

USER'S MANUAL KOYOT 3



KOYOT 3

Adventurer-to-be

WELCOME

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

We would like to share with you the commitment, the passion and emotions of the Niviuk design team, which have resulted in the creation of the new KOYOT 3. Niviuk is very proud of this new glider, carefully designed to bring you maximum pleasure whilst allowing you learn and progress.

The KOYOT 3 is not only a simple evolution from the previous model. Our designers started from scratch to better integrate the latest innovations and produce the perfect glider to make the dream of flying and progressing come true.

We are confident it will bring the essence and joy of flying to many pilots who will soon understand the meaning of our slogan: 'The importance of small details'.

The **NIVIUK** Team.

USER'S MANUAL

NIVIUK GLIDERS KOYOT 3

This manual offers all the necessary information to familiarize yourself with the main characteristics of your new paraglider.

This manual is for information purposes only and does not offer the necessary instruction requirements to pilot this type of wing. Flying instruction can only be obtained at a certified paragliding school affiliated with your country's Flying Federation/Association.

Please carefully read the entire content of your KOYOT 3 user's manual.

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 KOYOT 3 is aimed to a wide range of pilots from beginners to weekend pilots looking for a comfortable, fun and safe glider.

The KOYOT 3 is an ENA glider. Please, do not use it if you do not have enough experience to fly this wing category.

-Description of ENA gliders main characteristics:
Maximum passive safety and a high tolerance level.

-Description of the skill level required to fly ENA gliders:
Suitable for school and entry level pilots.

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

1.2 CERTIFICATION

The KOYOT 3 has successfully passed the European EN/LTF certification. This test was carried out by the Swiss Air-Turquoise laboratories in Switzerland. All the commercially available sizes passed every required test with excellent results, and the KOYOT 3 received the EN A / LTF A certifications for all sizes.

The KOYOT 3 successfully passed the 8G essential load test.

We recommend paying special attention to the flight test report made by the certification laboratory. It provides all necessary technical information to know about the wing and how it reacted during each tested manoeuvre.

Note that each wing size can behave differently during the same

manoeuvre depending on its all up weight.

1.3 IN-FLIGHT BEHAVIOUR

Niviuk developed the KOYOT 3 by adopting very defined guidelines: the objective was to obtain the greatest level of performance while minimizing gear weight, volume for easy transportation, harmonize sensations, facilitate piloting, and above all, maintain a very high wing safety level.

The glider profile was optimized to transmit maximum information in a very understandable and convenient way, helping the pilot focus on synchronizing feelings and technique.

The KOYOT 3 profile is solid. No unwanted surprises with sudden up or down motions even when pushing the speed-bar full-out during acceleration. The glide remains high and stable. The turn is accurate, less physical and easy to activate. Each inflation does not require much effort, wind or not, and the glider has a great ability to takeoff from tight mountainous rough terrains. The landing is smooth and precise.

Flying the KOYOT 3 becomes quickly very intuitive, with plenty of nuances and clear references to the state of the air mass. The glider will react to pilot input effectively even in turbulent conditions, and remain solid.

The wing adapts quite effectively to the flying conditions and cores the thermals progressive effectively and cores thermals progressively. Easy to control in all flying conditions, passive by nature, it will further the pleasure of soaring and convey a blissful sense of pure freedom. It is an agile, light, predictable glider.

1.4 ASSEMBLY, MATERIALS

The KOYOT 3 benefits from all the technological innovations found in

other Niviuk gliders. The RAM, TNT, 3LT, SLE, 3DP and 3DL technologies are part of its design and greatly enhance its performance level.

RAM Air Intake (RAM).-The RAM Air Intake technology presents an internal positioning of the air intakes to provide optimal and constant internal pressure while improving laminar air flow on the intrados. As a result, a significant turbulent air buffering takes place at the leading edge for better consistency across the speed range, and hence increasing performance with maximum safety.

Titanium Technology (TNT).- A revolutionary technique developed using Nitinol to build the internal structure of the glider, brings a more uniform profile, and reduces the overall wing weight to gain efficiency in flight. The Nitinol provides the highest level of resistance against deformation, heat or breaks. Using this technological advance, the glider is able to maintain its original structural integrity for a longer period of time.

3 liner Technology (3LT).- Its powerful profile, a detailed internal architectural structure, and the use of high-tech strength materials make it possible to obtain a significant reduction of the combined suspension line lengths, hence reducing the parasite drag amount and the weight of the glider for better efficiency.

Structured Leading Edge (SLE).- The SLE strengthens the leading edge, preventing any deformation in turbulence, and promotes better airflow over the foremost edge of the glider.

3D Pattern Cut Optimization (3DP).- Cutting the fabric in a specific directional angle according to each panel's final location and positioning, results in a wrinkle-free surface with better fabric tension.

3D Leading Edge (3DL).- Adding an extra seam to the longitudinal axis of the glider helps building a cleaner profile with less wrinkles and obtain better load distribution.

From Olivier's computer to fabric cutting, the operation is a zero tolerance process. An automated computer laser-cutting robotic arm creates each of the many sections needed to complete the wing assembly. This program also paints the guideline markers and numbers each individual fabric piece.

The jigsaw puzzle assembly is made easier by using this method to minimize the operation and improve quality control efficient.

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

The fabric used to manufacture the glider is light, resistant, durable, and will not experience colour loss.

The KOYOT 3's line cascade layout uses Technora with Polyester sheath. The diameter of each line is chosen to obtain the best performance versus drag ratio, based on the wing loading. The sheath protects the lines from external abrasions and UVB rays.

