BI ROLLER 2

USER MANUAL

EN/LTF B

BI ROLLER 2

CHALLENGE AND FREEDOM GO HAND IN HAND

WELCOME

We welcome you to our team and thank you for the trust you have placed in our Niviuk paraglider.

We would like you to share the enthusiasm with which we have created this paraglider and the importance and care with which we have developed the design and manufacture of this new model. All this, in order to be able to offer you the maximum pleasure in every flight under a Niviuk paraglider.

The BI ROLLER 2 is our first mini tandem glider. The small and compact BI ROLLER 2 has been meticulously designed for professional tandem flying in high wind conditions. It stands out for its stable and safe construction, its speed and its high performance.

Reinvent your tandem flying experience with the BI ROLLER 2!

We are sure you will enjoy flying this paraglider and you will soon discover the meaning of our philosophy:

"Give importance to the small details to make big things happen".

This is the user manual and we recommend you read it carefully.

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USER MANUAL

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

Whilst it provides information, 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 for information purposes only and 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 BI ROLLER 2 manual.

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

CONTENTS

1. CHARACTERISTICS

1.1 TARGET GROUP

The BI ROLLER 2 is our first mini tandem glider. Being small and compact it has been meticulously designed for professional tandem flying in high wind conditions.

Professional tandem flights: a tandem designed to satisfy the most demanding professional pilots. The BI ROLLER 2 is a miniwing with a very wide speed range. Its durability and performance guarantee you a companion you won't want to part with.

Recreational flights: experience dual flights as you have never imagined before and let yourself be seduced by the supreme comfort and stability of this glider. It is light, manoeuvrable and can be flown quickly and accurately at all times. Enjoy every flight with a tandem that adapts perfectly to your needs and those of your passenger.

It is important to note that both tandem flying and speed-flying requires prior training. In terms of safety, it is paramount that the pilot's skill level matches the "performance" of the glider and/or the objectives of the pilot. The control, safety and freedom provided by the BI ROLLER 2 depend directly on the pilot's level of skill and experience. The experience and skill needed to fly this glider are popularly understood as professional piloting.

The BI ROLLER 2 is NOT recommended for beginner pilots due to its dual status as a tandem and speed-wing.

We recommend that beginners take advice from professionals in the sector during their post-training apprenticeship.

We recommend pilots coming from other free flying disciplines to use the advice of professionals and their common sense to adapt their experience to speed-flying.

The BI ROLLER 2 is a wing specifically designed for a wide range of pilots to enjoy the experience of speed.

1.2 CERTIFICATION

The BI ROLLER 2 has been submitted for the European EN and LTF certification.

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 8 G.

The shock test proved that the wing can resist 1200 daN of force.

The flight test resulted in the following certification of the BI ROLLER 2 for all sizes (30 and 34):

EN B
LTF B

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

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

- Description of EN B class wing characteristics:
  paragliders with a high degree of passive safety and very forgiving flight characteristics. Gliders with high collapse resistance outside normal flight.

- Description of the skill and experience required for an EN B wing:
  designed for all pilots, including pilots at all levels of training and qualification.

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.

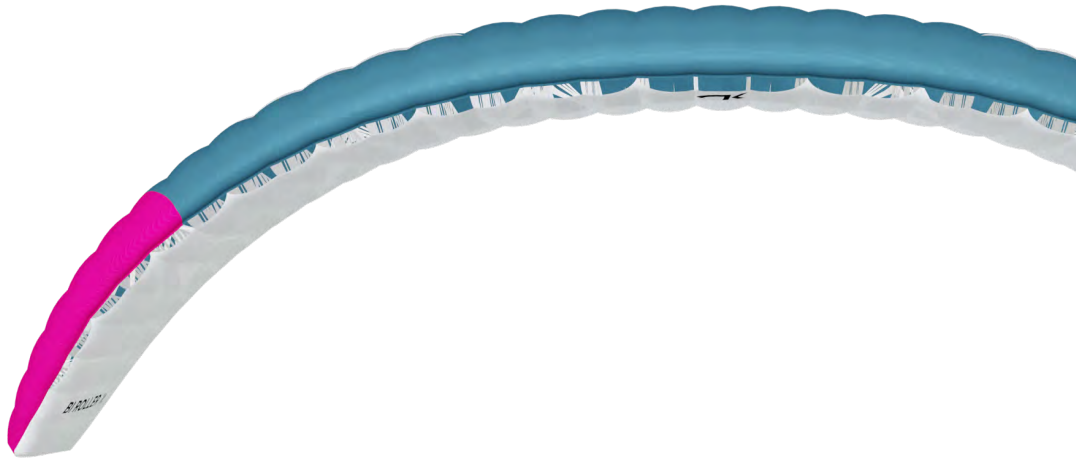
It is important to note that different size wings will react differently during manoeuvres. Even within the same size, at maximum or minimum load, the behaviour and reactions of the wing may vary.

For further information on the flight test and the corresponding certification, please see the final pages of this manual or see or visit the Downloads section.

1.3 IN-FLIGHT BEHAVIOUR

Niviuk developed this wing by adopting very specific goals: to offer the best possible features, excellent handling, to make flying easier for the pilot.

Our other aims were to achieve optimal 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 active piloting, take advantage of all favourable conditions.



Maximum stability: the BI ROLLER 2 is designed to provide maximum stability in high wind conditions. Its aerodynamic profile has been carefully designed and the arc has been structurally reinforced to provide pilot and passenger confidence.

Accessible: easy launch and landings. Its reduced aspect ratio (4.5) facilitates control, especially during launching. It is easy to fly and remains stable at all times. It lands easily and smoothly so that both pilot and passenger can just enjoy the ride.

Fast and agile: speed becomes an ally with the BI ROLLER 2. It is a fast glider that offers exceptional glide performance and advances with maximum efficiency. Built to harness the inertia of high wind gusts, it ensures dynamic flight with unprecedented speed and agility.

