IKUMA 3 P

User *manual*



AIVIUK BEYOND THE GLIDE

Make light *of any challenge*

CATEGORIES

- HIKE & FLY
- PROGRESSION
- CROSS-COUNTRY

WELCOME

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

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

Performance, lightness and durability go hand in hand with the new IKUMA 3 P. Intuitive and accessible, you can push your own limits with the ultra-light version of our high performance EN B+ wing.

Perfect for everyday XC and hike & fly, the internal structure has been optimised to minimise the overall weight of the glider while maintaining durability.

From 3.15 kg.

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

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

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

USER MANUAL

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

Whilst it provides information, it cannot be viewed as an instructional handbook and does not offer the training required to fly this type of paraglider.

Training can only be undertaken at a certified paragliding school and each country has its own system of licensing.

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

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

Equally, we would like to remind you that it is important to carefully read all the contents of your new IKUMA 3 P manual.

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

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1. CHARACTERISTICS

1.1 TARGET GROUP

Performance, lightness and durability go hand in hand with the new IKUMA 3 P. Intuitive and accessible, you can push your own limits with the ultra-light version of our high performance EN B+ wing. Perfect for everyday XC and hike & fly, the internal structure has been optimised to minimise the overall weight of the glider while maintaining durability.

The IKUMA 3 P is conceived and designed for intermediate pilots. Complete your training and progression phase with a glider that will allow you to polish your skills and gain confidence flight after flight.

It is suitable for all those who want to begin cross-country flying and decide to make long distance flights safely. Explore long distance flying with confidence, thanks to this high performance EN-B wing that will provide safety and control.

The Ikuma 3 P is also the perfect partner in your hike & fly adventures. Its lightness will allow you to reach new heights. State-of-the-art ultralight materials have been used throughout the wing to achieve the perfect balance between weight and durability. As a result, the canopy weighs only 3.15 kg (size 22).



1.2 CERTIFICATION

The IKUMA 3 P has been submitted for the European EN and LTF certification.

All certification tests were performed at the Swiss testing house Air Turquoise.

All sizes passed the load, shock and flight tests.

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

The shock test proved that the wing can resist 800 daN of force.

The flight test resulted in the following certification of the IKUMA 3 P for all sizes (20, 22, 24, 26 and 28):

EN B
LTF B

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

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

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

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

Description of EN B class wing characteristics:

- Paragliders with a high degree of passive safety and very forgiving flight characteristics.
- Gliders with high collapse resistance outside normal flight.

Description of the skills required by the pilot to fly an EN B wing:

- Designed for all pilots, including pilots at all levels of training and qualification.

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

1.3 IN-FLIGHT BEHAVIOUR

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

Our other aims were to achieve optimal performance while maintaining the highest level of safety. To ensure that the wing transmits the maximum feedback in an understandable and comfortable way so that the pilot can focus on piloting and enjoying the flight. And, with active piloting, take advantage of all favourable conditions.

In all aspects of flight, the wing is very solid and stable. The glide is smooth, even when fully accelerated. During glides, the wing maintains altitude and the wing remains stable. Improved turn precision means handling is less physical and provides better feedback. Inflating the wing is much easier and gentler, without overshooting.

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

The IKUMA 3 P 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 TECHNOLOGIES, CONSTRUCTION, MATERIALS

The IKUMA 3 P benefits from all the construction and assembly techniques used in our factory. It has all the current technology and accessories available to improve pilot comfort whilst increasing safety and performance.

In the design of all Niviuk products the team aims to ensure development and continuous improvement. The technologies developed in recent years have allowed us to develop greater, better wings. It is in this context that we would like to introduce the technologies included in this new model:

RAM Air Intake – the system is characterised by the arrangement of the air inlets, to ensure optimal maintenance of internal pressure across the the whole range of angles of attack.

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

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

Nitinol now features in all our wings.

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

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

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

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

Structured Middle Chord (SMC) - Ninitol rods in the middle-rear part of the profile form the SMC. This technology gives much more solidity and stability to maintain its shape. The profile is taut at all times, without creases, and fully optimised for all flight phases. Increases performance and makes the wing much more durable over time.

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

Radial Sliced Diagonal (RSD) - this involves a redesign of the internal structure of the wing. It incorporates independent and efficiently oriented diagonals, i.e. following the direction of the cloth. This improves strength, reduces the overall weight of the glider and avoids deformation.

In order to improve stress distribution and reduce the number of attachment points and lines, most wings already have these diagonals, which are connected from the attachment points to the adjacent profiles.

C2B System - Manoeuvrability has been improved with the new C2B system that is integrated into the risers, and which allows a three-liner wing to be flown as if it were a two-liner. Steering with the C-risers automatically includes the B-risers. As a result, the wing has a much more efficient, controlled and precise handling without degrading the shape of the profile.

Interlock System (IKS) - The IKS is a connection system that allows the risers to be connected to different parts of the wing, such as the lines or the harness. The IKS technology is a step towards greater lightness in wings and equipment, without sacrificing effectiveness and providing the same degree of safety and strength.

Niviuk has developed two types, the IKS 1000 is designed to join the lines with the risers and the IKS 3000 is designed to connect the risers and/or the parachute with the harness.

The IKUMA 3 P is supplied with the IKS 1000 as standard. This is a lightweight means to connect the risers to the lines. The system can hold up to 1,055 kg, which is well above the 550 kg of the classic 3 mm carabiner, and even weighs much less. This reduces the overall weight of the equipment while ensuring safety and durability.