The lines are semi-automatically cut to length and all the sewing is completed under the supervision of our specialists.

Each line is checked and measured once the final assembly is done. Each wing is then individually inflated for the last visual check.

All gliders are packaged following specific maintenance instructions recommended by the fabric manufacturer.

Niviuk Gliders are made of first quality materials. Information about them can be viewed on the last pages of this manual.

1.5 ELEMENTS, COMPONENTS

The KOYOT 3 is delivered with a series of components that, although not

fundamental, do take an important part in the use, transport and storage of the paraglider:

- The large capacity Kargo rucksack, ideal for packing the harness as well as the glider.
- An inner folding bag making the glider folding process easier.
- An adjustable folding strap for quick and easy packing.
- Speed bar
- A small fabric repair kit with self-adhesive ripstop nylon (matching the wing's colour scheme) and replacement maillon blockers.

2. UNPACKING AND ASSEMBLY

2.1 CHOOSING THE RIGHT LOCATION

We recommend unpacking and packing your wing on a school slope or a flat obstacle free area and in low wind speed. It will help you to carry out all the recommended steps required to check and inflate the KOYOT 3.

We recommend having professional supervision during the initial unpacking and assembly procedures.

2.2 PROCEDURE

Take the paraglider out of the rucksack, open it and spread it with the lines on top of the intrados. Position the wing as if you were to inflate it.

Check the condition of the fabric and the lines for abnormalities. Pay attention to the maillons connecting the lines to the risers to make sure they are fully closed and tightened. Identify and if necessary disentangle the lines from the A, B and C risers, the toggle lines and corresponding risers; they must be tangle and/or knot free.

2.3 HARNESS ASSEMBLY

The KOYOT 3 risers come with different colours:

- Right side in green
- Left side in red

This feature helps the pilot to better identify each side during the pre-flight phase and in flight.

Correctly connect the risers to the harness carabiners. The risers and lines cannot have any twists and must be in the right order. Check for the harness buckles to be properly fastened and securely locked.

2.4 HARNESS TYPE

The KOYOT 3 can be flown with most of the harnesses found on the market today, including the cocoon style models.

We strongly recommend adjusting the distance between the chest strap carabiners according to the settings used during the certification procedure. The distance will vary according to the size of the chosen harness model.

Incorrect chest strap adjustments can affect glider/harness behaviour and thus glider handling. Too wide a distance between the carabiners will provide greater feedback from the wing but less glider stability. Too narrow a distance will not bring as much feedback in addition to increasing the risk of experiencing a riser twist during a collapse.

In any case, it is appropriate to refer to the harness's instruction manual and the certification test report outlining the chest strap length adjustments used for these tests.

2.5 ACCELERATOR ASSEMBLY

The KOYOT 3 acceleration mechanism is engaged when foot pressure is

applied to the bar (speed-bar) supplied with the wing. It must be installed and properly adjusted before the first flight.

Most harnesses are ready to accept an acceleration system. Prior installation, ensure that all the harness preinstalled hardware, such as roller pulleys and guides, are compatible with the speed-bar/accelerator. Correct adjustments based on the pilot's leg length must be conducted thereafter.

We recommend installing and adjusting the speed-bar/accelerator during a hang-test first: most schools have such equipment. If in doubt, seek advice from a qualified professional outfit.

2.6 INSPECTION AND WING INFLATION ON THE GROUND

After your gear was thoroughly checked and the weather conditions deemed favourable for flying, inflate your KOYOT 3 as many times as necessary to familiarize yourself with its behaviour. The smooth inflation is easily done. An over energetic handling is not necessary to bring the wing overhead as it will gently climb with minimum tension on the harness when moving forward. The sequence can be made easier by using the 'A' risers.

Do not pull, but rather accompany them naturally, following the rising arcing movement of the wing. Once the wing has climbed overhead, simply apply the correct amount of brake pressure to keep the KOYOT 3 stationary.

2.7 ADJUSTING THE BRAKE LINES AND TOGGLES

The length of the main brake lines is adjusted at the factory according to the length established during the certification procedure. However, it can be changed to adapt to the pilot's own flying style. In any case, we recommend flying for a while using the default line length factory settings before making any adjustment. It will enable you to become more familiar with the KOYOT 3 and its unique flying characteristics. If you then decide

to change the length of the brake lines, untie the knot, slide the line through the brake link to the desired length, and strongly re-tie the knot. Only qualified personnel should carry out this adjustment. You must ensure that the modification does not slow the glider down without pilot input. Both brake lines should be symmetrical and of the same length. The most recommended knots are the clove hitch or bowline knot.

When changing the brakes length, it is necessary to check that they do not act when the accelerator is used. When accelerated, the glider rotates over the 'C' risers and the trailing edge rises. The brake lines should be checked for proper adjustment, while taking this extra length into consideration.

3. THE FIRST FLIGHT

3.1 CHOOSE THE RIGHT PLACE

We recommend taking the first flight with your KOYOT 3 on a smooth slope (a school training hill) or at your usual flying site.

3.2 PREPARATION

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

3.3 FLIGHT PLAN

Make a flight plan before taking off to avoid possible flight problems later.

3.4 PRE-FLIGHT CHECK LIST

Once ready, and before launching, conduct a last visual equipment inspection to ensure that all is in order and assess the weather conditions which must be suited for your flying skills.

