

ADVANCE LIGHTNESS³



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Thank you for flying ADVANCE

Congratulations on your choice of an LIGHTNESS 3 – a quality product from ADVANCE. We hope that you will spend many rewarding hours in the air with it.

This user manual is an important part of the harness. Here you will find instructions and important information about safety, care and maintenance, and that's why we recommend that you read this document carefully before your first flight.

Register your LIGHTNESS 3 online on www.advance.ch/warranty; you will then receive product updates or safety-related bulletins about the LIGHTNESS 3 direct from us. This information will also be available to download from our website at www.advance.ch, as will the latest version of this manual and further updated information.

If you have any further questions or problems please contact your dealer or get in touch directly with ADVANCE.

Now we wish you a lot of enjoyment with your LIGHTNESS 3, and always «happy landings».

Team ADVANCE

About ADVANCE

ADVANCE, based in Switzerland, is one of the world's leading paraglider manufacturers. Since it was founded in 1988, the company has consistently pursued its own directions and concepts, both in development and production. The results are quality products with distinctive characteristics.

Behind the ADVANCE brand name is a team of specialists who share the passion and trust in the company's products. At home in the air themselves, they contribute their valuable personal experience and dedication to the working processes.

Total control of the production process and supervision of the working practices at the ADVANCE factory in Vietnam ensure a high standard of workmanship. Long term relationships with fabric and line manufacturers means that ADVANCE knowledge and expertise also finds its way directly into the development of new materials.

ADVANCE attaches great importance to after-sales customer support, and has built up a worldwide service network for this purpose. An on-going interaction with its customers brings in a steady flow of new knowledge that finds its way into ADVANCE products, thus completing the «Circle of Service».

LIGHTNESS 3 - Ready to Transit

The new LIGHTNESS 3 offers comprehensive comfort both in flight and handling, and there's even more protection. A new choice of standard or light speedbag results in a wider range of uses; there's also the option of a windshield, which significantly raises flying comfort on long distance flights..

All-embracing comfort

Redesigned suspension and chest strap geometry distinguishes the LIGHTNESS 3 by its excellent comfort in flight – especially when accelerated – and high stability. The seat shell fits every pilot's body perfectly, and protects it where necessary. Dealing with the harness on the ground, e.g. speedbag adjustment, is entirely straightforward..

Modular System

The new options and configuration choices make this third generation of LIGHTNESS modular and flexible as never before. Considering prepared weight alone, the possible variance of the S size (2.75 kg up to 3.37 kg) suggests a large range of use – for example a several day bivouac expedition or, perhaps, a new cross country record.

Useful Details

The LIGHTNESS 3 incorporates a number of important details, including SAS-TEC back protection, ample back pocket, drink pouch holder, optional speedbag access line, relief tube channel, cockpit power cable access and loops for fixing to the chest strap, and easy-to-move setting balls for adjusting the Standard speedbag length.

Features LIGHTNESS 3



Side view

- 1 Edelrid ALIAS alu carabiners
- 2 Recline angle adjustment (Back strap)
- 3 Shoulder strap adjuster
- 4 Drink tube guide
- 5 Shoulder harness velcros
- 6 Drink Tube opening
- 7 Inner pocket for drink system
- 8 Reserve V-connection channel with zip
- **9** Easy-release reserve system

Front view

- 10 Additional stowage
- 11 Mesh back section on the back
- **12** Air-filled neck spoiler
- 13 Air intake for neck spoiler
- 14 Relief tube exit
- 15 Small chest strap
- 16 Optional Windshield for standard speedbag
- 17 Carbon footplate



Protectors at a glance

The LIGHTNESS 3 has an LTF (91/09) certified foam protector and visco-elastic soft foam along the back section up to the neck vertebrae. This visco-elastic back protection from the German SAS-TEC company attenuates impacts. Our familiar comfort foam, as used since the first generation LIGHTNESS, lies on top. The main protector, SAS-TEC element and comfort foam can be removed and replaced without problem. See also section "Exchanging parts"

- Certified Foam Protector
- 2 SAS-TEC Back Protection
- 3 Folding crease for easy packing
- 4 Comfort Foam



Features LIGHTPACK 3

- 1 Circumferential zip
- 2 Rucksack handle
- 3 Ergonomically shaped, adjustable shoulder straps
- 4 Large stretch side pocket
- 5 Wrist loop
- 6 Netting pocket
- 7 Elasticated waist strap pocket
- 8 Elasticated side pocket
- 9 Waist strap pocket with zip
- 10 Ergonomic waist strap
- 11 Ergonomic mesh back support





Safety Advice

Like all commercially available reserve parachutes, paraglider harnesses are never suitable for free fall parachuting because their design and construction details do not allow such a thing. Neither the reserve parachute nor its attachments to the harness can withstand the loadings involved in an abrupt opening.

All harness adjustments should be made before the harness is flown. Correct adjustment of the LIGHTNESS 3 greatly contributes to safety, correct function and comfort in flight.

No protector can provide total protection from injury. The EN/LTF certified foam protector only damps the effects of impacts, and so can reduce the severity of injuries that may be caused by takeoffs and landings that go wrong. The SAS-TEC back guard softens blows to the back.

During safety training over water one should take note that the air in a foam protector will try to float in water, and may tip the pilot in a head down attitude. Then there's the risk that foam parts will eventually fill with water and sink, with the pilot.

LIGHTNESS 3 certification is restricted exclusively to paraglider sport.

General recommendations about paragliding

Taking part in paragliding sport requires appropriate training and a comprehensive knowledge of the equipment, as well as the necessary insurance and licences. A pilot must be able to correctly assess the weather conditions at the chosen site before taking off. His abilities must be sufficient for the demands of the selected paraglider. When carrying out paragliding the pilot must also take responsibility for his care of the natural world and the landscape.

The wearing of an adequate helmet, suitable footwear and clothing, and the carriage of a reserve parachute are all essential. Before every flight all items of equipment must be checked for damage and airworthiness. A pre-takeoff check must always be carried out.

While engaged in paragliding every pilot bears sole responsibility for all risks, including those resulting in injury and death. Neither the manufacturer nor the seller of a paraglider can guarantee the safety of a pilot, or be held responsible for it.

