Owners Manual and Service booklet

UP K2 Tandem

Version 1.0
Valid from 2008
Stand: March 2008

Table of contents

Important

The following symbols are used to draw attention to particular sections:

WARNING!

Failing to comply with instructions given here may lead to injury or death!

BEWARE!

Failing to comply with instructions given here may cause undue wear to, or even damage, your new wing.

NOTICE

This pictogram indicates a tip or some helpful extra knowledge.

Welcome in our team

Congratulations on the purchase of your new UP K2. UP International is renowned across the globe for designing and building the finest paragliders available – paragliders characterised by maximum safety, performance and quality in every aspect.

Please take a little time to complete and send the reply card found in the back of this manual. This way we can keep you informed of all new products and developments at UP, as well as any technical information about the UP K2.

We would also be delighted to hear any feedback you have concerning the glider. This is only possible once we have received your product registration, either through completing and sending the attached product registration card, or by doing the same Online via www.up-paragliders.com>service>product registration. Your completed product registration is also needed should any warranty issues arise.

If you have any questions regarding your paraglider or auxiliary equipment please ask your local dealer or feel free to contact us here at UP directly.

Have fun with your new UP K2!

Your UP International Team

Safety instructions

BEWARE! Paragliding is an extremely demanding sport requiring the highest levels of attention, judgment, maturity, and self-discipline. Due to the inherent risks in flying this or any paraglider, no warranty of any kind can be made against accidents, injury, equipment failure, and/or death. This glider is not covered by product liability insurance. Do not fly it unless you are personally willing to assume all risks inherent in the sport of paragliding and all responsibility for any property damage, injury, or death, which may result from use of this paraglider.

Please read this owner's manual thoroughly before your first flight with the UP K2 so that you are fully acquainted with your new glider. This manual gives you information on the entire specific and general flying characteristics of the UP K2, but it does not replace attending a paragliding school. It is important to note the following points:

- At the time of delivery, this paraglider conforms the testing criteria of the "Luftfahrt-Bundesamts LTF 35/03 (LTF - Luftfahrt-Tauglichkeits-Forderungen, or "Flying craft Airworthiness Standard"") and/or the testing criteria for the EN 926-2. Read more about the testing regime in the technical data.
- This paraglider has been tested according to the German Air Sport rules. It is identical to the tested reference sample stored at the testing facility.
- Any changes being made outside the permitted range of adjustment invalidate any and all claims under the warranty
- Using this paraglider is exclusively at the risk of the user; the manufacturer or distributor assumes no responsibility for accidents occurring while using it.
- It is assumed that the pilot is in possession of the necessary qualifications and provisions of any relevant laws are observed
- When reselling the wing please make sure you also give this manual to the new owner. The manual is an integrated part of the paraglider and is required for the wing to keep its certification.

Development of paragliders

Admitted; we're proud of our heritage. No other company in the free flying world can look back on such an expansive history as we can. The UP story started back in 1970 when Pete Brock graduated from the Art Center, a world famous school for design and engineering in Pasadena, California, and promptly created some of the most legendary race cars ever – the Daytona Coupe from General Motors was one – and then went on to become fascinated by the emerging sport of hanggliding – at that time probably the maddest pastime of them all. After founding Ultralite Products he introduces his first wing, the Dragonfly, and soon the new company becomes known under the UP acronym.

Pete Brocks spirit survives to this day in everything we do at UP International – we still have our very own way of seeing things and designing things.

This entails building paragliders that are not only as safe as they come, they must also meet the very high standards we set ourselves. Among these are the continued use of the most advanced technology available both in the designing and manufacturing process, but also the feel, the handling and the performance of the finished product. All this because we're addicted to building wings that will fascinate you. A good paraglider is comprised of a number of interacting factors of which looks, feel, handling and performance are but a few. Only when all these come together in the final product can we claim to have built a wing that is homogenous and pleasurable to fly; and only then we're happy, and ready to introduce our new UP baby to the free flying world.

Our gliders are developed using state-of-the-art CAD software. Our programs allow us to do the initial flight testing in a virtual environment where we can simulate a great many things before even assembling the first prototypes.

Once we're happy with the new prototypes' behaviour in the virtual environment the program generates the templates after which the glider is sewn. When a new prototype arrives from our proto-building experts everyone at UP is excited about the prospects of trying it out in real life. The practical tests may show that further modifications are needed – these may be carried out on the existing wing, or a new prototype is built with the mods already incorporated. In exceptional cases this may continue through several prototypes, for only when we're 100% satisfied do we submit our new wing to testing by the DHV. We owe it to our customers, and to our own heritage, to be particular about which products earn the UP badge.

Technical description

The UP K2 was developed by UP to satisfy the demand from tandem pilots for a fast and secure tandem paraglider with outstanding take-off attributes and easy handling.

As with all UP products, the materials used have been carefully chosen for their outstanding quality and strength, to guarantee a long and trouble-free service life.

Further construction details, including line lengths, are included in the certification specification sheets, which form part of this manual. Any technical changes will appear in the appendix.

Certification class

The final LTF note of 1-2 was awarded based on the poorest grade attained in any of the tests.

Target group and recommended flying experience

Thermal and XC pilots flying regularly and possessing advanced flying skills. We think a minimum of 20-30 hours of airtime/year is a sensible limit to set.

Necessary skills for normal flights

Due to the somewhat shorter brake line travel, the reduced roll dampening and the dynamic handling, the flying and handling behaviour of paragliders in this class requires advanced,

precise skills along with the ability to fly instinctively and intuitively.

Necessary skills for dealing with disturbances

The glider behaviour in connection with disturbances requires somewhat higher skills than what is the case on LTF 1 wings. The pilot must possess a certain amount of automated reactions and be able to react quickly to incidents. We recommend making sure that you have the skills to sense disturbances before they happen, and to deal with them correctly once they do. Of particular importance here are adequate skills for dealing with asymmetrical or frontal collapses. Should you not feel fully up to the task we recommend visiting a safety clinic with your new wing.