3.5 WING INFLATION, CONTROL AND TAKE-OFF

Smoothly and progressively inflate the wing (chapter 2.6 INSPECTION AND WING INFLATION ON THE GROUND). The KOYOT 3 comes up easily and does not require excessive energy. No tendencies to overshoot, rendering the inflation sequence quite simple to achieve. Those characteristics enable the pilot to be in full control and give him/her enough time to decide whether or not to transit into the running phase toward a successful takeoff.

Whenever the wind speed permits it, we recommend to do a reversed inflation. This technique enables the pilot to have a better view of the wing to make sure all is in order before turning around and running down the slope. The KOYOT 3 does not require much effort to control in this configuration and higher wind speeds. However, wind speeds up to 25 to 30 km/h (10 to 18 mph) are considered strong and extra consideration should be given on whether or not to takeoff.

Pay particular attention to the wing layout on the ground. Choose an appropriate location for best wind direction. Display the paraglider symmetrically in a crescent-like shape facing upwind for a trouble free inflation before running and taking off.

3.6 LANDING

The KOYOT 3 has great landing abilities by turning its air speed into lift on demand using toggle impute, hence obtaining a fully controllable ground effect to reduce margin errors and improve safety upon landing. It will not be necessary to wrap the brake lines around your hands to get greater braking efficiency.

3.7 FOLDING INSTRUCTIONS

The KOYOT 3 has a complex leading and trailing edge, designed using a variety of different materials. For that reason, the use of a correct method

is very important to extend the paraglider's lifespan. It should be folded in an accordion shape, with the leading edge reinforcements flat and positioned one atop the other. This method will keep the profile in good shape without altering its form or performance.

The wing should then be folded in three parts without excessive compression; the contrary could lead to material and/or the line damage.

The NKare bag is an easy to use folding bag designed to help with the packing process. It can also be used as a surface base to protect the glider against damage.

4. IN FLIGHT

Please, carefully review the glider certification results including the relevant information pertaining to the manoeuvres involved during the tests.

Note that glider behaviour can vary depending on size or wing loading for the same size.

Becoming familiar with the test results can help you better understand the glider to tackle various situations when flying.

4.1 FLYING IN TURBULENCE

The KOYOT 3 has a solid profile design able to withstand various weather conditions, hence enabling the pilot to take advantage of its stability for greater handling efficiency. It reacts admirably in passive flight mode, and a high level of safety in turbulent conditions. Nonetheless, the pilot must always steer the wing and adapt to the prevailing weather conditions; for active flying is the most important safety factor.

We recommend active piloting and timely necessary fine adjustments to

keep the wing under control. The pilot should stop braking to regain the necessary air speed after a correction was made.

Do not maintain any toggles tension for longer than necessary or it would cause the wing to enter a dangerous flying configuration. Make prompt, precise yaw, pitch and roll adjustments when necessary to re-establish normal air speed.

4.2 POSSIBLE CONFIGURATIONS

To become familiar with those manoeuvres, we recommend practicing under the supervision of a qualified certified paragliding instructor. The pilot will have to constantly adapt his toggle input relative to the load carried by the wing, and avoid over-steering.

It is important to realize that from one size to the next, glider behaviour can vary, even under the same size wing: depending on minimum or maximum loading.

Asymmetrical collapse

In spite of the KOYOT 3's profile stability, strong turbulent air may cause the wing to collapse asymmetrically if the pilot was unable to predict the glider's reactions in specific circumstances. When the wing is about to experience an asymmetric collapse, the brake lines will slacken and transmit a tension loss affecting the harness stability. To prevent the collapse from happening, pull the toggle corresponding to the compromised side of the wing. It will increase the incidence of the wing (angle of attack). If the collapse does happen, the KOYOT 3 will not react violently, the turning tendency is gradual and easily controlled. Weight-shift toward the flying and opposite side of the collapse to keep the wing on flying straight while applying a light brake pressure to that side if necessary to slow it down. The collapsed side of the wing should then recover and reopen by itself. If it does not, then pull the toggle on the collapsed side decisively and quickly all the way down before bringing it back up immediately. You may have to repeat this pumping action to

provoke the re-opening of the deflated glider side. Do not over-brake or slow down the flying side of the wing (risk of a stall for having too high an angle of attack). Once the collapsed side is open, re-centre your body under the wing to regain the default flying speed.

Symmetrical collapse

In normal flying conditions and due to the KOYOT 3 design, asymmetrical collapses are unlikely to take place. The wing's profile has great buffering abilities when dealing with extreme incidence changes. A symmetrical collapse may occur in strong turbulent conditions, entering or exiting powerful thermals or when lacking experience using the accelerator/speed-bar with untimely inadequate input. Symmetrical collapses usually re-inflate without the glider turning, but a symmetrically applied quick braking action with a quick deep pump 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 KOYOT 3's normal flight behaviour. Certain circumstances however, may provoke this configuration such as trying to turn when flying at very low air speed deep in the brakes, and applying even more toggle pressure on one side). 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

A parachutal stall takes place when the wing remains fully inflated but loses forward motion to then drop vertically at an accelerated rate. Instability and a lack of pressure on the brake lines set in, although the canopy would appear to be correctly inflated. To regain normal air speed, release brake line tension symmetrically and push forward on the 'A'

lines or weight-shift your body to any side WITHOUT PULLING ON THE BRAKE LINES.

