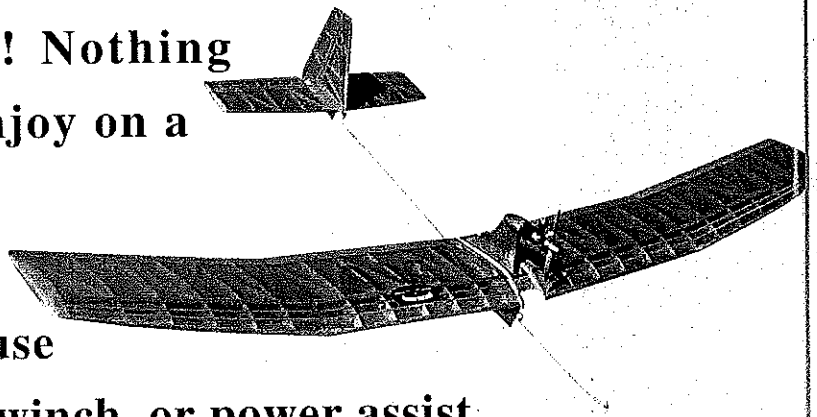


For many years, I have enjoyed thermal flights—whether it be RC sailplanes or Free Flight. When I designed Tri-Flite, I wanted an airplane that was easy to build and trouble-free, with inherent stability. Also required was a model that was appealing on the ground or in the sky! Nothing fancy; just something to enjoy on a sport-flying day.

Tri-Flite is derived from the three methods I use to catch thermals: Hi-start, winch, or power assist.



■ A R T C H R I S T E N S E N

CONSTRUCTION

All of the wood in Tri-Flite may be purchased from Superior Balsa and Hobby Supplies (Tel.: [800] 488-9525 for orders).

Fuselage: To build a consistent-flying airplane, care must be taken to ensure alignment; use the centerline on the top view for reference. Using $\frac{1}{8}$ balsa and $\frac{1}{8}$ Lite Ply, cut slightly oversize front and rear pieces and splice as shown on the plans. Trace the fuselage sides, cut to shape, and glue. I have used Weldbond Slow Drying White Glue with excellent results.

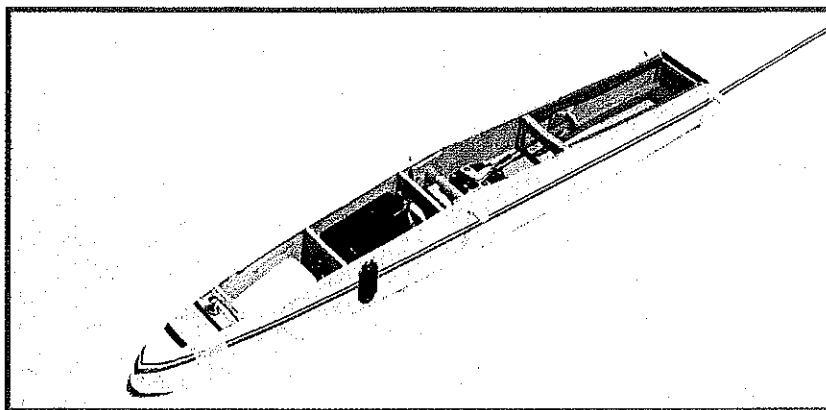
The $\frac{1}{8}$ Lite Ply is for the front and $\frac{1}{8}$ medium hard balsa for the rear of the fuselage. The fuselage side view has approximately $2\frac{1}{2}^\circ$ of incidence. Slightly taper the $\frac{3}{16} \times \frac{3}{8}$ joining block at the rear of the fuselage and glue the sides to the block.

Glue F1, F2, F3, F5, and F6 to join the fuselage sides. Do *not* glue F4 at this time. The fuselage bottom also consists of $\frac{1}{8}$ Lite Ply and $\frac{1}{8}$ medium-hard balsa. Join together after cutting to a slightly oversize shape.

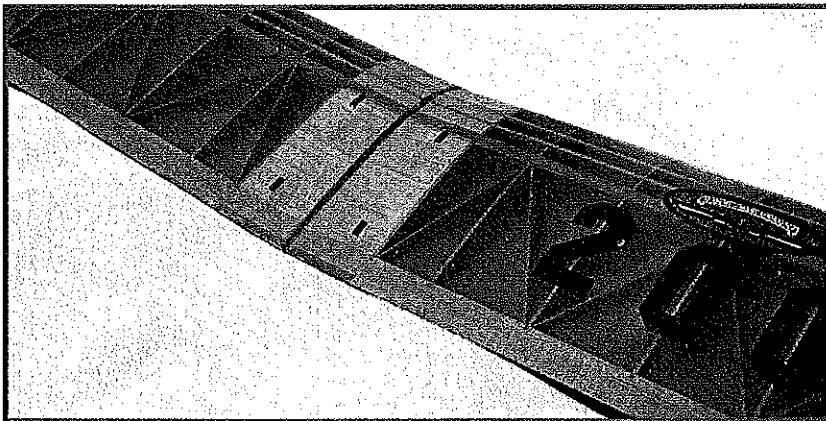
Find the approximate center and draw a line down the center for the full length. Glue the bottom to the sides, using a slow-drying glue such as Weldbond. Note the centerline marks on all of the formers. Be sure to line up these marks with the centerline drawn on the fuselage bottom.