Necessary skills for dealing with rapid descent methods

Flight manoeuvres like spiral dives and B-line stalls pose higher demands on the pilot than on lower rated wings. Good practical familiarity with these manoeuvres is a must. Should you not possess these skills we recommend visiting a safety clinic with your new wing.

Suitability for training

The UP K2 is suited for training.

Recommended weight range

The UP K2 should be flown within the stipulated takeoff weight limits, found in the “Technical data” section of this manual. The weights mentioned are total launch values, including glider, pilot, passenger, harness, all clothing etc. The easiest way to find your own total launch weight is to jump onto your scales with the complete backpack containing all your kit on your back, then weighing the passenger and adding the two numbers.

As with all paragliders, when flown heavy the UP K2 will be somewhat faster and more dynamic.

The UP K2 responds to load changes by flying either marginally faster or slower, depending on whether you in- or decrease the load. The glide ratio in still air is not affected, and the minimum sink rate only insignificantly so.

Technical Data UP K2

Size	**41**
Wing area real [m²]	41,8
Wing area projected [m²]	35,3
Wing span real [m]	14,9
Wing span projected [m]	11,4
Aspect ratio real	5,3
Aspect ratio projected	3,7
Number of Supported Ribs	36
Number of Cells Top Sail	45
Total line length [m]	490
Total # of lines	250
Line diameters [mm]	1,1 / 1,5 / 1,9 / 2,1
Weight [kg]	8,6 kg
Trimmspeed [km/h]*	39
Maximum Speed > [km/h]*	46
LTF Classification	1 - 2
LTF take off weight	135 - 220
Description	Tandem

As of Februar 13th 2008

* Note that the speeds (trim/max) quoted above are valid for a takeoff weight of about 185daN

Construction

Just hook in your passenger and prepare to enjoy the exquisite UP handling while your K2 takes you to even the most far-flung goals. Whether on short commercial flights or long personal XC adventures, this wing simply excels, thanks to the refined design and the many innovative solutions – the best companion for you and your passenger.

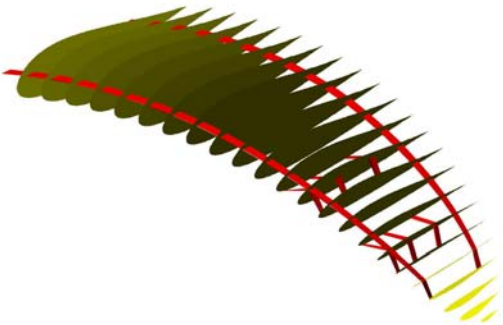


Illustration 1: CAD-Model of the UP K2

One of the most critical aspects of tandem design is getting the launch behaviour right. Consequently, whilst working on this wing we paid special attention to all launch-related design parameters; the inflation, the rising phase – all was refined, then refined again during the 1½ years the K2 was under development. In our work we continually relied on the feedback we got from our in-house tandem professionals Peter Neuenschwander and Olli Rössel – both fly tandems for a living and know exactly what they want from a tandem wing. Peter is also our extreme test pilot, insofar as he has several podium finishes in world class acro events on his flying CV. Listening to these two allowed us to build a new tandem glider that will satisfy even the most discerning tandem pro, Peter says: „The launching of this wing isn't available better from anyone else at the moment. Very light A-riser pressure, very direction stable, a surprisingly low lift-off speed combine to make each and every launch a total breeze". And since our own tandem designer Stephan Stieglair likes to take his prototypes on LOOONG XC forays through the central Alps we are also pretty sure that the XC capabilities will satisfy.

Even less-than-perfect launches will usually go well with the K2 – a light pull on the A's and the canopy rises to its overhead position. From then on it will feel as if the wing wants to go up on its own. This combination of very simple inflation and very low takeoff speed also makes it easy to evaluate early on if a launch is going according to plan or not – no more "I hope" launches, just safe, secure takeoffs every time.

A new profile

In order to further accentuate certain desirable design characteristics, UP designer Stephan Stieglair built a whole new profile for the K2. The new profile made it possible to attain the positive characteristics mentioned above; very simple inflation, low lift-off speed. In spite of this, the K2 is no lame mule once in the air, with a trim speed of +39km/h and the option to significantly increase this using the trimmers.

Another thing that received special, and ample, attention during the design phase was the optimisation of the canopy tension. Due to this work the K2 is practically wrinkle-free and very

solid when flying. Turbulence is swallowed up by the canopy, which in our view has the perfect balance of roll dampening and dynamic handling.

And the landing? This was another field where our tandem professionals were enthusiastic; "The K2 flares beautifully and converts speed into altitude very efficiently. This makes it possible to bleed off all excess speed even in zero wind conditions."

Airfoil Stabilizing System

We originally designed the ASS system for our competition gliders where it is used to stabilise and support the leading edge especially at high speeds. On the K2 we use the ASS leading edge reinforcement in conjunction with more traditional nose Mylars. The ASS is basically a thin nylon batten sewn into the leading edge, following the curvature of the important nose region. These nylon battens are strong and sturdy and preserve their shape far longer than any nose Mylar reinforcement ever will. This means that the K2 will retain its perfect launching characteristics far longer than conventional designs – an important factor with commercial tandems that are often packed very fast and not necessarily in the best way to preserve the nose Mylars.

Should a nose batten against all odds break it is easy to exchange. And in case anyone is wondering; the collapse behaviour is in no way negatively influenced by the nose battens, something that the DHV test reports will confirm.

Canopy material

The UP K2 is constructed from polyamide cloth, which is particularly stretch-resistant and durable, and is specially treated for maximum UV resistance.