Deep stall

The possibility of the KOYOT 3 falling into this configuration during normal flight is very unlikely. This could happen if you are flying at a very low speed, whilst oversteering during a number of manoeuvres and in turbulent conditions. The wing will enter a deep stall when reaching a point below minimum air speed by symmetrically pulling the brake lines. It is done by pulling the toggles all the way down and holding them in place. The glider will initially deflate and dive behind the pilot. Gravity will takeover with the pilot free falling for a second until the glider repositions itself overhead while rocking slightly, depending on how the manoeuvre was executed. When purposely initiating a stall, be positive and do not second guess the outcome for an instant. Do not release the brake lines when half way into the manoeuvre or it would cause the glider to violently surge forward with great energy in front of and passed the pilot. It is very important to apply a symmetrical strong brake pull to limit the surge and bring the wing back up. Lessen the brake tension as the glider rises to the overhead default flying angle of attack.

If a symmetrical stall takes place, briefly and evenly pull the brake lines even if the wing is still ahead of you.

Wing tangle

A wing tangle may happen after an asymmetrical collapse, the end of the wing is trapped between the lines (known as a Cravat). This situation could rapidly cause the wing to spin on itself depending on the nature of the tangle. The corrective manoeuvres to use are the same as those applied in case of an asymmetrical collapse: control the turn/spin by applying tension on the opposite brake and counterweight shift opposite to the turn. Then locate the line reaching the stabiliser trapped between the other lines. It has a different colour and belongs to the outer lines of the B riser.

Pull on this line until it is tense as it should help undo the wing tangle. If ineffective, fly down to the nearest possible landing spot, control the trajectory with both counterweight shifting and use of the brake opposite to the tangled side. Be cautious when attempting to undo a tangle while flying near a mountainside or other paragliders; a loss of control of the intended flight path might become jeopardized and a subsequent collision could happen as result.

Over handling

Most flying problems are caused by wrong pilot input, to then degenerate into a cascade of unwanted and unpredicted series of incidents. The KOYOT 3 was designed to recover by itself in most cases. Do not try to over correct it!

Generally speaking, the wing's reactions will be proportional to the type, amount and input duration sent by the pilot to the glider. Bringing the glider back to a normal flight configuration as soon as possible is the priority.

4.3 USING THE ACCELERATOR

The KOYOT 3 profile was designed to fly stably throughout its entire speed range. It is useful to accelerate when flying in strong winds or in extreme descending air. 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 accelerator should be reduced to a minimum and a slight pull on the brake lines is recommended to increase the wing's incidence angle. Remember to re-establish the air speed after correcting the incidence.

It is NOT recommended to accelerate near obstacles or in very turbulent conditions. If necessary, constantly adjust the movements and pressure on the accelerator 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 KOYOT 3's brake lines become disabled in flight, piloting the wing with the 'C' risers and weight shifting will become necessary. The C-lines steer easily because they are not under much tension, however you will need to be careful and not handle them too heavily to cause a stall or negative turn. The wing must be flown at full speed during the landing approach, and the 'C' risers will have to be pulled symmetrically all the way down shortly before contact with the ground. This braking method is not as effective as using the brake lines, and hence the wing will land with a higher ground speed.

4.5 LINE KNOT(S) IN FLIGHT

The best way to avoid knots and tangles is to thoroughly inspect the lines as part of a systematic Pre-flight Check. If a knot is spotted during the running phase, immediately abort the launching sequence and stop.

If inadvertently taking off with a knotted line, the glider drift will need to be compensated by weight-shifting to the opposite side of the wing and apply a slight brake pull to that side. Gently pull the toggle 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. Do not pull too hard on the toggles for there will be an increased risk of stalling the wing or enter a negative turn.

Before trying to remove a knot, make sure there are no pilots flying nearby, and never try these attempts close to the obstacles. If the knot is too tight and cannot be removed, carefully and safely fly to the nearest landing zone.

5. LOSING ALTITUDE

Knowledge of different descent techniques is important and could be

extremely useful to have. The most adequate descent method will vary depending on any particular situation.

We recommend learning these manoeuvres within a competent school environment.

5.1 EARS

Big Ears is a moderate descent technique enabling altitude losses of about -3 to -4 m/s and a ground speed reduction between 3 and 5 km/h. Effective piloting then becomes limited once the manoeuvre has been activated. The angle of incidence and wing loading also increases. Push on the accelerator/speed-bar to restore the wing's initial air speed and angle of attack.

To enter a 'Big Ears' configuration, simultaneously pull on 3A3 (outer 'A' lines)lines simultaneously/smoothly outward and downward. The wingtips will fold in. Let go of the lines to reopen the tips to a default configuration. If they do not re-inflate, gently pull on one of the brake lines and then on the opposite one. We recommend inflating the wing tips asymmetrically, not to alter the angle of incidence, especially when flying near the ground or flying in turbulence.

The 3A3 line is attached to the A' riser and used to pull 'Ears' effectively.

5.2 B-LINE STALL

When carrying out this manoeuvre, the wing stops flying, loses all horizontal speed and the pilot is no longer in control of the paraglider. The airflow over the profile is interrupted and the wing enters a situation similar to parachuting.

To enter this manoeuvre, the 'B' risers are handled below the maillons and symmetrically pulled down together (approx. 20-30 cm) and then held to this position. The initial phase is quite physical (high pull

resistance) requiring a strong tug until the wing's profile/cord deforms in an accordion-like shape. The initial pulling force will then be significantly lessened. Holding the 'B' lines in the pulled down position will be necessary to maintain the configuration. The wing will then deform, its horizontal speed will drop to 0 km/h vertical descending speed increase to -6 to -8 m/s depending on the weather conditions and how the manoeuvre was performed.

To exit the manoeuvre, simultaneously release both risers. The wing will then slightly surge forward and automatically return to normal flight. It is better to let go of the lines quickly rather than slowly. This is an easy escape manoeuvre to do but remember that the wing will stop flying, will lose all forward horizontal speed, and its reactions will change quite a bit when compared to a normal flight configuration.

