Stilomag

Yves Fernandez

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A classic Aerobatics machine. Design, with 59-in. built-up wing, represents 17 years of modeling experience. Fine detailing was done with a ruling pen loaded with paint. Note hole in wing tip for outboard weight. Author is a consistent top placer in central European CL Aerobatics circuit.

This CL Precision Aerobatics model for a .40 comes to us from Strassbourg, France and is the state-of-the-art in central Europe. It appears to have all of the qualities to perform fully to the pilot's ability.

AFTER having built several semi-scale Stunt models, I decided to try my hand at a true Precision Aerobatics plane. I wanted to design a model which would be somewhat more responsive in performing all of the maneuvers and patterns required of it. The fuselage was to be as straight as possible and parallel to its fore and aft axis so that it would go through its paces with ease. I planned my model around the best technical data available for a really fine aerobatics ship, keeping in mind a kind of elegance in form and shape. The completed design produced the Stilomag, which represents 17 years of aircraft modeling experience.

Engine. For the engine, I chose the HP .40 GC—which is light, small, and easy to handle. It has the additional advantage of an adjustable exhaust outlet. By moving it and the muffler to the outside of the plane's rotation, line tension is maintained with less wing tip weight. A lightweight muffler was added to provide both quietness and pressure to the fuel tank. Pressurizing the fuel tank is necessary to neutralize the differences between normal level flight and inverted maneuvers. I found this to be very important, because the HP .40 GC has a tendency to be sensitive.

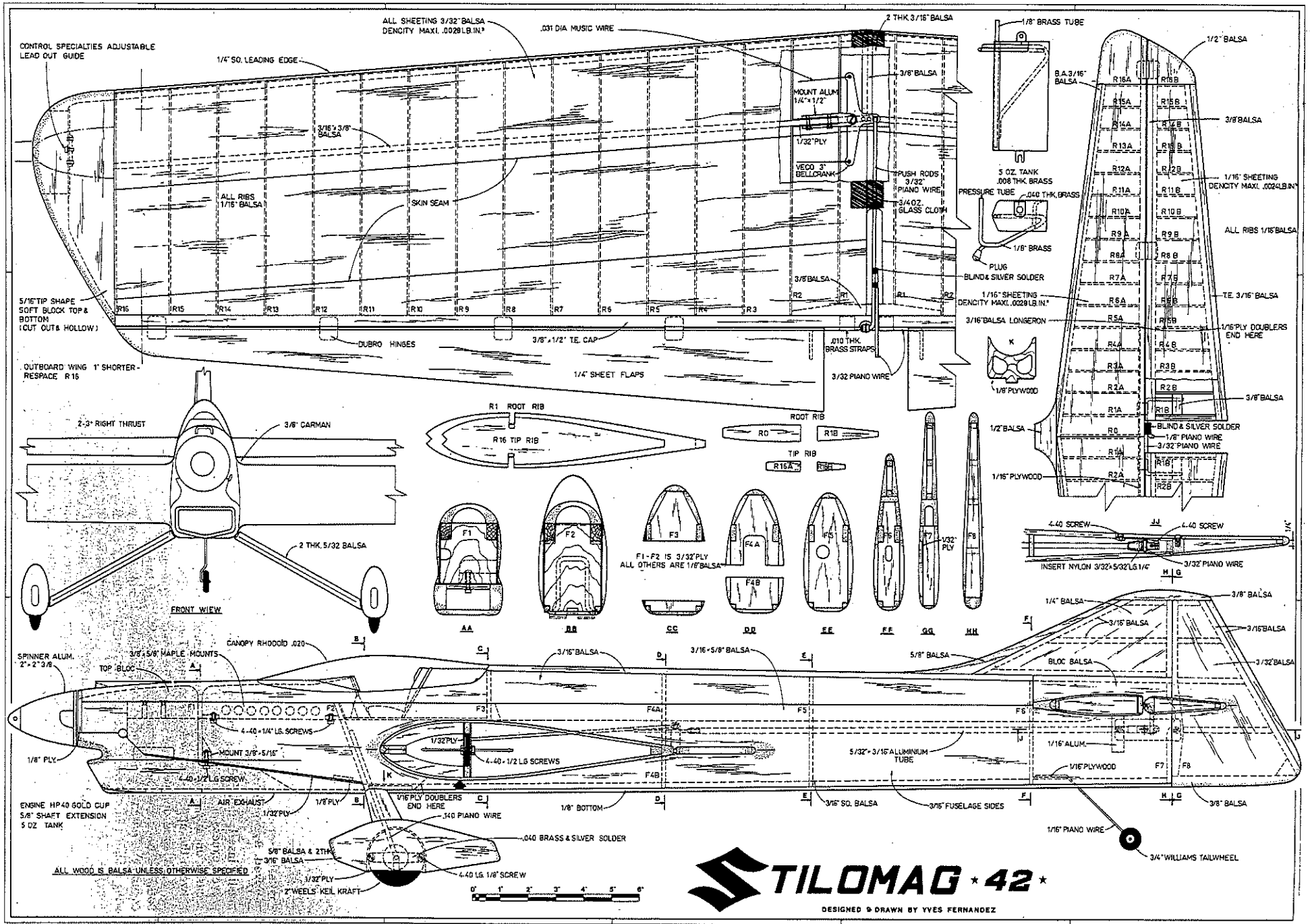
I used several other items of my own design. First of all, the original carburetor was replaced with one similar to the type used on a ST .46 or an OS .40. Secondly, an aluminum shaft extension was used. The type of engine you use in your Stilomag, and its exact placing in the nose of the fuselage will, of course, alter these needs.