After an extensive series of tests and years of practical experience we have found that the best material is a high tenacity polyamide “New Sky-Tex”, from Porcher Sport (France), with the Designation 9092 E85A (top surface, cloth weight 45 g/m²), 9017 E38A (bottom surface, cloth weight 40 g/m²), and 9017 E29A (not supported ribs, cloth weight 40 g/m²).

This material consistently exhibits excellent air permeability and has a remarkably good colourfastness with the latest PU coating.

Line material

The UP K2 uses sheathed Dyneema lines from Cousin Trestec with the following diameters: 1.1, 1.5, 1.9 and 2.1 millimetre.

These lines are constructed using a special pre-stretched Dyneema and have a significantly higher breaking strength compared to the customary Aramid-core lines. Furthermore they are far less susceptible to weakening through kinks than any of the Aramid lines we have tested. And finally this new line shows much less tendency towards stretching than any other Dyneema lines. This is of great importance in order to avoid adversely influencing the flight characteristics through uneven stretching across the span of your new wing.

Line system

The entire line system is formed from individual lines, which are sewn and looped at both ends. The single line levels are connected over a special hoop technology ("handshake") to prevent a weakening of the core and a loss of strength. The lines and stitching are subject to rigorous production controls, to ensure high and consistent manufacturing quality.

The lines of each wing section consist of four groups and the brake lines:

A-Lines: A1-A3
B-Lines: B1-B3
C-Lines: C1-C3 / S1
D/E-Lines: D1-D2
Brake Lines: BRK

The brake lines are collected at one main control line per side. This control line runs through a pulley attached to the D-Riser and is marked with a black dot at the point where it should loop around the D-ring. The brake is pre-set so that the glider is at 0 degree brake when the toggle is free. Please don’t change the main brake lines without checking the new length carefully at a suitable training hill before flying!

The line bundles (A, B, C and D) are colour coded for easy identification and handling. All main lines of each level are looped together and attached to delta quick links, which are connected to the risers. The quick links have special line collectors to prevent lines slipping, and are secured using a strong thread-locking compound (Loctite©), to prevent unintentional opening. After maintenance work the delta quick links should be re-glued with thread locking Loctite©!

Risers

The lines are grouped into four risers and one control line on each side. The riser ends are colour coded for easy identification at take off as well as in flight for B Stall.

In order to facilitate the use of Big Ears we have equipped the A-risers on the UP K2 with a set of small risers that are used to pull in the outer A-lines (see Illustration 2).

We have completely re-engineered the whole riser system and added a set of trimmers on the rear risers. Through the opening of the trimmers the angle of attack can be reduced, allowing better penetration in a headwind, better launching and climbing when towing, higher sinking when flying with Big Ears and higher speed when flying with a light passenger.

The most important changes in the riser department are:

- Separate A3 riser for easy application of big ears
- Triple purchase trimmers for very light and comfortable speed adjustments
- Optimised layout for improved glide at all speeds