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

For the construction process of the IKUMA 3 P we use the same criteria, quality controls and manufacturing processes as in the rest of our range. From Olivier Nef's computer to fabric cutting, the operation does not allow for even a millimetre of error. The cutting of each wing component is performed by a rigorous, extremely meticulous, automated computer laser-cutting robotic arm. This program also paints the guideline markers and numbers on each individual fabric piece, thus avoiding errors during this delicate process.

The jigsaw puzzle assembly is made easier using this method and optimises the operation while making the quality control more efficient.

All Niviuk gliders go through an extremely thorough and detailed final inspection. The canopy is cut and assembled under strict quality control conditions facilitated by the automation of this process.

Every wing is individually checked with a final visual inspection.

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

The lines are made of unsheathed Dyneema and Aramid.

The diameter is adjusted according to the load, aiming for the best performance with the least drag.

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

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

Each glider is packed following specific maintenance instructions as recommended by the fabric manufacturer.

Niviuk gliders are made of premium materials that meet the requirements of performance, durability and certification that the current market demands.

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

1.5 ELEMENTS, COMPONENTS

The IKUMA 3 P is delivered with a series of accessories that will greatly assist you in the maintenance of your paraglider:

- The inner bag, to keep the glider protected during storage and transport.
- An adjustable compression strap, which allows the inner bag to be compressed as much as possible to reduce packing volume.
- A riser bag, to protect them and pack them neatly.
- A repair kit with self-adhesive Ripstop tape.
- A Kargo 90 rucksack for the IKUMA 3 P in size 20, 22, 24 and 26. This is not included in the scope of delivery, but its purchase is recommended. It is perfect for transporting all the equipment comfortably and with plenty of space.
- The Kargo 130 rucksack for the IKUMA 3 P 28. This is not included in the scope of delivery, but its purchase is recommended. It is perfect for transporting all the equipment comfortably and with plenty of space.
- The IKUMA 3 P is supplied with the IKS 1000 as standard. This is a lightweight means to connect the risers to the lines.



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 IKUMA 3 P.

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

2.2 PROCEDURE

Take the paraglider out of the rucksack, open and unfold it on the ground with the lines positioned on the undersurface, oriented in the direction of inflation. Check the condition of the fabric and the lines for defects. Check the maillons/IKS connecting the lines to the risers to make sure they are fully closed and tightened. Identify, and if necessary, untangle, the A, B and C-lines, the brake lines and corresponding risers. Make sure that there are no knots.

2.3 CONNECTING THE HARNESS

The IKUMA 3 P risers are colour-coded.

- Right: green
- Left: red

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

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

2.4 HARNESS TYPE

The IKUMA 3 P can be flown with virtually all current harnesses. If the harness used has an adjustable chest strap, we recommend adjusting it to the distance recommended during the certification, which varies according to size. See the certification report.

Distance between the risers:

Size 20 – 40/44 cm
Size 22 – 40/44 cm
Size 24 – 40/44 cm
Size 26 – 44/48 cm
Size 28 – 44/48 cm

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

2.5 SPEED-BAR

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

The IKUMA 3 P includes a speed system with maximum travel depending on its size (see Full speed-bar). The speed system is operated by pushing with the feet on the speed-bar (not supplied as standard on this model) which the pilot must install by connecting it to the speed system on the risers (See 2.5.1: “Speed-bar installation”).

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

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

- Released speed-bar: the A, B and C-risers are aligned.
- Full speed-bar: the difference between the A - C-risers is 180 mm in all sizes.

(!) PLEASE NOTE: The use of the speed system results in changes to the speed and reactions of the wing. For more information, please see the certification report.

2.5.1 SPEED SYSTEM ASSEMBLY

By speed system we mean the speed-bar that the pilot pushes to accelerate, together with the two lines that connect it to the cords on the the risers. Once you have decided on the type of speed-bar you wish to use, it is necessary to proceed with its installation. Something to consider:

- The pilot can use the type of speed-bar they consider appropriate depending on the type of harness used and their preferences.
- This configuration is detachable to facilitate its connection and/or disconnection to the risers and its respective adjustment.
- For installation through the harness, the harness manufacturer’s instructions must be followed. Most harnesses are already pre-fitted for this purpose.
- The standard connection is made by means of the Brummel hooks in which the two grooves slide into each other to interlock, ensuring their use and connection/disconnection. However, any safe splicing system can be used.

Image 1.
Speed-bar connection using a Brummel hook.

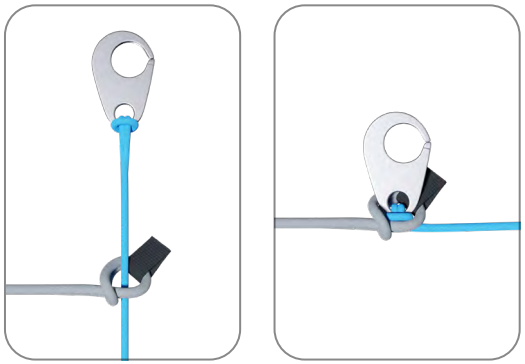
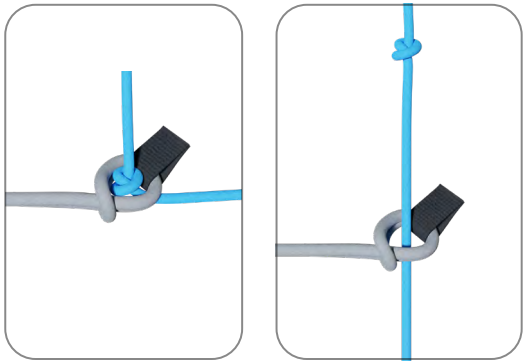


Image 2.
Speed-bar connection using a kite knot (without Brummel hook).



