Manual

THRILLER 2K12

U-TURN
your airline...

English Rev. 1.9

!!! Please read the manual before you fly your new
U-Turn THRILLER 2K12 !!!

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All technical details in this manual have been carefully checked by U-Turn. However we like to mention that we don´t take any lilability for possible mistakes, neither in legal responsibility, nor in liability cases that derive from mistakable details.
We preserve the right to change this manual in any way to achieve technical improvements.

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U-Turn your airline

U-Turn GmbH was incorporated in 2002 by Thomas Vosseler and Ernst Strobl after some years of market analysis. Vosseler, hobby pilot and successful entrepeneur in the computer and software business, is the sales and marketing specialist, while Strobl is in charge as Head of Development.

The company grew fast in Germany and Austria, and in 2004 the international distribution started. Today U-Turn gliders and related products such as rescues, helmets or flight-wear are available all over the world. The company`s headquarter is in Tuningen near the Black Forest and 30 minutes by car to the lake Constance.

U-Turn paragliders are in a class of their own. U-Turn doesn`t compromise on safety, and uses the best quality components and hallmark flight characteristics. Congratulation on you purchase of U-Turn glider, as it is the brand for those who appreciate the difference.
The laws of physics are well defined. We aspire to achieve to possible within the framework of its laws. We admit this is ambitious but you will always find U-Turn at the cutting edge of technology. As Oscar Wilde once said in this very British understatement: “His taste is very basics; only always the best is good enough.” The U-Turn team embodies this attitude: “We always want to deliver the best possible glider”. Nothing more and most certainly nothing lesss. U-Turn staff takes notice of its customer wishes, so we appreciate any comments or feedback!
Please feel free to contact your competence center or U-Turn directly for any advice or direction.

Thank you

The U-Turn team would like to congratulate you on the purchase of your new U-Turn paraglider. You have made an excellent choice. We wish you long and enjoyable flights and many happy landings with you U-Turn THRILLER 2K12.
The research and Development team at U-Turn can proudly look back at many successful years in the flight sport industry. Our own concepts not only meet but exceed industry standards. The combination between the latest computer based technology and the know-how of experienced test pilots and professional competition pilots provides an excellent basis for quality. We certainly keep our customers need in mind, and always appreciate your input and constructive criticism. Should any questions occur, please don`t hesitate to ask your U-Turn dealer or the U-Turn team.

In order to provide you with the latest information on technical development and innovations at U-Turn, we ask you to complete the questionnaire attached. Please mail it to the following address:

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Have fun and we wish you many flights on your new U-Turn THRILLER 2K12,
your U-Turn Team

Please study this manual extensively, there is an obligation toward this recreational aircraft and its user manual to inform yourself about its specific features prior to its first use.
We composed this handbook, in order to make the handling of your new U-Turn THRILLER 2K12 as safe and easy for you as possible.

U-Turn THRILLER 2K12

The Thriller of U-Turn plays in its own league- proven by the statements and results of its pilots. Now the new version THRILLER 2k12 is available. Major changes are the optimized sizing; the improved stability compared with outstanding agility and optimized line length.

Frome none of the U-Turn wings chief designer Ernst Strobl gets more feedback as from the THRILLER. No wonder: The wing is the innovation Lokomotive! „What makes me happy is the fact, that many top pilots who have to fly other wings in competitons, try the THRILLER and give me their feedback too. „The U-Turn team pilots give enormous feedback too, so Strobl made half a dozen prototypes to improve the THRILLER furthermore.

The so called „revision 3" version was the machine within. Pal Takats said it was „the coolest wing he has ever flown". The disadvantage of this mega dynamic resulted in a little difficulty inflating the wing, and when even Pal thinks the break pressure is little too strong and the security margin is too little for everyone, so some reviewing work has to be done. „The now finished version offers a bit more dynamic compared to the 2K11, but as a result of clever designing still the same more stability, so that the outstanding security margin for an acro wing stays the same" states Strobl.

To have in almost every situation a good pressure in the wingtip the cross ports have been optimized in detail to receive a better filling in difficult circumstances. This is supported by further EAS valves in the topsail which are perfectly matched to the new cross ports. Both Features make sure the THRILLER 2k12 got the same stability as its predecessor, regardless the fine-tunings in shape and the resulting change in sail tension increased the dynamic. The new sail tension allowed a line shortening by 5 cm.

The new THRILLER 2k12 comes now in 9 sizes. 15/16/17/18/19/20/21,5/23 and 24,5 square meters. "This to offer our pilots to choose the perfect size for a perfect feeling flying the THRILLER" U-Turn joint founder Thomas Vosseler says U-Turn is doing its best to offer the best possible product. "For economy it would make more sense to offer only 4 or 5 sizes." But the THRILLER is our most innovative product.Innovation locomotive, this title gained the THRILLER by a bundle of newest technology: PPN and PPNplus –technology, the Extended Aeration System (EAS) and the High Pressure Crossport Design (HPCD) make the pre- predecessor of the legendary G-FORCE a high tech wing of its own which is more than ever unreachable in its league.

The aspect ratio of the THRILLER 2k12 is by 5.62 well chosen. In addition to the modified ground shape, the redesigned cross ports the optimized trailing edge the glider got despite to its dynamics a good safety margin opening the pilot a big time window to command the wing. The feedback of the wing is gentler and more accurate.

Strobl spend a lot of work in developing the leading edge. The LE is due to the unreached dynamic of the THRILLER under extreme load. In addition the often bad angels of attack while exercising acro demand a well working Leading edge. As a result of this the THRILLER owns a unique feature: the PPN and the PPNplus System. PPN is the akronym for Precise Profile Nose. Plastic rods as a replacement for mylar in the leading edge got common in the recent years. Naturally the Thriller got it as well.

Strobl progressed this technology a step further. Beside the reinforcement in the ribs sewing, intensive testing resulted in reinforcement in the middle of the cell opening which gave good results.
The plastic rods in the leading edge support the stability of the shape and herewith the airflow around the profile: Even in extreme maneuvers the cell openings keep its shape due to the PPNplus system. The internal pressure stays longer on consistent level and the sail keeps its shape and rigidity. “With the PPNplus system we could reduce the relief of the leading edge in e.g. tumblings significantly” announces Strobl. The PPNplus cell openings stay longer open to boost the performance of the THRILLER.

The PPNplus-System extends the limits the leading edge reliefs but under bad thermaling circumstances or when exercising very dynamic maneuvers from a certain angle of attack reach its limits. Then another innovation takes action and lifts the THRILLER 2k12 to another dimension. The Extended Aeration System. This means netting covered cell openings in the topsail above the normal cell openings. When airflow is normal, the openings are closed caused by the internal pressure and the vortex by the airflow in the leading edge. See graphics. The valve blade is pressed against the netting. If internal pressure decreases despite AFS-System and PPNplus technology the valve is opening and the Extended Aeration System is activated. Ram air enters the cell and keeps the cell in shape. Another brilliant idea invented by Ernst Strobl. First published by U-Turn after intensive testing procedures.

EAS system in straight flight (pilot under the wing)

EAS system in tumbling (pilot above the wing)

The EAS-system is supported by optimized cross ports. “Cross ports are important for the lateral airflow in the wing. That’s not new. But in test flights we discovered the filling and the pressure in the wing can be optimized by different shaped cross ports“ Strobl states. Even more: the effect of unwanted blow out in extreme angle of attack can‘t be prevented in total but can be controlled with ease and commanding the wing close to the limits is noticeable improved. In the Thriller 2k12 U-Turn chief designer Strobl uses there for cross ports in different shape and size. Where in particular the cross ports in the ribs attached to the lines are different to the ones not. Compared to the THRILLER 2k11 there are now more openings in the topsail which in combination to the ports give a better internal pressure and respectively a quicker pressure increase.

As result the THRILLER 2k12 is not only outstanding dynamic and perfectly stable but also very good to command its dynamics. This means there will be new maneuvers now- impossible to fly in the past. Takats and Co are exercising intensively and will show up with new unbelievable tricks in new season. Not to forget: Tanks to the PPN, PPNplus and HPCD the wing inflates with ease. The THRILLER 2k12 owns a lot of details which advance the flight characteristics and increase the durability of the glider. Each line loop is reinforced with “Insignia Tape” (60g/m² selvadhesive Nylon fabric) on the bottom sail, the ribs and the v-tapes. Even the tension bands not attached directly to a line are reinforced with tape on ribs and bottom sail because these points are highly loaded as well. To make sure the wing keeps its rigidity even close to its limits the V-ribs are reinforced in the same way.

The THRILLER 2k12 is produced under improved manufacturing process that allows integrating a 10mm nylon band over the whole wingspan. This to make sure force is perfectly spread over the whole wing. This leads beside a better stability to a longer durability and therewith longer consistent flight characteristics. The profile, the orientation and the size of the cross ports are optimized for high loads and profile accuracy under load. From each line loop on a rib lead 3 tension bands to the topsail. 120m Insignia tape of 3cm width are used for it. Due to this profile fine tuning the wing can take more energy- this makes it easier for pilots with bigger gliders to perform e.g. the tumbling.

Regardless of the reinforcements which make the THRILLER 2k12 to a stable and long living acro wing that doesn’t have a weight problem at all. Intensive testing with wings in different material combinations made clear that a lot of dynamic can be gained by choosing the right material combination. Elastic fabric absorbs a lot of energy while a stiff one reduces the controllability and that what top pilots call liberty of action in e.g. performing the rhythmic. The materials used in the THRILLER 2k12 is 40 and 45gramm fabric which fulfills the needs of all top pilots. This includes the lines too. In the THRILLER 2k12 only Aramid lines from LIROS are used. The elongation resistant LIROS LTC and TSL lines brought in all tests with different material mixes only best results- regarding the measurements as well as the subjective feedback of our test pilots. The line shortening in the actual model is noticeable as a progress in the important bit more direct handling.

All together the THRILLER 2k12 combines 2 attributes normally won’t go together. The phenomenal dynamic and the improved stability of the wing. Despite its dynamic is the wing compared long living and keeps its flight characteristics for long time.

Motorised Paragliding

We do not recomend to fly the THRILLER 2K12 as a Powered paraglider wing.

