ICEPEAK EVOX

User's manual

ICEPEAK EVOX

Challenge the Status Quo

WELCOME

We wish to welcome you to our team and thank you for your confidence in our glider product line.

We would like to share the enthusiasm with which we created the ICEPEAK EVOX and the importance and care we took in the design and manufacture of this new model in order to offer maximum pleasure on every flight with a Niviuk glider.

The ICEPEAK EVOX is not just a simple evolution. More speed, more maneuverability and more performance in the most competitive version of the Icepeak to date. Its complex construction combined with the latest technological advances and the best materials elevate its performance to a level of excellence. A wing designed to change the rules of the game.
We are confident you will enjoy flying this glider and will soon discover the meaning of our name:
"The importance of small details".
This is the user manual and we recommend you read it carefully.

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USER'S MANUAL

This manual provides you with the necessary information on the main characteristics of your new paraglider.

Whilst it provides information on the wing, it cannot be viewed as an instructional handbook and does not offer the training required to fly this type of paraglider. Training can only be undertaken at a certified paragliding school and each country has its own system of licensing. Only the aeronautical authorities of respective countries can determine pilot competence.

The information in this manual is provided in order to warn you against adverse flying situations and potential dangers.

Equally, we would like to remind you that it is important to carefully read all the contents of your new ICEPEAK EVOX manual.

Misuse of this equipment could lead to severe injuries or death. The manufacturers and dealers cannot be held responsible for misuse of the paraglider. It is the responsibility of the pilot to ensure the equipment is used correctly.

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1. CHARACTERISTICS

1.1 WHO IS IT DESIGNED FOR?

The ICEPEAK EVOX is intended for pilots with passion, the instinct to excel, who have experience and the ambition to feel the excitement of high-level competition with a top performance wing.
A glider without precedent, it is the result of years of research by our R & D team. We aimed to make sure that every detail reaches the maximum of its possibilities. Basically, a wing that offers much and demands little.

1.2 CERTIFICATION

The ICEPEAK EVOX was presented for certification in accordance with the CIVL COMPETITION CLASS

All certification tests were performed at the Swiss testing house Air Turquoise. All sizes passed the load, shock and flight tests.

The load test proved that the wing can withstand the stipulated 8G.

The shock test proved that he wing can resist 1000 daN of force.

The flight test resulted in the following certification of the ICEPEAK EVOX for all sizes:

CCC

We recommend that only pilots who are familiar with gliders of this certification fly this paraglider.

Only the aeronautical authorities of respective countries can determine pilot competence.

We recommend pilots read the flight test report carefully, especially the comments of the test pilot. The report contains all the necessary information on how the paraglider reacts during each of the tested manoeuvres.

It is important to note that different size wings will react differently during manoeuvres. Even within the same size, at maximum or minimum load, the behaviour and reactions of the wing may vary.

Description of flight characteristics of CCC paragliders:

Paragliders with demanding and unique flight characteristics with potentially violent reactions in turbulence and to pilot errors.
Normal flight recovery requires precise pilot intervention.

- Description of the pilot skills required for an CCC wing:

For pilots trained in recovery techniques, who fly very actively, have significant experience of flying in turbulent conditions and who accept the consequences of flying with this type of wing.

For further information on the flight test and the corresponding certification number, please see the final pages of this manual or see www.niviuk.com

1.3 IN-FLIGHT BEHAVIOUR

Niviuk developed this wing by adopting very specific goals: to improve performance, excellent handling; to facilitate more control for the pilot.

To increase performance while maintaining the highest level of safety. To ensure that the wing transmits the maximum feedback in an understandable and comfortable way so that the pilot can focus on piloting and enjoying the flight. And, with smooth handling, take advantage of all favourable conditions.

In all aspects of flight, the wing is very solid and stable. The glide is

smooth, even when fully accelerated. During glides, the wing maintains altitude and the wing remains stable. Improved turn precision means handling is less physical and provides better feedback. Inflating the wing is much easier and gentler, without overshooting.

Flying this wing is very intuitive, with clear and useful feedback about the airmass. It responds to the pilot's inputs effectively and even in thermic and turbulent conditions it remains stable and solid.

The ICEPEAK EVOX flies efficiently. It enters thermals with sufficient speed to centre in the lift and climbs progressively. The handling is progressive and effective for even more flying pleasure under an exciting wing of extraordinary quality.

It is lightweight; even lighter in flight and easy to pilot, with outstanding turbulence buffering and a surprising range of speed for incredible glides.

1.4 CONSTRUCTION, MATERIALS

The ICEPEAK EVOX has all the technological innovations used on other Niviuk gliders and is built with the most careful selection of current materials. It has all the current technology and accessories available to improve pilot comfort whilst increasing safety and performance.
In the design of all Niviuk products the team aims to ensure development and continuous improvement. The technologies developed in recent years have allowed us to develop greater, better wings. It is in this context that we would like to introduce the technologies included in this new model.

RAM Air Intake - this system is characterised by the arrangement of the air inlets, to ensure optimal maintenance of internal pressure. Thanks to this design, we were able to reduce their size, while maintaining the same air flow at all angles to improve laminar flow. More consistency across the whole speed range and better performance without compromising on safety.

Titanium Technology (TNT) - a revolutionary technique using titanium. Using Nitinol in the internal construction provides a more uniform profile and reduces the weight to gain efficiency in flight. Nitinol provides the highest level of protection against deformation, heat or breaks.

Structured Leading Edge (SLE) – the use of the SLE considerably reduces the amount of Mylar which was used in previous Niviuk wings and this also reduces the weight of the leading edge. Therefore it is easier to inflate this wing than a paraglider without this system.

3D Pattern Cut Optimisation (3DP) - the latest generation of wings require a new fabric panel pattern and cutting system. Creating separate panels for each of the sections at the front of the wing means the sail fabric is more taut and crease-free. During the cutting, the optimal orientation of the fabric section is selected, depending on its final location. If the fabric pattern is properly aligned with the axes of load, it suffers less deformation after repeated use, to the long-term benefit of the leading edge.

3D Leading Edge (3DL)- adding an extra seam to the longitudinal axis of the glider helps, on the one hand, give more consistency and volume to the profile (a more efficient 3D contour).

Structured Trailing Edge (STE) - optimises the profile without deforming it. The circulation of the air is more fluid, ensuring a cleaner airflow. When changing the angle of attack or when accelerated, the profile remains more uniform and the after braking, the wing returns to trim more progressively, faster and more actively.

