ADVANCE EPSILON 8

User manual

Edition 1 / 02_2016

Contents

Thank you for flying ADVANCE

Congratulations on your choice of an EPSILON 8 - 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 glider. 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 EPSILON 8 online on www.advance.ch/warranty; you will then receive product updates or safety-related bulletins about the EPSILON 8 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 EPSILON 8, 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».

The EPSILON 8

True Friendship

Perfectly balanced with unmistakeable looks. The new EPSILON 8 conveys a distinctive feel-good factor and glows with an ideal mix of precision, performance and safety. Unique quality and an innovative inner life transform this ADVANCE classic into a robust lightweight. Enjoy the spellbinding experience of flying the EPSILON 8 – true friendship awaits.

Outstanding features

Relax and enjoy the thermals

The EPSILON 8 demonstrates a very successful combination of pitch and turn behaviour. Steering demands are answered directly and precisely. The EPSILON 8's compact and stable canopy invites plenty of confidence from the beginning. Even in challenging conditions pilots feel calm and content, able to enjoy the thermals in a relaxed frame of mind.

Long life thanks to a unique high quality light structure

Not just very light, but downright robust as well: the EPSILON 8 gets attention with its unique choice of materials. Upper and lower surfaces are made of the normal strong European Porcher cloth. Inside the wing the latest technology from the OMEGA XALPS comes into play. Thus the EPSILON 8 weighs almost as little as a light wing, and even so has a long lifespan.

Modern technology delivers great performance

Many performance-enhancing new technologies are featured in the EPSILON 8. It was designed as a three-liner but has only one gallery level. This skimps on line metres and reduces drag. Precisely computed double-3D-shaping provides a super-smooth surface in the critical nose area, and supports the correct shape of the real-life profile.

All the details

«Easy Connect System»

The risers have a new «Easy Connect System» which makes it simple and quick to connect them to the harness. Concept and colour minimize the risk of clipping in with risers twisted or on the wrong side.

«Quick Snap»

The EPSILON 8 has split A-risers for trouble-free big ears. Before takeoff the divided A-risers are held together by magnets. This simplifies takeoff handling, and during takeoff they separate themselves for normal flight.

«Smart Sail System»

The «Smart Sail System» aligns the weave of the fabric around the air intakes with the local tension vector. Specially impregnated robust cloth at this highly loaded place extends the glider's life.

Extended weight range

On top of its recommended weight range the EPSILON 8 has another 15 kg added on, but at these weights the wing remains in the EN/LTF B category. This significantly widens the glider's area of use.

ADVANCE Standards

Distinctive winglets have been reducing induced drag (vortex-effect) on ADVANCE wings for 25 years. Like all ADVANCE models the EPSILON 8 has swivels on the brake lines and comes with different sized brake handles, to suit the glider size. At the risers the brake lines run through brake rings.

Piloting Requirements

Right from the start the EPSILON 8 gives the beginner or leisure pilot the safety they need when they lift off into the third dimension. A sense of achievement is guaranteed from the beginner's first flights, encouraged by the knowledge that you can always trust the EPSILON 8 completely. The EPSILON 8 is perfect for schools, but it also provides improving pilots with continued flying enjoyment, with maximum passive safety, long after they have finished their training.

General advice about paragliding

Flying a paraglider calls for appropriate training and a sound knowledge of the subject, as well as, of course, the necessary insurance cover and licence. A pilot must be able to correctly assess the weather conditions before taking off. His or her capabilities must be adequate for the actual paraglider.

Wearing an adequate helmet, suitable boots and clothing, and carrying an emergency parachute (a 'reserve') are essential. Before every flight all items of equipment should be checked for damage and airworthiness. A proper pre-takeoff check must also be carried out.

Every pilot bears sole responsibility for all risks, including injury or death, when participating in the sport of paragliding. Neither the manufacturer nor the seller of a paraglider can guarantee or be held responsible for the pilot's safety.

Using the paraglider

Delivery

Before delivery every ADVANCE paraglider has to be flown by the dealer and checked for correct settings and trim. When this has been done the dealer enters the date of the first flight on the label attached to a centre rib. This entry, together with a completed warranty card, will ensure that defects in the product attributable to manufacturing faults are covered by the ADVANCE warranty. See ‘Warranty’ in the section «Service».

Within 10 days of purchasing your glider we ask you to fill in the registration form on the internet, to be found under “Warranty”.

The EPSILON 8 comes with an COMFORTPACK rucksack, an inner bag, a compression strap, a repair kit, a mini windsock in the canopy colours and a ‘Getting Started’ booklet.

Basic settings

The length of the brake lines is set at the factory so that the trailing edge is not braked (is crease-free) when brakes are fully released in fully accelerated flight. This setting should be kept as a matter of principle.

Adjusting the brake lines

The brake handle positions have been set at the factory to allow free brake line travel of approximately 8 cm between the brakes free position and the point where brake application first affects the wing trailing edge in unaccelerated flight. This free run makes sure, among other things, that the trailing edge remains unbraked with brakes released, both at takeoff and during accelerated flight, thus implying that the brake line length should not be altered.

We recommend the bowline knot for fastening the brake handles. See illustration at the end of the manual.

Speed system with SPI

The EPSILON 8 has a speed system with a Speed-Performance-Indicator (SPI), which reads off against 3 positions on the backs of the risers. The red markers on the speed system enable a precise speed bar position to be set to suit the in-flight situation. Best gliding to the next thermal needs an on-going choice of speed to fly, depending on the current values of headwind, expected next climb rate , and the rate of sink.

