XI.D. Cross Controlled Stalls

About: A crossed-control stall occurs when the pilot allows the aircraft to be flown in uncoordinated flight with the flight controls crossed: Aileron pressure applied in one direction and rudder pressure in the opposite direction.

This type of stall is most likely to occur during a poorly planned and executed base to final approach turn and often is the result of overshooting the centerline of the runway during that turn.

TSW: Understand the effect of improper control technique and the importance of using coordinated control pressures when making turns.

Procedure:

1. 1500 AGL for recovery (Go much higher): 2x 90 degree clearing turns
2. DO NOT extend flaps
3. Power Idle- carb heat
4. Establish best glide and attitude- TRIM
5. Roll into 30° medium bank turn (overshoot base to final)
    a. Apply excessive rudder in direction of turn
    b. Maintain constant bank by applying opposite aileron pressure
    c. Increase back pressure to keep nose from dropping- Stall

Recovery

6. Release control pressure
    a. Nose down elevator to reduce AOA
    b. Neutral rudder
7. Full power- Carb heat off
8. Level wings with coordinated aileron and rudder
9. Resume normal flight attitude, power, and airspeed, with min alt loss

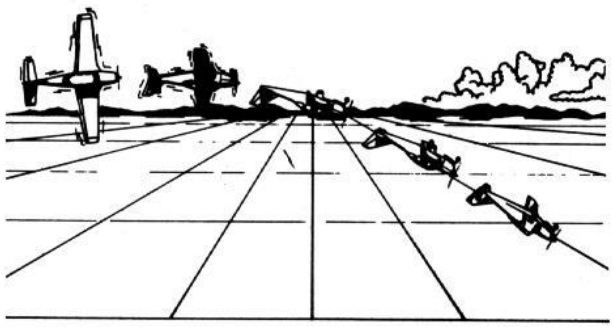

Figure 11–25 Crossed Controls Stall

***** You will go inverted or potentially spin*

Situation

1. Left turn from base to final overshooting past the centerline
2. The pilot rolls into 30° turn, but it isn't enough to prevent the overshoot
3. To avoid the overshoot, and help the turn, the pilot adds left rudder, causing the aircraft to roll left, and the nose to drop. To compensate, the pilot inputs right aileron and raises the nose with back elevator pressure
4. The deflected ailerons change the chord line and therefore the AOA of each wing
    a. The AOA increases on the left, inside wing (downward aileron)
    b. The AOA decreases on the right, outside wing (upward aileron)
5. The additional left roll is caused by the left rudder input, and the difference in lift between the two wings.
6. When the nose swings left, the right wing swings forward and the left wing swings backward. The right wing is accelerated and the left decelerated.
7. Lift is increased on the right wing, resulting in left bank. Right aileron is required to maintain the 30° banked turn
8. The nose drops due to the uncoordinated flight and additional drag. Raising the nose brings the AOA closer to the critical AOA
9. Suddenly, the aircraft rolls sharply left, inverted (or even into a spin)

Discussion Points:

1. It is imperative that this type of stall not occur during an actual approach to landing, since recovery may be impossible prior to ground contact due to the low altitude. During traffic pattern operations, any conditions that result in overshooting the turn from base leg to final approach, dramatically increases the possibility of an unintentional accelerated stall while the airplane is in a cross-control condition. If overshooting, do not try to correct with rudder, instead initiate a go-around and try again.

Common errors:

10. Failure to establish a crossed-control turn and stall condition that will adequately demonstrate the hazards of a crossed-control stall.
    a. Not reducing power initially to slow the airplane to a typical approach speed.
    b. Not increasing crossed-control pressures enough to induce a stall.
    c. Not increasing back elevator pressure enough to induce a stall.
11. Improper or inadequate demonstration of the recognition of and recovery from a crossed-control stall.

Evaluations/ Standards:

1. Demonstrate and explain a cross controlled stall, with landing gear extended and no flaps
2. Analyze and correct simulated common errors.