1. A knot is tied in the speed-bar cord and passed through the connector of the riser cord.

2. Tension is applied to both sides until the knot meets the connector of the webbing.

It should be noted that the connection procedure is exactly the same for the Brummel hook as for the kite loop, and is applicable to other connection systems or elements.

2.5.2 CHANGING THE RISER CORDS

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

In all Niviuk gliders the speed system cords on the risers are completely removable and easily replaceable. The pilot can use Brummel hooks, lark's foot/clove hitch, use a different knot, use another type of connector, etc. It is even possible to fix the speed-bar cords directly to the speed system on the risers. This last option makes the connection / disconnection more laborious, but means the cord has maximum travel without obstructions or restrictions which is very useful for some models of harnesses.

2.6 INSPECTION AND WING INFLATION ON THE GROUND

After your gear has been thoroughly checked and the weather conditions deemed favourable for flying, inflate your IKUMA 3 P as many times as necessary to familiarise yourself with its behaviour. Inflating the IKUMA 3 P is easy and should not require a great deal of physical effort. Inflate the wing with a little pressure from the body using the harness. This may be assisted by using the A-lines. Do not pull on them; just accompany the natural rising movement of the wing. Once the wing is inflated to the overhead position, appropriate control with the brakes will be sufficient to hold it there.

2.7 ADJUSTING THE BRAKES

The length of the main brake lines is adjusted at the factory and conform to the length stipulated during certification. However, they can be changed to suit your flying style. It is advisable to fly with the original setting for a period of time to get used to the actual behaviour of the IKUMA 3 P. In case it is necessary to modify the brake length, loosen the knot, slide the line through the brake handle to the desired point and re-tighten the knot firmly. Only qualified personnel should carry out this adjustment. You must ensure that the modification does not affect the trailing edge and slow the glider down without pilot input. Both brake lines should be symmetrical and the same length. We recommend using a clove hitch or bowline knot.

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



3. THE FIRST FLIGHT

3.1 CHOOSING THE RIGHT LOCATION

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

3.2 PREPARATION

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

3.3 FLIGHT PLAN

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

3.4 PRE-FLIGHT CHECK

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

3.5 WING INFLATION, CONTROL AND TAKEOFF

For launch, a smooth and progressive inflation is recommended. The IKUMA 3 P is easy to inflate and does not require a great deal of physical effort. It has no tendency to overshoot, which allows a smooth inflation phase, giving way to a control phase with enough time to make the decision to accelerate and take off when the pilot wishes to do so.

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 IKUMA 3 P 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 takeoff is especially important. Choose an appropriate location facing the wind. Position the paraglider in a crescent configuration to facilitate inflation. A clean wing layout will ensure a trouble-free take off.

3.6 LANDING

The IKUMA 3 P lands excellently, it converts the wing speed into lift at your demand, allowing an enormous margin of error. Wrapping the brake lines around your hand to get greater braking efficiency is not necessary.

3.7 PACKING

The IKUMA 3 P has a complex leading edge, manufactured using a variety of different materials and it must be packed carefully. A correct folding method is very important to extend the useful life of your paraglider.

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

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

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



4. IN FLIGHT

We recommend that you read the certification test report. The report contains all the necessary information on the IKUMA 3 P reacts during each of the tested manoeuvres.

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

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

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

4.1 FLYING IN TURBULENCE

The IKUMA 3 P 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 licensed training outfit. You must adapt your use of the brakes depending on the wing-loading and avoid over-steering.

It is important to note that the type of reaction to a manoeuvre can vary from one size of wing to another, and even within the same size the behaviour and reactions may be different depending on the wing-loading.

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

Asymmetric collapse

In spite of the IKUMA 3 P's profile stability, strong turbulent air may cause the wing to collapse asymmetrically in very strong turbulence, especially if you do not fly actively and prevent the collapse. In this case the glider conveys a loss of pressure through the brake lines and the harness. To prevent the collapse from happening, pull the brake handle on the affected side of the wing. It will increase the incidence of the wing (angle of attack). If the collapse does happen, the IKUMA 3 P will not react violently, the turning tendency is gradual and easily controlled. Weight-shift toward the open, flying side (the opposite side of the collapse) to keep the wing flying straight, while applying light brake pressure to that side if necessary. Normally, the collapsed side of the wing should then recover and reopen by itself. If it does not, try to weight-shift towards the collapsed side. If this does not resolve the issue, pull the brake handle on the collapsed side decisively and quickly all the way (100%) down and release it back up immediately. You may have to repeat this action to provoke the re-opening of the collapsed glider side. Do not over-brake or slow down the flying side of the wing (control the turn). Once the collapsed side is open make sure you return to normal flying speed.

Frontal collapse

Due to the IKUMA 3 P's design, in normal flying conditions frontal collapses are unlikely to take place. The wing's profile has great buffering abilities when dealing with extreme incidence changes. A frontal collapse may occur in strong turbulent conditions, entering or exiting powerful thermals. Frontal collapses usually re-inflate without the glider turning, but a symmetrically applied quick braking action with a quick deep pump of both brakes will accelerate the re-inflation if necessary. Release the brake lines immediately to return to default glider air speed.

Negative spin

A negative spin does not conform to the IKUMA 3 P's normal flight behaviour. Certain circumstances however, may provoke a negative spin (such as trying to turn when flying at very low air speed whilst applying a lot of brake). It is not easy to give any specific recommendation about



this situation other than quickly restoring the wing's default air speed and angle of attack by progressively reducing the tension on the brake lines. The normal wing reaction will be to have a lateral surge on the re-accelerated side with a rotation not greater than 360° before returning to default air speed and a straight flight path trajectory.

Parachutal stall

The possibility of entering or remaining in a parachutal stall have been eliminated from the IKUMA 3 P.