Wing and Tail. The wing has been completely sheeted with 3/32 balsa to maintain a flat surface rather than the concave look that usually occurs on open framework wings. A good deal of care needs to be made in selecting good light balsa for the sheeting. The type I use is super-light, weighing from ½ oz. to ¾ oz. for a 4 in. by 36 in. sheet. The sheets are butt-glued together to make a complete wing skin prior to covering.

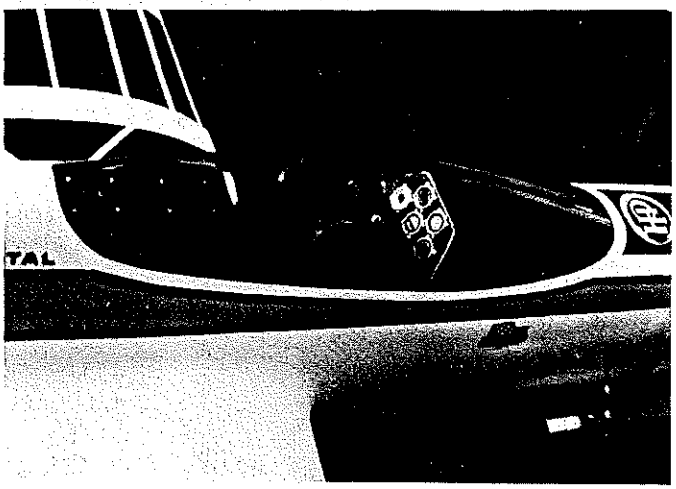
I also chose the heavier balsa for the outer wing construction. Before adding wing tip weight, I imagine that the outer wing weighs about ¾ oz. more than the inner wing. Lightening holes are added to all ribs to aid in overall weight reduction.

The inner wing is fitted with an adjustable lead-out guide. The outer wing has a hole added for tip weight.

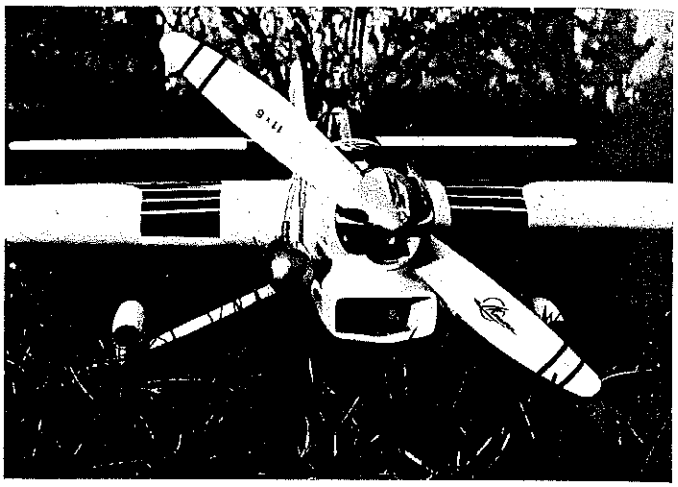
My model uses a 3-in. Veco bellcrank on a special aluminum bellcrank mount as shown on the plans. Note that the bellcrank is supported on a ¼-in. aluminum tube which is lined with a



