

# **USER'S MANUAL HOOK 4**



## HOOK 4

The pleasure of choosing

### WELCOME

We wish to welcome you to our team and thank you for the confidence that you have placed in a NIVIUK Glider.

We would like to share with you the commitment, the passion and emotions of the Niviuk design team, which have resulted in the creation of the new HOOK 4. Niviuk are very proud of this new glider, a glider carefully designed to bring you maximum pleasure whilst allowing you learn and progress.

The HOOK 4 has born from Niviuk essence, our tradition, from our experience from the past and future's innovation. Versatile and ultramodern, the HOOK 4 offers optimal piloting, adventure to the highest extent, comfort in flight and efficiency. It's the change from the usual to the extraordinary. The HOOK 4 does not leave anything else to wish for except probably more of the same.

We are confident that you will enjoy flying this wing and that you will soon understand the meaning of our slogan: "The importance of small details"

This is the user's manual that we recommend you to read in detail.

The **NIVIUK Gliders** Team.

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## USER'S MANUAL

### NIVIUK Gliders HOOK 4

This manual offers all the necessary information that will familiarize you with the main characteristics of your new paraglider. Although this manual informs you about your glider, it does not offer the instruction requirements necessary for you to be able to pilot this type of wing. Flying instruction can only be taught at a paragliding school recognised by the Flying Federation of your country.

Nevertheless we remind you that it is important that you carefully read all the contents of the manual for your new HOOK 4. Severe injuries to the pilot can be the consequence of the misuse of this equipment.

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## 1. CHARACTERISTICS

### 1.1 WHO IS IT DESIGNED FOR?

The HOOK 4 has been clearly designed for pilots that aim for the best: more independence, more freedom, more adventure, more exclusivity and more sportiness.

At Niviuk we have very clear that the most important element of the glider is the pilot. That's why our new HOOK 4 has a single objective: the personal growth of the pilot. Its high performance and high level of comfort in flight will let you chose between a flight with a sporty character or an astonishing serene flight. You are in charge of setting the pace. Let your emotions soar with the HOOK 4.

With a new and optimized internal structure less material is needed to produce the HOOK 4, this gives it a reduced internal weight to gain more serenity to its piloting. The glider allows a relaxed flight with less inertia and its reactions are smoother.

The profile has been redesigned, with the RAM and TNT technologies the glider's performance and the internal pressure have been improved. HOOK 4 will have a progressive and solid inflation to make easier the take off.

### 1.2 CERTIFICATION

The HOOK 4 has successfully achieved the European EN B certification.

#### **Description of flight characteristics on B class:**

Paraglider with good passive safety and forgiving characteristics. Some resistance to departures from normal flight.

#### **Description on pilots skills required on B class:**

Designed for all pilots including pilots under all levels of training.

The HOOK 4 passed the essential load test of 8G without experiencing any problems.

On the flight test all the five sizes of the HOOK 4 received the best certification EN B.

This test was carried out in the Swiss Air-Turquoise laboratories. Check the certification results and figures on the last pages of this manual or at [www.niviuk.com](http://www.niviuk.com)

### 1.3 IN-FLIGHT BEHAVIOR

In order to bring you the best glider in this class the NIVIUK Team have carried out extensive and meticulous design work. As a consequence of several prototypes and many hours of test flights numerous adjustments were made. These prototypes were then tested in all types of flight conditions.

HOOK 4 is the result, a new way of being one self. A technology privileged compared to its predecessors, provided of a new profile with performance and technologies transmited down from the competition wings. Improvements and innovations that Olivier and our R&D team manage to move from competitions all around the world to the new HOOK 4, for you to enjoy it. But in spite of evolution, the HOOK 4 is a Hook glider and it will provide you what is expected of it. HOOK 4 is a glider for all pilots who wish to be equipped with latest performance and technology; it is capable to offer the same usual safety, the same feeling with closed eyes and the same coherence with the original NIVIUK ideas.

### 1.4 ASSEMBLY, MATERIALS

The HOOK 4 does not only introduce new design methods but also new manufacture technologies: equipped with SLE, DRS, TNT and RAM systems.

The use of the SLE (Structured Leading Edge) allows reinforcement of the

leading edge preventing any deformation during turbulence. The airflow is also vastly improved over the entire front span of the glider.  
(See <http://niviuk.com/technology.asp?id=JNKPKPN4>)

With the DRS, the trailing edge has been reinforced with small ribs that make this part flatter in order to spread the pressure out evenly. It means better air-flow and less drag on this important part of the glider. The addition of these ribs gives exceptional handling (better and more efficient when turning) and more control and precision.

The TNT is a technical revolution. It underlines building the internal structure of the glider with Nitinol to make the profile more uniform and the glider lighter for better flight performance. Moreover, the nitinol is resistant to deformations, hot temperatures and breaks as well as more resistant to the glider folding process.

The RAM AIR INTAKE technology presents an internal situation for the air entrance to allow an optimal maintenance of the internal pressure as well as an improving of the laminar flow on intrados. What's the result? Gaining turbulent air absorption in the leading edge, more consistent at every speed and a better performance while assuring maximum security.  
(See <http://www.niviuk.com/technology.asp?id=JNKQKNP4>)

Not a single millimetre of error is possible in the manufacturing process from Olivier's computer to the cutting of the fabric. An automatic process controlled by a laser-cutting program cuts each of the sections that compose the different parts of the wing. This program not only cuts the pieces of fabric but it also paints the guideline marks that will aid the assembly; it also numbers the separate pieces of material. All this is carried out before human handling of the pieces begins. So we eliminate possible and understandable errors that may occur during this delicate procedure.