Drag Reduction Structure (DRS) - the trailing edge has been reinforced with small ribs in order to distribute the pressure more evenly. This results in excellent manoeuvrability and greater control and precision.

The use of these technologies is a big technological leap forward in building wings and a big improvement in flight comfort.

For the construction process of the ICEPEAK EVOX we use the same criteria, quality controls and manufacturing processes as in the rest of our range. From Olivier Nef's computer to fabric cutting, the operation does not allow for even a millimetre of error. The cutting of each wing component is performed by a rigorous, extremely meticulous, automated computer laser-cutting robotic arm.
This program also paints the guideline markers and numbers on each individual fabric piece, thus avoiding errors during this delicate process. The jigsaw puzzle assembly is made easier using this method and optimises the operation while making the quality control more efficient.
All Niviuk gliders go through an extremely thorough and detailed final inspection. The canopy is cut and assembled under strict quality control conditions facilitated by the automation of this process.
Every wing is individually checked with a final visual inspection.
The fabric used to manufacture the glider is light, resistant and durable. The fabric will not experience fading and is covered by our warranty.

All lines are made from Technora
The line diameter has been calculated depending on the workload and aims to achieve the required best performance with the least drag.

The lines are semi-automatically cut to length and all the sewing is completed under the supervision of our specialists.
Every line is checked and measured once the final assembly is concluded.
Each glider is packed following specific maintenance instructions as recommended by the fabric manufacturer.
Niviuk gliders are made of premium materials that meet the requirements of performance, durability and certification that the current market demands.

Information about the various materials used to manufacture the wing can be viewed in the final pages of this manual.

1.5 ELEMENTS, COMPONENTS

The ICEPEAK EVOX is delivered with a series of accessories that will greatly assist you in the maintenance of your paraglider:

- A Kargo bag. This bag is large enough to hold all equipment comfortably and with plenty of space.
- An inner bag to protect the wing during storage and transport.
- An adjustable compression strap to compress the inner bag and reduce its volume.
- A bag to protect the risers.
- A repair kit with self-adhesive Ripstop tape in the same colour as the wing and spare O-rings to protect the maillons.
- An NKare Bag that makes optimal packing of the ICEPEAK EVOX easy.

2. UNPACKING AND ASSEMBLY

2.1 CHOOSE THE RIGHT LOCATION

We recommend unpacking and assembling the wing on a training hill or a flat clear area without too much wind and free of obstacles. It will help you to carry out all the recommended steps required to check and inflate the ICEPEAK EVOX.

We recommend the whole installation procedure is supervised by a qualified professional instructor or official dealer. Only they can address any doubts in a safe and professional way.

2.2 PROCEDURE

Take the paraglider out of the rucksack, open and unfold it on the ground with the lines positioned on the undersurface, oriented in the direction of inflation. Check the condition of the fabric and the lines for defects. Check the maillons/IKS connecting the lines to the risers to make sure they are

fully closed and tightened. Identify, and if necessary untangle, the A, B and C-lines, the brake lines and corresponding risers. Make sure that there are no knots.

2.3 CONNECTING THE HARNESS

The ICEPEAK EVOX risers are colour-coded.
- Right: green
- Left: red

This colour-coding makes it easier to connect the wing to the correct side and helps prevent pre-flight errors.

Correctly connect the risers to the attachment points so that the risers and lines are correctly ordered and free of twists. Check that the IKS and carabiners are properly fastened and securely locked.

2.4 HARNESS TYPE

The ICEPEAK EVOX can be flown with all current harness types. We recommend setting the chest strap to the distance specified in the certification report - this will vary depending on size.

Care should be taken with the chest strap setting, as the distance of the chest strap setting will affect the handling of the glider. If the chest strap is too wide, it allows greater feedback but this carries the risk of affecting the stability of the wing.
If the chest strap is set too tightly, the wing feels more solid, but there is a loss of feedback and a risk of twisting in the case of a violent asymmetric collapse.

2.5 SPEED-BAR

The speed-bar is a means of temporary acceleration by changing the flow over the profile. The speed system comes pre-installed on the risers and is not modifiable as it conforms to the measurements and limits stipulated in its certification.

The ICEPEAK EVOX includes a speed system with maximum travel depending on its size (see Full speed-bar).
The speed system is engaged when the pilot pushes the speed-bar - not included as standard with this glider model - with their feet (see 2.5.1 Speed system assembly)

The speed system uses an action/reaction system. Released, the speed-bar is set to neutral. When the bar is pushed using the feet, the wing accelerates. The speed can be regulated by varying the pressure on the bar. Once the pressure on the bar is released, the speed system returns to the neutral setting.

The speed system is efficient, sensitive and precise. The pilot can use the system whenever they want during the flight. In the neutral position the glider will fly at the standard speed and glide. Using full speed-bar, the wing will fly at maximum speed, but the glide will be adversely affected.

•Released speed-bar: the A, B, C and D-risers are aligned.
•Full speed-bar: the difference between the A - C-risers becomes: 14 cm.

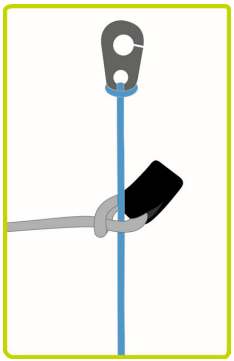
PLEASE NOTE!

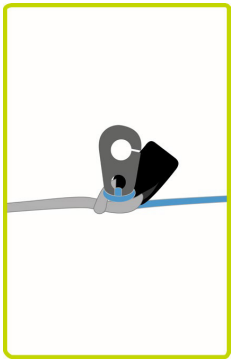
The use of the speed system results in changes to the speed and reactions of the wing. For more information, please see the certification report.

2.5.1 SPEED SYSTEM ASSEMBLY

The speed-bar consists of the bar that the pilot pushes with their feet, as well as the two cords that connect it to the speed system components on the risers. Once you have chosen the type of speed-bar you prefer, you must install it. Some considerations:

•you should use the type of speed-bar you consider appropriate, depending on the type of harness, personal preferences, etc.
•The speed-bar is detachable to facilitate its connection and / or disconnection to the risers as well as subsequent adjustment.
•To connect it to the harness, please follow the instructions of the harness manufacturer. The majority of harnesses have a speed system pre-installed.
•The standard connection of the speed-bar to the speed system is via Brummel hooks, where two slots in the hooks are interlocked, making their connection / disconnection easy. However, any connection system that is safe may be used.





