

Slow Flight



AIR ECHO ALPHA 51, LLC

Objective: Demonstrate the flight characteristics and degree of controllability of the airplane at its minimum flying speed.



Common Errors

- Failure to establish specified configuration
- Improper entry
- Failure to establish & maintain specified airspeed
- Excessive variation of altitude & heading
- Improper correction of left turning tendencies
- Unintentional stall
- Activation of Stall horn

Completion Standards

- Adheres to recommended safety precautions
 - Selects appropriate altitude
 - Clears the area
- Establish and maintain airspeed at which any further increase in angle of attack, increase in load factor, or reduction in power, would result in a stall warning
 - Understands the method for establishing slow flight
- Accomplish coordinated straight-and-level flight, turns, climbs, and descents without a stall warning
- Maintains altitude +/- 50ft, heading +/- 10°, airspeed +5/-0, bank +/- 5°
- Uses Checklists

PAVE & Preflight Discussion

20- Min

- The **Pilot** and Crew
 - P/M Safe Checklist
 - Delegate Duties
- The **Plane**
 - POH - Stall speeds, CG location, Weight, Configuration (flaps) & bank angles
- The **Environment**
 - Weather Briefing
 - The effects of environmental elements on aircraft performance related to slow flight (turbulence, wind shear, and high-density altitude)
 - Collision Avoidance
- External Pressures**
 - Factors & situations that could lead to an inadvertent stall horn activation or stall
 - Distractions, improper task management, loss of situational awareness, or disorientation.
 - Limitations of stall warning horns/speeds
- Slow flight is a part of **NORMAL** flight operations, and includes the speeds a pilot might use in the take-off, approach and landing sequence. Flight between the stall warning and up to the critical angle of attack moves into **ABNORMAL** flight operations.
- Stall horn activation: 5-10kts above a stall
- Recognizing slow flight
 - Vision, hearing, kinesthesia, control pressures, warning horns & IAS
- Left turning tendencies
 - High power settings & AOA
 - Low airspeeds
- Forces of Flight – Drag vs Thrust (power)
 - Parasite drag is created by the airframe's resistance to forward motion - the faster you fly, the greater the parasite drag.
 - Induced drag** is a byproduct of lift, and it's **greatest at high angles of attack and slow airspeeds.**
 - How to overcome drag? Add more power!
Yet, Power has a limit.

Flight Maneuver- Slow Flight

20- Min

- Clear the area
 - Altitude: Task completed > 1,500 ft
 - Airspeed: @ or below V_A
 - Airspace: E or G
 - Area Clear: No traffic
- The Set-up
 - Choose a ground reference point and/or set heading bug to note starting heading
 - Complete the Before Landing Checklist
 - Landing Configuration
 - Reduce throttle & adjust pitch to maintain altitude & reduce airspeed
 - Airspeed below V_{LE} - gear extended
 - Airspeed below V_{FE} - lower flaps
 - Carb Heat - On
 - Adjust pitch & power (throttle) and trim to maintain approach airspeed & altitude
- Slow Flight
 - Continue to reduce airspeed until 5-10kts above the stall horn activation
 - Increase throttle (power) & adjust pitch to maintain altitude and airspeed
 - Apply right rudder to compensate for turning tendencies
 - While in Slow Flight demonstrate Straight & Level flight, Shallows turns, Descents & Climbs (if able)
- The Recovery
 - Decrease AOA**
 - Throttle - smoothly increase power (if able)
 - Accelerate to V_X or V_Y
 - Directional control - Rudder
 - Carb heat- Off,
 - @ V_X or V_Y & positive rate-of-climb - retract the landing gear & flaps in increments
 - Return to starting altitude, heading, and airspeed

Traffic Pattern

15-Min

- Normal Take-off
- Normal Landing
- Slow flight is a part of **NORMAL** flight operations. Note the phases of the take-off, approach and landing sequence where the aircraft is in slow flight.