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Photo: Adi Geisegger / Red Bull Content Pool

# #x-mountain


Photo: Sebastian Marko / Red Bull Content Pool

**A submarine-style harness, the Ozone Sublite, during the Red Bull X-Alps 2025. Photo: Adi Geisegger / Red Bull Content Pool**

**Aaron Durogati was the first to land on the raft at the X-Alps 2025 finish, after 7 days and 8 hours of racing, having covered 1674 km, including 1415 km in the air. As we had anticipated and stated in the previous issue, the 2025 X-Alps was dominated by pressurized-envelope harnesses.**

Photo: Adi Geisegger / Red Bull Content Pool

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Photo: Adi Geisegger / Red Bull Content Pool



**For the first time since 2009, Chrigel Maurer didn't win — he had to settle for 4th place. Could the use of a classic harness be part of the reason?**

Photo: Maximilian Gierl / Red Bull Content Pool

# #shots X-Alps 2025

**As always, the images from the X-Alps inspire many pilots to take up hike & fly.**
**Simply hiking up the mountain, feeling the wind, watching the weather evolve — and then taking off, whether for a short glide or a cross-country flight, in total freedom...**
**Here are some inspiring images from the 2025 X-Alps...**

EN/LTF C

# ARTIK 7 P

## Sporting *performance*

From 3.07 kg

The Artik 7 P is an enjoyable and ultra-light sports class glider designed for long distance flights, which impresses with its high performance. This hybrid 3/2-liner with a moderate aspect ratio of 6.2, is totally stable, with a passive safety that will surprise you. Thanks to its versatility, you can take off or land anywhere on a mountain. It's the perfect combination of performance and accessibility to satisfy your hike & fly ambitions.

Sizes

20 / 22 / 23 / 24 / 26 / 28

Neon Earth Mint

# ARROW P

## Beyond *your limits*

From 1.61 kg

Sizes

S / M / L

The lightest pod harness in its class, with fairing and aerodynamics, designed to obtain the best performance. Practical, easy to use and compact: carry it comfortably on all your adventures. Optimised in every aspect, the Arrow P is very stable and offers exceptional comfort and ergonomics for its weight.The Arrow P joins the new generation of Niviuk harnesses, with the aim of satisfying the needs of all those pilots who want to fly further.

NIVIUK | P SERIES

Photo: Lukas Pilz / Red Bull Content Pool

**Some highly technical take-offs require perfect control... Here, Jean de Biolley (Niviuk) in Chiavenna, Italy.**

**Right: Aaron Durogati, Monte Berlinghera**

Photo: Maximilian Gierl / Red Bull Content Pool

On the via ferrata near Sexten in the Dolomites. In the foreground: Simon Oberrauner (AUT1, who finished third).
Photo: Maximilian Gierl / Red Bull Content Pool


Photo: Lukas Pilz/ Red Bull Content Pool

Photo: Maximilian Gierl/ Red Bull Content Pool

**The X-Alps: all kinds of take-offs and weather conditions...**

Tim Alongi (FRA3) near Mont Blanc, just a few days before he had to drop out.
Photo: Vitek Ludvik


**Ondrej Prochazka (CZE) was flying — like the X-Alps winner — with a Zian Ascendant. His wing was a Phi EN C Scala 2 light.**
**Photo: Vitek Ludvik / Red Bull Content Pool**

Aaron Durogati, here at the St. Moritz turnpoint, won the 2025 X-Alps flying a Nova Xenon 2 (size 18) and using a Zian Ascendant harness.

Unfortunately, for this edition of the X-Alps, it was impossible to obtain a full list of the gear used by the various athletes from the organization.

Could that have something to do with one of the event's main sponsors — the brand Skywalk?
Photo: Sebastian Marko / Red Bull Content Pool

**NEWS FAT FESTIVAL 2025 TARGASONNE**

**For the third time, the Club Appel d'Air is organizing the FAT-Festival in Targasonne, at the foot of the well-known flying site Pic Mauroux in the eastern Pyrenees.**

**A festival to properly kick off the Indian summer – a big Air Festival on the ground and in the sky, open to everyone!**

**Concerts will take place within the solar power plant Thémis (well worth a visit in its own right); there will be many stands and activities.**

**August 29–30, 2025**
**Program and more info**

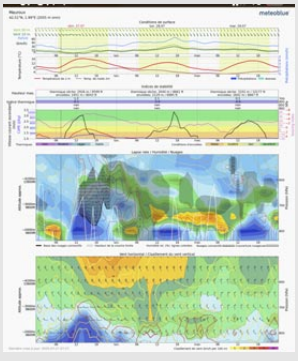
**https://lefat-festival.fr/**

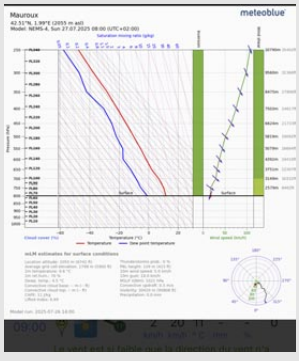
Photos: Sascha Burkhardt

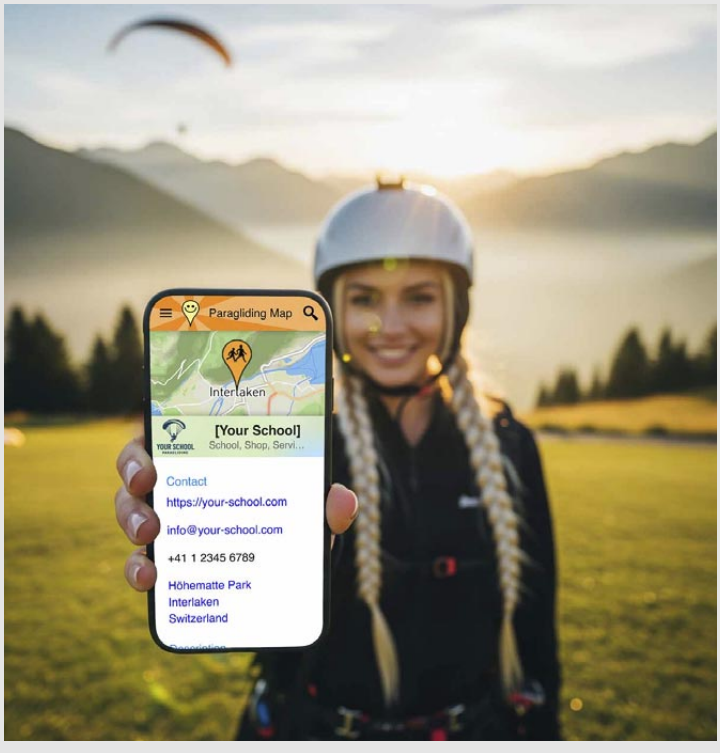

**This is also what the X-Alps can sometimes look like: Aaron Durogati on a peaceful glide in Switzerland.**
**Photo: Maximilian Gierl / Red Bull Content Pool**