Winching

Because of its excellent starting characteristics, the U-Turn THRILLER 2K12 is well suitable for winching operations. Take the following points into account:

- maximum linetension for winching is 120 kp
- if not operating at your usual winch, get acquainted with the local procedures and get a good briefing by a local pilot
- never winch the THRILLER 2K12 with loads outside the allowable weight range
- all involved persons, machines and accessories have to have the appropriate licenses, approval, certifications for winching

Safety Precautions

We recommend the following precautions:

- The U-Turn THRILLER 2K12 is not certified by DHV, AFNOR, DAEC, CEN, EN or any other institution.
- Make your maiden flight in a familiar flying site and calm conditons .
- Test your THRILLER 2K12 only over water.
- In a „dynamic flight“ are not only you exposed to high loads but also the glider. Please don`t under estimate this.
- Only fly the THRILLER 2K12 with at least one reserve parachute.
- observe and abide to the local aviation laws which rule in the respective country in question.
- Successful completion of appropriate training/schooling, having the needed knowledge as well as the actual flight experience are a prerequisite to operate your U-Turn THRILLER 2K12.
- The use of suitable, certified and in the respective country approved accessories (helmet, harness, reserve) is a requirement for the use of the U-Turn THRILLER 2K12.
- Execute before every take off a thourough inspection of your equipment (topsail, undersail, ribs, especially the lines, carabiners, buckles, cloth speed system etc.) A flight with a tear in a glider or lines can be life threatening.
- Make sure that your flying gear is in good condition and all checks are done.
- Be aware that you as a pilot have to be in a physical and mental state to control each flight unimpaired. You have to concentrate completely on flying, in order to avoid potential distressing flight conditions. Most accidents are caused by pilot error.
- Never fly in close proximity to high voltage transmission lines, airports or motorways, over people or with lightning! You cold endanger your life and the physcial well being of yourself as well as third parties and at the same time act reckless and negligent. At nor circumstance should the minimum distance fall below 50m at any give time. At airports this minimum distance to maintain is 5km.
- Inform yourself on the weather forecast and/or the predominating local weather conditions. Use the U-Turn THRILLER 2K12 only in wind strengths, in which you are able to control the wing for 100%. Do not use the U-Turn THRILLER 2K12, in wind with a great gust factor. Never use the glider with approaching thunderstorms or if probability of those of the development of thunderstorms is high. Land with thunderstorms approaching near immediately!
- The flying of aerobatics is generally forbidden and is dangerous. Unforeseen flight orientations can occur, which can spill out of control, arising the danger of overload on pilot and equipment.

Ignoring one or several safety precautions can lead to a leisurely fun flight,

turning into a fatal event.

General description

Baseline and brakeline adjustment

The factory brake-line setting corresponds to 0-free travel plus 5 cm. Its is recommended to adjust your brake line travel after the first flight to your personal preferences. Be aware not to adjust the brakes too short, otherwise the glider may fly with a little, but continuous applied brake pressure. This could be extremely dangerous during takeoff, flight and landing!

The afore mentioned factory brake setting allows for ample brake travel in extreme flight situations as well as for landing. At the same time it enables during flight at trim-speed a position of comfort for the pilots arms.
In no case the setup A, B and C main lines should be changed before the wing has been flown in the original setup. Please also note that adjusting the height of the suspension to the hangpoints on the harness, changes the relative braking travel. When setting the adjustment it is to be made certain that both sides are symmetrical and that a permanent knot is used. The bowline works particularly well because of the fact that it weakens the lines the least with excellent slip resistance.

Lines and risers

On the U-Turn THRILLER 2K12 we use Liros lines: LTC45, LTC65, LTC80, LTC120, and LTC 160 specially braided competition lines made of sheathless kevlar with Nanokoating as well as TSL 190, TSL 220, TSL 280, TSL 380 and DSL350 (TSL = Aramid core). Lines proven by their high tensile strength and are virtually immune to breaking. Their stretch resistance prevents a change in the flight characteristics by uneven lenghtening after short period of use. The use of different line diameters allows a good correlation of uncompromised safety, between line tension and minimized line drag in flight.

Trimming - Important information

Due to the extremely high loads in ACRO maneuvers and the resulting line stretching, in complex tests we found out the stretches and considered this in manufacturing process of your U-Turn THRILLER 2K12. That means, that all U-TURN ACRO wings are trimmed too fast on delivery. Only by high loads like steeps spirals stretch the master lines on the ideal trim! Only after expanding the lines, the glider developes its full dynamics!!! Please make sure that you load both wing sides symmetrically!!!

When Flying the THRILLER 2K12 as acro competition wing we recommend to change the complete line set after 70 hours of use.
When flying the THRILLER 2K12 normal like any other wing the lineset should be changed every 150 hours or each 2 years.

Risers

A and B risers are coloured different, to ensure when starting or speed descent B-Stall a clear identification.

The risers of U-Turn THRILLER 2K12 are made of strong and stretch-poor pad belts, in order to secure a long-term, sturdy trim.

Speed System

The U-Turn THRILLER 2K12 is equipped with a very effective foot actuated speed system. It increase the speed when applied with to approx. 18km/h, depending upon wing size and pilot weight or surface loading.

foot actuated speed system

Therefore it should not be activated in exteme flight situations or deactivate immediately when their occuring. All exteme flight attitudes (e.g. a-collapses) happen at accelerated speed more dynamically. Since the maximum acceleratiion is part of the safety behavior of the glider, it can happen that with some harnesses the speed bar to full speed cannot be used.

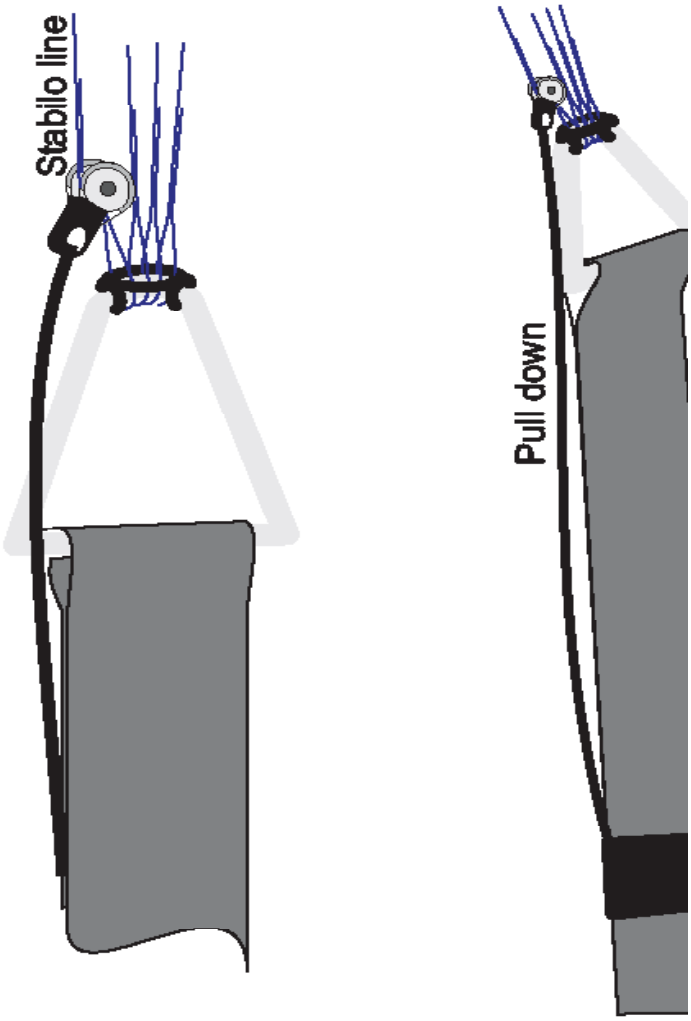
fast trim

standart trim

The trims can be adjusted in flight. In fast trim the wing is flying with maximum speed (without accelerator use at same time). The standard setup is with standard trim setting. In turbulent conditions we recommend to fly the THRILLER 2K12 only in standard setup. For acrobatic flying the trims must be in standard setup. Only in standard trim the wing can develop its full performance!

Stabilo-Line-Security-Function

A further innovation concerns the repair of cravattes. Even best pilots are not protected against cravattes, for example if they train new figures or exiting Choreographies.
So far most cravattes end at the rescue parachute. Because of the high acceleration forces in dynamic flying, which constantly rise with less surface size of the glider. For a pilot, who is exposed to these high g-forces, it is not dependent on pilot skills and training conditions to find quickly the stabilo line. The repair of the cravatte actually is mostly not a problem, the challenge is in fast finding and the Stabilo line. With the „Stabilo LINE Security Function" becomes now substantially simpler: The SLSF is a pulley, by which the Stabilo line is pulled and fastened with a rubber line to the B-Riser. When getting a cravatte the pilot can pull so the Stabilo line by grabbing and pull the loose rubber line and open the cravatte.



High Pressure Crossport Design (HPCD)

Crossports are of decisive importance for the cross ventilation of a paraglider, as only a wing with sufficient internal pressure can shape the profile optimally. With the High Pressure Crossport Design HPCD), U-Turn has created the perfect conditions to ensure the ideal internal pressure in the canopy. During extensive test flights we have mainly ascertained that: 1. The inflation of the canopy and therefore the setup of impact pressure can be considerably optimized by means of differentiated crossports. 2. The effect of unintentional deflation in ambitioned angles of attack or thermally demanding conditions can be moderated and controlled. At the same time the level of control commands increases, generelly the feedback of the canopy becomes better. Handle, master.
Therefore, in order to optimize the cross ventilation in the canopy, U-Turn is using crossports of different sizes and different cross section. Different levels of pressure come up in the paraglider.
In accordance with the physical laws, they are constantly compensating each other in a quick sequence. The individually differentiated crossports have two effects: On the one hand, the tendency to unintentional discharge process is enabled by increased air inlet. Both steps are important for the stability of the wing.
Crossports in the modern U-Turn wings differ depending on whether the cells, where they are integrated, have line contact points or not. Depending on the calcualtion values, the openings are made larger or smaller - and also the shape of the openings varies from round to oval.

Where as the focus of the HPCD functionality for more powerful wings is on better stability against folding, clear feedback and better control, the category 1 paragliders from U-Turn have as particular design objective the minimized surging tendency.

Operation

This instruction manual only pays attention to those points of flying technique which are important for the U-Turn THRILLER 2K12. It is not meant to substitue a basic flying education in an approved flying school! If a lying education and the appropriate experience is missing, paragliding is dangerous to life. Of the THRILLER 2K12 should be flown exclusively by experienced pilots.

The Flight

Take off

After the paraglider is unpacked and laid out in the shape of a horseshoe, the following points are to be considered:

- The paraglider should be laid out in such a way that when pulling up by the A-risers, the center lines are evenly, and earlier tensioned than those towards the wing tips. This ensures an easy and symmectrical inflation at launch.
- Take into consideration the wind direction when laying out, so that when pulling up into the wind, both sides of the paraglider can rise symmetrically.
- Ensure the risers are without twists, and the brake lines run freely through the pulleys to the trailing edge of the glider.
- No lines should pass underneath the sail. A line-over at take-off can have fatal consequences.
- The 5-point check shouldn`t be forgotten of course.

The center of the glider in the U-Turn THRILLER 2K12 is marked by the U-Turn logo on the leading edge. It suffices to only hold the main A-risers in the hand. Since the U-Turn THRILLER 2K12 has only minor tendency to overshoot, it requires only minimal brake input during launch. If needed, directional corrections with the brakes should be undertaken only if the wing already is overhead, since too much brake input could drop the glider back. The other risers should, during take off, be left alone. With an even pull but overall light input only, the glider is to be inflated. Unlike other gliders, it is not necessary to inflate the U-Turn THRILLER 2K12 with aggressive pulling or even fast running.
This is als true with little or no wind. Measured pulling up is the simplest and safest way to launch the U-Turn THRILLER 2K12. Once the pilot made sure that the glider is overhead and fully inflatet, the final decision is made whether to take off.

