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Foolproof Control Check

The Simple 4 – for Pilots & A&P's

Never let **anyone** tell you that a control check is "easy". Wig wagging controls is easy, but it is NOT a control check. And, unfortunately, not doing a "foolproof" control check can cost you your life.

The literature has a number of cases of pilots who lost their aircraft and their lives because of incorrectly rigged controls. And, what is even more important is that, in many cases, the pilots were highly qualified and experienced, as were the mechanics who worked on the aircraft. The pilots were not able to overcome the "confusion" that occurred – right near the ground – in the very brief time they had to analyze the situation with which they were confronted. What is even more disconcerting is when the aircraft had come out of some form of maintenance and had been signed off by an A&P mechanic and/or an IA! How did this happen?

The most recent case (this being written in Spring 2017) occurred after Sun'n'Fun on a takeoff in a Piper PA-12 Super Cruiser that had undergone an extensive "down to the frame" multi-year restoration. The fatal incident (in FAA terminology "accident") occurred on the **first** takeoff following that restoration and the aircraft return to service. The pilot was a highly experienced airline and GA pilot with many hours in both types of aircraft. The on-site visual report of an experienced pilot indicated that "immediately at liftoff the airplane pitched up, stalled, and the wing dropped; the Piper erupted into flame on impact". Even of more concern are the initial findings of the NTSB that, "*The elevator control cables were found attached to the upper and lower ends of the elevator control horn in the tail of the airplane. Elevator control cable continuity was established from the control horn to the forward and rear control sticks. Manipulation of the elevator control cables revealed that a nose input resulted in a nose down deflection of the elevator and vice versa.* ***Further examination revealed that the elevator control cables were improperly rigged, such that they were attached to the incorrect (opposite) locations on the upper and lower elevator control horn***."

Put yourself in the place of this very experienced pilot. How well do you think YOU would be able to (and how quickly) determine that the control movements you were putting into the system were backwards and that you would need to go against all training and put in the opposite in order to fly the aircraft? The answer is that it is NOT very likely that you, or any of us, would be able to do so.

You will recall that I used the word "incident" rather than accident earlier. While the FAA still calls this an accident, the National Safety Council has done away with the use of that term in favor of incident. Why? Because accident implies two things – that it was not avoidable (and we know that most are) and that it had no "fault" (which we know most do). This was **absolutely** both avoidable and there was "fault" on the part of both the pilot and the mechanic(s). Fault may seem harsh, but read on ….

The first question we must ask is how did this airplane get signed off by maintenance personnel and get turned over to the pilot with the elevator controls reversed? The second question is how did the pilot get to the point of takeoff and go – with the controls reversed?

Flight control checks come in a variety of forms, styles, and versions. However, while they may all have some relative merit, we must remember what they are meant to do – make sure that the controls move

in the direction necessary for a desired response. The easiest way to make sure that is the case is a movement and visual confirmation along with a "script" (said out loud) for what we are supposed to see with each movement, and there are only 4 – thus the name "Simple 4". If the Simple 4 is done **every time** a flight control check is necessary, there will "never" be this problem, and I seldom use the word "never".

1) Move the stick or control yoke fully left. **Say**, **and verify visually**, "left aileron up, right aileron down" which is the proper control position for the left turn.
2) Move the stick or control yoke fully right. **Say, and verify visually**, "right aileron up, left aileron down" which is the proper control positions for the right turn.
3) Move the stick or control yoke fully rearward. **Say, and verify visually**, "elevator up" and then move the control fully forward, **Say, and verify visually**, "elevator down" – the appropriate positions for nose up and nose down movement.
4) Push the left rudder pedal. **Say, and verify visually**, "left rudder" and then push the right rudder pedal, **Say, and verify visually**, "right rudder" – the appropriate positions for left and right nose movement.

(Note – if you are unable to see any portion of the control movements from the pilot's seat when performing the checks, either do them while standing outside of the airplane, if possible, or have someone visually confirm them for you as they are done – responding in the same manner.)

These are simple and basic, and they may seem to many to be "too" simple and basic, especially after they have been done many times. But, IF the "Simple 4" had been done by either the mechanic or the pilot, the pilot would still be alive today! And they must be done **EVERY TIME**, and in exactly the same manner, that a flight control check is appropriate! Make it a HABIT! And if anything doesn't look right, do it again to verify, and if it is not right – DON'T try to FLY!

I've had some comments about certain aircraft where some obstructions have occurred within the area behind the panel and using the "box check" version, with or without thumb position/pointing, is desirable to insure that does not occur. This is certainly something worthwhile to determine if there is some hang-up in the system behind the panel, such as in early model center control Beechcraft aircraft. However, I would do this AFTER the "Simple 4" if appropriate.

Remember, if you keep it **SIMPLE** and you do it exactly the same **EVERY TIME**, just like a GUMPS check on final can keep you from landing gear up, the "Simple 4" can keep you flying as you expect your aircraft to fly – and keep you … **ALIVE**.

Keep life **SIMPLE** – and fly **SAFE**!!

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Have a SAFE day!