The lines are semi-automatically manufactured and all the sewing is finished under the supervision of our specialists. The jigsaw puzzle of the

assembly process is made easier using this method. We minimise the processes while making the quality control more efficient. All the different parts of the canopy are cut and assembled under the strict conditions induced by the automation of the whole process.

All NIVIUK Gliders go through an extremely thorough and efficient final inspection.

Every single line of each glider is measured individually once the final assembly has concluded. Each wing is then individually inflated for the last visual revision.

Each glider is packaged following the maintenance and conservation instructions recommended for the advanced materials. NIVIUK Gliders are made of first class materials as demanded by the performance, durability, and homologation requirements of the present-day market. Information about construction materials is given on the last pages of this manual.

## 1.5 ELEMENTS, COMPONENTS

The HOOK 4 is delivered to its owner together with a series of components that, although not fundamental, do take an important part in the use, transport and storage of the paraglider. The glider is delivered together with a rucksack, large enough for all of the equipment to fit inside, once appropriately packed. The rucksack is designed to make transport on foot as pleasant as possible. The internal bag, intended to protect the HOOK 4 from possible damage, during storage is also supplied.

The glider strap allows you to fold the wing as small as possible. Furthermore you will find the accelerator bar that completes the acceleration gear of the wing, a small fabric repair kit made of auto adhesive rips top, a user's manual with the answers all our questions about our new HOOK 4 and an instruction booklet.

## 2. UNPACKING AND ASSEMBLY

### 2.1 CHOOSE THE RIGHT PLACE

We recommend that you unpack and assemble your wing on a schooling slope or a flat clear area without too much wind and free of obstacles.

These conditions will allow you to carry out all the steps required for you to check and inflate the HOOK 4.

We recommend that an instructor or a retailer supervises the entire procedure as only they are competent to resolve any doubt in a safe and professional way.

### 2.2 PROCEDURE

Take the paraglider out of the rucksack, open it and spread it open, with the lines on top of the underside, position the wing as if you were to inflate it. Check the condition of the fabric and the lines, make sure there are no abnormalities. Check the maillons that attach the lines to the risers are properly closed. Identify and order the A, B, C lines, the brake lines and the corresponding risers. Make sure that there are no ties or knots.

### 2.3 ASSEMBLY OF THE HARNESS

Correctly place the risers on the harness karabiners. The risers and lines should not have any twists and they should be in the right order. Check that the harness buckles are correctly locked.

### 2.4 TYPE OF HARNESS

The HOOK 4 has passed the EN B certification using a EN1651:1999 type harness.

This certification allows it to be flown with most of the harnesses on the market, even the ones that use cocoon.

We recommend that you adjust the distance of the chest strap according

the homologation from 42 to 50 cm between the harness carabineers. This adjustment will offer the top compromise between safety and feelings. Any change made to these specifications may affect the wing's performance and reactions. This would therefore effect the glider's configuration and would not conform to the homologation.

### 2.5 ASSEMBLY OF THE ACCELERATOR

The acceleration mechanism of the HOOK 4 works when you push with your feet on the accelerator bar, this is supplied with the equipment. On delivery the accelerator bar has not yet been installed and it is recommended that it is fit by you before flight. Most harnesses are equipped with a pre-installed acceleration system. When fitting any accelerator system ensure that all preinstalled items within the harness, such as roller pulleys are used correctly. After fitting, take into account that you will have to adjust the length of the accelerator lines for correct use. This will vary according to the length of the pilot's legs!

We recommend that you try the correct fitting of the acceleration system on equipment designed to do this, most paragliding schools have this sort of equipment.

### 2.6 INSPECTION AND WING INFLATION ON THE GROUND

Once you have checked all the equipment and made sure that the wind conditions are favourable, inflate your HOOK 4 as many times as necessary in order to become acquainted with the wing's behaviour. The HOOK 4 inflates easily and smoothly. An excess of energy is not necessary and the wing will inflate with minimum pressure on the harness when you move forward. This may be assisted by using the A lines. Do not pull on them, just lift to accompany the natural rising movement of the wing, once the wing is in the 12 o'clock position, simply apply correct pressure on the brake lines and the HOOK 4 will sit over your head.

### 2.7 ADJUSTING THE BRAKES

The length of the main brake lines is adjusted at the factory to the length established during homologation. However, the length can be changed to adapt to the pilot's flying style. Nevertheless, we recommend that you fly for a while with these, set at the original length. This will allow you to become accustomed to the HOOK 4's original flying behaviour. If you then decide to change the length of the brake lines, untie the knot, slide the line through the brake link to the desired length, and strongly re-tie the knot. Qualified personnel should carry out this adjustment. You must ensure that this adjustment does not slow down the glider without any pilot input. Both brake lines should be symmetrical and measure the same length. The most recommended knots are the clove hitch knot or bowline knot.