Handle with Care

ADVANCE LIGHTNESS 3 products are extremely lightly built and intended for specialised use. This puts particularly high demands on their handling and care. A committed interest in the products and their characteristics is essential. Because of the choice of materials and construction rucksack and harness are much more vulnerable to wear and tear from improper use than regular ADVANCE products.

LIGHTNESS 3 products should never be dragged over the ground. All the zips are for light use only; they should never be closed under heavy loading. Pointed and sharp objects do not belong in the harness back compartment, underseat stowage, speedbag side pockets, or the rucksack; they can damage the fabric. When accelerating make sure the feet stay in the centre of the speedbag or centred on the carbon footboard, and do not press into the speedbag floor or sides – where they will cause undesired friction and wear.



Caution: ADVANCE considers it important that you remain aware of the lightweight fabrics in the LIGHTNESS products. You can enjoy the harness and rucksack for a long time – but only if you look after them carefully. The label 'Handle with Care' is there to remind you that the lifespan of these products depends very much on your own care and attention.



Preparing the product

Delivery

Before delivery every ADVANCE product has to be checked by the dealer for delivery package contents and correct initial settings. A completed warranty form makes sure that deficiencies of the product, attributable to the manufacturer, are covered by the ADVANCE warranty (see under "Warranty" in the section" Service").

We ask you to complete this form on the ADVANCE website under "Warranty", within 10 days of purchase.

Delivery package

LIGHTNESS 3 delivery includes

- Harness with Standard or Light speedbag, incl. carbon footboard and integrated cockpit
- Detachable instrument board with Standard speedbag
- Step-in aid with Light speedbag
- EN/LTF certified foam protector under the seat area
- SAS-TEC back guard
- Comfort foam for the back
- 2 Edelrid ALIAS carabiners

- Reserve connection lines, reserve handle attached to four-flap inner container
- LIGHTPACK 3
- COMPRESSBAG
- Speed system
- "Getting Started" Booklet

Optional Extras:

- Detachable Windshield, only compatible with Standard speedbag
- Step-in aid for Standard speedbag
- Radio pocket for shoulder harness

Harness adjustment

General

Individual LIGHTNESS 3 set up is easy, even though there are many adjustment possibilities. As is generally required for reclining harnesses, you should take some time over initial adjustments, and repeat and refine after flight – as necessary.

Follow the following step-by-step instructions for a bespoke-fitting harness. They take into account all the important criteria such as upper body support, pressure distribution, speedbag length and the most efficient speedbag angle in flight.

All the buckles can be adjusted in flight. All other (non-buckle) settings can only be done on the ground. ADVANCE recommend that you take the time to have a good look at the whole system before your first flight in the harness. A first test flight should be done in quiet weather conditions.

- Info: For a realistic adjustment process the back pocket should be packed as for flight. This advice includes your reserve in its correct place.
- Caution: Small changes have a big effect on all harness adjustment. Approach your own perfect fit in small steps, and the

same both sides. Left/right differences will have a bad effect on your glider's desire to fly straight.

Choice of Speedbag size

Speedbag material stretches and most pilots are happy with the speedbag that comes with their harness size (S, M, L). But there are cases (e.g. especially long or short legs) where a harness is better combined with a different sized speedbag.

- **Caution:** If you change a speedbag you must always use the length lines that belong to the new one.
 - Caution: In the pilot height (S/M, M/L) overlap areas (165 cm-172 cm and 178 cm-183 cm) ADVANCE recommend that you should try both crossover speedbag sizes.

1 Your basic settings

All adjustments have markings for their basic setting. Always start from these standard measurements when finding your own ideal position. Grey sewing **G** indicates a basic setting for harness straps, and black pen marks **S** indicate standard speedbag line lengths. All LIGHTNESS 3s are delivered at these basic settings.

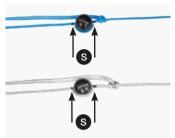
First check that harness straps and speedbag lines are at their basic setting marks. Harness pull-loop bases should line up with the grey sewing on the webbing, and speed bag length (lines to the footboard) knots sit between the black marks (see pics. rt.). If necessary, correct these positions before you start your own adjusting.

Put the LIGHTNESS 3 on, close the chest and leg straps with the two-buckle clips, fasten the Closure Remember System and the speedbag/cockpit and hang the harness in a harness stand by its carabiners.

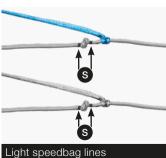


Tip: The harness stand support lines should approximately represent glider riser geometry.





Standard speedbag lines
Basic settings



Basic settings



2 Speedbag adjustment

Correct speedbag length is essential, because the fixed foot position sets the pilot's centre of gravity position relative to the carabiners, and thus the speedbag flying attitude. For minimum drag the underside of the speedbag should be horizontal in flight. To set this critical heel length first completely loosen the upper blue speedbag lines 1. Then set the middle grey lines 2 to achieve the correct heel (bottom of footboard) position. Heels too low – shorten: heels too high - lengthen. Approach this position in max 2 cm steps (equal both sides). Then shorten the upper blue footboard lines (toes) to find a comfortable angle for the feet. Finally adjust the lower blue lines 3 so that they are under light tension when the feet comfortably load the footboard.

3 Setting upper body angle

Set your back-recline angle with the back straps 4. Then you can pull in/ loosen the shoulder straps 5 to suit your desired degree of support – loose, or light contact: not too tight.

4 Fine adjustments

The lower back straps 6 set your lower back (lumbar) support. It also helps you find a better position if the underside of the speedbag is not yet horizontal. You can increase seat surface support with the thigh straps 7 by pulling them in for light leg support.

5 Chest strap adjustment

The chest strap **8** sets the distance between the main support points (carabiners). The chest strap is closed by the 2-Buckle-System and completes the Safe-T-System. ADVANCE recommend a loose to lightly-loaded setting (approx. shoulder-width carabiner distance).

- 6 The wider this distance the more agile is the pilot/glider relationship, both in roll feedback to the pilot and pilot ability to weight-steer. A narrower setting creates a quieter and more damped feeling from the wing. This adjustment range is large. Agility can be set to any position in flight to suit the conditions as the pilot wishes.
- **Tip:** The most important factor for chest strap adjustment is that the pilot feels happy in the harness

7 Mini chest strap setting

The mini chest strap holds the shoulder straps in place for takeoff and landing. Width can be set as required.

