# **Slow Flight**

<u>About:</u> Slow flight is flight at any speed lower than normal cruise. Specifically, when the airplane AOA is just under the AOA which will cause an aerodynamic buffet or a warning from a stall warning device if equipped with one.

<u>TSW:</u> Understand the flight characteristics and how the airplane's flight controls feel near its aerodynamic buffet or stall-warning.

**How:** This is shown by demonstrating slow flight in straight and level flight, turns, climbs, and descents.

### **Procedure:**

- 1. No lower than 1500 AGL
- 2. Two 90 degree clearing turns
- 3. Carb heat on
- 4. Power to 1500 RPM, Flaps 10° below white arc
- 5. Increase pitch to maintain altitude as airspeed decreases- TRIM
- 6. Extend Full flaps
- 7. Upon reaching 5-10kts above 1G stall speed, increase power to maintain level flight (~2100 RPM)
- 8. Maintain coordinated flight (Increased right rudder at low speed and high power setting)
- 9. Perform straight and level and turns (20° or less): outside references
- 10. Perform climbs and descents using power to control altitude and pitch to control airspeed.

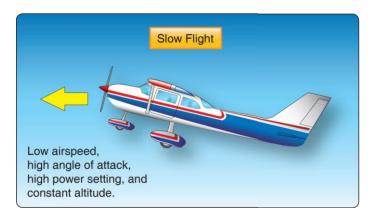
### Recovery

- 11. Apply full power, flaps up 10° at a time, reduce pitch to maintain alt- TRIM  $\,$ 
  - a. Carb heat off
- 12. Retract flaps 10° accelerating- TRIM
- 13. Retract flaps to 0° accelerating- TRIM
- 14. Accelerate to normal cruise

#### **Discussion Points:**

- 1. Pitch for airspeed, power for altitude. Behind the power curve it takes more to go slower.
- 2. Controls are less effective at lower speeds. Larger control movements will be required to create the same response.
- 3. P-factor will produce a strong left yaw which requires right rudder to maintain coordinated flight.

- 4. Abrupt or rough control movements during slow flight may result in a stall. (Abruptly raising flaps while in slow flight can cause stall)
- 5. Practice gentle climb descents and turns at a constant airspeed
- 6. Practice lowering flaps in small increments
- 7. Trim for level flight



# **Evaluations/ Standards:**

- 15. Student understands factors affecting flight characteristics and controllability and shows the ability to control the airplane effectively in different configurations of slow flight
- 16. Private Pilot Standards: Maintain the entry altitude  $\pm 100$  feet, airspeed  $\pm 10/-0$  knots, bank  $\pm 10^{\circ}$ , and heading  $\pm 10^{\circ}$ .
- 17. Commercial Pilot Standards: Maintain the entry altitude  $\pm 50$  feet, airspeed +5/-0 knots, bank  $\pm 5^{\circ}$ , and heading  $\pm 10^{\circ}$ .

#### **Common errors:**

- Failure to establish specified gear and flap configuration
- Improper entry technique
- Failure to establish and maintain the specified airspeed
- Excessive variations of altitude and heading when a constant altitude and heading are specified
- Uncoordinated use of flight controls
- Improper correction for torque effect
- Improper trim technique
- Unintentional stalls
- Inappropriate removal of hand from throttles