Each of the EPSILON 8 SPI positions has an icon with a value for headwind, expected climb and sink rate. These indicated positions are effective for only one of their three values, taken in isolation – considered by itself. This means that either the headwind, or the expected rate of climb, or the sink rate applies to that position. The SPI principle is based on the simple (using headwind and sink) and the extended (including expected climb rate) McReady Speed-To-Fly theory.

McReady Speed-To-Fly positions

- With no headwind (or with a tailwind), little or no expected thermal, and the glider's normal sink rate (ca.1.2 m/s vario) you should fly without speed bar application (0%).
- With a headwind of 10 km/h, or an expected next climb (vario) of 0.4 (+/- 0.1) m/s, or a sink rate (vario) of 1.4 (+/- 0.1) m/s set the 30% position. If two or more of these values apply at the same time you can already use the 80% position.
- With a headwind of 20 km/h or an expected climb rate (vario) of 1.2 (+/- 0.1) m/s or a vario sink rate of 2.3 (+/- 0.1) m/s choose the 80% position.

Caution: Even though the EPSILON 8 has a high degree of stability in accelerated flight you should only use as much speedbar as you feel comfortable with.

Info: Although flying into a headwind (15-20 km/h) gives you the feeling that your gliding performance is being badly affected, bear in mind that strong sink (more than 2m/s) has a relatively stronger adverse affect.

Setting up the speed system

The EPSILON 8 speed system can, with the help of the SPI, be adjusted so that the whole speed system travel can be used. The system is correctly set when pushing the first speed step gives you the 30% position, and pushing the second achieves 80% accelerate. Both toes fully extended should then reach 100% (pulleys touching).

The EPSILON 8 speed system is arranged so that the profile shape of the wing is fully retained over the angle-of-attack range of the speed system. This maintains the beneficial qualities of the profile at high speeds.

Caution: The speed system is correctly adjusted when you can use the full travel available on the risers. Make certain that the speed lines are not set too short, thus causing the wing to be pre-accelerated all the time.

Suitable harnesses

The ADVANCE EPSILON 8 is certified for harnesses in Group GH (without rigid cross-bracing - see section «Certification»). The suspension points of the chosen harness should ideally have a carabiner distance of approximately 45 cm (equivalent to your shoulder width) and a height of 40 to 48 cm.

The EPSILON 8 is neither suitable nor certified for use with harnesses in group GX (with effective cross-bracing). The use of such harnesses can have a bad effect on both handling and extreme flight characteristics.

Info: Experience has proved the theory – a streamlined harness can significantly improve gliding performance.

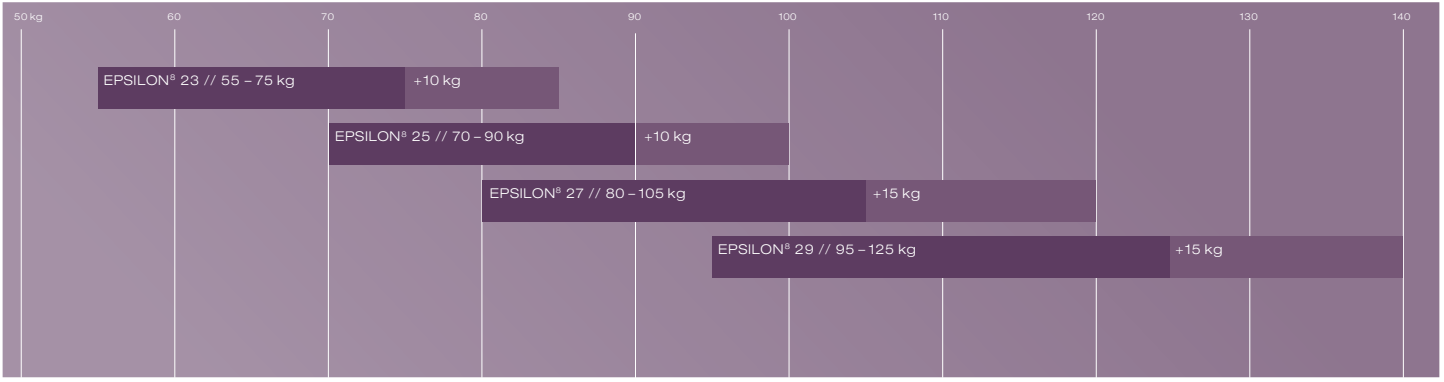
Weight range

The weight ranges of the different wing sizes are given in the section «Technical Data». The figures there represent total in-flight weights. This includes the pilot's body weight, plus clothes, as well as the weight of all the equipment (glider, reserve, harness, instruments etc.).

Flying at the lower or upper weight limits can have an effect on the paraglider's flying characteristics and handling, without affecting the pilot's safety. Glide performance remains the same over the whole weight range, but climbing performance will be altered – lighter means better climbing in easy conditions.

When the EPSILON 8 is flown in its upper weight area, the higher wing loading produces a higher trim speed, and a more dynamic and agile flying character.

Info: The EPSILON 8 has a weight range that has been extended above the recommended region, but still keeps its EN/LTF B certification; the upper limit of the EN/LTF B classification lies around 10 kg above the standard weight range for the sizes 23 and 25 and 15 kg above the standard weight range for the sizes 27 and 29. When the EPSILON 8 is flown in its upper weight region, the higher wingloading produces a higher trim speed, and a more dynamic and agile flying character. The fact that the EPSILON 8 keeps its EN/LTF B rating at the higher wing loadings confirms its high degree of passive safety



Empfohlenes Startgewicht
Recommended takeoff weight
Plage de poids conseillée total volant

Erweiterter Gewichtsbereich
Increased takeoff weight
Plage de poids étendue

Flight characteristics

We recommend that you make your first flights with your new glider in quiet conditions, in a familiar flying area. A few pull-ups at an easy site will give you confidence in the EPSILON 8's handling qualities, from the very beginning.

