USER MANUAL
SKIN 2

SKIN 2

Wherever, whenever

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 this wing 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.

Discover the second generation of the legendary Niviuk single-surface wing, now EN/LTF certified. Designed to bridge the gap between speedflying mini-wings and conventional paragliders, the new Skin 2 is the right choice for pilots looking for an agile and versatile wing, for any adventure imaginable.
We are confident that you will enjoy flying this wing and will soon understand the meaning of our motto:
'The importance of small details'.

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

The **NIVIUK** Team.

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USER MANUAL

NIVIUK GLIDERS SKIN 2

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 obtained 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 SKIN 2 manual.

Misuse of this equipment could lead to severe injuries or death. The manufacturer 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.

SUMMARY

1. CHARACTERISTICS

1.1 WHO IS IT DESIGNED FOR?

The SKIN 2 is designed for mountaineers, hike & fly aficionados and those who love adventures. The wing's excellent performance permits exploration with lightweight and compact equipment, without ever compromising the safety of the pilot.

Niviuk would like to reassure you that the SKIN 2 is not just a wing for descending down mountains. Its good performance in thermals, glide and speed make this model an easy to fly paraglider and which is accessible to pilots with some flight experience.

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

1.2 CERTIFICATION

All sizes of the SKIN 2 (16m, 18m and 20m), were certified at the Swiss testing house Air Turquoise S.A. in accordance with European norms: EN 926-1:2015 & LTF NFL II-91/09 chapter 3.

The results were:
Strength test: 10.860 N / 137,69 kg maximum load at 8 G.
Shock test: 800 daN

The SKIN 18m was certified to standards EN 926-2: 2013, EN 926-1: 2015 & LTF 91/09 with a weight range of 70kg minimum to 90kg maximum.
Certification: B
Certification reference: PG 1128.2016

We recommend pilots read the flight test report carefully. 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 sized 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 number, please see the final pages of this manual.

1.3 IN-FLIGHT BEHAVIOUR

Niviuk developed the SKIN 2 by adopting very specific goals: to continue to achieve optimum performance while minimising weight and volume in order to achieve an easily transportable wing; excellent handling; to facilitate more control for the pilot; improve the flare behaviour during the landing phase and, above all, to obtain the best level of certification whilst improving on the previous generation. The flight tests confirmed a high degree of safety for this new wing concept.

We have succeeded in having the wing transmit the maximum feedback in an understandable and comfortable way so that the pilot can focus on piloting.

In all aspects of flight, the wing is very solid and stable. During glide and when fully accelerated, the wing maintains altitude well. When gliding the profile remains stable. Turning is precise and less physical, and the turn is easily initiated. The wing is very easy to inflate even in nil-wind, it requires an extremely short takeoff (ideal especially in the mountains) and provides a smooth and precise landing.

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

The SKIN 2 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 SKIN 2 has details designed for greater pilot comfort and, on the other hand, features for example SLE and TNT to improve performance.

Tiny pulleys are mounted on the speed-bar to reduce pilot effort and improve the progressive speed-bar application.

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.

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. The leading edge is more rigid and the wing surface remains perfectly taut, without creases or parasitic drag. This optimises glide in all phases of the flight. Because the flexible rods always return to their original shape, the integrity of the profile is never affected. Nitinol provides the highest level of protection against deformation, heat or breaks.
Thanks to the application of this technology, the wing is more durable.

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 guarantees lightness, strength and durability without fading.

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, COMPONENTES

The SKIN 2 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 repair kit with self-adhesive Ripstop tape in the same colour as the wing and spare parts to protect the maillons.

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 SKIN 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. Pay attention to the maillons connecting the lines to the risers to make sure they are fully closed and tightened. Identify, and if necessary untangle, the A, B, C and D-lines, the brake lines and corresponding risers. Make sure that there are no knots.

2.3 CONNECTING THE HARNESS

The SKIN 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 carabiners, ensuring that the lines are correctly ordered and free of twists. Check that the carabiners are properly fastened and securely locked.

