

FOUNDATIONS OF FLIGHT | RELATIVE GLIDE



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

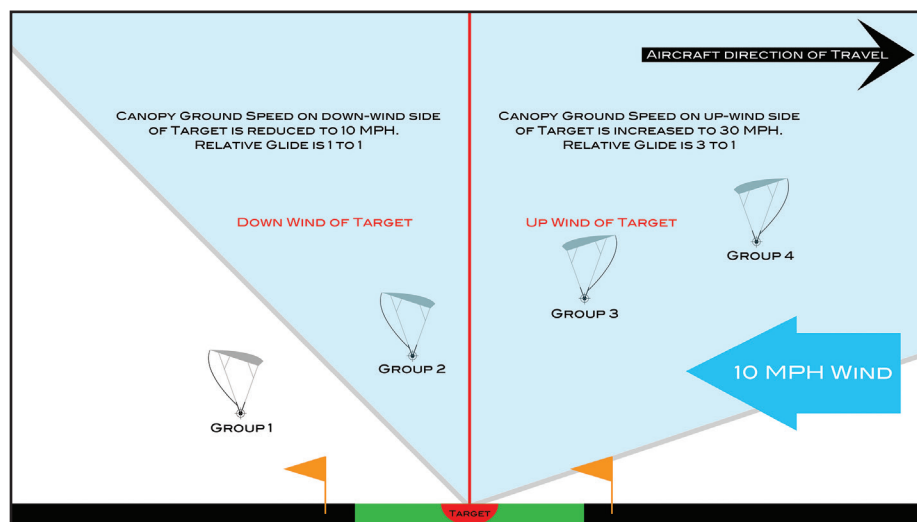
Purpose

- Understanding the difference between glide ratio and relative glide.
- Understanding how to best manipulate your canopy's control range to affect relative glide.

Key Terms

Chord Line: An imaginary line that connects the leading and trailing edge of the wing.

Angle of Attack: The angle between the chord line and the direction of the relative wind. Increasing your angle of attack by applying a small amount of brakes can give you a flatter glide by changing the tail position of the chord line. Applying deep brakes will further increase the angle of attack and create more drag, which can be useful



during the landing process when you want to shut down your forward movement.

Angle of Incidence: The angle between the chord line and the horizon.

Camber: The difference in the amount of curvature of the parachute's top and bottom skin, which causes high pressure on the bottom skin and low pressure (faster moving air) over the top skin. Applying brakes curves the top skin and produces

more lift (low pressure equals lift) but also increases drag and your angle of attack.

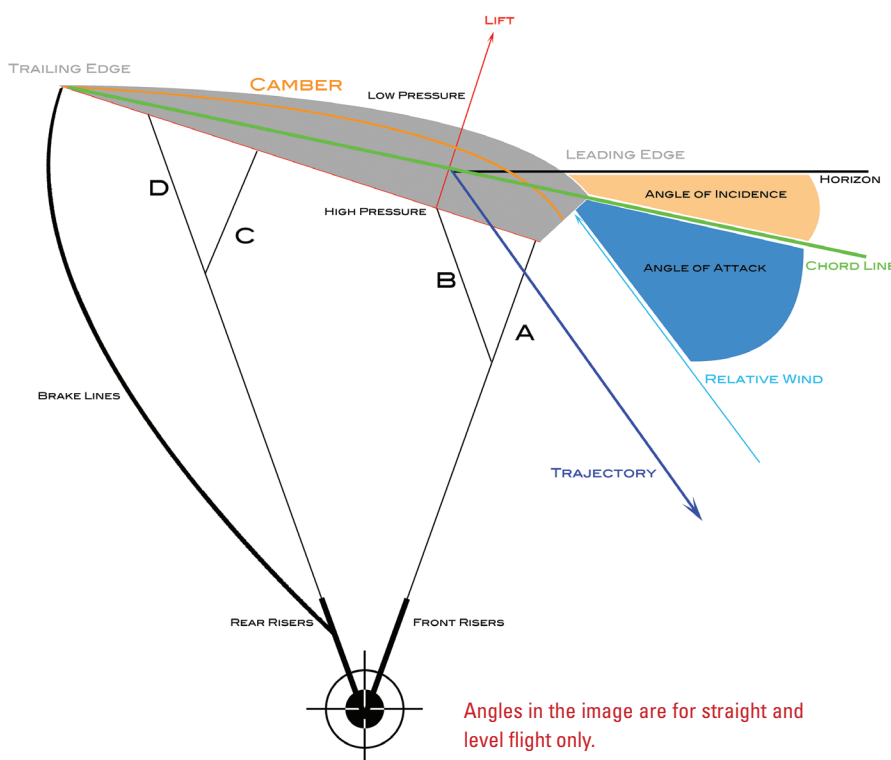
Glide Ratio: The distance a canopy moves forward through the air divided by how far it descends. A 2:1 ratio implies that for every foot you descend, you will cover 2 feet horizontally. This is a direct measurement of your lift to drag ratio. At 2:1, you have twice the lift force than drag force.

Relative Glide: Your glide relative to the ground, which will determine whether you land on target. Your ground speed plays a major factor in navigation. Your relative glide will either increase or decrease depending on whether you are facing into the wind or downwind.

A jumper can alter glide by using control inputs to change the canopy's angle of incidence, angle of attack and camber and also by increasing or decreasing his drag by altering his body position.

Flying into a Headwind

Let's say there is no wind, and your canopy has a 2:1 glide ratio in full flight. For every 100 feet you descend, you will cover 200 feet horizontally. However, if you are in a headwind that is moving at half the speed of your canopy's airspeed, your relative glide halves, meaning you'll only travel 100 horizontal feet over the ground. By applying rear risers, you can improve your glide ratio. Curl up your legs to further reduce drag. When fighting a headwind, your goal is to conserve airspeed.



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Flying with a Tailwind

Flying with the wind gives you options. If you are upwind of your target, time is on your side. By staying aloft for as much time as possible, the wind will carry you a long way with little effort. Using any variety of brakes will slow the canopy's descent rate. On a no-wind day this would give you a diminished glide ratio, but staying up with a strong tailwind and letting the wind carry you back to the landing area may be a good option because you have an increased relative glide. Using rear risers remains effective, but using brakes can also separate you vertically from other canopies, which may lessen landing pattern congestion.

Helpful Hints

A common misconception is that using front risers will increase a canopy's forward speed and help cut through a headwind, but since the canopy distorts and thickens (a step forms in the canopy with the tail curving upward), the resulting drag destroys the canopy's glide. However, when you're standing still or traveling backward, engaging the front risers increases your descent rate. Because you're getting to the ground faster, you'll have less drift and will end up closer to your target.



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