8 Final settings check

Check the horizontal speedbag attitude again - best observed by a third party or in a big mirror. Make sure that the front edge of the seat does not press into the backs of the knees. If it does, loosen the thigh strap; but do to hesitate to repeat all or any of the adjustment procedure as often as necessary.

Setting the speed system

The LIGHTNESS 3 comes with speed system 10 ready-fitted. The speed loop is attached at the carbon footboard by bungee. This attaches to the centre footboard loop as standard, but can be mounted left or right as desired for loop pickup.

Connect the LIGHTNESS 3 speed lines to your paraglider using Brummel hooks or kite loops (anchor hitch). Set the speed loop lengths by moving the positions of the knots inside the speedbag and tighten the kite loops at this position (same both sides). The speed system is correctly adjusted when you can use both speed loops, and have the total accelerate range available. Make sure the setting is not too short - an error which would cause the wing to be permanently accelerated.



Closing the speeebag

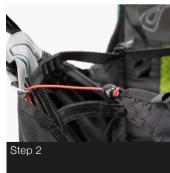
The LIGHTNESS 3 speedbag is closed by the Closure Remember System (CRS). This safety device is directly attached to the chest/ leg straps, and alerts the pilot to the status of the leg straps when the speedbag top is closed. Lead red loop #1 through #2 and #3 metal eyelets and fix it on the black ball (Step 1).

Then lay the speedbag sides left over right, and fix the left side loop over another black ball on the red line from the right hand speedbag carabiner loop (Step 2).



Caution: Always close the chest strap first, then the Closure Remember System and finally the speedbag. Recheck before every takeoff – especially after a failed attempt – with a solid tug at the chest strap, to confirm that both flat-buckles are correctly closed. An open chest strap can cause you to fall out of the harness!







Caution: Always check that ALL buckles and loops are correctly closed!

Cockpit and Instrument panel

A cockpit 1 is built in to both Standard and Light speedbags. The cockpit is closed by a zip which makes an extra pocket for spare batteries. A cable can be run through a hole at the back of the cockpit 3 direct to flight instruments on top.

The Standard speedbag also comes with a detachable cockpit panel 2. To save weight the Light speedbag does not have detachable panel. This can be obtained separately.

The detachable panel holds flight instruments (GPS, Vario, Smartphone etc.). There is a click buckle at the after edge (1), that can be clicked to the chest strap after closing the speedbag. This holds the cockpit in a good position during takeoff, and allows the pilot plenty of leg room for the takeoff run.

Fastening the cockpit panel on the cockpit. There are a number of tape loops for securing electronic items. The panel itself can be secured to the cockpit loop proper.

At delivery the cockpit pocket has a foam blank inside. This holds the cockpit steady and/or keeps its shape as a spoiler. The blank can be removed and the space used for personal essentials.







Additional stowage

The LIGHTNESS 3 has a 6 ltr stowage under the seat – an ideal place near the pilot centre of gravity.



Fitting the optional Windshield

The optional Windshield * for the standard speedbag markedly reduces windchill and its associated body cooling. Continuous wind noise is also suppressed in transiting flight, especially when accelerated.

First clip it to the press stud on the leftside of the harness. Lead it through the elastic strap on the speedbag and clip it on the right side.



Tip: open the cockpit zip and put your hand inside to press the button.

To avoid scratches and damage the screen should be unclipped after flight, put in its bag and stowed in the COMPRESSBAG inside the folded glider.



Sensible details

Shoulder attachments

The LIGHTNESS 3 right shoulder strap has a Velcro and loop. These can be used to fasten an emergency location device for example, or a vario. These can be secured by line.



Pocket and holder for drink systems

The LIGHTNESS 3 back compartment has a separate pocket for a drink bottle. Put the filled bottle inside and secure it with the holder above the pocket. Lead the white holder loop through the bottle's eyelet and pull it over the toggle.



Info: The holder is very adjustable and can accommodate the size and shape of your container.

The drink tube leaves via the left of the back pocket and can be held in the Neoprene loop on either left or right shoulder strap.



Relief tube routeing

Standard and Light speedbags have a hygienic relief tube routeing on the left hand side. The relief tube leads directly outside into open space. This has the housekeeping advantage that the speedbag remains unsullied, pristine, and only wetted by rain, even after long duration cross country flying.

The entry point for the relief tube is on the left side of the speedbag, at approximately hip height, and is hemmed in red. After closing the LIGHTNESS 3 lead the tube out of your trousers and push the end out of the red-marked opening on the left side of the speedbag. Make sure your tube is not kinked, twisted, knotted or otherwise obstructed.



Info: The relief tube can be pushed through the red-marked hole at any time thanks to its ease of access.





Fitting the Step-in Aid

The Light speedbag has the Step-in aid already fitted. This makes it easy to get your first foot in the speedbag after takeoff. The light speedbag is more easily blown back because of its lighter material, making it more difficult to reach.

Before takeoff push the knot on the elastic Step-in aid under the lace of your left shoe/boot.

After takeoff pull the speedbag forward with your left foot, and put your right foot inside.



Info: The Step-in Aid is available for the Standard speedbag as an option.



Replacing parts

The LIGHTNESS 3 is delivered with foam protector, SAS-TEC back guard, comfort foam, speedbag and speed system already built in. All these parts can be easily removed and exchanged, either for repair or replacement. You might consider removal for intended water landing during safety training, or for extreme use weight saving (Vol biv).

Ultimately, the LIGHTNESS 3 could be flown without foam protector (~ 450 gm) and SAS-TEC-crash protection (~ 270 gm). A sleeping bag could be stowed in place of the foam protector, and a folding Isomat take the place of the SAS-TEC back guard. We have to advise against these measures in the interests of safety. Flying without the comfort foam is also possible (~ 150 gm), but this will affect comfort on a long flight.

Foam protector

The foam protector pocket is under the seat between the extra stowage and reserve compartments. Open the pocket with the zip fastener under the harness and pull the protector out. When replacing make sure the mark on the protector faces you and lies against the similar mark on the inside of the protector pocket. Close the zip.

SAS-TEC back protection

The SAS-TEC back protection goes in a separate pocket in the back of the harness. To take it out first open the zip in the back pocket. Pull the SAS-TEC up and out. To reinstall it is essential to ensure that the mark on the back guard faces inboard - away from you - and lies against the mark in the SAS-TEC pocket. Close the zip.