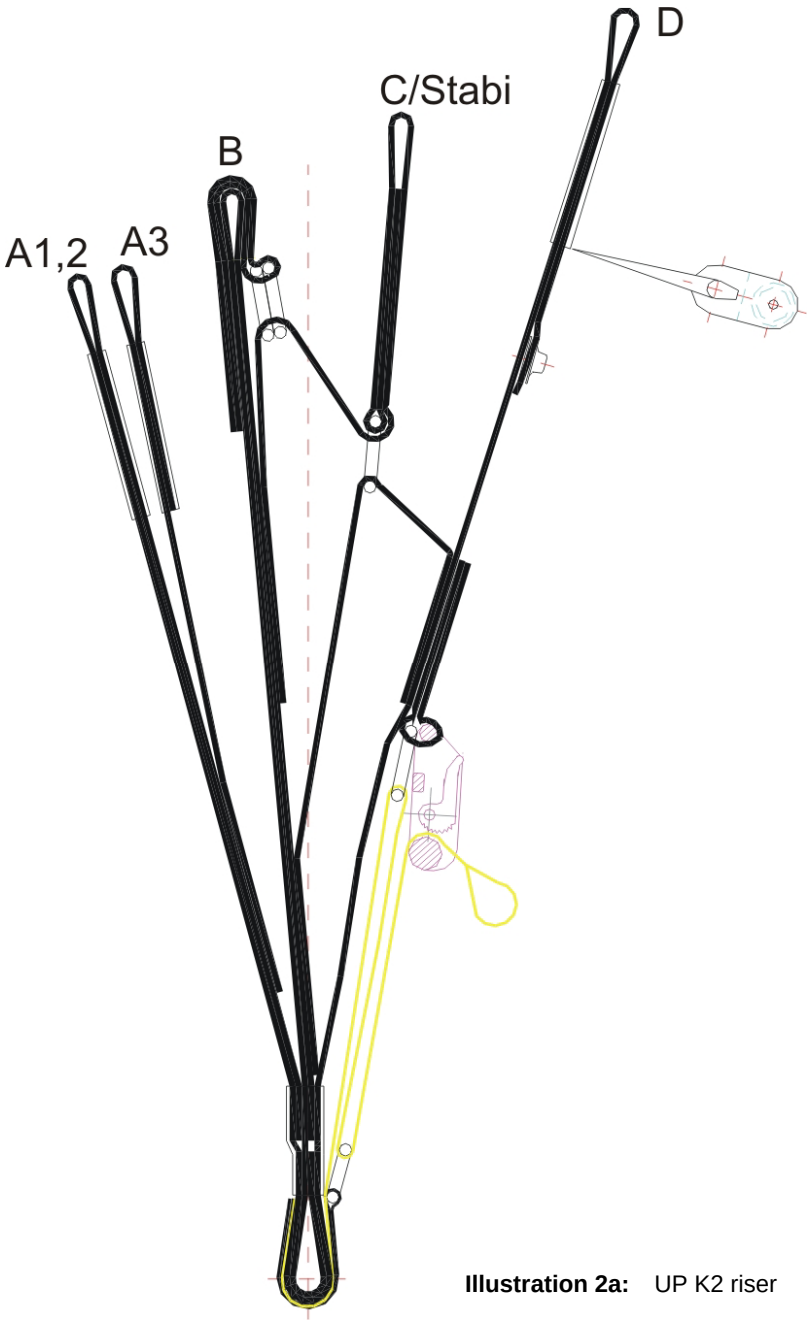


Illustration 2a: UP K2 riser

The T-bar suspension system

This A-shaped suspension system allows pilot and passenger to be suspended with a little distance between them. An approximately 32 cm long aluminium rod sewn into the webbing ensures a comfortable and tire-free position for both, even for longer flights.

In order to fulfil as many different demands to the overall operation of the tandem we also redesigned the spreader bars. Thanks to a Velcro closure the actual aluminium rods may be extracted so that the pilot has a multitude of different options when hooking in.

When the aluminium rod is removed the pilot and passenger hang closer together. This gives the pilot more control during launch, flight and landing.

An example of a scenario where removing the aluminium rods would make sense is when flying with passengers of a very different weight class than the pilot – children for example. In this case, simply changing the upper hang point is insufficient to avoid the passenger being lifted up where she may obstruct the pilots' visibility – something that is completely avoided when the aluminium rods are removed.

By correctly combining all the different suspension points it is possible to adapt the system to all pilot-/passenger configurations. A thorough description of the use of the system can be found in the chapter “Hooking into the tandem suspension system”.

A Velcro guide along the tandem suspension webbing prevents the twisting of the reserve bridle. This bridle must always be connected to the main carbines in the central suspension point.

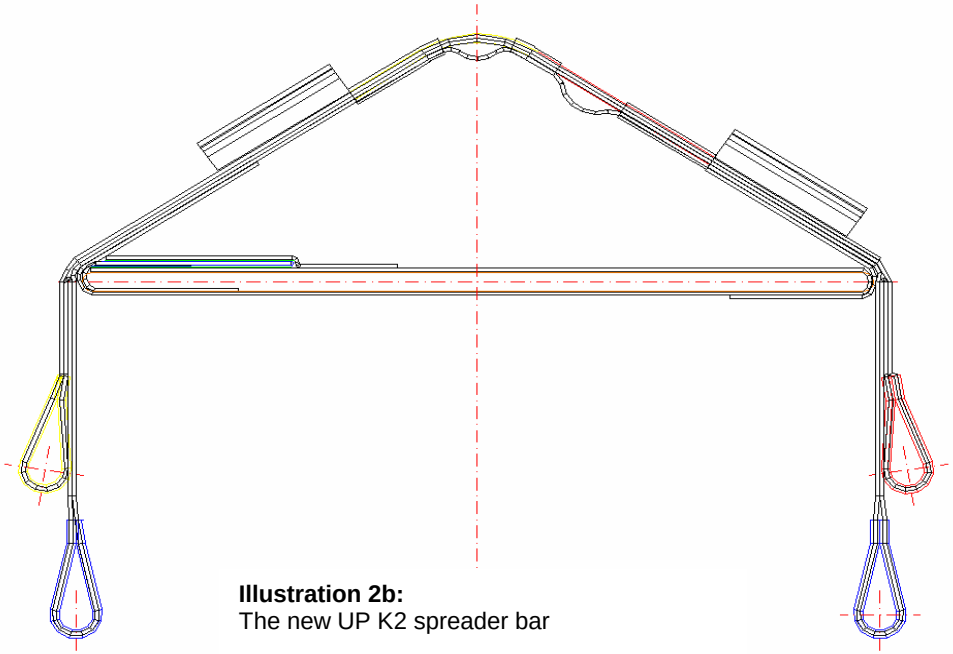


Illustration 2b:
The new UP K2 spreader bar

UP Backpack

The UP K2 is delivered with a special paraglider backpack, which fulfils the demands of very high luggage volume and ergonomically optimised comfort.

We have built in an anatomical carrying system that allows an optimised load distribution for maximum comfort. The S shaped shoulder straps allow full adjustment and the detachable chest strap prevents the shoulder straps from slipping off the shoulders.

The load control straps attached to the shoulder straps can be set either loose, to aid ventilation, or tight, for extra stability. They should rise from your collarbone at about a 45° angle.

A hip belt is also incorporated to assist overall comfort. If the hip belt is tightened then the shoulder straps can be released slightly to transfer the load away from the shoulders. The hip belt is fitted with stabilisation straps, which can be tightened to help stability, or loosened for extra freedom of movement. The hip belt is removable for when packing size is critical, or the pack is being transported by air.

