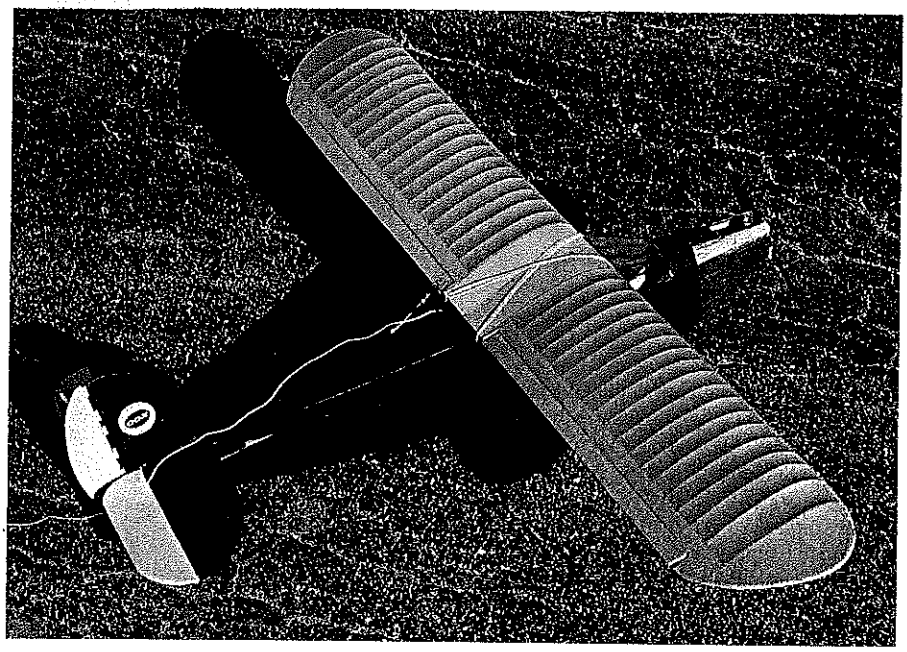
PLAN # 885

Fairchild

■ Roy L. Clough Jr.



Neatly cowled engine is hardly noticeable at most angles. Bright chrome engine cowling flashes sun at altitudes where airplane is nearly invisible.

