

Weight-Shift Control Aircraft Flying Handbook (FAA-H-8083-5) Addendum

The following information should be included in Chapter 13: Abnormal and Emergency Procedures of the Weight-Shift Control Aircraft Flying Handbook on page 13-10 and will be included in the next version of the handbook:

Recovery from a Steep-banked Spiral Dive

At times, weight-shift control pilots find themselves in an unintentional steep-banked descending spiral turn. This may happen while performing an emergency descent but more commonly happens when the pilot spots something on the ground and wants to get a closer look. The pilot initiates a turn which steepens to 45 to 60 degrees of bank or greater. Through turbulence, wind gusts, or inattention the turn may develop into a steep-banked spiraling descent. If the pilot attempts to arrest the descent by pushing out the control bar and increasing pitch, the rate of turn and rate of descent will increase and an accelerated stall may ensue. It may require significant force to level the wing at this point and with some wings it may actually be impossible unless the correct technique is followed. If the maneuver began at low altitude, there will be very little time to correct the situation before a crash occurs. **The appropriate recovery technique is to simultaneously reduce throttle, pull the control bar in to reduce pitch, and move the control bar to the side to level the wing.** Pulling the control bar in to reduce pitch may seem contrary to a pilot's instinct when the ground is rushing up, but it must be done to unload the wing and reduce control forces sufficiently to allow the pilot to level the wing. Once the wings are leveled, the pilot should be careful not to stall the wing or build up excessive speed to accomplish a successful dive recovery.

Practicing recovery from a steep spiral should only be performed after receiving instruction from an experienced and properly certificated flight instructor. The purpose of practicing this maneuver is to build recognition of and a reflexive response to a steep-banked spiraling dive. Start all practice at an altitude that will permit a recovery at no lower than 1,000 feet above the ground. An altitude of at least 2,500 AGL is recommended. Before starting the maneuver, the pilot should ensure that the area is clear of other traffic. Begin with a steep turn in level flight with adequate power to maintain altitude and at a speed well above the stall speed for the planned bank angle. The bank angle should be at least 45 degrees and below the manufacturer's maximum bank limitation. Allow the aircraft to begin a slow descent with a slight reduction in power, but be careful not to exceed the manufacturer's airspeed limitations. It may be necessary to push the control bar out somewhat as part of establishing the spiral and to control speed. Once the steep spiral is established the pilot may notice that the control forces required to level the wing or counter the wing's overbanking tendency will have increased. **Do not push the control bar further out as it will likely result in an accelerated stall.** Recovery should be initiated rapidly by simultaneously reducing the throttle to idle, pulling in the control bar, and reducing the bank angle to zero. A recovery must be performed by carefully controlling pitch and G-forces as the aircraft will naturally pitch up once the wings are level. As the airspeed returns to a normal cruise speed increase the throttle to maintain level flight. The pilot must be careful not to stall the aircraft or exceed airspeed limitations at all times.

The following are some errors that are commonly made during the recovery of a steep spiral:

- Failure to adequately clear the area.
- Entering the maneuver at a speed inadequate to prevent a stall at the selected bank angle.
- Allowing the airspeed to build rapidly without beginning a recovery.
- Leveling the wing without pulling the bar in and reducing throttle.
- Excessive pitch-up attitude during the recovery.
- Stalling the wing anytime during the maneuver.
- Failure to scan for other traffic before and during the maneuver.