5.3 SPIRAL DIVE

This is a more effective way for 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 practice, a pilot will fully appreciate and understand it. Only practice at high altitude and with enough ground clearance.

To enter the manoeuvre, the pilot will need to synchronize a weight-shift with a gradual toggle pull toward the inside of the intended turn. The intensity of the rotation can be controlled by applying a slight brake line pull with the toggle located on the upper and opposite half side of the wing.

A paraglider flying at its maximum rotating speed can reach -20 m/s, equivalent 70 km/h vertical descending speed, and a stabilized spiral dive will reach from 15 m/s onwards.

These are the reasons why any pilot should become familiar with the manoeuvre and know how to properly exit it.

To exit this manoeuvre, the inner toggle (down side of the turn) must progressively be relaxed while momentarily applying tension to the outer toggle opposite to the turn. The pilot must also weight shift and lean towards the opposite side of the turn at the same time. This exit needs to be carried out gradually and smoothly so to feel the 'G-force' and adapt to the speed changes taking place.

When exiting the spiral, the glider will briefly experience an asymmetrical acceleration and dive, depending on how the manoeuvre was carried out.

Practice these movements at sufficient altitude and with moderation.

5.4 SLOW DESCENT TECHNIQUE

Glide normally when using this technique without straining the wing or pilot, searching for descending (catabatic) air to use while turning as if climbing in a thermal. Beware of potentially dangerous areas and locate a suited LZ (Landing Zone) while descending. Safety comes first!

6. SPECIAL METHODS

6.1 TOWING

The KOYOT 3 does not experience any problem whilst being towed. Only qualified personnel should handle the certified equipment to carry out this operation. The wing must be inflated similarly as when done during a normal mountain or ridge takeoff.

6.2 ACROBATIC FLIGHT

Although the KOYOT 3 was tested by expert acrobatic pilots in extreme

situations, it was not designed for it. We do not recommend using this glider for acrobatic flying!!!

We consider acrobatic flights to be any form of piloting different than standard soaring flights. Learning acrobatic manoeuvres should be conducted under the supervision of qualified instructors within a school environment and over water with all safety/rescue elements in place. Forces as high as 4 to 5 G can be exerted on a paragliding wings during extreme manoeuvres.

Materials will wear more quickly than in normal flight. Gliders subjected to extreme manoeuvre techniques should be inspected every six months.

7. CARE AND MAINTENANCE

7.1 MAINTENANCE

Careful maintenance of your equipment will ensure continued top performance.

The fabric and the lines do not need to be washed. If they become dirty, clean them with a soft damp cloth.

If your wing is wet from contact with salt water, immerse it in fresh water and dry it away from direct sunlight. Direct sunlight may damage the wing's materials and cause premature aging. After landing, do not leave the wing exposed to the sun. Pack it properly and stow it away in its backpack.

If flying in a sandy environment, and sand has accumulated inside the wing, remove it before packing it away.

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 and UV rays. Do not leave the gear inside a car trunk, as temperatures can climb up to 60°C and damage it. Weight should not be laid atop the equipment.

If the flight gear is stored with organic material, such as leaves, grass or insects trapped inside the cells, the chemical reaction can cause irreparable damage. Empty the caissons before packing the glider away and never stow a glider away when wet.

7.3 CHECKS AND CONTROLS

The KOYOT 3 must be periodically serviced. An inspection must be scheduled every 100 flying hours or every twenty four months whichever comes first (EN/LTF normative).

Always conduct a thorough pre-flight check before each takeoff.

If the wing is damaged, you can temporarily repair it by using the ripstop material included in the repair kit, for as long as no stitching is required to mend the fabric.

Damaged lines must be repaired immediately. Please refer to the line plan at the end of this manual.

Any repair should be done by a specialized repair shop and qualified personnel. Niviuk can not be rendered responsible for any damage caused by incorrect repairs.

8. SAFETY AND RESPONSIBILITY

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

Wrong use of this equipment may cause severe injuries to the pilot, or even death. Manufacturers and dealers cannot be rendered responsible for your decisions or any act or accident that may result out of 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.

DISCLAIMER:

Paragliding is an activity requiring attention, specific knowledge and sound judgment. Beware! Learn your skills under the supervision and guidance of a certified school. Contract a personal insurance and become a licensed pilot. Be humble when evaluating your proficiency level in respect to weather conditions before deciding on whether or not to fly. Niviuk's liability coverage is for its product line only. Niviuk can not be rendered responsible for your own actions. Fly at your risk!

