

USER'S MANUAL



The pleasure of flying together... reinvented



TAKOO 2

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 thrill and the passion which has been involved in the creation of this glider. The TAKOO 2 was conceived to share, to allow you and your passenger to discover the passion of flying together in tandem. The TAKOO 2 is the perfect tool to let you share that unique experience.

The idea to design a tandem glider with long life was always in the work text: The leading edge includes the SLE (Structured Leading Edge). (http://www.niviuk.com/en/glider_prod_ste.asp?prod=takoo2). The SLE provides more rigidity and stability along the span of leading edge but also allows full flexibility along the both the vertical and horizontal axis of each open cell. With the SLE system there is no longer a need to use large amounts of mylar material to achieve leading edge reinforcement. This reduction in material has reduced the weight of the leading edge and the result is precise handling on the ground and easier launches.

Together with the SLE we have created the STE (Structured Trailing Edge) which has been developed directly from the competition class gliders. With the STE, the circulation of the air is more fluid, maintaining a consistent airflow at the trailing edge. STE works on more surface of the wing without distorting the profile. (http://www.niviuk.com/en/glider_prod_ste.asp?prod=takoo2)

The line plan has been very carefully calculated and developed not only to minimize the total line length and weight but to also minimize the resistance to wind.

It has an improved Ear Lock System (ELS), a facility which allows the easy application of Big Ears. (see chapter 5.1 Ears, for more information)

We have not only introduced new design methods but we have also used new production technologies. During the entire process of the development of this wing, the NIVIUK team, directed by Olivier Nef has achieved excellent behaviour and in-flight characteristics. These qualities have been confirmed by the excellent results obtained during the homologation process.

TAKOO 2 – Together, experience the true source of pure tandem flight and freedom

“Give importance to the small details that build up to big things”

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

The NIVIUK Gliders Team.

USER’S MANUAL

NIVIUK Gliders TAKOO 2

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 TAKOO 2 glider. 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 main objective of the TAKOO 2 is to satisfy all the tandem pilot's demands. If the pilot does not has pleasure flying, the passenger will not enjoy all the aspects of flying. This is one of the main arguments that the NIVIUK team has defended during the development and the finalisation of the TAKOO 2.

1.2 CERTIFICATION

Due to the focus attention on this kind of glider and to cover legal obligations of the tandem pilots in different countries, where we have professional activities with the TAKOO 2, NIVIUK Gliders decided to present his tandem to the strict homologation procedure the new EN-926-2, obtaining excellent results in the B level (EN C size 39). Check the homologation results and figures on the last pages of this manual.

1.3 IN-FLIGHT BEHAVIOUR

The NIVIUK Team has carried out extensive and meticulous work. As a consequence of several prototypes and many hours of test flights numerous adjustments were made. Different prototypes were then tested in all types of flight conditions. This intense development work supported by the combined experience of the whole team has achieved a wing with unbeatable behaviour. Light handling, precise response, manoeuvrable, safe and aesthetic, these are just some of the qualities of the TAKOO 2.

The wing's behaviour on the ground is the first quality of its obedient temperament. Its lightness, in command is so decisive that all actions that are taken during the flight result in total liberty.

This wing's performance will make quite clear that lightness and efficiency are complementary concepts. Even in the most turbulent conditions all instructions

are diligently transmitted and the response given by the TAKOO 2 is the expected response. The pilot will discover the manoeuvrability of this wing in all the aspects of piloting, allowing the pilot to explore beyond his/her present knowledge without running the risk of an incorrect response of the TAKOO 2.

Landing is clean, easy, precise, without imperfections, the pilot can adapt his final to every situation.

The wing's safety is guaranteed by its excellent homologation certifications. It is worthwhile remembering that the best tandem in the hands of a bad pilot does not guarantee a happy ending. The TAKOO 2's passive safety measures should also be accompanied by the passive safety offered by the rest of the flying equipment: the harness, helmet, emergency parachute etc. The extraordinary behaviour of the TAKOO 2 and common-sense piloting will give you many hours of peaceful flying.

1.4 ASSEMBLY, MATERIALS

The TAKOO 2 does not only introduce new design methods but also new manufacture technologies. 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 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 economize on resources 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 controlled 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.

As we continue the work that we started up with the rest of our gamma, all the used materials respond to our desire to improve what we established. The different diameters and strengths of the lines, an arch distribution with diagonal ribs that carry the main efforts on the glider and the elected materials to deal with these fatigues, surely are the elements that indicate how much attention we spent on choosing the materials for the TAKOO 2.

This complex process of selection and material distribution allow us to offer you a glider constructed way above the standards, with a design and very high finalisation level.

Information about construction materials is given on the last pages of this manual.