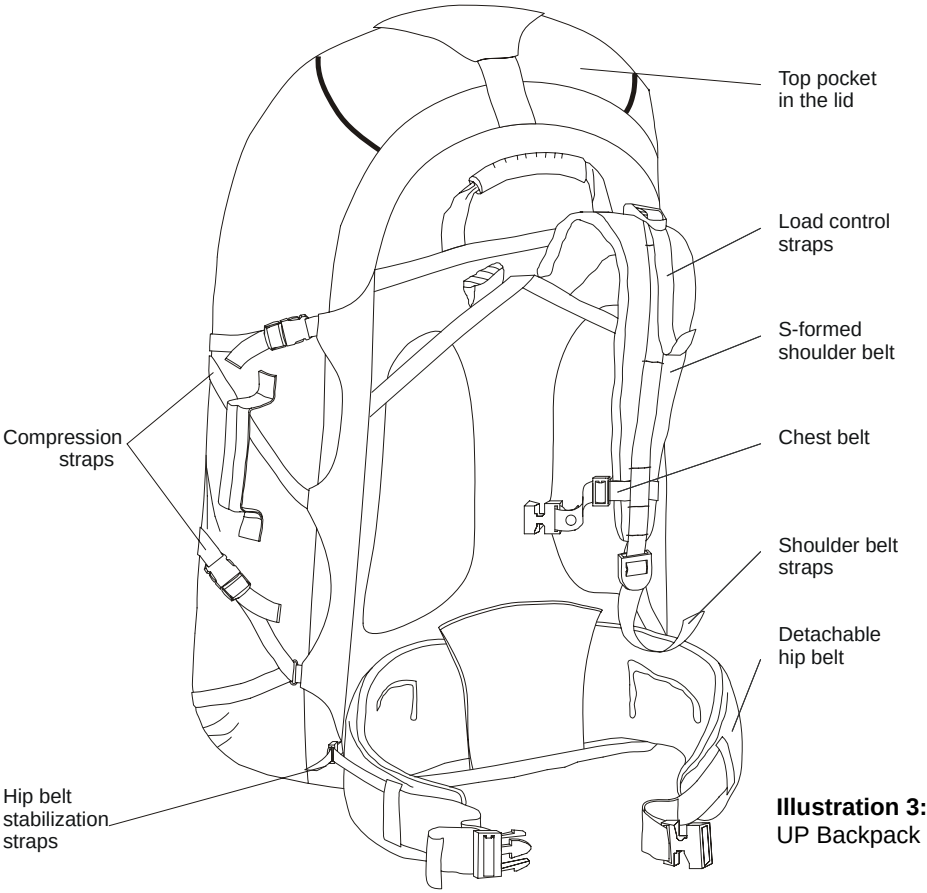


Illustration 3: UP Backpack

It is important, especially when there is a long trek involved, that the backpack is adjusted for maximum comfort. The following advice should be considered when packing.

Adjustment of the backpack

When fully loaded, all compression straps should be tightened to secure the load in the pack. All carrying straps should be set fully loose and the pack then put on your back. The hip belt should be fastened and tightened to rest approximately in the middle of the hip. Any slack should be taken out of the shoulder straps, and the chest strap should be done up. The load control straps at the shoulders and hips can now be tightened to achieve the desired stability.

Packing tips

Packing the UP paraglider rucksack correctly will make it a pleasure to carry. A couple of easy tips can help you get it right. Failing to follow these tips will adversely affect you carrying comfort.

The centre of gravity of the load should be as close to the vertical centre axis of the carrier, while also being situated as high on the back as possible. This allows for a vertical posture and minimises the leverage of the load against the natural posture of the carrier. It also helps by reducing the oscillations of the load while walking.

The drawing shows the ideal load distribution in the UP rucksack. Loaded like this the carrying comfort will be optimal. Start by placing the heaviest items close to the shoulder blades, with lighter items over and under this region. The lightest items should be placed the furthest from your back.

Do not fasten any objects to the exterior of the rucksack, as these are unprotected against theft and can also get caught on protruding points when entering or exiting lifts, cars or buses.

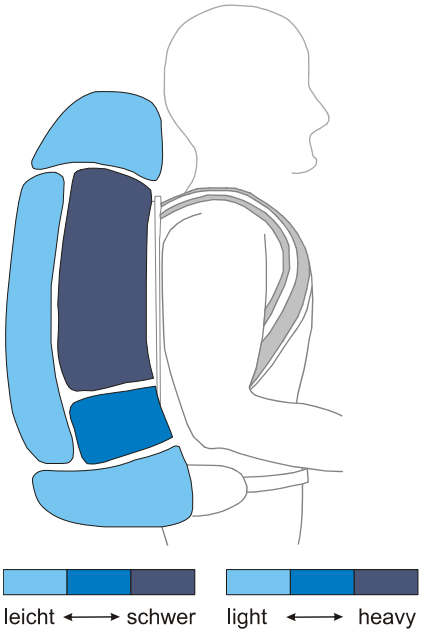


Illustration 4: Ideal load distribution in the UP rucksack

Before the first flight

The UP K2 is delivered with a speed system, rucksack, compression bag and –strap, repair materials and this manual. The manual may also be downloaded from the UP website. Every K2 delivered has been minutely checked at the factory, and corresponds exactly to the certified wing.

BEWARE! Before the first flight the UP K2 must be inflated in the wind on a flat surface. An approved UP dealer should carry out the first flight before the wing is handed over to the end customer.

Adjustments

The UP K2 has undergone an extensive development program and series of flight tests to ensure that the production model exhibits the optimum characteristics with regard to safety, handling and flight performance.

As with all products from UP International, the UP K2 is manufactured to the highest quality and precision. The line lengths of each glider are individually checked and recorded before dispatch.

Under no circumstances should the lengths of the lines or risers of the UP K2 be altered in any way.

WARNING! Any changes to line lengths or riser configuration will invalidate certification!
The only change allowed is to the length of the lower brake line. This should only be done by an experienced person.

Position of the brakes

The UP K2 is delivered from the factory with what we feel is the best brake position for most pilots. But tall or short pilots, or those with a harness with non-standard attachment points might feel it necessary to change the position of the brake handles.

If the brakes are to be shortened, it is extremely important to avoid the adjustment affecting the glider's trim speed. There must always be some slack in the brakes when they are fully released. This can be checked with the glider inflated above the pilot's head. There should be a noticeable bow in the brake lines, and the brakes should be having no effect on the shape of the trailing edge.