Turning

The U-Turn THRILLER 2K12 has a normal agility and reacts directly and instantly to steering inputs. You can fly flat turns with little altitude loss by shifting of bodyweight. A combination of appropriate pull on the inner brakeline and shift of bodyweight is the best way for a coordinated turn. Even with a gentle pull on one break the THRILLER 2K12 tends to enter a sharp and steep dive which can be extended to a spiral dive.

WARNING : A rapid pull on the brakeline may cause a spin.

Active Flying

The U-Turn THRILLER 2K12 should be flown with light braking on both sides when there is turbulent air. An increase in angle of attack provides better stability. When entering heavy thermals or strong turbulences be mindful of that the canopy does not get behind the pilot. To avoid that, release the brakes a bit to get an increase in speed when entering the updraft
If the canopy gets in front of the pilot when leaving a updraft or entering a downdraft the brakes have to be applied to counter that. Accelerated flight however is advisable when flying through downdraft zone. The U-Turn THRILLER 2K12 is naturally very stable due to the way it`s constructed and the built in AFS - System. Collapsing and deforming of the canopy can be avoided by active flying (as above mentioned) in turbulent air.

Landing

Start your landing preperation at sufficient altitude. Due to its excellent flaring characteristics, the THRILLER 2K12 is very easy to land. Glider in fairly normal to a straight- in final against the wind and get up in the harness early enough. According to the wind, the brakes have to be pulled firmly and dynamically, about one meter above ground, beyond the stalling point. If there is a strong headwind, be careful with the amount of braking. Don`t perform landings out of steep turns and big directional changes short prior landing, to avoid PLF.

Extremely flight manoeuvers

Deep Stall

The U-Turn THRILLER 2K12 is not stall sensitive. If in a stall, caused by overpulling on the brakes, the rear risers or delayed B-stall exit, the release of the brakes or the rear risers, recovers the stall. Should the stall be caused by an extreme flight condition or configuration (i.e. takeoff weight to low), a symmetric forward push on the A-riser or step the speed system recovers the stall.

Warning: Practicing stalls should be done with enough safe altitude. Never apply asymmetric brakes during a stall, it could cause a spin. If the THRILLER 2K12 is in deep stall, one shoulder never release the breaks if the glider is behind the pilot.

Fullstall

To initiate a full stall, pull both brakes witout a wrap slowly to the point of stall. As soon as the point of stall is reached, hold both hands up. The glider falls back. At point, under no circumstance should the hands let up or release the brakes, to recover from a full stalls the canopy should be stabilized overhead and prefilled. For this slightly let up both brakes symmetrically. To exist completely, let up both brakes symmetrically and slowly in its entirety. With a correct symmetrical exit the glider returns swiftly, as soon as the glider shoots strongly forward, it must be checked by a brief brake input. An asymmectrical recovery is to be avoided, this could lead to falling into the glider.

Negativ Turn

A negative turn/spin is initiated, when the pilot pulls the brake on one side fast and completely though the point of stall while letting the other side of the wing fly freely. With a negative turn the glider turns relatively fast around its center, while the inside filies backwards. In order to exist a spin, the applied brake released, where stalled side of the wing can pick up speed or one exit though a full stall, by braking the flying side into a stall also.

Note: The Spin and the Fullstall and unpredictable and dangerous flight attitudes and should only be executed in a safety training under guidance and never be intentionally executed. There is danger of riser twist. With a riser twist the brake lines can get blocked.

WARNING: The glider has been overloaded. Fullstalls and negative turns / spins as a descent method is dangerous, because a wrong exit, independent of glider type, can have fatal consequences.

Emergency Piloting

In any situation where normal steering with the brakelines is not possible, the U-Turn THRILLER 2K12 can be steered with the back risers easily. Turns can be flown with weightshift, however be mindful that the glider doesn`t lock into a spiral.

Maintenance and Care

Because U-Turn only uses high quality materials, your THRILLER 2K12 will be airworthy for many years if you take good care. The aging of your THRILLER 2K12 depends on the total flying time, the conditions you fly in, the amount of UV radiation it is exposed to and the intensity and quality of care. A couple of tips for maintenance and care:

Long lasting exposure to UV radiation and normal use stress the material

- Don`t expose your glider to the sun when there is no need to
- Consider the choice of terrain where you lay out the glider for takeoff
- Assymmetrical and changing folding patterns prolong the lifetime of the material especially in the middle section

Please take following points into consideration

- regular check for damage
- no unneccessary bending
- lines after overloads (tree landing, water landing, etc.) for its strength and correct length to be checked and exchanged if necessary
- in case of changing inflight handling characteristics, the line have to be checked for their correct length
- don`t tie the brakelines on the grips if not needed, it weakens the lines

To clean the canopy use warm water and a soft sponge.
If you use a detergent for hard stains, make sure that you rinse intensively afterwards. Never apply any chemicals for cleaning, the weaken the material and damage the coating. Store your glider at a dry and dark location away from any chemicals. After two years or 300 flighhours, whichever occurs first, your THRILLER 2K12 has to be inspected by the manufacturer, in case of extreme use we are glad to do that earlier. Only you know about the condition of your glider. Should there be a need for any repairs they are to be done by the manufacturer.

Nature and environment friendly behaviour

We ask you to perform our sport in a manner, that impacts nature and environment with minimum intensity. Please do not walk beside marked paths, don`t leave any waste, please be not noisy and respect the sensitive biological equilibrium in the mountains. Especially at starting areas maximum care for nature is necessary.
The synthetic materials your U-Turn glider is build must be depolluted appropriately. Please send you U-Turn glider at the end of its life-cycle back to U-Turn. We will take care for recycling and removal.

Flight accessories

Harness

The THRILLER 2K12 is suitable with all acro harnesses. But we recommend to fly the THRILLER 2K12 with a double rescue harness. Remember that your harness is under extreme loads to. We strictly recommend to use acrobatics harnesses! Only these are designed to resist the high g-forces. Remember that the relative break travel changes with the carabiner hight of the harness.
If you have any questions about the usage of your harness with the THRILLER 2K12, as your U-Turn dealer or directly contact U-Turn. We assist you in any possible way.

Suitable Rescue System

It is required by law and absolutely neccessary for safe operation of your paraglider that you always carry a rescue system with you. When choosing a rescue system, watch out that it is approved and suitable for the intended takeoff weight. With the innovative rescue systems of the SECURE-series by U-Turn light-weight, convenient and safe reserves are available. The SECURE rescues offer extremely short opening times and low sink-rate.
We recommend the use of a second rescue system! In many acrobatic harnesses this option is already prepared.

Note: Please do not hesitate to throw your reserve! If you notice the glider is twisted twice and is impossible to control any more, throw your reserve! The earlier the smaller is the risk that the reserve is tangled in the glider.

Assumption of Risk

Flying the U-Turn THRILLER 2K12 is inherent with certain dangers of bodily harm or even death of the user of this product or third party equipment. With the use of the THRILLER 2K12 you assume all known and unknown risks and accept probable and improbable risks to injury. The dangers innate with the practice this kind of sport can be reduced by adhering to the warning notes in the manual, as well as the required attention to detail on each flight. The risks inherent to the sport can be reduced to a large degree, if one adheres both to the maintenance guidelines, which are listed in this operating manual, as well as using common sense.

Liability claim and renouncement of exclusion

With the completion of the sale of a U-Turn THRILLER 2K12 you express your in consent with the following points of legal specifications:

THE RENOUNCEMENT EXCLUSION OF ALL LIABILITY CLAIMS deriving from the use the U-Turn THRILLER 2K12 and or either compenents thereof, now or in the future, against the U-Turn GmbH and all other contracting parties, that could arise.

Releasing U-Turn GmbH and all other contracting parties of all liability claims concerning loss, damage, injury or expenses to you, your next of kin, relatives or any other user of the U-Turn THRILLER 2K12 as a result could suffer. This includes but is not limited to lawful or contractual liability on behalf U-Turn GmbH and all other contracting parties as a result of the of production and processing the U-Turn THRILLER 2K12 and all its components. With the occurrence of death or disability, all directives stated here come into force and bind their beneficiaries, next of kin, trustees, legal successors and/ or representatives. The U-Turn GmbH and all other contracting parties express no verbal or written representation and denial expressively that this was done, with exception of what is specified in and in the manual the U-Turn THRILLER 2K12.

Safety Advice and Liability

The operation of the glider is at your own risk. The manufacturer and the dealer don`t take any liability for accidents and follow on damages. Please consider all safety notes, cautions and warnings for safe flying. Further, we assume that the pilot has the necessary certifications and that the legal limitations are being followed. Use of the equipment is at your own risk. Follow the safety instructions for a safe flight.

Release of Liability, Renouncement of Entitlement

Hereby you declare, that you -prior to use of the U-Turn THRILLER 2K12- the U-Turn THRILLER 2K12 user manual in its entirety, including directions and warnings, which are included in this user manual, have read and understood. Moreover to carry responsibility - prior to granting the use by a third party of U-Turn THRILLER 2K12 - through transferring ownership temporary or permanently, for this other user to have read and unterstood the U-Turn THRILLER 2K12 user manual in its entirety, including directions and warnings, which are included in this user manual.

----------	----------
Date	Signature first Pilot
----------	----------
Date	Signature second Pilot
----------	----------
Date	Signature third Pilot

U-Turn cannot be hold responsible for any 2-years-inspection and any repairs not performed by U-Turn or an U-Turn authorized dealer. Any checking or repairing performed by people not authorized by U-Turn will cause denial of any warranty!

Technical Data U-Turn THRILLER 2K12

THRILLER 2K12 — Technical Data — U-TURN your airline...