2.4 HARNESS TYPE

The SKIN 2 can be flown with all current harness types. We recommend the 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, 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 CONNECTING THE SPEED-BAR

The SKIN 2 speed-system is engaged by pressing the speed-bar with the pilot's feet. The system is easy to install and can be adjusted appropriately.

The majority of harnesses have a speed system pre-installed.
To install the speed-bar, pass the speed system cords through the harness and connect them to the speed system cords on the A-risers. The length of the speed-bar travel must be adjusted depending on the height of the individual pilot!

We recommend testing the complete system when hanging in a frame first - most schools have such equipment.
The speed-bar is not supplied as standard.

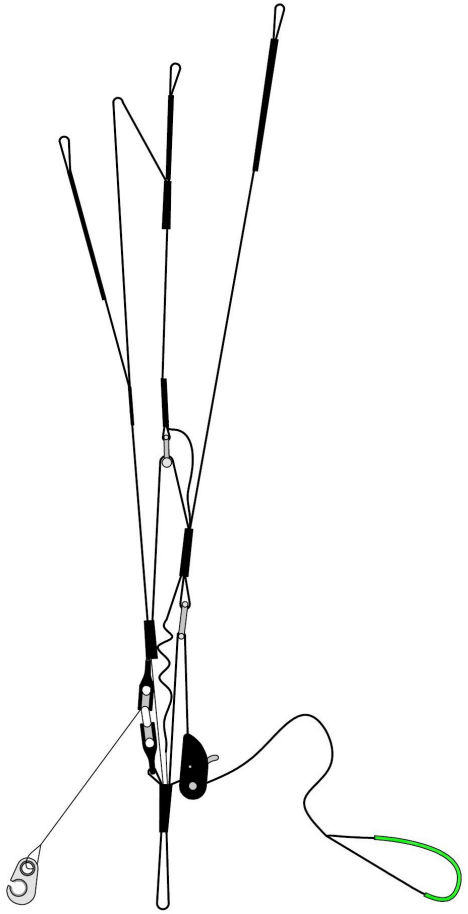
2.6 USING THE SPEED-BAR

The speed-system on the SKIN 2 can be used to temporarily and gently vary the speed of the wing. It is utilised by pressing the speed-bar with the pilot's feet.
To accelerate, you should extend your legs whilst resting your feet on the speed-bar. To release the speed-bar bring your legs back to the initial/ neutral position.
It is the responsibility of the pilot to decide how much to accelerate at any given moment. It is important to remember that the speed-bar is not the only method to accelerate the wing. Care should be taken when the following elements interact with each other:

- Speed-bar
- Trimmers
- Brakes

The speed-bar may be used at the same time as the trimmers.
The pilot must note and assess the increase in wind speed and turbulence, and decide the most safe action to take.
The maximum speed-system travel is 70mm.

Riser (mm)	A	B	C	D
Standard	480	480	480	480
Open	410	427,5	445	480
Travel	70	52,5	35	0



2.7 TRIMMERS

Using the trimmers:

Although the principles of trimmer operation are widely understood, it is necessary to underline some basic safety rules.

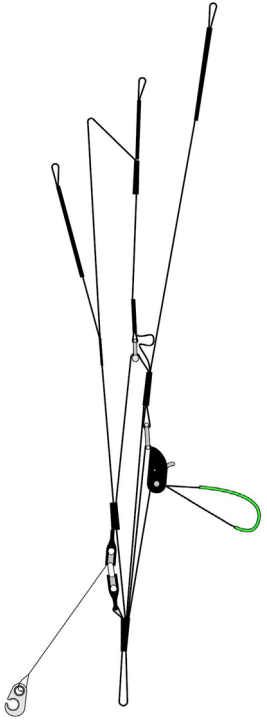
- The trimmers are installed in the factory and the pilot only needs to check their proper operation and adjustment.
- The trimmers should not be used to steer the wing.
- The pilot should note that when releasing trimmers, the brake handle rises the same distance as the trimmers travel.
- The trimmers must be applied symmetrically.
- The trimmers can be used at the same time as the speed-bar.
- It is the responsibility of the pilot to decide how much trimmers to use at any one time. Bear in mind that the trimmer is not the only speed variation system. Care should be taken when the following elements interact with each other:
    - Speed-bar
    - Trimmers
    - Brakes

The pilot must note and assess the increase in wind speed and turbulence, and decide the most safe action to take.