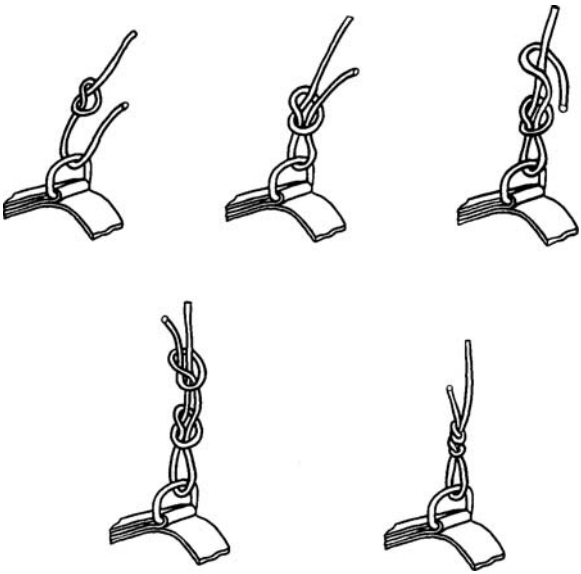
If the brake lines are to be lengthened, it is important to ensure that the pilot can still stall the canopy (i.e. during extreme manoeuvres or landing) without the need to take wraps.

If you do feel the need to change the brake line lengths, do so a little (3-4cm) at a time, and preferably whilst at an easy training slope. Check especially that both lines are the same length, as any asymmetry will lead to tiring and possible dangerous flying characteristics.

If you have any questions or concerns with reference to the brake line lengths then seek advice from either your UP dealer or directly from UP International.

To tie the brake line onto the brake handle use one of the following knots: The simple fisherman's knot or the Bowline as shown in illustration 5 and 6. These knots guarantee the least amount of line weakening.

BEWARE! Loose or incorrect brake knots can cause serious accidents through loss of the steering of the glider!



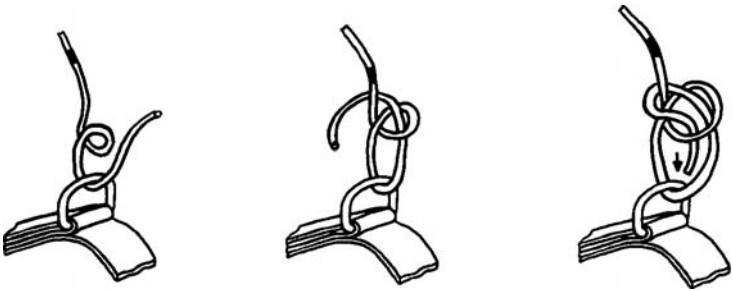


Illustration 5 and 6:
Fishermans- and bowline-knots

Suitable harnesses

Any harness with hang points near chest height is suitable for use with the UP K2. The lower the hang point of the harness, the better the pilot can steer by weight shift. A LTF / EN certified harness is recommended.

The harness design should also guarantee that it's possible to accelerate the UP K2 up to the maximum speed.

Note that the height of the hang point also affects the brake line length. If you have a question about your UP harness, contact your dealer or UP International.

Rescue system

Carrying a rescue system is not only mandatory; it is also extremely dangerous to fly without one. Make sure you choose the right rescue system; it is very important to use only a special Tandem Rescue System with a maximum load of 180-200 daN that has been designed and certified for Tandem Paragliding. Using a normal rescue system with only 100-120 daN maximum load capacity is illegal, extremely hazardous and should be avoided totally. Neither is the use of two single reserves an alternative to a proper tandem reserve, for example the UP Profile Bi, developed especially for tandem use.

The connecting bridle from the reserve must be attached between the risers and the T-Bars to allow a controlled emergency landing with the passenger.

WARNING! Never attach the reserve only to the pilot's harness; once deployed the passenger will swing below the pilot and both could suffer serious injury during landing.

Use of the UP K2

The UP K2 has been developed and tested solely for foot launched and winch launched paragliding flights. It is not allowed and potentially dangerous to use the glider for any other purpose.

Aerobatics

The UP K2 has not been developed, constructed and/or tested for aerobatics use.

WARNING! The glider has not been certified for aerobatics. Performing aerobatics with the UP K2 or any other paraglider can be very dangerous. Doing aerobatics can induce flying configurations well beyond the tested flight envelope, and can lead to total loss of control. Aerobatics can also overload your glider and break it in flight.

Motorised Paragliding

The UP K2 has not been tested for use with any kind of engine.

If you wish to fly your UP K2 with a motor please get in touch with the manufacturer of the engine unit, with UP International GmbH and with the governing body for ultralight flying in your area, to check on certification of this configuration.

Flying with passenger

The UP K2 was designed and certified for Tandem Paragliding with two people (pilot and passenger). Flying the UP K2 alone (only one person) is not allowed; neither is flying with more than one passenger.

All participating persons and every piece of equipment has to have the necessary and proper licenses, certifications and ratings appropriate for the country where the flights are to be made.

Taking passengers on board has to one of the most demanding challenges in the sport of paragliding. It is an outstanding opportunity for the pilot to convey the fascination of paragliding to another person, but requires the utmost in skill and responsibility on the part of the pilot. It is their responsibility to ensure that the flight is a safe and a good one and that the passenger carries with them the memory of a remarkable and enjoyable experience.

Flight practice and safety

Both of the following chapters (Flight practise and Flight safety) describe fundamental aspects of flying paragliders. In no way do they substitute proper training, nor should any of the content therein be unknown to any pilot who has chosen to fly with passengers.

Flight practice

Pre-flight check

Make sure whenever you get your UP K2 back from somebody else to check the glider very carefully if you are not the only pilot flying it. Ask if there was anything that could have damaged any part of the glider, if the pilot has found any part that needs to be replaced or if they noticed any strange flight behaviour. Make sure you do the same when you lend your glider to somebody else.

A thorough pre-flight inspection should be performed prior to each flight. A careful pre-flight check is a must for any and all airplanes – also the UP K2. Please apply the same care and attention before EVERY flight!