Professional performance: the BI ROLLER 2 is meticulously designed to meet the needs of professional pilots. It follows the highest standards of the tandem industry, guaranteeing reliability and durability even in the most demanding conditions. Its exceptional performance allows pilots to complete professional level flights with ease.

Compact design: its innovative design, compact and reinforced structure made from durable materials, guarantees easy control and manoeuvrability. Being lightweight, the packsacks have been optimised for ease of transport and to meet the needs of the most adventurous pilots.

⚠ PLEASE NOTE: The term “speed-flying” implies that, in addition to having the necessary experience and qualifications to fly this type of glider, the pilot must also fly actively and vigilantly. It is crucial to pay attention to speed during turns, abrupt manoeuvres and in general during all acceleration, especially when flying close to the ground and/or obstacles. The pilot must be precise and quick in their responses, whether using the brakes or weight-shifting, which requires considerable adaptation to fully enjoy this activity.

1.4 TECHNOLOGIES, CONSTRUCTION, MATERIALS

The BI ROLLER 2 benefits from all the construction and assembly techniques used in our factory. 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 – the system is characterised by the arrangement of the air inlets, to ensure optimal maintenance of internal pressure across the the whole range of angles of attack.

The result? Having greater internal pressure means better tolerance of turbulence, greater consistency of the profile shape across the speed range; excellent handling at low speed is achieved by allowing the pilot to extend the braking limit, there is a lower risk of collapse and consequently, greater control and 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.

Nitinol now features in all our wings.

Structured Leading Edge (SLE) - the application of Nitinol rods in the leading edge. This technology provides increased strength and stability by maintaining the shape of the aerofoil throughout all phases of flight. This increases performance, efficiency and stability, absorbs turbulence better and makes the wing much more durable over time.

3D Pattern Cut Optimisation (3DP) - this involves placing the fabric of each panel in one direction only, taking as a reference its location on the leading edge. It has been proved that, if the cloth pattern is correctly aligned to the direction of the load axes, the material deforms much less flight after flight, so the leading edge keeps its shape better and is much more durable over time.

Over the years, the design of our paragliding and paramotoring wings has evolved a lot, with a positive and specific advancement of the leading edge.

3D Leading Edge (3DL) - this means adjusting the material of the leading edge to avoid ballooning and the creases that form in this curved area of the wing. Specifically, the leading edge is divided into “sub-panels” sewn into each of the cells at the front of the glider. As a result, the tension of the leading edge cloth is perfectly uniform, increasing the performance and durability of the glider.

DRS Drag Reduction Structure - the DRS aims to reduce the adverse pressure gradient and drag by optimising the aerodynamic shape of the wing. Its application makes the airflow direction much more progressive at the trailing edge. This increases performance without reducing safety and control of the wing.

ELS Ear Lock System - a big ear locking system which provides a simple and effective solution for the tandem/dual pilot when quick descents are required. This innovation makes pulling and releasing big ears possible with one simple, quick and easy action.

It allows big ears to be applied or released whenever the pilot choses. It lets the pilot use the ears as long as necessary with no physical effort at all. It can be used in conjunction with the trimmers. The manoeuvre can still be performed the classic way, without using the ELS.

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 BI ROLLER 2 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.

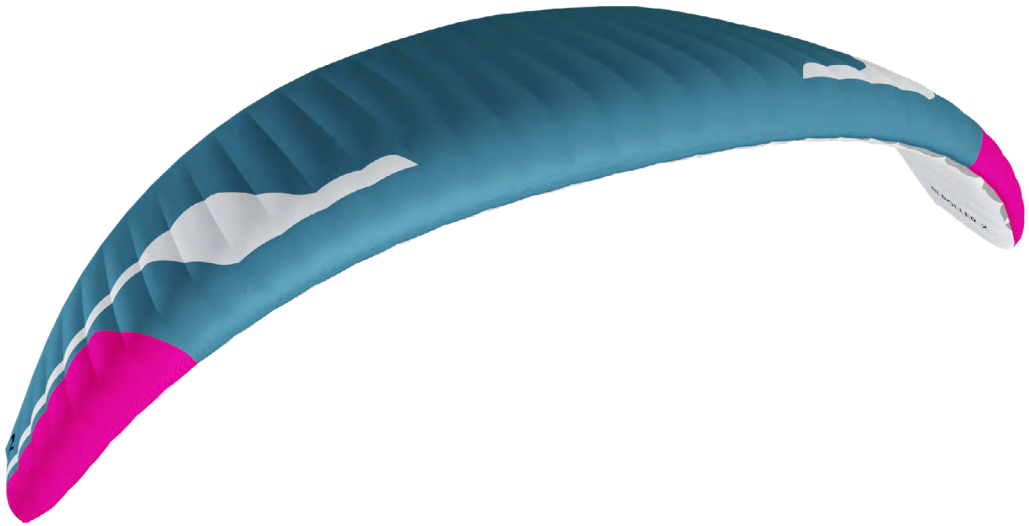
The jigsaw puzzle assembly is made easier using this method and optimises the operation while making the quality control more efficient. All Niviuk gliders go through an extremely thorough and detailed final inspection. The canopy is cut and assembled under strict quality control conditions facilitated by the automation of this process.

Every wing is individually checked with a final visual inspection.

The same fabric has been used as in the rest of the range, ensuring its guaranteed lightness, strength and durability without loss of colour.

The main lines are made from Technora with a polyester sheath, the lower and the upper gallery lines are made from sheathed Dyneema.

The diameter is adjusted according to the load, aiming for the best performance with the least drag. The sheath protects the core from UV rays and abrasions.



The lines are produced semi-automatically and all seams are finished under the supervision of our specialists.

After final assembly on the canopy, the lineset is measured on each individual wing.

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 BI ROLLER 2 is delivered with a series of accessories that will greatly assist you in the maintenance of your paraglider:

- The inner bag, to keep the glider protected during storage and transport.
- An adjustable compression strap, which allows the inner bag to be compressed as much as possible to reduce packing volume.
- A riser bag, to protect them and pack them neatly.
- A repair kit with self-adhesive Ripstop tape.
- The Koli Bag backpack: this is not included in the scope of delivery, but its purchase is recommended. It is perfect for transporting all the equipment comfortably and with plenty of space.
- A set of spacers of the pilot's choice, which can be rigid (15 cm) or flexible.

