HI-FLI

By **PHILIP O. KRAFT**

Tired of fast, hot aircraft that make like post-hole diggers? This he-man's .15 job puts out, but requires minimum of adjustments. S'fact.

On this VTO take-off for benefit of the photographer, Phil forgot to light the fuse and a 46-minute chase resulted. Power: a Webra Mach 1. Wind should always be at your back when making VTO take-offs like this.

Even under extreme power, Kraft claims ship is safe, forgiving errors.

► After a 12-year lay-off, the author started model building again a few years ago and soon found that there was much to learn and unlearn in developing a successful contest free flight. First experiments were aimed at high efficiency with aspect ratios of from 10 or 12:1 and glider-type airfoils. Universally, these designs had beautiful glides but proved completely unsuited to today's contest conditions. It soon became evident that there is no substitute for consistently putting a gas model 'way up. The greater the altitude achieved, the greater chance the model has to drift into thermal activity; and even without thermals, the average time will be consistently good.

The well-known prerequisites for a fast climb are as high a power-to-weight ratio as possible, clean design and the ability of the model to convert the engine's power into a consistently smooth flight pattern. Of the three, the latter is probably the most important.

The difficulty with hot, fast aircraft is that most of them end up making like post hole diggers. Only with careful adjustment by an expert are most of today's contest designs capable of handling large amounts of power. Cross-thrust and rudder, thrust into wing wash and other counteracting force adjustments are usually brought into