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 IKUMA 3 P stalling during normal flight is very unlikely. It could only happen if you are flying at a very low air speed, whilst over-steering or performing dangerous manoeuvres in turbulent air.

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

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

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

Cravat

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

Pull this line until it is taut. This action will help to release the cravat. If ineffective, fly down to the nearest possible landing spot, controlling the direction with both weight-shift and the use of the brake opposite to the tangled side. Be cautious when attempting to undo a tangle while flying near terrain or other paragliders; it may not be possible to continue on the intended flight path.

Over-controlling

Most flying problems are caused by wrong pilot input, which then escalates into a cascade of unwanted and unpredicted incidents. We should note that the wrong inputs can lead to loss of control of the glider. The IKUMA 3 P 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 IKUMA 3 P's profile was designed for stable flight throughout its entire speed range. Accelerating the wing can be useful in strong winds or significant sink.

When accelerating the wing, the profile becomes more sensitive to turbulence and closer to a possible frontal collapse. If a loss in internal wing pressure is felt, tension on the speed-bar should be reduced to a minimum and a slight pull on the brake lines is recommended to increase the wing's incidence angle. Remember to re-establish the air speed after correcting the angle of attack.

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

4.4 FLYING WITHOUT BRAKE LINES

If, for any reason at all, the IKUMA 3 P's brake lines become disabled in flight, it will become necessary to pilot the wing gently using the C-risers and weight shifting until landing. These risers steer easily because are not under significant tension. You will have to be careful and not handle them too heavily in case this causes a stall or negative spin. The wing must be flown at full speed (not accelerated) during the landing approach, and the C-risers should be pulled symmetrically shortly before contact with the ground. This braking method is not as effective as using the brake lines, and hence the wing will land with a higher ground speed.

4.5 LINE KNOT(S) IN FLIGHT

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

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



5. LOSING ALTITUDE

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

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

5.1 BIG EARS

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

To perform the Big Ears manoeuvre, take the line 3A3 on each A-riser and simultaneously, smoothly pull them outward and downward. The wingtips will fold in.

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

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

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

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, you will fully appreciate and understand it. Only practise this manoeuvre at high altitude and with enough ground clearance.

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

A paraglider flying at its maximum rotating speed can reach –20 m/s, or the equivalent of a 70 km/h vertical descent, and will stabilise in a spiral dive from 15 m/s onwards. Good enough reasons to familiarise yourself with the manoeuvre and understand how to exit it.

To exit this manoeuvre, the inner brake handle (down side of the turn) must progressively be relaxed while momentarily applying tension to the outer brake handle opposite to the turn.

The pilot must also weight shift and lean towards the opposite side of the turn at the same time.

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

Practise these manoeuvres at sufficient altitude and carefully.

5.3 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 first!



6. SPECIAL METHODS

6.1 TOWING

The IKUMA 3 P does not experience any problem whilst being towed. Only qualified winch personnel should handle the certified equipment to carryout this operation. The wing must be inflated similarly as during a normal take off.

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

6.2 ACROBATIC FLIGHT

Although the IKUMA 3 P was tested by expert acrobatic pilots in extreme situations, it was not designed for it. We do NOT recommend using this glider for acrobatic flying.

We consider extreme or acrobatic flights to be any form of piloting different than standard flights. Learning aerobatic/acrobatic manoeuvres should be conducted under the supervision of qualified instructors within a school environment and over water with all safety/ rescue elements in place. When performing extreme maneuvers, you will subject both the glider and your body to centrifugal forces that can reach up to 4 or 5 g, wearing down the material much faster than with normal flight.



7. CARE AND MAINTENANCE

7.1 MAINTENANCE

Careful maintenance of your equipment will ensure continued top performance. Apart from the general checks, we recommend actively maintaining your equipment.

A pre-flight check is obligatory before each flight.

If there is any damage to the equipment or you suspect any areas of the wing are susceptible to wear, you should inspect these and act accordingly.

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

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

The IKUMA 3 P is part of our lightweight P Series. With all the lightweight and ultralight materials we use, we ensure a good compromise between performance and durability. The weight of the materials is minimised by reducing the amount and type of yarn, and by modifying the surface coating, i.e. their strength. Therefore, care should be taken in the use of the wing, and care should be taken to avoid increasing the natural wear and tear of the material itself.

- The fabric and the lines do not need to be washed. If they become dirty, clean them with a soft damp cloth, using only water. Do not use detergents or other chemicals.
- If your wing is wet from contact with water, place it in a dry area, air it and keep it away from direct sunlight.
- Direct sunlight may damage the wing's materials and cause premature aging. Do not leave your glider unnecessarily exposed to the sun, neither before launching nor on landing. Pack it properly and stow it away in its backpack.
- If you fly in sandy areas, avoid getting sand in the cells or down into the trailing edge. At the end of the flight, empty any sand that is in your wing. The openings at the end of the wingtips make this much easier.
- If your wing is wet from contact with salt water, immerse it in fresh water and dry it away from direct sunlight.

7.2 STORAGE

- It is important for the wing to be correctly folded when stored. Keep it in the in a cool, dry place away from solvents, fuels, oils.
- Do not leave your gear inside a car boot, as cars left in the sun can become very hot. A rucksack can reach temperatures up to 60°C.
- Weight should not be laid on top of the equipment.
- It is very important to pack the wing correctly before storage.
- In case of long-term storage, it is advisable, if possible, that the wing is not compressed and it should be stored loosely without direct contact with the ground. Humidity and heating can have an adverse effect on the equipment.

7.3 CHECKS AND INSPECTIONS

The IKUMA 3 P must be periodically serviced. An inspection must be scheduled every 100 flying hours or every two years, whichever comes first.