Shape the removable hatch and drill the clearance for a 4-40 bolt. Position F7 on the bottom of the hatch using a Du-Bro blind nut and glue to the fuselage slightly below the hatch position (to avoid having the hatch adhere to the fuselage).

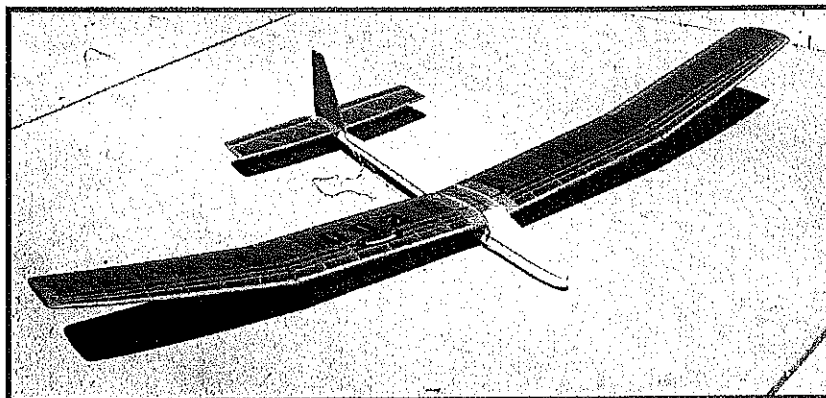
Locate the approximate position for F4. Mark a line on the hatch and glue a piece of $\frac{1}{8}$ Lite Ply to the underside of the hatch. To mount the Goldberg hold-down, bend the hold-down slightly and position the



Fuselage is low-drag, but there is still plenty of room for radio components. Futaba radio equipment was used on the original model.



The wing center section is keyed to hold the power pod in alignment. The pod is attached to the wing with #64 rubber bands.



The original Tri-Flite was covered with silk, but the structure is substantial enough for plastic coverings. Prototype weighed 23 ounces as shown.

locking screw on F4. Now glue F4 in the fuselage while the hatch is in its proper location.

Cut the mounting holes for servo installations and mount the servo tray as shown. Install the $\frac{1}{16}$ plywood doublers and drill $\frac{1}{4}$ holes for wing hold-down dowels. Install the dowels and glue in place.

Install the servos and pushrods. Check to see if the fuselage is in line with the centerline shown on the plan. With this

method, the fuselage should be perfectly straight.

Glue the top sheet of balsa to the sides, after providing breakouts for the pushrods. Finish by gluing the nose block in position and installing the Airtronics towhook. Sand the edges to a nice round contour. The fuselage is now complete except for covering.

Wing: Cut the wing ribs from $\frac{3}{32}$ sheet balsa. Cut the diagonal ribs from $\frac{1}{16}$ sheet balsa. Lay aside ribs PR1 and PR2 (PR = Polyhedral Ribs). Cut the leading edges, spruce spars, and trailing edges to size; carve and sand leading edge to shape.

For a left wing side, turn the plan over and lightly spread glycerine where the right panel is shown. Shim the leading edge

using trailing edge stock as shown on the plans. Secure the leading edge, bottom spruce spars, and trailing edge to the plans. Glue the ribs to the leading edge, bottom spars, and trailing edges. Do not glue the bottom spar to ribs W-6 or W-7 at this time.

Glue the top spruce spar to the main panels. Raise the rearmost part of the tip trailing edge $\frac{1}{16}$ to produce tip washout. Add the top spar to both tips.

After removing the wing panels from the work surface, the shear webs and diagonals may be glued into position (but do not glue the shear webs to any section where polyhedral is to be utilized). Glue the bottom spar to ribs W-6 and W-7.

Photos by the author. Graphic Design by Heather Erdahl

Join the tips to the main panels using plywood gusset PG1. Join main panels together using plywood gusset PG2. Insert hard balsa between spruce spars on the tips and main panels as shown in Section B-B.

Glue PR1 and PR2 ribs in place. Place $\frac{1}{8}$ square turbulators in the rib notches and glue in place.