1.5 ELEMENTS, COMPONENTS

The TAKOO 2 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 TAKOO 2 from possible damage, during storage is also supplied.

The glider strap allows you to reduce the volume of your glider. Furthermore you will find the spread bar, a small fabric repair kit made of auto-adhesive ripstop and a small box containing a USB pen drive which holds all relevant information about the TAKOO 2 and also the Niviuk catalogue which can be updated via internet. Within the box you will also find a quick reference guide about your new wing.

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 your NIVIUK Gliders TAKOO 2.

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, and D 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 superior loop of the triangle of the spread system (in blue on the NIVIUK Spread system). The risers and lines should not have any twists and they should be in the right order. Check if the

harness buckles are correctly locked. Secondly, you should connect the Spread system (shortest part and only one assembly loop) to the pilot's harness. Connect the buckles of your reserve to the superior part of the spread system (in blue on the NIVIUK Spread system). Install your "André Rose" system if you have it. And at last, connect the passenger's harness.

2.4 TYPE OF HARNESS

The TAKOO 2 has passed the EN class "B" homologation (EN C size 39). This standard allows it to be flown with most of the harnesses on the market. We recommend you only to use, as well for the pilot as for the passenger, special designed harnesses for tandem flights.

2.5 TRIM DISPLAY

The new acceleration mechanism of the TAKOO 2 works when you release the "Trims" on the D-riser. The efficiency of this new system provides a wide range of speeds, much broader than that of the first Takoo. To reduce the speed, pull the strap to obtain the desired speed. The range of the acceleration system starts at the neutral position up to the maximum speed when it is completely released and vice versa up to the neutral position. Look also at the graphics at the end of this manual.

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 TAKOO 2 as many times as necessary in order to become acquainted with the wing's behaviour. The TAKOO 2 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 accompany the natural rising movement of the wing. Once the wing is overhead, simply apply correct pressure on the brake lines and the TAKOO 2 will sit over your head. The leading edge is much lighter than the first Takoo which translates into exceptional inflation, allowing softer and simpler take offs.

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 TAKOO 2's original flying behaviour. If you then decide to change the length of the brake lines, slack off 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. Both brake lines should be symmetrical and measure the same length. The most recommended knots are the clove hitch knot or bowline knot.

3. THE FIRST FLIGHT

3.1 CHOOSE THE RIGHT PLACE

We recommend that the first flight with your TAKOO 2 is made on a smooth slope (a school slope) or in your usual flying area accompanied by a qualified instructor.

3.2 PREPARATION

Repeat the procedures detailed in chapter 2 (UNPACKING AND ASSEMBLY) in order to prepare your TAKOO 2.

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 your wing. The TAKOO 2 inflates easily and does not require excessive energy even when there is no wind. 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 TAKOO 2 is especially easy to control in this position in strong winds. The TAKOO 2 will not pull you from the ground. However, wind speeds up to 25 to 30 km/h are considered strong.

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 TAKOO 2 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. The pilot will act on the brakes depending on the load/m² of his glider. With the Takoo 2 we have achieved in making the final stages of every flight, the landing, an easy and simple manoeuvre. The TAKOO 2 absorbs the speed in order to allow you a perfect landing, even on days with nil wind.

4. IN FLIGHT

4.1 FLYING IN TURBULENCE

The TAKOO 2 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 should avoid the glider to collapse, by acting correctly to increase the speed of his glider. 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. The pilot should always act on the brakes depending on the load/m² of the moment, avoiding over-handling with a small load or a lack of energy with a high load.

Asymmetric collapse.

In spite of the great stability of the profile of the TAKOO 2, 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 TAKOO 2 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 TAKOO 2 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 TAKOO 2. 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 TAKOO 2 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 TAKOO 2 falling into this configuration during normal flight is very unlikely. 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 TAKOO 2, 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. 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 TAKOO 2 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.

ATTENTION...The pilot should always act on the brakes depending on the load/m² of the moment, avoiding over-handling with a small load or a lack of energy with a high load.

4.3 USING THE TRIMMERS DISPLAY

The profile of the TAKOO 2 has been designed to fly stable through its entire speed range, the EN Class “B” (EN C size 39) homologation confirms this. It is recommended to accelerate “trimmers released” when flying in strong winds or to get away from 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 position the “trimmers” in neutral 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 release the “trimmers” near to the mountainside or in very turbulent conditions. If necessary you will have to constantly adjust the use of the trim whilst constantly adjusting the pressure applied to the brake lines. This balance is considered to be “active piloting.”

4.4 FLYING WITHOUT BRAKE LINES

If, for any reason at all, you cannot use the brake lines of your TAKOO 2 you will have to pilot the wing using the D-risers and your body weight to fly towards the nearest landing. The D-lines steer easily because they are not under pressure, 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 D-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 guardian of a competent school.

