

FOUNDATIONS OF FLIGHT

FLARE TECHNIQUE

Brought to you by Niklas Daniel and Brianne Thompson of AXIS Flight School at Skydive Arizona in Eloy. For more skydiving educational content and professional coaching services, visit axisflightschool.com.

The term navigation refers to a broad skillset that includes identifying your current location and where you want to go, then choosing a strategy based on environmental conditions and how much altitude and time you have available. Since most skydiving takes place within eyesight of a landing area and in a short time frame, it is good practice to predict your navigational choices and consider your options before boarding the aircraft. During your canopy flight, some factors are in your control (when/where you exit, pull altitude, mental attitude, descent rate, heading) and some that are not (wind conditions, actions of other jumpers). Focus on the things that are in your control. Skilled jumpers who have developed a sense of this concept, either through coaching or experience, are able to land softly and accurately on a consistent basis.

Airspeed—The velocity at which a parachute travels through the atmosphere. The pilot controls airspeed directly with inputs and maneuvers that influence flight- and landing-performance factors such as glide and flare power. In flight, airspeed is the combination of forward speed and descent rate through the air. In steady, full flight, a canopy flies along at its designed trim speed. A parachute assumes its own airspeed through a combination of trim angle, size, wing shape, wing loading, etc. When a canopy pilot changes the wing's shape and/or angle of attack, it affects the system's airspeed.

Ground Speed—The horizontal velocity a skydiver travels over the ground. Ground speed is controlled indirectly with canopy inputs and navigational choices relative to windspeed and direction. On a no-wind day, a skydiver's forward speed (the horizontal component of airspeed) and ground speed will be identical. However, if wind is present, it will affect a jumper's ground speed based on which direction the skydiver is heading in relation to the wind.

Windspeed and Direction—An uncontrollable variable that fluctuates and affects a pilot's ground speed. Because you cannot control

the wind, you must consider what conditions you choose to jump in. Though you may be a licensed skydiver who can jump in unrestricted wind speeds, it is advisable to set personal limits based on equipment, experience, skill and currency.

Putting It All Together (Ground Speed = Forward speed ± Windspeed)

Since a canopy pilot's target is fixed on the ground, properly assessing ground speed visually is a vital skill for accuracy. When flying with the wind (i.e., in a tailwind, a wind that's blowing in the direction of travel), the ground speed will equal the canopy's forward speed plus the speed of the wind. This means you will travel a greater distance in a given amount of time. That is why the downwind leg of a standard pattern is longer than the base or final. However, if there are no or light winds, avoid setting a holding area too far upwind.

When flying against the wind (i.e., in a headwind, a wind against direction of travel), the ground speed will be equal to the canopy's forward speed minus the speed of the wind. This means the final leg of the pattern is the shortest, as the pilot covers the least amount of ground in a given amount of time. Landing against the wind is favorable because it typically results in softer and more accurate landings. While the descent rate of the system remains the same in full flight, the pilot experiences a slower ground speed, steeper relative glide and a reduced landing distance during plane out.

A crosswind moves perpendicular to the skydiver's travel path and deflects the flight path in the direction of the wind. Touching down in a crosswind makes landings more difficult and places more stress on the body. A direct crosswind results in a diminished ground speed, because to stay on course the jumper must apply a correction angle. This means the pilot turns the nose of the wing slightly into the wind, therefore moving sideways (aka crabbing) over the ground.

Developing a keen eye and an intuitive sense for ground speed is the trick to becoming more accurate. Canopy pilots can make use of the wind rather than fight it by putting

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themselves in a position of advantage. The objective during landing is to touch down with the slowest ground speed possible, because this causes less stress on the body. Rather than blaming a bad landing on the factors that are out of your control, focus on fixing the things that are in your control. This is not to say we are immune to bad luck, but in a skill-based activity you increase your chances of success with training and coaching.

An in-depth article that includes skill-building drills is available in the January 2018 *Parachutist* article "99 Problems but the Wind Ain't One" by Niklas Daniel, which is available under the Back Issues tab at parachutist.com.

Information about AXIS' coaching and instructional services is available at axisflightschool.com. The authors intend this article to be an educational guideline. It is not a substitute for professional instruction.



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