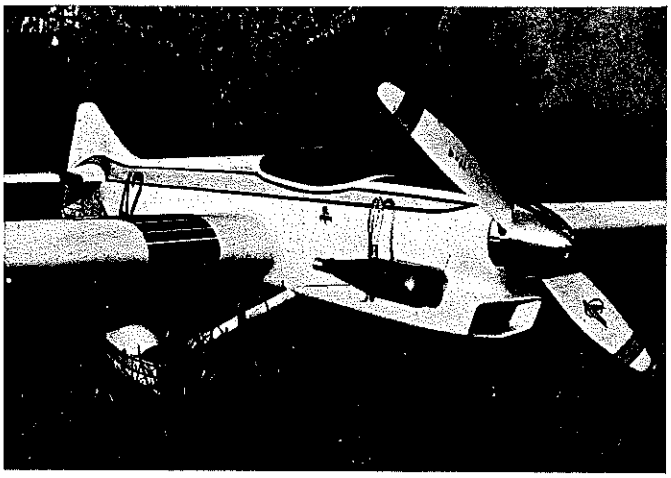
FULL-SIZE PLANS AVAILABLE . . . SEE PAGE 128



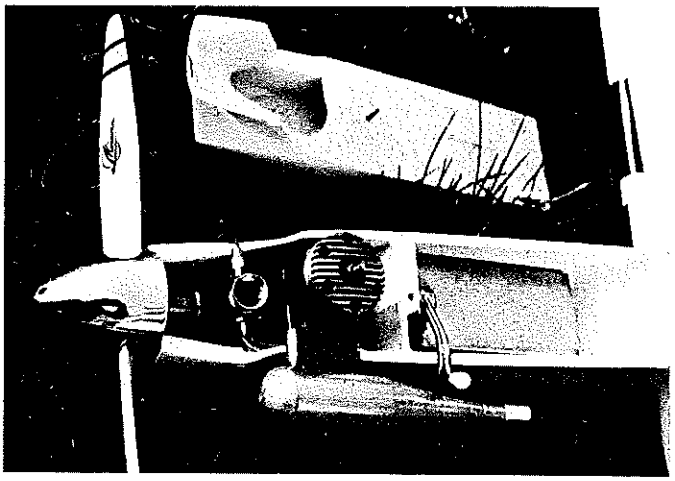
A little care with cockpit detailing—and a pilot figure—adds immeasurably to the plane's appearance. Everything counts in competition.



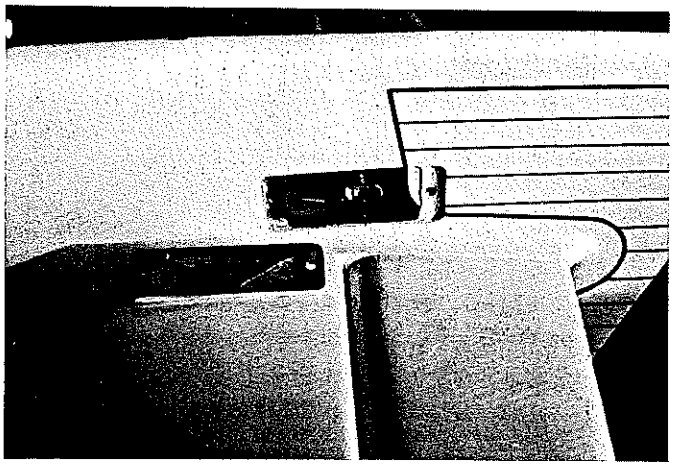
Inverted engine with muffler on wrong side? On HP 40 Gold Cup, it's adjustable. In this position, less wing tip weight is needed.