10. TECHNICAL DATA

10.1 TECHNICAL DATA

KOYOT 3			22	24	26	28	31
CELLS	NUMBER		36	36	36	36	36
	CLOSED		8	8	8	8	8
	BOX		27	27	27	27	27
FLAT	AREA	m ²	22	24	26	28	31
	SPAN	m	10,44	10,90	11,35	11,77	12,39
	ASPECT RATIO		4,95	4,95	4,95	4,95	4,95
PROJECTED	AREA	m ²	19,04	20,77	22,50	24,23	26,83
	SPAN	m	8,48	8,86	9,22	9,56	10,06
	ASPECT RATIO		3,78	3,78	3,78	3,78	3,78
FLATTENING		%	13	13	13	13	13
CORD	MAXIMUM	m	2,55	2,67	2,78	2,88	3,03
	MINIMUM	m	0,66	0,69	0,72	0,75	0,79
	AVERAGE	m	2,11	2,20	2,29	2,38	2,50
LINES	TOTAL METERS	m	264	276	287	299	315
	HEIGHT	m	6,59	6,88	7,16	7,43	7,82
	NUMBER		206	206	206	206	206
	MAIN		2+1/3/4	2+1/3/4	2+1/3/4	2+1/3/4	2+1/3/4
RISERS	NUMBER	3	A+A'/B/C	A+A'/B/C	A+A'/B/C	A+A'/B/C	A+A'/B/C
	TRIMS		NO	NO	NO	NO	NO
	ACCELERATOR	m/m	110	110	110	110	110
	SPLIT A'S		YES	YES	YES	YES	YES
TOTAL WEIGHT	MINIMUM	kg	45	60	75	90	110
IN FLIGHT	MAXIMUM	kg	73	80	95	115	135
GLIDER WEIGHT		kg	4,25	4,54	4,93	5,11	5,40
CERTIFICATION		EN/LTF	A	A	A	A	A

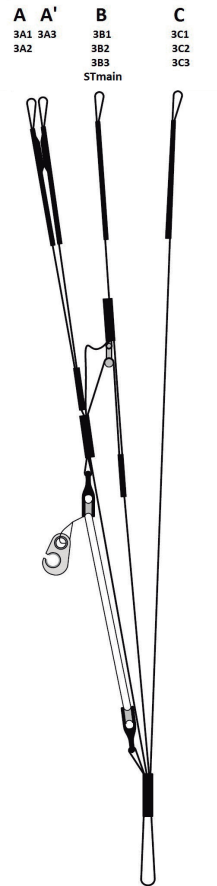
10.2 MATERIALS DESCRIPTION

CANOPY	FABRIC CODE	SUPPLIER
UPPER SURFACE	9017 E25	PORCHER IND (FRANCE)
BOTTOM SURFACE	N-20-DMF 36	DOMINICO TEX CO
PROFILES	9017 E29	PORCHER IND (FRANCE)
DIAGONALS	9017 E29	PORCHER IND (FRANCE)
LOOPS	LKI - 10	KOLON IND. (KOREA)
REINFORCEMENT LOOPS	W-420	D-P (GERMANY)
TRAILING EDGE REINFORCEMENT	MYLAR	D-P (GERMANY)
REINFORCEMENT RIBS	LTN-0.8 STICK	SPORTWARE CO. (CHINA)
THREAD	SERAFIL 60	AMAN (GERMANY)

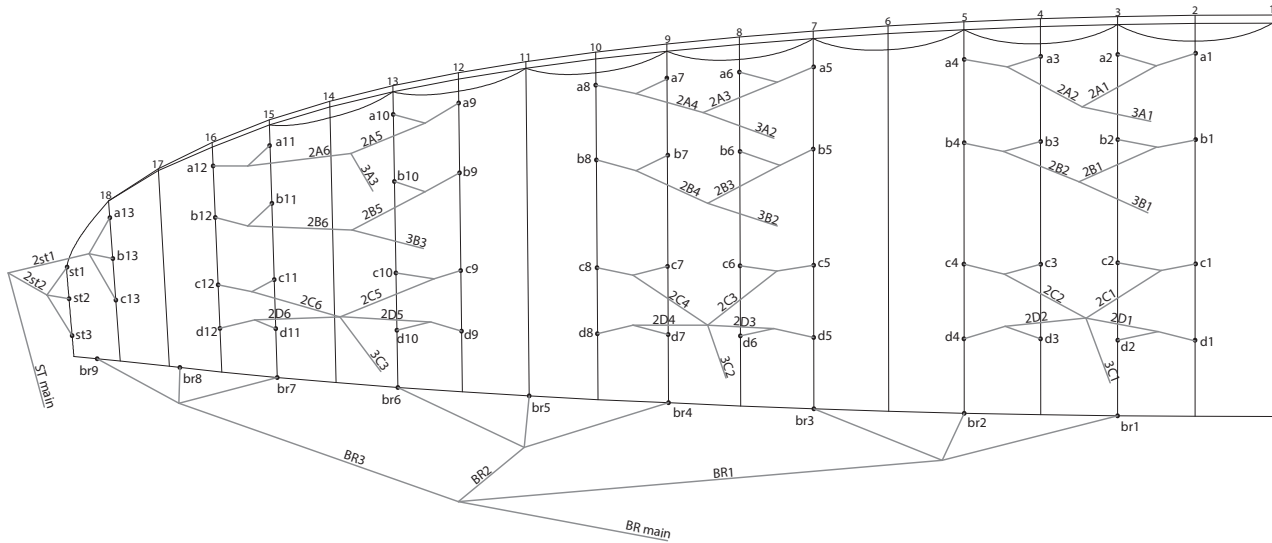
SUSPENSION LINES	FABRIC CODE	SUPPLIER
UPPER CASCADES	TNL - 080	TEIJIM LIMITED (JAPAN)
MIDDLE CASCADES	TNL - 080	TEIJIM LIMITED (JAPAN)
MIDDLE CASCADES	TNL - 140	TEIJIM LIMITED (JAPAN)
MAIN	TNL - 220	TEIJIM LIMITED (JAPAN)
MAIN	TNL - 280	TEIJIM LIMITED (JAPAN)
MAIN BREAK	TNL - 280	TEIJIM LIMITED (JAPAN)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

RISERS	FABRIC CODE	SUPPLIER
MATERIAL	WD103	COUSIN (FRANCE)
COLOUR INDICATOR	210D	TECNI SANGLES (FRANCE)
THREAD	V138	COATS (ENGLAND)
MAILLONS	MRI4	ANSUNG PRECISION (KOREA)
PULLEYS	PY - 1304-2	ANSUNG PRECISION (KOREA)

