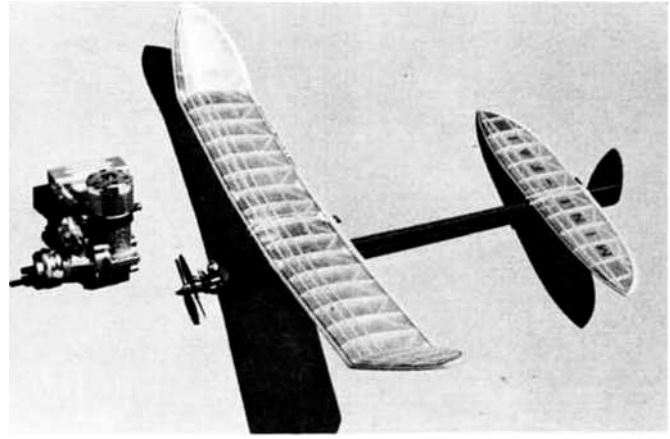


The prime for that Enya 60 would probably run the 010 for half an hour! An interesting visual comparison.



Same scene as at the left, but now Mini is dressed,

MINI-FAI

By Loren A. Williams

We published a photo of this plane in the February issue, and can now truly say, "By popular demand, we bring you . . . etc." The special engine backplate is available from the author.

Thirty eight years of model building has brought me to the conclusion that, there will never be enough time to build all the designs I dream of. Each month the major model magazines present us with enough plans to fill a year's sabbatical. The selection of your next model be it an original or a proven design, is based on the amount of time that can be devoted to that specific model (count your unfinished projects). We will automatically reject a plan that will take 3 months to build, daydream of our super job that will take at least a year, then turn to a 5 hour peanut scale to satisfy our craving.

The problem: Time.

The solution: Shrink size and we shrink building time. Build a scale version of that project you have never started, to fit a Cox .010 engine. Most magazine plans need only be doubled.

The Cox TD .010 turns 27,500 R.P.M. (EAI enthusiasts take note), enough power for our scale version to simulate the most competitive of large engines.

The scale FAI presented in this article is a merger of highly desired design factors, which result in a model that reaches full flying speed almost instantly, climbs in a controlled vertical spiral, and flows smoothly into a floating glide pattern. MINI-FAI has 100 square inches of total flying surface (wing and stab areas combined) and a total all up flying weight of 50 grams (1.8 ounces). A special machined aluminum plate, for low profile, replaces the bulky plastic tank. Sec Workbench section for availability.

Only 25 hours of building time required. Ready to start?

CONSTRUCTION: The key to fast building is to accurately fabricate the components to their exact finished shapes. All your planning of how the model will go together is done during this stage.

Although this article will be broken into basic assemblies, read each one carefully and

pick out all components that can be prefabricated. The author even goes so far as to cut all tissue pieces to size before assembly of model begins. Careful selection of wood should be made to produce as light a structure as possible. When construction begins, there is no lost motion; there is always something to put together while something else is drying. Ambroid fast drying cement was used for all joints, except the firewall which uses Titebond.

FIREWALL AND TANK: Cut 1/16 plywood firewall to shape shown on plan. Drill engine mounting holes from backing plate and fuel outlet lube (3/32 O.D. brass tubing). Epoxy small pattern 2-56 nuts on rear of firewall.

The tank is fabricated from two U-shaped pieces of .006 brass shim stock usually available from automotive parts stores. The first U-shape is the 2 sides and the bottom, the other being the front, top and rear. All 3/32 tubing holes are drilled before forming. After tack soldering all corners of assembled U-shapes, complete soldering of seams. Place tank and firewall on top view of plan to solder fuel outlet tube to correct angle. Solder filler tubes to top of tank. Don't worry about pin holes in your soldering, as entire assembly is final painted with epoxy.