We strongly recommend that any repairs should be done in a specialist repair shop by qualified personnel.

This will guarantee the airworthiness and continued certification of the IKUMA 3 P.

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

The IKUMA 3 P is fitted with unsheathed lines. Their durability conforms to unsheathed line standards. Their strength is guaranteed and their resistance to UV is one of the highest in this type of lines.

The lines are made of a new material with a water-repellent coating (Magix Pro Dry), which makes it easier to untangle knots and simplifies line sorting before flying.

However, in order to maintain the wing's standard performance, it is necessary to keep the trim constantly adjusted.

Generally speaking, line lengths change with glider use. For this reason we recommend a trim check after approximately the first 30 hours of flight. The hours or actions required to repair lines may vary for each wing depending on the conditions of each flying area, regional weather, temperature, humidity, terrain type, wing loading, etc.

Thanks to the experience and many years of paraglider inspections our R&D team has carried out, we have the necessary information to be able to define the real behaviour of the line. With these quality controls we can keep our wings at the optimum trim without any loss of performance due to wear and tear.

The most important detail to check and/or repair on the lines are the so-called "loops". In some models, such as the IKUMA 3 P, the wings are delivered with loops already installed as standard. These shall be released or readjusted depending on the current trim.

Never adjust a line according to the line length of another wing of the same type. Each length must be adapted and customised for each wing concerned, as a result of an analysis carried out by specialised and authorised personnel.

Length adjustments may never exceed 1% of the length permitted by the certification.

7.4 REPAIRS

In the case of small tears, you can temporarily repair these by using the Ripstop tape included in the repair kit, as long as no stitching is required to mend the fabric.

Any other tears or repairs should be done in a specialist repair shop by qualified personnel.

Damaged lines must be repaired or exchanged immediately.

Please refer to the line plan at the end of this manual.

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

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

8. SAFETY AND RESPONSIBILITY

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

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

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

9. GUARANTEE

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

The warranty does not cover misuse of the equipment.

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

If you notice any defects in your harness, please contact Niviuk immediately for a more thorough inspection.



10. ANNEXES

10.1 TECHNICAL SPECIFICATIONS

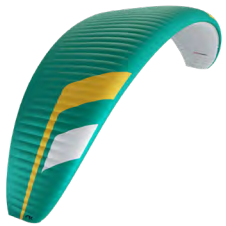
			20	22	24	26	28
Cells	Number		62	62	62	62	62
Aspect ratio	Flat		5,7	5,7	5,7	5,7	5,7
	Projected		4,4	4,4	4,4	4,4	4,4
Area	Flat	m^2	19,8	21,8	23,8	25,8	27,8
	Projected	m^2	16,87	18,58	20,28	21,99	23,69
Span	Flat	m	10,62	11,15	11,65	12,13	12,59
Chords	Maximum	m	2,29	2,41	2,51	2,62	2,72
Lines	Total	m	203	214	224	233	242
	Main		2-1/4/2	2-1/4/2	2-1/4/2	2-1/4/2	2-1/4/2
Risers	Number	3+1	A-A'/B/C	A-A'/B/C	A-A'/B/C	A-A'/B/C	A-A'/B/C
	Speed-bar	mm	180	180	180	180	180
Glider weight		kg	3	3,15	3,45	3,7	4
Total weight in flight	Min-max	kg	55-75	65-85	**75-95**	**85-105**	**95-115**
Certification			EN/LTF B+	EN/LTF B+	EN/LTF B+	EN/LTF B+	EN/LTF B+

The total weight of the wing may differ ±2% due to variations in the weight of the fabric supplied by the manufacturers.