The trimmers serve to modify the speed of the wing.
The trimmer system is set by the pilot, i.e. it does not return to its point of origin, but remains in place until the pilot decides to release/change the position.
When the trimmer is in the neutral position, the wing will fly at a lower speed with greater glide; when the trimmer is released, the wing will fly with higher speed and worse glide.

The maximum travel of the trimmers is 50mm.

Riser (mm)	A	B	C	D
Standard	480	480	480	480
Open	480	493	505	530
Travel	0	12,5	25	50



Engaging and releasing the trimmers is effective and quick as well as sensitive and accurate.
The trimmers must be manually operated by the pilot. The trimmers are situated on the D-risers, one on each side.
To open the trimmers, press the trim tab inwards until the tape is released and pull the trim tab to the required position. If we stop pressing the trim tab, the tape is locked again in that position.

Once it is locked in that position, it will not release automatically and return to its initial position. The pilot is responsible for engaging and releasing the trimmers.

To close the trimmers, pull the tape down using the handle and without touching the trimmer tabs, then release when you reach the required position.

The trimmer setting and symmetry must be constantly checked during flight and before every takeoff.

2.8 INSPECTION AND WING INFLATION ON THE GROUND

After your gear has been thoroughly checked and the weather conditions deemed favourable for flying, inflate your SKIN 2 as many times as necessary to familiarise yourself with its behaviour. Inflating the SKIN 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.

2.9 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 the pilot's 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 SKIN 2. 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 of 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 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.

When arriving at the take-off, the pilot should assess the following conditions: wind speed and direction, possible areas of rotor, take-off is clear of obstacles, etc. A defined flight plan should be formulated and this should include taking note of the topography, obstructions and risk areas to avoid. The take-off zone should be sufficiently large and free of obstacles.
Before takeoff, inspect the wing, harness, helmet and any other equipment.

It is essential to adapt each launch to the varying conditions and sites. The conditions must also be suitable for the pilot's skill level and experience.
Just because the wing is fast, pilots should not make the mistake of underestimating the conditions and taking off in unsuitable and unsafe circumstances.

3.2 PREPARATION

Repeat the procedures detailed in chapter 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

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

Smoothly and progressively inflate the wing. Inflating of the SKIN 2 is easy and does not require a lot of energy. The wing rises fast and the pilot must anticipate this in order to have control during this phase. The wing will take the load immediately, making it easier to take off in rough terrain.

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 SKIN 2 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

Landing the SKIN 2 is like landing any other paraglider. Correctly executing the different landing phases will make the touchdown more accurate and safe, even in nil-wind.

- On final glide it is recommended to speed up the wing. We recommend opening the trimmers by 1/3 and to release the brake pressure by raising the hands.
- Close to the ground, determined braking ensures an effective roundout and sufficient the horizontal speed.
- Only a few steps might be needed.

We do not recommend taking a wrap to increase the efficiency of the brakes.

3.7 PACKING

The SKIN 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.

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.

4. IN FLIGHT

4.1 FLYING IN TURBULENCE

The SKIN 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.

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 competent training outfit. The pilot must adapt their use of the brakes depending on the wing-loading and avoiding 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 SKIN 2's profile stability, strong turbulent air may cause the wing to collapse asymmetrically in very strong turbulence, especially if the pilot is unable to 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 corresponding to the affected side of the wing. It will increase the incidence of the wing (angle of attack). If the collapse does happen, the SKIN 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, then pull the brake handle on the collapsed side decisively and quickly all the way (100%) down. You may have to repeat this pumping action to provoke the re-opening of the deflated 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 the default flying speed.