Caution: The visco-elastic SAS-TEC material becomes extremely hard in very cold temperatures and can break if it is folded. Thanks to our pre-arranged folding line this should not happen when the LIGHTNESS 3 is folded for packing.

Comfort foam

The comfort foam is behind the SAS-TEC pocket in its own push-in/slide down pocket. To remove it first take out the SAS-TEC back guard, as described above. Then pull the comfort foam out of its pocket. Reverse the sequence to reinstall, not forgetting the SAS-TEC guard.

Speedbag

The LIGHTNESS 3 comes already fitted with the speedbag you ordered. The speedbag is principally secured to the harness at three places: by a loop at each carabiner, zips along the sides and Velcro underneath of the LIGHTNESS 3 and the lower speedbag lines to the sides of the seat shell.

To remove a speedbag for replacement, first free the grey support loops 1 from the carabiners. Then open both side zips 2, and free the Velcro underneath 3. Take out the speed lines and speed loop.

Now release both lower, blue speedbag lines which connect the speedbag to the harness.

For a Standard speedbag next release the lower red-marked part of the lines from the red attachment points on the footboard 4. Free the anchor hitch (kite) knots from the red lines. Then loosen the kite knots on the blue lines below the black setting balls 5 and pull the lower, red sewn ends of the lines out of the kite knots. Then completely free the blue lines from the black tabs on the edge of the seat surface.

For a Light speedbag directly release the kite knots on the upper ends of the blue lines, so as to pull these off the grey adjustment lines, then thread the grey adjustment lines off the black tabs on the edge of the seat surface.

The LIGHTNESS 3 is now ready for its new/different speedbag. Proceed in the following three steps:

For a Standard speedbag first release the two lower blue speedbag lines from their attachment on the footboard. Loosen the kite knots and pull the blue lines off the red attachment lines.



Now thread the upper ends of the blue speedbag lines through the blacktabs on the seat surface and pull them through (Fig. 1). Fold the upper loop of the line into a kite knot and pull the lower, red-marked part of the line through it (Fig. 2). Then pull the kite knot up tight behind the black ball.

Now fasten the lower, red-marked ends of the lines with kite knots on the short red attachment lines on the lower end of the footboard (Fig. 3).

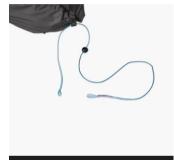




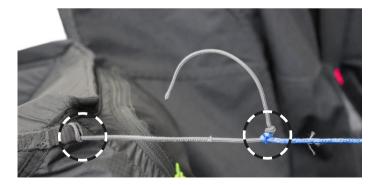


Fig. 2



For the first step in fitting a Light speedbag release the grey adjustment section at the upper ends from the two lower blue speedbag lines. To do this loosen the kits knots of the blue speedbag lines and pull these off the grey adjustment lines. Now fasten the two grey adjustment lines with kite knots direct to the black loops on the edge of the seat surface. Then fasten both lower blue speedbag lines to the grey adjustment lines, again with kite knots.

At the second step fix your new speedbag to the underside of the



harness with the Velcro 3 and close both side zips 2

The third step requires that you hang the grey speedbag left and right support loops 1 in the carabiners.

- **Caution:** Always use the original footboard (blue) lines that belong to the speedbag.
- **Caution:** It is essential that the grey speedbag support loops are hung in the carabiners. Otherwise the zips will be immediately damaged under load.
- **Info:** The footboard is part of the speedbag and provides significant support in your no-seatboard reclining position. The LIGHTNESS 3 only functions with the Speedbag.

Carbon seatboard

A new footboard is pushed into its pocket in the end of the speedbag. This pocket is closed by Velcro strips

Speed loop

The lower speed loop has a grey locating loop 1. This goes through the loop in the black bungee fixed to the centre of the footboard 2. Pull the whole speedloop component through the grey loop to make a loop-in-loop connection with the pull-forward bungee.

Lead the grey speedlines (minus Brummel hooks) 3 through the metal D rings on each side of the seat surface, between speedbag and harness to the Ronstan pulleys; aft through these, then up through the openings in the harness sides. Loop the speedline loops through and over the Brummel hooks in the usual way (anchor hitch).

Caution: Be sure to check the run of speed and speedbag lines. These must not cross, or cutting may result.



Caution: Only use the original speed lines and speed loop. A different line or a solid speedbar could seriously damage the speedbag and harness by point-load or friction.



Installing the reserve

General advice

Every reserve/harness combination has its own peculiarities. It is essential that pilots and parachute packers familiarise themselves with the system and how it works – especially if any part of it is new (new reserve in existing harness or vice versa), so that reliable operation can be assured.

The LIGHTNESS 3 reserve compartment is in the best aerodynamic position near the pilot's centre of gravity. The harness/reserve connection runs in a channel at the side of the harness, closed by a zip fastener. The reserve compartment is closed by a closure flap; the reserve system is thereby well protected from the outside, and accidental releases are hardly possible. A well-designed release system guarantees reliable and fast opening.

Caution: Installing the reserve must be done by a suitably skilled person. Your safety depends on it!

Suitable reserves/reserve compartment volume

Basically, bulky old-style reserves in compact, modern harnesses can be difficult to release, especially under high g loading. The certified volumes for the LIGHTNESS 3 are specified as a function of harness size: size S 3 to 5.5 litres, size M 3 to 6 litres; size L 3 to 6.5 litres.

- **Info:** For a general approximation of a reserve volume, its weight in kilos x 2.7 gives a volume in litres. But, depending on packing style and skill, it can still be that a reserve that conforms to the maximum certified volume for a container, using the weight formula above, cannot be released without problem.
- **Caution:** if the volume of the packed reserve lies within the upper third of the certified volume range, it is especially important to observe that the reserve has been correctly folded to conform to the length of the inner container!
- Caution: when installation is complete only a test release/compatibility check can confirm that the actual reserve/LIGHTNESS 3 combination will work.
- Caution: A reserve parachute volume can expand by up to 30 % when it has been newly folded. ADVANCE therefore strongly recommend that a new compatibility test is carried out after every repack.

Steerable reserves

A steerable reserve can be connected directly to the two coloured support points under the shoulder strap covers, using two similar Maillons Rapide of 2400 daN safe working load. The parachute risers run into the reserve compartment in the channel provided. The normal harness V-connection (not used) can be led into the back compartment through the existing opening, then stowed away in the comfort foam pocket. Once again a compatibility test will decide if the chosen reserve works properly with the LIGHTNESS 3.