	15	16	17	18	19	20	21,5	23	24,5
Start Weight	50 - 100 kg	60 -100 kg	70 - 105 kg	75 - 110 kg	80 - 110 kg	85 - 115 kg	90 - 120 kg	100 - 130 kg	110 - 140 kg
Flat Area	15	16	17	18	19	20	21,5	23	24,5
Projected Area	13,29	14,18	15,06	15,95	16,83	17,72	19,05	20,38	21,71
Flat Wingspan	9,18	9,48	9,77	10,05	10,33	10,6	10,99	11,36	11,73
Projected Wingspan	7,66	7,9	8,14	8,39	8,62	8,85	9,17	9,49	9,79
Flat AR	5,62	5,62	5,62	5,62	5,62	5,62	5,62	5,62	5,62
Projected AR	4,42	4,42	4,42	4,42	4,42	4,42	4,42	4,42	4,42
Chord: Center / Wingtip	2,006 / 0,418	2,072 / 0,432	2,135 / 0,445	2,197 / 0,459	2,258 / 0,471	2,316 / 0,483	2,402 / 0,501	2,484 / 0,517	2,564 / 0,536
V-Trim	~ 44 Km/h (75kg Startgewicht)	44 Km/h (75kg Startgewicht)	44 Km/h (95kg Startgewicht)	44 Km/h (100kg Startgewicht)	44 Km/h (110kg Startgewicht)	43 Km/h (110kg Startgewicht)	43 Km/h (120kg Startgewicht)	44 Km/h (130kg Startgewicht)	43 Km/h (130kg Startgewicht)
V-Max	58+ Km/h	58+ Km/h	58+ Km/h	58+ Km/h	58+ Km/h	58+ Km/h	58 Km/h	58 Km/h	58 Km/h
Bridle height	6,7	6,9	7,1	7,3	7,5	7,7	8,0	8,3	8,6
Nr. of Cells	50	50	50	50	50	50	50	50	50
Glider Weight									
Bridle length	287	311	340	370	399	428	469	509	549
Line Diameter	2,2 / 1,8 / 1,65 / 1,55 / 1,3 1,2 / 1,1 / 0,7 / 0,65mm	2,2 / 1,8 / 1,65 / 1,55 / 1,3 1,2 / 1,1 / 0,7 / 0,65mm	2,2 / 1,8 / 1,65 / 1,55 / 1,3 1,2 / 1,1 / 0,7 / 0,65mm	2,2 / 1,8 / 1,65 / 1,55 / 1,3 1,2 / 1,1 / 0,7 / 0,65mm	2,2 / 1,8 / 1,65 / 1,55 / 1,3 1,2 / 1,1 / 0,7 / 0,65mm	2,2 / 1,8 / 1,65 / 1,55 / 1,3 1,2 / 1,1 / 0,7 / 0,65mm	2,2 / 1,8 / 1,65 / 1,55 / 1,3 1,2 / 1,1 / 0,7 / 0,65mm	2,2 / 1,8 / 1,65 / 1,55 / 1,3 1,2 / 1,1 / 0,7 / 0,65mm	2,2 / 1,8 / 1,65 / 1,55 / 1,3 1,2 / 1,1 / 0,7 / 0,65mm
Speed System / Trimmer	Yes / Yes	Yes / Yes	Yes / Yes	Yes / Yes	Yes / Yes	Yes / Yes	Yes / Yes	Yes / Yes	Yes / Yes
Certification	non-scheduled	non-scheduled	non-scheduled	non-scheduled	non-scheduled	non-scheduled	non-scheduled	non-scheduled	non-scheduled
Certified standards and procedures	Tested and Trimmed by U-Turn ACRO Team	Tested and Trimmed by U-Turn ACRO Team	Tested and Trimmed by U-Turn ACRO Team	Tested and Trimmed by U-Turn ACRO Team	Tested and Trimmed by U-Turn ACRO Team	Tested and Trimmed by U-Turn ACRO Team	Tested and Trimmed by U-Turn ACRO Team	Tested and Trimmed by U-Turn ACRO Team	Tested and Trimmed by U-Turn ACRO Team
Folding lines used for certification	No	No	No	No	No	No	No	No	No
Certification No.	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -

Color-Info

Color 1

Color 2

Color 3

U-Turn GmbH offers special color designs too. If you got questions regarding the special color design of your THRILLER 2K12, please do not hesitate to contact your U-Turn competence center or directly us.

THRILLER 2K12

Table of area loading

U-TURN your airline...

Take off weight (kg)	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120	125	130	135	140
THRILLER 2K12 15	3,33	3,67	4,00	4,33	4,67	5,00	5,33	5,67	6,00	6,33	6,67	7,00	7,33	7,67	8,00	8,33	8,67	9,00	9,33
THRILLER 2K12 16	3,13	3,44	3,75	4,06	4,38	4,69	5,00	5,31	5,63	5,94	6,25	6,56	6,88	7,19	7,50	*7,81*	*8,13*	*8,44*	*8,75*
THRILLER 2K12 17	2,94	3,24	3,53	3,82	4,12	4,41	4,71	5,00	5,29	5,59	5,88	6,18	6,47	6,76	7,06	7,35	7,65	*7,94*	*8,24*
THRILLER 2K12 18	2,78	3,06	3,33	3,61	3,89	4,17	4,44	4,72	5,00	5,28	5,56	5,83	6,11	6,39	6,67	6,94	7,22	7,50	*7,78*
THRILLER 2K12 19	2,63	2,89	3,16	3,42	3,68	3,95	4,21	4,47	4,74	5,00	5,26	5,53	5,79	6,05	6,32	6,58	6,84	7,11	7,37
THRILLER 2K12 20	2,50	2,75	3,00	3,25	3,50	3,75	4,00	4,25	4,50	4,75	5,00	5,25	5,50	5,75	6,00	6,25	6,50	6,75	7,00
THRILLER 2K12 21,5	2,33	2,56	2,79	3,02	3,26	3,49	3,72	3,95	4,19	4,42	4,65	4,88	5,12	5,35	5,58	5,81	6,05	6,28	6,51
THRILLER 2K12 23	2,17	2,39	2,61	2,83	3,04	3,26	3,48	3,70	3,91	4,13	4,35	4,57	4,78	5,00	5,22	5,43	5,65	5,87	6,09
THRILLER 2K12 24,5	2,04	2,24	2,45	2,65	2,86	3,06	3,27	3,47	3,67	3,88	4,08	4,29	4,49	4,69	4,90	5,10	5,31	5,51	5,71

Dear Pilots,

the area loading table is intended to give you valuable hints on the behaviour in flight of the canopy under different stress conditions. The different colour indicate the following:

BLUE: A paraglider with this stress load is only conditionally suited for acro-figures.

GREY: All rhythmical figures can be performed as of this stress load, even the INFINITY Tumbling is possible with corresponding pilot experience and expertise.

GREEN: This medium to upper area is the ideal stress loading per unit area. The paraglider has the perfect balance between controlability and agility. All manoeuvres can be done with high dynamic precision.

ORANGE: The paraglider can develope an immense dynamic level if handled incorrectly, this level can only be handled and kept under control by professional pilots loading! Errors can very quickly lead to life endangering situations. U-Turn recommends to strictly avoid these levels of area stress.

RED: It is not allowed to do any acro-manoeuvres in this region of area stress loading.
The paraglider can reach such a high dynamic level which exceeds what the pilot and the material can withstand.
This can even lead to the pilot getting unconscious and the paraglider being destroyed.

Material list U-Turn THRILLER 2K12

THRILLER 2K12

Material List

U-TURN your airline...

Material/ product name	technical data / Dimension weight / strength	Producer
Attachement loops	Nylon	Aqua Dynamics
Accelerator lines	Nylon	Aqua Dynamics
brake attachements	Nylon	Aqua Dynamics
brake handhold	HT Poliester Yarn 22mm	Aqua Dynamics
brake handhold attachement	HT Poliester Yarn 22mm	Aqua Dynamics
brake handhold	Magnet	Aqua Dynamics
Brake main line 2,3mm Ø	Dynema Lines	Aqua Dynamics
Lines: (detail please see line plan)	LTC ; TSL	LIROS, Rosenberger Tauwerke
belt redirection	Stainless Steel	Aqua Dynamics
lines lock	Stainless Steel	Aqua Dynamics
Top sail - A - B - C	AQ-44-C (44-46 g/m²; PA 6.6 HAT)	Aqua Dynamics
V-Tape	AQ-44-C (44-46 g/m²; PA 6.6 HAT)	Aqua Dynamics
Nose reinforcement	PPN / PPN plus	Aqua Dynamics
Rips, Profile	AQ-44-C (44-46 g/m²; PA 6.6 HAT)	Aqua Dynamics
Riser	21 g/m / 1000 kg Bruchlast	Güthe & Wolf, Germany
Undersail - A - B - C	AQ-44-C (44-46 g/m²; PA 6.6 HAT)	Aqua Dynamics
Reinforcement pivot point B/C/D	AQ 240	Aqua Dynamics
sewing thread conopy	HT Poliester Yarn 150D/2	Amann & Söhne GmbH, Germany
sewing thread lines	HT Poliester Yarn 150D/3	Amann & Söhne GmbH, Germany

Line Code-Info

Lineplan U-Turn THRILLER 2K12

Leinenplan / Lineplan

overall Revision 3

0,939336

Thriller 15 2K12	Line plan				rev1k
A # Line					
Rib # 24	397	1136	4715		6249
Rib # 23	352				6203
Rib # 21	370	1087			6172
Rib # 20	388				6190
Rib # 18	397	2016	3743		6155
Rib # 17	352				6110
Rib # 15	388	1889			6020
Rib # 14	361				5993
Rib # 12	370	1849			5961
Rib # 11	370				5961
Rib # 9	397	1163	4302		5862
Rib # 8	352				5817
Rib # 6	577	861			5740
Rib # 4	550				5713
Rib # 2 Stabi	996				5533
Stabi	866				5403
B # Line					
Rib # 24	397	1136	4662		6195
Rib # 23	352				6150
Rib # 21	370	1087			6119
Rib # 20	388				6137
Rib # 18	397	2016	3688		6101
Rib # 17	352				6056
Rib # 15	388	1889			5965
Rib # 14	361				5938
Rib # 12	370	1849			5907
Rib # 11	370				5907
Rib # 9	397	1163	4265		5825
Rib # 8	352				5780
Rib # 6	577	861			5703
Rib # 4	550				5676
Rib # 2 Stabi	969				5506
Stabi	875		4537		5412
C # Line					
Rib # 24	397	1136	4676		6209
Rib # 23	352				6164
Rib # 21	370	1087			6132
Rib # 20	388				6150
Rib # 18	397	2016	3706		6119
Rib # 17	352				6074
Rib # 15	388	1889			5984
Rib # 14	361				5956
Rib # 12	370	1849			5925
Rib # 11	370				5925
Rib # 9	397	1163	4284		5844
Rib # 8	352				5799
Rib # 6	577	861			5722
Rib # 4	550				5695
Rib # 2 Stabi	987				5524
Stabi	933				5470
D # Line					
Rib # 24	397	1136	4766		6299
Rib # 23	352				6254
Rib # 21	370	1087			6222
Rib # 20	388				6241
Rib # 18	397	2016	3783		6195
Rib # 17	352				6150
Rib # 15	388	1889			6060
Rib # 14	361				6033
Rib # 12	370	1849			6002
Rib # 11	370				6002
Rib # 9	397	1163	4338		5898
Rib # 8	352				5853
Rib # 6	577	861			5776
Rib # 4	550				5749
Rib # 2 Stabi	1043				5580
Brake # Line					
Rib # 24	1479	1984	2164	1092	6719
Rib # 22	1321			.+300	6561
Rib # 20	1231	1984			6471
Rib # 18	1118				6358
Rib # 16	1046	1984	2164		6286
Rib # 14	929				6169
Rib # 12	843	1984			6083
Rib # 10	825				6065
Rib # 8	712	1984	2164		5953
Rib # 6	672				5912
Rib # 4	595	1984			5835
Rib # 2	541				5781

