

Basic Quick Fix Mixing Tips

None of us would consider flying an airplane that is not trimmed for level flight. Even though all surfaces are level, we still need to trim the plane to fly straight and level. Due to imperfections in building, airframe twist or incidence problems, nearly all will require trim. C.O.G. and design issues also cause problems that require adjustments. We all understand this need and make adjustments to keep the plane flying without input in level flight. So why do most pilots fly planes not trimmed on knife edge. It is just as easy to do; we just have to know how. There are 3 profound reasons to do this apart from the obvious: First, if you plan to roll the airplane and want those rolls axial, especially when going slowly, it will track straighter. Second, when applying the rudder for any maneuver, the plane will react as expected without unwanted results. Finally, any precision flying you do, or flat rudder turns will benefit by not requiring adjustments complicating the maneuver.

I need to say there is a much more complex and comprehensive way to properly trim an aircraft for competitive IMAC and F3A flying, or for the pilot looking for extreme precision and performance. The following is a simple way to get tremendous benefit with just a few minutes effort.

Here's how it's done:

Rudder ->Aileron mix

Begin with aileron coupling programming. Roll your plane to knife edge and while deflecting right rudder, note whether it is rolling through the knife edge or back out when you leave the right stick neutral. Do the same for the left rudder. At this point, just go to the program mixes and set the rudder as the master and aileron as the slave. If unfamiliar, you should refer to your radio manual. You will be setting the value to a positive or negative percentage to deflect the aileron in the direction needed to correct whenever the rudder is deflected. This will cause the aileron to counteract the natural tendencies of the airframe to roll in or out. A slight roll only requires maybe 2% to 5%, whereas a hard roll can go very high. Just start at 3% for slight and 10% for hard and adjust from there until the wings remain at the 90 degree point when you put it there.

Rudder -> Elevator Mix

Next, you should fly the plane again and turn on knife edge in both directions. Simply make note of whether the plane is pulling toward the canopy or toward the gear. I personally note that in the first flight so I can make the first rough mixes all at once. If the plane pulls toward the gear for instance, you should add an up elevator mix to that rudder direction, and vice versa when it pulls toward the canopy. At this point, just go to the program mixes and set the rudder as the master and elevator as the slave. You will be setting the value to a positive or negative percentage that will deflect the elevator in the proper direction whenever the

rudder is deflected. This will cause the elevator to counteract the natural tendencies of the airframe to pull in or out and fly straight. A slight tendency to pull one way or the other only requires maybe 2% to 5% percent, whereas a hard push or pull can go past 10% easily and even go very high. Just start at 3% for slight and 10% for harder pulling and adjust from there until the plane can fly straight with no elevator input.

This may take a few flights and a few tries, but is very much worth the effort. When you watch my videos and see how straight it is flying on the knife-edge passes, you will notice I am not making a ton of adjustments. The plane is just flying straight on its knife edge. The PA planes require very little mixing, but without it, you have to work harder than necessary. If you watch my Addiction X video you will see a hand launch on knife edge. My right hand isn't even on the transmitter! This is only possible because I trust the mix and know it will fly straight.

This Tip can potentially make even a difficult plane very easy to knife edge and fly better through the entire flight envelope! At one point, this simple programming had actually taken a giant 200cc python from a marginal aerobatic flyer ready to be sold, to an awesome 3d machine in less than 20 minutes. Please give this a try. You will be very glad you did!

— Michael Wargo