Caution: steerable reserves tend to take up more volume.

Info: you can also use QuickOut carabiners with a steerable reserve on the LIGHTNESS 3.

In general

The reserve handle and the four-flap inner container are fixed together and this combination is designed so that the pull of the handle acts equally over the whole width of the inner container. This minimises the risk of the container jamming in the reserve compartment, or the

reserve lines getting caught up. The reserve handle together with the four-flap inner container are essential parts of the harness, and this arrangement conforms to the latest LTF certification requirements. Only the original reserve handle with its four-flap inner container is allowed to be used.

Packing the reserve in the inner container

Always fold your reserve to the shape and dimensions of the inner container supplied with the LIGHTNESS 3. At the final packing stage put the line bundles opposite the reserve handle. When the lines have been stowed in the inner container there should be 90 cm of reserve line remaining outside, between the inner container and bridle/steerable



risers.

Closing the inner container

Close the container flap in the order indicated (1-3). Secure the final container flap (3) with a 5 to 6 cm line loop (ca. 3 finger widths). Now check the tension of the bungee loop and adjust if necessary. --> lift

the package by the lines - the weight of the reserve should release the line loop.





Now close the outer container flap (red border) with two similar line loops (5 to 6 cm). These two line loops are secured in the two attached rubber bands though their eyelets on the outer flap.



Connecting the reserve to the harness

The reserve bridle and the harness connection must be connected to each other by the means of a suitable quicklink of at least 2400 daN safe load (fig. 1). These two lines must be stabilised at the maillon, for example by using rubber O rings, to prevent the webbings slipping round and cross-loading the maillon during a reserve deployment.

In collaboration with the PMA (Paraglider Manufacturer's Association) and German climbing rope manufacturer Edelrid, ADVANCE carried out an exhaustive series of tests in 2017 to investigate the strength of the direct loop-in-loop method of connecting these two webbing items (fig. 2). This involved a series of material combinations of harness V-lines and reserve bridles, such are as used in ADVANCE harnesses with COMPANION reserves. Compared with a Maillon Rapide connection the strength of this arrangement was slightly reduced, but not to an extent that would compromise its function.

For this reason loop in loop connection between ADVANCE products and COMPANION reserves is approved, so long as basic safety measures are observed: namely, loops centred and the webbing connection pulled as tight as possible We cannot make a definitive statement about the strength of such a connection of ADVANCE harnesses with other reserve.

I

Caution: don't use sticky tape instead of O rings for locating the loops on the maillon!



Info: when looping a COMPANION reserve to the LIGHTNESS 3 the V-line Neoprene protector must finally be pulled over the connection.





Putting the inner container in the reserve compartment Spot to spot

First lay the harness V-connection in the compartment, then put the inner container on top. It is essential that the inner container closure flaps face the bottom (when in flight) of the harness. Follow the directions indicated on the inner container and the inside of the reserve compartment. When correctly installed spot faces spot.



Caution: if a repacked reserve does not fit the shape of the inner container it must be refolded to the correct shape.



Closing the reserve compartment and fitting the reserve handle

The outer container is closed by the white closure loops and the two yellow cables on the reserve handle. First lead the lower, longer yellow cable 1 through the "buttonhole" of the reserve handle pocket 2 and further down its channel until it comes out of the harness 3. Now fix the reserve handle in its pocket and then lead the upper, shorter yellow cable 4 to the side, out of the pocket by the red marking 5. A magnet hold the reserve handle in position.

Put the reserve connection lines in their space at the side of the harness 6.

Thread a short length of packing help line through the lower closure loop and pull the ends of this line through its metal eyelet. Secure the lower end of the outer container with the lower, longer yellow cable 7 and stow the end in its channel.

Now completely open the side zip (which closes the V-connection side channel). To do this, carefully pull the zip all the way down (wrong way for opened zip) to the left hand side of the outer container **3**. This is the correct start of the zip track. Return the zip all the way back to the shoulder end which will close the side channel **9**. Stow the zip slider in its "garage".

1

Caution: Do it with feeling - not strength!







Protect the zip with the upper, shorter cable. To do this thread a packing help line through the upper white loop and pull this through its metal closure eyelet. Push the yellow cable through the white loop 10 and stow the end in its channel.

- **Tip:** If the V-connection zip tracks get out of sync. (misaligned) you can restart it by opening the Velcro, disengage the zip end, realign the beginning of the zip track and start again (like a full zip jacket).
- **Caution:** To guarantee a correct release always make sure that the yellow cables run freely.
- **Info:** The zip fasteners will always open easily and reliably when required even after long intervals between openings.
- Caution: Never connect the reserve directly to the inner container!





Compatibility test

In every case correct installation of a reserve must be proven by a test release. Put the harness on, close the 2-buckle closure, the Remember Closure System and the speedbag, and hang the LIGHTNESS 3 up by its carabiners in a harness stand. Then pull the reserve out by its handle, as if in flight.

It is not sufficient to pull the reserve out when not sitting in the harness as for flight. The release procedure must take place in the flying position, without hindrance, and in accordance with the requirements of this manual. The force required to release the reserve must not be less than 4 daN and not more than 7 daN. If in doubt you should contact a qualified person or your ADVANCE dealer.

The correct throwing technique has to be used – a pull to the side (see next page). Anything else can make deployment more difficult.

The following factors can make successful reserve opening more difficult, or prevent it – especially if any apply together:

- Reserve too big too much volume for the compartment or inner container.
- Reserve not folded to the shape of the inner container.
- Incorrect throwing technique. A pull to the side is required (Caution:

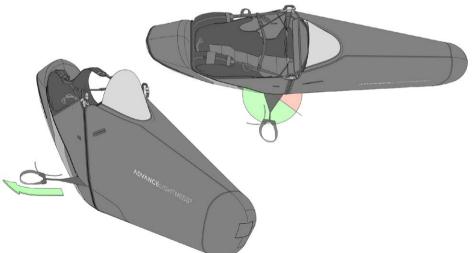
don't pull the reserve handle straight upwards).