When changing the brakes length, it is necessary to check that they do not act when the accelerator is used. When we accelerate the glider rotates over the C riser and the trailing edge elevates. We must check that the brake is adjusted taking in consideration this extra length in acceleration.

## 3. THE FIRST FLIGHT

### 3.1 CHOOSE THE RIGHT PLACE

We recommend that the first flight with your HOOK 4 is made on a smooth slope (a school slope) or in your usual flying area.

### 3.2 PREPARATION

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

### 3.3 FLIGHT PLAN

Draw out a flight plan before take-off in order to avoid possible flight errors.

### 3.4 PRE-FLIGHT CHECK LIST

Once you are ready, but before you take-off, carry out another equipment inspection. Ensure correct installation of all equipment and that all lines are free of hindrances or knots. Check that the weather conditions are suited for your flying skills.

### 3.5 WING INFLATION, CONTROL, AND TAKE-OFF

Smoothly and progressively inflate the wing (chapter 2.6 INSPECTION AND WING INFLATION ON THE GROUND). The HOOK 4 inflates easily and does not require excessive energy. It does not tend to over-take you, so the wing inflation phase is carried out without anguish. These take off characteristics provide a perfect control phase and enough time for the pilot to decide whether to accelerate and take off.

Whenever the wind speed allows it, we recommend a reverse launch technique; this type of launch allows you to carry out a better visual check of the wing. The HOOK 4 is especially easy to control in this position in strong winds. However, wind speeds up to 25 to 30 km/h are considered strong and extra consideration should be given to any thought of flight.

Preparation and positioning of the wing on the take off is especially important. Choose a location which is appropriate for the direction of the wind. Position the paraglider as if it were part of a large circle, taking into account the shape of the canopy in flight. All this will assist in a trouble free take-off.

### 3.6 LANDING

The HOOK 4 lands excellently, it transforms the wing speed into lift on the pilot's demand, allowing an enormous margin of error. You will not have to wrap the brake lines around your hand to get greater braking efficiency.

## 4. IN FLIGHT

### 4.1 FLYING IN TURBULENCE

The HOOK 4 complies with an excellent homologation to face this type of situation with the best safety guarantee. This wing is stable in all types of weather conditions. It reacts admirably in passive flight, thus offering a high level of safety in turbulent conditions. Nonetheless, all paragliders always have to be piloted according to the prevailing weather conditions; the pilot is the ultimate safety factor.

We recommend that the pilot adopts a proactive attitude when flying, making the necessary fine adjustments to keep the wing in control. He/she should stop braking to allow it to fly at the required wing speed after a correction is made. Do not maintain any correction for longer than necessary (braked) this would cause the wing to enter into critical flying situation. Whenever necessary, control a situation, react to it and then re-establish the required speed.

### 4.2 POSSIBLE CONFIGURATIONS

We recommend that training to master these manoeuvres be carried out under the supervision of a competent school.

#### Asymmetric collapse

In spite of the great stability of the profile of the HOOK 4, heavy turbulent conditions may cause part of the wing to collapse asymmetrically. This usually happens when the pilot has not foreseen this possible reaction of the wing. When the wing is about to experience an asymmetric collapse the brake lines and the harness will transmit a loss of pressure to the pilot. To prevent the collapse from happening, pull the brake line corresponding to the compromised side of the wing, this will increase the angle of incidence. If the collapse does happen the HOOK 4 will not react violently, the turn tendency is very gradual and it is easily controlled. Lean your body towards the side that is still flying in order to counteract the turn and

to maintain a straight course, if necessary slightly slow down the same side. The collapse will normally open by itself but if that does not happen, pull completely on the brake line on the side which has collapsed (100%). Do this with a firm movement. You may have to repeat this operation to provoke the re-opening. Take care not to over-brake on the side that is still flying (turn control) and when the collapse has been solved; remember to let the wing recover its flying speed.

#### Symmetric collapse

In normal flying conditions the design of the HOOK 4 ensures that a symmetric collapse is quite improbable. The profile of the wing has been designed to widely tolerate extreme changes in the angle of incidence. A symmetric collapse may occur in heavy turbulent conditions, on entry or exit of strong thermals or lack of adapting the use of the accelerator to the prevailing air conditions. Symmetrical collapses usually re-inflate without the glider turning but you can symmetrically apply the brake lines with a quick deep pump to quicken the re-inflation. Release the brake lines immediately to recover optimum flight speed.

#### Negative spin

This configuration is out of the normal flight behaviour of the HOOK 4. Certain circumstances however, may provoke this configuration such as trying to turn when the wing is flying at very low speed (while heavily braking). It is not easy to give any recommendations about this situation since it varies depending on the circumstances. Remember that you should restore the relative air speed over the wing. To achieve this, progressively reduce the pressure on the brake lines and let the wing gain speed. The normal reaction would be a lateral surge with a turn tendency no greater than 360° before restoring to normal flight conditions.

#### Parachutal stall

The possibility of this happening has been eliminated by the design of the HOOK 4 and it is highly unlikely to happen on this paraglider. If it does happen, the feeling would be that the wing would not be advancing; you

would feel a kind of instability and a lack of pressure on the brake lines, although the canopy would appear to be correctly inflated. The correct reaction would be to release the pressure on the brake lines and push the A lines forward or rather lean your body to any side WITHOUT PULLING ON THE BRAKE LINES.