**NEWS PARAGLIDING MAP**
**The Paragliding Map app, which lists all official flying sites, is constantly being improved.**
**A reminder: subscribers have full access, at no extra cost, to all Meteoblue forecasts, including sounding charts.**
**Another improvement: from now on, schools and shops can insert their business into the site descriptions free of charge.**

**School registration:**
**www.paraglidingmap.com/Account/BusinessEdit.aspx**
**App Paragliding Map :**
**www.paraglidingmap.com/app/**







**Aaron takes off in Austria.**
**One of the essential requirements for using submarine-type harnesses in this race was the ability to get the feet in or out in less than two seconds.**

**Photo: Maximilian Gierl / Red Bull Content Pool**

EN/LTF B

# HIKO P

## Envolve *with lightness*

Flamingo Citrik Tekno

From 2.99 kg

The Hiko P is an intermediate and ultra-light EN B wing – an all-rounder for a wide range of pilots. It will accompany you in the transition from paragliding training to your first XC flights. Thanks to the combination of the lightest materials, the IKS 1000 connection system and a weight-optimised internal structure, it is also the ideal glider for hike and fly. It offers great confidence building and excellent performance, to start new adventures and improve your skills.

**Sizes**

20 / 22 / 24
26 / 28

# KOOPER P

## All *in one*

From 2.09 kg

**Sizes**

S / M / L

The new Kooper P is Niviuk's most versatile reversible harness. Its modular structure allows for various configurations – perfect for different flying disciplines. Ideal for hike & fly, thermalling and soaring, it can also be used for speed flying. Light, ergonomic, compact and safe, it is equipped with an airbag and an integrated emergency parachute compartment.

NIVIUK | P SERIES

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# #submarine Ascendant Zian


At the Coupe Icare 2024, a new French harness manufacturer made its debut: Ascendant, founded among others by Hugo Laronze, a former Supair collaborator. He had worked on the development of the pressurized Alp harness — see next pages.

It's no surprise that the Zian harness shows similarities with the Alp and even offers some improvements, such as easier handling during takeoff.

A stroke of luck for Ascendant: the Short Tail "ST" version of the Zian — compliant with X-Alps rules — was chosen by several competitors, including the winner Aaron Durogati…

This harness will likely draw growing interest among hike & fly pilots looking for comfort and lightness, combined with performance. The standard long-tail version costs €2,490 and features an inflatable back protector with a maximum thickness of 16 cm, certified along with the structure. It weighs only 1.6 kg in size M and packs down to a very small volume.

**The Zian is currently available in a long version (top) and a short X-Alps version (bottom). A third version, possibly in between, is expected for the Coupe Icare 2025.**
**Photos: Ascendant**


**Ascendant Zian (X-Alps version) stalling and in backfly**
**Ondrej Prochazka demonstrates here how the short version of the Ascendant Zian (X-Alps version) behaves during stall and backfly. Unlike longer submarine-type harnesses, the pilot retains some visibility.**
**Video: Ascendant**

**On the right: the first presentation of the Zian at the Coupe Icare 2024.**
**Photo: Sascha Burkhardt**

# MAESTRO 3

The next step

PHI-AIR.COM

**The nose inflates solely by relative wind; there are no Nitinol rods (right). However, the footplate adjusts automatically using Nitinol rods (photo below). https://fly-ascendant.com/.**

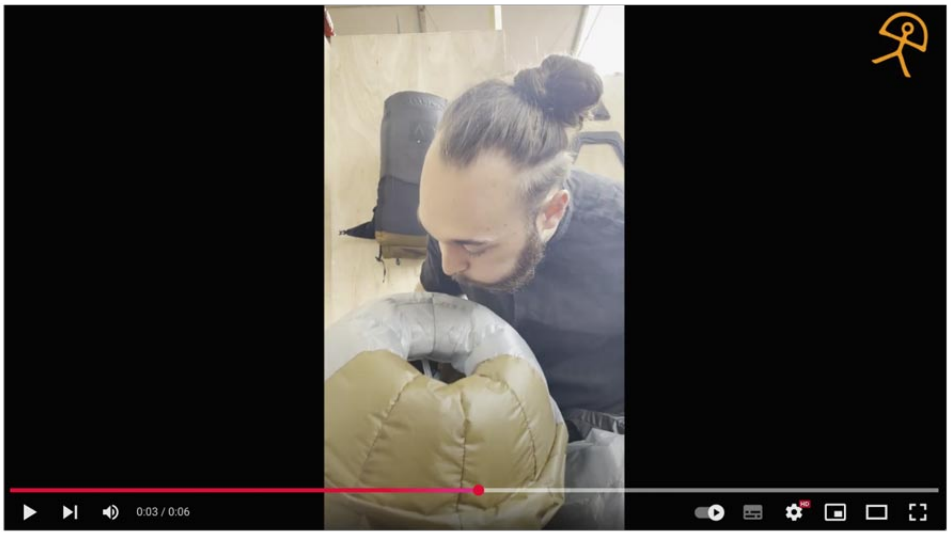



Photo & video : Sascha Burkhardt


Photo : Sascha Burkhardt, Pilote Arthur Burkhardt

**Control over the C2B (speed-bar not yet connected here) under an EN B+ Niviuk Ikuma 3. Pressurized pods – the future for all wing categories and pilots?**

# #submarines for #all ?

A few years ago, the first pod harnesses appeared. For a long time, they were reserved for competition and cross-country pilots, flying EN C, EN D, or CCC-type gliders.

Then, many pilots discovered the comfort these harnesses provide, in addition to the performance gains—even at medium speeds, not just at full bar speed.

Today, pod harnesses are even seen under EN A wings. And rightly so: more and more instructors are advising their students, to improve performance in the air, to first switch to a more streamlined harness rather than moving up a glider category.

Indeed, going from an EN B to an EN C, for example, requires far more pilot skill and awareness under the wing than switching to a pod harness, even though the latter can slightly increase the risk of twists—a risk that is easily avoided if the pilot sits upright as soon as an incident begins.

**The Supair Alp under an EN B+ Skyman Cross Country 3: benefits on multiple levels, even in this class.**


Photo : Arthur Burkhardt


**In 2023, we talked for the first time about the potential of the submarine-type harness and published this glide ratio comparison calculated by Ozone.**

Switching to a pod harness can significantly improve glide without compromising the safety provided by a moderate wing category.

For submarine-type harnesses, the performance gain is even more evident: during the development of the Submarine, Ozone calculated a glide gain from 7.7 to 8.6 for a Submarine under an EN B Rush—making it more efficient than an EN C Delta flown with a classic seated harness (glide 8.1).