- The reserve volume was suitable for the harness when first fitted in the new harness, but after a repack it is too big.
- Pilot arm length is a factor: short pilots with short arms can sometimes not pul out the reserve.
- Deployment under high g (more than 3g, for example in a spiral dive).
- Info: a successful compatibility test can reinforce the tester's confidence in the reserve system.
- **Caution:** before every flight check that the reserve handle is in its correct position, and that the yellow cables are correctly sited.
- **Tip:** We recommend a brief check of the reserve handle during every flight. This helps to memorise its position. We also advise you to mentally rehearse the sidewards pulling and throwing action.

Sideways pull

When releasing the reserve a pull force directly to the side must be employed. If the handle is pulled upwards or forwards at the same time the force required will be raised considerably.

If the reserve is not pulled straight out from the reserve compartment as described, it is possible that it will jam in its pocket. In an extreme case, release could be rendered impossible.



Packing the LIGHTNESS 3 back and under-seat pockets

Careful packing of the 2 harness stowages has a significant effect on flying comfort. Oddly shaped and hard objects can be felt through the back and lower seat shell surface and can affect your reclining comfort.

First pack the COMPRESSBAG in the harness back compartment and push it all the way down. Roll up the LIGHTPACK 3 long and thin, and push that into the back pocket. The remaining space should be used sensibly. Pack hiking poles (rubbered points upwards), rations and clothes cautiously around the rolled rucksack, but do not pack too full, or strain the back compartment.

Adjusting the rucksack

The LIGHTPACK 3 Rucksack has been designed specially for the LIGHTNESS 3 harness. The two sizes, S/M and L, are arranged to carry a normal size paraglider, the LIGHTNESS 3 harness and speedbag, reserve, helmet and the most important items of clothing. The compactness and geometry of the system provides a high degree of carrying comfort. Side pockets provide space for small objects and for a drink system. The two lower side pockets are easy to reach while walking. Never close the light duty zip fasteners under tension. For an ideal individual adjustment ADVANCE recommend that you proceed as follows for a fully packed rucksack:

1. Adjust the waist strap

The fastened waist strap of a packed rucksack should lie on the hip bones. Pull the waist strap in at this position as far as feels good. A correctly adjusted waist strap should carry most of the rucksack weight on the hips.

2. Adjust the shoulder straps

Pull in the shoulder straps so that you can feel tham, but not so that they put pressure on the shoulders. The low mounting of the shoulder straps adapts to different upper body lengths. When correctly adjusted the shoulder straps lie over the shoulders, but do not press or load them.

Use in Practice

General

The LIGHTNESS 3 is flown in a reclining position. If you have adjusted the harness correctly information from the wing will be transmitted directly to your nether regions. Your weight will be evenly distributed from the thighs to the shoulder blades. This means that pressure points will be avoided, circulation will continue unimpeded, and you will maintain your concentration on long flights. The aerodynamically optimised speedbag protects you from the cold while serving as a foot support.

Clipping in

The EASY CONNECT coloured markings on the carabiner support loops make it especially easy to clip in an ADVANCE paraglider to the LIGHTNESS 3. The pilot only has to make sure that the red and blue markings on the paraglider risers join the equivalent red and blue lines on the LIGHTNESS 3 harness carabiner loops. The EASY CONNECT SYSTEM contributes to greater safety before takeoff.

Takeoff preparation and check

Before every takeoff you should check the following:

- 1 Harness and helmet clipped up, reserve OK?
- 2 Lines clear?

- 3 Canopy clear?
- 4 Wind direction and strength assessed?
- **5** Airspace and field of view clear?
 - Caution: Always close the chest strap first, and the speedbag afterwards. Before every takeoff but vitally important after a failed takeoff attempt confirm that the aluminium flat buckles are correctly closed with a firm tug on the chest strap. An open or not properly closed chest strap can result in you falling out of the

Using the speedbag

harness after liftoff!

Getting the feet into the speedbag

Take off with a pronounced forward-leaning body position and keep this after lift off, so that you don't slide down too low in the harness. You can then best reach the right foot into the speedbag which will be trailing below and slightly behind. A glance below at the speedbag opening makes this easier. The speedbag closes automatically when you stretch your legs in it, and pressure on the footboard pushes you back into a comfortable reclining position.

After taking up the flying position and stretching your legs the speedbag closure system will automatically close the speedbag top and bring the cockpit into position. For landing take both feet out of the speedbag in good time, and take up an upright position. Always make a stand up landing, so as to avoid damage to body or equipment.



Tip: The speedbag can be very warm; if it gets too warm inside bend a knee to let air in.

Using the speed loop

Both LIGHTNESS 3 speed loop rungs are centrally reinforced. This makes them more comfortable on the feet but also easier feel a rung centre. Make sure that the speed lines are not set too short – so that the full accelerate range is available. Accelerate with one foot only, and leave the other on the footboard. To accelerate more, push the first rung to the footboard and put the other in the second speed rung. Make sure your heels do not push into the bottom of the speedbag and overstress the material.



Caution: Connect the speed system to the paraglider for every flight. Free-swinging speed lines could prevent a successful reserve throwing.

Flying with Ballast

As a lightweight XC harness the LIGHTNESS 3 does not have a separate water ballast compartment. Also, neither the extra stowage pocket under the seat nor the cockpit are suitable for heavy water containers. If you do want to fly with extra weight we recommend that you divide it up between the back pocket and the extra underfloor stowage area (1 to 1½ litres in each). If even more weight is required (waterbag) we recommend that you hang it from the carabiners.

Use for school training

The LIGHTNESS 3 is a reclining harness - not suitable for school training.

Winching

All ADVANCE harnesses are suitable for winching. Connect your LIGHTNESS 3 to the tow link using rope loops or Maillons from the main carabiners. If in doubt always consult the winch driver, or someone authorised by the manufacturer.

Acro

The LIGHTNESS 3 is not suitable for acro flying. Freestyle manoeuvres pose no problem, however.

Tandem flying

Aufgrund seiner Dimension/Funktion eignet sich das LIGHTNESS 3 grundsätzlich nicht für doppelsitziges Fliegen – weder für den Piloten noch den Passagier.

Paraglider compatibility

The LIGHTNESS 3 can be used with any glider - there is no restriction.

Landing in water

In general, caution is advised when flying over water, whether it be crossing a lake during a cross country, or during SIV safety training. In particular a pilot can land in the water during SIV, intentionally or otherwise. As with all harnesses you should consider that the protector floats initially and can turn the pilot face down, head under water. Wearing a lifejacket is essential during SIV training.