2.5.2 CHANGING THE RISER CORDS

In spite of the speed system having pulleys with bearings to reduce friction to a minimum, the frequency with which the speed-bar is used causes the cord to wear and you may need to replace them.

In all Niviuk gliders the speed system cords on the risers are completely removable and easily replaceable. You can use the Brummel hooks, not use them, remove them, use another type of connector, etc. It is even possible to fix the speed-bar cords directly to the speed system on the risers. This last option makes the connection / disconnection more laborious, but means the cord has maximum travel without obstructions or restrictions which is very useful for some models of harnesses

2.6 INSPECTION AND WING INFLATION ON THE GROUND

After your gear has been thoroughly checked and the weather conditions deemed favourable for flying, inflate your ICEPEAK EVOX as many times as necessary to familiarise yourself with its behaviour. Inflating the ICEPEAK EVOX is easy and should not require a great deal of physical effort. Inflate the wing with a little pressure from the body using the harness. This may be assisted by using the A-lines. Do not pull on them; just accompany the natural rising movement of the wing. Once the wing is inflated to the overhead position, appropriate control with the brakes will be sufficient to hold it there.

2.7 ADJUSTING THE BRAKES

The length of the main brake lines are adjusted at the factory and conform to the length stipulated during certification. However, they can be changed to suit your flying style. It is advisable to fly with the original setting for a period of time to get used to the actual behaviour of the ICEPEAK EVOX. In case it is necessary to modify the brake length, loosen the knot, slide the line through the brake handle to the desired point and re-tighten the knot firmly.

Only qualified personnel should carry out this adjustment. You must ensure that the modification does not affect the trailing edge and slow the ICEPEAK EVOX down without pilot input. Both brake lines should be symmetrical and the same length. We recommend using a clove hitch or bowline knot.

When changing the brake length, it is necessary to check that they do not engage when the speed-bar is used. When we accelerate, the glider rotates over the D-riser and the trailing edge elevates.
It is important to check that the brake is adjusted to take into consideration this extra distance during acceleration. With this profile deformation there is a risk of generating turbulence and causing a frontal or asymmetric collapse.

3. THE FIRST FLIGHT

3.1 CHOOSE THE RIGHT LOCATION

For the first flight we recommend going to your usual flying area and that a qualified instructor is present and supervising the entire procedure.

3.2 PREPARATION

Repeat the procedures detailed in section 2 UNPACKING AND ASSEMBLY to prepare your equipment

3.3 FLIGHT PLAN

Planning a flight before taking off to avoid possible problems later is always a good idea.

3.4 PRE-FLIGHT CHECK LIST

Once ready, but before taking off, conduct another equipment inspection. Conduct a thorough visual check of your gear with the wing fully open, the lines untangled and properly laid out on the ground to ensure that all is in working order. Be certain the weather conditions are suited to your flying skill level.

3.5 WING INFLATION, CONTROL, AND TAKE-OFF

The ICEPEAK EVOX comes up easily, without requiring additional energy, and does not overfly you. It is a straight-forward exercise, leaving enough time for you to decide whether to accelerate and take off or not.

If the wind permits, we recommend a reverse launch, as this allows a better visual inspection of the wing during inflation. In “strong” winds, the ICEPEAK EVOX is especially easy to control using this launch technique. Winds of 25 to 30 km/h are considered strong for paragliding.

Correctly setting up the wing on the ground before take off is especially important. Choose an appropriate location facing the wind. Position the paraglider in a crescent configuration to facilitate inflation. A clean wing layout will ensure a trouble-free take off.

3.6 LANDING

The ICEPEAK EVOX lands excellently, it converts the wing speed into lift at your demand, allowing an enormous margin of error. Wrapping the brake lines around your hand to get greater braking efficiency is not necessary

3.7 PACKING

The ICEPEAK EVOX has a complex leading edge, manufactured using a variety of different materials and it must be packed carefully. A correct folding method is very important to extend the useful life of your paraglider.

It should be concertina-packed, with the leading edge reinforcements flat and the flexible rods stacked one on top of the other. This method will keep the profile in its original shape and protect the integrity of the wing over time. Make sure the reinforcements are not bent or folded. It should not be folded too tightly to avoid damage to the cloth and/or lines.

At Niviuk we have designed the NKare Bag, a bag designed to assist you with rapid packing which helps maintain the integrity of the leading edge and its internal structures in perfect condition.

The NKare Bag guides you through the folding process, allowing you to concertina pack the wing with each rod on top of the other and then fold the wing as required. This folding system ensures that both the fabric and the reinforcements of the internal structure are kept in perfect condition.

4. IN FLIGHT

4.1 FLYING IN TURBULENCE

We recommend that you read the certification test report.

The report contains all the necessary information on how the ICEPEAK EVOX reacts during each of the tested manoeuvres.

It is important to point out that the appropriate response to each adverse manoeuver can vary from size to size; even within the same size at maximum or minimum load the behaviour and reactions of the wing may vary.

Having the knowledge that the testing house provides through the test report is fundamental to learning how to deal with possible situations.

To become familiar with the manoeuvres described below, we recommend practising within the auspices of a licensed training outfit.

4.2 POSSIBLE CONFIGURATIONS

To become familiar with the manoeuvres described below, we recommend practising within the environment of a licensed training outfit. You must adapt your use of the brakes depending on the wing-loading and avoid over-steering.
It is important to note that the type of reaction to a manoeuvre can vary from one size of wing to another, and even within the same size the behaviour and reactions may be different depending on the wing-loading.

In the test report, you will find all the necessary information on how to handle your new wing during each of the tested manoeuvres. Having this information is crucial to know how to react during these manoeuvres in real flight, so you can deal with these situations as safely as possible.

Asymmetric collapse
In spite of the ICEPEAK EVOX's profile stability, strong turbulent air may cause the wing to collapse asymmetrically in very strong turbulence, especially if you do not fly actively and prevent the collapse. In this case the glider conveys a loss of pressure through the brake lines and the harness. To prevent the collapse from happening, pull the brake handle on the affected side of the wing. It will increase the incidence of the wing (angle of attack). If the collapse does happen, the ICEPEAK EVOX will not react violently, the turning tendency is gradual and easily controlled. Weight-shift toward the open, flying side (the opposite side of the collapse) to keep the wing flying straight, while applying light brake pressure to that side if necessary. Normally, the collapsed side of the wing should then recover and reopen by itself. If it does not, try to weight-shift towards the collapsed side. If this does not resolve the issue, pull the brake handle on the collapsed side decisively and quickly all the way (100%) down and release it back up immediately. You may have to repeat this action to provoke the re-opening of the collapsed glider side. Do not over-brake or slow down the flying side of the wing (control the turn). Once the collapsed side is open make sure you return to normal flying speed.