5.1 BIG EARS

Big ears are a moderate descent method, reaching -3 or -4 m/s, ground 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 TAKOO 2 is fitted with big ear pulleys with an ear lock-on system. The improved EAR LOCK SYSTEM (ELS) allows to lock and unlock the ears with no effort of the pilot.

The wing can be piloted with the ears on.

The ELS allows the pilot to have the ears on all the time with no effort.

The ELS allows the pilot to use the trimmers at the same time.

The ELS can be regulated to do big ears or small ears.

With the ELS the pilot can also apply the ears in the classic way. (This is done by taking the outermost A-lines of both stabilizers as high up as possible and pulling on 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.)

The ELS prevents the involuntary opening of the ears.

The ELS can be removed if the pilot desires to do so.

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 below the maillons and symmetrically pull both of them down (approx. 20-30 cms) 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.

This manoeuvre is difficult with the TAKOO 2, without the help of the passenger.

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 speed and the increase in g's will be substantial. 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 TAKOO 2 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 TAKOO 2 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 5 g.

Materials will wear more quickly than in normal flight. If you do practice extreme manoeuvres we strongly recommend that you submit your wing to a line revision every months or maximum 100 hours.

7. FOLDING INSTRUCTIONS

The TAKOO 2 has a complex leading and trailing edge, manufactured using a variety of different materials. For that reason, the use of a correct folding method is very important for extending the useful life of your paraglider. It should be folded like an accordion, with the leading edge reinforcements flat

and the rigifoils positioned one upon the other. This method will ensure that the profile remains in good shape without altering its form or its performance.

The wing should then be folded in three parts taking care of not bending or twisting the STE or the SLE rigifoils. The wing does not have to be tightly folded, if you do so it may damage the material and or the lines.

To make this process easier we can introduce to you the new Niviuk NKare folding bag. This new NKare bag will assist you to quickly fold and care for your glider whilst maintaining the profile and integrity of the internal structures. The NKare has some air vents to avoid condensation inside the bag, preventing premature degradation of the wing, while the SLE, the STE and the internal structure reinforcements are kept in perfect condition. The NKare protects your glider and facilitates the action of folding the wing like an accordion (cell by cell).

8. CARE AND MAINTENANCE

8.1 MAINTENANCE

If you take good care of your equipment its performance will be maintained.

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 TAKOO 2 is periodically serviced and checked at your local repair shop every 100 hours of use or once a year (whichever happens first). This is the only way to guarantee that your TAKOO 2 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

