

A rising numbers of people like me are flying 2-liner Paragliders just for fun, with no intentions toward competition flying.

Same as me you most likely always hear that only the "elite" (whatever / whoever that is and however they got into that status) of paraglider pilots are able to fly those wings and you should not even attempt to try it.

In reality, when flying in "normal" flying conditions - from my current point of view - 2-liner flying is neither per se unsafe nor per se dangerous, its just a bit different and you need to follow some simple rules in order to be relatively safe, but overall still less "safe" compared to flying a 3-liner.

But at first one important question:

Why fly a 2-liner paraglider ?

- Exceptional performance in weak conditions
- Exceptional performance when flying into the wind
- Exceptional climb performance due to the ability to "catch" small patches of lift
- Exceptional performance when flying on half bar to full bar (depending on model)

Why is the performance better ?

- 1.) less lines, less drag, more AR, better reynolds number (ok thats very obvious)

2.) Due to the auto stable profile (the center of lift stays more or less directly over the A lines) the front half of the wing adjusts itself (to a certain instance) freely to the oncoming air due to the "hinge" thats placed between the A and B lines - imagine it like the keys on a piano, each cell finds its perfect angle of attack on its own.

3.) This (2) leads to a 2-liners ability to catch small patches of lift (microlift) by adjusting each group of cells to the perfect angle of attack - freely without any input from the pilot - something a 3- or 4-liner cant do due to the restriction in cordwise movement

5.) at bar you can control the wings AOA perfectly with the B lines without any added drag (applying brakes) or unwanted profile distortion (applying C riser pull on 3-liners distorts the profile and decreases performance)

So here is what I have learned in the last few years of "just for fun" 2-liner flying:

DISCLAIMER:

I have gathered all my practical knowledge by flying a 2011 Gin Boomerang 8 in Size S, some details might be different with your wing, but in general most infos below should be applicable.

This is just a starting point and by no means a complete guide to a potentially dangerous sport like paragliding.

Use all the info below at your own risk !

What are the dangers ?

Well in my opinion there are two sorts of dangers:

1.) objective dangers

Its clear that when a 2-liner suffers a big collapse that there is not much resistance due to the lack of line levels, in other words an A line collapse is like a A, B and C collapse on a 4-line glider or a A + B collapse on a 3-liner

2-liners only work (= keep their shape) due to a high amount of spanwise tension in the sail (especially on bar when the wingtips have a higher AOA then the center and put a lot of tension in the leading edge.

If that spanwise tension is removed due to a big collapse the whole glider tends to collapse, this makes it harder to recover compared to a wing with 3 line levels which does not rely that much on spanwise tension to stay coherent.

This leads to the conclusion that a really big collapse on a 2-line wing is of uncertain outcome and should be avoided at all cost.

Another objective danger is the fact that due to the "hinge" between A's and B's brake application above 50% bar can create a lifting force in the area of the "hinge" and create a collapse.

So when flying on more then 50% bar DO NOT touch the brakes, make all your inputs with the b-risers

It must be understood that flying on more then 50% bar and suffering a collapse can end in a disastrous cascade of events and the wing may end in an unrecoverable state - the same applies for most 3-liner and 4-liner high performance gliders with top speeds in excess of ++60 kph

So when flying on more then 50% bar you must be shure that you can manage the AOA of the wing in order NOT to get a collapse.

Below 50% bar things happen in manageable speed, but still, the risk of a disastrous cascade of events is higher compared to less stretched wings with more line levels (3 or 4-liners)

Flying above 70% bar is fast - VERY fast so expect things (= collapses) to happen very fast

2.) psychological dangers

2-line wings are so stable on bar due to their autostable profile that the faster you fly the more solid they feel (at least up to 50 or even 75 % bar) so coming from a 3-liner you might be tempted to underrate the level of turbulence you are flying in.

Glide - your glide into the wind is sometimes so much better than you expect it (from probably many years of flying less performant gliders) that you might be lured to forget about the possibility of massive sinking airmasses (especially near high mountain passes connecting long alpine valleys) - and then your glide performance is suddenly almost as bad as with any other wing or aircraft in the same situation

Super Rough Air - as 2-liners are extremely solid on bar, its more easy to accidentally end up in super rough air, keep in mind that once your wing loses its shape (especially spanwise tension) it can react less predictable compared to a 3 or 4-line glider with a more explosive loss of flying shape - the psychological danger here is that the 2-liner shows some sort of "jekyll and Hide" personality ... more solid up to a certain point and as soon as you cross that invisible border it suddenly is a lot less predictable compared to a standard glider with less AR and less need for constant spanwise sail tension.

