

STEEP SPIRAL

What Is It?

- A constant gliding turn during which a constant radius around a point on the ground is maintained. It is similar to Turns Around a Point, but is normally done from much higher and utilizes steeper bank angles, not to exceed 60 degrees. A textbook Steep Spiral will include no less than three 360 degree descending spirals, so it is important to begin the maneuver fairly high up - about 4,000 feet in order to end the maneuver at or above 1,500 feet.

When/Why

- The objective of the Steep Spiral is to rapidly dissipate substantial amounts of altitude while remaining over a selected spot. In an emergency such as a fire, the airplane needs to get on the ground as fast as possible, which means the you're probably landing on whatever is underneath you at the time. (The reality of an in-flight fire is that if you don't land ASAP, the airplane might burn up before you even get on the ground, so taking your chances with flying obstacles will probably provide a more favorable outcome than spending time gliding around to a more suitable landing site.)

How

1. Clear the area.
2. Select an altitude sufficient to continue through a series of at least three 360° turns.
3. Make sure the airplane is configured clean - no flaps or gear.
4. Establish and maintain a steep spiral, not to exceed 60° angle of bank, to maintain a constant radius about a suitable ground reference point.
5. Apply wind drift correction to track a constant radius circle around selected reference point with bank not to exceed 60° at steepest point in turn (steeper turns flying downwind; shallower turns flying upwind). Remember: winds might change as you descend from higher altitudes closer to the surface.
6. Divide attention between airplane control and ground track, while maintaining coordinated flight.
7. Advance the throttle every few moments to keep it from excessively cooling
8. Maintain the specified airspeed, ± 10 knots, rolls out toward object or specified heading, $\pm 10^\circ$.

Aids

- UND Steep Spiral: <https://www.youtube.com/watch?v=kqLh8TMNtEM>

Common Errors

- Improper coordination during entry
- Not establishing appropriate pitch, airspeed, and power for glide
- Exceeding 60 degree bank
- Not clearing engine during maneuver
- Not performing clearing turns
- Not keeping track of the number of turns during the spiral
- Not entering the spiral high enough to complete 3 turns above 1,500 AGL
- No rollout to a definite object or specific heading
- Not recognizing or correcting for wind drift
- Slipping or Skidding during turns

Notes

- This is not a redline airspeed maneuver - it is fairly slow, done at a speed near best glide.

Task	B. Steep Spiral (ASEL, ASES)
References	FAA-H-8083-2, FAA-H-8083-3; POH/AFM
Objective	To determine that the applicant exhibits satisfactory knowledge, risk management, and skills associated with steep spirals. <i>Note: See Appendix 7: Aircraft, Equipment, and Operational Requirements & Limitations.</i>
Knowledge	The applicant demonstrates understanding of:
CA.V.B.K1	Purpose of steep spirals.
CA.V.B.K2	Maintaining a constant radius about a point.
CA.V.B.K3	Effects of wind on ground track and relation to a ground reference point.
Risk Management	The applicant demonstrates the ability to identify, assess and mitigate risks, encompassing:
CA.V.B.R1	Failure to divide attention between airplane control and orientation.
CA.V.B.R2	Collision hazards, to include aircraft, terrain, obstacles, and wires.
CA.V.B.R3	Low altitude maneuvering/stall/spin.
CA.V.B.R4	Distractions, loss of situational awareness, and/or improper task management.
CA.V.B.R5	Failure to maintain coordinated flight.
CA.V.B.R6	Effects of wind.
CA.V.B.R7	Airframe and/or airspeed limitations.
Skills	The applicant demonstrates the ability to:
CA.V.B.S1	Clear the area.
CA.V.B.S2	Select an altitude sufficient to continue through a series of at least three 360° turns.
CA.V.B.S3	Establish and maintain a steep spiral, not to exceed 60° angle of bank, to maintain a constant radius about a suitable ground reference point.
CA.V.B.S4	Apply wind drift correction to track a constant radius circle around selected reference point with bank not to exceed 60° at steepest point in turn.
CA.V.B.S5	Divide attention between airplane control and ground track, while maintaining coordinated flight.
CA.V.B.S6	Maintain the specified airspeed, ±10 knots, rolls out toward object or specified heading, ±10°.

(Current As Of 10/4/2017)