2. UNPACKING AND ASSEMBLY

2.1 CHOOSING 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 BI ROLLER 2.

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 and B-lines, the brake lines and corresponding risers. Make sure that there are no knots 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 BI ROLLER 2 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 or carabiners are properly fastened and securely locked.

2.4 HARNESS TYPE

In order to get the most out of your BI ROLLER 2, it is essential to choose the right harness. The BI ROLLER 2 can be flown with almost all current tandem harnesses. We recommend using any of the specially designed tandem harnesses for both pilot and passenger.

At Niviuk we have designed a harness that adapts perfectly to these needs. Our new tandem harnesses: The Sherlock for the professional pilot and the Watson 2 for the passenger. Ergonomic and very comfortable, they are the perfect solution for both of you to enjoy a sensational flight. The Sherlock features airbag protection which can be combined with foam. The emergency parachute compartment is at the rear of the harness. It has a back storage compartment that will allow you to store all your belongings before launch. The Watson 2 is our new harness for tandem passengers. As always, it is reversible. Comfort has been optimised and storage ergonomics improved. The airbag protection can also be combined with foam.

Harnesses with back protectors, whether airbag or foam, are compatible with the BI ROLLER 2. If the harness used has an adjustable chest strap, we recommend adjusting it to the distance recommended during the certification, which varies according to size. See the certification report.

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 TRIMMERS

The BI ROLLER 2's acceleration system is activated by releasing travel of the trimmers which are situated on the C-risers. This efficient system provides a much wider and more dynamic speed range.

To reduce the speed, it is necessary to close the trimmers until the desired speed is reached. The travel of this acceleration system varies from the neutral position to maximum speed when fully opened, and back to neutral when closed.

We recommend setting the trimmers to neutral when launching. However, occasionally, launch conditions may require the trimmers to be opened to adapt the rate of climb of the wing during inflation. The greater the amount the trimmers are opened, the faster the wing will rise, and consequently the more control the pilot must exert over the wing.

The BI ROLLER 2 stands out for its great control and manoeuvrability, even as a miniwing. The BI ROLLER 2 allows the pilot to inflate with complete control, even in high wind conditions. In flight, the pilot can adjust the trimmers to the required speed: slow speed with trimmers in neutral position or fast speed with trimmers opened.

For landing, we recommend positioning the trimmers to the first mark of the trimmer tape. However, the pilot must assess the circumstances and adjust the trimmers according to the conditions of each landing. Again, the BI ROLLER 2 assists the pilot in this flying phase, allowing them to perform the landing manoeuvre with full control, either from neutral or with the trimmers fully open.

2.5.1 CORRECT USE OF THE TRIMMERS

The pilot must operate the trimmers manually. Each trimmer is located on the C-riser. To use them, press the tab of the trimmer inwards until the tape is released. The pressure must be released when the trimmer reaches the desired position.

To close the trimmers, grasp the handle, pull down the tape and release when it reaches the right position.

To work properly, the trimmers must always be symmetrical. There are 4 marks along the length of the tape that will facilitate adjusting the symmetry correctly and to see where they have been set. To avoid the annoying flapping of excess tape, the neutral position has a hook at the end for easy attachment.

PLEASE NOTE
Trimmers must not be used to steer the glider. The pilot should note that when releasing the trimmers, the brake handle will be raised the same distance as the trimmers. We recommend adapting the piloting according to the wing-loading and the trimmer travel used.

Please refer to the chart on the final pages of this manual for more information.

2.5.2 ADJUSTING THE TRIMMERS

The trimmers are already fitted as standard and only need to be checked for correct operation and adjustment.

The BI ROLLER 2 risers are divided into 3 branches. The trimmers are located on the C-risers and are adjustable with a total travel of 11 cm.

Adjusting the trimmers causes changes in the speed and reactions of the wing.

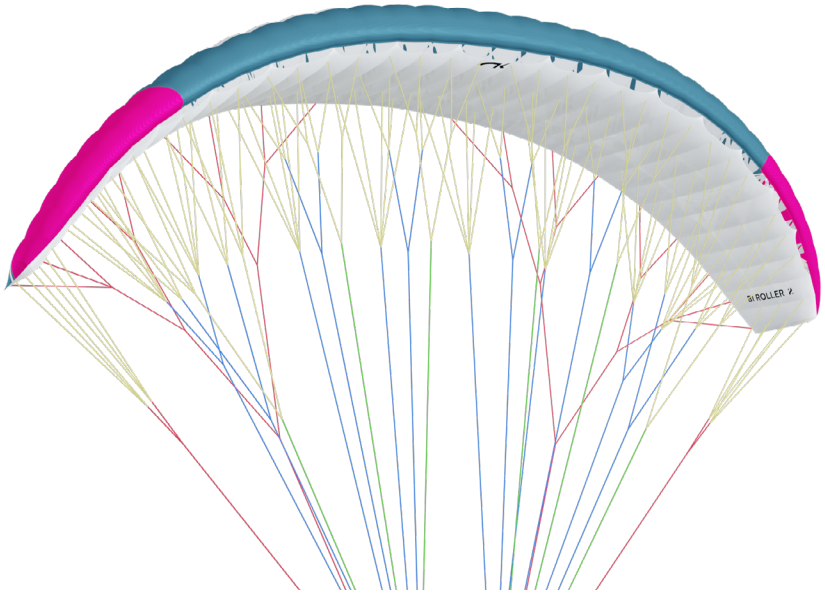
It is the pilot's responsibility to ensure that the trimmer setting is appropriate. The trimmer setting and symmetry must be constantly checked during the flight and, above all, before each take off.

The trimmer system is set by the pilot, i.e. it does not return to its point of origin.

Opening and closing the trimmers is efficient and fast, as well as sensitive and precise.

Put simply, if the trimmers are in the neutral position, there is less speed and more glide; and with the trimmers are open, there is more speed and less glide.