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Thriller 16 2K12	Line plan				rev1k
A # Line					
Rib # 24	410	1174	4870		6393
Rib # 23	363				6347
Rib # 21	382	1122			6315
Rib # 20	400				6333
Rib # 18	410	2082	3865		6297
Rib # 17	363				6250
Rib # 15	400	1951			6158
Rib # 14	373				6130
Rib # 12	382	1909			6098
Rib # 11	382				6098
Rib # 9	410	1201	4443		5997
Rib # 8	363				5951
Rib # 6	596	889			5872
Rib # 4	568				5844
Rib # 2 Stabi	1029				5660
Stabi	894				5526
B # Line					
Rib # 24	410	1174	4815		6338
Rib # 23	363				6292
Rib # 21	382	1122			6260
Rib # 20	400				6278
Rib # 18	410	2082	3809		6241
Rib # 17	363				6195
Rib # 15	400	1951			6103
Rib # 14	373				6075
Rib # 12	382	1909			6043
Rib # 11	382				6043
Rib # 9	410	1201	4404		5960
Rib # 8	363				5914
Rib # 6	596	889			5835
Rib # 4	568				5808
Rib # 2 Stabi	1001				5632
Stabi	903		4686		5535
C # Line					
Rib # 24	410	1174	4829		6352
Rib # 23	363				6306
Rib # 21	382	1122			6273
Rib # 20	400				6292
Rib # 18	410	2082	3828		6260
Rib # 17	363				6214
Rib # 15	400	1951			6121
Rib # 14	373				6094
Rib # 12	382	1909			6061
Rib # 11	382				6061
Rib # 9	410	1201	4424		5978
Rib # 8	363				5932
Rib # 6	596	889			5854
Rib # 4	568				5826
Rib # 2 Stabi	1020				5651
Stabi	964				5595
D # Line					
Rib # 24	410	1174	4922		6444
Rib # 23	363				6398
Rib # 21	382	1122			6366
Rib # 20	400				6384
Rib # 18	410	2082	3907		6338
Rib # 17	363				6292
Rib # 15	400	1951			6200
Rib # 14	373				6172
Rib # 12	382	1909			6140
Rib # 11	382				6140
Rib # 9	410	1201	4480		6034
Rib # 8	363				5987
Rib # 6	596	889			5909
Rib # 4	568				5881
Rib # 2 Stabi	1077				5721
Brake # Line					
Rib # 24	1527	2049	2235	1128	6874
Rib # 22	1364			.+300	6712
Rib # 20	1271	2049			6620
Rib # 18	1155				6505
Rib # 16	1080	2049	2235		6431
Rib # 14	959				6311
Rib # 12	871	2049			6223
Rib # 10	852				6205
Rib # 8	736	2049	2235		6090
Rib # 6	694				6048
Rib # 4	615	2049			5970
Rib # 2	559				5914

Basis

Thriller 17 2K12	Line plan				rev3k
A # Line					
Rib # 24	422	1210	5020		6652
Rib # 23	374				6604
Rib # 21	394	1157			6570
Rib # 20	413				6590
Rib # 18	422	2146	3984		6552
Rib # 17	374				6504
Rib # 15	413	2011			6408
Rib # 14	384				6380
Rib # 12	394	1968			6346
Rib # 11	394				6346
Rib # 9	422	1238	4579		6240
Rib # 8	374				6192
Rib # 6	614	917			6111
Rib # 4	586				6082
Rib # 2 Stabi	1061				5891
Stabi	922				5752
B # Line					
Rib # 24	422	1210	4963		6596
Rib # 23	374				6548
Rib # 21	394	1157			6514
Rib # 20	413				6533
Rib # 18	422	2146	3927		6495
Rib # 17	374				6447
Rib # 15	413	2011			6351
Rib # 14	384				6322
Rib # 12	394	1968			6288
Rib # 11	394				6288
Rib # 9	422	1238	4540		6201
Rib # 8	374				6153
Rib # 6	614	917			6071
Rib # 4	586				6042
Rib # 2 Stabi	1032				5862
Stabi	931		4830		5761
C # Line					
Rib # 24	422	1210	4978		6610
Rib # 23	374				6562
Rib # 21	394	1157			6528
Rib # 20	413				6548
Rib # 18	422	2146	3946		6514
Rib # 17	374				6466
Rib # 15	413	2011			6370
Rib # 14	384				6341
Rib # 12	394	1968			6308
Rib # 11	394				6308
Rib # 9	422	1238	4560		6221
Rib # 8	374				6173
Rib # 6	614	917			6092
Rib # 4	586				6063
Rib # 2 Stabi	1051				5881
Stabi	994				5824
D # Line					
Rib # 24	422	1210	5074		6706
Rib # 23	374				6658
Rib # 21	394	1157			6624
Rib # 20	413				6644
Rib # 18	422	2146	4027		6596
Rib # 17	374				6548
Rib # 15	413	2011			6452
Rib # 14	384				6423
Rib # 12	394	1968			6389
Rib # 11	394				6389
Rib # 9	422	1238	4618		6279
Rib # 8	374				6231
Rib # 6	614	917			6149
Rib # 4	586				6120
Rib # 2 Stabi	1110				5940
Brake # Line					
Rib # 24	1574	2112	2304	1162	7153
Rib # 22	1406			.+300	6985
Rib # 20	1310	2112			6889
Rib # 18	1190				6769
Rib # 16	1114	2112	2304		6692
Rib # 14	989				6567
Rib # 12	898	2112			6476
Rib # 10	878				6457
Rib # 8	758	2112	2304		6337
Rib # 6	715				6294
Rib # 4	634	2112			6212
Rib # 2	576				6155

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Thriller 18 2K12	Line plan				rev1
A # Line					
Rib # 24	435	1245	5166		6845
Rib # 23	385				6796
Rib # 21	405	1190			6761
Rib # 20	425				6781
Rib # 18	435	2208	4100		6742
Rib # 17	385				6693
Rib # 15	425	2070			6594
Rib # 14	395				6564
Rib # 12	405	2025			6530
Rib # 11	405				6530
Rib # 9	435	1274	4712		6421
Rib # 8	385				6372
Rib # 6	632	943			6288
Rib # 4	603				6258
Rib # 2 Stabi	1092				6062
Stabi	948				5918
B # Line					
Rib # 24	435	1245	5107		6787
Rib # 23	385				6737
Rib # 21	405	1190			6703
Rib # 20	425				6723
Rib # 18	435	2208	4040		6683
Rib # 17	385				6634
Rib # 15	425	2070			6535
Rib # 14	395				6505
Rib # 12	405	2025			6471
Rib # 11	405				6471
Rib # 9	435	1274	4672		6381
Rib # 8	385				6331
Rib # 6	632	943			6247
Rib # 4	603				6218
Rib # 2 Stabi	1062				6032
Stabi	958		4970		5928
C # Line					
Rib # 24	435	1245	5122		6802
Rib # 23	385				6752
Rib # 21	405	1190			6718
Rib # 20	425				6737
Rib # 18	435	2208	4060		6703
Rib # 17	385				6653
Rib # 15	425	2070			6555
Rib # 14	395				6525
Rib # 12	405	2025			6490
Rib # 11	405				6490
Rib # 9	435	1274	4692		6401
Rib # 8	385				6352
Rib # 6	632	943			6268
Rib # 4	603				6238
Rib # 2 Stabi	1082				6052
Stabi	1022				5992
D # Line					
Rib # 24	435	1245	5221		6900
Rib # 23	385				6851
Rib # 21	405	1190			6816
Rib # 20	425				6836
Rib # 18	435	2208	4144		6787
Rib # 17	385				6737
Rib # 15	425	2070			6639
Rib # 14	395				6609
Rib # 12	405	2025			6574
Rib # 11	405				6574
Rib # 9	435	1274	4752		6461
Rib # 8	385				6411
Rib # 6	632	943			6327
Rib # 4	603				6298
Rib # 2 Stabi	1142				6112
Brake # Line					
Rib # 24	1620	2173	2371	1196	7360
Rib # 22	1447			.+300	7188
Rib # 20	1348	2173			7089
Rib # 18	1225				6965
Rib # 16	1146	2173	2371		6886
Rib # 14	1018				6758
Rib # 12	924	2173			6664
Rib # 10	904				6644
Rib # 8	780	2173	2371		6521
Rib # 6	736				6476
Rib # 4	652	2173			6392
Rib # 2	593				6333

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Thriller 19 2K12	Line plan				rev2k
A # Line					
Rib # 24	447	1279	5307		7033
Rib # 23	396				6982
Rib # 21	416	1223			6946
Rib # 20	436				6967
Rib # 18	447	2268	4212		6927
Rib # 17	396				6876
Rib # 15	436	2126			6775
Rib # 14	406				6744
Rib # 12	416	2081			6709
Rib # 11	416				6709
Rib # 9	447	1309	4841		6597
Rib # 8	396				6546
Rib # 6	650	969			6460
Rib # 4	619				6430
Rib # 2 Stabi	1122				6228
Stabi	974				6081
B # Line					
Rib # 24	447	1279	5247		6973
Rib # 23	396				6922
Rib # 21	416	1223			6886
Rib # 20	436				6907
Rib # 18	447	2268	4151		6866
Rib # 17	396				6815
Rib # 15	436	2126			6714
Rib # 14	406				6683
Rib # 12	416	2081			6648
Rib # 11	416				6648
Rib # 9	447	1309	4800		6556
Rib # 8	396				6505
Rib # 6	650	969			6418
Rib # 4	619				6388
Rib # 2 Stabi	1091				6197
Stabi	985		5106		6091
C # Line					
Rib # 24	447	1279	5263		6988
Rib # 23	396				6937
Rib # 21	416	1223			6902
Rib # 20	436				6922
Rib # 18	447	2268	4171		6886
Rib # 17	396				6836
Rib # 15	436	2126			6734
Rib # 14	406				6704
Rib # 12	416	2081			6668
Rib # 11	416				6668
Rib # 9	447	1309	4821		6577
Rib # 8	396				6526
Rib # 6	650	969			6440
Rib # 4	619				6409
Rib # 2 Stabi	1111				6218
Stabi	1050				6157
D # Line					
Rib # 24	447	1279	5364		7089
Rib # 23	396				7039
Rib # 21	416	1223			7003
Rib # 20	436				7023
Rib # 18	447	2268	4258		6973
Rib # 17	396				6922
Rib # 15	436	2126			6820
Rib # 14	406				6790
Rib # 12	416	2081			6755
Rib # 11	416				6755
Rib # 9	447	1309	4882		6638
Rib # 8	396				6587
Rib # 6	650	969			6501
Rib # 4	619				6470
Rib # 2 Stabi	1173				6280
Brake # Line					
Rib # 24	1665	2233	2436	1229	7562
Rib # 22	1487			.+300	7384
Rib # 20	1385	2233			7283
Rib # 18	1259				7156
Rib # 16	1177	2233	2436		7075
Rib # 14	1045				6943
Rib # 12	949	2233			6847
Rib # 10	929				6826
Rib # 8	802	2233	2436		6699
Rib # 6	756				6654
Rib # 4	670	2233			6567
Rib # 2	609				6507