Photo : Arthur Burkhardt, Pilote Sascha Burkhardt

**Thanks to the magnetic zips, getting into the pod at takeoff is almost instantaneous. The closure system of the Supair Alp was, to our knowledge, the first of its kind. Only thanks to this system can the pilot get in and out in under two seconds... This removes one of the arguments against the wider use of submarine-type harnesses.**
**In the clip below, you can see in real time how quickly this system seals the pod.**


Photos & video : Sascha Burkhardt

So it's fair to ask: what if most pilots switched to a pressurized "submarine-type" harness?

At first glance, it seems almost ridiculous, but many within the paragliding world believe we could be witnessing a shift similar to the pod harness boom a decade ago.

Of course, there are arguments against it. Interestingly, until now, coaches at the "Pôle Espoir" in Font Romeu—such as Capucine Deliot—have prohibited their promising young pilots, even those flying sharp wings, from using Ozone's first Submarine.

The main reasons cited had been:

- The back protection is too thin, and therefore less effective.
- Too complex to set up, particularly the zip closure of the pod on early Submarine models.
- Difficult access to instruments (which also react with some delay when placed inside the envelope, as on the first Submarines).
- Reduced downward visibility. But above all: the risk of completely losing visibility after an incident like a backfly during stall, when the fairing wraps around the pilot's head.

However, many of these concerns fade or disappear entirely with second-generation submarines, such as the Supair Alp we are currently testing.

- The back protection on newer models is thicker (and LTF certified). There is nothing in the concept preventing even higher back protection using higher inflatable protectors like in Little Cloud's Grasshopper or its clone, the Air Design Sock.
- The magnetic zip on the Alp (now also found on Ozone's newer Submarines) requires no manual action. Slide your feet in, it seals automatically—done.
- On the Alp, for example, the instruments are positioned outside the envelope, unlike the first-generation Submarines.
- On short-tail versions like those seen in the X-Alps, the risk of losing visibility in an incident is much lower (see the video in this issue's article about the Ascendant Zian).

So we may be approaching a setup more suited to a wider range of pilots—especially since, in addition to the undeniable performance gain, comfort also improves.

Photo : Sascha Burkhardt, Pilote Arthur Burkhardt

**We are testing the Supair Alp with various EN B wings, like here with the Supair Step X. Surprising experiences – we will detail the results in a full Supair Alp review in an upcoming issue.**

A harness like the Alp weighs only 1.5 kg and folds down into a very compact size. That's great for hike & fly & cross-country. Despite the minimalist frame inside the inflatable envelope, comfort is quite good—and even at altitude, it stays very warm inside this trapped layer of air (sometimes even too warm).

Pre-launch preparation remains more complex, although the Zian by Ascendant, for example, opens wider than the Supair Alp, making entry easier. There's still room for improvement in the concept.

What will never change: the large envelope made of thin fabric remains fragile.
As for fairing length, a good compromise must be found: not too long to avoid dragging during takeoff or blocking the pilot's view in an incident, but long enough to ensure the expected performance gain and sufficient yaw stability.
All the shortened submarines seen at the X-Alps needed a small stabilizing fin underneath.

We're eager to follow this new equipment revolution...


**The future of all harnesses? A prototype of the Niviuk Rocket P with a short tail.**

**Very small packed volume for the 1.5 kg Alp we are currently testing.**

**Complication: the speed-bar cord has to go through a small hole that doesn't allow hooks to pass. So you need to replace the riser cord with the one from the harness.**

# Next Generation rescue systems

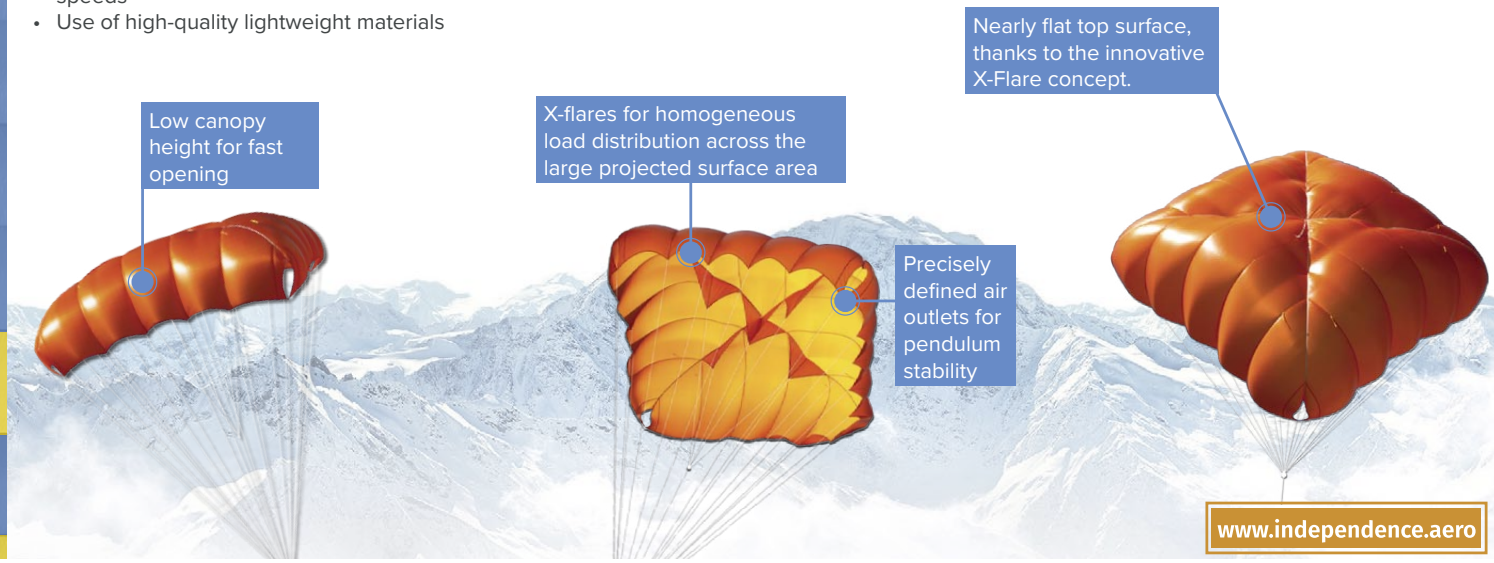
independence paragliding

The world´s leading rescue systems

## Quick facts about the NG series:

- Available in 3 sizes, in both the NG and the NG Light version. Certified according to EN12491
- New, innovative X-Flare concept for high efficiency
- Excellent sink rates, each just over 5 m/s, equivalent to a jump from a height of about 1.3 m
- Very reliable opening and extremely good pendulum stability
- Intelligent, lightweight construction for fast openings, even at low speeds
- Use of high-quality lightweight materials

| | Max load (kg) | Surface ($m^2$) | NG weight (kg) | NG light weight (kg) |
|---|---|---|---|---|
| NG 100 Series | 100 | 25 | 1.45 | 1.18 |
| NG 120 Seriea | 120 | 29 | 1.6 | 1.3 |
| NG 140 Seriea | 140 | 33 | 1.85 | 1.49 |



# #landing on your #buttocks

*For decades, in our sport, this was a no-no and rather a sign of poor technique. Nowadays, however, the buttocks are increasingly and deliberately used as landing gear, especially in tandem, but also in solo flights.*

It is mainly professional tandem pilots who have introduced this method. At first glance, it's anything but elegant, and one wonders what the point is. Yet the answer is simple and clear: if the landing field is nice and clean, without rocks or large irregularities in the ground, it's a very reliable method for landing even the least athletic passengers without risk of a sprain.