Frontal collapse
Due to the SKIN 2's design, in normal flying conditions frontal collapses are extremely unlikely. 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 or when lacking experience using the accelerator/ speed-bar without adapting to the prevailing conditions. 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 SKIN 2, 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 SKIN 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 SKIN 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 was done.

When entering a stall, remain clear-headed and ease off the brake lines until reaching the half-way point of the total the brake travel. The wing will then surge violently forward and could reach a point below the pilot. 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 break 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 SKIN 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 SKIN 2 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 incidence.

It is NOT recommended to accelerate near obstacles or in very turbulent conditions. Aim to achieve a balance between speed-bar and brake use. This balance is considered to be 'active piloting'.

4.4 FLYING WITHOUT BRAKE LINES

If, for any reason at all, the SKIN 2s 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 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 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 of the wing 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 competent training outfit.

5.1 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.

To re-establish forward speed and the correct angle of attack, the pilot must accelerate once the ears are pulled.

To activate the 'Big ears' manoeuvre, take the outer '3 A 3' line on each A-riser and simultaneously, smoothly pull them outward and downward. The wingtips will fold in. Let go of the risers to re-inflate them automatically. If they do not re-inflate, gently pull on one of the brake lines and then on the opposite one. 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.

5.2 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, a pilot 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 with moderation.

5.3 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 is the most important consideration.

6. SPECIAL METHODS

6.1 TOWING

The SKIN 2 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 takeoff.

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 SKIN 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 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

At 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.

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, you should inspect it and act accordingly.

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

The combination of sheathed and unsheathed lines provides increased performance, but this means more care should be taken when using and maintaining the wing.

Thanks to TNT, the wing has more safety and performance, but this means being more careful with the material. 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 ageing. After landing, do not leave the wing exposed to the sun. Pack it properly and stow it away in its backpack.

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 the 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.

It is essential that the wing is properly folded and packed. 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

A complete inspection must be scheduled every 100 flying hours or every 24 four months, whichever comes first (EN/LTF norm).

We strongly recommend that any repairs should be done in a specialist repair shop by qualified personnel. A thorough pre-flight check must be performed before every flight.

The SKIN 2 is partly constructed with unsheathed lines. Their durability is within the unsheathed line standards. Their strength is guaranteed and their resistance to UV is one of the highest in this type of lines.

However, one of the obligations derived from the use of these lines is the need to maintain the trim of our SKIN 2 within the stipulated ranges. In other words, if the lines are out of trim, however small the variation it will affect performance.

We recommend checking the lines after the first +/- 30 flying hours. This trim check should be performed additionally to the inspection at 100 hours / 2 years (whichever comes first).

Why is this necessary?

With this check we can ensure that the wing performs optimally with its original performance.

The check results will vary for each wing, depending on the country, terrain, climate, temperature, humidity, wing-loading, etc. That is why, if there are any differences in the line lengths, the wing must be returned to its optimum trim. This check and any adjustment must be performed by a qualified professional.

It is important not to match your lines to another identical wing. Your wing may not need any modification.

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. 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 cannot be held responsible for any damage caused by incorrect repairs.

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.

Wrong 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.

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.

DISCLAIMER: Paragliding is an activity that requires concentration, specific knowledge and common sense. Take care! You should learn to paraglide under the auspices of a certified flying school. Take out personal insurance and make sure you have all the correct licences. Be modest when you evaluate your skill level in terms of weather.

Niviuk's liability for damages covers only its own products.

Niviuk can take no responsibility for your actions. When flying, accept the risk involved.