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Thriller 20 2K12	Line plan				rev2k
A # Line					
Rib # 24	458	1312	5445		7215
Rib # 23	406				7163
Rib # 21	427	1255			7127
Rib # 20	448				7148
Rib # 18	458	2327	4321		7107
Rib # 17	406				7055
Rib # 15	448	2182			6951
Rib # 14	417				6920
Rib # 12	427	2135			6883
Rib # 11	427				6883
Rib # 9	458	1343	4967		6769
Rib # 8	406				6717
Rib # 6	666	994			6628
Rib # 4	635				6597
Rib # 2 Stabi	1151				6390
Stabi	1000				6239
B # Line					
Rib # 24	458	1312	5384		7154
Rib # 23	406				7102
Rib # 21	427	1255			7065
Rib # 20	448				7086
Rib # 18	458	2327	4259		7045
Rib # 17	406				6992
Rib # 15	448	2182			6888
Rib # 14	417				6857
Rib # 12	427	2135			6821
Rib # 11	427				6821
Rib # 9	458	1343	4924		6726
Rib # 8	406				6674
Rib # 6	666	994			6585
Rib # 4	635				6554
Rib # 2 Stabi	1119				6358
Stabi	1010		5239		6249
C # Line					
Rib # 24	458	1312	5399		7169
Rib # 23	406				7117
Rib # 21	427	1255			7081
Rib # 20	448				7102
Rib # 18	458	2327	4280		7065
Rib # 17	406				7013
Rib # 15	448	2182			6909
Rib # 14	417				6878
Rib # 12	427	2135			6841
Rib # 11	427				6841
Rib # 9	458	1343	4946		6748
Rib # 8	406				6696
Rib # 6	666	994			6607
Rib # 4	635				6576
Rib # 2 Stabi	1140				6379
Stabi	1078				6317
D # Line					
Rib # 24	458	1312	5503		7274
Rib # 23	406				7222
Rib # 21	427	1255			7185
Rib # 20	448				7206
Rib # 18	458	2327	4368		7154
Rib # 17	406				7102
Rib # 15	448	2182			6998
Rib # 14	417				6966
Rib # 12	427	2135			6930
Rib # 11	427				6930
Rib # 9	458	1343	5009		6810
Rib # 8	406				6758
Rib # 6	666	994			6670
Rib # 4	635				6638
Rib # 2 Stabi	1204				6443
Brake # Line					
Rib # 24	1708	2291	2499	1261	7759
Rib # 22	1526			.+300	7576
Rib # 20	1421	2291			7472
Rib # 18	1291				7342
Rib # 16	1208	2291	2499		7259
Rib # 14	1073				7123
Rib # 12	974	2291			7024
Rib # 10	953				7004
Rib # 8	823	2291	2499		6873
Rib # 6	776				6827
Rib # 4	687	2291			6738
Rib # 2	625				6676

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Thriller 21.5 2K12	Line plan				rev2k
A # Line					
Rib # 24	475	1360	5645		7481
Rib # 23	421				7427
Rib # 21	443	1301			7389
Rib # 20	464				7411
Rib # 18	475	2413	4481		7369
Rib # 17	421				7315
Rib # 15	464	2262			7207
Rib # 14	432				7174
Rib # 12	443	2213			7137
Rib # 11	443				7137
Rib # 9	475	1393	5150		7018
Rib # 8	421				6964
Rib # 6	691	1031			6872
Rib # 4	659				6840
Rib # 2 Stabi	1193				6625
Stabi	1036				6468
B # Line					
Rib # 24	475	1360	5582		7417
Rib # 23	421				7363
Rib # 21	443	1301			7326
Rib # 20	464				7347
Rib # 18	475	2413	4416		7304
Rib # 17	421				7250
Rib # 15	464	2262			7142
Rib # 14	432				7110
Rib # 12	443	2213			7072
Rib # 11	443				7072
Rib # 9	475	1393	5106		6973
Rib # 8	421				6919
Rib # 6	691	1031			6828
Rib # 4	659				6795
Rib # 2 Stabi	1161				6592
Stabi	1047		5432		6479
C # Line					
Rib # 24	475	1360	5598		7433
Rib # 23	421				7380
Rib # 21	443	1301			7342
Rib # 20	464				7363
Rib # 18	475	2413	4437		7326
Rib # 17	421				7272
Rib # 15	464	2262			7164
Rib # 14	432				7131
Rib # 12	443	2213			7093
Rib # 11	443				7093
Rib # 9	475	1393	5128		6996
Rib # 8	421				6942
Rib # 6	691	1031			6850
Rib # 4	659				6818
Rib # 2 Stabi	1182				6614
Stabi	1117				6549
D # Line					
Rib # 24	475	1360	5706		7541
Rib # 23	421				7487
Rib # 21	443	1301			7450
Rib # 20	464				7471
Rib # 18	475	2413	4529		7417
Rib # 17	421				7363
Rib # 15	464	2262			7255
Rib # 14	432				7223
Rib # 12	443	2213			7185
Rib # 11	443				7185
Rib # 9	475	1393	5193		7061
Rib # 8	421				7007
Rib # 6	691	1031			6915
Rib # 4	659				6883
Rib # 2 Stabi	1248				6680
Brake # Line					
Rib # 24	1771	2375	2591	1307	8044
Rib # 22	1582			.+300	7855
Rib # 20	1474	2375			7747
Rib # 18	1339				7612
Rib # 16	1252	2375	2591		7526
Rib # 14	1112				7386
Rib # 12	1009	2375			7283
Rib # 10	988				7261
Rib # 8	853	2375	2591		7126
Rib # 6	804				7078
Rib # 4	713	2375			6986
Rib # 2	648				6921

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Thriller 23 2K12	Line plan				rev2k
A # Line					
Rib # 24	491	1407	5839		7737
Rib # 23	436				7682
Rib # 21	458	1346			7643
Rib # 20	480				7665
Rib # 18	491	2496	4634		7621
Rib # 17	436				7566
Rib # 15	480	2339			7454
Rib # 14	447				7420
Rib # 12	458	2289			7381
Rib # 11	458				7381
Rib # 9	491	1441	5327		7258
Rib # 8	436				7203
Rib # 6	715	1066			7108
Rib # 4	681				7074
Rib # 2 Stabi	1234				6852
Stabi	1072				6690
B # Line					
Rib # 24	491	1407	5773		7672
Rib # 23	436				7616
Rib # 21	458	1346			7577
Rib # 20	480				7599
Rib # 18	491	2496	4567		7554
Rib # 17	436				7499
Rib # 15	480	2339			7387
Rib # 14	447				7353
Rib # 12	458	2289			7314
Rib # 11	458				7314
Rib # 9	491	1441	5281		7213
Rib # 8	436				7157
Rib # 6	715	1066			7062
Rib # 4	681				7028
Rib # 2 Stabi	1200				6819
Stabi	1083		5618		6701
C # Line					
Rib # 24	491	1407	5790		7688
Rib # 23	436				7633
Rib # 21	458	1346			7593
Rib # 20	480				7616
Rib # 18	491	2496	4590		7577
Rib # 17	436				7521
Rib # 15	480	2339			7409
Rib # 14	447				7376
Rib # 12	458	2289			7337
Rib # 11	458				7337
Rib # 9	491	1441	5304		7236
Rib # 8	436				7180
Rib # 6	715	1066			7085
Rib # 4	681				7052
Rib # 2 Stabi	1223				6841
Stabi	1156				6774
D # Line					
Rib # 24	491	1407	5902		7800
Rib # 23	436				7744
Rib # 21	458	1346			7705
Rib # 20	480				7727
Rib # 18	491	2496	4685		7672
Rib # 17	436				7616
Rib # 15	480	2339			7504
Rib # 14	447				7471
Rib # 12	458	2289			7432
Rib # 11	458				7432
Rib # 9	491	1441	5371		7303
Rib # 8	436				7247
Rib # 6	715	1066			7152
Rib # 4	681				7119
Rib # 2 Stabi	1291				6909
Brake # Line					
Rib # 24	1831	2457	2680	1352	8320
Rib # 22	1636			.+300	8125
Rib # 20	1524	2457			8013
Rib # 18	1385				7873
Rib # 16	1295	2457	2680		7784
Rib # 14	1150				7639
Rib # 12	1044	2457			7533
Rib # 10	1022				7510
Rib # 8	882	2457	2680		7371
Rib # 6	832				7321
Rib # 4	737	2457			7226
Rib # 2	670				7159

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Thriller 24.5 2K12	Line plan				rev2k
A # Line					
Rib # 24	507	1452	6026		7986
Rib # 23	449				7928
Rib # 21	473	1389			7888
Rib # 20	496				7911
Rib # 18	507	2576	4783		7866
Rib # 17	449				7808
Rib # 15	496	2415			7693
Rib # 14	461				7659
Rib # 12	473	2363			7618
Rib # 11	473				7618
Rib # 9	507	1487	5498		7491
Rib # 8	449				7434
Rib # 6	738	1101			7336
Rib # 4	703				7301
Rib # 2 Stabi	1274				7072
Stabi	1106				6905
B # Line					
Rib # 24	507	1452	5959		7918
Rib # 23	449				7860
Rib # 21	473	1389			7820
Rib # 20	496				7843
Rib # 18	507	2576	4714		7797
Rib # 17	449				7739
Rib # 15	496	2415			7624
Rib # 14	461				7589
Rib # 12	473	2363			7549
Rib # 11	473				7549
Rib # 9	507	1487	5450		7444
Rib # 8	449				7386
Rib # 6	738	1101			7289
Rib # 4	703				7254
Rib # 2 Stabi	1239				7037
Stabi	1118		5798		6916
C # Line					
Rib # 24	507	1452	5976		7935
Rib # 23	449				7878
Rib # 21	473	1389			7837
Rib # 20	496				7860
Rib # 18	507	2576	4737		7820
Rib # 17	449				7762
Rib # 15	496	2415			7647
Rib # 14	461				7612
Rib # 12	473	2363			7572
Rib # 11	473				7572
Rib # 9	507	1487	5475		7468
Rib # 8	449				7411
Rib # 6	738	1101			7313
Rib # 4	703				7278
Rib # 2 Stabi	1262				7060
Stabi	1193				6991
D # Line					
Rib # 24	507	1452	6091		8050
Rib # 23	449				7993
Rib # 21	473	1389			7952
Rib # 20	496				7976
Rib # 18	507	2576	4835		7918
Rib # 17	449				7860
Rib # 15	496	2415			7745
Rib # 14	461				7710
Rib # 12	473	2363			7670
Rib # 11	473				7670
Rib # 9	507	1487	5544		7538
Rib # 8	449				7480
Rib # 6	738	1101			7382
Rib # 4	703				7347
Rib # 2 Stabi	1333				7131
Brake # Line					
Rib # 24	1890	2536	2766	1395	8587
Rib # 22	1688			.+300	8385
Rib # 20	1573	2536			8270
Rib # 18	1429				8126
Rib # 16	1337	2536	2766		8034
Rib # 14	1187				7884
Rib # 12	1078	2536			7775
Rib # 10	1055				7752
Rib # 8	910	2536	2766		7607
Rib # 6	859				7556
Rib # 4	761	2536			7458
Rib # 2	692				7388

