

The Featherlight

By A. Pete Ianuzzi



TOOLS

- Drill press and band saw for making the wooden fittings (or a hand drill and hand saw).
- File and sandpaper to smooth fittings.
- Jeweler's saw frame with a very fine jeweler's metal-cutting saw blade for cutting the fiberglass tubes. (One could use a hacksaw, but it tends to shatter fiberglass.)
- Carpenter's square for layout.

MATERIALS

- 123 inches $\frac{1}{2}$ -ounce ripstop nylon in two pieces, each 61 inches long. (Before cutting fabric in half, cut the keel out.)
- Twill tape: 12 inches of $\frac{1}{4}$ -inch for cover loops, and 5 inches of $\frac{1}{2}$ -inch for keel reinforcement at the tow point.
- Wooden dowels: 4 pieces of $\frac{3}{16}$ -inch diameter, each 1 $\frac{1}{2}$ -inch long, for the tips of the spars.
- One wooden dowel, $\frac{1}{4}$ -inch diameter, about 8 inches long, for the top of the spine (wood takes abuse and is replaceable).
- Four 6-foot fiberglass fishing rod blanks for the spars and spine, cut to 39 or 40 inches long (the butt end shortened), tapered from 0.2-inch to 0.4-inch. (Spin Cast, light, from Netcraft is what Pete used; other fishing suppliers should have similar wares).
- Wood for fittings, two blocks, each about 3 by 4 inches and 1 inch thick, preferably of black gum (*nyssa sylvatica*) or sweet gum (*liquidambar styraciflua*)—a wood that is strong in all directions but not too heavy. (Pete has tried casting the main fitting from epoxy but it was heavy and easily shattered. Other materials might be used, such as nylon.)

CONSTRUCTION STEPS

Cover

1. Cut and hem the right and left sides of the cover and the keel. Keep the fabric weave in a fore-and-aft orientation. Allow $\frac{1}{2}$ -inch hems all around outside the dimensions given. Pete uses double stitch-

ing for all the seams on the kite.

2. Attach $\frac{1}{4}$ -inch twill tape spar loops at four corners. (See detail A.)

3. Sew 1-inch (2-inch when flat) bias tape 26 inches long, using one row of stitches, to the back of the cover, to make a tubular casing on a curve on each side of the kite. The curve keeps the main cover tight (the top triangle is relatively loose). To be neatest, stitch little hems on the ends of the bias tape.

4. Sew $\frac{1}{2}$ -inch twill tape to the towing point on the keel in a manner similar to step 2. (See detail B.)

5. Attach keel to center seam of cover.

Fittings and Spars

1. Make fittings before cutting spars to length. The fittings are made of wood using a drill and saw, followed by hand filing and sanding. (See drawings for shaping, angles and dimensions.)

2. Assemble spars to the fittings and then cut spars to length so that the cover is tight when the tip fittings are in place on the spar ends. (No adjustments in tension can be made at the spar tips with this design, but humidity has been found to have only a very minor effect on the kite's flight performance.)

3. Cut spars and spine as suggested or by any other technique that will not splinter the fiberglass. The spine is two pieces of pole left over from the tail spars and fitted internally with a dowel, sanded to taper snugly, glued into one of the pole pieces and slip-fit into the other.

4. Make wooden spar tips. (See detail.) The notches in the ends of the tips are cut with a saw and the sharp edges are smoothed with an emery board. Attach the tips to the spars using epoxy. Roughen the tips of the fiberglass so the epoxy will hold.

VARIATIONS

The Featherlight could be made larger and lighter, or smaller and heavier, but Pete is happy with the balance of elements attained by this size.

The shape of the kite could be easily modified on the sides, where curves could be substituted for the straight angles in

This kite was made on September 30, 1980, partly as a new creation and partly as an evolution from two of Pete's previous kites. Those in turn were based on the original Günther Flügspiel Schmetterling (butterfly) kite.

Pete has called this kite **Yellow Bird** up until now, but in deference to people who want to use other colors, we have chosen a new name for it for these plans.

In designing this kite, Pete was aiming for a high performance craft, one that would fly in low winds. In that respect the Featherlight is a success because it soars in those feeble breezes that so often prevail in and around Pete's hometown of Catonsville, Maryland.