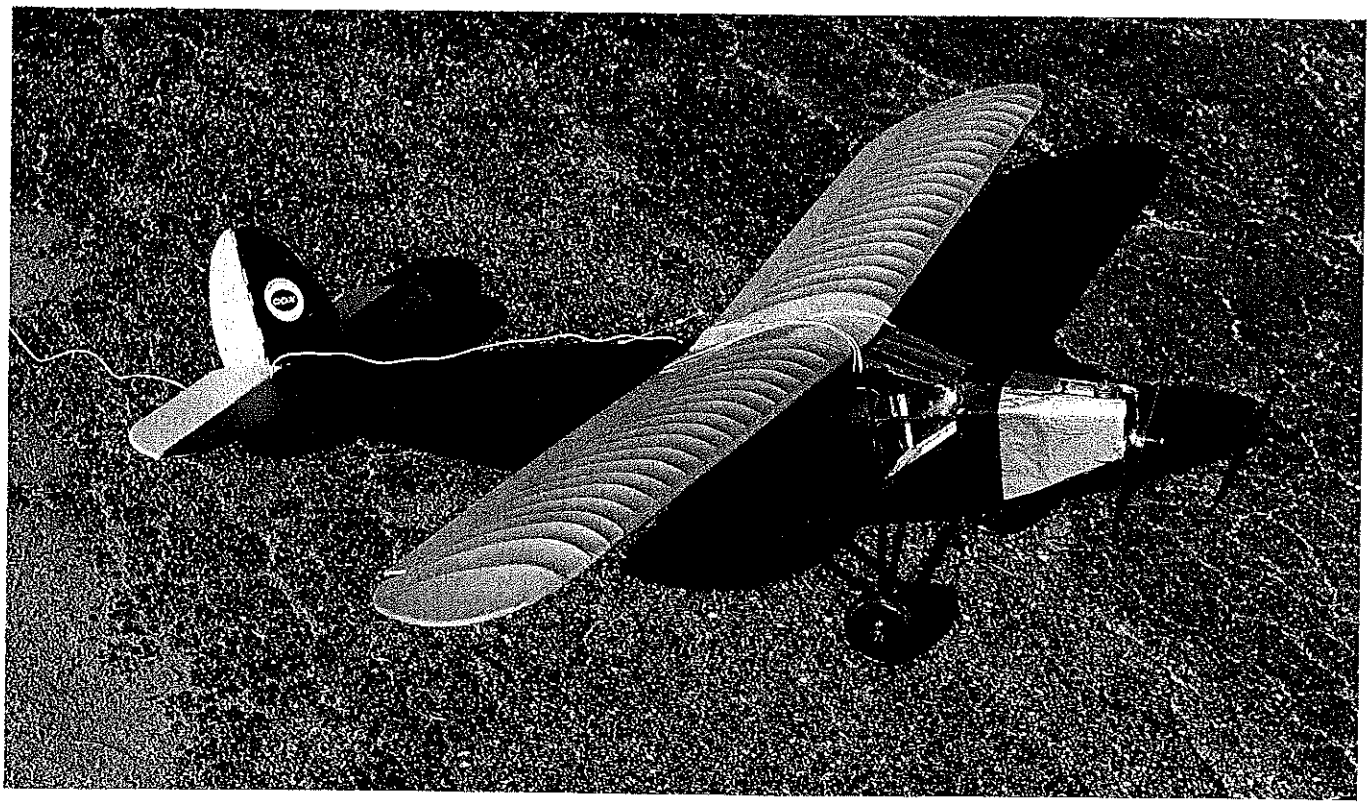
A few years ago, a couple of flying buddies lured me into their fascinating world of Texaco flying. Watching them fly their models up almost out of sight on the little 5.1cc fuel tanks of their Cox reed-valve engines, while craning their necks to keep the tiny blobs against the sky in view as they twiddled transmitter sticks in search of rising air, finally got to me.

In "dead" air, they were getting four- to five-minute flights on engine runs of 2½-3 minutes. Weak thermals could boost this to 8-10 minutes. They told me that they were shooting for the 15-minute max for the class. On a good day, circling over the hot asphalt of the big parking lot beyond the runway where we flew, they'd get it—sometimes more. Before that summer was over, I'd watched several half-hour flights.

Who could resist that kind of action?

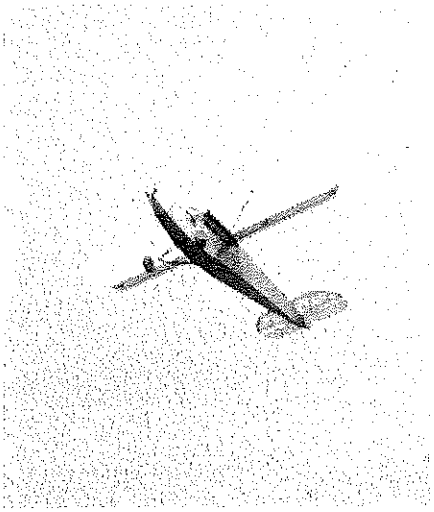
Until that time, I felt that I'd built and flown just about every variety of model airplane. My introduction to Texaco flying reminded me that no matter how long you've been around, it pays to keep an eye open for new possibilities.

