

WHAM

NEWS, VIEWS and REVIEWS

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Trimming Power Models - George Avila

Some consider the trimming of power models to be a "Black Art." A well trimmed model is the result of many factors that influence the bird in flight. To achieve the goal of a good flying bird, decisions and compromises are made thru out the process, from model selection to the end result. Following are some of the decisions/compromises I make to that end.

The process begins with model selection, be it kit, scratch built or plans built. One of the first decisions is wood selection. You maybe helped here by the designer re wood grain and sizes to be used, and his comments for construction. Replace kit wood if it is unsuitable, such as to weight or quality. Too heavy, light, or warped, all will have an influence on the end result.

The next factor that enters the equation, is the building surface. Is it large enough, true, both laterally and longitudinally? Building on other than a flat surface usually results in "built in warps." Some designers "build in" warps during construction often to achieve "wash in" in such as the right wing. My choice is to build the surfaces flat and use such as TE stock on the lower right wing trailing edge for "wash in" after the surface is completed and covered. It provides an easy way to make trim changes at the field, either by adding or removing material. Bowed or warped wood, especially in major surfaces, e.g. wings or stabs, may result in warps due to built in stress.

Once the bird is completed and covered, check for any warps incurred, particularly with the covering of the wing and stab. If found, remove! Next, assemble the bird checking for alignment and the CG. Is the wing "square" on the pylon? Is the rudder aligned with the CL of the fuselage? Is the pylon aligned with the fuselage CL and rudder? Is the stab square with the fuselage?

Most conventional pylon models will have 1.5-2 degrees of left thrust, and 2-3 degrees of down thrust. Similarly, most have 1.5-2 degrees of positive incidence, between the wing and stab, with the stab normally at "zero." The CG will usually be around 70 percent, follow the designers recommendations. Add

weight, as necessary, to achieve the desired location. Ideally, little if any will be necessary. NOS models, due to their larger stabs and shorter moments, have a CG farther aft, in the range of 75 to 85 percent, and increased amounts of down thrust. High thrust pylon models have different force arrangements. Here it is necessary to follow the designers recommendation and comments.

My preference for the first power flight is an engine run of 2-3 secs, insuring that the model is "safe" to continue. The launch attitude is usually 60-70 degrees nose up to begin. Here is where a timer with quick DT is most useful. The flight is most often terminated before contact with terra firma should a problem arise. Thrust adjustments should be made in small increments until a safe power pattern is established. Thrust adjustments are only effective in the first 50-100 feet after launch, after which aerodynamic forces control the flight path. When satisfied, the engine run can be slowly increased, noting any additional changes required.

Radical deviations from the desired flight path will become evident immediately following launch. Such deviations may include a left or right turn, and/or nose up or down. The model may also tend to flatten out and accelerate-"zeroing out." Thrust adjustments will normally correct the problem. This, assuming the initial alignment checks were correct. Once satisfied the bird is safe, time to slowly increase the engine run, noting the flight path. Again, proceed one small change at a time.

Once a safe power pattern is achieved, time to trim so that the desired climb pattern is achieved, normally a right climbing turn. Should the model enter a right banked turn during the power pattern, and tend to "level out," the probable cause is elevator incidence. Slowly lower the trailing edge of the stab, reducing stab positive incidence. If the correction is effective, subsequent flights will determine if additional minor changes are necessary. If no improvement is noted, it maybe necessary to increase right wing wash in, or a combination of both. If the bird continues in (Continued on page 3)

November 15, 2014 Meeting Minutes

ATTENDEES:

Mary Kay & George Avila, Phil Burress, Jeff Englert, Regina & Marty Kline, Linda & Chuck Powell, Marty & Jim O'Reilly, Marilyn & Bill Schmidt, Dan Walton

President Avila called the meeting to order, Minutes were approved as reported in the newsletter. Treasurer O'Reilly reported that the club assets remained positive. Noted that dues are due.

OLD BUSINESS:

A number of contest reports were received. Lots of fun, plan to attend this year!

NEW BUSINESS:

The current officers were convinced into serving another year, Yeah!

SHOW AND TELL:

Bill Schmidt exhibited a NOS rubber design; the Perky. A 1952 Air Trails design with an unnamed designer.

Phil Burress showed his Bostonian, the Observer a nice high wing cabin design.

Chuck Powell brought forth a Stan Buddenbohm design of an old time HLG by Horbasky incorporating the 'tumbling pigeon' dethermalizer system. In addition, he had an Easy Built kit design of the Chambermaid, which utilizes a Don DeLoach DT system.

Jim O'Reilly showed a Wilbur, a South African design for NOS rubber.

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a straight climb during engine run, a small increase in stab incidence maybe warranted. If this is not effective, a minor change in the amount of wash in should be tried. The end result is a compromise in the changes made in achieving the desired flight path. The use of rudder will induce a "yaw," and maybe a rolling tendency, called "dutch roll." Once the desired power pattern is "dialed in," minor changes in rudder trim may assist in entry to the glide. As with all trim adjustments, the effect is more pronounced under power.

Now that the power pattern is sorted out, its time to check the glide. Stab tilt is used to control the glide circle, and is relatively ineffective under power. A good starting point is to raise the tip of the stab about 10 degrees in the direction of the desired circle. Raising the stab does change the incidence angle. Rule of thumb, add about 1/2 the amount of change to increase/decrease stab incidence. Again proceed slowly, making small adjustments one at a time. The diameter of the glide circle is controlled by the amount of stab tilt which also effects the glide speed.