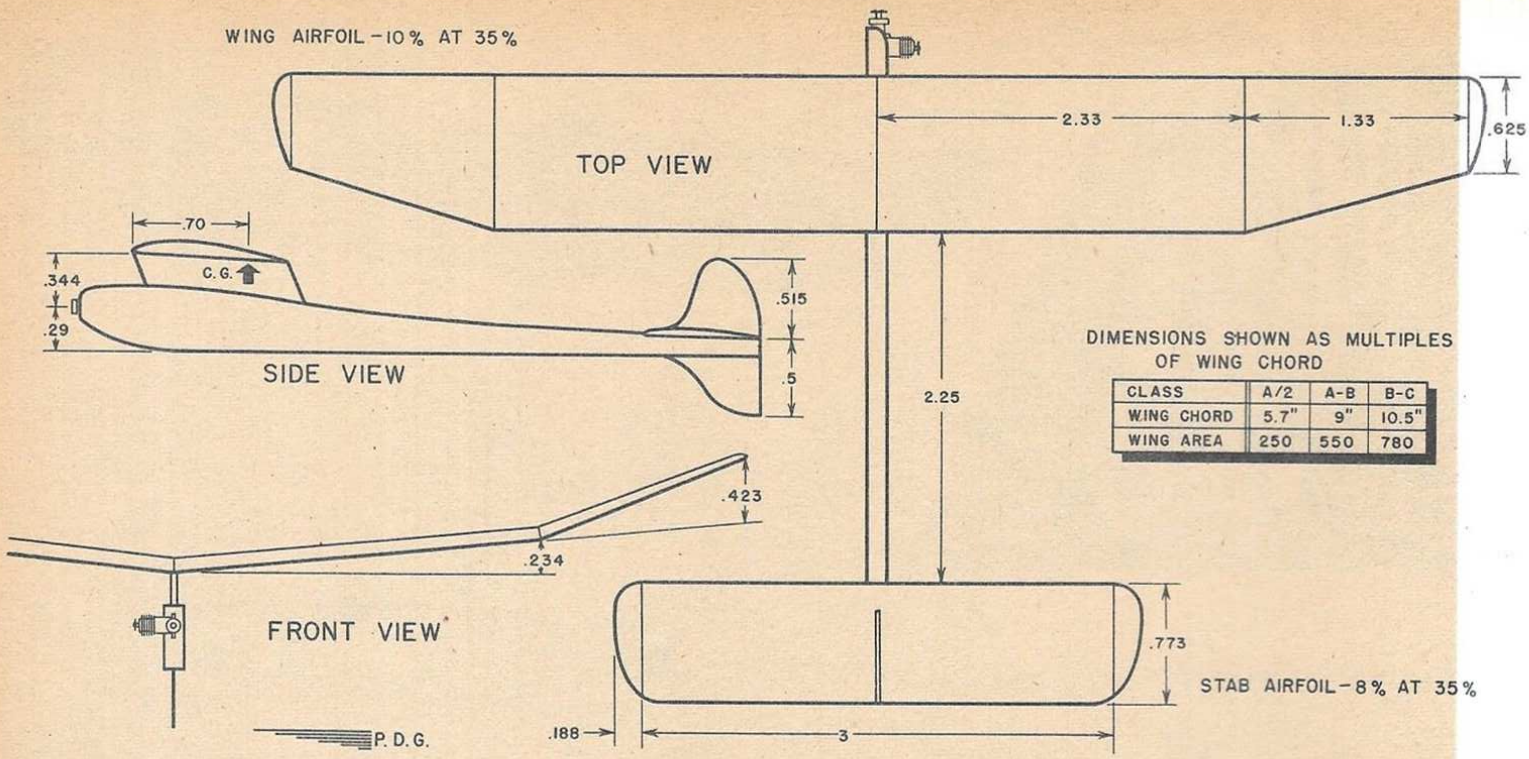
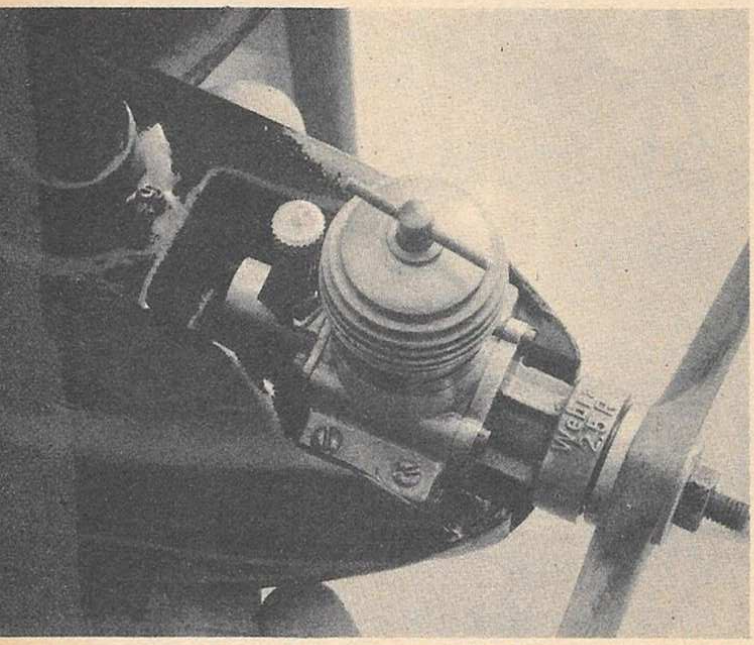
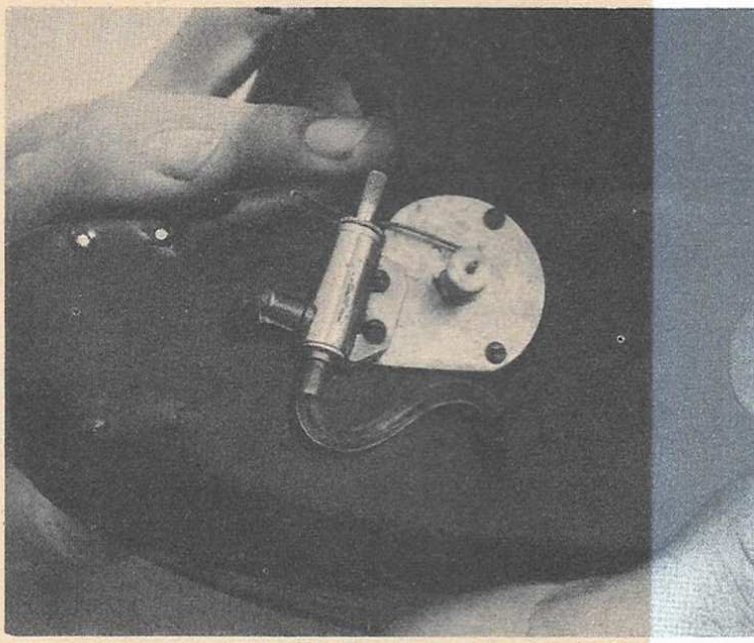