Texaco flying is under the aegis of the Society of Antique Modelers (SAM). With

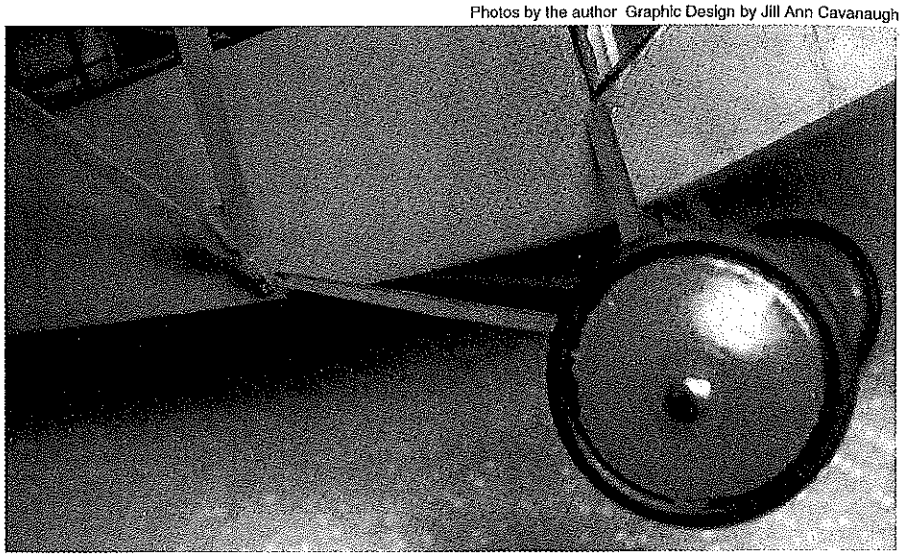


This Fairchild version was adapted from an old set of plans for a rubber-powered model. Gray Cox 7 x 3½ prop is best.

Photos by the author Graphic Design by Jill Ann Cavanaugh



Fascinated: Author watched friends' Texaco models fly and thought, "Who could resist that kind of action?"

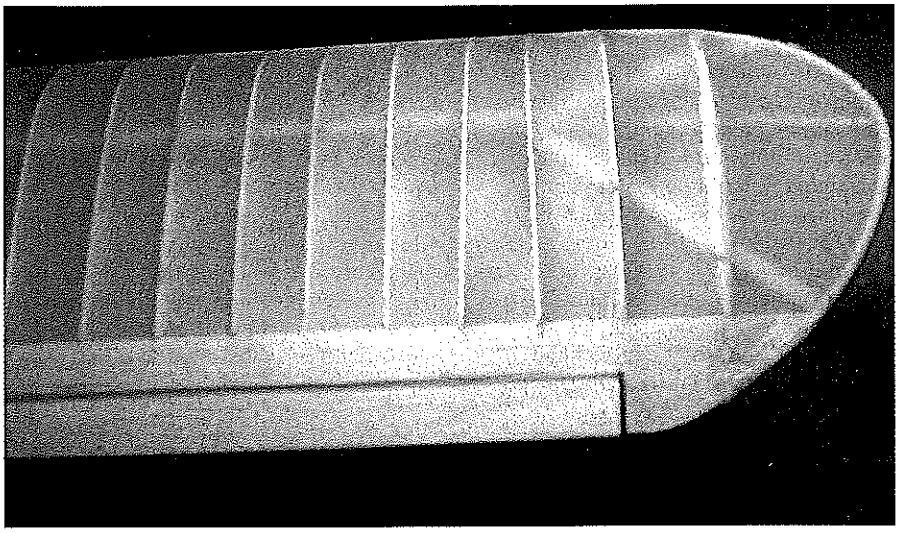


Commercial wheels may be used, but author preferred homemade type, built from jelly jar caps and neoprene tubing purchased at a hardware store.

the SAM rulebook in hand, I decided to design my own Texaco contender. I started with a set of 60-year-old rubber model plans, found in the pull-out plan pack from an ancient model airplane book that my wife had picked up at a yard sale.

Certainly this makes an unusual provenance: Our Texaco .049 Fairchild is a wet-engine model of a rubber-powered model of a full-scale airplane—about as legitimately antique as one can get.