- Trimmers in neutral position: the A, B and C-risers are aligned.
- Trimmers open: the difference between A and B-risers is 4.5 cm; and between A and C-risers is 11 cm.



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 BI ROLLER 2 as many times as necessary to familiarise yourself with its behaviour. Inflating the BI ROLLER 2 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 is 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 BI ROLLER 2.

In addition, the BI ROLLER 2 has two additional attachment points for fixing the height of the brake pulley. Separated by 7 cm from each other, they allow the brakes to be adjusted according to the type of harness used, the pilot's height or preferences: for better handling and to locate the brake handles comfortably and quickly.

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 glider 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 trimmers are used. When we use the trimmers, the glider rotates over the C-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 CHOOSING 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.

On arrival at take-off, the pilot must assess the conditions: wind speed and direction, possible rotor areas, clean launch site, etc.

It is necessary to formulate a flight plan which takes in the topography of the terrain and to avoid possible obstacles or risk areas. Choose a large take-off area without any obstacles.

When unpacking the wing, examine it, the harness, helmet and any other items of equipment.

3.2 PREPARATION

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

3.3 FLIGHT PLAN

It is necessary to make a flight plan in advance, to avoid possible errors in decision making.

3.4 PRE-FLIGHT CHECK

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 TAKEOFF

The launch phases with the BI ROLLER 2 are the same as with conventional gliders. With a normal wind speed and once all equipment is checked and ready to fly, the position of the trimmers should be adjusted to the neutral position. Miniwings take off much faster than standard paragliders, so more running space will be needed.

A slight tug on the risers will ensure a clean inflation. If you must make a correction, do so once the acceleration phase has started - it is better to let the wing have pressure, and then act, as it will usually settle back into place by itself. It is important to take off at speed and remember that any input on the brake reduces speed.

With time, having gained experience and knowing the wind intensity better, it will be possible to tailor the launch to your preferences. We recommend that whenever possible, taking off into a headwind. In this way, a visual inspection can be carried out with more guarantees of success.

PLEASE NOTE
Given the wide range of possibilities and conditions in which the BI ROLLER 2 can fly, it is essential to adapt the launch to the circumstances and conditions in which each flight takes place. Conditions must be correctly assessed, and be suitable for the pilot's experience and flying skills. The BI ROLLER 2 is a fast wing, so it is important not to underestimate the conditions and go beyond the pilot's capabilities.

3.6 LANDING

The BI ROLLER 2 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.

It is important to remember the steps for landing: trimmers should be in the neutral position, make your approach glide straight and with speed, have smooth control when rounding out and just as the speed slows down, brake to the maximum.

3.7 PACKING

The BI ROLLER 2 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.

Niviuk have designed the NKare Bag and the ZipNkare. These will assist you in quickly folding the paraglider, keeping the profile and integrity of the internal structures in perfect condition.

The NKare Bag will guide you through the folding process by allowing you to place the rods one on top of the other on the longitudinal axis to “concertina” pack the glider. Then you can easily make the sectional folds that each model requires. This folding system guarantees that both the cloth and the reinforcements of the internal structure remain in perfect condition. With the ZipNkare, it is possible to perform exactly the same folding procedure and with its zip closed, becomes a much easier to carry case.

4. IN FLIGHT

We recommend that you read the certification test report. The report contains all the necessary information on the BI ROLLER 2 reacts during each of the tested manoeuvres.

It is important to point out that the appropriate response to each adverse manoeuvre 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.

4.1 FLYING IN TURBULENCE

The BI ROLLER 2 has an excellent profile to deal with incidents; it is very stable in all conditions and has a high degree of passive safety, even in turbulent conditions.

Under normal conditions, we should not expect any incidents with the BI ROLLER 2, even in thermals or turbulent conditions, its profile and high internal pressure absorbs them. In severe turbulence the wing may lose pressure but will regain it immediately. Collapses are unlikely, but cannot be ruled out. If they do occur, the best way to prevent them is through more active flying. In such conditions, it is best if the trimmers are set to neutral. All paragliders must be piloted for the prevailing conditions and the pilot is the ultimate safety factor.

We recommend active flying in turbulent conditions, always taking measures to maintain control of the wing, preventing it from collapsing and restoring the speed required by the wing after each correction.

Do not correct the glider (braking) for too long in case this provokes a stall. If you have to take corrective action, make the input then re-establish the correct flying speed.

4.2 POSSIBLE CONFIGURATIONS

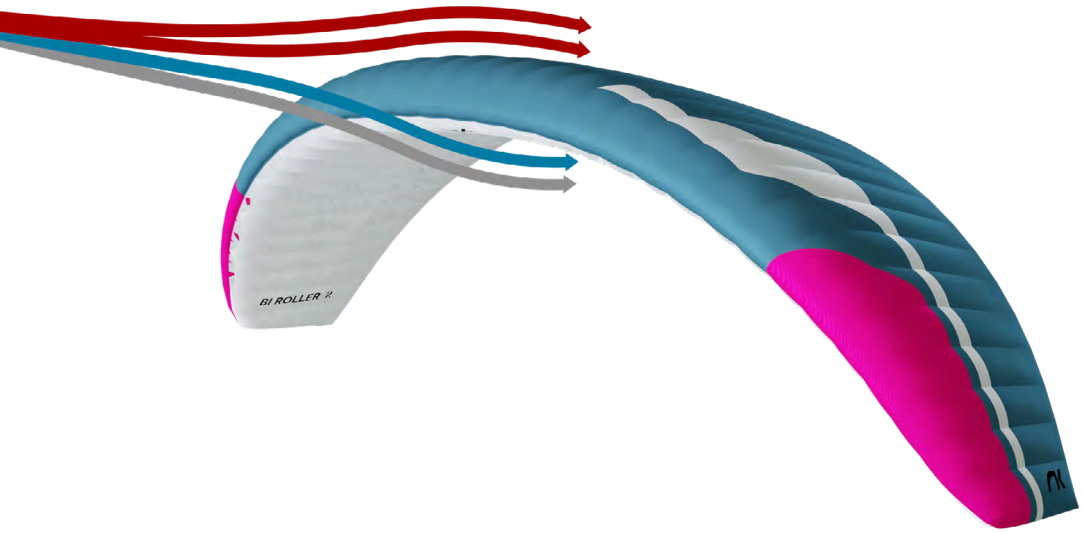
To become familiar with the manoeuvres described below, we recommend practising within the environment of a licensed training outfit. You must adapt your use of the brakes depending on the wing-loading and avoid over-steering.