And it's not just for them. Even a normally built passenger reaches the limit of what's runnable if the wind suddenly turns tail. There are landing sites where the breeze never clearly sets in, and the wind can turn significantly tail if a thermal triggers just in front.

The same applies to a solo pilot, provided they have good back protection. If the terrain allows, and if the wind is undecided, why not lift your legs and finish on the back protector, skimming the ground as much as possible? This is also an action that can be decided at the very last second: if you see that the wind is not coming from the front as assumed, but rather from behind, and you have room to extend your approach over a clean field — don't hesitate, lift your legs, they will thank you for not taking an unnecessary shock, or for avoiding a mad dash ending in a tumble

Too bad if it looks inelegant. Sometimes can even be avoided: a nice low swoop in a pod harness, ending first on the buttocks and then perhaps on the feet, using the last bit of inertia just before the complete stop, is quite "cool".
But you have to prepare for it. In particular, "old school" tandem pilots have difficulty giving up their habits: "On the feet or nothing." You can train solo first: performing the approach to the ground without standing up — that's quickly learned.


Photos & video : Sascha Burkhardt

Some tandem pilots land their passengers on the buttocks while remaining upright themselves. It's possible, but depending on the direction and speed of the wind, the pilot can easily catch their feet on the passenger sitting in front of them: that is really not elegant nor respectful for the latter. There is a way to prevent this problem by placing the passenger to the side before touchdown, but this complicates symmetrical braking during the flare.

For this reason, more and more tandem pilots are making butt landings systematic for both, if (!) the terrain allows.

**BACK PROTECTION**

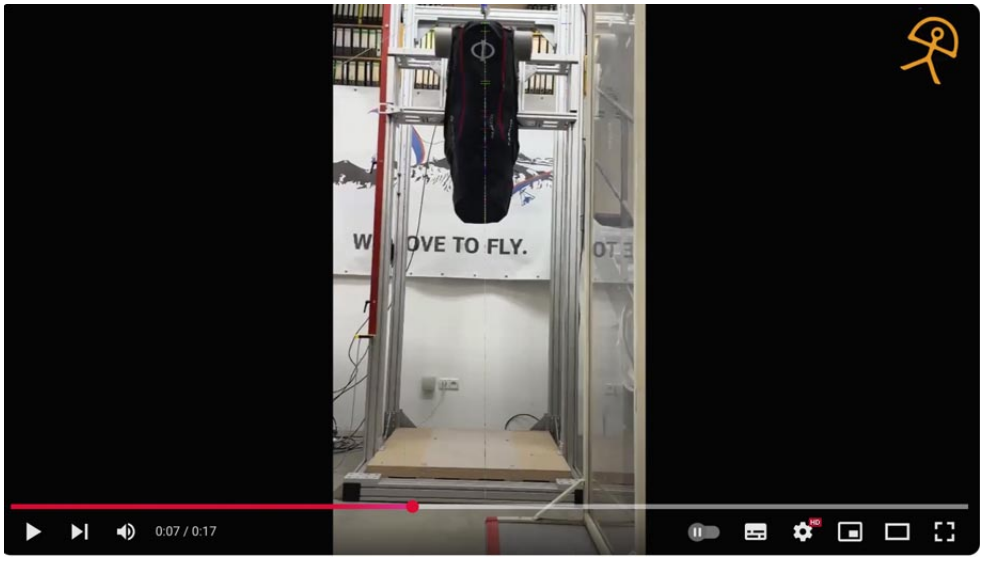
Of course, it's mainly modern back protectors that make this technique possible. EN-certified, they protect the spine from a free fall (!) from a height of 1.65 m: the maximum deceleration (negative acceleration) experienced must be 50 g, the value of 38 g must not be measured for more than 7 milliseconds, and the value of 20 g for no more than 25 milliseconds. These are therefore very effective protectors, if they impact in the intended direction and not sideways, for example.

When landing under a wing, even poorly braked, the impact will not be as strong as in free fall. You can therefore rely on these protectors on smooth ground, especially if you skim it well, with good horizontal speed.

Surprisingly, alpine tandem pilots, often flying with minimalist equipment without back protection, sometimes also land on their buttocks... it may seem daring, but if the ground is smooth (!) and the trajectory well horizontal, it can apparently be done - if the pilot is truly experienced. Zeb Roche, who for example has flown tandem from K2, says he uses this technique quite often with his para-alpinism clients, but by attaching the backpack under the passenger's buttocks to provide a

**In all three videos, the pilot chooses to remain standing — but the technique would allow, if needed, to land safely on the buttocks. Worth noting, especially in the last of the three clips, is the significant speed gained by adding a turn at the end. Perfect: the passengers are well briefed and hold their legs high.**
**Thx to Chris Niederkofler,**
**https://www.instagram.com/tandemflightskronplatz**

**Certification tests require a maximum deceleration of 50 g.**
**The new Phi Cabrio stays well below that with 17 g — an exceptional value.**



minimum of cushioning.

**TYPE OF PROTECTION**

Passenger harnesses for professional tandem use, such as the Passenger Pro from Independence, are equipped with a fairly sturdy and easily replaceable skid plate: after a season or two, the tandem pilot replaces it for a few euros. The smooth surface of this plate also allows it to slide even more easily during the final glide.

For solo pilots, most classic and pod harnesses handle this sliding quite well. Obviously, with a submarine-type harness and its ultra-light fabric, this type of landing is not an option.


Photos : Sascha Burkhardt

The Passenger Pro from Independence in flight: the seat angle of the harness suggests a good slide and solid protection for a butt landing.

https://www.independence.aero/en/harnesses/passenger/

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The pilot harness in the photo is an Apco 2 Light: a very good compromise between robustness and low weight. We will present it in more detail in an upcoming tandem special issue

## FOAM PROTECTORS – THE BEST?

Ideal are foam protectors or those with permanent inflation (before takeoff), while protectors inflating with relative wind have a major drawback, even if they are kept in shape by a Nitinol spring: if the protector does not arrive perfectly in line, but slightly inclined, the effectiveness drops significantly. This is also visible during homologation tests on test benches. After a first satisfactory test, the same harness sometimes arrives very slightly crooked, barely visible to the naked eye, and the acceleration values leave the authorized range…

## FEARS AND TECHNIQUE

A fear of many solo and tandem pilots starting butt landings: what if final second sink, or a strong gradient, causes you to drop fairly vertically in the last few meters? Surprisingly, to preserve passengers' ankles, pioneers of this technique like Jérôme Canaud use it even more systematically on sites subject to gradient. Because as mentioned above, suitable back protection is fully capable of supporting a slightly higher sink rate, even if the trajectory is not a nice tangent but rather vertical. Of course, there are limits, and in this case, stronger final braking may be required.


