

# Foundations of Flight

**Toggle Stalls** | Brought to you by Axis Flight School at Skydive Arizona in Eloy. Photos by Niklas Daniel.

**AXIS**  
Flight School

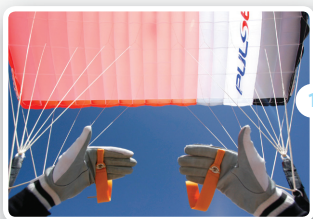
Although you can stall just about any canopy with toggle input, you should perform your first attempts on a large and docile canopy (and some manufacturers recommend against performing stalls on certain canopy models, particularly those that are small and highly wing loaded). Once you understand the warning signs of a stall, you'll be able to recognize one when you're flying any model or size canopy. Make sure to perform this maneuver with plenty of altitude, stopping the drill no lower than 3,000 feet, and make sure the airspace around and below you is clear. (You may want to make a high-altitude hop-and-pop specifically to try this drill.)

## Reasons to Practice Toggle Stalls:

### Safety

- ▶ To understand your canopy's slow-flight characteristics and its limits (the stall point)
- ▶ To improve your landings by making smoother and more precise inputs
- ▶ To further your knowledge of braked (flat) turns for obstacle avoidance, to minimize altitude loss when turning and to maintain vertical separation from others when turning in the pattern

## Execution



**1. Set-Up**—If your brake lines are long, stalling the canopy may be difficult (tough to flare those last couple of inches). Instead of wrapping the excess brake line around your hand, place the toggles in your hands as shown in the photo. Holding onto the toggle at the top of the knot may give you the extra inches necessary to get the canopy to stall. With this method, if you have to cut your main away, your hands won't be as encumbered.



**2. Initiation**—Go into deep brakes (similar to your flare on landing) to begin slowing your parachute.



**3. Use Your Pilot Chute as a Stall Indicator**—Once you've slowed your canopy's airspeed, you'll notice your pilot chute start to drop, and there will be slack and movement in the bridle. Through the harness, you may begin to feel the canopy bucking.



**4. Tail Edges Begin to Fold Together**—Entering the stall, the pilot chute starts to disappear from view and will be above you, streaming from the top skin as it does when the canopy is deploying.



**5. Maintaining the Stall**—Using reverse turns (turning by letting up on one toggle), you can maintain this flight mode while still controlling your heading. Once you're in this configuration, don't quickly lift your hands. Quickly moving back into full flight may cause your canopy to rapidly re-inflate and dive forward. If this happens, you'll lose control over the canopy momentarily, since there will be slack in the lines.

To recover from the stall, ease up on the toggles slowly and symmetrically by first bringing them to three-quarter brakes, then half brakes and so on.

## Helpful Hints

Stalling your canopy intentionally can be a scary experience. But you'll have deployed your canopy and checked that it is flying properly before performing this drill, so it is very unlikely that a major malfunction will occur. However, if you do not release your brakes smoothly and evenly, one side of the wing may overtake the other during its recovery and induce line twists. One of the reasons we recommend performing this drill at higher altitudes is to give you time to deal with this usually minor problem.