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 BI ROLLER 2'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 BI ROLLER 2 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 BI ROLLER 2'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 BI ROLLER 2'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 360° 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 BI ROLLER 2.

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 BI ROLLER 2 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 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 BI ROLLER 2 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 BI ROLLER 2's profile was designed for stable flight throughout its entire speed range. Accelerating the wing, i.e. opening the trimmers, can be useful in strong winds or significant sink.

With the trimmers open, the profile becomes more sensitive to turbulence and closer to a possible frontal collapse. If a loss in internal wing pressure is felt, 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 use the trimmers near obstacles or in very turbulent conditions. If necessary, trimmer use should be dosed, balancing pressure losses with the action of the brakes. This balance is considered to be 'active piloting'.

4.4 FLYING WITHOUT BRAKE LINES

If, for any reason at all, the BI ROLLER 2's brake lines become disabled in flight, it will become necessary to pilot the wing gently using the C-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 accelerated) during the landing approach, and the C-risers should be pulled symmetrically 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 take off 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 a -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.

To perform the classic big ears maneuver, grasp the ELS (Ear Lock System) located on the A-risers and pull downwards. The wingtips will fold in.

To re-establish forward speed and the correct angle of attack, use the trimmers once the ears are pulled.

Keep the ears pulled in until you have lost the desired altitude.

Release the ELS to re-inflate the tips automatically. If they do not, try progressively pulling one brake then the other. Asymmetric reopening is recommended in order to avoid compromising the angle of attack, particularly flying near the ground or in turbulent conditions.

5.1.1 EAR LOCK SYSTEM (ELS)

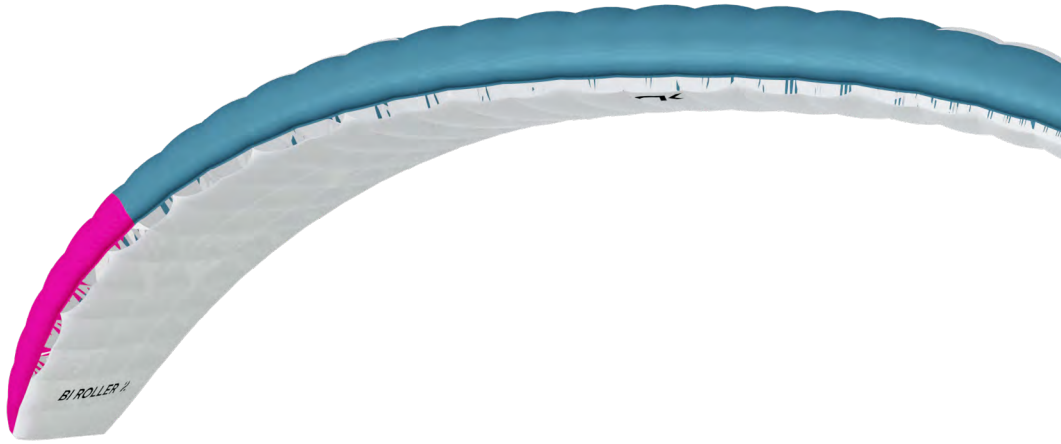
The ELS is a big ear locking system which provides a simple and effective solution for the tandem/dual pilot when they wish to pull big ears when quick descents are required.

Usually when the pilot has pulled big ears on a solo glider, they can only steer using weight-shift. Although it is also possible to do this with the help of a passenger on a tandem paraglider, in most cases this is insufficient. This is why Niviuk developed the ELS, which is installed as standard on the BI ROLLER 2.

To use the Ear Lock System, simply pull the ear lock tab downward until the knot passes through the ELS (lock system). Then move them slightly horizontally forward, locking the knots in the V grooves. To release, pull the big ear tabs down to release the knots from the grooves. Then guide it vertically as it goes upward and back through the ELS. It is better to release the two ears asymmetrically.

The advantages of the ELS are:

- It enables the pilot to pull and release the ears as desired.
- The action of performing the manoeuvre is simplified, as the ears can be pulled and released quickly and easily.
- It gives full steering control to the pilot with the ears applied.
- It lets the pilot use the ears as long as necessary with no physical effort at all.
- Allows the pilot to use the trimmers without concern or restriction, even when the ears are pulled in.
- Prevents the ears from opening unintentionally, as they are blocked.
- The manoeuvre can still be performed the classic way, without using the ELS.
- Can be easily removed without affecting the rest of the equipment.



5.2 B-LINE STALL

When this manoeuvre is performed, the glider stops flying, there is no horizontal speed and no control over the glider. The air circulation over the profile is interrupted and the BI ROLLER 2 is left in a situation similar to a parachute.

To do this, grab the B-risers under the maillons and pull down symmetrically (approximately 20-30 cm) while maintaining the position.

Initially, the manoeuvre requires some physical strength, so pull hard until the profile deforms, when the force required will be much less. From then on, the action should be continued without releasing the risers. The wing will deform, its horizontal speed will become 0 km/h, and its vertical speed will increase to -6 to -8 m/s depending on the conditions and how the manoeuvre was performed.

To release the wing, let go of the risers simultaneously. The glider will react with pitch gently and return to normal flight on its own. It is better to release the risers quickly rather than slowly. It is an easy manoeuvre, but it must be taken into account that the glider stops flying, there is no wind speed and the reactions are very different from normal flight.

5.3 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 15 m/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.