10. TECHNICAL DATA

10.1 TECHNICAL DATA

SKIN 2			**16**	**18**	**20**
CELLS	NUMBER		39	39	39
	BOX		39	39	39
FLAT	AREA	m^2	16	18	20
	SPAN	m	9,38	9,95	10,5
	ASPECT RATIO		5,5	5,5	5,5
PROJECTED	AREA	m^2	13,5	15,2	16,9
	SPAN	m	7,46	7,92	8,34
	ASPECT RATIO		4,12	4,12	4,12
FLATTENING		%	15	15	15
CORD	MAXIMUM	m	2,11	2,24	2,36
	MINIMUM	m	0,44	0,46	0,49
	AVERAGE	m	1,71	1,81	1,9
LINES	TOTAL METERS	m	383	407	429
	HEIGHT	m	5,9	6,3	6,6
	NUMBER		396	396	396
	MAIN		3/4/3/3	3/4/3/3	3/4/3/3
RISERS	NUMBER	4	A/B/C/D	A/B/C/D	A/B/C/D
	TRIMS		YES	YES	YES
	ACCELERATOR	m/m	70	70	70
TOTAL WEIGHT	MINIMUM	kg	60	70	85
IN FLIGHT	MAXIMUM	kg	85	90	110
GLIDER WEIGHT		kg	2,3	2,5	2,7
CERTIFICATION	EN/LTF		-	B	-
	EN		926-1	926-1	926-1

10.2 MATERIALS DESCRIPTION

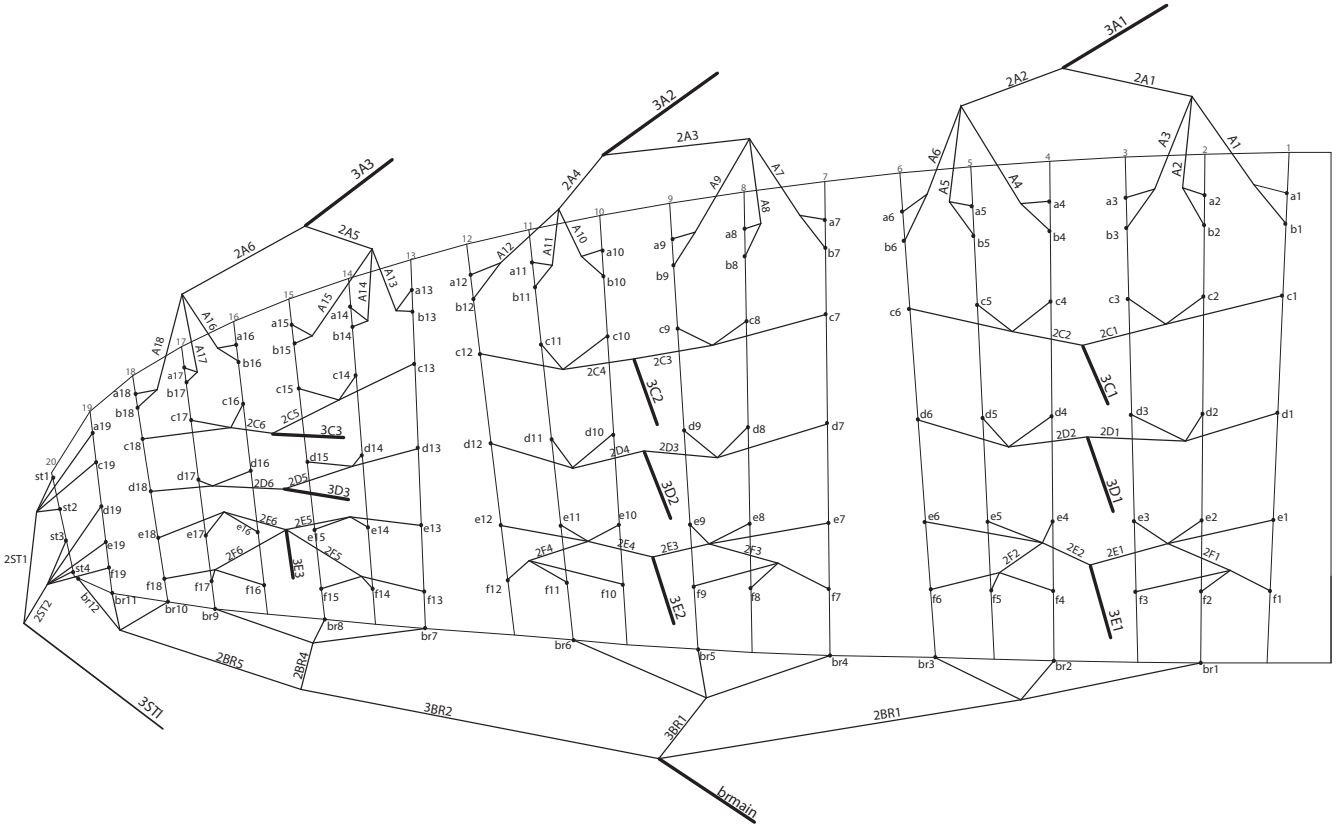
CANOPY	**FABRIC CODE**	**SUPPLIER**
UPPER SURFACE	9017 E25	PORCHER IND (FRANCE)
UPPER SURFACE FOR THE REST	70032 E3W	PORCHER IND (FRANCE)
BOTTOM SURFACE	70032 E3W	PORCHER IND (FRANCE)
RIBS	70032 E4D	PORCHER IND (FRANCE)
LOOPS	LKI - 10	KOLON IND. (KOREA)
TRAILING EDGE REIFORCEMENT	MYLAR 20	D-P (GERMANY)
REINFORCEMENT RIBS	LTN-0.8 STICK	SPORTWARE CO. (CHINA)
THREAD	SERAFIL 60	AMAN (GERMANY)

