

Foundations of Flight

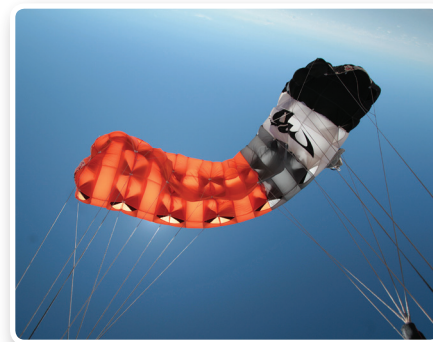
AXIS
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Rear-Riser Stall

Brought to you by AXIS Flight School Instructor Niklas Daniel at Skydive Arizona in Eloy. Photos by Niklas Daniel.



Stalling a parachute is a huge fear for most jumpers. However, exploring stalls and the slow-flight range of a canopy gives jumpers a better understanding of how their parachutes work and helps them to fly better landing patterns, improve accuracy and execute consistently soft landings.

Though often associated only with slow flight, a stall occurs when a parachute's angle in relation to the relative wind (the angle of attack) is extremely high. This means that stalls can happen at high speeds because stalls are independent of airspeed. Therefore, understanding stalls is very important for everyone, including those exploring high-performance canopy flight.

Unlike stalling your canopy using your brake lines (see "Foundations of Flight—Toggle Stalls," July 2011 *Parachutist*), stalling your canopy using rear-riser input will change the shape of the canopy by affecting the C and D lines—half of the canopy. Rear-riser stalls commence more suddenly than toggle stalls, but recovering from them is easier and smoother.

It's best to practice stalls on a full-altitude hop-and-pop. Make sure you are clear of any other canopy traffic, and stop any stall attempts by 2,500 feet.

Purpose

- ▶ To increase awareness of the slow-flight range of your canopy
- ▶ To learn to recover from a stall with minimum loss of altitude
- ▶ To understand when you are no longer maximizing forward glide
- ▶ To learn how to prevent high-speed stalls (particularly for high-performance canopy pilots)


Execution

Keep your toggles in your hands at all times. Grab your rear risers as high up as you can—right where the lines meet the risers, if possible—to get the most range. Take your time when entering a rear-riser stall; attempt to keep your wing level as you apply input in order to sink into the stall slowly. You'll soon see the tail edge of the canopy flutter, and you should focus on how this feels through your harness. You should feel the lifting power of your parachute disappear and your descent rate increase. In some cases, you may even feel the wind on the back of your calves.

Recovery

All parachutes require the same remedy in order to recover from a stall: a reduction in the angle of attack. Reduce the angle of attack by slowly letting up on the risers, bringing the canopy back into full flight. The way your parachute will recover will differ depending on its design. Prevent it from surging forward or from turning around the yaw (vertical) axis.

Helpful Hints

If you are a high-performance canopy pilot seeking to use your rear risers during the plane-out sequence of your landing, do not trust them to pull you out of a low turn. No matter how fast you are traveling, if you change the angle of attack of your parachute too aggressively, it will stall. 



To view the instructional video, use the QR code to the left or visit the Foundations of Flight page at parachutistonline.com.