Before every launch you should carry out the standard 5-point checking procedure. It is a good idea to do the checks following the same sequence every time to minimize the risk of omitting something.

1. Unpack and arrange your glider in a semi-circular manner. This shape ensures that the centre cells inflate before the tips. When unfolding your glider, observe the wind direction and arrange your glider so that it is pointed directly into the wind.
2. The lines must be arranged so that there are no tangles and the A-lines are uppermost. Once the lines are free and untangled, check to make sure that they all go directly from the riser to the glider without going over the top of the wing. Launching with a line over the wing is extremely dangerous! It is also important that the brake lines are free and not tangled.
3. Next check that you have put the harness on correctly, and ensure that both leg straps and the chest strap are closed and adjusted. Also check the rescue system pins and deployment handle.

   Always verify the correct connection of the passenger seat to the spreader bar, and the risers and the spreader bar, before each flight.
4. Right before the launch you should check the air space (also behind you).
5. Once again check the wind direction before take-off.

Clicking into the T-bar system

The UP K2 has been tested and certified with a standard T-bar (spreader bar) suspension system. Using the UP K2 with other tandem suspension systems is not recommended as it could adversely affect both flight characteristics and the behaviour in extreme flight situations.

The T-bar/spreader bar suspension system

The incorporation of two main hang-points on the T-bar serves to eliminate the disadvantages of flying with passengers either much heavier or much lighter than the pilot. Should the opposite be the case (passenger significantly heavier than pilot) the spreader bar may simply be turned around and hooking in is done at the foremost hang point. If pilot and passenger are of comparable weight use the central hang point.

The upper passenger hang point should be used when flying with passengers of comparable height to your own, or when the passenger is taller than yourself. If the passenger is notably shorter (+15cms) than the pilot, use the lower passenger hang point – this improves the launch handing.

When the aluminium rods are removed from the spreader bars, weight differences become obsolete and the different hang points for passenger/pilot only serve to equalize heights.

Note that if you choose the lower pilot hang point you may need to adjust the brake line length accordingly.

WARNING! Please note that the karabiner suspension points must be used correctly. Failing to do so will cause risk of injury. The correct suspension points are marked with colours to avoid confusion.

Never connect the karabiners to the spreader bars outside the designated suspension points. The bar is not designed for it and it may lead to material failures due to unintended distribution of forces.

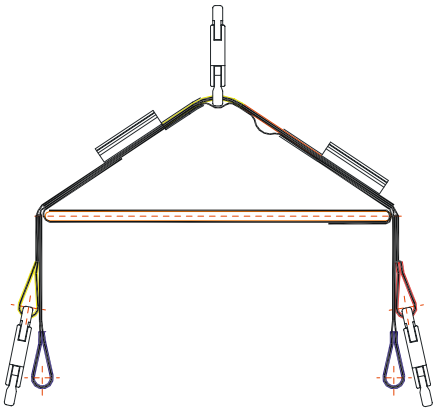


Illustration 7a: Correctly positioned karabiners in the tandem spreader bar

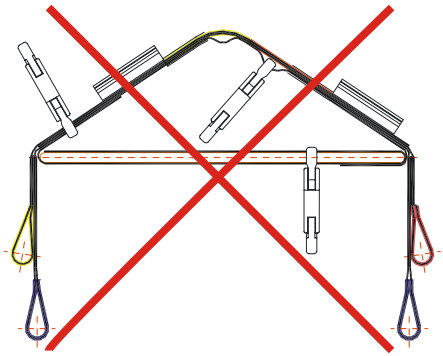


Illustration 7b: Incorrectly placed karabiners

Mounting the tandem reserve

Always mount the reserve so that unintentional opening by either passenger or pilot is out of the question. Please refer to the reserve manufacturers User Manual.

The reserve bridle should run along the pilots' back, then follow the T-bar

through the Velcro guide and finally be attached to the main carbines at the main suspension point (where the risers are attached). Any other mode of attachment will compromise the safety of pilot and passenger in the event of a reserve opening.

Launching

The take-off characteristics of the UP K2 are extremely straightforward. Only a gentle forward pressure on the A risers is necessary and the glider will inflate evenly and climb above your head. The glider has no tendency to hang back behind you or to overshoot over your head.

With the A risers and the brakes in your hands, have another look at your unfolded glider. Make sure that you are centrally positioned in the middle of the wing, and that the wing is facing into wind. The middle of the canopy is marked by the UP logo at the leading edge.

Inflate the glider with a steady run and remember to position your arms so that they are a continuation of the A risers. As the glider comes above your head, you should glance up to see that the entire canopy is inflated and flying. The UP K2 has a low surge tendency, so there is usually no necessity to brake to stop the glider from over-flying you.

Directional control should only be attempted when the glider is above your head. Excessive braking will cause the wing to drop back.

Only after checking that the wing is properly inflated do you apply slight brake pressure and accelerate rapidly down the hill. After a few steps you will reach flying speed and become airborne.

Speed control

Using the brakes

The UP K2 has a wide useable speed range, coupled with excellent stability at all speeds. The speed can be set with the brakes to optimise performance in any situation.

Maximum glide speed is achieved with the brakes released completely, whereas minimum sink speed is with approximately 15-20cm of brake applied. Further braking will not improve the sink rate, but the brake pressure increases noticeably as the glider reaches minimum speed.

BEWARE! Flying close to the stall point is very dangerous and should be avoided. At speeds below minimum sink the danger of entering an unintentional stall or spin is increased dramatically.

Using the trimmers

The UP K2 comes equipped with trimmers on the C-D risers. The trimmers are operated via the Kamet™ buckles on the D risers. This trim system allows an airspeed increase of 4 to 7 km/h.