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TwinForce 2K12	Line plan				rev2k
A # Line					
Rib # 24	571	1636	6790		8997
Rib # 23	506				8932
Rib # 21	532	1565			8887
Rib # 20	558				8913
Rib # 18	571	2902	5389		8862
Rib # 17	506				8797
Rib # 15	558	2720			8668
Rib # 14	519				8629
Rib # 12	532	2662			8583
Rib # 11	532				8583
Rib # 9	571	1675	6194		8440
Rib # 8	506				8375
Rib # 6	831	1240			8265
Rib # 4	792				8226
Rib # 2 Stabi	1435				7968
Stabi	1247				7779
B # Line					
Rib # 24	571	1636	6713		8921
Rib # 23	506				8856
Rib # 21	532	1565			8810
Rib # 20	558				8836
Rib # 18	571	2902	5311		8785
Rib # 17	506				8720
Rib # 15	558	2720			8590
Rib # 14	519				8551
Rib # 12	532	2662			8505
Rib # 11	532				8505
Rib # 9	571	1675	6141		8387
Rib # 8	506				8322
Rib # 6	831	1240			8212
Rib # 4	792				8173
Rib # 2 Stabi	1396				7929
Stabi	1260		6533		7792
C # Line					
Rib # 24	571	1636	6733		8940
Rib # 23	506				8875
Rib # 21	532	1565			8830
Rib # 20	558				8856
Rib # 18	571	2902	5337		8810
Rib # 17	506				8746
Rib # 15	558	2720			8616
Rib # 14	519				8577
Rib # 12	532	2662			8531
Rib # 11	532				8531
Rib # 9	571	1675	6168		8414
Rib # 8	506				8349
Rib # 6	831	1240			8239
Rib # 4	792				8200
Rib # 2 Stabi	1422				7955
Stabi	1344				7877
D # Line					
Rib # 24	571	1636	6863		9070
Rib # 23	506				9005
Rib # 21	532	1565			8960
Rib # 20	558				8986
Rib # 18	571	2902	5447		8921
Rib # 17	506				8856
Rib # 15	558	2720			8726
Rib # 14	519				8687
Rib # 12	532	2662			8642
Rib # 11	532				8642
Rib # 9	571	1675	6246		8492
Rib # 8	506				8427
Rib # 6	831	1240			8317
Rib # 4	792				8278
Rib # 2 Stabi	1501				8034
Brake # Line					
Rib # 24	2130	2857	3116	1572	9675
Rib # 22	1902			.+300	9448
Rib # 20	1772	2857			9318
Rib # 18	1610				9155
Rib # 16	1506	2857	3116		9052
Rib # 14	1337				8883
Rib # 12	1214	2857			8759
Rib # 10	1188				8733
Rib # 8	1026	2857	3116		8571
Rib # 6	967				8513
Rib # 4	857	2857			8402
Rib # 2	779				8324

Thriller 2K12	all sizes		line config.	rev 1
A# Line				
Rib # 24	LTC-0080	LTC-0160	TSL 380	
Rib # 23	LTC-0080			
Rib # 21	LTC-0080	LTC-0160		
Rib # 20	LTC-0080			
Rib # 18	LTC-0080	LTC-0120	TSL 380	
Rib # 17	LTC-0080			
Rib # 15	LTC-0080	LTC-0120		
Rib # 14	LTC-0080			
Rib # 12	LTC-0080	LTC-0120		
Rib # 11	LTC-0065			
Rib # 9	LTC-0065	LTC-0080	TSL 220	
Rib # 8	LTC-0065			
Rib # 6	LTC-0065	LTC-0080		
Rib # 4	LTC-0065			
Rib # 2 Stabi	LTC-0065			
Stabi	LTC-0065			
B # Line				
Rib # 24	LTC-0080	LTC-0160	TSL 380	
Rib # 23	LTC-0080			
Rib # 21	LTC-0080	LTC-0160		
Rib # 20	LTC-0080			
Rib # 18	LTC-0080	LTC-0120	TSL 380	
Rib # 17	LTC-0080			
Rib # 15	LTC-0080	LTC-0120		
Rib # 14	LTC-0080			
Rib # 12	LTC-0080	LTC-0120		
Rib # 11	LTC-0080			
Rib # 9	LTC-0065	LTC-0080	TSL 220	
Rib # 8	LTC-0065			
Rib # 6	LTC-0065	LTC-0080		
Rib # 4	LTC-0065			
Rib # 2 Stabi	LTC-0065			
Stabi	LTC-0065		TSL 190	
C # Line				
Rib # 24	LTC-0065	LTC-0120	TSL 380	
Rib # 23	LTC-0065			
Rib # 21	LTC-0065	LTC-0120		
Rib # 20	LTC-0065			
Rib # 18	LTC-0065	LTC-0120	TSL 280	
Rib # 17	LTC-0065			
Rib # 15	LTC-0065	LTC-0120		
Rib # 14	LTC-0065			
Rib # 12	LTC-0065	LTC-0120		
Rib # 11	LTC-0065			
Rib # 9	LTC-0045	LTC-0080	TSL 220	
Rib # 8	LTC-0045			
Rib # 6	LTC-0045	LTC-0080		
Rib # 4	LTC-0045			
Rib # 2 Stabi	LTC-0045			
Stabi	LTC-0045			
D # Line				
Rib # 24	LTC-0065	LTC-0120	TSL 280	
Rib # 23	LTC-0065			
Rib # 21	LTC-0065	LTC-0120		
Rib # 20	LTC-0065			
Rib # 18	LTC-0065	LTC-0080	TSL 220	
Rib # 17	LTC-0065			
Rib # 15	LTC-0065	LTC-0080		
Rib # 14	LTC-0065			
Rib # 12	LTC-0065	LTC-0080		
Rib # 11	LTC-0065			
Rib # 9	LTC-0045	LTC-0080	TSL 190	
Rib # 8	LTC-0045			
Rib # 6	LTC-0045	LTC-0080		
Rib # 4	LTC-0045			
Rib # 2 Stabi	LTC-0045			
Brake # Line				
Rib # 27	LTC-0045	LTC-0080	LTC-0160	DSL 300
Rib # 25	LTC-0045			
Rib # 23	LTC-0045			
Rib # 21	LTC-0045	LTC-0080		
Rib # 19	LTC-0045			
Rib # 17	LTC-0045	LTC-0080	LTC-0160	
Rib # 15	LTC-0045			
Rib # 13	LTC-0045	LTC-0080		
Rib # 11	LTC-0045			
Rib # 9	LTC-0045	LTC-0080	LTC-0160	
Rib # 7	LTC-0045			
Rib # 5	LTC-0045	LTC-0080		

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Im Neuneck 1
78609 Tuningen
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Fax: +49 (0)7464/989128-28

Instruction leaflet for repairs and 2 annual Check

Name:	
Adress:	
Land:	Telephone Number:
E-Mail:	
Paraglider type and Color:	Serial number:
comments/notes:	

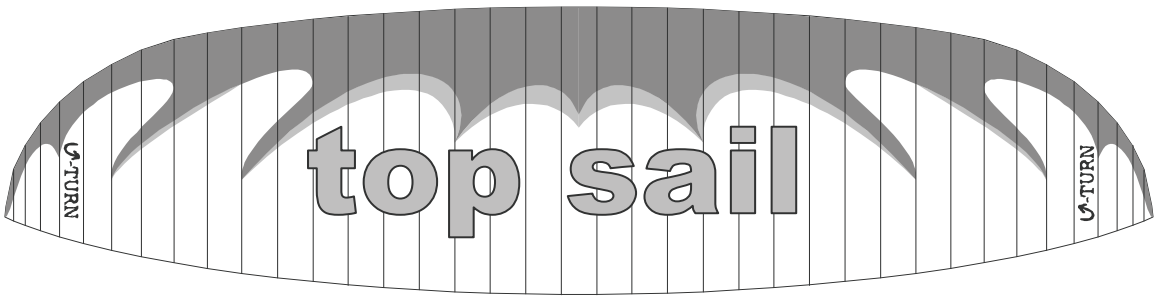
☐ 2 annual Check

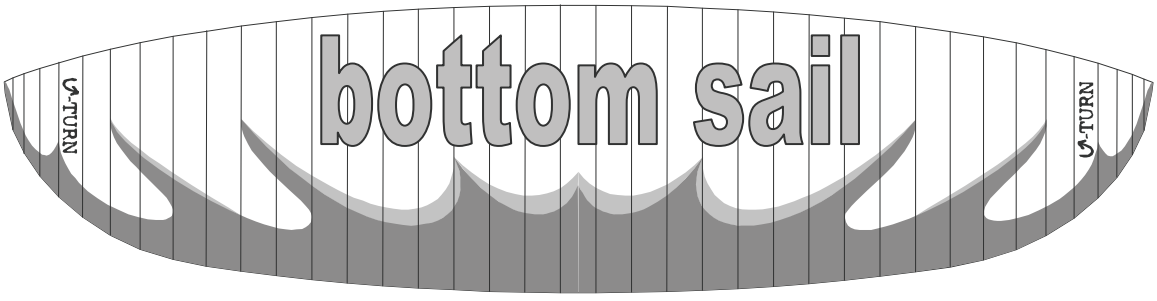
☐ Line Check incl. strength test

☐ Air permeability check

☐ Repair of the marked damage

☐ Recall with sighting of the paraglider





Please, pretend the repair-destitute place in the top sail and / or bottom sail.