Frontal collapse
Due to the ICEPEAK EVOX's design, in normal flying conditions frontal collapses are unlikely to take place. The wing's profile has great buffering abilities when dealing with extreme incidence changes. A frontal collapse may occur in strong turbulent conditions, entering or exiting powerful thermals. Frontal collapses usually re-inflate without the glider turning, but a symmetrically applied quick braking action with a quick deep pump of both brakes will accelerate the re-inflation if necessary. Release the brake lines immediately to return to default glider air speed.

Negative spin
A negative spin does not conform to the ICEPEAK EVOX's normal flight behaviour. Certain circumstances however, may provoke a negative spin (such as trying to turn when flying at very low air speed whilst applying a lot of brake). It is not easy to give any specific recommendation about this situation other than quickly restoring the wing's default air speed and angle of attack by progressively reducing the tension on the brake lines. The normal wing reaction will be to have a lateral surge on the re-accelerated side with a rotation not greater than 360º before returning to default air speed and a straight flight path trajectory.

Parachutal stall
The possibility of entering or remaining in a parachutal stall have been eliminated from the ICEPEAK EVOX.
A parachutal stall is virtually impossible with this wing. If it did enter into a parachutal stall, the wing loses forward motion, becomes unstable and there is a lack of pressure on the brake lines, although the canopy appears to be fully inflated. To regain normal air speed, release brake line tension symmetrically and manually push on the A-lines or weight-shift your body to any side WITHOUT PULLING ON THE BRAKE LINES.

Deep Stall
The possibility of the ICEPEAK EVOX stalling during normal flight is very unlikely. It could only happen if you are flying at a very low air speed, whilst over-steering or performing dangerous manoeuvres in turbulent air.

To provoke a deep stall, the wing has to be slowed down to its minimum air speed by symmetrically pulling the brake lines all the way (100%) down until the stall point is reached and held there. The glider will first pitch rearward and then reposition itself overhead, rocking slightly, depending on how the manoeuvre is done.

When entering a stall, remain clear-headed and ease off the brake lines until reaching the half-way point of the total brake travel. The wing will then surge violently forward and could reach a point below you. It is most important to maintain brake pressure until the glider has returned to its default overhead flying position.

To resume normal flight conditions, progressively and symmetrically release the brake line tension to regain air speed. When the wing reaches the overhead position, the brakes must be fully released. The wing will then surge forward to regain full air speed. Do not brake excessively at this moment as the wing needs to accelerate to pull away from the stall configuration. If you have to control a possible frontal collapse, briefly pull both brake handles down to bring the wing back up and release them immediately while the glider is still in transition to reposition itself overhead.

Cravat
A cravat may happen after an asymmetric collapse, when the end of the wing is trapped between the lines. Depending on the nature of the tangle, this situation could rapidly cause the wing to spin. The corrective manoeuvres to use are the same as those applied in case of an asymmetric collapse: control the turn/spin by applying tension on the opposite brake and weight shift opposite to the turn. Then locate the 3STI stabilo line (attached to the wing tip) trapped between the other lines. This line has a different colour and is located on the outside position of the B-riser.

Pull this line until it is taut. This action will help to release the cravat. If ineffective, fly down to the nearest possible landing spot, controlling the

direction with both weight-shift and the use of the brake opposite to the tangled side. Be cautious when attempting to undo a tangle while flying near terrain or other paragliders; it may not be possible to continue on the intended flight path.

Over-controlling
Most flying problems are caused by wrong pilot input, which then escalates into a cascade of unwanted and unpredicted incidents. We should note that the wrong inputs can lead to loss of control of the glider. The ICEPEAK EVOX was designed to recover by itself in most cases. Do not try to over-correct it!

Generally speaking, the reactions of the wing, which are caused by too much input, are due to the length of time the pilot continues to over–control the wing. You have to allow the glider to re-establish normal flying speed and attitude after any type of incident.

4.3 ACCELERATED FLIGHT

The ICEPEAK EVOX's profile was designed for stable flight throughout its entire speed range. The speed-bar can be used in strong winds or significant sink.
When accelerating the wing, the profile becomes more sensitive to turbulence and closer to a possible frontal collapse. If a loss in internal wing pressure is felt, tension on the speed-bar should be reduced to a minimum and a slight pull on the brake lines is recommended to increase the wing's incidence angle. Remember to re-establish the air speed after correcting the angle of attack.

It is NOT recommended to accelerate near obstacles or in very turbulent conditions. If necessary, constantly adjust the movements and pressure on the speed-bar whilst doing the same to the brake lines. This balance is considered to be 'active piloting'.

4.4 FLYING WITHOUT BRAKE LINES

If, for any reason at all, the ICEPEAK EVOX's brake lines become disabled in flight, it will become necessary to pilot the wing with the D-risers and weight shifting until landing. These risers steer easily because are not under significant tension. You will have to be careful and not handle them too heavily in case this causes a stall or negative spin. The wing must be flown at full speed (not acellerated) during the landing approach, and the D-risers will have to be pulled symmetrically all the way down shortly before contact with the ground. This braking method is not as effective as using the brake lines, and hence the wing will land with a higher ground speed.

4.5 LINE KNOT(S) IN FLIGHT

The best way to avoid knots and tangles is to thoroughly inspect the lines as part of a systematic pre-flight check. If a knot is spotted during the takeoff phase, immediately abort the launch sequence and stop.

If inadvertently taking off with a knotted line, the glider drift will need to be compensated by weight-shifting to the opposite side and applying a slight brake pull to that side. Gently pull the brake line to see if the knot can be undone or try to locate the problem line. Try pulling it to see if the knot can be undone. Beware of trying to clear a knotted line or untangle a line in flight when close to the terrain. If the knot is too tight and cannot be undone, carefully and safely fly to the nearest landing zone. Be careful: do not pull too hard on the brake handles because there will be an increased risk of stalling the wing or entering a negative spin. Before attempting to clear a knot, make sure there are no other pilots flying in the vicinity.

5. LOSING ALTITUDE

Knowledge of different descent techniques could become vital in certain situations. The most suitable descent method will depend on the particular situation.