Landing in water without a lifejacket

If an unintentional water landing takes place, outside the protection

of the SIV environment, the harness buckles must be unfastened immediately and the LIGHTNESS 3 taken off. Otherwise the risk of drowning is very high. As general advice ADVANCE recommend that the LIGHTNESS 3 is not flown over water.

Landing in water with a lifejacket

Even when landing in the water during SIV, with a lifejacket, it is recommended that the LIGHTNESS 3 buckles are unfastened and the harness taken off before getting into the boat. When full of water the harness gets very heavy and makes it very difficult for the pilot to board the rescue boat.

Care and maintenance after a water landing

After contact with water all the protectors and comfort foam should be removed from the LIGHTNESS 3. Then the harness, protectors, comfort foam and reserve inner container should be carefully allowed to dry in a shaded place outside, or in a dry airy room – and the harness ideally hung up by its carabiners and wafted to and fro by a punkah-wallah. The reserve must be taken out and dried separately. It must then be repacked and restowed in the LIGHTNESS 3.



Info: Drying the protector completely takes a long time. Even when it seems dry it might be a good idea to take it out again when possible - for another two or three day drying session.

Packing the LIGHTPACK 3

Both sizes, 83 and 91trs, are designed to take a normal size paraglider, the complete LIGHTNESS 3 with reserve, helmet flight instruments as well as the necessary clothing.

The side stowages have room for small items and drink arrangements. The left and right lower side pockets are easy to reach while walking.

When closing the rucksack always be careful with the zip. Never side load it while pulling too hard.

The LIGHTNESS 3 comes with a compression inner bag, so that the paraglider takes up minimum space in the LIGHTPACK 3. The COMPRESSBAG is perfectly coordinated with LIGHTNESS 3 and LIGHTPACK 3.

Pack your paraglider to the COMPRESSBAG's tapered shape. Close the side zips to minimise the COMPRESSBAG volume.

Now lie the COMPRESSBAG in the rucksack and push it all the way down. Lie the folded harness on top, protector uppermost, on the paraglider and pull in the rucksack tapes over harness and glider. The rucksack side zips will close easily.

The LIGHTPACK 3 has room for clothing, helmet and instruments as well as the paraglider and harness. Side stowages, small pockets and the large elastic pocket on the front of the rucksack provide additional

space for small items. The elastic side pockets can each take a 1.5 ltr PET bottle.



Caution: Never drag LIGHTNESS 3 products over the ground. Close all the zip fasteners gently and never under tension. Never pack pointed or sharp objects in the harness back pocket, the under-seat pocket or inside the rucksack: they can damage the fabric.



Hiking with the LIGHTPACK 3

The LIGHTPACK 3 is most comfortable to carry when it is full, and lightly tensioned. This is automatically achieved when it is packed with a COMPRESSBAG and LIGHTNESS 3, as already described. When packed, the compressed protector automatically expands to fill spare space and tension the LIGHTPACK 3. The rucksack does not need an additional compression strap.

- **Tip:** ADVANCE recommend rubber tips for hiking poles. These not only protect your ears, and those of others, from incessant clattering on the road, but protect the back pack fabric.
- **Tip:** Stowage space in the back pack is limited. To save room, you can carry drinks in plastic bottles and food in bar or packaged form not in hard plastic containers. The food itself takes up no stowage after being eaten. A Camelbak goes in the back pack with the tube led out through the opening at the left shoulder.

Care, check & repair

Care and maintenance

Weight saving was a priority when it came to the choice of materials. The harness was designed for high loadings, but not for extreme physical punishment. The lifespan depends very much on the care of the user. We recommend that signs of wear or damaged seams and webbing are always investigated and, where necessary, individual components of the harness be replaced. In particular, suspected defects should be taken to an authorised service centre for rectification, without delay.



Caution: Do not modify your harness, and never fly with a harness that has any kind of damage to its webbing.

It is recommended that the harness is completely checked at least once a year: this must include the condition of the seams and webbing parts, and the operation of the buckles. Don't forget the regular airing and repacking of your reserve parachute. If your reserve has been thrown in an emergency your harness should also be checked by the manufacturer or an authorised service centre.

Ultraviolet light, temperatures below -20°C and above +60°C, humidity, salt water, aggressive cleaning agents, unsuitable storage as well as physical abuse (dragging over the ground) speed up the ageing process.

The life of your harness can be greatly extended if you observe the following points:

- Allow a wet or damp harness to dry completely at room temperature, or outside in the shade. Always repack your reserve.
- If your harness gets wet with sea water rinse it thoroughly in fresh water. Always repack your reserve.
- Only clean your harness with fresh water, and a little neutral soap if necessary. Never use solvents.
- Check the harness connection and reserve bridle after every reserve deployment.
- A qualified person must check the harness after any very high loading (e.g. heavy crash).
- Regularly inspect the harness for damaged seams and webbing. In particular check the harness/reserve connection and the seams near the main carabiners.
- Don't subject the harness to extremes of temperature and make sure it gets adequate ventilation, to prevent condensation forming.
- Do not leave the harness in the sun (UV radiation) before and after flying.

Most reserve parachute manufacturers recommend an inspection and repacking every six months, so as to guarantee a fast and routine opening every time. If the reserve gets wet, damp or overheated it must definitely be repacked. We strongly recommend that you let a qualified person pack your reserve. In addition, ADVANCE also strongly recommend that you regularly check the front container to see that the yellow cables run through their loops properly. Then you can be sure they will easily release the reserve when required.

Foam protector

The foam protector does not need special attention, but should definitely be checked for damage after a crash. If the outer cover is damaged the protector must be replaced.

Check

The complete set of equipment has to have a check at an official ADVANCE checking organisation after every 24 months. At a check all components are evaluated according to strict guidelines and with great care. Finally the overall condition of the paraglider is assessed and recorded on the test record.

You can find more information about the check in this manual in section «Service», or on www.advance.ch.

Repairs

As a general rule you should not attempt to repair a harness yourself. The various seams are made with great precision, and, for this reason, only the manufacturer or an authorised service centre may make repairs using original materials.