5.4 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 BI ROLLER 2 does not experience any problem whilst being towed. Only qualified winch personnel should handle the certified equipment to carryout 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, 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 BI ROLLER 2 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 extreme or acrobatic flights to be any form of piloting different than standard flights. Learning aerobatic/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. When performing extreme maneuvers, you will subject both the glider and your body to centrifugal forces that can reach up to 4 or 5 g, wearing down the material much faster than with normal flight.

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.

Niviuk we are firmly committed to make technology accessible to all pilots. Therefore, our wings are equipped with the latest technological advances gained from the experience of our R&D team. Thanks to these new technologies, paragliders are gaining more safety and performance, which requires greater care of the materials.

PLEASE NOTE: it is critical to avoid any kind of impact or dragging the leading edge on the ground. This part is reinforced with very durable and strong Nitinol rods that can be easily replaced. Dragging and/or hitting the leading edge can cause serious damage to the fabric, which is much more complicated and costly to repair.

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 you fly in sandy areas, avoid getting sand in the cells or down into the trailing edge. At the end of the flight, empty any sand that is in your wing. The openings at the end of the wingtips make this much easier.

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 60°C.

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

The BI ROLLER 2 must be periodically serviced. 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 the BI ROLLER 2.

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

7.4 REPAIRS

In the 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.

We recommend any inspection or repair is performed by a Niviuk professional in our official workshop:

https://niviuk.com/niviuk-service-form

Any modification of the glider made in an external workshop will invalidate the guarantee of the product. Niviuk cannot be held responsible for any issues or damage resulting from modifications or repairs carried out by unqualified professionals or who are not approved by the manufacturer.

8. SAFETY AND RESPONSIBILITY

It is well known that free-flying with a paraglider 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.

PLEASE NOTE
The pilot is responsible for their decisions and it is up to them to assess whether the weather, wind, flying and landing conditions and their level of piloting, skills and experience are sufficient for the intended flight and the risks involved.

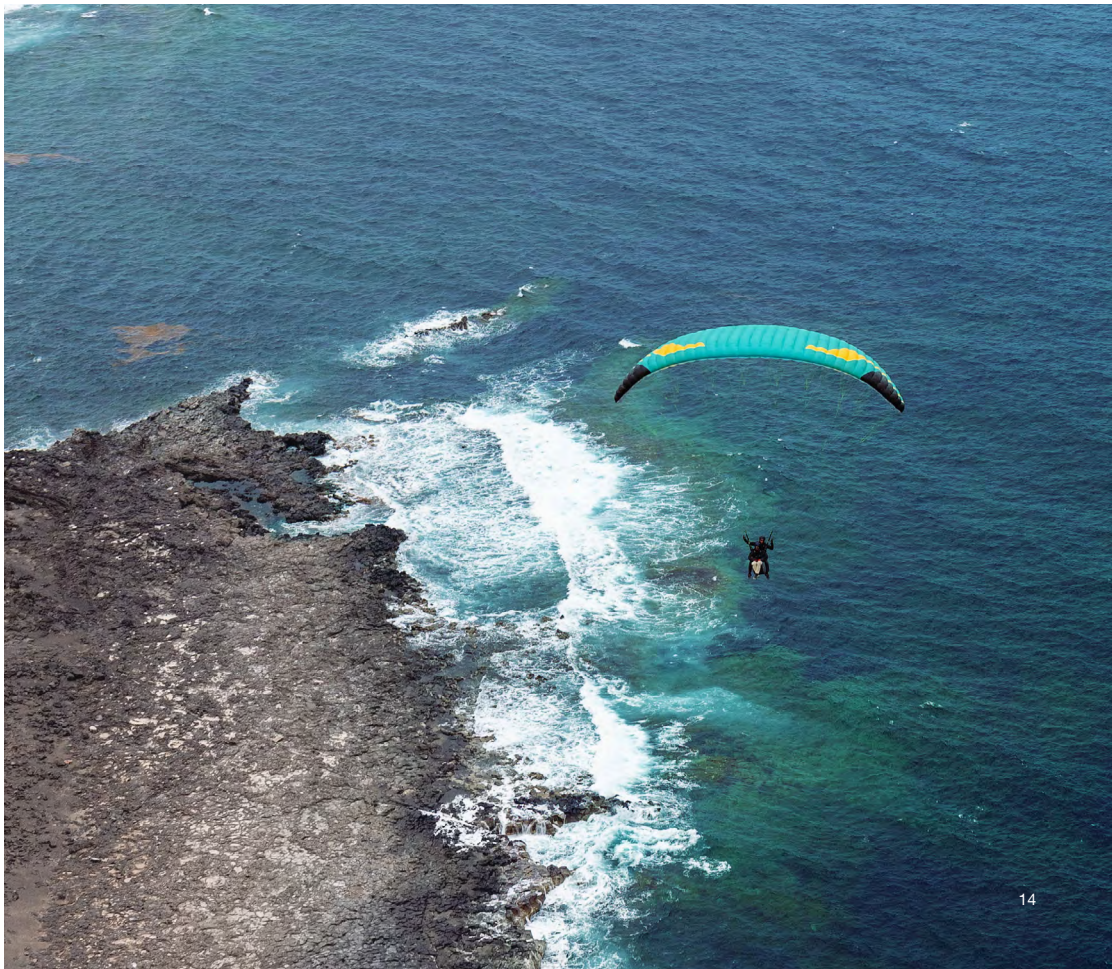
9. GARANTEE

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

The warranty does not cover misuse of the equipment.

Any modification to the paraglider or its components invalidates the guarantee and the certification.

If you notice a fault or defect on your paraglider, contact Niviuk immediately for a full inspection.