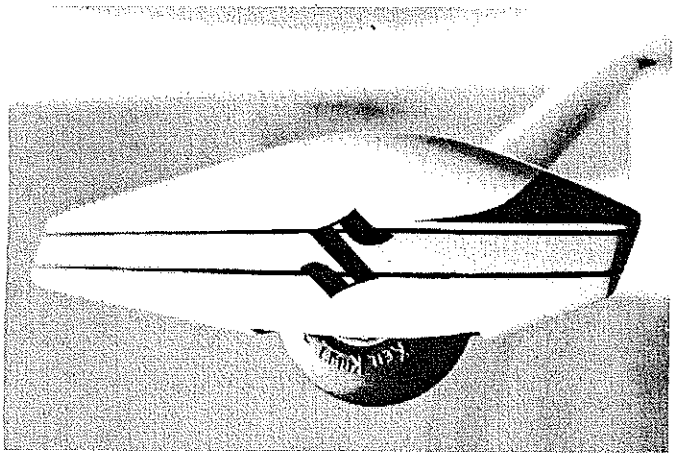
Large air intake helps to maintain a cool-running engine. Muffler provides quietness and the needed fuel tank pressure.



Prop shaft extender is visible with cowling removed, as is the pressurized fuel tank. Light construction throughout, especially tail.



Pushrod connection to the control horn shows with rear fuselage hatch removed. System provides easy adjustments and reduced drag.



Landing gear fairings and wheel pants add to the total impression. FAI rules used in Europe don't judge appearance—but it still counts!

plastic insert; this reduces friction and helps prevent excess play in the controls. The mount is secured on a 3/16-in. plywood support glued between the upper and lower wing spars. Two 1/32 plywood doublers are glued on to cover both the bellcrank support and the spars—to ensure a good strong mounting. Note that the wing is built 1 in. shorter on the right side (outer wing).

The finished weight of the wing, including the flaps, bellcrank, etc., but not including the tissue covering and paint, is less than 13½ oz.

The elevator and stabilizer are quite thick, ¾ in. at the root (this helps reduce air speed build-up when the model is diving). The tail surfaces are built in the same manner as the wing, but keep in mind that they must be kept light. They must not exceed 2½ oz., including all hardware.

The control horn on the elevator is made from ⅛ in. music wire (see plan). This is attached to an aluminum sliding fork which helps in making adjustments. A hatch at the rear of the fuselage allows a means of making these adjustments. The best ratio for the Stilomag seems to be 38°/45°. The pushrod is made from 5/32-in. outside diameter aluminum tubing. This is both lighter and stiffer than music wire.

Again, I remind you to keep the tail section light. The balance point seems to be best situated 2¾ in. behind the root leading edge.

Fuselage and landing gear. The fuselage cross section is somewhat egg-shaped, and even though the canopy is low, it does not give the impression of being squashed. Study the plan carefully; the cross section views at the former locations should aid in building with little explanation. Be sure to place the wings and horizontal stabilizer exactly as shown.

The canopy was shaped around a form. The edges were cut into the balsa so that no seam would show.

I replaced the original hubs on the 2-in. wheels with new magnesium hubs, which I fashioned myself. The wheel fairings are made of light balsa

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After the cone cools, clean the cone with soap and water to remove the flux. Repeat these procedures for the other cone.

That's it for this month, guys. The rest of the article will appear in the next Speed column. Meanwhile, I suggest you practice Jerry's brazing technique described above. This is the most critical and difficult technique used in constructing Jerry's ½A pipe.

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and stiffened with 1/32 plywood sheet on the inside; both weigh ½ oz.

After all filling and sanding was completed, the entire model was covered with Japanese tissue. The model was then primed and spray-painted with several coats of paint and varnish. This was followed up by paste-waxing.

The finished model weighs between 53 and 54 ounces.

The paint scheme that I used was designed to give me good reference points for the maneuvers.

The engine, with its modified exhaust, is practically noiseless—yet strong enough to give a fine account of itself.

My props are homemade 11 x 6s with large blades.

I have noticed that more than one flier has had problems with his engine runs in competition. According to my tests, the fuel content has a big effect on how long the engine runs per tank. If oil or nitro is added to the fuel mixture, the running time is proportionately shortened. On the contrary, if 2% benzene or unleaded gasoline is added, the running time is lengthened by approximately 5%.

The Stilomag's first flight went very well. The lead-out adjustment was in the center of its range, and ½-oz. of outboard wing tip weight had been added. The model's control and response was quite good as it went through its paces. I usually fly with .015-in. braided lines, 65-ft. long, but my future flights will be on .018-in., which I feel will slightly improve control response.