**The Watson 2 (passenger) and Sherlock (pilot) set. Well thought out: both are equipped with a pre-inflated protector using Nitinol rods, but the pilot can also add the foam supplied as standard. The protectors are certified for impact with and without it. With it, it's even better suited for butt landings. The passenger harness has a Velcro-attached, replaceable fabric piece under the seat.**

**A thick foam pad provides very good protection, as in the Techno 2023 solo harness from Dudek.**

Photos : Sascha Burkhardt


Be careful, however, not to brake too early, nor to provoke a very strong flare that would lift you several meters.
The classic technique: raise your legs high enough, early enough. On a tandem, encourage the passenger to do the same. Do not lose speed by braking too early. On the contrary, hands up, a final approach even faster than when landing on your feet. Some pilots even add speed, some by releasing trimmers, others by initiating a small turn before roundout. Be careful, however, especially in tandem, to set up your approach very early and avoid low turns, except perhaps this last alignment planned in advance. Then: an almost brake-free approach. Just like a ski landing, rather little braking, so no flare! It is only if the trajectory drops sharply unexpectedly that you should brake more to limit the inevitable shock in the absence of a roundout!

## SYSTEMATIZING?

More and more tandem pilots are therefore adopting this technique, almost systematically. A little anecdote in this context: in Germany, in view of a hypothetical claim for damages, a passenger who injured her foot during a landing asked the federation whether landing on the feet is allowed, given that

**Butt landing in tandem, pilot and passenger, as recommended in "ski landing" style, with no flare and therefore light braking at the end. However, just before, right after the turn aligning the trajectory on final approach, it would have been better to fully take advantage of the speed gained from the turn and release the brakes more, to level out even more the glide along the ground. The touchdown would have been even softer.**
**Another detail: it would have been wise to ask the passenger to lift their legs even higher.**

**A relevant question to ask if one really lands on the buttocks very often: what is the structural wear of the foam and harness, and does it still match the certified model over a long period of time?**

**An air scoop like this one (Woody Valley Passenger) is not ideal, but does not automatically rule out landing on the protector.**

Photos : Sascha Burkhardt

Photo : Liv et Zeb

other tandem pilots in the area systematically land on back protectors.
At the same time, some tandem pilots, especially from older generations, totally reject this technique, preferring to use their feet as shock absorbers, even in the event of a problem. Because of course, everything has its limits, and even the best back protection does not protect from every possible impact. And a back injury would be much more serious than one to the feet.

## CONCLUSION

Taking up butt landings, both solo and tandem, at least experimentally, enriches your available toolbox depending on the needs. Tandem pilots, test it solo first, to properly perform, with enough horizontal speed, this counterintuitive arrival.

**Daring: some paragliding/para-alpinism pilots like Zeb Roche (here on K2 in 2024, the very first tandem flight ever from this 8,611-meter mountain) sometimes also land on their buttocks without back protection, if the terrain allows — even with small and fast mountain wings!**

**Here, it's the new version of the 2015 Niviuk Bi Skin (the latter weighs 3.3 kg; the new version, still a prototype, could come in at almost half that...)**
**However, on landing after the K2 flight, Liv and Zeb touched down on their feet, as can be seen in the video below. On such terrain, the question doesn't even arise.**

EN/LTF B

# HIKO

## Progress *with total confidence*

The Hiko is the perfect compromise between passive safety and performance to commence your first long distance flights. It is an intermediate glider (mid EN B), situated between the Hook and Ikuma, expanding our range of paragliders. Its intuitive handling and advanced technologies will allow you to fly with confidence and explore new horizons.


Lavande

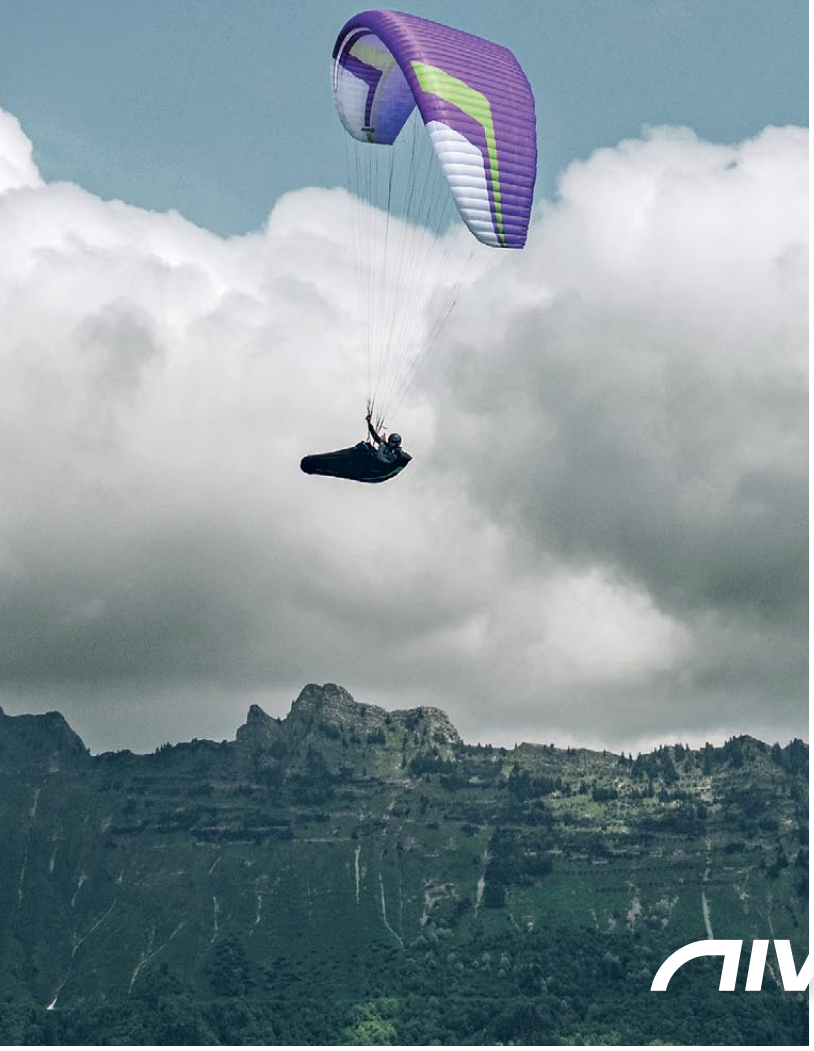

Clay


Motmot


River

**Sizes**

20 / 22 / 24
26 / 28 / 30



# KONVERS 3

## Versatile *and functional*

The Konvers 3 is a versatile harness fitted with a seat board. It is comfortable, ergonomic and designed to suit the needs of every pilot. It is also reversible, but the backpack is completely detachable, so it can be used independently. It is perfect for thermalling, recreational flights and ground handling. Compact and safe, it has a pre-inflated airbag and an integrated emergency parachute compartment.