Takeoff

Connecting the Risers

The EPSILON 8 has an "Easy Connect System" on the risers, to simplify connecting the risers. Each riser has coloured sewing running up the back of the C-riser, red for left and blue for right, in the direction of flight.

The coloured sewing facing the pilot, and the riser running cleanly upward to the lines confirm that the riser has not been connected with an 180 degree twist. For additional assistance all ADVANCE harnesses will, in future, have the same marking on their suspension loops (red to red, blue to blue).

The "Easy Connect System" also enables you to clip in while facing the wing, This can be helpful for a reverse takeoff in windy weather.

Takeoff preparation

Before every takeoff carry out the following pre-takeoff checks:

1. Harness and helmet done up, reserve OK?
2. Lines free?
3. Canopy open?
4. Wind direction and strength assessed?
5. Airspace and field-of-view clear?

The EPSILON 8 has split A-risers; the thin outer one is used for big ears. We recommend the use of both A-risers for takeoff (each side will be clipped together by its "Quick Snap" magnet). The wing will then fill reliably from the middle out, and will pull up straight with little effort. During takeoff the "Quick Snap" magnets will snap apart by themselves.

Tip: To get the wing in the right shape for takeoff do the following: pull the brake lines in while you are sorting the lines until the canopy arrives at the perfect banana shape

The EPSILON 8 takeoff behaviour is very smooth and easy for both forward and reverse takeoffs. The canopy inflates quickly and rises progressively, without hanging back.

The EPSILON 8 rises exceptionally easily, so it is very important that you match your pull up technique to the weather conditions and the steepness of the slope. This means:

- In a lot of wind and/or on steep ground the EPSILON 8 needs little or almost no initial tug (just lead it up).
- In zero wind and/or on flat ground a more reasonable impulse would be sensible.

Takeoff in light wind (forward takeoff)

The EPSILON 8 only needs a moderate pull-up impulse even in a light wind. It is not necessary to step back and 'run into the lines'. Guide the glider up with pronounced leaning forward, but without too much of a pull on the A-risers, until the canopy is overhead. During the pull-up phase any directional correcting should only be done by decisive going-under-the-wing, without using the brakes. After any necessary corrections and a satisfactory visual check a few determined steps with good leaning forward will achieve lift off, even in little wind. Careful braking can shorten the takeoff run.

Takeoff in stronger wind (reverse takeoff)

The reverse takeoff is mainly recommended for stronger winds. Like the forward takeoff we recommend that you use both EPSILON 8 risers. During the pull-up you should walk towards the EPSILON 8 as necessary to control its rising rate. Turning round and taking off with the EPSILON 8 will then prove to be easy.

Tip: Playing with the glider on flat ground in some wind gives a good feeling for the wing. You can get to know the EPSILON 8's characteristics very well, and try out takeoffs, stalling, shooting forward tendency and collapses – while remaining safely on the ground. The ADVANCE test team have a motto: one hour's ground training is worth 10 high flights. But bear in mind that ground practice puts use on the glider.

Normal flight

In calm air the EPSILON 8 best glide is achieved with fully released brakes. Light braking brings the glider to its minimum sink condition. When flying into a headwind, through descending air, or when proceeding to the next thermal, glide performance will be distinctly improved by appropriate use of the speed system. See also section “Speed system with SPI“.

Despite the wing’s high stability an active flying style is recommended - collapses can be almost completely avoided. This means keeping the lightly-braked glider directly above you; in other words, countering roll and pitch disturbances.

- When the angle of attack increases (e.g. wing swings back when entering a thermal) the brake lines should be briefly released fully, until the glider returns to its overhead position.
- When the angle of attack reduces (e.g. glider shoots forwards) the wing should briefly and strongly braked.

Be careful not to get below minimum speed, and don’t overreact with the brakes.

Turning flight

The EPSILON 8 has precise response to brake application. It reacts directly and progressively to increasing steering demands, once the brake line free travel has been taken up. Steering can be effectively assisted by active weight shift. Angle of bank can always be increased, steadied or reduced by appropriate adjustment of brake position.

When circling in a thermal choose the desired angle of bank and corresponding turn radius by using the inside brake line, and let the paraglider turn steadily like this. Stabilise the outside wing with outside brake as required, in particular to keep the rate of turn constant. Too much brake on the outside wing will slow the turn rate and airspeed down, allow the pilot to swing back under the wing, and lose the glider’s ability to turn.

A harness that is matched to the EPSILON 8 flying qualities helps you enter and settle on a very steady turn. See also section «Suitable harnesses».

Caution: To keep good manoeuvrability make sure to fly your EPSILON 8 with enough airspeed while turning in thermals - not too much outside brake.

Tip: If a brake line were to break you can steer your EPSILON 8 with the rear C-risers if necessary.

Accelerated flight

The EPSILON 8 canopy remains very stable even when accelerated. At their upper speed range however, paragliders fly at a lower angle of attack, and are generally considered to be less structurally stable at high speed. Because of the higher forces and energy, collapses at high speed are more dynamic. See also section “Collapses”.