To become familiar with the manoeuvres described below, we recommend practising within the environment of a licensed training outfit.

5.1 BIG EARS

Big ears is a moderate descent technique, able to increase the sink rate to –3 or –4 m/s and reduces the ground speed by 3 to 5 km/h. The angle of attack and effective wing-loading will also increase due to the smaller surface area of the wing.

Técnica standard

To perform the 'Big ears' manoeuvre, take the outermost line on each A-riser and simultaneously, smoothly pull them outward and downward. The wingtips will fold in.
To re-establish forward speed and the correct angle of attack, accelerate once the ears are pulled.
Keep the ears pulled in until you have lost the desired altitude.
Let go of the lines to re-inflate the tips automatically. If they do not, try progressively pulling one brake then the other. We recommend inflating the wing tips asymmetrically, without major change to the angle of attack, especially when flying near the ground or flying in turbulence.

Beware of the risk of stalling!

The action of reaching for the outermost A-lines to make ears, can inadvertently mean pulling the brakes. The same can happen when we are holding the tips down with the outermost A-lines, it is possible to accidentally affect the brakes. This can obviously lead to a significant speed decrease.

In paragliders with a very pronounced arc, pulling big ears means an increase in drag. On a very arched wing, the ears do not fold, they just hang. The increase of drag is more pronounced than on wings with a less pronounced arc.
The ICEPEAK EVOX is designed with little chord, which is good in normal flight conditions. However, this same damping is what can cause us to have problems to regain normal flying speed after a high increase of the angle of attack and the added drag of the ears.
These particularities, together with turbulent thermic conditions, could cause an unintentional stall.

The solution: big ears may still be applied but you must be fully aware of the above-mentioned points and act accordingly. To avoid the stall, simply use half speed-bar (this is sufficient) to increase the speed and decrease the angle of incidence. This should allow you to maintain sufficient speed to prevent the stall. Take care not to pull the brakes while making the ears as this will make a stall more likely!

5.2 B3 TECHNIQUE

On the new generation of paragliders like the ICEPEAK EVOX the application of big ears can create a high degree of trailing edge turbulence. In addition, with the length of the chord and the arc of the wing, the ears have a tendency to "flap", increasing the turbulence and causing the paraglider to lose too much airspeed, making it necessary for the pilot to recover it, either using the the speed-bar or releasing the ears.
This new rapid descent technique was first discovered by our Niviuk team pilots in 2009 while flying a competition prototype wing, which, because of its line plan and high aspect ratio would not allow big ears to be applied.

With the current 2 or 3-liner wings, the inability to pull big ears, or the risk involved in doing so, concerns many pilots who want to have a controlled rapid descent technique. For the above reasons we recommend using the c3 3c3 line.
This technique easily increases the descent rate without causing problems and without the risk of causing a collapse while maintaining high speed.

HOW? Locate the xxx line on your risers and, as you would when applying big ears, simply pull down firmly and smoothly until you see both wingtips drop back slightly. The forward speed of the glider speed will then reduce slightly, quickly stabilise and then increase. You will then experience a descent rate of around 5-6m/s.
We recommend the application of the speed bar whilst using this technique. Controlled turning of the wing can easily be maintained by weight shifting, exactly the same as you would with big ears. During this manoeuvre, the first sensation is a decrease in relative wind and a slight backwards inclination of the wing, as if going backwards.

To exit the manoeuvre release the lines as you would with big ears, control the pitch and the wing will quickly adopt normal flight. This new technique allows a comfortable and controllable rapid descent without the risk of experiencing a cravat. It is very comfortable and makes turning simple. We advise you to first try this technique in smooth conditions with sufficient altitude above appropriate terrain.
This is a new controlled descent technique that only needs a little practise to be executed with total comfort and effectiveness.

5.3 B-LINE STALL

When carrying out this manoeuvre, the wing stops flying, loses all horizontal speed and the pilot is no longer in control of the paraglider.

The airflow over the profile is interrupted and the wing enters a situation similar to parachuting.

To enter this manoeuvre, the B-risers are gripped below the maillons and symmetrically pulled down together (approx. 20-30 cm) and maintained in that position.

Initiating the maneuver is physically demanding because it can take some strength to pull the risers down until the wing is deformed. After this, the physical effort is less. Continue to hold the risers in position. Once the wing is deformed, its horizontal speed will drop to 0 km/h; vertical descending speed increases to –6 to –8 m/s, depending on the conditions and how the manoeuvre is performed.

To exit the manoeuvre, simultaneously release both risers. The wing will then slightly surge forward and automatically return to normal flight. It is better to let go of the lines quickly rather than slowly.

This is an easy descent technique to perform, but remember that the wing will stop flying, will lose all forward horizontal speed, and its reactions will change markedly when compared to a normal flight configuration.

5.4 SPIRAL DIVE

This is a more effective way to rapidly lose altitude. Beware that the wing will experience and be subjected to a tremendous amount of descending and rotating speed (g-force), which can cause a loss of orientation and consciousness (blackout). This manoeuvre must therefore be done gradually to increase one's capacity to resist the g-force exerted on the body. With practise, you will fully appreciate and understand it. Only practise this manoeuvre at high altitude and with enough ground clearance.

To start the manoeuvre, first weight shift and pull the brake handle located on the inner side of the turn. The intensity of the turn can be controlled by braking slightly using the outer brake handle.

A paraglider flying at its maximum rotating speed can reach –20 m/s, or the equivalent of a 70 km/h vertical descent, and will stabilise in a spiral dive from 15m/s onwards.

Good enough reasons to familiarise yourself with the manoeuvre and understand how to exit it.

To exit this manoeuvre, the inner brake handle (down side of the turn) must progressively be relaxed while momentarily applying tension to the outer brake handle opposite to the turn. The pilot must also weight shift and lean towards the opposite side of the turn at the same time.

The exit should be performed gradually and smoothly so that the changes in pressure and speed can be noted.
When exiting the spiral, the glider will briefly experience an asymmetrical acceleration and dive, depending on how the manoeuvre was carried out.

Practise these manoeuvres at sufficient altitude and carefully.

5.5 SLOW DESCENT TECHNIQUE

This technique allows descent without straining the wing or taxing the pilot. Glide normally while searching for descending air and begin to turn as if climbing in a thermal, but with the intention to sink.

Common sense has to be used to avoid dangerous areas of rotor when looking for descending air. Safety first!

