IX.B. Steep Spirals

About: Steep spirals provide a flight maneuver for rapidly dissipating substantial amounts of altitude while remaining over a selected spot.

TSW: Learn to maintain a constant radius around a surface reference while in a steep gliding turn.

How: This is shown by entering a glide and then a steep turn while using bank to adjust for wind while flying 3 constant radius turns around a point and rolling out on a heading +/-10°.

Procedure:

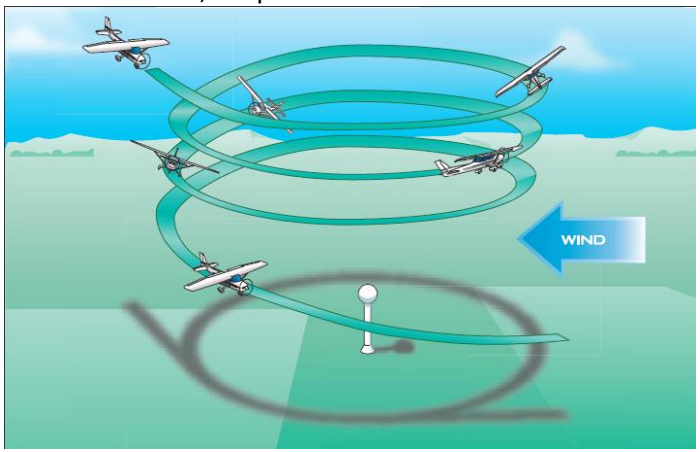
1. Select an altitude that allows spiral to be continued for 3x 360° turns and recovery complete no lower than 1500 ft AGL.
2. Two 90 degree clearing turns
3. Carb heat on, power to idle
4. Maintain level flight until best glide speed- TRIM
5. Roll into ~45° turn abeam selected point – downwind heading
6. Vary bank as necessary to maintain distance from point.
7. Clear engine on upwind heading
8. Roll out and recover to level flight on entry heading after 3 circles, at least 1500' AGL

Discussion Points:

1. Selection of proper ground reference point that allows for a safe descent and emergency landing, if necessary.
2. Select a heading and outside reference point
3. Carb heat, reduce power to idle, trim for best glide airspeed.
4. Angle of bank will have to be decreased as the airplane turns upwind (Groundspeed is decreased)
5. Steepest bank should not exceed 60°
6. Clearing engine: throttle should be advanced to normal cruise power and sustained for a few seconds on the upwind leg to combat excessive engine cooling, spark plug fouling, or carb ice.
7. Maintain a constant airspeed throughout maneuver- TRIM
8. During the rollout, the smooth and accurate application of the flight controls will allow for a recovery to a wings level glide with no change in airspeed. Recover to normal cruise speed after established in a wings level glide.

Evaluations/ Standards:

9. The student will consistently be able to perform steep spirals with confidence and persistence.
10. Standards – 3x coordinated 360° turns at a constant radius, bank not to exceed 60°, airspeed ± 10 kts. Roll out ± 10°



Common errors:

9. **Improper pitch, bank, and power coordination during entry or completion:** It is common for a student to not reduce the power completely to idle at the entry of the maneuver. It is also common to see over banking. Over banking will generally lead to excessive airspeed and a bust standards. If the student does not bank enough on entry, the wind drift correction will be inadequate.
10. **Uncoordinated use of flight controls:**
11. **Improper planning and lack of maintenance of constant airspeed and radius (inadequate wind drift correction):** The student must be able to vary the bank according to the direction and strength of the wind. It is common to see a student not apply the correction when being pushed off the point. This may require a return to an almost level flight attitude on upwind properly correct.
12. **Failure to stay oriented to the number of turns and the rollout heading:** This may happen if the student is fixated within the aircraft and not following visual cues. Bug headings.
13. **Failure to clear the area for traffic**