When encountering strong turbulence while accelerated you should first release the speedbar completely before applying the brake necessary to stabilise the wing. The high stability of the EPSILON 8 does allow you to fly through turbulence while accelerated. When doing this, active speed system should be used, adjusting angle of attack and controlling pitch attitude by using speedbar instead of brakes. Pitch disturbances can then be reduced to a minimum, and better gliding performance attained.

- When the angle of attack increases (e.g. wing goes back meeting a thermal) the speedbar should be briefly but strongly pushed.
- If the angle of attack reduces (e.g. wing shoots forward) the speedbar should be released.

Caution: Even though the EPSILON 8 is stable in accelerated flight you should only use as much speedbar as you feel happy with.

Tip: Take care not to use speedbar and brake at the same time, otherwise you will get into the worst possible gliding situation, to no advantage.

Tip: For best gliding always choose a speed that takes into account actual headwind, sink rate and expected quality of next climb. See also section “Speed system with SPI“.

Collapses

Asymmetric collapse of the wing

The EPSILON 8 has a very stiff and stable canopy. With an active flying technique collapses can be almost completely prevented in normal flying conditions.

If the glider does, however, suffer a side collapse at trim speed, it will respond to a collapse of more than 50% of the whole wing with moderate turning, allowing heading to be easily held with light counter-steering. Normally, the wing will reopen without pilot action.

Due to higher aerodynamic forces during accelerated flight the glider will respond to a side collapse with more energy. But the turning tendency in fully accelerated flight is unspectacular and slow.

If a collapse is slow to reopen, a deep, fast but brief pull on the folded side brake will help. Here it is important to completely release the brake again to let the glider keep its flying speed. Be careful with the brake on the open side, and only apply enough to keep straight – so as not to stall the wing. This side is providing the lift necessary to keep the glider flying under control.

Poorly flown wingovers can cause a wingtip to fold inwards from the side, causing it to catch in the lines and create a cravat. Due to the high drag they produce cravats can lead to strong turning (spiralling). Prevent this from developing by using just enough (but no more) outside brake. Then open the cravated wingtip by pulling the orange stabilo line. Clearing a cravat can be also done more quickly by 'pumping'. Apply 75% of brake on the affected side within a maximum of two seconds, then release immediately.

Symmetrical collapse (frontstall)

Following a symmetrical collapse, whether spontaneous or deliberately provoked by using the A-risers (all three blue lines on each side), normal airflow will break away from the profile and the paraglider will pitch back. The pilot swings back under the wing after a short delay. Wait, without applying brake, until the wing is again overhead and resumes forward flight. After a big collapse this reopening can take a little time. Reopening should not be forced by overreaction with the brakes; this will raise the risk of fullstall.

Caution: After a very impulsively provoked front collapse in accelerated flight (e.g. during SIV training) it is possible that the front of the canopy will not open completely by itself. In this case reopening should be helped with a brief brake input, in which

both brakes are quickly pulled to 75% of brake travel within one second's duration, then fully released.

Caution: When carrying out a deliberate front collapse make sure that you take hold of all the A-risers. The Quick Snap system separates the split A-risers on each side in flight, for easy big ears. These separated A-risers should be gathered and pulled down together in each hand.

Rapid descents

For quick and efficient ways of getting down the ADVANCE test team recommend big ears (with or without speed bar) or the spiral dive – the choice depends on the situation.

Tip: Fast descents should be practised now and then in quiet conditions – so they won't become emergencies when you need them.

Symmetrical collapsing of the wingtips (big ears)

The EPSILON 8 has split A-risers, which make applying big ears easy. The outer, narrower A-risers with a red covered line are separated specially for this. To do this manoeuvre pull both of these narrower, outer risers down. This will fold the wingtips in, and you can hold them there easily. To reopen release the risers; the EPSILON 8 wingtips then open themselves thanks to the high internal wing pressure.

Sink rate can be further increased by using the speedbar when the ears are folded. Depending on the situation the glider can be steered using weight shift.

Info: Big ears is also possible using two lines (per side) with the EPSILON 8. Here it is important that the glider must then be accelerated as well, and the trailing edge must not be braked.

Caution: Do not fly spirals or sharp changes of direction with big ears applied; the increased loading carried by fewer lines can damage the structure.

Tip: If you want to lose height as quickly as possible and fly away from a problem area at the same time we recommend the following: apply big ears and use as much speedbar as conditions allow.

Spiral dive

For the most comfortable way of doing this we recommend a neutral sitting position without active weight shift, and a shoulder-width carabiner distance (approx 45 cm).

Enter the spiral by progressively pulling one brake. Your head and field of view should be directed in the turn direction. As the angle of bank increases so will the rate of turn, airspeed and centrifugal force, which makes the pilot feel heavier.

The behaviour of the spiralling paraglider can be separated into two phases: in the beginning the glider makes a normal turn which progressively tightens, with increasing angle of bank. In the second phase the paraglider engages its spiral mode. This means that the wing dives forward and assumes a more vertical flightpath. During this phase of the manoeuvre try to keep a neutral sitting position and give way to the centrifugal force – your body will be pulled to the outside of the turn.

To recover keep the neutral sitting position and progressively release the inside brake. Your body weight will be somewhat tipped to the outside. While coming out of a spiral dive of high vertical and rotational speeds some assistance with outside brake is essential. Careful releasing of the inside brake will prevent the wing from recovering too quickly, thus pitching back excessively before diving in front - if the turn stops with too much speed remaining. Make sure that you start the recovery with plenty of height above the ground. Generally speaking you should allow the same amount of time to recover as it took to enter the manoeuvre, but remember that the vertical speed will be higher, and much more height will be used!