COLORS



Warrior



Acid



Pitaya

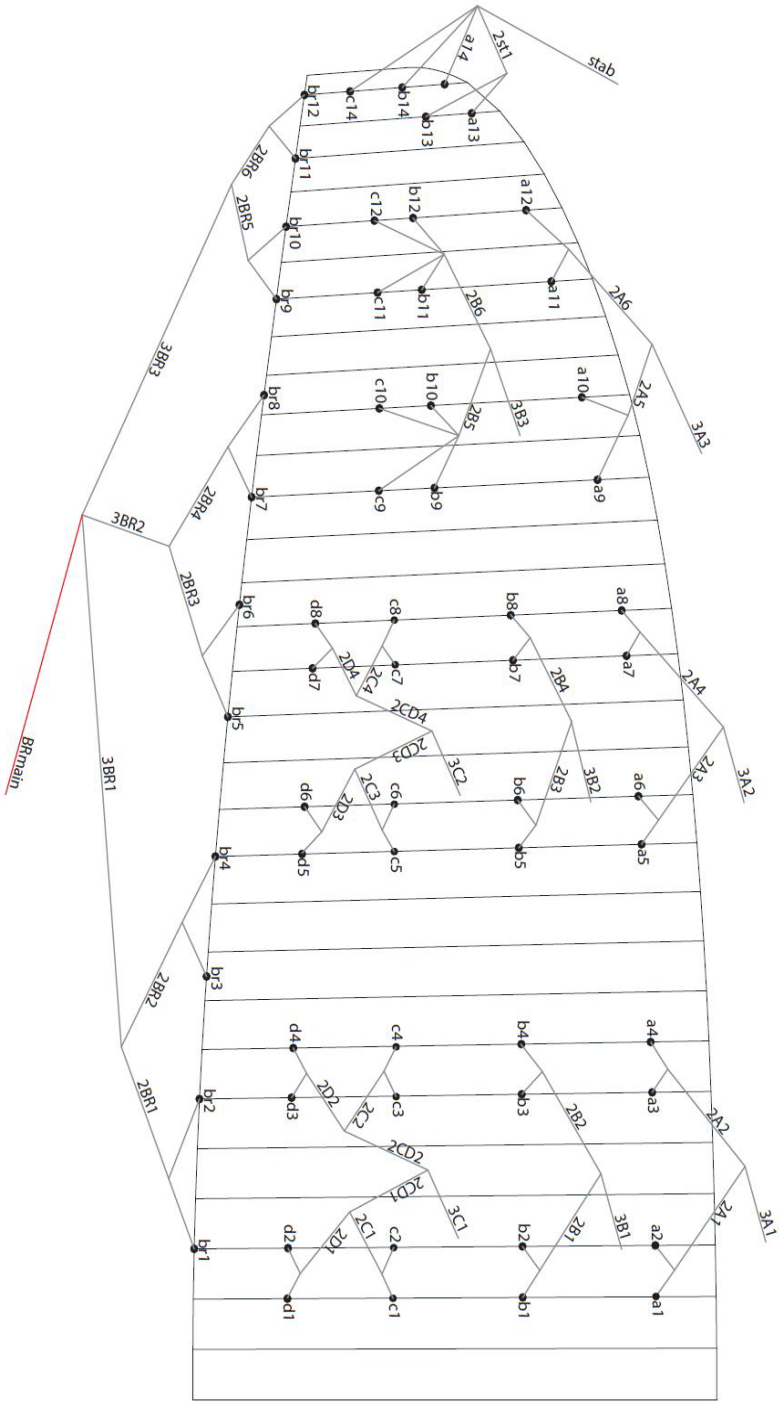
10.2 MATERIALS

CANOPY	FABRIC CODE	SUPPLIER
UPPER SURFACE	2044 32 PS / D10	DOMINICO TEX CO (KOREA)
BOTTOM SURFACE	D10	DOMINICO TEX CO (KOREA)
PROFILES	2044 32 FM / 7000 E91	DOMINICO TEX CO (KOREA) / PORCHER SPORT (FRANCE)
DIAGONALS	30 DFM / 2044 32 FM	DOMINICO TEX CO (KOREA)
LOOPS	LKI - 12	KOLON IND. (KOREA)
REINFORCEMENT LOOPS	RIPSTOP FABRIC	DOMINICO TEX CO (KOREA)
TRAILING EDGE REIFORCEMENT	MYLAR	D-P (GERMANY)
RIBS REIFORCEMENT	LTN-0.8/1 STICK	SPORTWARE CO.CHINA
THREAD	SERAFIL 60	AMAN (GERMANY)

SUSPENSION LINES	FABRIC CODE	SUPPLIER
UPPER CASCADES	DC - 60	LIROS GMHB (GERMANY)
UPPER CASCADES	DC - 40	LIROS GMHB (GERMANY)
MIDDLE CASCADES	DC - 60	LIROS GMHB (GERMANY)
MIDDLE CASCADES	DC - 40	LIROS GMHB (GERMANY)
MIDDLE CASCADES	A-8001/U 50	EDELRID (GERMANY)
MIDDLE CASCADES	A-8001/U 70	EDELRID (GERMANY)
MIDDLE CASCADES	A-8001/U 90	EDELRID (GERMANY)
MIDDLE CASCADES	A-8001/U 130	EDELRID (GERMANY)
MAIN	A-8001/U 70	EDELRID (GERMANY)
MAIN	A-8001/U 90	EDELRID (GERMANY)
MAIN	A-8001/U 130	EDELRID (GERMANY)
MAIN	A-8001/U 190	EDELRID (GERMANY)
MAIN	A-8001/U 230	EDELRID (GERMANY)
MAIN BREAK	TARAX-240	EDELRID (GERMANY)
THREAD	SERAFIL 60	AMAN (GERMANY)

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

10.3 LINE PLAN



LINE REPLACEMENT

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

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

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

BEFORE REMOVING ANY LINES, CHECK:

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

AFTER CONFIRMING THAT ALL LINES ARE CORRECT:

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

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

SPECIAL CONFIGURATION ON LINES 3C1 – 3C2 – 3B3

The 3C1 - 3C2 - 3B3 lines are connected to the maillon by means of a special fixation method. See diagram below.

The lark's foot/clove hitch is used to adjust the trim to the preset range. The loop will allow readjustment of the trim due to use, stretching or shrinking. Failure to make this loop compromises the trim of the wing and the safety of the pilot.



10.4 RISER PLAN

A	A'	B	C
3A1	3A3	3B1	3C1
3A2		3B2	3C2
		3B3	
		stab	



10.5 LINE MEASUREMENTS

IKUMA 3 P - 20

LINES HEIGHT + RISER mm

	A	B	C	D	BR
1	6544	6463	6544	6616	6869
2	6507	6428	6496	6571	6488
3	6463	6384	6457	6530	6356
4	6470	6391	6482	6548	6369
5	6389	6315	6405	6472	6164
6	6353	6281	6358	6424	6017
7	6290	6224	6300	6360	5965
8	6297	6232	6323	6364	6052
9	6199	6161	6221		5909
10	6109	6079	6139		5835
11	6014	6002	6049		5830
12	5997	5989	6036		5933
13	5814	5796	5830		
14	5763	5768			