Remark: Don't sweat it here, I talk about air nobody in his / her right mind would deliberately fly into, but you might be unlucky, so be aware and throw in some extra safety margin by not deliberately flying your 2-liner in conditions where you might encounter super rough air - there is nothing to prove except you being stupid , -)

Enough Background talking, lets go for the main part:

The main Do's and Dont's of recreational 2-liner flying:

- 1.) When flying on more then 50% bar dont touch the brakes.

- 2.) when applying speedbar ("flying on bar") always use the B risers to control the wing

- 3.) NEVER fly in very turbulent or lee side conditions, coming from a 3-liner or 4-liner - especially in the beginning you might underestimate the real strenght of the turbulences as the wing feels more solid

- 4.) Dont get too excited, very soon - due to the high performance, expecially into the wind - you will find yourself flying lines that you would not fly with another, less performant wing, but keep in mind that turbulence roughly tends to increase with the square of windspeed, so you might expose yourself to a considerably higher danger of hitting rough or super rough air.

- 5.) Managing Collapses

When you see a collapse starting to develop then apply an immediate and sharp B-line pull on the side that starts to collapse (or on both sides in case of a center frontal).

Some wings react better on pulling the B's in a backwards arc, others like the B's beeing pulled more downward - check with your wings manufacturer or just try it while flying on half bar and monitor which method removes more speed - in theory this should be the more effective method, I must add i found not much difference between an backward/downward and a pure downward pull on my wing.

The amount of B-Line pull corresponds to the unloading of the A's, you need to practice that by flying in semi turbulent air (e.g. flying high above ground straight through mid strong thermals)

and modulating the b-line pull forces in order to keep the wing on a straight line - at least that's how I learned the amount of input needed, if you have a better idea pls share it with us :-)

When suffering from a beginning collapse on bar then pull the b-lines first - it is necessary to pull them quick, hard and fast - if that is not enough release the speedbar this increases the angle of attack of your wing but at the same time removes some tension from the leading edge (as the wingtips have more AOA than the center of the wing when bar is applied - at least with all 2-liners i know of) so be aware that in some situations it might be better to stay on bar and just use massive B-line input.

As a last resort, when anything else fails, release the bar, then release the b's and give the brakes a hard blow to re-establish a positive angle of attack and get rid of the collapse.

If all that fails keep the glider in a semi stalled brake configuration and wait until it either enters a beginning flyback / fullstall or enters a parachutal configuration. then slowly release the brakes as if you would fly out of a fullstall or parachutal condition depending on what happened before.

If you suffer an asymmetric collapse then - if possible due to height above ground - tuck your feet in (obvious I think) and follow the collapse, this re-tensions the lines as fast as possible and gives the smallest chance of tangled wingtips (commonly referred to as "cravatte") - at least from my (i must add limited) experience - maybe someone with a very high amount of experience with incidents can give / add more insight into that topic (pls use the comment function below . thank you !) ?

In all asymmetric collapses i tried it worked best to follow the collapse, but that must not mean this is always the best solution in any situation.

6.) Spirals in order to lose altitude - forget it, they don't work properly, the lift and performance is so good that you don't reach an efficient decent rate before the spiral gets very uncomfortable, use bigears (if your glider is capable of that) or use an Anti G parachute instead.

7.) Landing - In tight landing spots or top landings don't be taken by surprise by the exceptional good / long landing flare most 2-liners show

8.) Anything else - not much difference to any other high aspect ratio wing, handle it with care and don't force it, these wings like to fly themselves, you just give them directions.

Last but not least the ultimate must watch video for any aspiring 2-liner pilot (thanks Russel !!!)

{youtube}_YVbdaLc1jk|960|540|1{/youtube}

From Pal Takats comes this SIV Video, also interesting to see.

{youtube}cBZd3tt_OC0|960|540|1{/youtube}

Thats all folks, grab your toys and have some good old flying fun :-)

Paul

PS: leave your comments below, but pls stay nice and constructive thks.