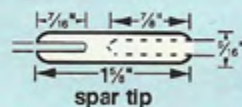
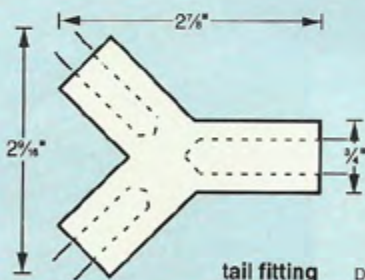
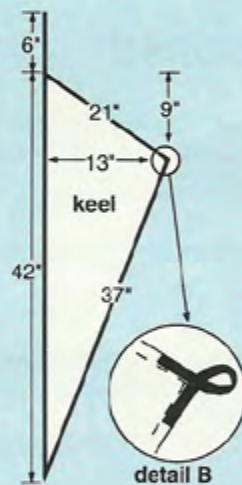
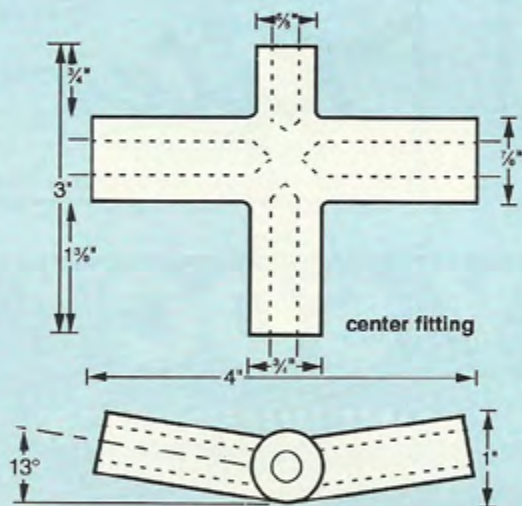
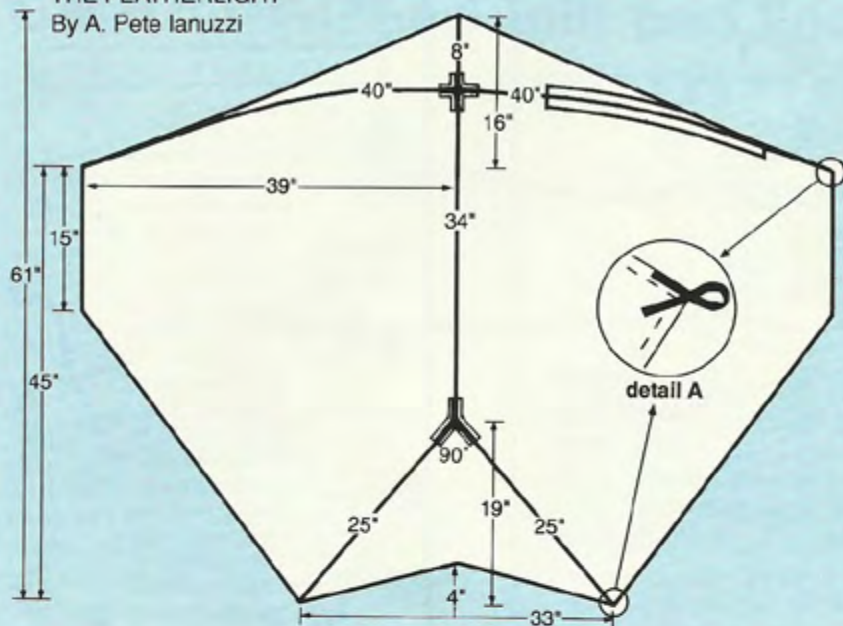
The kite will go up on less than 4mph and it weighs only 0.4 ounce per square foot of sail area. It was a winner at the 1988 Smithsonian Kite Festival and has flown in many other places since then.

When the *Kite Lines* staff goes out to test-fly a kite, Pete generally comes along with his Featherlight. If it's a low wind day, he'll put the kite up. If it doesn't fly, we can be almost sure that it's no use trying any of the other kites.

This kite is the product of logical thinking in answer to the question: What is the easiest and least wasteful way I can make the kite I want? "Easy" for Pete might not be easy for others, particularly people without the wood carving skills Pete brings to the fittings. However, other methods and materials might be used by inventive kitemakers. —V.G.

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Drawings by Lisa Craig from originals by A. Pete Ianzuzzi

the plan. Curves might be aesthetically pleasing and reduce the slight fluttering of the flaps in flight. The flutter is almost the only motion this kite makes in the sky, because it is such a stable kite. The desirability of this flutter is, of course, in the eye of the beholder. But Pete has a theory that the flutters absorb Von Karman vortex effects.

Pete has left the kite undecorated, as usual (he concentrates on performance),

but another maker might find the plan a very attractive space for surface design.

FLYING

This kite will fly in winds as low as 2 mph and will tolerate winds up to 8 mph. Over 8, however, the pockets get deep and the chance of breakage increases. This is, after all, a light wind kite.

Last tip: The Featherlight is a great kite for carrying light sticks at night. ◇