

Eights on Pylons

About: The most advanced and difficult of the ground reference maneuvers. Similar to turns around a point/ eights around pylons except altitude is varied to maintain a specific visual reference to the pivot points.

TSW: Learn to develop intuitive control of the airplane by maintaining an imaginary line extending along the planes lateral axis to a ground reference point.

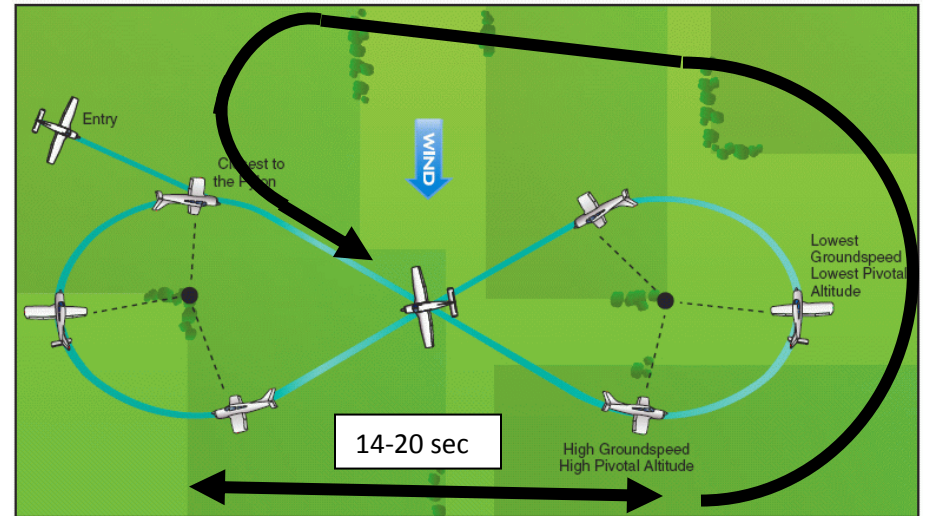
How: Shown by entering 45° downwind and using elevator to adjust height while flying a figure eight path around two ground pylons.

Procedure:

1. Two 90° clearing turns, establish V_A or recommended speed
2. Fly a path perpendicular to the wind on the upwind side of pylons.
 - a. Pick 2 points 14-20 sec apart (1/2 mile)
3. Enter 45° to the downwind **at pivotal altitude**, first turn into wind
4. If point goes **ahead** of wing, **decrease altitude** (Increasing GS)
5. If point goes **behind** wing **increase altitude** (Decreasing GS)
6. Maintain straight and level flight 3-5 sec crossing center midpoint
7. Exit maneuver of the 45° to the downwind (entry heading)

Discussion Points:

1. Determine wind direction and speed (AWOS)
2. Ensure emergency landing area available for selected field. Do not perform over neighborhoods.
3. Pivotal altitude: Alt at which when the airplane turns at a given GS, a projection of the sighting ref line to the selected point on the ground will appear to pivot on that point.
 - a. Any alt above pivotal alt, the projected ref line will appear to move rearward in a circular path in relation to the pylon.
 - b. Conversely, when the airplane is below the pivotal alt, the projected ref line appears to move forward in circular path
 - c. $Kts = (GS^2/11.3)$ MPH = $(GS^2/15)$
 - d. 100 mph = 670ft, 110 mph = 810ft
4. The distance from the pylons varies if there is any wind
 - a. Downwind: fastest GS: 30° at steepest point/ highest pivotal alt
 - b. Upwind: slowest GS: shallowest bank/ lowest pivotal alt
5. Prevent up-down movement of the pylon using aileron
6. Prevent fore-aft movement of the pylon using elevator.



Evaluations/ Commercial ACS Standards:

- Clear the area.
- Determine the approximate pivotal altitude.
- Select suitable pylons that will permit straight-and-level flight between the pylons.
- Enter the maneuver in the correct direction and position using an appropriate altitude and airspeed.
- Establish the correct bank angle for the conditions, not to exceed 40°.
- Apply smooth and continuous corrections so that the line-of-sight reference line remains on the pylon.
- Divide attention between accurate, coordinated airplane control and outside visual references.
- Maintain pylon position using appropriate pivotal altitude, avoiding slips and skids.

Common errors:

- Faulty entry procedure (entering upwind) (not at pivotal alt)
- Poor planning, orientation, and division of attention
- Application of rudder alone to maintain "line of sight" ref
- Not using correct bank angles in turns. (+40°)
- Selection of a ground reference where there is no suitable emergency landing area within the gliding distance.
- Fixating on the field and forgetting to look for other air traffic.
- Failure to clear area and establish proper altitude prior to entry.