SUSPENSION LINES	**FABRIC CODE**	**SUPPLIER**
UPPER CASCADES	DC - 40	LIROS GMHB (GERMANY)
UPPER CASCADES	8000/U - 50	EDELRID (GERMANY)
UPPER CASCADES	8000/U - 70	EDELRID (GERMANY)
MIDDLE CASCADES	DC - 40	LIROS GMHB (GERMANY)
MIDDLE CASCADES	DC - 60	LIROS GMHB (GERMANY)
MIDDLE CASCADES	8000/U - 50	EDELRID (GERMANY)
MIDDLE CASCADES	8000/U - 70	EDELRID (GERMANY)
MIDDLE CASCADES	TNL-80	TEIJIM LIMITED (JAPAN)
MIDDLE CASCADES	TNL-140	TEIJIM LIMITED (JAPAN)
MAIN	TNL-80	TEIJIM LIMITED (JAPAN)
MAIN	TNL-140	TEIJIM LIMITED (JAPAN)
MAIN	TNL-220	TEIJIM LIMITED (JAPAN)
MAIN BREAK	TNL-280	TEIJIM LIMITED (JAPAN)
THREAD	SERAFIL 60	AMAN (GERMANY)

RISERS	**FABRIC CODE**	**SUPPLIER**
MATERIAL	3455	COUSIN (FRANCE)
COLOR INDICATOR	PAD	TECNI SANGLES (FRANCE)
THREAD	V138	COATS (ENGLAND)
MAILLONS	3.5	ANSUNG PRECISION (KOREA)
PULLEYS	PY - 1304-2	ANSUNG PRECISION (KOREA)