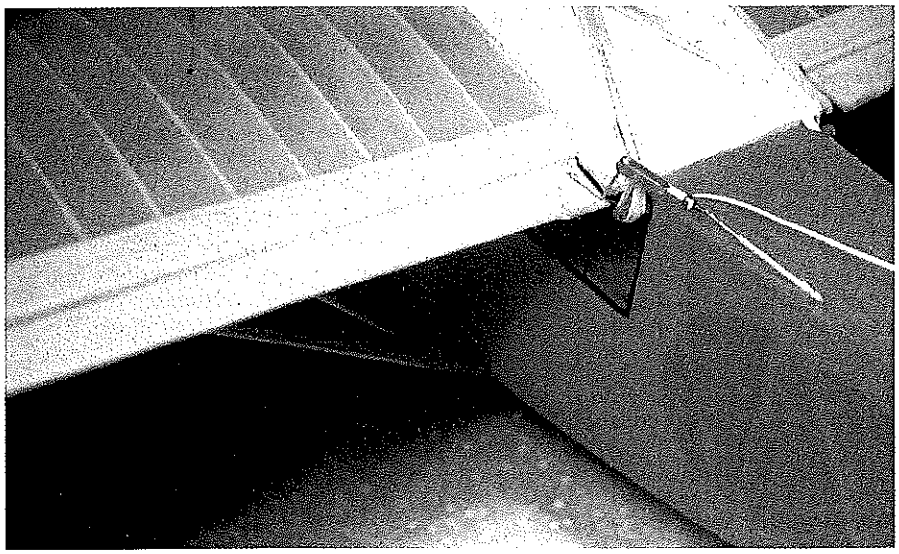
Although the original plans by H. Page Hoggard Jr. did not provide the type number of its counterpart, it's clearly a model of an early liquid-cooled, inline-engined Fairchild F-70. When enlarged to bring the wing area up to the SAM-legal 288 square inches, the model had plenty of room to install any of the Cox .049 reed-valve engines.



"An adventure in classic construction." Author preferred reed tip bows for this airplane's wings. Balsa outlines are okay—but not quite as "vintage."

CONSTRUCTION

The structure is a bit more involved than I generally use, because I wanted the



Original was built with aileron and rudder control; later tried with elevator and rudder. Auxiliary rudder connection shown (see following drawing).

