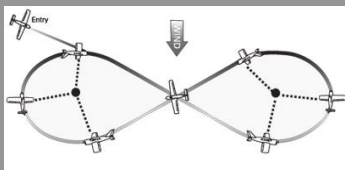


8s on Pylons



AIR ECHO ALPHA 51, LLC.

Objective: Refine the ability to control the airplane while dividing attention between the instruments and visual indications outside the aircraft. Helps develop subconscious feel, planning, orientation, coordination and speed sense.



Common Errors

- Most common error- attempting to hold a pylon with incorrect use of the rudder
- Failure to clear the area
- Poor selection of reference points
- Uncoordinated use of the flight controls
- Poor planning, orientation & division of attention
- Improper wind correction between pylons
- Failure to maintain adequate altitude control during the maneuver
- Failure to divide attention between aircraft control and orientation
- Failure to manage energy

Completion Standards

- Adheres to recommended safety precautions
- Understands the relationship between ground speed and pivotal altitude
- Selects proper altitude & reference points to complete the maneuver
- Aligns the line-of-sight reference point with the pylon throughout the maneuver using the appropriate pivotal altitude
- Establishes the correct bank angle for the conditions, not to exceed 40°
- Divides attention between aircraft control and orientation

PAVE & Preflight Discussion

20- Min

- The Pilot & Crew**
PM Safe Checklist & Delegate Duties
- The Plane**
POH - Stall speeds, CG location, Weight, V_A , configuration & bank angle
- The Environment**
Weather Briefing
The effects of environmental elements on aircraft performance (turbulence, wind shear, and high-density altitude)
Effects of wind speed, direction, shear or gusts on ground track and **ground speed**
- External Pressures**
Aerodynamics associated with 8s on pylons
Coordinated and uncoordinated flight
Pivotal altitude and factors that affect it
Low altitude maneuvering
Collision hazards: aircraft, terrain, obstacles, and wires
Steep turns, stalls, spins, or CFIT
Far 91.119 minimum altitudes
Emergency Landing considerations
Distractions, improper task management, loss of situational awareness

- 8s on pylons
Ground reference maneuver wherein circular paths are flown in a figure 8 around two pylons. Altitude is varied to maintain a specific visual reference to the pivot points
- Pivotal altitude changes with variations in groundspeed $(GS)^2 / 11.3 = P.A.$

Groundspeed		Approximate Pivotal Altitude
Knots	MPH	
87	100	670
91	105	735
96	110	810
100	115	885
104	120	960
109	125	1050
113	130	1130

- Pivotal altitude does not vary with bank angle unless the bank angle is steep enough to affect the groundspeed
- Bank angle is determined by the distance from the pylon and with variations in wind
- Energy management
 Δ Pitch, power & bank = Δ Airspeed & altitude
- Rate and radius of turn
Function of airspeed & angle of bank

Flight Maneuver – 8s on Pylons

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**
Determine the wind direction & speed
Select 2 prominent pylons (1/2 – 1 mile apart)
Along a line that lies perpendicular to the direction of the wind
Locate an emergency landing spot
Select a visual reference line that, from eye level, parallels the lateral axis of the airplane. (~wingtip)
Calculate Pivotal altitude = $(GS)^2 / 11.3$
(600' – 900')
Aircraft configuration
Flaps – UP
Gear – UP
Props – Set for S&L/ V_A (~17" MP)
Throttle - Set for S&L/ V_A (~2300 RMP)

- 8s on pylons
Begin the maneuver by flying diagonally between the pylons to a point downwind from the first pylon
Roll into the first turn (30° – 40° bank) where the pylon appears to be just ahead of the visual reference line (wingtip)
 \uparrow G.S. = \uparrow P.A.
The reference line should appear to pivot on the pylon
As the turn progresses into the wind groundspeed will decrease requiring a decrease in pivotal altitude and a reduction in bank angle
If the reference point moves forward of the pylon – Climb
If the reference point moves aft of the pylon – Descend (dive down to catch up)
Rollout to S&L as the first turn is completed
Maintain S&L for 3 to 5 seconds, crab to correct for wind
Roll into the second turn in the opposite direction where the pylon appears to be just ahead of the visual reference line (wingtip)