10.3 RISERS LAYOUT

10.4 LINE PLAN



10.5 LENGTHS SKIN 2 16

LINES HEIGHT m/m

	A	B	C	D	E	F	br
1	5607	5588	5551	5540	5580	5593	6073
2	5546	5529	5492	5479	5508	5505	5829
3	5534	5486	5443	5436	5477	5532	5736
4	5506	5457	5413	5402	5457	5522	5623
5	5507	5492	5451	5432	5459	5467	5518
6	5552	5537	5494	5473	5494	5507	5501
7	5492	5473	5441	5413	5433	5451	5506
8	5412	5397	5364	5338	5359	5367	5409
9	5384	5344	5304	5288	5329	5388	5377
10	5361	5321	5282	5267	5306	5361	5348
11	5342	5334	5302	5281	5302	5305	5334
12	5361	5355	5324	5304	5325	5333	5374
13	5287	5267	5227	5194	5201	5208	
14	5192	5175	5137	5115	5125	5129	
15	5126	5096	5054	5045	5071	5112	
16	5068	5033	4993	4985	5009	5045	
17	5004	4995	4964	4949	4957	4959	
18	4974	4972	4943	4922	4927	4936	
19	4814		4796	4788	4791	4797	
20	4755		4763	4760		4784	

RISERS LENGHT m/m

480	480	480	480		STANDARD
410	427,5	445	480		ACCELERATED
480	492,5	505	530		TRIM OPEN
410	440	470	530		ACCELERATED + TRIM OPEN
-70	-40	-10	50		TOTAL TRAVEL

10.6 LENGTHS SKIN 2 18

LINES HEIGHT m/m

	A	B	C	D	E	F	br
1	5965	5945	5909	5898	5941	5955	6465
2	5901	5883	5848	5834	5866	5861	6208
3	5891	5839	5797	5789	5834	5891	6111
4	5861	5809	5767	5755	5814	5883	6066
5	5863	5846	5808	5787	5817	5826	5956
6	5911	5895	5855	5832	5855	5870	5939
7	5849	5828	5799	5771	5792	5810	5873
8	5765	5749	5718	5692	5713	5722	5771
9	5736	5694	5654	5640	5682	5745	5739
10	5711	5670	5633	5618	5659	5717	5709
11	5693	5684	5654	5634	5655	5658	5695
12	5714	5707	5678	5659	5681	5689	5738
13	5636	5614	5578	5555	5566	5574	
14	5534	5517	5482	5470	5486	5489	
15	5465	5432	5395	5396	5429	5471	
16	5403	5366	5331	5333	5362	5400	
17	5336	5325	5301	5294	5307	5309	
18	5304	5302	5278	5266	5276	5285	
19	5136		5122	5114	5118	5124	
20	5065		5073	5072		5098	

RISERS LENGHT m/m

480	480	480	480		STANDARD
410	427,5	445	480		ACCELERATED
480	492,5	505	530		TRIM OPEN
410	440	470	530		ACCELERATED + TRIM OPEN
-70	-40	-10	50		TOTAL TRAVEL

10.7 LENGTHS SKIN 2 20

LINES HEIGHT m/m

	A	B	C	D	E	F	br
1	6309	6289	6246	6234	6279	6294	6788
2	6242	6223	6182	6168	6201	6193	6518
3	6232	6178	6129	6121	6168	6226	6397
4	6202	6148	6099	6085	6148	6221	6292
5	6206	6188	6143	6120	6152	6160	6157
6	6258	6241	6193	6168	6193	6208	6181
7	6187	6165	6136	6107	6130	6149	6133
8	6099	6083	6051	6025	6047	6056	6027
9	6070	6025	5985	5970	6015	6081	5994
10	6044	6000	5962	5948	5991	6052	5922
11	6025	6015	5986	5966	5988	5991	5909
12	6047	6040	6012	5993	6015	6023	5954
13	5967	5944	5907	5874	5883	5892	
14	5859	5839	5802	5777	5786	5787	
15	5787	5753	5714	5705	5735	5779	
16	5722	5683	5646	5639	5667	5706	
17	5651	5641	5615	5598	5609	5610	
18	5618	5617	5591	5568	5576	5586	
19	5445		5425	5418	5408	5430	
20	5380		5389	5389		5416	

RISERS LENGHT m/m

480	480	480	480		STANDARD
410	427,5	445	480		ACCELERATED
480	492,5	505	530		TRIM OPEN
410	440	470	530		ACCELERATED + TRIM OPEN
-70	-40	-10	50		TOTAL TRAVEL

The importance of small details
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