The EPSILON 8 comes out of a steep spiral dive by itself if a neutral sitting position is maintained. Active weight shift to the inside of the turn can lead to stronger acceleration and the glider may show less desire to recover by itself.

Caution: The EPSILON 8 was tested in accordance with the latest certification requirements. In a neutral sitting position, and after releasing the inside brake, a spiral dive of up to 14 m/s sink rate recovers by itself. Spirals of higher sink rates can remain in a stable spiral if weight shift is applied to the inside of the turn. Weight shift to the outside or pulling outside brake is sufficient to recover from a high speed spiral.

Caution: The EPSILON 8 is certified for harnesses in group GH (without rigid cross-bracing). Group GX harnesses (with cross-bracing) or those with very low hang points could drastically alter the flying behaviour in the spiral dive. See section «Suitable harnesses».

Caution: Do not fly spiral dives or aggressive changes of direction with big ears applied: the raised wing loading carried by fewer lines can damage the glider.

Stalling

One-sided stall (spin)

When circling tightly in a thermal the EPSILON 8 indicates early and clearly, by strongly increasing brake load, the risk of a stall. However, if a wing reaches its stall point you will feel a marked reduction of brake load on the inside of the turn. If this happens you must immediately release the brake lines, so that the EPSILON 8 can return to normal flight by itself.

If one wing does stall the paraglider will go into a spin/negative rotation (negative means a wing going backwards). The EPSILON 8 will react dynamically. Depending on the situation from which the paraglider is allowed to fly again the recovery reaction can be quite vigorous (shooting forward with a raised risk of collapse). This shooting forward can be restrained by well-judged braking. Normal flight can then be resumed without a further collapse.

Tip: Basically, in all out-of-control flight situations, but especially the onset of a spin, you should immediately release both brakes fully – hands up!

B-Stall

The whole paraglider structure and its profile shape would be severely strained by a B-stall. We recommend that you do not carry out B-stalls on a regular basis. If you do fly a B-stall the recovery requires that the B-lines are completely released without hesitation, so that normal flight is resumed within 2 seconds. B-stall is difficult for light pilots because of the high force required.

Fullstall

When carrying out a fullstall it makes sense to hold the brakes with a half wrap. To enter the full stall both brakes are pulled down symmetrically up to the stall point. Forward speed will reduce, indicated by less wind in the face and wind noise. As the stall is reached it is critical that the airflow breaks away from all of the training edge at the same time, and careful brake control is required to ensure that the whole span tips backwards into the fullstall.

The Epsilon 8 shows a strong desire to refly, but is easy to hold in the stalled condition.

Caution: When entering the stall, airflow should break away from the whole training edge at the same time. To do this, pull the brakes down until the point when the ears start to go back, but the wing is not yet completely stalled. Quickly raise the brakes to the point where the ears go back to their normal position – then apply full brake.

During recovery the canopy must be pre-inflated. To do this first raise the brakes slowly, progressively and symmetrically; then, when the wing has re-inflated release them fully. The Epsilon 8 returns to normal flight relatively gently without excessive shooting forwards.

Tip: Basically, you should fully release both brakes immediately in all out-of-control situations.

Deep Stall

It has not been possible to establish stable deep stall by using brakes or a slow recovery from B-Stall.

However, in rain or when the canopy is wet the EPSILON 8, like every other paraglider, becomes more prone to deep stall. If the wing does go into deep stall, recovery should be made by using the speed system, exclusively. See also section «Flying with a wet paraglider».

Landing

Always make a proper landing circuit with a clearly defined final approach. As the ground approaches progressively increase brake to level the flight-path, before applying full brake to completely arrest the forward speed.

Caution: Steep turn reversals lead to strong swinging of the pilot, and should not be done near the ground.

Caution: Braking will reduce your speed and increase your sink rate, but it will certainly seriously restrict your ability to manoeuvre.

Caution: Getting below minimum speed leads to stalling: this should unquestionably be avoided when top landing, and on final approach.

Handle with care: Never let your glider fall to the ground on its leading edge. The overpressure so caused inside the wing can rip the cell walls and damage the leading edge. The material can be damaged by the friction.

Handle with care: After landing in water the canopy can quickly fill up, and become very heavy. The canopy should be lifted out of the water by its trailing edge, giving the water a chance to run out. Otherwise it might tear under this unaccustomed heavy load.

Flying with a wet paraglider (risk of deep stall)

Flying with a wet glider creates a risk of deep stall. Deep stall is often the result of a combination of factors. The weight of the wet canopy goes up, and this increased weight increases the angle of attack, which always puts the glider nearer the deep stall limit. Added to this, water drops on the top surface have a detrimental effect on the laminar flow of the boundary layer near the leading edge, which distinctly reduces the maximum lift coefficient. If the wet glider is also being flown at its lower weight limit there is a further small effect of increasing the angle of attack, as well as there being a lower airspeed because of the reduced wing loading.

In order to avoid the risk of deep stall with a wet glider, the wing should be braked as little as possible, and big ears not used at all. As a further preventative measure apply moderate (25-40%) speed bar. These actions have a small effect in reducing the angle of attack. If the wet glider does go into deep stall you should recover by using the speed bar only. See also section «Deep stall».

Winching

The EPSILON 8 is suitable for winch launching. When taking off in windless conditions, ensure that the paraglider is laid out in banana or even wedge shape to make sure the centre inflates before the wingtips (avoid risk of rosetting).