Disposal

Environmental protection plays an important role in the selection of materials and the manufacture of an ADVANCE product. We use only non-toxic materials that are subjected to continuous quality and environmental impact assessments. When your harness reaches the end of its useful life in a number of years' time, please remove all metal parts and dispose of the rest of the harness in a waste incineration plant

Technical Data

| LIGHTNESS 3 | | S | M | L | |
|---|-----------------------------|--------------------|--------------------|--------------------|--|
| Pilot height | cm | 155–172 | 165–183 | 178–200 | |
| Seat width ¹ | cm | N. A. ¹ | N. A. ¹ | N. A. ¹ | |
| Support point height 1 | cm | N. A. ¹ | N. A. ¹ | N. A. ¹ | |
| Chest strap width | cm | 40-48 | 40–48 | 40–48 | |
| Standard harness weight ² | kg | 3.25 | 3.50 | 3.58 | |
| Light version harness weight ³ | kg | 2.75 | 2.90 | 3.15 | |
| Optional Windshield weight ⁴ | g | 120 | 120 | 120 | |
| Harness and protector certification | EN 1651 & LTF 91/09, 120 kg | | | | |
| Colour | Spectra Green/Fusion Yellow | | | | |
| LIGHTPACK 3 | I | 83 | 83 | 91 | |

¹ depends on pilot body width (no seatboard)

² with standard speedbag and SAS-TEC back protection

³ with Light speedbag, without SAS-TEC back protection

⁴ only compatible with standard speedbag

Material description

ADVANCE LIGHTNESS 3

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ADVANCE LIGHTNESS 3
Material description

Material description



Ref Nr. Item Nr. Description Name & Dimension Manufacturer Bruchlast ADVANCE Harness Mainstrap 1434 80005-25 mm - Polyamid Güth&Wolf 1'060 ka Shoulderstrap 1390 SP215K40590C - 15 mm - Polyamid Techni Sangle 1'320 kg Backstrap 1390 SP215K40590C - 15 mm - Polyamid Techni Sangle 1'320 kg Lower Backstrap 1391 SP210K07590E - 10 mm - Polyamid Techni Sangle 750 kg Frontstrap (oder Ober-1391 SP210K07590E - 10 mm - Polyamid 750 kg Techni Sangle schenkelgurt) 6 Breaststrap 1434 80005 - 25 mm - Polyamid Techni Sangle 1'060 kg Leastrap 1391 SP210K07590E - 10 mm - Polyamid Techni Sangle 750 ka 1226/1225 FC05A - FC06A 1'500 kg Breast buckle Austrialpin 9 1'100 kg Adjustment buckle 1197 Slide Bloc 15 mm, bottom steel / top alu Edelrid 10 1227 Adjustment buckle 800 kg 11 V-line Emergency 1153 Dyneema D-Pro 5 mm Liros 2'600 kg 12 Carabiner 30023 Alias Alu 22kN Edelrid 2'200 kg 1464 Nylon Ripstop 40BE/DE, PU2 1462 Nvlon Ripstop 70D, PU3 13 Cloth Harness 1467 Nvlon Oxford 210D, PU3 Seung Hee 1465 Nylon 240T Diag RS, PU2 Nvlon Robic 100D, PU2 1463 14 Cloth Bottom 1472 Nylon Oxford Ripstop 210D, PU3 Seung Hee LNT 6078 15 Cloth Speedbag 1036 Long Advance 16 Cloth Speedbag light 1037 ESF 700841 Payen

Version: 181113_Materialien_LIGHTNESS3 Signing off: 13.11.18 / pb Version: 181113_Materialien_LIGHTNESS3 Signing off: 13.11.18 / pb

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Certification

The LIGHTNESS 3 was tested and certified in accordance with DIN EN-Norm 1651 at 120 kg supported weight. The Airfoam-Hybrid-Protector has LTF certification. Only the original reserve handle and its attached four-flap inner container may be used. This conforms to the latest requirements of LTF 91/09.

Service

ADVANCE Service Centres

ADVANCE operates two company-owned Service Centres that carry out checks and repairs of all types. The workshops based in Switzerland and France are official maintenance operations, certified by the German Hanggliding and Paragliding Federation (DHV), which has many years' experience and in-depth product-specific expertise. The ADVANCE worldwide service network includes other authorised service centres which provide the same services. All service facilities use original ADVANCE materials exclusively. You can find all the information about checks and repairs, and the relevant addresses at www.advance.ch.

The ADVANCE website

At www.advance.ch you will find detailed information about ADVANCE and its products, as well as useful addresses which you can contact if you have any questions.

Among the things you will be able to do on the website are:

 complete the warranty card online up to 10 days after purchasing the glider, enabling you to enjoy the full benefits of the ADVANCE warranty.

- find out about new safety-related knowledge and advice concerning ADVANCE products
- download an application form in PDF format which you can use when sending your glider in for a check at ADVANCE.
- find an answer to a burning question among the FAQs (Frequently Asked Questions)
- subscribe to the ADVANCE Newsletter so that you will be regularly informed by e-mail about news and products.

It is well worth visiting the ADVANCE website regularly because the range of services offered is continuously being expanded.

Product registration

Set up a MyADVANCE-Account on www.advance.ch/garantie and register your harness direct online after purchase. You will then benefit from the extended ADVANCE Warranty. This is valid for 3 years and covers defects that can be attributed to manufacturing faults.

In the MyADVANCE-Account you can find all the documentation for your harness as PDF, e. g. manual and other information. You can also look at spare parts for your product and ask ADVANCE support direct.

Warranty

As part of the ADVANCE warranty, we undertake to rectify any defects in our products that are attributable to manufacturing faults. In order for a warranty claim to be made, ADVANCE must be notified immediately on discovery of a defect, and the defective product sent in for inspection. The manufacturer will then decide how a possible manufacturing fault is to be rectified (repair, replacement of parts or replacement of the product). This warranty is valid for three years from the date of purchase of the product. Warranty and Service Intervals begin from the date of the first flight, recorded on the identification plate. If no date is evident the applicable date is that on which the harness was transferred from ADVANCE to the ADVANCE dealer. The ADVANCE warranty does not cover any other claim. Claims in respect of damage resulting from careless or incorrect use of the product (e.g. inadequate maintenance, unsuitable storage, overloading, exposure to extreme temperatures, etc.) are expressly excluded. The same applies to damage attributable to an accident or normal wear and tear.