10.3 RISERS LAYOUT



10.4 LINE PLAN



10.5 LENGTHS KOYOT 3 22

LINES HEIGHT m/m					
	A	B	C	D	br
1	5.964	5.902	6.005	6.132	6.582
2	5.921	5.855	5.943	6.074	6.345
3	5.900	5.833	5.927	6.042	6.296
4	5.944	5.872	5.959	6.069	6.204
5	5.896	5.842	5.936	6.057	6.092
6	5.847	5.792	5.877	5.998	6.104
7	5.834	5.779	5.862	5.978	6.031
8	5.858	5.802	5.894	6.002	5.892
9	5.831	5.779	5.843	5.919	5.736
10	5.772	5.723	5.781	5.857	
11	5.692	5.651	5.704	5.758	
12	5.666	5.629	5.679	5.729	
13	5.439	5.407	5.451		
stb	5.329	5.340	5.405		

RISERS LENGTH m/m					
	A	A'	B	C	
	470	470	470	470	STANDARD
	360	360	390	470	ACCELERATED

10.6 LENGTHS KOYOT 3 24

LINES HEIGHT m/m					
	A	B	C	D	br
1	6.328	6.258	6.370	6.503	6.961
2	6.284	6.211	6.305	6.443	6.715
3	6.263	6.189	6.290	6.411	6.668
4	6.311	6.231	6.325	6.442	6.575
5	6.262	6.205	6.305	6.435	6.458
6	6.211	6.153	6.243	6.373	6.472
7	6.198	6.140	6.229	6.353	6.387
8	6.224	6.165	6.263	6.379	6.246
9	6.197	6.143	6.208	6.287	6.069
10	6.135	6.083	6.143	6.222	
11	6.050	6.008	6.062	6.118	
12	6.023	5.985	6.037	6.087	
13	5.785	5.751	5.797		
stb	5.669	5.680	5.748		

RISERS LENGTH m/m					
	A	A'	B	C	
	470	470	470	470	STANDARD
	360	360	390	470	ACCELERATED

10.7 LENGTHS KOYOT 3 26

LINES HEIGHT m/m					
	A	B	C	D	br
1	6.606	6.534	6.651	6.789	7.290
2	6.561	6.485	6.584	6.728	7.032
3	6.541	6.463	6.569	6.695	6.981
4	6.592	6.509	6.606	6.727	6.883
5	6.542	6.482	6.586	6.720	6.763
6	6.490	6.429	6.521	6.657	6.779
7	6.476	6.416	6.508	6.636	6.701
8	6.503	6.442	6.543	6.664	6.550
9	6.477	6.419	6.488	6.572	6.380
10	6.412	6.358	6.421	6.504	
11	6.324	6.281	6.337	6.396	
12	6.297	6.258	6.310	6.364	
13	6.049	6.014	6.062		
stb	5.928	5.940	6.011		

RISERS LENGTH m/m					
	A	A'	B	C	
	470	470	470	470	STANDARD
	360	360	390	470	ACCELERATED

10.8 LENGTHS KOYOT 3 28

LINES HEIGHT m/m					
	A	B	C	D	br
1	6.873	6.797	6.921	7.065	7.550
2	6.828	6.748	6.853	7.002	7.287
3	6.808	6.726	6.837	6.969	7.238
4	6.861	6.774	6.877	7.003	7.140
5	6.811	6.749	6.857	6.996	7.016
6	6.756	6.694	6.791	6.930	7.032
7	6.743	6.681	6.777	6.910	6.943
8	6.771	6.709	6.814	6.939	6.792
9	6.745	6.686	6.758	6.839	6.603
10	6.678	6.622	6.688	6.769	
11	6.588	6.543	6.601	6.663	
12	6.559	6.519	6.574	6.630	
13	6.303	6.266	6.316		
stb	6.177	6.190	6.263		

RISERS LENGTH m/m					
	A	A'	B	C	
	470	470	470	470	STANDARD
	360	360	390	470	ACCELERATED

10.7 LENGTHS KOYOT 3 31

LINES HEIGHT m/m

	A	B	C	D	br
1	7.237	7.162	7.293	7.445	7.978
2	7.191	7.112	7.222	7.380	7.699
3	7.171	7.091	7.207	7.345	7.645
4	7.228	7.143	7.250	7.382	7.541
5	7.197	7.132	7.246	7.391	7.413
6	7.141	7.075	7.177	7.323	7.432
7	7.128	7.062	7.163	7.303	7.349
8	7.159	7.093	7.203	7.334	7.186
9	7.131	7.069	7.146	7.236	6.962
10	7.060	7.003	7.073	7.162	
11	6.965	6.920	6.982	7.046	
12	6.935	6.895	6.953	7.011	
13	6.669	6.631	6.683		
stb	6.535	6.548	6.625		

RISERS LENGTH m/m

	A	A'	B	C	
	470	470	470	470	STANDARD
	360	360	390	470	ACCELERATED

10.8 CERTIFICATION SPECIMEN TEST

KOYOT 3 22

AIR TURQUOISE SA | PARA-TEST.COM

Route du Pré-au-Comte 8 • CH-1844 Villeneuve • +41 (0)21 965 65 65

Test laboratory for paragliders, paraglider harnesses and paraglider reserve parachutes



Class: **A**

In accordance with standards

EN 926-2:2013, EN 926-1:2015 & LTF 91/09:

PG_1027.2016

Date of issue (DMY):

14. 06. 2016

Manufacturer: Niviuk Gliders / Air Games S.L.