**Sizes**

S / M / L / XL

AIRIUK

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The Red Bull X-Alps promote it, and more and more pilots are taking up this activity at an amateur level... X-Alps 2025, Thomas Friedrich in the Dolomites. Photo: Maximilian Gierl / Red Bull Content Pool

# #x-mountain #matos

*Hike & fly is attracting more and more enthusiasts. The corresponding equipment is constantly being improved and made lighter. From now on, each issue will briefly present new products... and tried-and-tested older gear.*

Another reason for the success of lightweight gear: the reduction in weight of harnesses and wings, originally intended for hike & fly, has also had an impact on "classic" local flying.

Many pilots choose lightweight gear for reasons other than hiking. For example, between a lightweight wing and the same model in a heavier version, the lightweight generally reacts more gently in a dive recovery, with less amplitude. On the other hand, the lighter fabric may sometimes flutter just a little more in turbulence, with no impact on safety. On the contrary, the wing can even give slightly earlier warnings of unfavourable conditions. Another example: without the widespread adoption of Skytex 27 fabric in wings, pressurised harnesses (see the article in this issue) would have developed more slowly.

Lightweight gear also has an advantage on site: for example, before take off, carrying and handling a comfortable yet lightweight pod harness weighing under two kilos (such as a Niviuk Arrow P) is far more pleasant than a "ship" of 7 kg like the Woody Valley X-Rated 7. Despite slightly greater in-flight comfort, this type of harness is disappearing, as even competition pilots are switching to submarines.

Ozone's "Submarine" does weigh a full 8 kg, but the competitors' submarines are comfortably in the class under 2 kg, with perhaps a little less comfort, but still surprising given the weight. Starting with this issue, we will regularly present in brief all that matters for lightweight flying, whether for local flying, hike & fly, or para-mountaineering.


Photo : Niviuk

# Niviuk #Kode P

The Kode P has been on the market for over 3 years – and has established itself as one of the most universal "mountain wings."

Niviuk had previously distinguished itself with the single-surface "Skin P," which was already a really small paraglider, quite versatile and EN B certified. With the Kode P, Niviuk entered the market of ultralight double-surface wings (1.8 kg for size 16!), offering very good speed and glide for this type of wing and, even in the smaller sizes, the ability to climb thermals efficiently. Already the small 16 is certified EN B up to 70 kg and EN C up to 90 kg.

The solidity of the leading edge against collapses is obvious, even if a Kode P 16, for example, clearly transmits the movements of a turbulent air mass. Large induced collapses, however, lead to more damped reactions compared to an Ultralite 17; the Kode is gentler in extreme behaviour. Despite its small size and liveliness, a Kode P 16 is therefore a very safe "mini-wing" and a good entry point into the world of this type of wing.

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| | | | 12 | 14 | 16 | 18 | 20 | 22 | 24 | 26 |
|---|---|---|---|---|---|---|---|---|---|---|
| CELLS | NUMBER | | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 |
| ASPECT RATIO | FLAT | | 4,75 | 4,75 | 4,75 | 4,75 | 4,75 | 4,75 | 4,75 | 4,75 |
| | PROJECTED | | 3,83 | 3,83 | 3,83 | 3,83 | 3,83 | 3,83 | 3,83 | 3,83 |
| AREA | FLAT | m² | 12,5 | 14 | 16 | 18 | 20 | 22 | 24 | 26,5 |
| | PROJECTED | m² | 11,21 | 12,56 | 14,35 | 16,05 | 17,61 | 19,37 | 21,13 | 23,33 |
| SPAN | FLAT | m | 7,71 | 8,16 | 8,72 | 9,25 | 9,75 | 10,22 | 10,68 | 11,22 |
| CHORD | MAXIMUM | m | 2 | 2,11 | 2,26 | 2,39 | 2,52 | 2,65 | 2,76 | 2,90 |
| LINES | TOTAL | m | 190 | 202 | 218 | 231 | 243 | 255 | 267 | 281 |
| | MAIN | | 3/3/2 | 3/3/2 | 3/3/2 | 3/3/2 | 2+1/3/2 | 2+1/3/2 | 2+1/3/2 | 2+1/3/2 |
| RISERS | NUMBER | | A/B/C | A/B/C | A/B/C | A/B/C | A+A'/B/C | A+A'/B/C | A+A'/B/C | A+A'/B/C |
| | SPEED-BAR | mm | 100 | 100 | 100 | 100 | 160 | 160 | 160 | 160 |
| GLIDER WEIGHT | | kg | 1,55 | 1,65 | 1,80 | 1,95 | 2,24 | 2,41 | 2,60 | 2,80 |
| GLIDER VOLUME | | L | 9 | 9,5 | 10 | 10,5 | 11 | 11,5 | 12 | 12,5 |
| CERTIFICATION | | | EN 926-1 (max 110 kg) | EN 926-1 (max 110 kg) | | | | | | |
| WEIGHT RANGE EN/LTF A | | kg | - | - | - | 50-70 | 60-85 | 65-90 | 70-95 | 90-115 |
| WEIGHT RANGE EN/LTF B | | kg | - | - | 45-70 | 70-80 | - | - | - | - |
| WEIGHT RANGE EN/LTF C | | kg | - | - | 70-90 | 80-100 | - | - | - | - |

The Kode family offers a pleasant roll response in all sizes ... this is somewhat part of Niviuk's trademark.

Inflation and lift-off correspond perfectly to the program, allowing take offs from tricky spots. Sometimes, a small part of the wingtip gets caught in a line during inflation, without consequences.

Technically, the wing incorporates elements from the Klimber 2P, especially in the internal structure, leading to a reduced packing volume and very low weight. The Nitinol rods handle rough packing very well.

An interesting and little-known detail: loops in the leading edge allow the wing to be fixed to the ground on slippery mountain take-offs, using small rods at the end of a short line (as on Skyman wings).

Regarding size choice: depending on pilot weight, from the 18, and even more from the 20 upwards, one gets a real paraglider that can surprisingly efficiently climb thermals, while still packing into a reduced volume and weighing around 2 kg...