WING CONSTRUCTION: Cut all ribs oversize, pin together, block sand to final shape, and notch. Trim each tip rib to size. Taper leading edge from tip dihedral break to 3/32 square at tip, soak in warm water for ten minutes, pin to plan and allow to dry overnight. Glue tip trailing edges to T.E. stock and sand to final shape. Pin trailing edge assembly to plan, add the two bottom spars and cement in all ribs, except in dihedral breaks.

After allowing time to dry, remove the wing panels from the plans. Next, carve and sand the leading edges to shape. Pin the main wing panels down and block the tip panels into place at the correct dihedral angle. When in position, add the dihedral joint ribs.

The top tip spars are now cut to length and glued in position. Next, pin the centersection panel down and repeat the blocking and gluing procedure with the main panels. Cut and glue all other top spars into place.

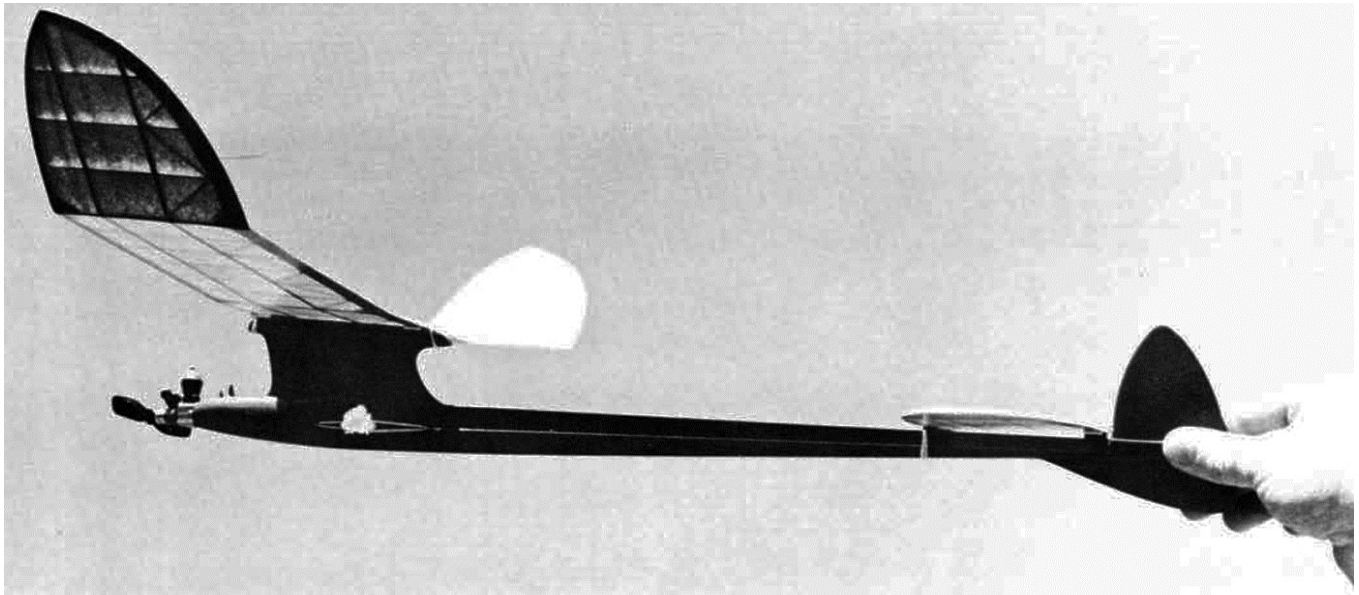
When entirely dry, remove the assembled wing from the building board and add all gussets and diagonal braces. Sand the entire wing to a final, finished form. Reinforce all dihedral joints by rubbing three coats of glue into all joints for strength.

STAB CONSTRUCTION: Same as wing except all spars are installed on plan. Remove, carve leading edge to shape and add diagonal bracing. Install DT hooks, noting offset of rear hook.

