Quikie MK4

THIS CLASS B PATTERN DESIGN IS A FINE SPORT FLYER FOR WEEKEND . . FAST BUILDING, GENTLE IN FLIGHT, DURABLE, USES A 60.

by DON SOBBE

Three years ago I got tired of fixing something every time I came home from the flying field and decided to do something about it. Not having much time to build or repair, the Quikie was designed around my requirements for a fast, maneuverable, rugged sport ship that could take the kind of punishment the average flier dishes out. It was a success—then the contest bug bit. Wanting to retain the prototype's durability, a series of modifications were made to improve performance and handling, resulting in the MK 4.

With a 51 or 56 in the nose, the Quikie has very pleasant handling characteristics. Put a healthy 60 up front and this ship will hold its own in any B Pattern and most C Novice contests. Six trophies in two seasons bear this out.

There are three structural features in the fuselage which need clarification. They are: (1) Triangular Stock—No, it's not crashproof. That bracing provides contact area for gluing. The net result is that after three years of summer and winter flying, the prototype shows no signs of hairline cracks due to vibration commonly seen around fuselage joints. (2) Stabilizer Key—Have you ever had cracks develop at the stab leading edge-fuselage intersection? The stab key eliminates this possibility on the Quikie. (3) Nose Gear—If properly installed, the steering linkage shown on the plan will disengage from the steering arm if the nose-wheel cocks over on a rough landing. This feature saves the linkage, bottom block and possibly a servo. The surgical tube nose gear bearing used in the Tatone mount eliminates quite a bit of nose gear vibration; however, the gear will not swing freely in this bearing. If it's too snug, stretch the tubing on the nose gear and re-install. Don't be leery of it—I've used this type installation for two years and never overloaded a servo. You can't appreciate the durability of this gear until you've dirtied the spinner on a rough landing.

The above-mentioned items won't buy you a thing in a terminal velocity stop on a flat rock, but they will considerably extend the airframe life under normal flying conditions, and reduce maintenance.

Construction

No radio, Tatone mount, engine or linkage (other than steering) are shown

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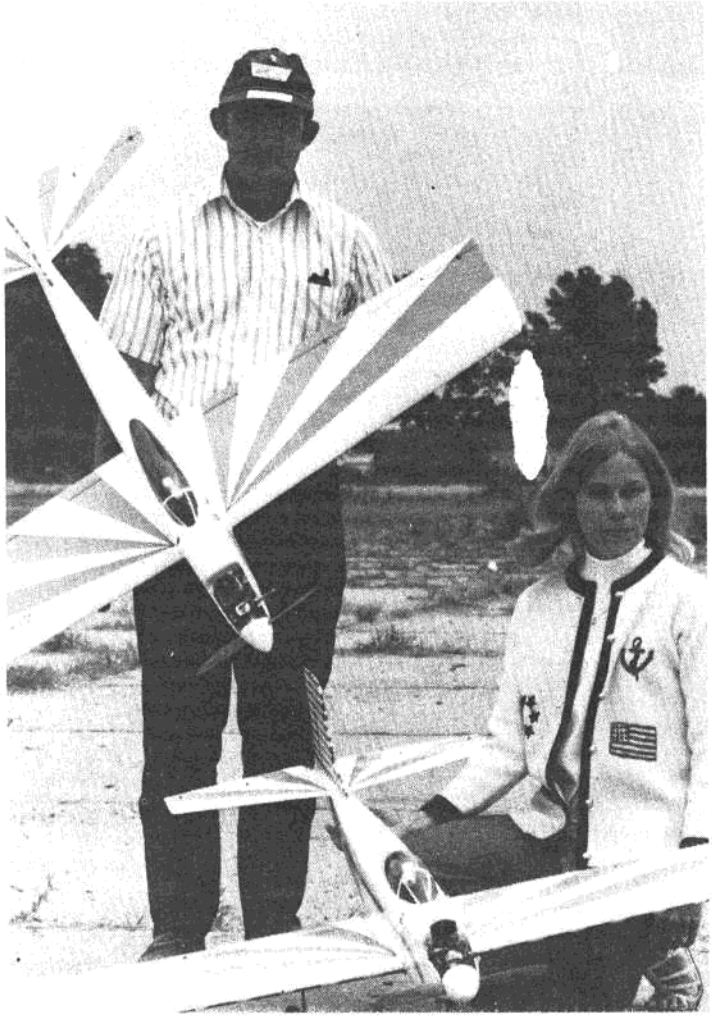

Scene at 1971 Nats Glenview where Don and his wife have two identical models ready for Pattern Class B competition.

Quikie

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because of variety and builders' preference. A Pylon brand RST 12 nylon tank, or a tank similar in cross section, must be used. This is because the tank hole in F-2 provides access to the battery compartment and use of a smaller tank hole would make a Chinese puzzle out of battery installation. Four cell Pro-Line, EK type flat battery packs will fit in easily with a ¼" to ½" of foam rubber wrapped around them. What I have done is traded an access hatch for more strength. It's worth it. It will be necessary to bevel the sides of a 60-sized Tatone mount at a slight angle to give 1/16" clearance from the cowl sides. An alternate method would be to widen F-1 to give the desired clearance. If you like, conventional bar mounts may be used, but keep the nose gear on the front side of F-1.