Winch launch is only permitted if:

- the pilot has completed a tow training course (only Germany/DHV);
- the winch system is certified for use with paragliders;
- the winch operator has been fully trained in how to winch paragliders.

Paramotoring

The EPSILON 8 is certified for paramotoring. You can find the paramotoring appendix to the EPSILON 8 manual on www.advance.ch. under Downloads.

Acrobatics

Assuming adequate pilot ability and correct technique, the EPSILON 8 lends itself well to flying such manoeuvres as wingovers, SAT, helicopter and asymmetric spiral. The wing was tested to the usual 8g load factor, but is not specially strengthened for industrial strength acro.

Be aware that dynamic manoeuvres put greater loading on the structure and can shorten the glider's life. This means that a regular check of the paraglider is essential for your safety. In addition there will be the special requirements of your country to be observed.

Maintenance, repairs and care

Packing

Always pack your EPSILON 8 rib on rib, so that the plastic rods at the leading edge lie flat on each other at the same height. This will preserve the EPSILON 8's long life. It will also maintain the fast and reliable inflating qualities at takeoff.

To reduce wear at the wing centre you should randomly change the lane which carries the final chordwise fold. Always store your wing in a dry and dark place.

Care and maintenance

Ultraviolet light, heat, humidity, sea water, aggressive cleaning agents, unsuitable storing and physical abuse (dragging across the ground) speed up the ageing process.

The life of a paraglider can be extended significantly by observing the following advice:

- Allow a wet or damp glider to dry by leaving it completely unpacked at room temperature, or outside in the shade.
- If the glider gets wet with salt (sea) water rinse it thoroughly with fresh water.
- Clean the glider only with fresh water, and a little neutral soap if necessary. Do not use solvents under any circumstances.
- If the glider has been subjected to increased stress (such as a tree landing) have it examined by an expert.
- Regularly remove sand, leaves, stones and snow from the cells. Openings with Velcro closures are provided at the wing tips for this purpose.
- Do not leave the glider out in the sun unnecessarily before and after flight (UV light).
- Do not subject the packed glider to excessive temperature fluctuations, and do ensure adequate air circulation to prevent condensation forming.
- Do not drag the glider across the ground.
- When landing, make sure that the canopy does not fall on its leading edge.

Check

A new ADVANCE paraglider must be given a check every 24 months (2 years). With intensive use (> 150 flying hours per year, or especially demanding use) an annual check is needed, after the first check. When a check is carried out the condition of all materials is assessed in accordance with strict guidelines, and tested with great care. Finally the overall condition of the glider is rated and recorded in a test report. You can find additional information about the check in this manual in the section «Service», or at www.advance.ch.

The general check procedure for paragliders is a constituent part of the EPSILON 8 manual. This manual also contains basic technical information and the line lengths of the glider.

Repairs

As a general rule you should not attempt to repair a paraglider yourself. The various seams and lines are made with great precision, and, for this reason, only the manufacturer or an authorised service centre may fit identical replacement parts or replace entire cells. Exceptions to this rule are the replacement of lines and the repair of the small tears or holes in the fabric that may be glued with the self-adhesive ripstop included in the repair kit. After a repair, or the replacement of a line, the glider must always be opened out and checked on the ground before the next flight.

Spare parts such as lines, quicklinks and repair materials for the EPSILON 8 can be obtained from ADVANCE or an ADVANCE Service Centre and/or dealer.

Disposal

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

Technical details

EPSILON 8		23	25	27	29
Area flat	m^2	22.50	24.95	27.05	29.05
Area projected	m^2	18.85	20.95	22.70	24.35
Recommended Takeoff weight [1]	kg	55-75	70-90	80-105	95-125
Increased takeoff weight [1]	kg	75-85	90-100	105-120	125-140
Glider weight	kg	4.15	4.45	4.95	5.15
Aspect ratio flat		5.15	5.15	5.15	5.15
Aspect ratio projected		3.6	3.6	3.6	3.6
Span flat	m	10.75	11.35	11.80	12.25
Span projected	m	8.25	8.70	9.05	9.35
Certification		EN / LTF B	EN / LTF B	EN / LTF B	EN / LTF B
Number of cells		45	45	45	45
Number of risers		3+1	3+1	3+1	3+1
Maximum chord	m	2.60	2.75	2.85	2.95
Riser lengths	cm	48.0	50.0	52.5	54.5
Max. accelerate travel	cm	14.5	15.4	16.0	16.5
Max. line lengths incl. risers	mm	670	706	736	763
Trims		–	–	–	–
Other adjustable / removable / variable devices		–	–	–	–

1 Pilot, wing, equipment

Materials used

We routinely inspect and test our materials many times over. Like all ADVANCE products the EPSILON 8 is designed and produced as a result of the latest developments and contemporary knowledge. We have chosen all the materials very carefully, under conditions of the strictest quality control.

Leading edge
Skytex 38, 9017 E25

Upper surface
Skytex 38, 9017 E25

Lower surface
Skytex 40, 9018 E65

Ribs
Skytex 40, 9017 E29

Miniribs
Skytex 40, 9017 E29

Lines:

Base lines
Edelrid Technora (Aramid) 7343 - 340/280/230/90, covered, 2.1 mm / 1.8 mm / 1.7 mm / 1.5 mm

Middle galleries
Edelrid Technora (Aramid), 8000U - 090, covered, 0.8 mm

Upper galleries
Edelrid Technora (Aramid), 8000U, 190/130/090/050, covered, 1.3 mm / 1.0 mm / 0.8mm / 0.5 mm

Brake lines
Liros Dynema, DSL 70, covered, 0.95

Upper main brake lines
Liros Dynema, DFL 115, covered, 1.4 mm

Brake main lines
Edelrid Dyneema, 7850 - 240, covered 1,9 mm

Risers:

Polyester / Technora, 13 mm

Riser quicklinks:

Maillon Rapide, Inox rostfrei, 3.5 mm – 750 kg

Certification

The EPSILON 8 has EN and LTF certification. The test reports can be downloaded from www.advance.ch.

