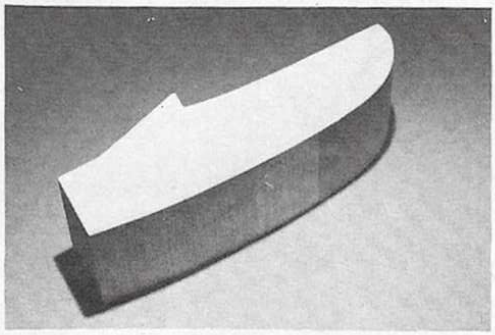
I am quite proud of this airplane. It placed fourth in the original design class at the 1976 Toledo Show. It is a stable flier yet maneuverable, and attracts attention whenever flown.

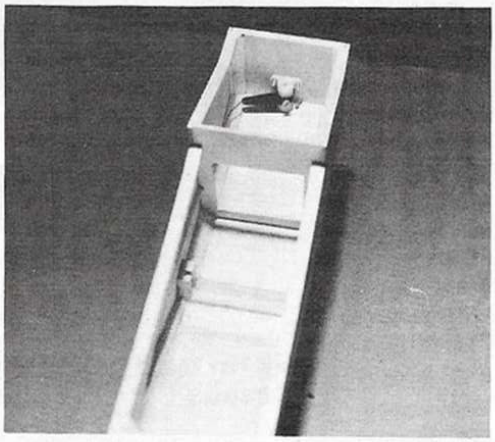
So let's get some balsa and start cutting! Once you have all the parts cut out, read the instructions carefully and be sure you follow the proper sequence in building the wing. Before you sheet the top of the wing, make certain that everything is in, i.e., control cables for ailerons, rudder and elevator (stiffen cables with solder to prevent kinking). Thoroughly epoxy the ⅛" piano wire wing-guide pins and their counterpart, the brass tubing; oil inside of tubing to prevent sticking. Note that the wire guide pin at the rear spar protrudes to half the length of the pin at the front spar.

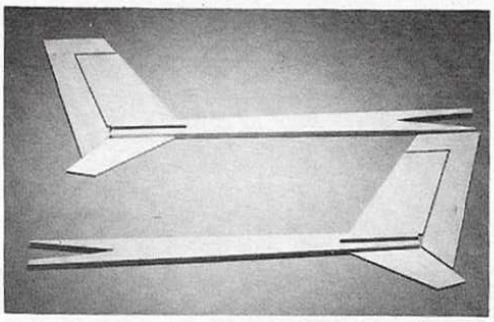
Regarding the installation of the aileron servo, the cables are linked together with brass tubing, then brought out through a slot in the wing with a wire as shown on the plan. The servo is fastened to the bottom outside of the wing.

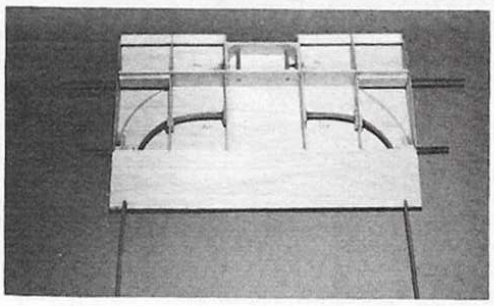
Two flight shots above prove that the Airmaster has flight performance that it claims.

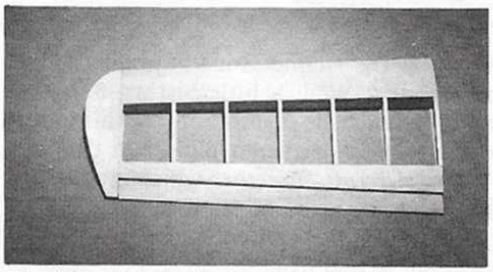












All of the above photos show the fuselage & wing in various stages of their construction.

Air Master

INSTRUCTIONS:

I Cut out all major parts: wing, ribs, spars, fuselage, sides-former, doublers, etc.