#### Deep Stall

The possibility of the HOOK 4 falling into this configuration is almost nonexistent, if the factory settings have not been altered. This could happen if you are flying at a very low speed, whilst over steering in a number of manoeuvres and in turbulent conditions. To provoke a deep stall you have to take the wing to minimum flight speed by symmetrically pulling the brake lines, when you reach this point, continue pulling until you reach 100% and then hold. The glider will first fall behind you and then situate itself above you, rocking slightly, depending on how the manoeuvre was carried out. When you start to provoke a stall, be positive and do not doubt an instant. Do not release the brake lines when half way through the manoeuvre. This would cause the glider to surge violently forward with great energy and may result in the wing below the pilot. It is very important that the pressure on the brake lines is maintained until the wing is well established vertical above. To regain normal flight conditions, progressively and symmetrically release the brake lines, letting the speed be re-established. When the wing reaches the maximum advanced position ensure that the brakes are fully released. The wing will now surge forward, this is necessary so that air speed is completely restored over the wing. Do not over brake at this point because the wing needs to recover speed to quit the stall configuration. If you have to control a possible symmetrical front stall, briefly and symmetrically pull on the brake lines and let go even when the wing is still ahead of you.

#### Wing tangle

Of all the possible situations, which you may encounter while flying the HOOK 4, this is the least probable one of all. The well proportioned ratio and well calculated positioning of the line cascades ratify this fact.

A wing tangle may happen after an asymmetric collapse, the end of the wing is trapped between the lines (Cravat). This situation could rapidly cause the wing to turn, although it depends on the nature of the tangle. The correction manoeuvres are the same as those applied in the case of an asymmetrical collapse, control the turn tendency by applying the opposite brake and lean your body against the turn. Then locate the line that reaches the stabiliser that is trapped between the other lines. This line has a different colour and belongs to the external lines of the B riser. Pull on this line until it is tense, this should help to undo the wing tangle. If you cannot undo the tangle, fly to the nearest possible landing spot, control the flying course with your body movements and a little pressure on the opposite brake. Be careful when attempting to undo a tangle if you are flying near a mountainside or near to other paragliders, you may lose control of the flying course and a collision may occur.

#### Over handling

Most flying incidents are caused by wrong actions of the pilot, which chained one after another create abnormal flying configurations (a cascade of incidents). You must remember that over handling the wing will lead to critical levels of functioning. The HOOK 4 is designed always to try to recover normal flight by itself, do not try to over handle it. Generally speaking, the reactions of the wing, that follow over handling, are neither due to the input made or the intensity, but the length of time the pilot continues to over handle. You have to allow the profile to re-establish normal flight speed after any type of handling.

### 4.3 USING THE ACCELERATOR

The profile of the HOOK 4 has been designed to fly stable through its entire speed range, the EN B certification confirms this. It is useful to accelerate when flying in strong winds or in extreme descending air. When you accelerate the wing, the profile becomes more sensitive to possible turbulence and closer to a possible frontal collapse. If you feel a pressure loss, you should stop pushing on the accelerator and pull slightly on the brake lines to increase the angle of incidence. Remember that you have to

re-establish the flight speed after correcting the incidence. It is NOT recommended to accelerate near to the mountainside or in very turbulent conditions. If necessary you will have to constantly adjust the movements and pressure on the accelerator whilst constantly adjusting the pressure applied to the brake lines. This balance is considered to be “active piloting.”

HOOK 4 has been designed with no other adjustable, removable or variable device that could modify glider’s behaviour to prevent an incorrect use of the product.

#### 4.4 FLYING WITHOUT BRAKE LINES

If, for any reason at all, you cannot use the brake lines of your HOOK 4 you will have to pilot the wing using the C-risers and your body weight to fly towards the nearest landing. The C-lines steer easily because they are not under pressure, however you have to be careful not to over handle them causing a stall or negative turn. To land you have to let the wing fly at full speed and before reaching the ground you will have to pull symmetrically on both the C-risers. This braking method is not as effective as using the brake lines so you will land at a higher speed.

#### 4.5 KNOTS IN FLIGHT

The best way to avoid these knots and tangles is to inspect the lines before you inflate the wing for take-off. If you notice a knot before take-off, immediately stop running and do not take off.

If you have taken off with a knot you will have to correct the drift by leaning on the opposite side of the knot and apply the brake line on that side too. You can gently pull on the brake line to see if the knot becomes unfastened or try to identify the line with the knot in it. The identified line can then be pulled to see if the knot undoes. Be very careful when trying to remove a knot. When there are knots in the lines or when they are tangled, do not pull too hard on the brake lines because there is a greater risk of the wing to stalling or negative turn being initiated

Before trying to remove a knot, make sure there are no pilots flying nearby and never try these manoeuvres near the mountainside. If the knot is too tight and you cannot remove it, carefully and safely fly to the nearest landing place.

### 5. LOSING HEIGHT

The knowledge of the different descent techniques is an important resource to use in certain situations. The most adequate descent method will depend on the particular situation.

We recommend that you learn to use these manoeuvres under the tuition of a competent school.