COVERING: Prior to covering, give the wing and stab three coats of 50/50 dope, sanding lightly between coats. Cover the wing and stab with Japanese tissue, dry. Apply the tissue to the wing with thinner, which soaks through the tissue and softens the previously applied dope for adhesion, or if desired, utilize 50/50 dope in the same manner. Spray wing and stab with water to tighten the tissue. Brush on two coats of thin dope and then apply tissue numbers or trim with thinner. Finish doping the wing and stab, adding three more thin coats on the wing and two on the stab. Let the stab and the wing season for at least a week in a warm place. I prefer to pin the stab down for this period of time.

FUSELAGE CONSTRUCTION: Fuselage is built a la Starduster. Cut the two pieces for the pylon from medium soft 1/8 inch sheet, glue and pin flat to dry. Next, cut the pieces for the fin from the lightest 1/16 sheet possible. This too should be glued together and pinned down until dry.

Select good, straight-grained 1/32 sheeting for the sides. Trace the outline, cut both sides and pin one down flat on an absolutely straight building surface. Next, cut 1/16 x 1/4 top and bottom strips, slot both for fin and glue and pin



Try this on your 8 pound R/C toad! The clean, functional lines are very evident in this photo.

them in place. Note top strip is in 2 pieces, one forward and one aft of the pylon. Now cut 1/16 square doubler for the rear of the fuselage and glue in place. The bulkheads are also cut from 1/16 x 1/4 stock and should be glued in position at this time.

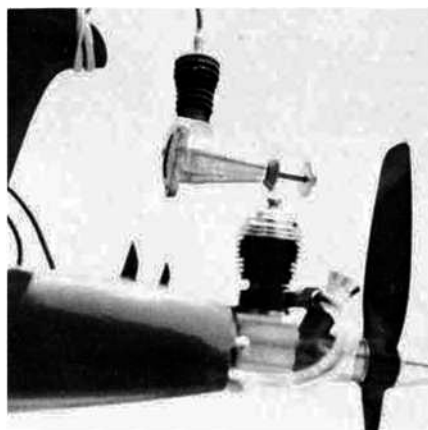
Cut the eight required doublers from 1/16 sheet for the front, side, and rear of the pylon. Glue and pin four of them in place as well as the 1/16 square fuselage top & uprights that support the pylon on one side. Now glue the pylon and the fin in position. Cement all the required pieces into place on the top of the pylon and fin. When all pieces are dry, remove from plan. Fill last half of fin on both sides with soft 3/32 scrap.

Tank and firewall are now installed, check plan for down and right thrust. Then glue other side piece in place.

The cheek cowl (pre-shaped) are now installed. When dry, the cheek cowl can be sanded to their finished form. Install forward D.T. hook at this time in left cheek cowl.

Glue lengths of 3/32 x 1/4 tapered trailing edge stock to the top sides of the pylon. Also attach the wing platform to the top of the pylon.

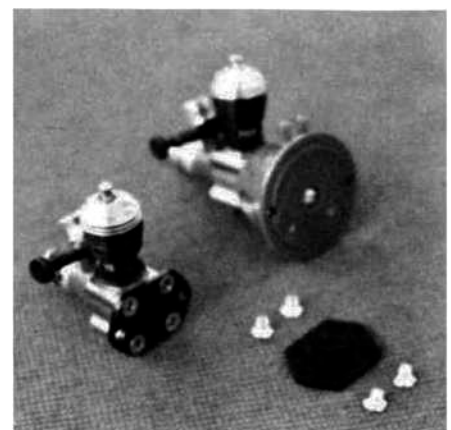
Sand the fuselage to its final shape and



At last! A picture in which Bill Brown's CO2 engine doesn't look small.

smoothness. Install stab platform and 1/8 high incidence block, building in stab tilt per plan. Pre-dope the fuselage with at least three coats of 50/50 dope filled with talcum powder, sanding lightly after each coat. Finish with 2 coats of clear 50/50 and 3 coats colored dope. Rub out last color coat. Epoxy the snuffer tube and the D.T. line guides into place.