Photo : Niviuk

Photo : Sascha Burkhardt, Pilote Valentin Burkhardt



Photo & Pilote Pascal Bouigakoff

**The Kode P is without doubt one of the most versatile wings, suitable for use both on local sites and for hike & fly.**


Photo : Melissa Le Nevé / Ozone

# Ozone #UltraLite 5

Ozone's "Ultralite" family caused a stir right from the very first model: a double-surface wing directly challenging the light single-surface wings, while still keeping comparable weight and packing volume.

Take off handling and inflation were also very close to the characteristics of single-surface wings, which mainly suffered from a lack of speed – unlike a double-surface wing, which naturally provides better penetration.

Today, Ozone has reached the fifth version of the Ultralite. It remains particularly light: size 19, at 1.93 kg, is about 10% lighter than an Advance Pi 3 19 (despite using comparable materials), and the packing volume is still very small. The UL5 is even 100 g lighter than the UL4! At the same time, the wing has significantly improved in performance and speed. (Figures announced by Ozone, not precisely verified: +0.8 glide ratio, +7 km/h).

Photo : Speedlyingschool

At take-off, there is nothing to criticise: this universal mountain wing rises well, even without pulling on the A-risers. In wind, a small brake input is required after it comes up.

In flight, roll behaviour has improved compared to the previous version, and the wing has become even more fun.

The Ultralite 5 in size 17 feels less nervous and more stable in turbulence than a Kode P 16. But if the pilot provokes a massive asymmetric collapse by pulling on the A-riser, the UL5 reopens very quickly, though it dives more sharply and shoots further forward, while the Kode P remains tamer in extreme behaviour. Given the good stability of the profile, such collapses are in any case rather unlikely.

On landing, the flare is particularly effective with the UL5.

In conclusion: in its fifth version, the UL5 remains a benchmark in this class of wings – highly versatile in the mountains, with very good performance in thermals encountered along the route from high summits, hard-won on foot...

Photo : Antoine Boisselier / Ozone

| SIZES | 13 | 15 | 17 | 19 | 21 | 23 | 25 |
|---|---|---|---|---|---|---|---|
| Number of Cells | 34 | 34 | 34 | 34 | 34 | 34 | 34 |
| Projected Area (m²) | 11.4 | 13.1 | 14.7 | 16.5 | 18.1 | 19.9 | 21.9 |
| Flat Area (m²) | 12.9 | 14.9 | 16.9 | 18.9 | 20.8 | 22.8 | 25.1 |
| Projected Span (m) | 6.3 | 6.7 | 7.1 | 7.5 | 7.9 | 8.3 | 8.7 |
| Flat Span (m) | 7.7 | 8.2 | 8.8 | 9.3 | 9.7 | 10.2 | 10.7 |
| Projected Aspect Ratio | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 |
| Flat Aspect Ratio | 4.56 | 4.56 | 4.56 | 4.56 | 4.56 | 4.56 | 4.56 |
| Root Chord (m) | 2.1 | 2.25 | 2.4 | 2.54 | 2.66 | 2.79 | 2.92 |
| Glider Weight (kg)* | 1.44 | 1.59 | 1.76 | 1.93 | 2.07 | 2.23 | 2.41 |
| In-flight Weight Range (kg) | 55-90 | 55-90 | 55-90 | 55-95 | 55-100 | 65-110 | 75-120 |
| Certification | - | - | C | B | A | A | A |

* Wing weight may vary up to 50g per size due to slight variations in the manufacturing of the fabric used.

**For many articles, especially on mini-wings and parakites, we receive valuable input from Beni Kälin, director of the SpeedflyingSchool in Switzerland. Thanks to him here as well, where he shared with us many experiences with the Kode P and the Ultralite 5.**
**https://speedflyingschool.com/**


Photo : Sascha Burkhardt

# U-Turn #Annapurna 2

Somewhat lesser-known: the Annapurna 2 from U-Turn sits in the category of mountain wings with almost normal sizes - the smallest is 20 m². This size is EN A certified with a weight range of 50–65 kg. The same wing can also be flown in the 75–95 kg range and is then EN B certified.

At 80 kg all-up, we found it both very reassuring and yet quite dynamic for an EN B.

It's a good compromise between a mountain wing and a mini-wing. In this weight range, it can also make good use of lift, with good handling to circle tightly in the core.

The launch characteristics are more than up to expectations:

Easy line sorting, cell openings stand open to the wind, very quick inflation, and solid load-taking — exactly what you want for wild mountain launches.

On a windy launch, working and playing with the rear risers instead of the brakes is intuitive, easy, and reassuring.


Photo : U-Turn

**The Nitinol rods keep the openings remarkably well open before launch**
**.https://u-turn.de/en/produkt/annapurna2/**

Its “versatile wing” promise is fulfilled, at least in this size flown at 80 kg. Big plus: U-Turn has a lot of experience with acro wings and the associated material stresses. The longevity of this wing seems assured when looking at the build quality and the materials used. The fabric is Paratex P20 and P10, derived from acro fabric.

And yet, the size 20 wing still weighs only 2.65 kg... That’s about 400–600 grams more than other comparable mountain wings, but probably the price to pay for the choice of materials. The packed volume of the wing in the rucksack is very small and fits perfectly with the “universal mountain wing” concept...