Fairchild

Type: RC 1/2A Texaco

Wingspan: 44 inches

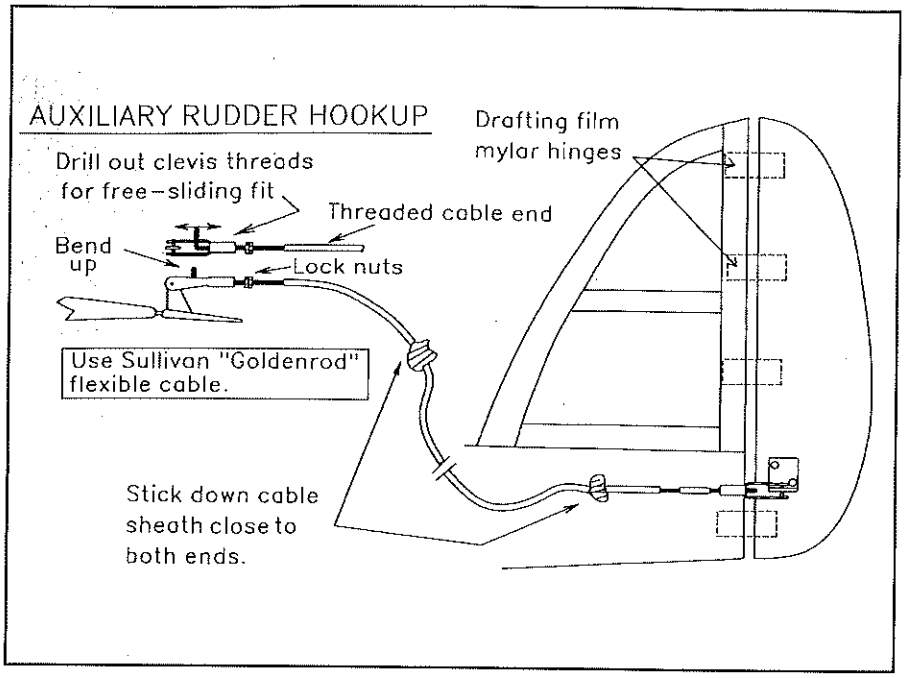
Engine: Reed-valve .049

Functions: Rudder/elevator or aileron/elevator

Flying weight: 19 ounces

Construction: Built-up

Covering/finish: Heat-shrink film



Fairchild—with its Warren-truss, shadowboxed fuselage, and multiribbed wing—to be an adventure in classic construction. It's worth the small extra investment in building time to get something a cut above average.

In the same spirit, I fitted the original with aileron and elevator control instead of the usual elevator and rudder. Test flights showed ailerons and elevator worked just fine, so of course I had to find out how it would fly with elevator and rudder; there wasn't enough difference in overall performance to be worth telling you about. (Just remember that in SAM Texaco you can use rudder *or* ailerons with your elevator, but not both; it's strictly two-channel competition.)

Wing: The plan shows both ways to build the wing. Note that it also gives you a choice of bent-reed or balsa wingtips. The bent reed is more "classic," but balsa is somewhat easier to shape.

Decide which version of wing you want—noting, of course, that ailerons can be built in now, or later, if you want to compare the two methods of control.

The closely-spaced ribs have an unusual, but easy undercamber—just two flat surfaces meet at an angle at the spar. The sheet-balsa trailing edge is not shaped or tapered; it's just rounded over at the rear edge. The center section of the wing is covered with balsa sheet to support the rubber-band hold-down.

Empennage: Tail surfaces are of mixed stick and sheet-balsa construction. The rudder/vertical fin is built as one assembly, and the rudder is cut loose and hinged if this type of control is desired.

Fuselage: The sides are built one over the other (with a strip of waxed paper in between), in the usual way. When they are separated, be sure to add the ⅛ square inside doubler behind the separate pieces that make up the window "sill." Glue the side "shadowbox" sheathing in place before assembling the fuselage to the preassembled master bulkhead/main landing gear anchor; preassembled plywood firewall/balsa backer; and draw together at the tail block.

Note how the rear landing gear anchor block is recessed to fit inside the fuselage longerons and diagonal struts. The 1/32 top and bottom fuselage sheathing has the grain crosswise.

The Fairchild landing gear is typical of the 1920s-30s. Plan dimensions show the lengths for each section. My trick of soldering the axle ends together inside a short length of brass tubing (earlier used on my Faker D-8, *MA* 11/98) makes final alignment much simpler and easier than trying to hold the loose ends and wrap them with fine wire before soldering. Thin balsa fairing strips are fastened to the landing gear legs with tissue and glue.

Wheels may be purchased, or as detailed on the plan sheet, you can make really good-looking vintage types from jelly jar covers. When I first tried this, I wondered if cyanoacrylate-(CyA) glued hardware-store neoprene tubing tires would hold up. A dozen or more wheel pairs later, I can tell you that they do.

Wing strut fuselage-end wires are bent into shallow hooks to fit into eyes bent into their paperclip wire anchors. (Not a fussy fit—their main function is cosmetic.) Wing attachments are tin-can stock. CyA them to the ends of the wood struts and into the wing end anchor slits.

Engine-mount cowl cheeks are ⅛ sheet, butt-glued to the firewall flush with the outer sheathing of the fuselage. Leave open at the top and fill at the bottom, except for an area left open for drainage. For years, I liked to paint inside such areas with several coats of butyrate dope to prevent fuel soak; then I made the discovery that carpenter's glue is just as fuelproof.

The engine is mounted on washers to improve breathing and allow easy changes to the thrustline.