10. ANNEXES

10.1 TECHNICAL SPECIFICATIONS

			30	34
Cells	Number		37	37
Aspect ratio	Flat		4,5	4,5
	Projected		3,67	3,67
Area	Flat	m²	30,5	34
	Projected	m²	26,83	29,91
Span	Flat	m	11,72	12,37
Chord	Max	m	3,13	3,31
Lines	Total	m	200	205
	Main		3/4/3	3/4/3
Risers	Number	3	A/B/C	A/B/C
	Trimmers	mm	110	110
Glider weight		kg	6,15	6,67
Total weight in flight	Min-max	kg	90-180	100-210
Certification			EN/LTF B	EN/LTF B

COLORS

Kyanite

Krystall

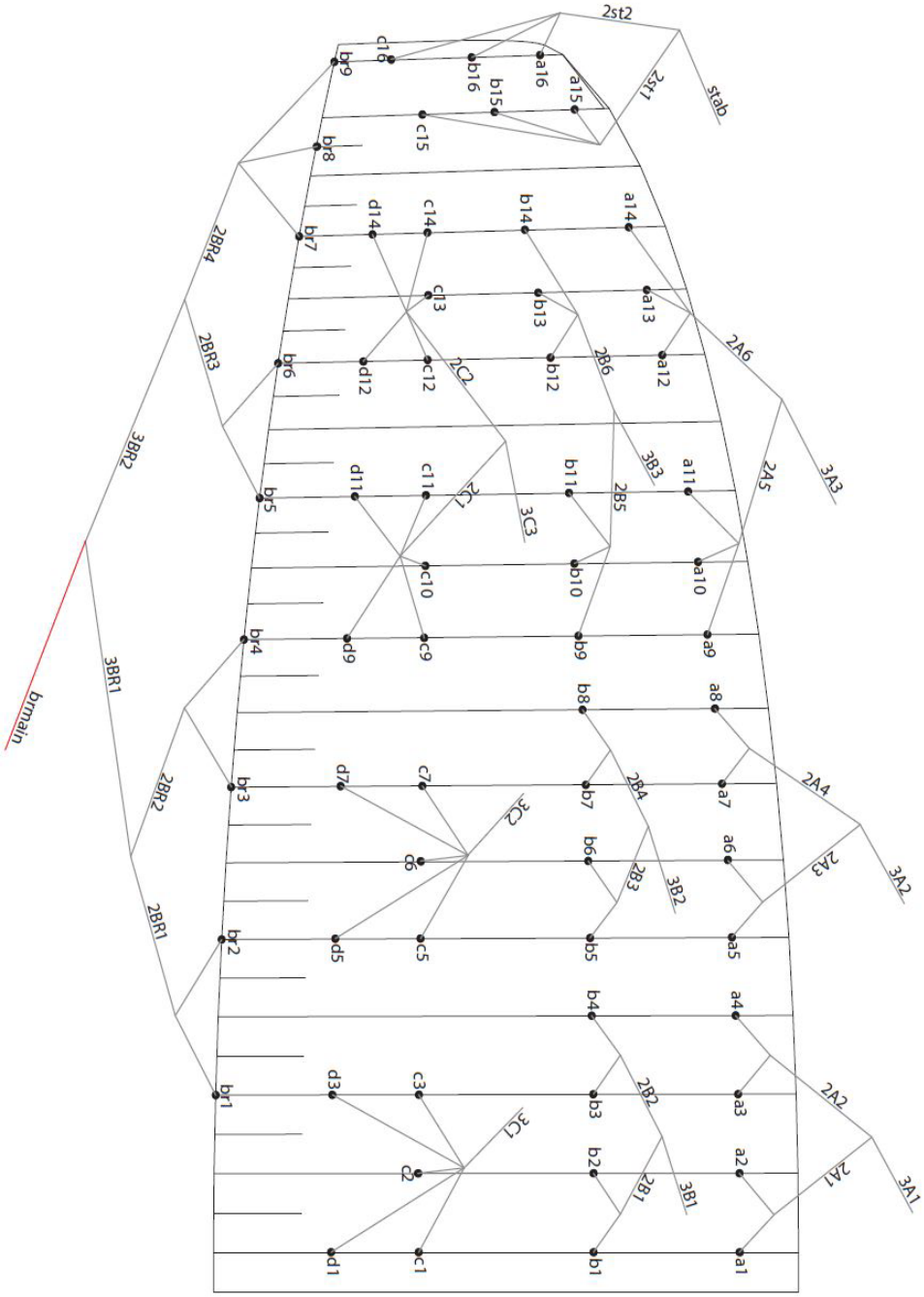
10.2 MATERIALS TECHNICAL DATA

CANOPY	FABRIC CODE	SUPPLIER
UPPER SURFACE	30 DMF	DOMINICO TEX CO (KOREA)
BOTTOM SURFACE	N20 DMF	DOMINICO TEX CO (KOREA)
PROFILES	30 DFM	DOMINICO TEX CO (KOREA)
DIAGONALS	30 DFM	DOMINICO TEX CO (KOREA)
LOOPS	LKI - 10	KOLON IND. (KOREA)
REIFORCEMENT LOOPS	RIPSTOP FABRIC	DOMINICO TEX CO (KOREA)
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	PPSL - 120	LIROS GMHB (GERMANY)
UPPER CASCADES	MATRIX - 80	EDELRID (GERMANY)
MIDDLE CASCADES	PPSL - 200	LIROS GMHB (GERMANY)
MIDDLE CASCADES	PPSL - 120	LIROS GMHB (GERMANY)
MIDDLE CASCADES	TNL - 140	TEIJIM LIMITED (JAPAN)
MAIN	TNL - 400	TEIJIM LIMITED (JAPAN)
MAIN	TNL - 280	TEIJIM LIMITED (JAPAN)
MAIN	TNL - 140	TEIJIM LIMITED (JAPAN)
MAIN BREAK	TARAX-240	EDELRID (GERMANY)
THREAD	SERAFIL 60	AMAN (GERMANY)

RISERS	FABRIC CODE	SUPPLIER
MATERIAL	G-R 22	TECNI SANGLES (FRANCE)
COLOR INDICATOR	210D	TECNI SANGLES (FRANCE)
THREAD	V138	COATS (ENGLAND)
MAILLONS	MRI4	ANSUNG PRECISION (KOREA)
PULLEYS	RF25109	RONSTAN (AUSTRALIA)

10.3 LINE PLAN



LINE REPLACEMENT

The use of new high performance materials in modern wings is now common. The advantages of using these materials in terms of performance are widely acknowledged as part of our sport's evolution. However, along with those technological advances come additional responsibilities which cannot be avoided. As a result, line inspection and replacement must be carried out more frequently. That increased frequency appears to be encouraging some pilots to try to perform line replacement themselves.