| | 20 | 22 | 24 | 26 | 28 | 31 |
|---|---|---|---|---|---|---|
| Recommended Start weight **** Empfohlenes Startgewicht **** | 50-65 kg | 55-70 kg | 65-85 kg | 80-100 kg | 95-115 kg | 110-125 kg |
| Increased takeoff weight *** Erweitertes Startgewicht *** | 65-75 kg | 70-80 kg | 85-95kg | 100-110 kg | 115-125 kg | 125 -132 kg |
| Hike&Fly takeoff weight NfL/EN B Hike&Fly Startgewicht NfL/EN B | 75-95 kg | 80-100 kg | 95-110kg | – | – | – |
| Flat area Fläche ausgelegt | 20,3 m² | 22,1 m² | 24 m² | 26,2 m² | 28,5 m² | 31 m² |
| Projected area Fläche projiziert | 16,70 m² | 18,18 m² | 19,75 m² | 21,56 m² | 23,45 m² | 25,51 m² |
| Flat wingspan Spannweite ausgelegt | 10,07 m | 10,51 m | 10,95 m | 11,44 m | 11,93 m | 12,45 m |
| Projected wingspan Spannweite projiziert | 7,71 m | 8,04 m | 8,38 m | 8,76 m | 9,13 m | 9,53 m |
| Flat AR Streckung ausgelegt | 5 | 5 | 5 | 5 | 5 | 5 |
| Projected AR Streckung projiziert | 3,56 | 3,56 | 3,56 | 3,56 | 3,56 | 3,56 |
| Chord: center / wingtip Flügeltiefe: Mitte / Stabilo | 2,39 m / 0,71 m | 2,5 m / 0,74 m | 2,60 m / 0,77 m | 2,72 m / 0,81 m | 2,84 m / 0,84 m | 2,96 m / 0,88 m |
| V-trim V-Trimm | ~ 38- 40 km/h | ~ 38- 40 km/h | ~ 38- 40 km/h | ~ 38- 40 km/h | ~ 38- 40 km/h | ~ 38- 40 km/h |
| V-max V-Max. | 52 - 54 km/h | 52 - 54 km/h | 52 - 54 km/h | 52 - 54 km/h | 52 - 54 km/h | 52 - 54 km/h |
| Bridle height Abstand Tragegurt-Kappe | 6,14 m | 6,41 m | 6,68 m | 6,98 m | 7,28 m | 7,59 m |
| Nr. of cells Zellenanzahl | 38 | 38 | 38 | 38 | 38 | 38 |
| Glider weight Gewicht | 2,65 kg | 2,85 kg | 3,05 kg | 3,25 kg | 3,45 kg | 3,7 kg |
| Bridle length Gesamt Leinenlänge | 236 m | 221 m | 212 m | 223 m | 252 m | 287 m |
| Line diameter Leinenduchmesser | 0,6 / 0,8 / 1,0 1,2 / 1,4 / 1,6/ 1,8 mm | 0,6 / 0,8 / 1,0 1,2 / 1,4 / 1,6/ 1,8 mm | 0,6 / 0,8 / 1,0 1,2 / 1,4 / 1,6/ 1,8 mm | 0,6 / 0,8 / 1,0 1,2 / 1,4 / 1,6/ 1,8 mm | 0,6 / 0,8 / 1,0 1,2 / 1,4 / 1,6/ 1,8 mm | 0,6 / 0,8 / 1,0 1,2 / 1,4 / 1,6/ 1,8 mm |
| Speed system / trimmer Fuß Beschleuniger / Trimmer | Yes / No Ja / Nein | Yes / No Ja / Nein | Yes / No Ja / Nein | Yes / No Ja / Nein | Yes / No Ja / Nein | Yes / No Ja / Nein |
| Certification Zulassung | EN-A/LTF-A/B | EN-A/LTF-A/B | EN-A/LTF-A/B | EN-A/LTF-A | EN-A/LTF-A | EN-A/LTF-A |
| Certified standards and procedures Angewandte Testverfahren | EN 926-1:2015, EN 926-2:2013+A1:2021 and NfL 2-565-20 | EN 926-1:2015, EN 926-2:2013+A1:2021 and NfL 2-565-20 | EN 926-1:2015, EN 926-2:2013+A1:2021 and NfL 2-565-20 | EN 926-1:2015, EN 926-2:2013+A1:2021 and NfL 2-565-20 | EN 926-1:2015, EN 926-2:2013+A1:2021 and NfL 2-565-20 | EN 926-1:2015, EN 926-2:2013+A1:2021 and NfL 2-565-20 |
| Folding lines used for certification Faltleinen für Testflüge benutzt | No Nein | No Nein | No Nein | No Nein | No Nein | No Nein |
| Number of risers Anzahl Traggurte | 3+1 | 3+1 | 3+1 | 3+1 | 3+1 | 3+1 |
| Certification No. Zulassungsnummer | PG-2051.2022 | PG-2052.2022 | PG-2053.2022 | PG-2054.2022 | PG-2055.2022 | PG-2056.2022 |
| Certification Zulassung | NfL / EN A+B | NfL / EN A+B | NfL / EN A+B | NfL / EN A | NfL / EN A | NfL / EN A |

**Use of a single-surface wing (here the Sir Edmund Shark from Skyman) at a classic flying site.**

**With double-surface wings becoming increasingly lighter yet still high-performing, some question the use of single-surface wings.**

**However, even though they still lack a bit of top-end speed, they are proving themselves more and more in thermals, and the incredible safety offered by this system reassures many pilots.**

Photos : Sascha Burkhardt Pilote: Valentin Burkhardt


Photo : Claytone Carpé

# #minimalist shoes

Minimalist shoes, or barefoot shoes, are designed to reproduce the natural mechanics of walking barefoot, thereby enhancing foot strength, balance, and proprioception.

For the past eight years, we have tested them regularly, and some members of the editorial team use them by choice for hike & fly or simply on a classic take-off. We described all the benefits back in 2017, with the full article linked here. To summarise, minimalist shoes feature:

- flat soles ("zero-drop"): no elevation between heel and forefoot.
- thin and flexible soles: for better ground feel.
- wide toe boxes: allowing natural toe splay.
- lightweight construction: making natural movements easier.

In short, proprioception is trained and thus provides, according to many specialists (a view we share), a clear advantage on rough terrain during approach hikes and on takeoff, to avoid sprains. And besides, it is much more comfortable.

'Normal' on a dune, 'mad' elsewhere?

## HIKE AND FLY BAREFOOT (OR ALMOST)

***Lighter 'hike&fly': also concerns shoes. All-encompassing ankle boots have given way to lighter, even minimalist, shoes...***

As far as shoes are concerned, school instructors or tandem pilots taking a passenger on a first flight, are often uncompromising with their pupils/passengers: you can't work on the training slope/take-off in light shoes. That seems obvious because heavy walking boots, which go higher up, can protect ankles whereas, in trainers, it seems easier to twist an ankle.

Taking off in a tandem after a two hour walk in with Fivefingers... Wow !

Photo : Claytone Carpe


Another advantage: minimalist shoes are often available in amphibious versions, allowing walking in water (since they are worn without socks), and they dry quickly (even after rain, or simply because the foot has overheated).

The very good airflow in the amphibious versions increases comfort.

Here, this is the Vivobarefoot Hydra Esc, designed for walking both on dry land and on wet surfaces or in water. They are relatively expensive (€180, currently on sale for €108), but very robust and durable.

The Michelin sole looks very thick, but flexibility remains complete, as does the available width for the toes.

**To fully benefit from minimalist shoes, regardless of the brand, it takes several weeks or even months to adapt.**
**Afterwards, thanks in part to significant strengthening of the fibular muscle – here highlighted by tensing and spreading the toes – the pilot while walking may benefit from:**

- **better lateral stability**
  **The fibular muscle helps control the foot's lateral movements, which is crucial on uneven or sloping terrain. With minimalist shoes, the foot is freer to move naturally, putting more demand on this muscle.**
- **prevention of sprains**
  **A strengthened fibular muscle reduces the risk of ankle sprains by stabilising the joint, especially during changes of direction or unstable footing.**
- **improved proprioception**
  **by an increased sensitivity of the foot to the ground, allowing better adaptation to irregularities.**
- **reduced fatigue and pain**
  **A well-trained fibular muscle enables better distribution of forces while walking, reducing fatigue in the other leg muscles.**
- **reduced strain on knees and hips.**

**IMPRINT**

**Founder, editor-in-chief, webmaster, test pilot.**

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