Chart enables you to make drawings for other classes. Adjustments built in; do not, repeat, do not, use offset thrust, warps. That's what man sez.



Side-mounted Webra Diesel, streamlining of timer case. In 12 big California contests Hi-Flis took nine firsts, several seconds, thirds.



Modified Austin timer and DE fuel shut-off fit compactly, give short fuel draw. The climb-out is almost straight-up, right-hand corkscrew.

And if you like them big . . . author builds Hi-Flis in five sizes, from 184 sq. in. to 780 sq. in. of wing area. Jap tissue, light and rigid.

the picture. The trouble with adjusting flight pattern in a model is that the effects of the various forces employed vary widely with speed. Any mishandling which upsets the delicate balance of such a model, with resulting increase in flight speed, often ends in disaster.

Aside from achieving happy performance, the primary aim in developing Hi-Fli was to produce a model in which slight trim would be the only necessary adjustment. After a great deal of experimentation, this FAI-sized design incorporated the solution to that problem. The first model of this design flew in April of 1954 and since then five different sizes ranging from 184 sq. in. to 780 sq. in. wing area have all flown with identical characteristics: i.e., an extremely fast climb in a loose—almost straight-up—right corkscrew with perfect transition to a good glide. No radical adjustments have been necessary on any Hi-Fli.

Also above average has been contest success. In 12 major Southern California contests, Hi-Fli has won nine firsts and several seconds and thirds.

The model presented here

is a lighter, cleaner VTO version of the earlier FAI design and achieved high time in both the regional FAI eliminations and Southern California finals. Construction is simple and strong. Wing and tail should be completed first. Be careful to select the grades of wood indicated on the plans. The original was covered with lightweight silk, but Japanese tissue is recommended for its lighter weight and greater rigidity.

In constructing the fuselage, build the nose section first as shown in Figs. 1, 2 and 3. Motor bearer spacing will, of course, depend on the engine used. Trace the fuselage sides directly from the plans, marking the position of all bulkheads, etc., on the balsa. Pin and cement the longerons to the sides and add sheet filler at the rear. The pylon is constructed over the plan and, when dry, trimmed to a streamlined section and planked with 1/32 in. sheet balsa. Add wire hooks and wing platform at this time.

With the exception of the top and bottom planking, the fuselage is completely assembled flat on the workbench. Drill a hole in the work surface to clear tank outlet and pin left side of fuselage down flat near the edge of surface to allow the wing rest to project over edge. Prop up rear end as necessary and bevel as shown on top view of rear section. Cement the nose section in place, add all bulkheads and cement and pin—or weight—right side of fuselage directly over left. Cement completed pylon assembly in place, measuring to ascertain correct angle of attack. Add sub fin and plywood skid to completed assembly. Allow fuselage to dry overnight on workbench; remove and plank top and bottom cross-grain. Round off nose section as shown in pictures and sand corners of fuselage to a radius of approximately ⅛ in.

The Austin Timer and DE shut-off form a very reliable engine shut-off system. Drill out the rivets holding the fiber-covered plate on the large Austin Timer and, using the old cover as a template, make a new one from 1/32 in. aluminum, allowing a projection to hold the bolts for the DE shut-off. Tin stock drilled 3/16 in. to slip over side outlet on DE is bent around it to form a mounting strap. The assembly is clearly shown in picture. Cement complete unit into the fuselage and be sure the nuts holding cover plate screws are secure. When cement has dried,