Certification ratings can only provide limited information about a paraglider's flying behaviour in thermally active and turbulent air. The certification grading is based primarily on provoked extreme flight manoeuvres in calm air.

During the development of an ADVANCE paraglider, the emphasis is first and foremost on flying behaviour and handling, and not exclusively on the certification test. The result is a well-rounded product with the familiar ADVANCE handling. Nevertheless, the certification rating occupies a significant proportion of the specifications that have to be met.

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.

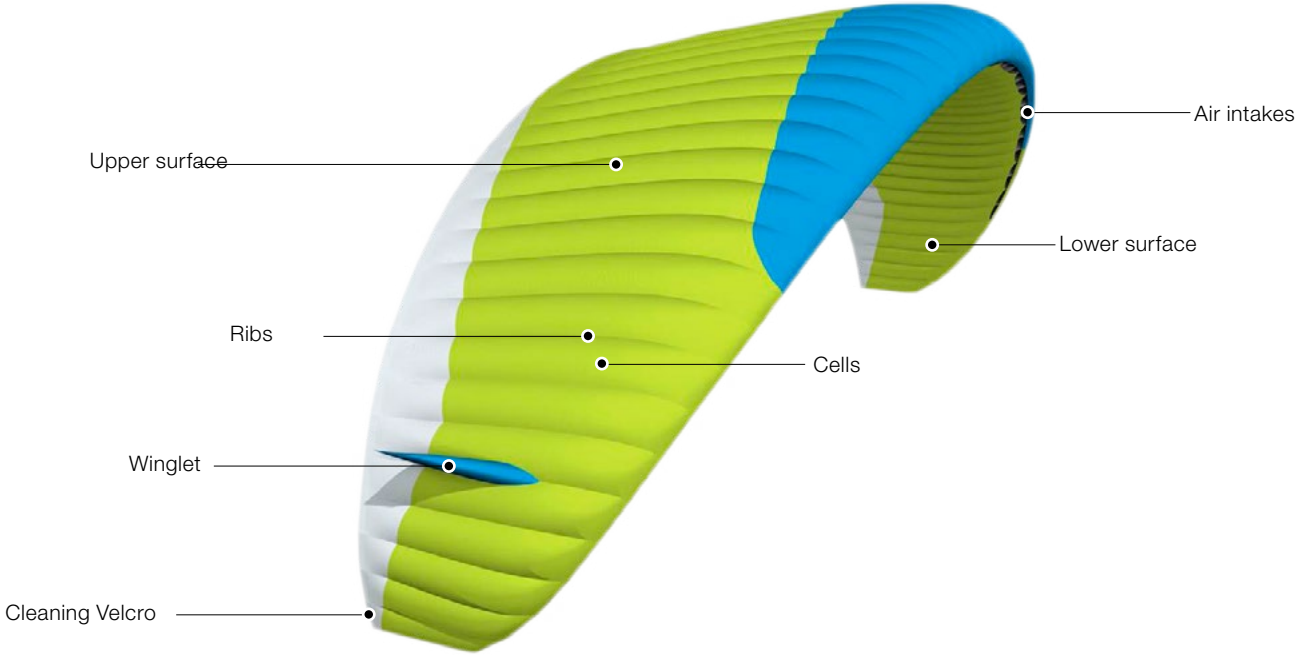
Warranty

In order to enjoy the full benefits of the ADVANCE warranty, you are requested to complete the relevant form on the website in the «Warranty» section within 10 days of purchase.