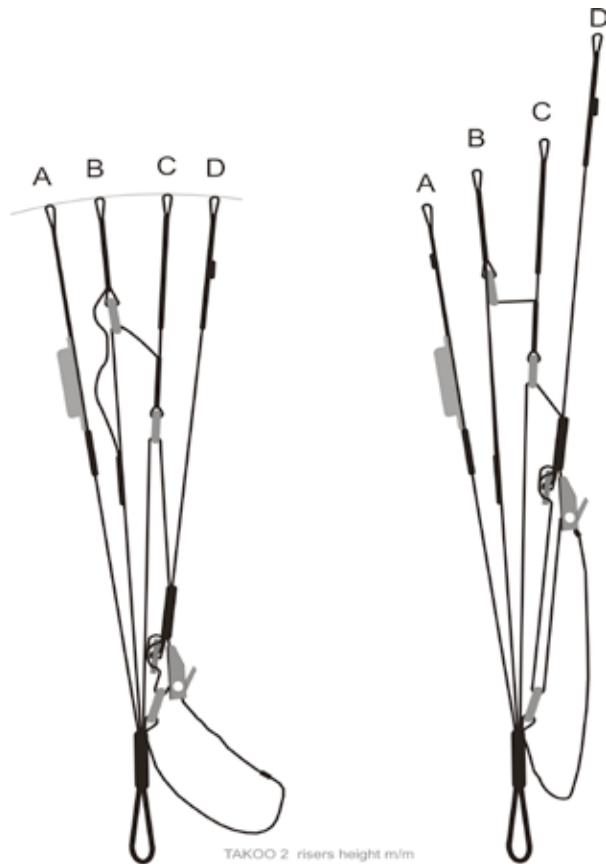
11.1 TECHNICAL DATA

TAKOO 2			39	42
CELLS	NUMBER		52	52
	CLOSED		6	6
	BOX		25	25
FLAT	AREA	M2	39	42
	SPAN	M	14,51	15,6
	ASPECT RATIO		5,4	5,4
PROJECTED	AREA	M2	33,3	35,84
	SPAN	M	11,44	11,87
	ASPECT RATIO		3,93	3,93
FLATTENING		%	15	15
CORD	MAXIMUM	M	3,4	3,52
	MINIMUM	M	0,7	0,72
	AVERAGE	M	2,68	2,69
LINES	TOTAL METERS	M	416	431
	HEIGHT	M	8,52	8,84
	NUMBER		210	210
	MAIN		3/3/4/2	3/3/4/2
RISERS	NUMBER	4	A/B/C/D	A/B/C/D
	TRIMS	CM	12,5	12,5
	ACCELERATOR		NO	NO
	EAR LOCK SYSTEM		YES	YES
TOTAL WEIGHT	MINIMUM	KG	110	130
IN FLIGHT	MAXIMUM	KG	190	220
GLIDER WEIGHT		KG	8,6	8,8
CERTIFICATION		EN	C	B

11.2 MATERIALS DESCRIPTION

CANOPY	FABRIC CODE	SUPPLIER
UPPER SURFACE	SKYTEX 40 9017 E77	PORCHER IND (FRANCE)
BOTTOM SURFACE	SKYTEX 32 70032 E17+	PORCHER IND (FRANCE)
PROFILES	30D FM	DOMINICO TEX CO
DIAGONALS	30D FM	DOMINICO TEX CO
LOOPS	LKI - 10	KOLON IND. (KOREA)
REINFORCEMENT LOOPS	W-420	D-P (GERMANY)
TRAILING EDGE REINFORCEMENT	MYLAR	D-P (GERMANY)
RIBS REINFORCEMENT	W-420	D-P (GERMANY)
THREAD	SERAFIL 60	AMAN (GERMANY)
SUSPENSION LINES	FABRIC CODE	SUPPLIER
UPPER CASCADES	PPSL - 120	LIROS GMHB(GERMANY)
MIDDLE CASCADES	PPSL - 120	LIROS GMHB(GERMANY)
MIDDLE CASCADES	TNL - 140	TEIJIM LIMITED (JAPAN)
MAIN	TNL - 220	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	G-R 25	TECNI SANGLES (FRANCE)
COLOR INDICATOR	PAD	TECNI SANGLES (FRANCE)
THREAD	V138	COATS (ENGLAND)
MAILLONS	MRI4	ANSUNG PRECISION (KOREA)
PULLEYS	PY - 1304	ANSUNG PRECISION (KOREA)

11.3 RISER ARRANGEMENT TAKOO 2



TAKOO 2 risers height m/m

	A	B	C	D
Standard	380	380	380	380
Trimmers opened	380	410	440	505
Travel	0	30	60	125

11.5 LENGTHS TAKOO 2 42

NIVIUK TAKOO 2 42

LINES HEIGHT CM.

	A	B	C	D	E	BR
1	850,1	839,8	843,4	854,2	865,2	948,4
2	840,7	830,5	832,3	843,6	851,3	917,3
3	843,7	834,3	837,3	849,2	859,5	896,8
4	841,4	833,3	835,7	851,6	861,3	892,5
5	833,9	826,7	828,1	839,8	846,8	877,9
6	837,8	831,5	833,9	841,5	851,4	864,2
7	828,2	823,4	828,3	839,5		859,4
8	816	812,4	816,4	828,1		863,2
9	805,4	803,2	804,5	814,9		850,7
10	801,9	800,8	799,9	809,7		837,3
11	771,5	768,8	771,5	785,2		827,8
12	759,5	762,3	762,7	777,7		821,1
13	746,8	750,2	758,7			816,2

RISERS LENGTHS CM.

	A	B	C	D	
38	38	38	38	38	STANDARD
38	41	44	50,5		TRIMMER OPENED
0	3	6	12,5		TRAVEL

11.6 LENGTHS TAKOO 2 39

NIVIUK TAKOO 2 39

LINES HEIGHT CM.

	A	B	C	D	E	BR
1	817,4	807,3	811,1	821,5	832,4	923
2	807,8	798,3	800,2	811	818,9	889
3	811	801,8	804,8	815,9	826,5	868,4
4	808,8	800,2	803,2	818,4	828,4	864,3
5	801,1	793,7	795,8	807	814,3	850
6	804,8	798,3	801,4	808,6	818,5	836,7
7	795,8	791,1	795,5	806,2		831,8
8	784	780,5	784,1	795,1		835,4
9	773,6	771,3	771,7	781,5		824,3
10	770,4	769,1	767,3	776,5		811,2
11	740,8	738,5	740	753,2		804,5
12	729,1	732	731,4	746,1		797,6
13	716	719	727,4			793

RISERS LENGTHS CM.

	A	B	C	D	
38	38	38	38	38	STANDARD
38	41	44	50,5		TRIMMER OPENED
0	3	6	12,5		TRAVEL

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The importance of small details