

Gordy's Travels #10

Nose Heavy Sailplanes are Easier to Fly???

I hear it continuously, heck it echos through RC soaring time, and its....true...sort of.

You get a new plane and the instructions suggest the "CG range" in so many inches usually measured from the leading edge. So you get out your 'balancing jig' put a mark under the wing and add lead till your model teeters approximately level. Fine, no problem with that because its handy to have a starting point, where things get screwy and illogical is when you have created some elaborate balancing thing that suspends the model from a string, and has a laser level so that you can get it balanced right dead on that mark.

Ta Da! Your sailplane is 'balanced'....for sitting on a bench....not for flying. Yes guys, RC sailplanes are actually supposed to fly! RC sailplanes are dynamic, not static, they have to be balanced in the air, you know while flying!

Gravity is always engaged, your elevators ONLY are empowered with airspeed.

Think that over....twice. If your sailplane's nose has more lead than the wing needs to stay level, then the elevator (stabilizer) has to do extra work to keep the wing's leading edge from being pulled toward the ground.

Gravity is always engaged.... So when your sailplane's airspeed slows down, how can your elevator (stab) keep the nose from being pulled down?

Airspeed empowers your elevators (stabilizer)....So if your sailplane has more lead in its nose than is needed, then your elevators have to have up incidence in order to hold the nose from being pulled down by gravity...so what happens when your sailplane's airspeed increases? Your sailplane's elevator gain power and the nose lead is over come and the sailplane's nose is driven upwards. Then when the airspeed slows, the elevator loses its power and gravity grabs the nose again.

THIS is where that goofy dive test came about. "You push your sailplane's nose over and watch to see if your model pulls out in a gentle recovery"....argh! At the point where the nose pulls out your airspeed is at about 100mph, not exactly representative of thermal flying. OF course if the model doesn't pull out then it must mean that the model is 'tail heavy'. When in fact both conditions don't indicate anything of value... unless you are checking to determine tail boom flex, or stab twist, or maybe pushrod flex from the huge loads (in comparison to thermal turning) experienced in the dive.

Balancing a sailplane has to be done in the airspeed conditions that most match the task and don't apply unusual load forces : Flat and level flying, at airspeeds

that best equal those seen during thermaling. That's where the inverted test shines. You simply flip your sailplane upside down and if you don't need any down elevator, it means that you weren't using up elevator to keep your sailplane level right side up. It means your elevator was being used to hold up excess nose lead.

So where the heck does this 'nose heavy planes are more stable than a 'neutrally' balanced sailplane come from? It came about because it is true....sort of.

Planes with too much nose weight have to fly with up elevator, that way when they slow, drop, speed up then they self recover....sure sounds good. They also go up 'better' in lift...because it is better to fall upwards in lift.

So what's the catch? The catch is that those models really fly great...at a very *specific*, single airspeed. And that means problems. During landings, when you are coming in through ground effect and your sailplane speeds up, up goes the nose. When you are coming in and going slow, instead of stretching that glide, the elevator runs out of power and the nose plops to the ground. In tight, tiny and low thermal turns when you are scratching to make time, your model is less than efficient, needing a lot more energy than one that is not flying with lead and a dirty elevator.

So nose heavy gives you one good thing and a whole bunch of lousy things.... doesn't sound so good to me.

IF you are considering moving up toward the top 5, then you'll have to get your partner tuned up to the task. That means balanced for battle versus just for a day of soaring.

You don't need a 'better' plane, you need to learn one plane, and learn to interpret what it tries to tell you in lift and sink, and to know what that one plane will do at speed and lack of speed. The only way that will happen will be to get the plane you own to start flying more consistently. The only way you'll get that is if you get the excess lead out of it's nose.

So get upside down and start mining for lead!

See you next trip where I will tell you how to get rid of wobble, but doing some wiggle...'Setting Aileron Differential'.

Gordysoar