6. SPECIAL METHODS

6.1 TOWING

The ICEPEAK EVOX does not experience any problem whilst being towed. Only qualified winch personnel should handle the certified equipment to carry out this operation. The wing must be inflated similarly as during a normal take off.

It is important to use the brakes to correct the flight path alignment, especially if the glider begins to turn. Since the wing is subject to a slow airspeed and with a high positive angle of attack, we must make any corrections with a high degree of feel and delicacy, in order to avoid a stall.

6.2 ACROBATIC FLIGHT

Although the ICEPEAK EVOX was tested by expert acrobatic pilots in extreme situations, it was not designed for it. We do NOT recommend using this glider for acrobatic flying!!!

We consider acrobatic flights to be any form of piloting different than standard flights. Learning acrobatic manoeuvres should be conducted under the supervision of qualified instructors within a school environment and over water with all safety/rescue elements in place. Centrifugal forces as high as 4 to 5 g can be exerted on the body and wing during extreme manoeuvres

7. CARE AND MAINTENANCE

7.1 MAINTENANCE

Careful maintenance of your equipment will ensure continued top performance.

Apart from the general checks, we recommend actively maintaining your equipment.

A pre-flight check is obligatory before each flight.
If there is any damage to the equipment or you suspect any areas of the wing are susceptible to wear, you should inspect these and act accordingly.

At Niviuk we are firmly committed to make technology accessible to all pilots. For this reason all our wings are fitted with the latest innovations. Thanks to our innovative technologies, the wing has more safety and performance, but this means being more careful with the material.

A hard impact of the leading edge against a hard surface can damage the sail cloth. All incidents involving the leading edge should be reviewed.

If any Nitinol rod is damaged, they are easily replaceable.

The fabric and the lines do not need to be washed. If they become dirty, clean them with a soft damp cloth, using only water. Do not use detergents or other chemicals.

If your wing is wet from contact with water, place it in a dry area, air it and keep it away from direct sunlight.

Direct sunlight may damage the wing's materials and cause premature aging. After landing, do not leave the wing exposed to the sun. Pack it properly and stow it away in its backpack.

If flying in a sandy environment, and sand has accumulated inside the wing, remove it before packing it away. The apertures at the wing tips facilitate easy removal of objects from the trailing edge.

If your wing is wet from contact with salt water, immerse it in fresh water and dry it away from direct sunlight.

7.2 STORAGE

It is important for the wing to be correctly folded when stored. Keep it in the in a cool, dry place away from solvents, fuels, oils.

Do not leave your gear inside a car boot, as cars left in the sun can become very hot. A rucksack can reach temperatures up to 60ºC.

Weight should NOT be laid on top of the equipment.

It is very important to pack the wing correctly before storage.

In case of long-term storage it is advisable, if possible, that the wing is not compressed and it should be stored loosely without direct contact with the ground. Humidity and heating can have an adverse effect on the equipment.

7.3 CHECKS AND INSPECTIONS

Inspections

The ICEPEAK EVOX must be periodically serviced. In accordance with the certification, an inspection must be scheduled every 100 flying hours or every two years whichever comes first.

We strongly recommend that any repairs should
be done in a specialist repair shop by qualified personnel.
This will guarantee the airworthiness and continued certification of your ICEPEAK EVOX.

A thorough pre-flight check must be performed before every flight.

Checking unsheathed lines

The ICEPEAK EVOX is fitted with unsheathed lines. Their durability conforms to unsheathed line standards. Their strength is guaranteed and their resistance to UV is one of the highest in this type of lines.
However, using these lines means there is a requirement to maintain the trim of your ICEPEAK EVOX within the stipulated ranges.
We recommend checking the lines after the first +/- 30 flying hours.

Why is this necessary?
Thanks to our research and experience acquired over time by our R&D team, we are capable of predicting how lines will perform.

Following the recommended inspections will allow you to maintain the wing in optimum condition.
The maintenance carried out on each wing will be different depending on the conditions of each flying area, climate, temperature, humidity, type of terrain, wing load, etc.

We refer to the so-called loops. The Ikuma, Peak 4 and Icepeak 8 models are delivered as standard with a double loop at the top of some of their lines. This double loop is used to adjust the length to stipulated margins and allows, if necessary, readjustment of the line length according to its stability in use.
Every pilot receives their wing from the factory with the loops already made, so please do not change the line lengths or loops under any circumstances. Any readjustment must be performed by a specialised workshop.

7.4 REPAIRS

In case of small tears, you can temporarily repair these by using the Ripstop tape included in the repair kit, as long as no stitching is required to mend the fabric.
Any other tears or repairs should be done in a specialist repair shop by qualified personnel.
Damaged lines must be repaired or exchanged immediately.
Please refer to the line plan at the end of this manual.
Any repair should be done in a specialist repair shop by qualified personnel.
Niviuk can not be held responsible for any damage caused by incorrect repairs.

8. SAFETY AND RESPONSIBILITY

It is well known that free-flying is considered a high-risk sport, where safety depends on the person who is practicing it.

Incorrect use of this equipment may cause severe, life-changing injuries to the pilot, or even death. Manufacturers and dealers cannot be held responsible for your decisions, actions or accidents that may result from participating in this sport.

You must not use this equipment if you have not been properly trained to use it. Do not take advice or accept any informal training from anyone who is not properly qualified as a flight instructor.

8.3 CHECKS AND CONTROLS

We strongly recommend that all actions on the glider were advised for professionals.

Always check all the flying equipment before every flight.

In spite of providing much more benefits to the pilots, 2 liner gliders need more care and control of the calibration. The ICEPEAK 8 mechanic and UV resistance are one of the highest for this type of line. With a 2 liner glider every little variation on the calibration of the lines has a directly effect on the performance of the wing.

We recommend checking the lines calibration after the first 30 hours +/- of flight. This examination must be taken apart from the regular checking every 100 hours of use or every two years (whichever happens first).

Why is it necessary?

Thanks to the experience acquired with the 2 liner gliders on the previous seasons and to the incessant control task of our R&D team over the Abac Team gliders, we are capable now of predicting how to take appropriately care of this kind of lines to assure the best performance of the profile. Following the controls recommended the glider will keep its original features for longer.

The conditions of the flight zone, the climate area, temperature, humidity, wing load, …cause a different impact over the wing. That's why the calibration would be set taking in consideration these factors.
Only qualified professionals should realize it. Do not modify the wing considering the calibration required for other pilots before being sure that it is really necessary for us.

9. GARANTEE

The equipment and components are covered by a 2-year warranty against any manufacturing defect.

