



BRUCE GOLDSMITH *ICARISTICS*
**BRAKES AND
EFFICIENCY**



Bruce Goldsmith has been flying since the 1980s. He has been British Hang Gliding Champion twice, British Paragliding Champion three times and was Paragliding World Champion in 2007. He has been designing paragliders for 20 years.

◀ HANDS UP

Bruce flying during the Fassa Sky Expo in September, Val di Fassa, Italy. Photo: Ant Green

Some pilots fly with a little brake the whole time, whether climbing, gliding or just ridge soaring. Many schools teach this as the standard technique, because it can provide a level of comfort to the pilot and give them a feeling of safety, and a kind of permanent physical contact with the wing. A few years ago this was how we all used to fly, but the gliders have changed and the way they should be flown also needs to evolve. Flying permanently with brakes on, it is no longer the best way to fly modern wings for several reasons.

Enhanced stability

The stability of paragliders has improved hugely over the last decade, and whereas previously you needed the extra stability of flying with the brakes on, the modern glider is reassuringly stable when flown hands up. Historically, flying with brakes on gave the wing more incidence and pressurised the leading edge giving the pilot an increased margin of safety. Flying with brakes on not only reduces your speed but also used to limit the pitching of the wing.

Because modern wings are designed to be intrinsically pitch neutral as well as more resistant to collapse, they can be relied upon to be stable and efficient when flown hands-up; the need to fly with the brakes on is gone.

Flatter polar curve

Glider performance has also improved in recent years and the polar curve has got much flatter and the minimum sink rate has got closer to trim speed. This means that you do not get a better sink rate by flying slower any more. Now the best sink rate is with little or no brake applied. This improvement in the polar curve is the single most significant reason why flying with the brakes released is more efficient. Not only is the glide angle better but the sink rate is as well

Fly decisively

This all means that pilots need to be more decisive in their flying. You need to decide if you are gliding or climbing. If you are gliding it is a disadvantage to glide with your brakes on, it reduces your speed by a couple of km/h and also reduces your glide by at least 1 point

of glide. If your wing glides at 10 hands up, then just a little brake will reduce your glide to around 8.5. Why pay to get the best possible performance wing when you destroy the performance by gliding with your brakes on? So glide with no brake on and try to resist using your brakes to control the wing in direction, roll or pitch. It is better to use weightshift for directional control and the rear risers or the accelerator for pitch control. This is what makes gliding a fine art. You can extract a lot more performance from your wing by using these techniques correctly.

Fly brakes-up

Brakes-up is good for safety too. If your wing is not flying properly due to a flight incident, then going brakes-up will help your wing recover, especially from any kind of stall (deep stall, spin or full stall). If you are used to flying around the whole time with your brakes on then chances are that you will not automatically release your brakes when the going gets tough either. So get used to it: fly brakes-off as much as possible. Not only is it more efficient but it's safer too. **✎**



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