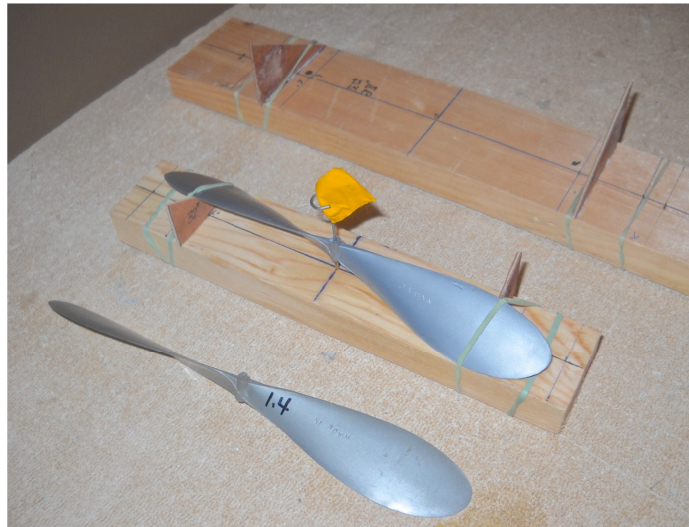


REPITCHING PECK PROPS

By Tom Arnold

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I love Peck props---you stick them on a prop shaft, wind it up and let 'er go. What could be simpler? They paint well, you can trim to the shape you want, you can mount freewheelers on them, and if they break, they are cheap enough to replace with no tears. Their only sin is they come in only set pitches and all of them pretty low. In fact the Pitch-Diameter ratio on some are closer to gas models than rubber, but a low pitch prop works more times in getting an overweight model in the air than a high pitch one does and as a result they have been made, sold, and used by the jillions. So how about changing the pitch to something more efficient? Like from a .95 PD for a 9.5" prop to 1.3PD? It is easy to do. All you have to do is twist the blade, holding close to the hub, until you see the white stress marks form on the surface of the plastic. Work the blade back and forth at that point and pretty soon the blade keeps the new pitch. The only problem is, you don't know the exact amount and good luck in eyeballing the other blade to the same twist. The other bummer is that you have weakened the blade at the stress point and don't be surprised if it breaks there on a hard landing.



After a bit of experimenting, I came up with fairly reproducible way to repitch the little buggers but it does take building a simple jig for the blade size and pitch that you want. In Wm. McCombs book "Making Scale Models Fly" (a publication every man should have on his bookshelf) on page 6.9 there is a chart that correlates PD to the angle of the blade at a point 70% out from the shaft. (See table below) A couple of precise ply angles are cut and are glued in place on the jig pictured with the blade being held in place snug against the ply angles with a couple of rubber bands.

The next part is so simple I am sure it has been tried before, but it sure works. Borrow your wife's hairdryer, put it on high and squirt hot air for about 30 SECONDS--- WATCH OUT AS THINGS MAY QUICKLY MELT WITH A LONGER TIME---around the center and out on the "throat" of the blades a bit. Keep the air on the inner 1/3rd of the blade. Move the air quickly and evenly all around, tops and bottoms. Undo the rubber bands holding the prop in place and check the blades to see if they now lay evenly against the little jig triangles. If you see any gap and sometimes one blade is good but the other off a bit, strap the prop back down in the jig and repeat the heat process only now increase the time by 5 seconds. If that doesn't do the job, repeat and increase the time another 5 seconds. Don't be tempted to let the hair dryer linger on a stubborn prop for obvious reasons (how do I know this?). Keep upping the time by precise 5 second increments until the blade conforms to the jig. Needless to say, you need a digital timer close at hand that you keep a very alert eyeball on. Keep the distance of the hair dryer and pace of moving it around constant. If you hold the hair dryer on one spot just a bit too long, you will have a cooked prop, guaranteed. Be patient and don't try to hurry things.

Be sure and mark your blade with the new PD ratio. The nice thing about this is that the pitch is exact, the blades are not weakened and both blades should be identical. I also was never aware at how hot a hair dryer can get. The heat from a cheap unit went off the scale at 220 degrees which is as scaldable as boiling water. I cannot believe my wife points this thing at her head every morning.

Table 6-6 Blade Angle at $R/R_o = .70$
For Setting Prop Blade

Desired P/D	H/W @ $R/R_o = .70$ (Table 6-1)	Blade Angle @ $R/R_o = .70$
.8	.36	19.8
.9	.41	22.3
1.0	.45	24.2
1.1	.50	26.6
1.2	.55	28.8
1.3	.59	30.6
1.4	.64	32.5
1.5	.68	34.2
1.6	.73	36.1
1.7	.77	37.6
1.8	.82	39.3
1.9	.86	40.7
2.0	.91	42.3
2.1	.95	43.5
2.2	1.00	45.0
2.3	1.05	46.4
2.4	1.09	47.5