Line order sheet

U-Turn GmbH
Im Neuneck 1
78609 Tuningen
Germany

Tel: +49 (0)7464/9891280
Fax: +49 (0)7464/989128-28

LINE ORDER SHEET / BESTELLFORMULAR FÜR LEINEN

Name	
Adress / Adresse	
E-mail	
Telephone Number / Telefon Nummer	
Paragliding name / Gleitschirm Name	
Size / Größe	
Other / Sonstiges	

Serial Number / Serien Nummer: _ _ _ _ _ _ _ _ - _ _ _ _ - _ _ _ _

Line ID / Bezeichnung	Quantity/ Stückzahl	Line ID / Bezeichnung	Quantity/ Stückzahl

Business Reply Card

U-Turn GmbH
Im Neuneck 1
D- 78609 Tuningen

Name :

First name:

Street:

Zip code/ City:

Telephone:

E-Mail:

Paraglider type:

Serial number:

Date of purchase:

DealershipP:

Tested by:

Flying hours:

Paraglider since:

Miscellaneous:

☐ Yes, I would like to get the newsletter by E-Mail

Maintenance manual

as developer and manufacturer for paragliders, harnesses and rescue parachutes

English Rev. 1.2

Text: Stefan Preuss
Text and Graphics: Ernst Strobl
All technical details in this manual have been carefully checked be U-Turn. However we like to mention that we don`t take any liability for possible mistakes, neither in legal responsibility, nor in liability cases that derive from mistakable details. We preserve the right to change this manual in any way to achieve technical improvements.

Topic of the inspection and reinspection intervals

Regular inspection according to aircraft inspection ordinance for standardized evaluated gliders. For school gliders afer 1 year, aircraft for recreational use after 2 years. Tandem gliders for commercial purposes annually, non commercial use every 2 years to be inspected. The inspection shall take place in the aforementioned intervals, or no later than 150 hours. Ground handling needs to be included in the sum of flight hours. Generally speaking: in the case any abnormal flight behavior, the manufacturer should be informed and the canopy, if necessary, sent in for inspection.

Who may inspect/test?

Besides the manufacturer or the by him approved person or instance is authorized the owner of the glider to warrant the bi-annual inspection and only if in compliance with pre-requisites set forth.

Individual personal prerequisites for the inspections

Personal prerequisites for the inspection of individually owned solo gliders for recreational use only:

- Holder of a valid unrestricted license for paragliders or equivalent accredited license
- An adequate orientation in the operation by the manufacturer. For this a 3 month formation with the manufacturer is necessary
- If a glider was tested for personal use exclusively, then its use by a third party is not allowed

Individual personal prerequisites for the inspection of gliders, RG,GZ, used by third parties or for tandem purpose:

- A for the testing prescribed professional training
- A vocational activity in the productin or maintenance of GS, RG, GZ or one of a technically similiar nature. Of which 6 month within the last 24 in a manufacturing operation recreational free flight aircraft
- An at least 2 week, subject to charge, relevant training course at the operation of the manufacturer
- An applicable orientation for each type of device, which is to be refreshed annually.

Necessary equipment and documentation

- Gauge, preferably Kretschmer (brand) with manual
- Bettsometer with manual
- Maintenance directions by manufacturer
- Original materials and -spare parts, as well as original material-record for the device
- Assertion of airworthiness for the device
- Airsports device identification tag (see manual)
- Line length table (see manual)
- Line lenght logs (if available)
- Inspection log (collecting main) to the documentation
- Lighttable for visual inspection of the reserve

During the inspection the following steps are to be taken in

Positive identification of the device:

Positive identification of the aircraft (Type, size, etc.) on the basis certification seal or placard.

- Are the pertinent manufacturer documents available?
- If certification seal and/ or placard are in place, are they readable and correct?
- If not so: Please obtain from manufacturer or dealer in question

The determined values / modification are to be noted in an inspection log!

Inspection of the reserve parachute

Before packing the reserve parachute this is to be checked by packer. If the parachute was deployed for a rescue, then it is subject to an inspection. If a folded reserve parachute is re-packed again a deployment check is to be staged, to be determined is if the force for deployment is between a minimum of 3kg and maximum of 6kg.

Testing of the topsail, undersail, seams, reserve parachute of

holes and tears

The topsail and undersail of both paragliders as well as reserve parachutes must, for each cell (paragliders) and each gore (parachutes), from the leading edge to the trailing edge, submitted to the following checks. If in one of the following attributes anomalies are discovered, the glider is to be sent in to the manufacturer for inspection.

- Check for holes smaller or larger tears, deformations and abraded areas
- Defeciencies in the coating, other aberrations in the canopy like e.g. old repairs
- With reserve parachutes a light-talbe is to be used for an inspection for holes, tears and deformations

Abrasison and deformaties

With large and critical abrasion and deformations, the entire cell panel in question must be replaced by the manufacturer. The determined values/modifications are to be noted in the testin log!

Testing of the ribs

Visual inspection of the chambers (from the leading to the trailing edge) whether the stitching in the seams, cell partition ribs and reinforcements are in good shape, thus without tears, deformations, abrasions or damage of the coating.
With torn ribs, defective, loose or missing stitching in the seams the glider must be returned the to the manufacturer or authorized inspection operation. The determined values/modifications are to be noted in the inpection log!

Check of the tear resistance

To be conducted with the Bettsometer at the following points (B.M.A.A. approved patent number GB2270768 Clive of bed Sails)
The test sequence is to be inferred from the operating instruction the Bettosometer.

- In both the top and undersail where the A-lines connect, push a needle-thick hole and check the tear resistance
- The limit value of the measurement is determined at 500g, and a tear width of fewer than 5mm.

The determined values / modifications are to be noted in the inspection log!

Porositycheck of the canopy

At all following measuring points the air porosity has to be more than at least 20 sec. (by Kretschmer). At smaller air permeability values the paraglider must be returned to the manufacturer.
Measuring points: The porosity measurements by the Kretschmer measuring method (please consider operating instruction) are to be conducted at the following points on the canopy check on both under and upper sail.

- Center cell approx. 20-30cm back from leading edge
- 3rd Cell off center both to the left/right approx. 20-30cm back from leading edge
- 10th Cell off center both to the left/right approx. 20-30 cam back from leading edge

The determined values / modifications are to be noted in the inspection log!

Connection parts

Check of the webbing and maillons

- are there abrasions, buckling, tears, strong signs of wear obvious?
- Is all the stitching fast and firm?
- Is the accelerator running free and intact?
- Are brake toggle attachments still firmly sewn on?
- Are the maillons corrosion free, are the sleeves of the gates free moving on the thread?

Measure under a load of 5 kg. The determined values are to be compared with the specifications from the EAPR-Technical data sheet. Allowable variations are to be inferred from the manufacturer directions. If the webbing or parts thereof are defective, spare parts are to be ordered from the manufacturer and replace the defective parts with original parts. The determined values/modification are to be note in the inspection log!

Lines

Test of the line tensile strength:
Line selection: select a middle, lower cascade of the A, B and a C- lines as well as if available a middle A and B upper cascade, and stress test for tensile strength testing device on their tensile strength.
Tension velocity of the tension cylinder: v=30cm/min

Tear/tensile strength values:
the determined values/modifications are to be noted in the inspection!

Attention: Each size (line diameter) is to be assigned a fixed value.
In case the lines cannot withstand the indicated load/stress or pass tensile strength test, all other lines must also be changed. If the checked lines fulfill the test criteria, only those are replaced by new lines. All replaced lines are to be marked in the proximity of the maillon (seam) with a black felt marker pen and noted in the inspection log with the date of the exchange and the logged of hours of flight time of the glider. During the next test for tensile strength an original line, neighbouring the replaced line is to be sampled. The various line diameters are allocated a minimal Sewing lenght!

Check of the line length and line attachments

Bottom cascade, upper cascades and brake lines for, breaks, abrasions, visual check. First the A-lines, then B. etc.

- Are all lines adequately sewn and attached to the line attachments?
- Is the sheathing of the lines even are exactly?
- Are all loops, knots, seams in good shape?
- Are there any abrasions present?

Measuring the line lengths:

- The lines must be measured with a load of 5 kg, in order to obtain comparable results. The relevant line lengths are in the technical data sheet of the uster manual.
- The measurement takes place in accordance with DHV method, from the maillon to the canopy (inclusive attachment loop at the sail).
- The numbering takes place from the stabilo toward the center. Measuring the opposite facing of the wing can under same conditions also be conducted by a symmetry comparision.
- The results are again noted the inspection log and should be compared side by side to line lenghts of the EAPR technical data sheet. The tolerance in deviation of these values should not exceed more than + /- 1,5cm
- • If a line is defective, it is to be exchanged immediately. Please acquire the identification reference marking of the line from the line plan, order from the manufacturer and replace accordingly or have it replaced.

The determined values / modifications are to be noted in the inspection log!

Occassional check of trim and adjustment

Before a test flight a visual inspection of the canopy and lines is to be conducted with the glider laid out as well as pulled up inflated.
In particular attention should be paid to the length of the brake lines with the canopy inflated. Only if all doubts are cleared concerning faulty adjustment of the brake lines, a check flight may be conducted.

Description of the materials and technical data

See manual of your paraglider.

miscellaneous

- All measurement and repair work at paraglider and rescue system must be documented completely in the inspection log.
- When packing or repacking the reserve parachute, special attention is to be paid to the particular packing directions of the manufacturer! See rescue / reserve equipment manual.
- With the exchange of parts or component modules only original materials or original replacement parts may be used!
- With sewing work the original sewing pattern is to be kept, patching and thread material of same strength and quality as original!
- The inspection survey and/or test log must with be signed, complete with place and date!
- The period for recordkeeping is 4 years.

Completed check very important

Before you perform any checks and/or repairs yourself on your glider, we ask to read you the following pages carefully. You inform yourself hereby about prerequisites and conditions of a done in person bi-annual inspection.

- According to new DHV regulation, the customer (Glider-owner) can conduct the 2-yearly check of the canopy with the help of the inspection directions and all necessary testing equipment and documents in person on his own responsibility. In addition the wing does not have to be sent in to the manufacturer.
- The 2-yearly check may only be conducted by the glider owner personally, if he fulfills the prerequisites, or an inspection station authorized by the manufacturer. Inquire therefore with the manufacturer on authorized inspection stations.
- The owner of the canopy must be aware of the responsibility, which he takes with a self conducted 2-yearly check of the glider. The self performed 2-yearly check is only legally effective, if this is acknowledged after the check with date, name (in capitals) and signature on or beside the placard.
- Reserve equipment re-packing interval in accordance with DHV: Every 4 months a repacking is required. Allowed period of operation: 8 years, afterwards up to 12 years with an annual check
- About insurance-legal consequences of your self performed 2-yearly inspection you should inform with your insurer in a timely fashion.
- An inspection is valid only if the inspection log is completely filled out. Inform also about possible revisions of the inspection directions with the manufacturer before the inspection.
- Important: If the necessary efforts for the maintenance inspection cannot be carried out (required equipment and documents), should the canopy be sent in to the manufacturer.
- For paragliders, harnesses and reserve parachutes, which are checked, controlled, repaired, packed or repacked, test-flown and/or other maintenance work, by none U-turn authorized personnel forgo any guarantee and or warranty!
- All maintenance work must in be accordance with the maintenance specifications of the operation manual and the special maintenance directions of the manufacturer and the publications of the IHB to be conducted.
- With any abnormal appearances during the performance of maintenance is the technical manager to be informed, who has to decide on how to procede.
- With the replacement of parts or component modules only original materials or original party may be used!