#### 5.1 SPLIT A

Big ears are a moderate descent method, reaching  $-3$  or  $-4$  m/s, speed reduces slightly between 3 and 5 km/h and piloting becomes limited. The angle of incidence and the surface wing load also increases. Push on the accelerator to restore the wing’s horizontal speed and the angle of incidence.

The HOOK 4 is fitted with a big ear pulley system which makes both locating the right line and the manoeuvre easier. These big ear pulleys can easily be removed whenever the pilot wishes. To activate big ears take either the big ear pulley or outer most line on each A risers (2A3 in the line plan) and simultaneously, smoothly pull them outward and downward. The wingtips will fold in. Let go of the lines and the big ears will re-inflate automatically. If they do not re-inflate, gently pull on one of the brake lines and then on the opposite one. We recommend that you re-inflate asymmetrically, not to alter the angle of incidence, more so if you are flying near the ground or flying in turbulence.

#### 5.2 B-LINE STALL

When you carry out this manoeuvre, the wing stops flying, it loses all

horizontal speed and you are not in control of the paraglider. The air circulation over the profile is interrupted and the wing enters into a situation similar to parachuting.

To carry out this manoeuvre you have to take the B-lines at the maillons height leaving them as base in the hand palm avoiding taking the A&B together. Pull symmetrically down (approx. 20-30cms) and then hold this position. The initial phase is quite physical (hard resistance) which means that you will have to pull strongly until the profile of the wing is deformed, when this happens the required force will then significantly reduce. To maintain this manoeuvre you must continue to hold the B Lines in the pulled down position. The wing will then become deformed, horizontal speed drops to 0 km/h and vertical speed increases to -6 to -8 m/s depending on the conditions and how the manoeuvre has been carried out.

To exit the manoeuvre, simultaneously release both risers, the wing will then slightly surge forward and then automatically return to normal flight. It is better to let go of the lines quickly rather than slowly. This is an easy manoeuvre but you must remember that the wing stops flying, it loses all horizontal movement and its reactions are very different compared to normal flight.

### 5.3 SPIRAL DIVE

This is a more effective way for rapidly losing height. You have to know that, the wing can gain a lot of vertical speed and rotation speed (G force). This can cause a loss of orientation and consciousness (blackouts). These are the reasons why it is best to carry out this manoeuvre gradually so your capacity to resist the G forces increases and you will learn to fully appreciate and understand the manoeuvre. Always practice this manoeuvre when flying at high altitude.

To start the manoeuvre, first lean your bodyweight and pull the brake line to the side to which you are leaning. You can regulate the intensity of the turn by applying a little outside brake.

A paraglider flying at its maximum turn speed can reach -20 m/s,

equivalent 70 km/h vertical speed and stabilize in a spiral dive from 15 m/s onwards.

These are the reasons why you should be familiar with and know how to carry out the exit methods.

To exit this manoeuvre you must progressively release the inside brake and also momentarily apply outside brake. Whilst doing this you must also lean your bodyweight towards the outside. This exit manoeuvre has to be carried out gradually and with smooth movements so you can feel the pressure and speed changes at the same time.

The after effect of the exit manoeuvre is that the glider will rock briefly with lateral surge, depending on how the manoeuvre has been carried out.

Practice these movements at sufficient altitude and with moderation.

## 6. SPECIAL METHODS

### 6.1 TOWING

The HOOK 4 does not experience any problem when being towed. Only qualified personnel should handle the qualified equipment to carry out this operation. The wing has to be inflated in the same way as in normal flight.

### 6.2 ACROBATIC FLIGHT

Although the HOOK 4 has been tested by expert acrobatic pilots in extreme situations, it HAS NOT been designed for acrobatic flight and we DO NOT recommend continued use in this type of flight. Acrobatic flight is the youngest discipline in free flight. We consider acrobatic flight to be any form of piloting that is different to normal flight. To learn safely how to master acrobatic manoeuvres you should attend lessons which are carried out by a qualified instructor and over water. Extreme manoeuvres take you and your wing to centrifugal forces that can reach 4 to 5g. Materials will wear more quickly than in normal flight. If you do practice

extreme manoeuvres we recommend that you submit your wing to a line revision every six months.

## 7. FOLDING INSTRUCTIONS

The HOOK 4 features the SLE (Structured Leading Edge) and to preserve the integrity of this structure a degree of care should be taken when folding. When the correct technique is applied to the folding process it will ensure that the wing maintains its high performance, safety and durability. Folding should be carried out cell to cell (accordion style) with the SLE ribs remaining parallel to the leading edge at all times. The wing does not have to be tightly folded, if you do so it may damage the material and or the lines.

To assist in this folding process Niviuk has designed the NKare folding bag (supplied as an option). The NKare Bag will help to ensure the correct folding process is carried out, maintaining the profile and integrity of the internal SLE structure as described above.

## 8. CARE AND MAINTENANCE

### 8.1 MAINTENANCE

Careful maintenance of your equipment will ensure continued performance.

The fabric and the lines do not need to be washed, if they become dirty, clean them with a soft damp cloth. If your wing gets wet with salty water, immerse it in fresh water and dry it away from direct sunlight. The sunlight may damage the materials of your wing and cause premature aging. Once you have landed, do not leave the wing in the sun, store it properly. If you use your wing in a sandy area, try to avoid the sand from entering through the cell openings of the leading edge. If sand is inside the wing, remove it before folding.