Model: Koyot 3 22

Serial number: Koyot 3 19-22

Configuration during flight tests

Paraglider		Accessories	
Maximum weight in flight (kg)	73	Range of speed system (cm)	11
Minimum weight in flight (kg)	45	Speed range using brakes (km/h)	15
Glider's weight (kg)	4.2	Range of trimmers (cm)	0
Number of risers	3	Total speed range with accessories (km/h)	23
Projected area (m2)	19.04		

Harness used for testing (max weight)		Inspections (whichever happens first)	
Harness type	ABS	every 24 months or every 100 flying hours	
Harness brand	Flugsau	Warning! Before use refer to user's manual	
Harness model	XX-Lite	Person or company having presented the glider for testing: None	

Harness to risers distance (cm)	40
Distance between risers (cm)	40

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

KOYOT 3 24

para-test.com



paragliding by air turquoise

Air Turquoise SA
Rte du Pré-au-Comte 8 | CH-1844 Villeneuve
Tel. +41 21 965 65 65 | mobile +41 79 202 52 93
info@para-test.com



Class: **A**

In accordance with EN standards 926-2:2013 & 926-1:2015

PG_1028.2016

Date of issue (DMY):

/ LTF: NFL II 91/09

29. 03. 2016

Manufacturer: Niviuk Gliders / Air Games S.L.

Model: Koyot 3 24

Serial number: Koyot 3 18-24

Configuration during flight tests

Paraglider		Accessories	
Maximum weight in flight (kg)	80	Range of speed system (cm)	10.4
Minimum weight in flight (kg)	60	Speed range using brakes (km/h)	15
Glider's weight (kg)	4.56	Range of trimmers (cm)	0
Number of risers	3	Total speed range with accessories (km/h)	23
Projected area (m2)	20.77		

Harness used for testing (max weight)		Inspections (whichever happens first)	
Harness type	AB S	every 24 months or every 100 flying hours	
Harness brand	Sup' Air	Warning! Before use refer to user's manual	
Harness model	Altitude M	Person or company having presented the glider for testing: None	

Harness to risers distance (cm)	41
Distance between risers (cm)	44

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

Class: **A**

In accordance with EN standards 926-2:2013 & 926-1:2015 **PG_0976.2015**
Date of issue (DMY): / LTF: NFL II 91/09 **29. 03. 2016**

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

Model: **Koyot 3 26**

Serial number: **Koyot 3 17-26**

Configuration during flight tests

Paraglider		Accessories	
Maximum weight in flight (kg)	95	Range of speed system (cm)	10.5
Minimum weight in flight (kg)	75	Speed range using brakes (km/h)	15
Glider's weight (kg)	4.32	Range of trimmers (cm)	0
Number of risers	3	Total speed range with accessories (km/h)	23
Projected area (m ²)	22.5		

Harness used for testing (max weight)		Inspections (whichever happens first)
Harness type	AB\$	every 24 months or every 100 flying hours
Harness brand	Flugasu	Warning! Before use refer to user's manual
Harness model	XX-Lite	Person or company having presented the glider for testing: None

Harness to risers distance (cm)	41
Distance between risers (cm)	44

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

Class: **A**

In accordance with EN standards 926-2:2013 & 926-1:2015 **PG_1029.2016**
Date of issue (DMY): / LTF: NFL II 91/09 **29. 03. 2016**

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

Model: **Koyot 3 28**

Serial number: **koyot 3 18-28**

Configuration during flight tests

Paraglider		Accessories	
Maximum weight in flight (kg)	115	Range of speed system (cm)	10.5
Minimum weight in flight (kg)	90	Speed range using brakes (km/h)	15
Glider's weight (kg)	5.16	Range of trimmers (cm)	0
Number of risers	3	Total speed range with accessories (km/h)	23
Projected area (m ²)	24.23		

Harness used for testing (max weight)		Inspections (whichever happens first)
Harness type	AB\$	every 24 months or every 100 flying hours
Harness brand	Niviuk	Warning! Before use refer to user's manual
Harness model	Hamak L	Person or company having presented the glider for testing: None

Harness to risers distance (cm)	43
Distance between risers (cm)	46

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

KOYOT 3 31

AIR TURQUOISE SA | PARA-TEST.COM

Route du Pié-au-Cornie 8 • CH-1844 Villeneuve • +41 (0)21 965 65 65

Test laboratory for paragliders, paraglider harnesses and paraglider reserve parachutes



Class: **A**

In accordance with standards
EN 926-2:2013, EN 926-1:2015 & LTF 91/09:

PG_1030.2016

Date of issue (DMY):

14. 06. 2016

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

Model: **Koyot 3 31**

Serial number: **Koyot 3 19-31**

Configuration during flight tests

Paraglider		Accessories	
Maximum weight in flight (kg)	135	Range of speed system (cm)	10.9
Minimum weight in flight (kg)	110	Speed range using brakes (km/h)	15
Glider's weight (kg)	5.5	Range of trimmers (cm)	0
Number of risers	3	Total speed range with accessories (km/h)	23
Projected area (m2)	26.83		
Harness used for testing (max weight)		Inspections (whichever happens first)	
Harness type	ABS	every 24 months or every 100 flying hours	
Harness brand	Gin Gliders	Warning! Before use refer to user's manual	
Harness model	Gingo 2 L	Person or company having presented the glider for testing: None	
Harness to risers distance (cm)	43		
Distance between risers (cm)	46		

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