Remove tank from your T.D. 010 and replace with backing plate shown on plan

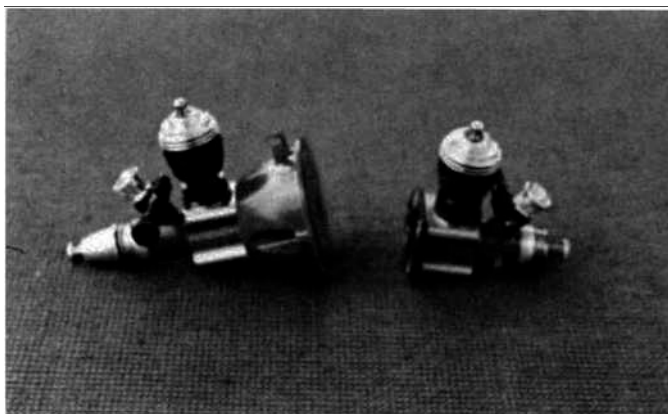


The relative sizes of the standard tank mount and the special back plate show up here.

(stainless flat head 2-56 screws furnished). Mount engine with 2-56 pan head screws with lockwashers and connect original fuel line.

Make monofilament D.T. line, put small loop in rear to slip into stab hook, front "S" hook is shown in exact position for 45 degree pop-up with stab in flight position.

Assemble the entire model and align the wing by measuring equal distances from each wing lip to the rear of the fuselage.



From this angle, the comparison of frontal area between the stock tank mount and the special backplate is obvious.



Here's the photo that started all the fuse. Published in the Feb '72 Model Builder, Loren got many requests for plans. Here they are!

Assemble the entire model and align the wing by measuring equal distances from each wing lip to the rear of the fuselage. When properly aligned, key the wing in place with a split 1/16 diameter dowel. Key stab at trailing edge only. Balance the model to correct center of gravity as shown on the plans. Both the original and the second model balanced as built.

WARPS: After wing has seasoned a week or more, get out the tea kettle and let's either correct the present warps or set in the required one. These warps may be set in the following manner: hold wing over steam until the covering puffs and is covered with a light condensation, all the while twisting the panel an equal amount in the opposite direction.

Immediately after removing the wing from the steam, either rub your cheek across the surface of the panel, or rub the panel across your leg. This saps the heat from the wing in a sudden manner and sets the warp. Sight check the warp to make sure the amount desired is achieved. Repeat the steps to increase or decrease as needed.

In order to pattern this ship we must put in 1/8 wash-in in the right main panel. The same technique is used for setting this warp, with the exception that only the desired amount of warp is held into the panel.

TRIMMING - FLYING: With Model properly balanced, hand glide to obtain slow, floating glide to the right. Because of this ship's small size, a circle of 35-40 feet is desired. Shim rear of stabilizer, as required, for glide.

A point to remember when shimming on side positions, the amount under the trailing edge of the stab for equal adjustments is just half of the side shim, be it adding or subtracting.

Since we have no fuel shutoff timer, take the time to familiarize yourself with your engine and tank duration. The tank shown will run, with engine peaked out, for just over a minute. Practice your release timing by starting engine, tuning, lighting fuse, then checking sweep hand on your watch until engine quits. When you become proficient at estimating various release times you're ready for your first flight.

Release first flight at a 60 degree angle; it will be at full speed in about three feet! The climb is a tight right spiral with right glide pattern. If further power pattern trim is required, use only thrust, wing warp, and stab adjustments: do not use any rudder adjustments. Since this is a high performance bird, take your time in making your trim adjustments. Unlike the javelin launch of its big brothers, MINI-FAI VTO'S right now!

One final note: In selecting your takeoff site on a given field, it is mandatory that you be as close as possible to the Class D and D modelers so they may share the enjoyment of your 25 hours of labor.