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## Flaps – Aileron Alignment

26 April 2001

### Flap Meets the Aileron

Many of you folks met Rob Fox at the 50th Anniversary in Wichita. If you got the chance to speak with Rob you know he is building a world-class Birddog in Australia. "G'day mate!" He is getting very close to the maiden flight of his 9 year rebuild and the other day while he was working on the last 95% of the things to do in the last 5% of the rebuild process he wrote me an email concerning the alignment of the wings to the fuselage. To say that he was near despair is putting it mildly. If he had any hair left I'm sure he would have pulled it all out worrying about a very common question.

Rob wrote:

Hey Mr. Birddog having just finished a nine year restoration that has resulted in one of the finest examples of the breed ever. Can you imagine my horror when rigging the ailerons on the newly skinned wings I find that the RH lines up exquisitely but the Left Hand side there is about a one half inch difference where the flap meets the aileron, is the flap lower or is the aileron twisted !!. Lots of measuring and head scratching and copious heart pills later I figure that the flap brackets appear to be set down 1/8th of an inch lower on this side. I was mortified how could I get the rigging of the wing jig so wrong, but hey I didn't remove these brackets. A quick trip to my o'l mates dog at the next airport and low and behold it's exactly the same, can you imagine my relief. Now the big question, WHY is it so, did Cessna get their jigs wrong?

Cheers Foxy

### MR. BIRDDOG SAYS:

Every Birddog I've ever seen has this similar aesthetic "problem". The flaps and the fuselage gap is greater on the left side than the right. The left wing ends up with a bit more angle of incidence built in to control the vast amount of torque and P-factor in the mighty Birddog. Imagine the amount of muscle you would have in your right leg if you had to hold the rudder pedal the whole time you were flying to keep the Birddog from turning to the left. This little bit of atheistic encumbrance has a whole bunch to do with your ability to fly hands off for hours at a time and still go in a straight line.

Those of us with the "fire breathing" -15 engines and the constant speed props have even more droop in the trailing edge of the left wing to further assist us in flying a straight line. When we pass through about 115 mph in cruise flight we have to start holding a bit of rudder pressure to hold the mighty Dog under control. At speeds around 135-140 mph in level cruise flight we notice a burning sensation in our leg from muscle cramps from holding back all the torque. When we throttle back to the more sedentary speeds of normal Birddogs of 97 mph the Birddog flies perfectly

level with the ball in the center of the race. You might have noticed that the Birddog is not rigged for going fast. The big square windshield, the elevator control horns that hang in the breeze in normal cruise flight, struts, antennas, etc. all created enough drag on the Birddog to keep it from winning any air race unless the other competitors are flying in L-3's, L-4's or hang-gliders.

Keep those doggies flying!

Mr. Birddog