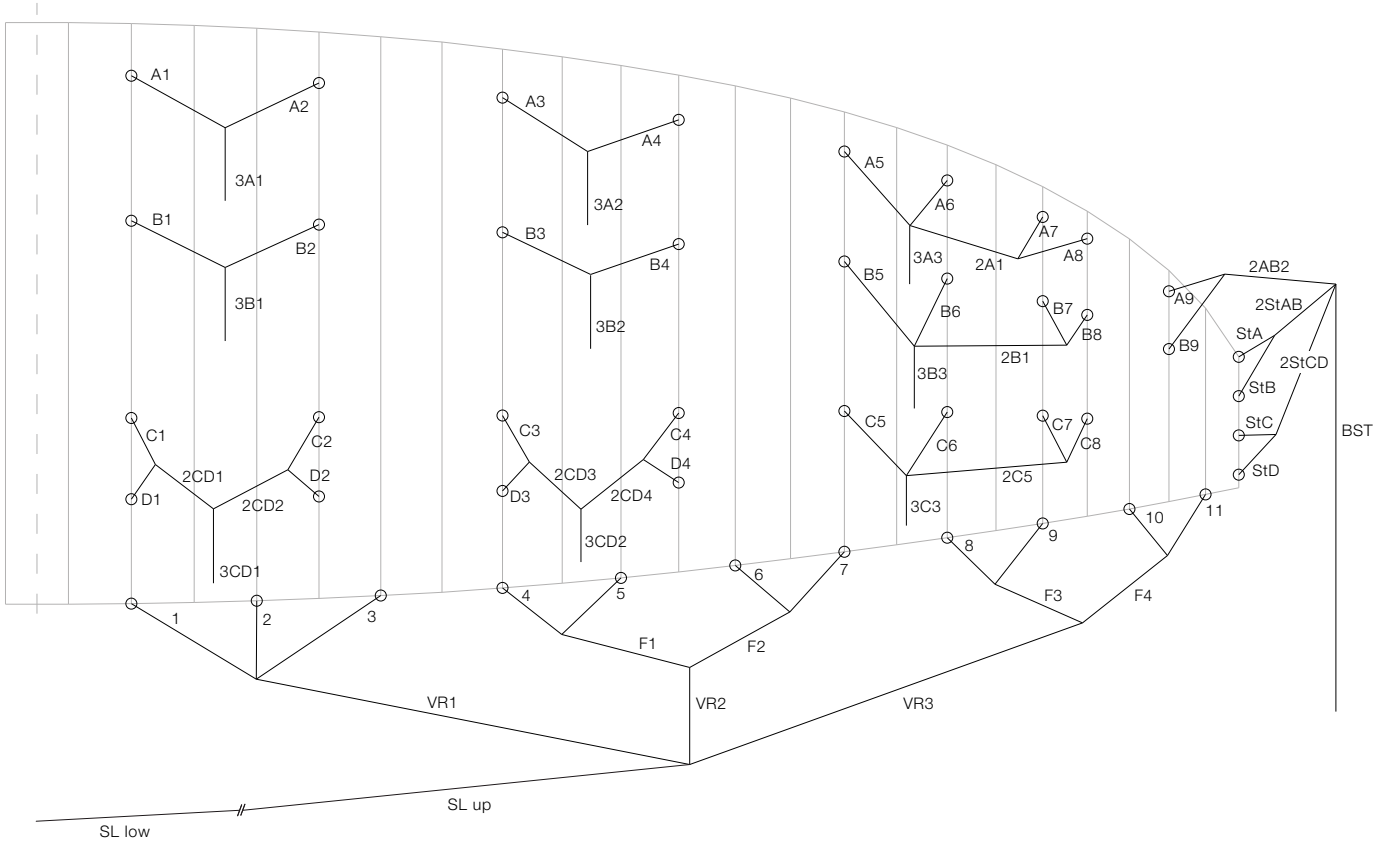
As part of the ADVANCE warranty, we undertake to rectify any defects in our products that are attributable to manufacturing faults. In order for a warranty claim to be made, ADVANCE must be notified immediately on discovery of a defect, and the defective product sent in for inspection. The manufacturer 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 glider's first flight, recorded on the identification plate. If no date is evident the applicable date is that on which the glider 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.

Wing parts

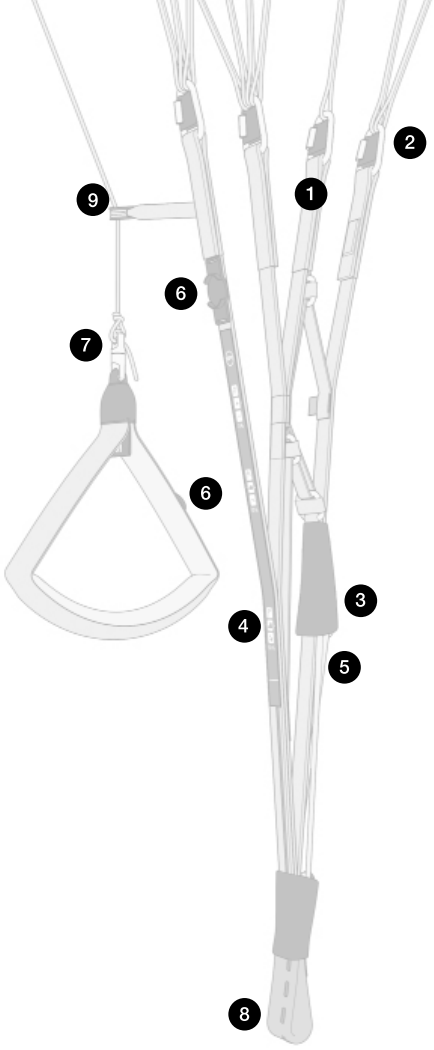

Air intakes
Upper surface
Lower surface
Ribs
Cells
Winglet
Cleaning Velcro

Line plan


A1
A2
3A1
B1
B2
3B1
A3
A4
3A2
B3
B4
3B2
A5
A6
A7
A8
3A3
2A1
B5
B6
B7
B8
3B3
2B1
2AB2
A9
B9
2StAB
StA
2StCD
StB
StC
StD
BST
C1
C2
D1
D2
2CD1
2CD2
3CD1
C3
C4
D3
D4
2CD3
2CD4
3CD2
C5
C6
C7
C8
3C3
2C5
1
2
3
4
5
6
7
8
9
10
11
F1
F2
F3
F4
VR1
VR2
VR3
SL low
SL up

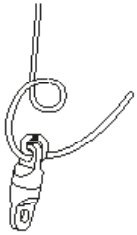
Risers

1. Big ears system with «Quick Snap»
2. Quicklinks and clips
3. Speed system pulleys
4. Speed Perfomance Index (SPI)
5. Brummel hooks
6. Magnet clips
7. Swivel
8. Suspension loop with «Easy Connect System» marks
9. Brake ring



Bowline

Step 1



Step 2

Step 3

Step 4

Step 5

ADVANCE

advance thun ag
uttigengstrasse 87
ch 3600 thun

fon +41 33 225 70 10
fax +41 33 225 70 11

www.advance.ch
info@advance.ch