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Hebert Triangulation Method

Now to correctly trim a model you need three tools,

#1 **An incidence meter** no matter what kind dig

#2 **honesty** without it you will deceive yourself into believing it's trimmed

#3 **patience** I know I just lost some of you but there is only one of these three you can do without ,, it's the inc. meter,, the other two will guide you if you stay at it till it's right.

Assuming everything else is perfectly straight and aligned correctly.... ☺

#1 Set your c/g according to the design spec on the drawings for your design as a starting point (measure & record)

#2 Set motor at 1/2 deg down. Wings at 1/2 pos to start, Stabs at 1/4 pos.
(Line up all your control surfaces and get them even, because we are going to let the airplane tell us what to do to fix it later)

#3 Fly the airplane & trim hands off for level flight then fly inverted to see if you like the inverted elevator and the airplane feels solid and easy to hold on a line . and take notes. (helper with pad of paper)

#4 Pull a vertical line & see what it does.

#5 Put it straight down & see how long it takes to pull out to the canopy

#6 Do a left rudder knife edge & see if its straight - no pull the entire length of the field.

#7 Do a right rudder knife edge, see if it's straight same as above.

#8 Now land and see where the elevator wound up (never mind the stabs right now, we will adjust them later)

Be sure to take notes of what the airplane did in all three of these maneuvers; you will see you can triangulate a common input fix.

Look at the elevator trim and see what it has in it, if we are lucky and your airplane is 10 pounds you are "all over it" and it just may take a little c/g to give a click or two one way or the other.

#1 If it pulls in the up and down lines you need more pos incidence (one turn at a time on the adjuster)

#2 -If it goes to the belly in left rudder move the c/g forward (your tail heavy) until it stops pulling to the belly regardless of the inc.

-If it goes to the canopy in both knives #1 will probably fix it but refer to the inverted flight part of you notes and see if you think the elevator was mushy, holdable but mushy and you might require tail weight and pos inc. to fix both problems canopy pull down lines and knife edge flight.

Because we are on the edge of trim perfection now in all wing loaded, and unloaded positions, now we can adjust c/g by using the earlier mentioned bullet points for fine tune feeling Remember most of the time one fix will fix 3 other things and bring it all together because they are all related, that's why a well trimmed airplane rolls with ease and 4 points with ease. (Because we are not fighting any adverse trim issues in any axis. or wing load).

Now do the adjustments and leave the trims on the airplane like they are make another flight your adjustments should Jive with the reverse of what you trimmed on the first flight and make your trims work ,, if you have to increase the trim you already have in there from the first flight LAND you went the wrong way with the adjustments and make your corrections again

(< on another side note > for my designs since I know where they should be set ,a quick method is to do the triangulation method this way, trim the airplane to fly the down lines, leave this trim in and land and then adjust the wings to get the trim out and all three Maneuvers are now happy),

The closer you get to the end, the finer the tuning will need to be, and it can try your patience! Don't get mad at me if you cannot fix your favorite airplane Just buy a better design ,,,Mine preferably <G>

We can't put the cart before the Horse here. We have to adjust the wing INC and C/G before anything else is moved.... see the effect and let the airplane tell us where to go from there by looking at the trims.

Once your wing and c/g is right the stab adjustment will solidify the airplane if you are carrying down elevator you need positive stab incidence. Adjusting the stabs to meet the elevator halves will take out some of the Mix required and make the airplane more solid in the wind.

Engine thrust and stab incidence have a small roll to play But it is the last adjustments carried out and only for fine tuning.

Common points –

Up elevator with left and right rudder you are still tail heavy and it's effecting you in all aspects of your flying.

Another legend.... is adjusting stabs for pulling problems in the up and down lines.

No modern pattern airplane needs more than .5 deg down thrust or right thrust

Thrust is not a major issue... wing inc. will always trump thrust,, in power and influence over vertical lines.

Thrust is a " very fine tune" issue it should not be used to adjust tracking issues

Having a small tuck to the belly on left rudder only is always a result in a little too much tail weight providing the stab halves and elevator halves are correct.

First things first.... get the wing inc right THEN,, the ac/g You would be surprised at how far off you can fly c/g and get away with it. Differential will fix problems on an up line pull, usually because your flying a tail heavy airplane.

Dropping on down line 45's – what's happening in your wandering 4/5's the tail weight as is ,,is making you add a little down elevator trim because the wing is flying a little more positive. You want to create the pos angle of attack with the wing only use the tail weight only to adjust the feel for rolls and inverted flight.