

KEEP THE CG WELL FORWARD

By Tom Arnold

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Editor

This should be entitled "How to Reinvent The Basic Wheel" or "Trimming Revisited Again and Again and Again." The cause of my introspection has been a 34" span P-38 that I labored on mightily and have flown in a few contests. Finished in a photo-recon blue it was the pride of my stable for quite a while, however, it exacted its price from my heart. On numerous occasions I would launch it and it would reward me with a climbing turn and high altitude cruise that was truly magnificent. The sun shining through the tissue, the blue sky, the bright yellow spinners and yellow prop tips describing the prop arc — everything. You know the feeling. It was like a drug, and I wanted to do it again and again. Go higher and higher, longer and longer. But then, perversely, it would wing over and dive down, down, down like a blue skybolt to end in a little blossom of balsa and tissue against that hard ground. While a prop stoppage problem that usually initiated this maneuver was solved, that long straight dive remained a real puzzler.

Then one fine day I was out with one of my old beat-up ships that was long past its prime when all at once, THE DIVE started again! Was this accursed plunge some disease caught by my models? When I picked up the old war horse and was walking back to the car, I noticed the gob of clay that usually clung to the underside of the nose was gone. Then I remembered. It had fallen off earlier and I had lost it in the grass so I did some test glides, adjusted the elevator and got a nice flight path out of it. Some low powered flights and I fixed a nose down pitch by taking out some down thrust. After all this, I got some great flights and because the clay weight was gone, they were quite a bit longer. I remember at the time I thought "I should have done this sooner."

Then the awful realization began to flood over my brain. (Some of you are already ahead of the plot) What I had done was move the CG back (by losing the clay) and I retrimmed it, only now I had, instead of a bit of up elevator, an almost neutral setting. A full scale aircraft can fly just fine like this as a pilot can always give a little up elevator anytime he gets into a downhill coast.

Not so our models. What happened was a bit of turbulence dumped Old Trusty on its nose and down it went picking up speed but with no "up" elevator of any degree to pull the tail down with any authority. The result was a long straight dive into the brush. (Actually, there would have been a gradual pull up had the aircraft had a mile of air to the ground.) Instantly the P-38's death dives played in my head. That's what had happened — that's exactly what had happened. When I initially balanced it on the main wing spar, I was delighted that I did not need to add nose weight. In fact, a lot more weight had crept into my handiwork than I had planned for so perhaps "relieved" is a better word. With the CG fixed, my trimming came along just fine except in reality a slightly aft CG was waiting to bite and, boy, did it. I also remember saying to myself 'Gee, I really

lucked out. Even the elevator needs no adjustment." As a result the P-38 would go anywhere it was pointed: level, climb, and softly in a glide. But if any bumps put it on its nose, it was just as dedicated, right straight down.

What I should have done was listen to the alarm bells when I noticed no up elevator was required. A little bit of clay on the nose would have forced me to trim in a bit of "up" — a bit is all that would have been needed too. Walt Mooney told me many years ago that 99% of a modeler's ills can be cured by: washout the wing tips and move the CG forward. The man evidently knew what he was talking about.