### 8.2 STORAGE

It is important that the wing is correctly folded when stored. Store your flying equipment in a cool, dry place away from solvents, fuels or oils. It is not advisable to store your flying equipment in the trunk of your car. Temperatures inside a car parked in the sunlight, can be very high. Inside a rucksack and in the sunlight temperatures can reach 60°C. Weight should not be laid on top of the equipment.

### 8.3 CHECKS AND CONTROLS

You should ensure your HOOK 4 is periodically serviced and checked at your local repair shop every 100 hours of use or two years (whichever happens first). This is the only way to guarantee that your HOOK 4 will continue to function properly and therefore continue fulfilling the homologation certificate results.

### 8.4 REPAIRS

If the wing is damaged, you can temporarily repair it by using the rip stop that you'll find in the repair kit, so long as no stitches are involved in the tear. Any other type of tear must be repaired in a specialized repair shop or by qualified personnel. Do not accept a home repair.

## 9. SAFETY AND RESPONSIBILITY

It is well known that paragliding is considered a high-risk sport, where safety depends on the person who is practising it. Wrong use of this equipment can cause severe injuries to the pilot, even death. Manufacturers and dealers are not responsible for any act or accident that may be the result of practicing this sport. You must not use this equipment if you are not trained. Do not take advice or accept any informal training from anyone who is not properly qualified as a flight instructor.

## 10. GUARANTEE

The entire equipment and components are covered by a 2 year guarantee for any manufacture fault.

The guarantee does not cover misuse or abnormal use of the materials.

## 11. TECHNICAL DATA

### 11.1 TECHNICAL DATA

<b>HOOK 4</b>			<b>21</b>	<b>23</b>	<b>25</b>	<b>27</b>	<b>29</b>
CELLS	NUMBER		52	52	52	52	52
	CLOSED		8	8	8	8	8
FLAT	BOX	m <sup>2</sup>	23	23	23	23	23
	AREA	m <sup>2</sup>	21	23	25	27	29
	SPAN	m	10,65	11,15	11,62	12,08	12,51
	ASPECT RATIO		5,4	5,4	5,4	5,4	5,4
PROJECTED	AREA	m <sup>2</sup>	17,85	19,55	21,25	22,95	24,65
	SPAN	m	8,45	8,84	9,22	9,58	9,93
	ASPECT RATIO		4	4	4	4	4
FLATTENING		%	15%	15%	15%	15%	15%
CORD	MAXIMUM	m	2,47	2,58	2,69	2,8	2,9
	MINIMUM	m	0,49	0,52	0,54	0,56	0,58
	AVERAGE	m	1,97	2,06	2,14	2,23	2,31
LINES	TOTAL METERS	m	208	218	227	236	245
	HEIGHT	m	6,5	6,8	7,09	7,36	7,63
	NUMBER		180	180	180	180	180
	MAIN		2/1/3/2	2/1/3/2	2/1/3/2	2/1/3/2	2/1/3/2
RISERS	NUMBER	4	A/A'/B/C	A/A'/B/C	A/A'/B/C	A/A'/B/C	A/A'/B/C
	TRIMS		NO	NO	NO	NO	NO
	ACCELERATOR	m/m	135	135	135	135	135
TOTAL WEIGHT	MINIMUM	kg	55	65	80	95	110
IN FLIGHT	MAXIMUM	kg	70	85	100	115	130
GLIDER WEIGHT		kg	4,3	4,7	4,9	5,3	5,6
CERTIFICATION		EN/LTF	B	B	B	B	B

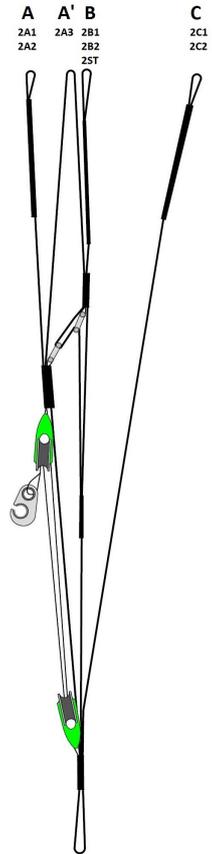
## 11.2 MATERIALS DESCRIPTION

CANOPY	FABRIC CODE	SUPPLIER
UPPER SURFACE	9017 E25	PORCHER IND (FRANCE)
BOTTOM SURFACE	N20DMF	DOMINICO TEX CO (KOREA)
RIBS	9017 E29	PORCHER IND (FRANCE)
DIAGONALS	9017 E29	PORCHER IND (FRANCE)
LOOPS	LKI - 10	KOLON IND. (KOREA)
REINFORCEMENT LOOPS	W-420	D-P (GERMANY)
TRAILING EDGE REINFORCEMENT	MYLAR	D-P (GERMANY)
REINFORCEMENT RIBS	LTN-0.8 STICK	SPORTWARE CO. (CHINA)
THREAD	SERAFIL 60	AMAN (GERMANY)