RISERS LENGHT mm

A	A'	B	C	
530	530	530	530	STANDARD
350	350	410	530	ACCELERATED

10.6 LINE MEASUREMENTS

IKUMA 3 P - 22

LINES HEIGHT + RISER mm

	A	B	C	D	BR
1	6877	6782	6870	6946	7228
2	6839	6746	6820	6900	6830
3	6796	6704	6782	6859	6693
4	6804	6713	6810	6879	6708
5	6715	6637	6732	6803	6496
6	6678	6601	6684	6752	6344
7	6614	6543	6625	6687	6291
8	6622	6553	6649	6692	6385
9	6521	6480	6543		6236
10	6427	6395	6459		6159
11	6328	6315	6366		6156
12	6312	6302	6352		6264
13	6119	6100	6135		
14	6066	6070			

RISERS LENGHT mm

A	A'	B	C	
530	530	530	530	STANDARD
350	350	410	530	ACCELERATED

10.7 LINE MEASUREMENTS

IKUMA 3 P - 24

LINES HEIGHT + RISER mm

	A	B	C	D	BR
1	7188	7092	7191	7269	7562
2	7149	7055	7138	7221	7146
3	7104	7011	7099	7179	7004
4	7112	7020	7128	7201	7020
5	7025	6939	7046	7120	6797
6	6986	6902	6995	7068	6638
7	6919	6841	6933	6999	6584
8	6927	6852	6958	7004	6682
9	6801	6784	6847		6527
10	6703	6694	6758		6446
11	6599	6610	6660		6442
12	6582	6597	6646		6555
13	6392	6371	6408		
14	6336	6340			

RISERS LENGHT mm

A	A'	B	C	
530	530	530	530	STANDARD
350	350	410	530	ACCELERATED

10.8 LINE MEASUREMENTS

IKUMA 3 P - 26

LINES HEIGHT + RISER mm

	A	B	C	D	BR
1	7483	7384	7486	7568	7899
2	7443	7346	7432	7518	7467
3	7398	7301	7392	7475	7319
4	7407	7311	7422	7498	7337
5	7318	7229	7338	7414	7107
6	7278	7191	7285	7359	6943
7	7208	7128	7221	7289	6886
8	7217	7139	7247	7294	6989
9	7085	7068	7132		6829
10	6983	6974	7039		6745
11	6875	6887	6938		6742
12	6857	6873	6923		6861
13	6661	6639	6677		
14	6603	6607			

RISERS LENGHT mm

A	A'	B	C	
530	530	530	530	STANDARD
350	350	410	530	ACCELERATED

10.9 LINE MEASUREMENTS

IKUMA 3 P - 28

LINES HEIGHT + RISER mm

	A	B	C	D	BR
1	7766	7669	7770	7855	8215
2	7726	7629	7714	7804	7766
3	7680	7584	7675	7761	7614
4	7691	7595	7707	7784	7633
5	7599	7511	7620	7699	7395
6	7558	7472	7565	7643	7225
7	7487	7407	7500	7570	7168
8	7496	7419	7527	7576	7275
9	7363	7344	7408		7109
10	7257	7247	7312		7023
11	7145	7156	7206		7020
12	7127	7142	7190		7143
13	6922	6900	6938		
14	6862	6866			

RISERS LENGHT mm

A	A'	B	C	
530	530	530	530	STANDARD
350	350	410	530	ACCELERATED

10.10 CERTIFICATION

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

test laboratory for paragliders, paraglider harnesses
and paraglider reserve parachutes

paragliding by air turquoise

NIVIUK

Classification: **B**

In accordance with standards: EN926-1:2015, EN926-2:2013+A1:2021 and NfL 2-565-20	PG_2397.2024
Date of issue (DMY):	21.03.2024
Manufacturer:	Niviuk Gliders / Air Games S.L.
Model:	Ikuma 3 P 20
Serial number:	IKUMA320FT

Configuration during flight tests

Paraglider	
Maximum weight in flight [kg]	**75**
Minimum weight in flight [kg]	**55**
Glider's weight [kg]	**2.9**
Number of risers	**3+1**
Projected area [m²]	**16.87**

Accessories	
Range of speed system [cm]	**19.0**
Speed range using brakes [km/h]	**12**
Total speed range with accessories [km/h]	**26**
Range of trimmers [cm]	**n/a**

Harness used for testing (max weight)	
Harness type	**ABS**
Harness brand	**Woody Valley srl**
Harness model	**Wani Light 2 M**
Harness to risers distance [cm]	**43**
Distance between risers [cm]	**43**

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

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

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

The validation of this test report is given by the signature of the test manager on inspection certificate 91.20 // Rev 07 | 04.03.2022 // ISO | 91.21 // Page 1 of 1

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test laboratory for paragliders, paraglider harnesses
and paraglider reserve parachutes

paragliding by air turquoise

NIVIUK

Classification: **B**

In accordance with standards: EN926-1:2015, EN926-2:2013+A1:2021 and NfL 2-565-20	PG_2303.2023
Date of issue (DMY):	30.11.2023
Manufacturer:	Niviuk Gliders / Air Games S.L.
Model:	Ikuma 3 P 22
Serial number:	SI461928

Configuration during flight tests

Paraglider	
Maximum weight in flight (kg)	**85**
Minimum weight in flight (kg)	**65**
Glider's weight (kg)	**3.2**
Number of risers	**3+1**
Projected area (m2)	**18.58**

Accessories	
Range of speed system (cm)	**19.8**
Speed range using brakes (km/h)	**12**
Total speed range with accessories (km/h)	**26**
Range of trimmers (cm)	**n/a**

Harness used for testing (max weight)	
Harness type	**ABS**
Harness brand	**Niviuk**
Harness model	**Hamak M**
Harness to risers distance (cm)	**42**
Distance between risers (cm)	**44**