The warranty does not cover misuse of the equipment.

10. ANNEXES

10. TECHNICAL DATA

10.1 GENERAL TECHNICAL DATA

ICEPEAK EVOX			20	22	24	25	26	27
CELLS	NUMBER		99	99	99	99	99	99
ASPECT RATIO	FLAT		7,6	7,6	7,6	7,6	7,6	7,6
AREA	FLAT	m2	20	22	23,5	25	26,5	27,5
	PROJECTED	m2	17,04	18,74	20,02	21,3	22,58	23,43
CORD	MAXIMUM	m	2,01	2,11	2,18	2,25	2,32	2,36
LINES	TOTAL	m	193	203	210	217	224	228
	MAIN		2/1/3	2/1/3	2/1/3	2/1/3	2/1/3	2/1/3
RISERS	NUMBER	2+1	A/A'/B	A/A'/B	A/A'/B	A/A'/B	A/A'/B	A/A'/B
	ACCELERATOR	mm	140	140	140	140	140	140
TOTAL WEIGHT IN FLIGHT	MIN - MAX	kg	80 - 95	90 - 105	100 - 110	107 - 117	113 - 128	125 -134
OPTIMAL WEIGHT IN FLIGHT	MIN - MAX	kg	88	97 - 100	106 - 108	114 - 116	123 - 125	132
GLIDER WEIGHT		kg	5,4	5,8	6,1	6,4	6,7	6,9
CERTIFICATION			CCC	CCC	CCC	CCC	CCC	CCC

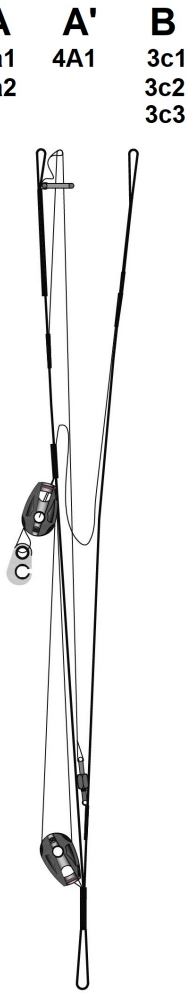
10.2 MATERIALS DESCRIPTION

CANOPY	FABRIC CODE	SUPPLIER
UPPER SURFACE	9017 E25/70032 E3W	PORCHER IND (France)
BOTTOM SURFACE	70000 E3H	PORCHER IND (France)
PROFILES	9017 E29	PORCHER IND (FRANCE)
DIAGONALS	9017 E29	PORCHER IND (FRANCE)
LOOPS	LKI - 10	KOLON IND. (KOREA)
REIFORCEMENT LOOPS	W-420 / Ripstop	D-P (GERMANY)
TRAILING EDGE REIFORCEMENT	MYLAR	D-P (GERMANY)
RIBS REIFORCEMNET	LTN-0.8/1 STICK	SPORTWARE CO.CHINA
THREAD	SERAFIL 60	AMAN (GERMANY)

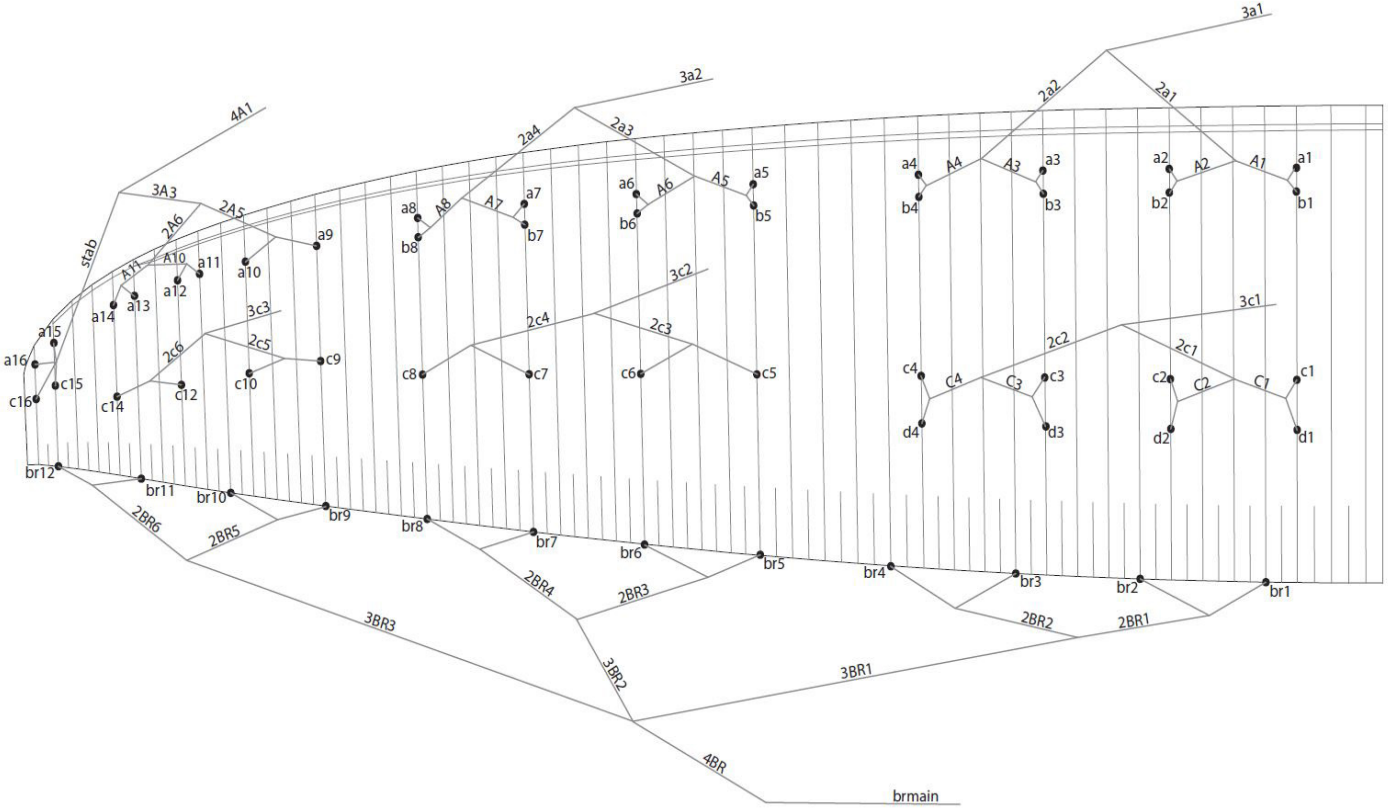
SUSPENSION LINES	FABRIC CODE	SUPPLIER
UPPER CASCADES	DC - 60	LIROS GMHB (GERMANY)
UPPER CASCADES	DC - 40	LIROS GMHB (GERMANY)
UPPER CASCADES	DC - 35	LIROS GMHB (GERMANY)
UPPER CASCADES	A-8000/U 50	EDELRID (GERMANY)
MIDDLE CASCADES	DC - 35	LIROS GMHB (GERMANY)
MIDDLE CASCADES	DC - 40	LIROS GMHB (GERMANY)
MIDDLE CASCADES	A-8000/U 50	EDELRID (GERMANY)
MIDDLE CASCADES	A-8000/U 70	EDELRID (GERMANY)
MIDDLE CASCADES	A-8000/U 90	EDELRID (GERMANY)
MIDDLE CASCADES	A-8000/U 190	EDELRID (GERMANY)
MAIN	A-8000/U 70	EDELRID (GERMANY)
MAIN	A-8000/U 130	EDELRID (GERMANY)
MAIN	A-8000/U 190	EDELRID (GERMANY)
MAIN	A-8000/U 360	EDELRID (GERMANY)
MAIN	A-8000/U 470	EDELRID (GERMANY)
MAIN BREAK	PPSL - 200	LIROS GMHB (GERMANY)
THREAD	SERAFIL 60	AMAN (GERMANY)

