

Slow Flight

About: 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.

TSW: 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 ± 100 feet, airspeed $+10/-0$ knots, bank $\pm 10^\circ$, and heading $\pm 10^\circ$.
17. Commercial Pilot Standards: Maintain the entry altitude ± 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