II Start fuselage:

1. Install and glue ¼" wing saddle on fuselage sides.
2. Glue ¼" x ½" aft stiffener to sides.
3. Glue ½" x ½" triangular stock in place.
4. Install fire wall F1 and formers F2 and F3 with epoxy (make sure they are 90 degrees to fuselage by using a square).
5. Join fuselage halves making sure they are true.
6. Install ½" x 1" balsa block at rear of fuselage. Add triangular bracing.
7. Install 3 ¾" x 7" x 1 ½" bottom block, carved out for extra room.
8. Install ¼" x ½" balsa bracing at front of fuselage (canopy area).

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9. Sheet bottom of fuselage (cross-grain) 3/8" balsa.
10. Sand bottom of fuselage to shape and hollow out rear block.
11. Install landing gear blocks.
12. Install nose wheel and linkage, including throttle.
13. Install blocks for canopy and nose section.
14. Sand entire fuselage to shape, except where wing meets canopy; fitting will be required after wing is completed.
15. Install your favorite motor mount; build up cowl with balsa blocks.
16. Sand entire fuselage to shape.

WING

1. Build up center section first (egg crate method). Slide ribs onto spars and glue in place.
2. Install leading edge and half a hinge to lock the wing together.
3. Install bottom trailing edge 1/16" x 3".
4. Install W8 and W9.
5. Sheet bottom of wing with 1/16" balsa.
6. Install Gold-N-Rods for elevator and rudder controls.
7. Install aileron Gold-N-Rods.
8. Install wing guide pins for outside panels, 1/8" piano wire.
9. Install wing hold-down dowels 3/16", fill back spar to T.E. with scrap balsa.
10. Sheet top of wing with 1/16" balsa.
11. Sand to shape.
12. Fit center section to fuselage, center and install wing hold-down bolt.

OUTER WING PANELS

1. Install rib on spars. Shim W7 at the trailing edge for 1/8" washout and slant W1 to give 1" dihedral.
2. Install leading and trailing edge.
3. Sheet top and bottom of wing 1/16" balsa and cap strip.
4. Install brass tubing and carefully align with center panel, then sheet top.
5. Install tip block and sand to shape.
6. Turn plan over and make opposite panel.

RUDDER AND STAB

1. Follow plan—basic 1/4" balsa construction.
2. Use lightest balsa possible.

BOOMS

1. Basic box construction, soft-to-medium balsa; follow plan.
2. Cut out stab slot and center section, cut out together so that they will be in same location on both booms. Pin booms together for cutouts.

LANDING GEAR

1. Shape curve on landing gear by pulling piano wire across round object (pipe, etc.) and bending slightly until proper curve is achieved.
2. Install balsa fairing on wire and cover with silk.

COVERING

1. Cover and finish with your own favorite finish, taking care to keep tail section as light as possible.

FINISHING

My airplane was covered with Silkspun Coverite, followed by three coats of dope sanded in between, one coat of K & B Primer, a gentle sanding, then the final coat of white K & B Epoxy, and trimmed in red to add "a touch of class." One word of caution—let the dope dry at least a week and gently rough the surface with steel wool before you apply the primer.

FLYING

Taxi at slow speed, especially when turning; then after you are satisfied with engine performance, line it up into the wind, open the throttle, let the airplane attain sufficient speed, ease back on the stick and get some altitude. After you get the feel of the airplane, you will find it flies much like a pattern ship. One note about landing—I found it easier to land the Air Master with some power on. You will be amazed at the smooth landing possible with this ship.

TRIMMING

This airplane flew right off the drawing board, requiring only a slight adjustment on the elevator. Care should be taken to ensure the C/G, where shown on the plan, is with tank empty. All linkages should work free without slop. The installation of adjustable clevises will greatly simplify trimming procedures. A total travel of 5/8" on the ailerons and 3/4" on the elevator should be enough, while 1" on the rudder will be more than ample for the first flight.

Good luck! ■