WE STRONGLY RECOMMEND ANY LINE REPLACEMENT IS PERFORMED BY AN AUTHORISED SPECIALIST ONLY.

Ultimately, if the pilot decides to perform any line replacement without professional oversight they therefore assume all responsibility. In this case, these guidelines will have to be followed.

BEFORE REMOVING ANY LINES, CHECK:

- That the line plan is correct according to the glider model and size.
- That the line kit is complete and correct.
- Never assume but always check each individual line for the correct specification.

AFTER CONFIRMING THAT ALL LINES ARE CORRECT:

- Fit the new line(s) WITHOUT removing the label.
- Once replaced, measure each line length to confirm the correct measurement.
- Inflate the wing to check for any irregularities.
- The line labels may then be removed but NOT BEFORE completion of the line replacement.

Niviuk strongly recommends for any line replacement to be carried out by an authorised professional only, and will not accept responsibility for any damage or injury caused as a result of incorrect re-assembly.

10.4 RISER PLAN

10.5 LINE MEASUREMENTS

BI ROLLER 2 - 30

LINES HEIGHT mm

	A	B	C	D	BR
1	7382	7290	7376	7475	8045
2	7309	7219	7318	7424	7569
3	7296	7207	7326	7424	7410
4	7342	7255	7326	7417	7447
5	7340	7255	7301	7480	7297
6	7291	7210	7329	7330	7193
7	7289	7213	7397	7245	7156
8	7333	7262	7304	7206	7198
9	7342	7278	7257		7308
10	7257	7200	7183		
11	7216	7166	7153		
12	7130	7096	7160		
13	7081	7057	6889		
14	7069	7054	6872		
15	6852	6814			
16	6776	6763			

RISERS LENGHT mm

A	A'	B	C	
380	380	380	380	STANDARD
380	380	425	490	ACCELERATED

10.6 LINE MEASUREMENTS

BI ROLLER 2 - 34

LINES HEIGHT mm

	A	B	C	D	BR
1	7797	7700	7783	7888	8510
2	7722	7625	7722	7836	8009
3	7710	7614	7732	7839	7843
4	7760	7666	7735	7834	7884
5	7760	7666	7710	7903	7728
6	7709	7619	7741	7746	7620
7	7708	7624	7816	7656	7583
8	7756	7677	7718	7615	7629
9	7763	7695	7668		7750
10	7673	7612	7591		
11	7631	7577	7560		
12	7542	7506	7567		
13	7491	7464	7282		
14	7478	7463	7265		
15	7249	7209			
16	7170	7155			

RISERS LENGHT mm

A	A'	B	C	
380	380	380	380	STANDARD
380	380	425	490	ACCELERATED

10.7 CERTIFICATION

AIR TURQUOISE SA | PARA-TEST.COM
Route du Pré-au-Compte 8 • CH-1844 Villeneuve • +41 (0)21 965 65 65

test laboratory for paragliders, paraglider harnesses
and paraglider reserve parachutes

paragliding by air turquoise

NIVIUK

Classification: **B**

In accordance with standards: EN926-1:2015, EN926-2:2013+A1:2021 and NfL 2-565-20	PG_2231.2023
Date of issue (DMY):	19.09.2023
Manufacturer:	Niviuk Gliders / Air Games S.L.
Model:	BI ROLLER 2 30
Serial number:	BIROLLER230FT

Configuration during flight tests

Paraglider		**Accessories**	
Maximum weight in flight (kg)	**180**	Range of speed system (cm)	**n/a**
Minimum weight in flight (kg)	**90**	Speed range using brakes (km/h)	**13**
Glider's weight (kg)	**6.0**	Total speed range with accessories (km/h)	**23**
Number of risers	**3+1**	Range of trimmers (cm)	**10.4**
Projected area (m2)	**26.83**		

Harness used for testing (max weight)	
Harness type	**ABS**
Harness brand	**Advance Thun AG**
Harness model	**Bi-pro 2**
Harness to risers distance (cm)	**44**
Distance between risers (cm)	**55**

Inspections (whichever happens first)
every 100 hours of use or every 24 months

Person or company having presented the glider for testing: **None**

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
B	**A**	**B**	**A**	**0**	**0**	**A**	**A**	**A**	**A**	**A**	**A**	**B**	**B**	**A**	**A**	**A**	**A**	**0**	**B**	**0**	**A**	**0**

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paragliding by air turquoise

NIVIUK

Classification: **B**

In accordance with standards: EN926-1:2015, EN926-2:2013+A1:2021 and NfL 2-565-20	PG_2196.2023
Date of issue (DMY):	19.09.2023
Manufacturer:	Niviuk Gliders / Air Games S.L.
Model:	BI ROLLER 2 34
Serial number:	ROLLERBI3343

Configuration during flight tests

Paraglider		**Accessories**	
Maximum weight in flight (kg)	**210**	Range of speed system (cm)	**n/a**
Minimum weight in flight (kg)	**100**	Speed range using brakes (km/h)	**13**
Glider's weight (kg)	**6.5**	Total speed range with accessories (km/h)	**23**
Number of risers	**3+1**	Range of trimmers (cm)	**10.8**
Projected area (m2)	**29.91**		

Harness used for testing (max weight)	
Harness type	**ABS**
Harness brand	**Advance Thun AG**
Harness model	**Bi-pro 2**
Harness to risers distance (cm)	**44**
Distance between risers (cm)	**55**

Inspections (whichever happens first)
every 100 hours of use or every 24 months

Person or company having presented the glider for testing: **None**

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
B	**A**	**B**	**A**	**0**	**0**	**A**	**A**	**A**	**B**	**A**	**A**	**B**	**B**	**A**	**A**	**A**	**B**	**A**	**B**	**0**	**A**	**0**

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