Covering: Several choices here. I used Litespan, in red and yellow, because it has a satin finish. I felt that the bright glossy gleam of heavier films would be out of place on this period-piece model. Litespan is thin, tough, and shrinks well, but it has no adhesive and must be stuck on with BalsaLoc, Black Baron Balsarite, or Liquitex Gloss Medium & Varnish. Give the underside of the wing ribs two coats to make sure of a good stick against the pull of the covering.

Micafilm would also be a good choice—just be sure your antenna is brought outside of it as close to the receiver as possible. (There is reason to suspect it has RF-shielding properties.) If you want the convenience of an adhesive-backed film, I've found Flitecote is a good, lightweight, low-temp alternative.

On the plan sheet we promised to show a quick and easy way to hinge control surfaces with the same film that covers them. Let's use the wing as an example (use the stabilizer/elevator if you aren't building with ailerons).

Cut the aileron loose before starting to cover the wing. Allow the top covering to project about ½ inch beyond the trailing edge dimension. Set the wing down on your work surface, place a length of ⅛ dowel in the aileron cutout, to space it from the wing. Heat-stick the covering, taking care not to fuse it to the dowel spacer.

Turn the wing over, remove the spacing dowel, and cover over the ⅛ gap it left. (If you are using an adhesive such as BalsaLoc, wipe a stripe onto the film that will come over the gap area.)

Now iron down the covering, dragging the point of the iron in the space left by the dowel, to stick the covering on both sides together. Work the point of the iron back and forth, on both sides, while pushing the surfaces together to narrow the gap between them.

This hinge should last for the life of the airplane!

Flying: All Cox .049 reed-valve engines are legal for SAM competition, provided

they are fitted with the 5.1cc fuel tank. The Cox Babe Bee is the only reed valve that comes with this tank. Oddly enough, the Cox Texaco engine comes with the "big" 8cc tank—which isn't legal for the Texaco event. So, if you want to fly with a Texaco engine, or a Black Widow, you'll have to buy the small tank retrofit kit. Weird, eh? But worth it.

The Texaco engine has the small fuel-misering venturi, double-slit exhaust, and extra glow head fins that allow it to be loaded with a large propeller (we use up to 7 x 4) for long engine runs at good thrust without overheating.

(As of this writing, some months before publication, it has been proposed to open the event to other makes of engines and limit their fuel capacity. Check with SAM for the latest ruling.)

Experience with these engines has taught me to use at least 15% nitro fuel. Add a tablespoonful of drugstore castor oil per quart. When competing, never try for an official flight on the first tankful; run out the first filling to loosen everything up and get your needle valve setting. Then refuel, restart, and get out your stopwatch.

My Texaco Fairchild had been flying very successfully on ailerons and elevator for a couple of years. Small aileron deflections easily maintained heading while greater aileron deflection induced bank and turn. I thought it would be interesting to add delayed rudder input. Kicking in rudder after setting up the bank should speed up the turn. This could be a small, possibly significant advantage when trying to stay within a small thermal.

Since only two servos can be used in ½A Texaco, I decided to use a hookup similar to that used to steer the tailwheel of the Aileron Trainer (*MA* 12/96). I split the solid rudder from the stabilizer and hinged it with small rectangles of drafting Mylar™. This was stiff enough to keep the rudder centered in the absence of input, but springy enough to be deflected by an auxiliary pushrod.

Drill the threads out of a metal clevis so that the threaded end of a Sullivan Goldenrod cable can slip freely within it. Spin on a couple of nuts for adjustment and locking in position. Push through the clevis and bend a short section of the threaded rod end to 90° with a pair of needle-nose pliers. The clevis is now attached to a standard control horn bolted either top or bottom of the aileron, up close to the fuselage. Note that top or bottom position of this horn determines to which side the rudder horn must be attached. Use a clevis with intact threads on the rudder end.