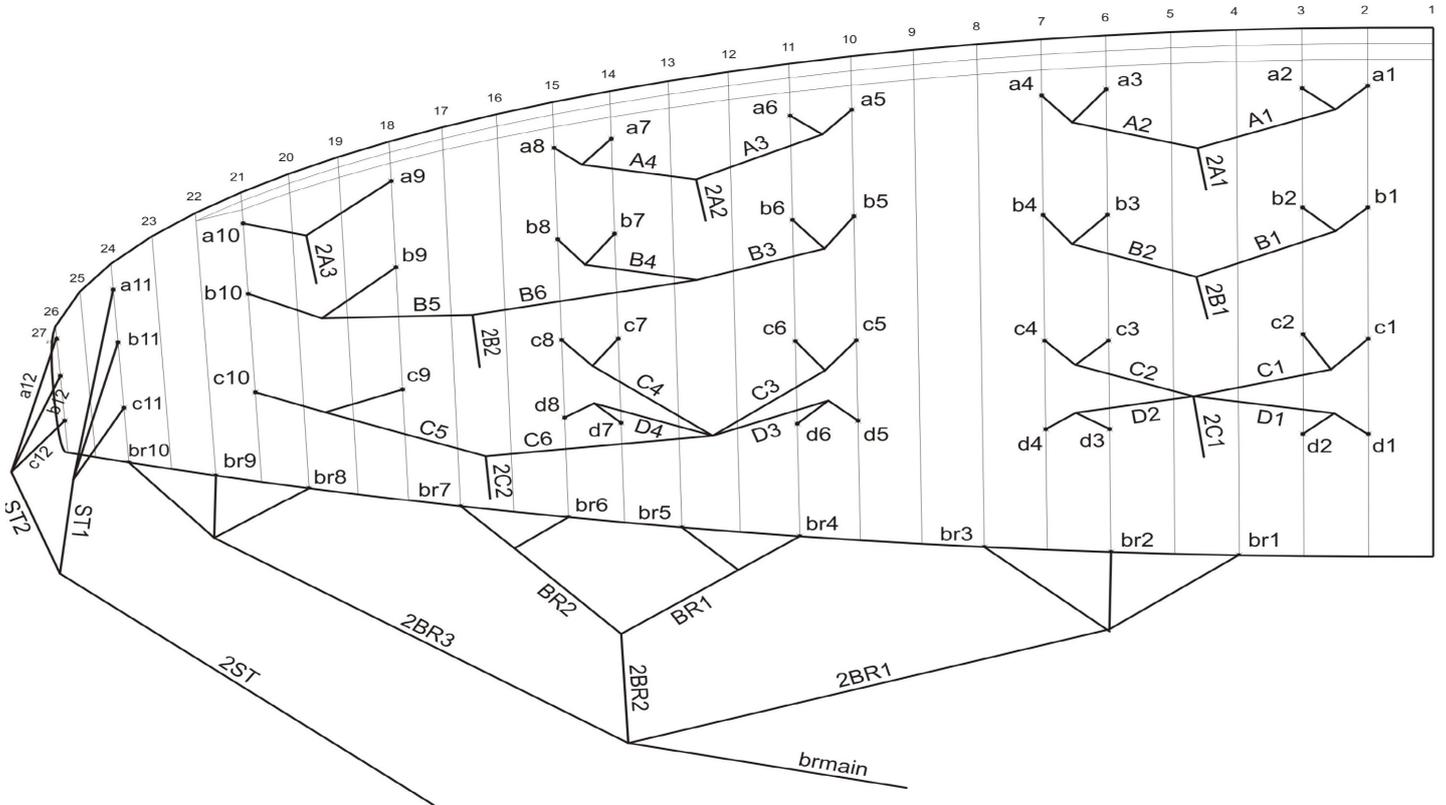
SUSPENSION LINES	FABRIC CODE	SUPPLIER
UPPER CASCADES	DC - 060	LIROS GMHB (GERMANY)
UPPER CASCADES	TNL - 080	TEIJIM LIMITED (JAPAN)
UPPER CASCADES	DC - 100	LIROS GMHB (GERMANY)
MIDDLE CASCADES	TNL - 080	TEIJIM LIMITED (JAPAN)
MIDDLE CASCADES	TNL - 140	TEIJIM LIMITED (JAPAN)
MIDDLE CASCADES	TNL - 220	TEIJIM LIMITED (JAPAN)
MAIN	TNL - 080	TEIJIM LIMITED (JAPAN)
MAIN	TNL - 140	TEIJIM LIMITED (JAPAN)
MAIN	TNL - 280	TEIJIM LIMITED (JAPAN)
MAIN	TNL - 400	TEIJIM LIMITED (JAPAN)
MAIN BREAK	TNL - 400	TEIJIM LIMITED (JAPAN)
THREAD	SERAFIL 60	AMAN (GERMANY)

RISERS	FABRIC CODE	SUPPLIER
MATERIAL	WD103	COUSIN (FRANCE)
COLOR INDICATOR	PAD	TECNI SANGLES (FRANCE)
THREAD	V138	COATS (ENGLAND)
MAILLONS	4	ANSUNG PRECISION (KOREA)
PULLEYS	ID018041	RONSTAN (AUSTRALIA)