An increase in tilt will tend to lower the nose and speed the bird up. Conversely, a decrease will slow the bird and may result in stalled flight. Adjust the glide speed with minor adjustments to the CG.

Last to be considered is the dethermalizer action of the stab, DT. The DT angle of the stab controls the rate of descent rate of the bird. Usually a stab angle of 30-45 degrees is commonly used. For smaller and lighter birds, The larger DT angle is suggested. The reason being, in a "BOOMER," the upward lift of the thermal can exceed the weight (wing loading), not allowing the model to descend, but continue on in the grasp of the thermal. A smaller DT angle can be used to slow the rate of descent of a larger, and heavier, model, softening contact upon arrival on terra firma, thus minimizing the chance of damage on contact with a hard landing surface.

Success is achieved thru the choice of materials used, good building practices, and most importantly, patience during the alignment checks, and trim flights.

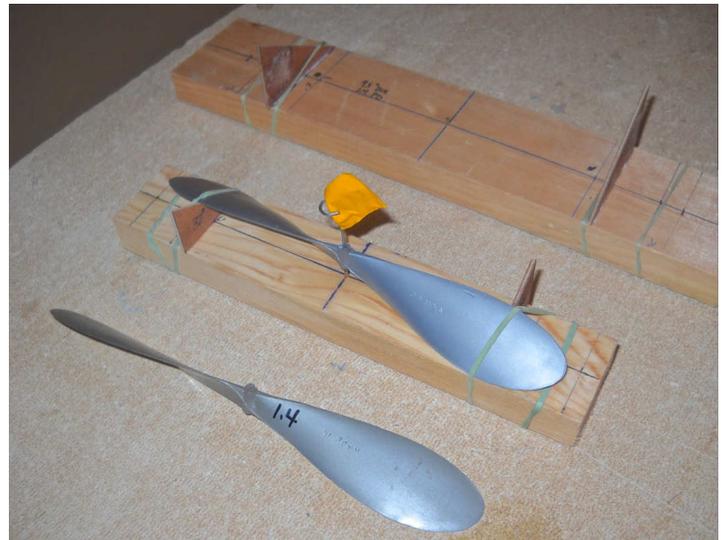
At the field, watch others, and if unsure, ask questions. Unasked questions do not provide answers to any problems in achieving a good flying aircraft.

REPITCHING PECK PROPS

By Tom Arnold

Published in the November 2014 Issue of Flying Aces Club News, Rich Weber, Editor

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 (continued on page 4)

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 will scald you as well as boiling water. I cannot believe my wife points this thing at her head every morning.

Bill's Prop Pitch Gauge

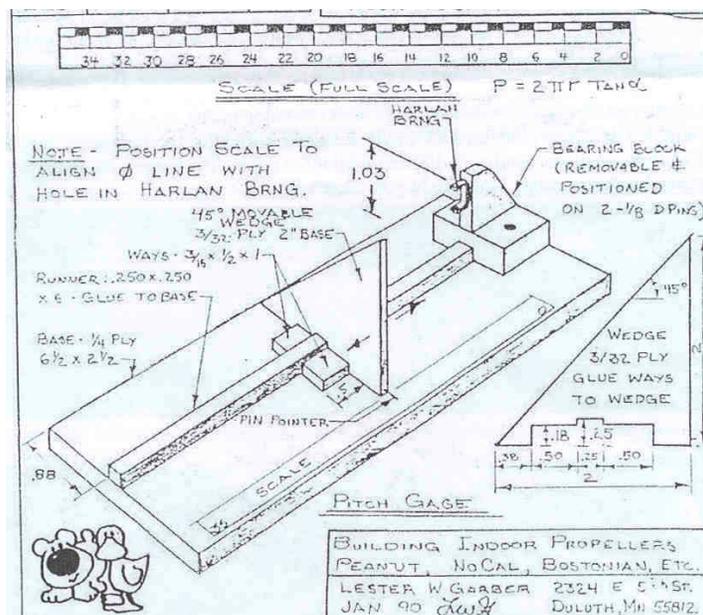


For those intimidated by Bill's, here's an alternative idea from my indoor files, Build something to suit the peck props and you should be good to go.

Jeff

Table 6-6 Blade Angle at R/R₀=.70 For Setting Prop Blade

Desired P/D	H/W @ R/R ₀ =.70 (Table 6-1)	Blade Angle @ R/R ₀ =.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



WHAM - News, Views and Reviews

Jeff Englert
10118 Sterling Court
Wichita, KS 67205



The next SAM 56 Dinner Meeting will be at:

Mediterranean Grill

335 S Towne East Mall Dr., Wichita, KS 67207

(316) 651-5599

Saturday, January 24, 2015

Social Hour @ 6:00 PM, Dinner @ 6:30 PM..

Upcoming events:

Probable Mtg Dates: Jan 24 Jul 18 Mar 14 Sep 12 May 16 Nov 14

Club Events: 1/2A Texaco, Jimmy Allen, C/HLG, or as arranged.....

Membership Information:

Open to all interested AMA members, founded to encourage and promote the model airplane building hobby.
Member dues \$20 annually, Subscription only; \$12 annually, \$18 foreign.

Send checks to Jim O'Reilly, 4760 Battin, Wichita, KS 67220.

All memberships and subscription renewals are due January 1st of the new year.

Club Officers:

President: George Avila, 683-1474
Treasurer: Jim O'Reilly, 744-0856

Vice-President: Bill Schmidt, 744-0378,
Secretary: Jeff Englert, 722-7491