

A WHOLE PROPELLER AT ONCE - WE CLONE A PECK

An Article by By Carl Bakay, Editor, in the May2007 Issue of The South Louisiana Indoor Modeling Journal

Last issue we featured a jig by David Dodge of the Glastonbury Aero-Modellers to make a lot of quickie blades for simple rubber-powered helicopters and small rubber jobs like the Phantom Flash.

It would be hard to find an item which has been in wider use over the years than the Peck Polymers gray plastic propeller. It is supplied over a huge range of sizes, and is still widely available. I have a few dozen stashed away myself. There are better choices for specific applications. The 6" black Tern and 5 7/8" red IGRA are very efficient in that size. And the Czech yellow 9" is perfect for P-30 out of doors. But for FAC and AMA indoor and outdoor scale and sport flying in general, the gray Peck propeller is a good and popular choice. However, plastic is heavy for indoor flying, and shaving blades is a chore. We wondered - Could you clone a Peck plastic job in balsa wood?

Using the David Dodge idea would be a logical choice, but since pitch distribution is important for efficient flight, we improved upon it. We drilled a hole in the center of a 3" x 9" piece of plywood for the shaft. We then cut an 8" Peck plastic propeller at the 2" and 3.5" distances from the hub, and traced the camber at those stations onto 1/4" hard balsa. This is shown in Figure 3. They were then cut out and glued in place under an actual plastic propeller, and wooden uprights installed at the hub location, one wood thickness back from the prop shaft. This shown in Figure 4. Now the jig fixes our pitch in three places instead of just two.

Playing with different woods, something like 1/20" (or 0.050") B-grain 8 to 9 ppcf balsa from Lonestar Balsa or Solarbo gave in to our torture the best. Start by making a cardboard template by drawing around an actual propeller, or use the template on the previous page, and cut out two prop blanks. Soak them in hot water for an hour, blot to an even dampness, and coat with thinned Titebond or Elmer's Carpenter's Glue. I wouldn't try using contact cement, Duco, or CA, because you need an adhesive that's squishy for a while to allow the blade sheets to slide a little when you apply the twist. Otherwise they will buckle if the adhesive sets up too soon. With the 3/64" prop shaft inserted into the block, poke it between the two sheets in the hub area. Work the two sides down gradually over the form, putting in the extra twist near the hub area with your fingers. Wrap in several places with rubber bands, Scotch tape, or masking tape. Secure the shaft area tightly above and below the hub with rubber bands. Put in a warm place to dry overnight.

The result we achieved was a nicely formed balsa replica of a Peck 8-inch plastic prop. There was no splitting of the wood, and good bonding of the two sheets. Sanding and 2 coats of clear nitrate dope gave a 2.2 gram propeller (as compared to 5.3 grams for the plastic variant) with a dead true shaft hole as a bonus. If you can do without the nose weight of a Peck propeller, one of these on your next indoor scale job will provide performance plus significant weight savings.

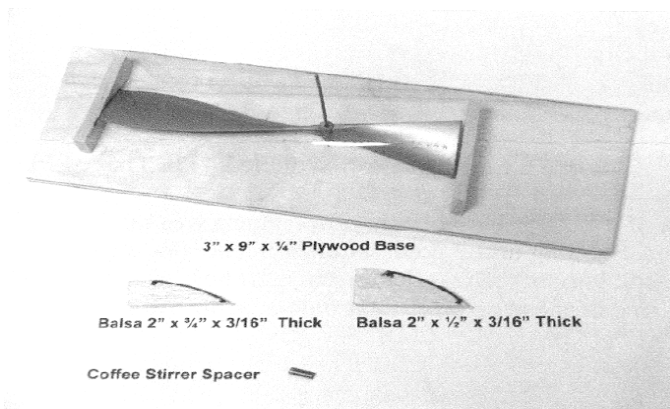


Figure 3 Trace Camber at 2" and 3.5" from Hub,
Using the Prop You Want to Clone

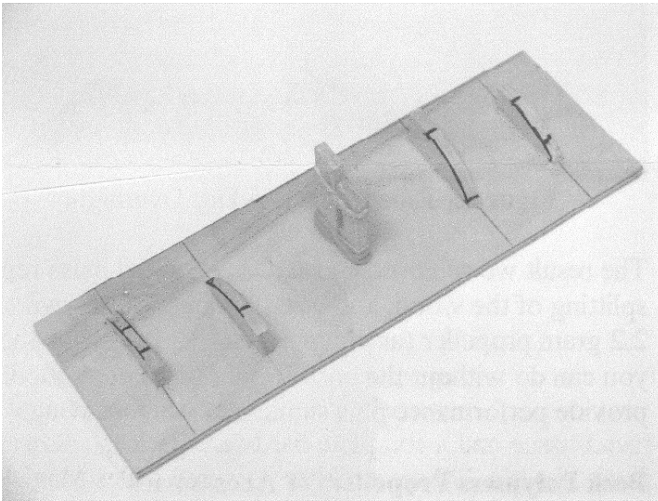


Figure 4 Cut out and Glue in Place, Using an Uncut Prop as a Guide. Add a Center Backplate 1/20" Back from the Shaft



Figure 5 Taped Down to Dry Overnight

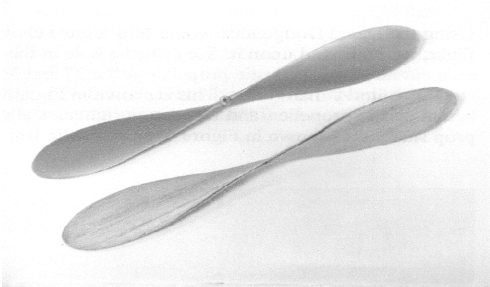
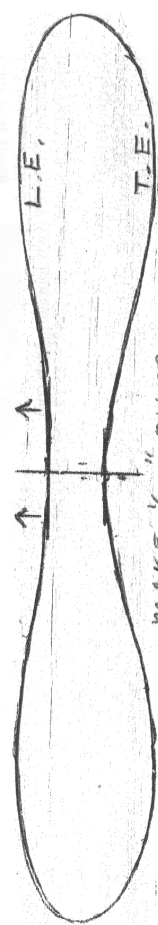


Figure 6 Finished Prop Weighed 41% That of Plastic



Template is Drawn Full Size