They say that if you've built one foam wing you've built them all. The only difference here is the deletion of dihedral braces. The gear block shown on the plan is the one I use; however, a commercial one may be used. After joining the wing halves with epoxy, shim one panel 3/4" at the tip. Glass the center section and line the servo cutout with 1/16" balsa. Do not install the wood dowel or fairing block at this time. Important: be sure the main gear is located in the position shown on the plan.

For the empennage we have used a Taurus type stab. Use Titebond throughout; cut the key way after completion. Do not cover at this time. Cut the rudder from ¼" hard balsa and do not omit the dorsal fin.

All the fuselage balsa is lightweight medium grade. Assemble the fuselage in the following sequence. Mount the Tatone engine bearer (be sure it is the type that will take a Du Bro or BK nose gear) on F-1 using 6-32 socket head bolts and blind nuts, making sure it is square and the tops of the engine bearers are at the horizontal reference line on F-1. Stand F-1 upside down on a flat surface and slide the fuel tank (also inverted) against the back side of F-1. Mark the fuel and vent line positions and drill through F-1 and the engine bearer from the back side. Slip a Top Flite bearing block on the nose gear and about one in. of medium size surgical tubing. Lubricate if necessary and slide this unit into the engine mount. The thickness of F-1A can now be determined. Epoxy F-1A in position and, using the bearing block as a guide, drill right through F-1. Mount the bearing block with 4-40 screws and blind nuts. Cut all bolts flush with the back of F-1 so they can't puncture the tank or battery pack. Now remove the nose gear and engine mount.

I've seen many modelers lavish a great deal of time and effort building straight wings, only to nullify this effort by mating the wing to a crooked fuselage. If this sounds familiar, try building the fuselage the following way.

The top edge of the fuselage sides is a straight line parallel to the centerline. It may be used as the reference line for all incidence and thrust. If so, its straightness must be maintained throughout fuselage construction.

After cutting the forward doublers, mark the bulkhead locations being certain F-1 is 90 degrees to the reference line. Lay the fuselage sides on a flat surface and contact cement the doublers, filler strips and longitudinal triangular braces in place. Be careful not to get contact cement on any surface that will mate with the top block (epoxy over contact cement equals a bad joint). Cut the top braces to receive F-2 and F-3, five minute epoxy at a 90 degree angle to one side. When cured, add the other side. Install F-1 with Hobbypoxy Formula 2. If construction has been accurate to this point, F-1 will align itself when pushed against the braces. Epoxy in the cowl and bottom blocks, and chop off everything that doesn't look like the Quikie.

As there is no nose ring, the engine and Tatone mount can easily and best be installed as a unit. Make sure the inside of the cowl is shaped so an allen wrench can reach the bottom 6/32 bolts from the front. Mark the *exact* center of F-1 and F-3. Invert the fuselage on the overhead plan view with bulkhead center marks on the centerline. Tapering the braces as necessary, join the tail with epoxy on the centerline. Glue in F-4, grain crosswise. At this point, check for twisting and square the aft end up before the epoxy cures. Epoxy in all remaining vertical and crosswise triangular bracing.

Now is the time to install all linkage. If you are going to use the steering linkage described above, the end of the Nyrod tube should be located one in. directly behind and in line with the hole in the steering arm that will receive the linkage. Experience has shown that heavy side loads are applied to the end of the Nyrod should the steering arm swing in toward the fuselage centerline. It is necessary to dig out a rough depression 1/8" around and under the Nyrod end in the bottom block, filling this area with epoxy and building it up over the Nyrod, forming a fillet. This "footing" helps prevent the Nyrod from being torn out of the block. Both rubber band and bolt wing hold-down methods are shown on the plan. If you are using rubber bands, delete the additional 1/16" doublers at F-3 and the 5/16" dowl. For bolt-on wings, align the wing in the saddle, locate the dowel position through the hole in F-2 and install ¼"-20 wing hold-downs (Tatone are shown). The fillets are compatible with either bolts or rubber bands. Many fine articles have been written on fillet construction. Use any method you prefer. Performance won't suffer without the fillets; however, they do add quite a bit of strength to the fuselage sides and are recommended for the bolt-on wing.

After the wing is mounted, the fairing block is epoxied in place and shaped. Align the stabilizer and mount with epoxy. Do not remove any more triangular bracing in the stab saddle than is necessary. Next, glue in the bottom sheeting (grain crosswise) using Titebond. Brush a thin coat of epoxy in the battery-tank compartment, both sides of F-1, inside of the cowl, and the side of the top block that will be in the tank area. Immediately epoxy the top block in place. Carve and sand the fuselage to finished shape. Epoxy in the stab key, rudder and dorsal fin. Using Epoxolite or epoxy mixed with corn starch to the consistency of taffy, form a fillet on the inside of the cowl at the sides of F-1, and along the root of the rudder and stabilizer. Do not omit this last step. Finish and decorate the aircraft as desired.

In trimming the model there are two adjustments that may give you trouble. If your model tends to nose over easily while taxiing, you have too much weight on the nose-wheel. Bend the main gear forward until the ship almost drops on its tail with an empty tank. The airfoil used is a free-lance design and differential ailerons must be used if good roll performance is to be achieved. About six degrees more up than down. Keep the total aileron travel down to about 20 degrees—this is more than adequate.

The CG indicated on the plan gives best all-round performance, but may be moved back ¼" for better response to inside and outside snap rolls, Iomcovaks, and inverted reverse spins.

Elevator travel should be 30 degrees up and 30 degrees down. Rudder throw should be all you can get short of hitting the elevator.