RISERS	FABRIC CODE	SUPPLIER
MATERIAL	3455	COUSIN (FRANCE)
COLOR INDICATOR	210D	TECNI SANGLES (FRANCE)
THREAD	V138	COATS (ENGLAND)
MAILLONS	3.5	ANSUNG PRECISION (KOREA)
PULLEYS	RF25109	RONSTAN (AUSTRALIA)

10.3 RISERS PLAN



10.4 SUSPENSION PLAN



10.5 DIMENSIONS ICEPEAK EVOX 20

LINES HEIGHT + RISER mm

	A	B	C	D	br
1	7610	7595	7613	7714	7867
2	7499	7482	7479	7582	7567
3	7468	7451	7452	7554	7448
4	7506	7492	7519	7615	7502
5	7398	7382	7392		7301
6	7248	7231	7238		7099
7	7161	7144	7165		7017
8	7142	7130	7199		7084
9	6979		6982		6905
10	6855		6870		6792
11	6804		6815		6768
12	6776		6837		6878
13	6767		6687		
14	6787		6701		
15	6676				
16	6674				

RISERS LENGHT mm

	A	A'	B	
	514	517	516	STANDARD
	374	444	516	ACCELERATED

10.6 DIMENSIONS ICEPEAK EVOX 22

LINES HEIGHT + RISER mm

	A	B	C	D	br
1	7980	7966	7975	8080	8277
2	7865	7848	7835	7942	7962
3	7835	7818	7808	7913	7838
4	7876	7862	7881	7980	7895
5	7763	7747	7748		7686
6	7607	7590	7587		7475
7	7516	7499	7512		7390
8	7497	7485	7549		7461
9	7328		7320		7274
10	7197		7203		7156
11	7144		7145		7132
12	7115		7168		7248
13	7105		7020		
14	7127		7035		
15	7009				
16	7007				

RISERS LENGHT mm

	A	A'	B	
	514	517	516	STANDARD
	374	444	516	ACCELERATED

10.7 DIMENSIONS ICEPEAK EVOX 24

LINES HEIGHT + RISER mm

	A	B	C	D	br
1	8246	8232	8239	8348	8572
2	8128	8111	8098	8207	8247
3	8098	8081	8071	8178	8120
4	8141	8127	8146	8248	8180
5	8026	8010	8012		7964
6	7866	7849	7846		7747
7	7772	7755	7768		7660
8	7753	7742	7806		7734
9	7577		7571		7541
10	7442		7449		7419
11	7388		7390		7395
12	7358		7414		7515
13	7348		7260		
14	7370		7275		
15	7248				
16	7246				

RISERS LENGHT mm

	A	A'	B	
	514	517	516	STANDARD
	374	444	516	ACCELERATED

10.8 DIMENSIONS ICEPEAK EVOX 25

LINES HEIGHT + RISER mm

	A	B	C	D	br
1	8504	8490	8499	8609	8857
2	8384	8367	8354	8465	8522
3	8355	8338	8326	8436	8392
4	8399	8386	8405	8509	8454
5	8281	8265	8266		8233
6	8115	8098	8096		8009
7	8020	8003	8016		7920
8	8001	7990	8056		7997
9	7819		7812		7799
10	7680		7687		7673
11	7624		7625		7649
12	7593		7649		7773
13	7582		7492		
14	7606		7507		
15	7480				
16	7477				

RISERS LENGHT mm

	A	A'	B	
	514	517	516	STANDARD
	374	444	516	ACCELERATED

10.9 DIMENSIONS ICEPEAK EVOX 26

LINES HEIGHT + RISER mm

	A	B	C	D	br
1	8737	8730	8744	8857	9134
2	8614	8604	8594	8709	8790
3	8585	8575	8567	8680	8657
4	8631	8625	8649	8755	8721
5	8521	8511	8512		8494
6	8351	8340	8337		8264
7	8254	8243	8255		8173
8	8236	8231	8297		8252
9	8050		8049		8050
10	7907		7920		7921
11	7846		7857		7896
12	7814		7882		8024
13	7804		7714		
14	7828		7730		
15	7702				
16	7700				

RISERS LENGHT mm

	A	A'	B	
	514	517	516	STANDARD
	374	444	516	ACCELERATED

10.10 DIMENSIONS ICEPEAK EVOX 27

LINES HEIGHT + RISER mm

	A	B	C	D	br
1	8901	8894	8907	9021	9314
2	8776	8766	8755	8870	8964
3	8746	8736	8727	8842	8828
4	8795	8788	8811	8919	8894
5	8682	8672	8672		8664
6	8510	8499	8494		8430
7	8411	8400	8411		8337
8	8391	8386	8454		8418
9	8203		8202		8212
10	8058		8071		8081
11	7997		8006		8055
12	7965		8032		8186
13	7955		7861		
14	7979		7877		
15	7850				
16	7847				

RISERS LENGHT mm

	A	A'	B	
	514	517	516	STANDARD
	374	444	516	ACCELERATED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