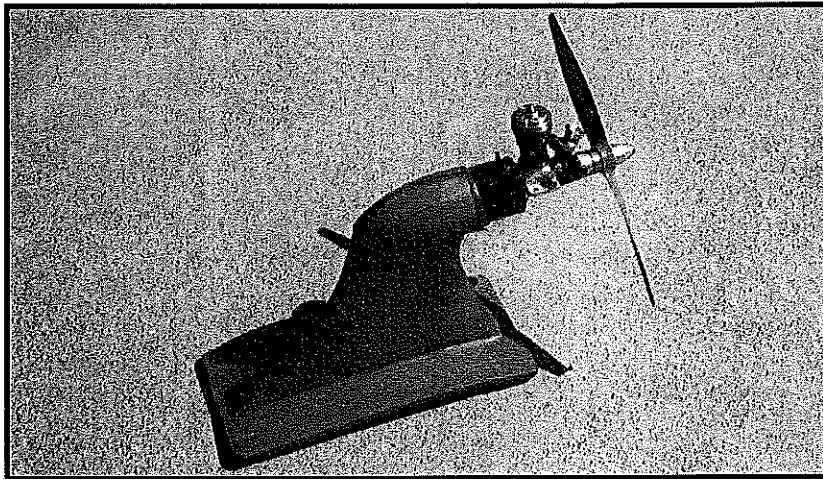
Plank the bottom and top center section with $\frac{1}{8}$ light balsa sheet. Notch and install the trailing edge at the center section with $\frac{1}{8}$ x $\frac{3}{8}$ x $2\frac{1}{2}$ spruce. Glue solid balsa on both tips. Complete the shear web installation at the polyhedral joints.

Stabilizer: The stabilizer is of conventional construction. Choose a medium-hard $\frac{1}{4}$ square for leading edge. Note the hinge locations. Be sure to allow $\frac{1}{4}$ inch between center ribs for the rudder. The $\frac{1}{4}$ balsa shown on the elevator is for a control horn mount (right side, top view).

Rudder: Similar to stabilizer and elevator construction. Note the hinge location and $\frac{3}{8}$ diameter notch in the rudder for

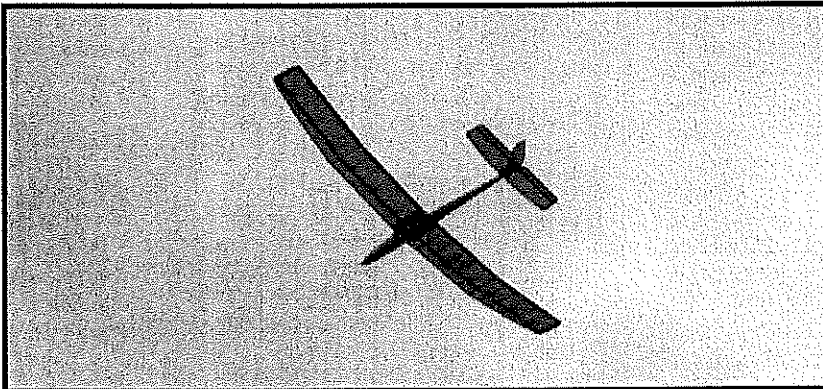
Pod and Pylon: The pylon core is $\frac{1}{16}$ plywood; the shape is determined by the engine you will use. Shape the pod and glue to the $\frac{1}{16}$ plywood core. The mounting platform is formed by cutting a V notch and placing it on the wing center section to attain the polyhedral angle. Glue the notch and allow to dry.

Line up the plywood core and glue it to the mounting platform. Shape the $\frac{3}{8}$ balsa pylon sides and glue to



Power pod assembly shows mount for Cox Tee Dee .049, which has more-than-adequate power for this model. Pod adds four ounces to all-up weight.

areas where the stabilizer is glued to the fuselage. Cut a slot $\frac{3}{8}$ x $\frac{1}{4}$ for rudder leading edge entry into the fuselage.



In lift and going up! Long tail moment arm aids stability; substantial structure allows various launching methods: power assist, winch, or hi-start.

travel is $\frac{1}{2}$ inch each way. The upthrust of 5" may vary due to model weight. It's not critical, and may require adjustment after the initial test flights.

the plywood core. Sand the pylon and pod to a streamlined shape. Install the $\frac{1}{8}$ plywood firewall.

Covering: The choice of covering material is yours. Tri-Flite is a very strong model; the structure does not depend on covering material for strength.

Cover the rudder and be sure to remove covering where the rudder is inserted into the stabilizer. Cover the fuselage except where the stabilizer is glued to it. Cover the stabilizer and remove covering material in the fuselage.

The stabilizer and rudder assembly is now glued to the fuselage. After covering, attach the $\frac{1}{4}$ wing keys for the power pod.

To join the power pod to the fuselage, use rubber bands between the dowels and over the pod platform.

Locate the center of gravity (CG) by adding ballast in the nose compartment (my model required four ounces to attain the proper CG). The rudder travel is one inch in each direction; elevator

To fly hi-start or winch, simply remove the power pod and locate towhook as shown. If you have avoided warps, located the correct CG point and built in tip washout, Tri-Flite will fly right off the board. The total weight of my model less power pod is 23 ounces, and 27 ounces with the power pod.

Go catch a thermal, and if you have any comments, drop me a line:

Art Christensen
315 S. Donald Ave.
Arlington Heights IL
60004

Type: RC Sailplane
Wingspan: 77 inches
Engine: Cox Tee Dee .049 (optional)
Functions: Rudder, elevator
Flying weight: 23 ounces (less pod)
27 ounces (with pod)
Construction: Built-up
Covering/finish: Silk or film

Tri-
FLITE