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

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

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

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10.10 CERTIFICATION

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test laboratory for paragliders, paraglider harnesses
and paraglider reserve parachutes

paragliding by air turquoise

NIVIUK

Classification: **B**

In accordance with standards: EN926-1:2015, EN926-2:2013+A1:2021 and NfL 2-565-20	PG_2304.2023
Date of issue (DMY):	30.11.2023
Manufacturer:	Niviuk Gliders / Air Games S.L.
Model:	Ikuma 3 P 24
Serial number:	IKUMA3P24FT

Configuration during flight tests

Paraglider	
Maximum weight in flight (kg)	**95**
Minimum weight in flight (kg)	**75**
Glider's weight (kg)	**3.4**
Number of risers	**3+1**
Projected area (m2)	**20.28**

Accessories	
Range of speed system (cm)	**20.2**
Speed range using brakes (km/h)	**12**
Total speed range with accessories (km/h)	**26**
Range of trimmers (cm)	**n/a**

Harness used for testing (max weight)	
Harness type	**ABS**
Harness brand	**BGD GmbH**
Harness model	**Snug M**
Harness to risers distance (cm)	**43**
Distance between risers (cm)	**44**

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

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

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

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NIVIUK

Classification: **B**

In accordance with standards: EN926-1:2015, EN926-2:2013+A1:2021 and NfL 2-565-20	PG_2305.2024
Date of issue (DMY):	30.11.2023
Manufacturer:	Niviuk Gliders / Air Games S.L.
Model:	Ikuma 3 P 26
Serial number:	IKUMA3P26FT

Configuration during flight tests

Paraglider	
Maximum weight in flight (kg)	**105**
Minimum weight in flight (kg)	**85**
Glider's weight (kg)	**3.7**
Number of risers	**3+1**
Projected area (m2)	**21.99**

Accessories	
Range of speed system (cm)	**20.2**
Speed range using brakes (km/h)	**12**
Total speed range with accessories (km/h)	**26**
Range of trimmers (cm)	**n/a**

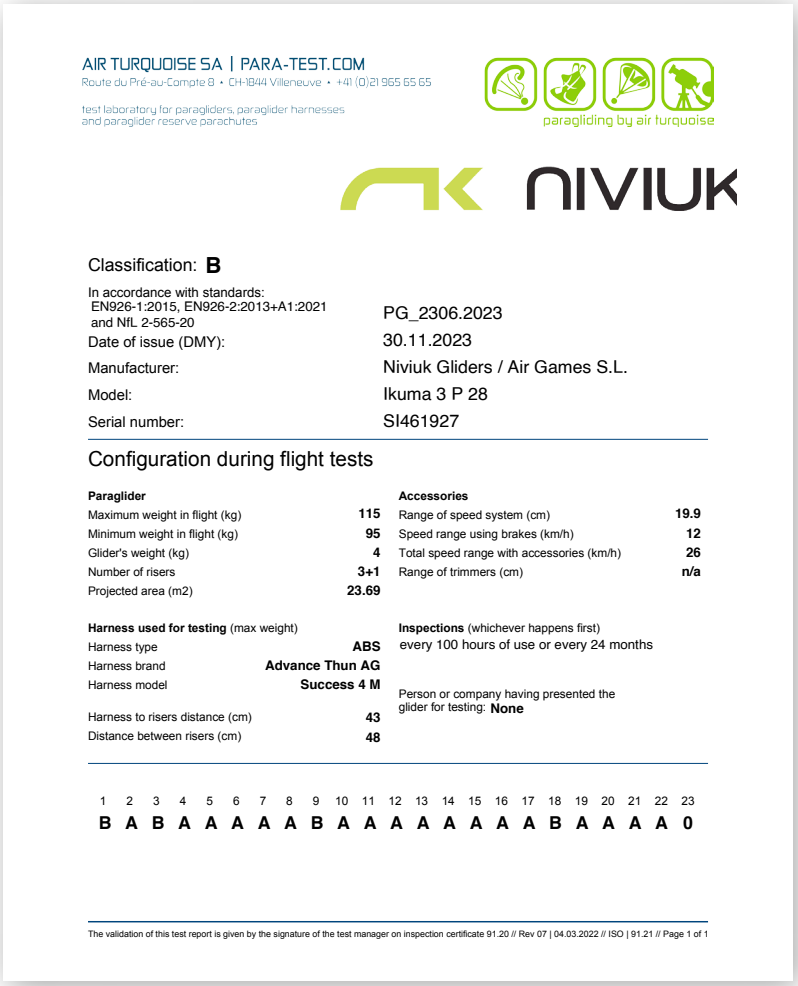
Harness used for testing (max weight)	
Harness type	**ABS**
Harness brand	**Advance Thun AG**
Harness model	**Success 4 M**
Harness to risers distance (cm)	**43**
Distance between risers (cm)	**48**

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

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

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

10.10 CERTIFICATION



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Classification: **B**

In accordance with standards: EN926-1:2015, EN926-2:2013+A1:2021 and NfL 2-565-20	PG_2306.2023
Date of issue (DMY):	30.11.2023
Manufacturer:	Niviuk Gliders / Air Games S.L.
Model:	Ikuma 3 P 28
Serial number:	SI461927

Configuration during flight tests

Paraglider	
Maximum weight in flight (kg)	**115**
Minimum weight in flight (kg)	**95**
Glider's weight (kg)	**4**
Number of risers	**3+1**
Projected area (m2)	**23.69**

Accessories	
Range of speed system (cm)	**19.9**
Speed range using brakes (km/h)	**12**
Total speed range with accessories (km/h)	**26**
Range of trimmers (cm)	**n/a**

Harness used for testing (max weight)	
Harness type	**ABS**
Harness brand	**Advance Thun AG**
Harness model	**Success 4 M**
Harness to risers distance (cm)	**43**
Distance between risers (cm)	**48**

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

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

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

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