Anchor opposite ends of the cable sheath to structure with dabs of Goop cement. Use the lock nuts to adjust the amount of aileron throw, before the rudder kicks in. The total free travel on the original airplane was about ⅛ inch. *MA*

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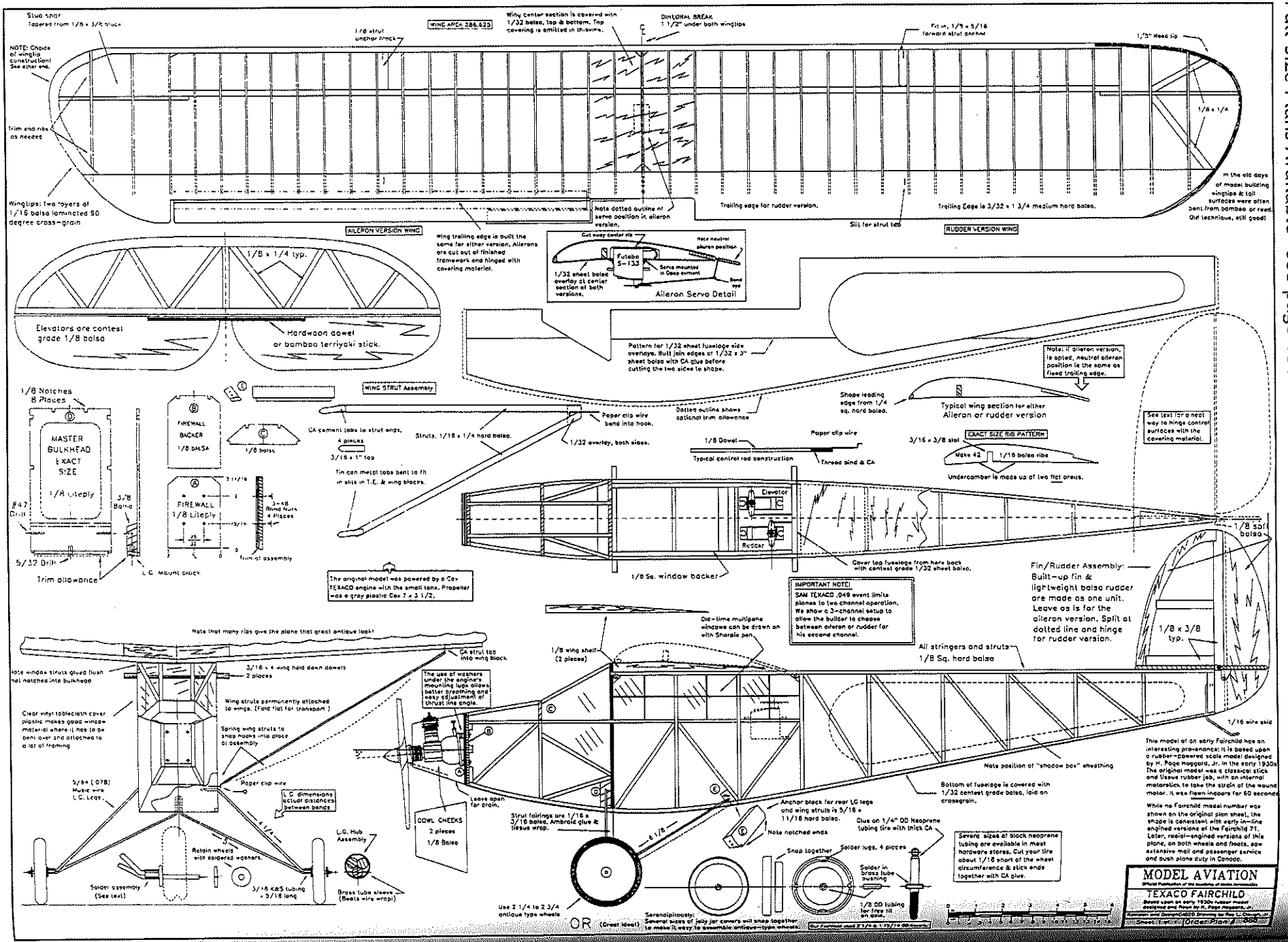
Full-Size Plans Available—see page 181



TEXACO FAIRCHILD

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