### 11.3 RISERS PLAN



# 11.4 SUSPENSION PLAN



### 11.5 DIMENSIONS HOOK 4 21

LINES HEIGHT m/m					
	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>br</b>
1	5994	5906	5998	6097	6751
2	5933	5846	5912	6015	6435
3	5893	5808	5867	5966	6274
4	5912	5829	5911	6006	6154
5	5880	5843	5934	6019	6028
6	5841	5791	5859	5940	5988
7	5791	5711	5756	5829	6051
8	5806	5721	5781	5848	5874
9	5628	5627	5696		5803
10	5489	5595	5718		5793
11	5286	5265	5364		
12	5184	5180	5238		

RISERS LENGHT m/m					
	<b>A</b>	<b>A'</b>	<b>B</b>	<b>C</b>	
	470	470	470	470	STANDARD
	340	360	380	470	ACCELERATED

### 11.6 DIMENSIONS HOOK 4 23

LINES HEIGHT m/m					
	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>br</b>
1	6298	6197	6301	6410	7125
2	6234	6135	6212	6324	6795
3	6194	6098	6165	6264	6628
4	6214	6120	6212	6306	6504
5	6184	6148	6247	6336	6372
6	6143	6093	6168	6254	6332
7	6091	6010	6061	6138	6398
8	6108	6021	6088	6157	6235
9	5927	5922	6004		6160
10	5781	5890	6027		6150
11	5566	5550	5654		
12	5458	5460	5520		

RISERS LENGHT m/m					
	<b>A</b>	<b>A'</b>	<b>B</b>	<b>C</b>	
	470	470	470	470	STANDARD
	340	360	380	470	ACCELERATED

### 11.7 DIMENSIONS HOOK 4 25

LINES HEIGHT m/m					
	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>br</b>
1	6586	6488	6600	6705	7413
2	6521	6424	6508	6616	7070
3	6481	6386	6461	6565	6896
4	6503	6410	6510	6610	6773
5	6463	6445	6548	6641	6637
6	6420	6388	6466	6555	6594
7	6368	6301	6355	6435	6664
8	6386	6313	6382	6456	6466
9	6202	6210	6291		6389
10	6050	6177	6315		6379
11	5819	5812	5920		
12	5706	5719	5781		

RISERS LENGHT m/m					
	<b>A</b>	<b>A'</b>	<b>B</b>	<b>C</b>	
	470	470	470	470	STANDARD
	340	360	380	470	ACCELERATED

### 11.8 DIMENSIONS HOOK 4 27

LINES HEIGHT m/m					
	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>br</b>
1	6866	6763	6880	6993	7688
2	6799	6696	6784	6902	7332
3	6759	6659	6736	6843	7152
4	6782	6684	6788	6890	7026
5	6742	6704	6826	6927	6884
6	6698	6644	6741	6838	6841
7	6644	6555	6627	6715	6914
8	6662	6567	6656	6736	6709
9	6472	6459	6561		6630
10	6314	6425	6587		6620
11	6072	6059	6176		
12	5954	5961	6031		

RISERS LENGHT m/m					
	<b>A</b>	<b>A'</b>	<b>B</b>	<b>C</b>	
	470	470	470	470	STANDARD
	340	360	380	470	ACCELERATED

## 11.9 DIMENSIONS HOOK 4 29

LINES HEIGHT m/m

	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>br</b>
1	7130	7027	7144	7261	7990
2	7060	6958	7045	7166	7621
3	7020	6921	6997	7113	7435
4	7045	6947	7050	7161	7304
5	7009	6981	7070	7175	7158
6	6963	6920	6982	7083	7114
7	6909	6828	6864	6955	7190
8	6928	6840	6895	6978	6976
9	6720	6731	6796		6894
10	6556	6696	6824		6884
11	6311	6297	6414		
12	6189	6197	6264		

RISERS LENGHT m/m

	<b>A</b>	<b>A'</b>	<b>B</b>	<b>C</b>	
	470	470	470	470	STANDARD
	340	360	380	470	ACCELERATED







Class: **B**

In accordance with EN standards 926-2:2013 & 926-1:2006: **PG\_0961.2015**

Date of issue (DMY): **17. 09. 2015**

Manufacturer: **Niviuk Gliders / Air Games S.L.**

Model: **Hook 4 29**

Serial number: **Hook 4 1-29**

### Configuration during flight tests

<b>Paraglider</b>		<b>Accessories</b>	
Maximum weight in flight (kg)	<b>130</b>	Range of speed system (cm)	<b>13.5</b>
Minimum weight in flight (kg)	<b>110</b>	Speed range using brakes (km/h)	<b>14</b>
Glider's weight (kg)	<b>5.5</b>	Range of trimmers (cm)	<b>0</b>
Number of risers	<b>3</b>	Total speed range with accessories (km/h)	<b>24</b>
Projected area (m2)	<b>24.65</b>		
<b>Harness used for testing</b> (max weight)		<b>Inspections</b> (whichever happens first)	
Harness type	<b>ABS</b>	every 24 months or every 100 flying hours	
Harness brand	<b>Niviuk</b>	Warning! Before use refer to user's manual	
Harness model	<b>Hamak L</b>	Person or company having presented the glider for testing: <b>None</b>	
Harness to risers distance (cm)	<b>43</b>		
Distance between risers (cm)	<b>46</b>		

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
A	A	B	A	A	A	A	A	A	A	A	A	B	B	A	A	A	B	A	A	A	A	0	□