Open trimmers, and the resulting increased airspeed are suitable for flying in stronger winds, for towing, for flying with big-ears or when flying with light passengers. It is also useful for long transitions into headwinds. UP Europe recommends open trimmers when flying with low to medium hook-in weight. This ensures optimum launching behaviour, airspeed and handling. When flying heavy (over 190 kg hook-in weight) we recommend closing the trimmers.

Please note that the trimmers should be pulled to “neutral” position when

there is a danger of unusual flying situations.

BEWARE! Any unintended flying configuration (collapse etc.) will be aggravated by higher airspeeds. For this reason the trimmers should not be used, or used with great care close to the ground or in turbulent conditions.

Turning

The UP K2 has been developed to meet the demands of tandem pilots. The brakes have been designed so that the first 10 centimetre of travel will cause a soft and direct turning, whereas larger movements will give the glider an agile and nimble feel.

Brake input and amount of weight shift induced will define the radius and bank angle on the UP K2, and will allow it to be controlled with ease. Using weight shift in combination with brake input will result in flat turns with minimum height loss and is in fact always the most efficient control method. The radius of the turn is then controlled with the brake line whereas the bank is controlled through weight shift.

If needed the UP K2 will turn very tight. To do this, apply some brake input on both sides, then release the outside brake whilst applying further brake on the inside – this will reduce turning radius to a minimum.

When brake input is increased beyond approximately 50% on one side, the UP K2 begins a fast and steep turn, which can be made into a steep spiral (refer to chapter heading "steep spiral").

Landing

The UP K2 is easy to land. While pointing into the wind, the pilot should fly the wing fast until approximately one meter above the ground, and then apply both brakes completely. When landing in stronger wind, less brake is required. Landing from steep turns should be avoided due to the risk of an uncontrolled pendulum reaction.

Winch towing

The UP K2 tows easily. There are no special techniques that need to be employed, but consideration should be given to the following points:

- It makes sense to open the trimmers for towing. Doing this reduces the angle of attack during the tow so that the glider flies more above the pilots, as opposed to hanging back. It also makes inflating the glider easier.
- Especially when you are towing at an unknown field, make sure that you are fully aware of any local conditions and peculiarities. Ask the local pilots if you are at all unsure.
- During the launch, ensure that the glider is completely inflated and over your head before giving the 'start towing' signal. If the glider is not central over your head do not continue with the tow. Any corrections attempted through the brakes during this critical phase may result in the canopy deflating again, or in the tow progressing with a non-flying wing; if tow tension is applied when the glider is not correctly positioned then a 'lock out' or a stall could occur.
- Try to avoid large brake inputs until you are reasonably high. Emphasize weight shift if any

course correction is necessary close to the ground.

- Do not try to climb steeply during the first part of the tow. Good airspeed is essential.
- Do not use a towline tension greater than 150 daN at any time during the tow.
- All persons involved with the towing operation should be suitably qualified and experienced. All equipment used should, where necessary, be certified, and a tow permit should be valid for the field being used.

Attaching the towline release system

For tandem paragliders it is not necessary to use the tow-release adapter now recommended for solo towing. We recommend hooking into the passenger harness main karabiners, even if the harness is equipped with tow-release loops. For tandem towing these are placed too low and will result in an unsuitable load distribution, with the pilot/passenger being pulled too far forward.

Flight safety

The development of high performance paragliders from square parachutes has meant vast improvements in speed, sink rate and handling. But, at the same time, it has also led to a requirement on behalf of the pilot for accurate, sensitive control and an acute anticipation of possible flying conditions. Any glider, whether beginner or competition class, may collapse in turbulent conditions and you must be able to react accordingly.

Today you have a wide choice between different gliders in the UP range. The main difference between the gliders is in the stability that each class offers. Beginner wings react to turbulence less dramatically and are more forgiving when compared to top performance gliders, which have more sensitive, but less forgiving handling. Making the correct decision when choosing a new glider is most important; you should critically examine your flying and your level of knowledge.

A safe and efficient way to get used to your new paraglider is by practicing your ground handling skills. We suggest finding a suitable area, like a playing field, and with light to medium wind it is quite easy to practice inflating the glider and feel the reaction to brake input, b-line stall, collapses etc.

Before takeoff and whilst flying it is very important to anticipate any likely turbulence and fly accordingly. Look well ahead, and as well as looking for areas of likely lift, try and predict, and avoid, areas of sink and rough air. If you do find yourself in turbulence then look for the cause, and adjust your flight plan to avoid other similar places.

Thermals and Turbulence

In turbulent air, the UP K2 should be flown with a little brake to increase the angle of attack and provide greater stability. While flying in strong or broken thermals, it is important that you concentrate on keeping the wing centrally above your head. Do this by allowing the glider to fly faster while entering a thermal, and by dampening the surge of the canopy while exiting the thermal by braking gently.

Flying fast is useful for getting through sink or when flying into a headwind. The UP K2 possesses a high inherent stability due to its construction and design, however an active flying style in turbulence will help increase safety by preventing unnecessary collapses and deformation of the canopy.

Getting down fast

All rapid descent manoeuvres should be practiced initially in smooth conditions with plenty of altitude before you need to use them 'for real'. It is important to distinguish between the three techniques, and to know the merits of each.
You should inform your passenger before the flight about all planned manoeuvres.

WARNING! All other manoeuvres, such as full stalls and spins, should be avoided as fast descent techniques. They are not very efficient, and incorrect recovery can have dangerous consequences (as with any paraglider)!

Steep Spiral Dive

A maximum sink rate of over 15 meters per second can be achieved in a steep spiral dive, but it is advisable to build up gradually to these sink rates when you first practice spiralling.

Getting the UP K2 into a spiral dive is very simple and has already been described in the chapter regarding turning. When entering the spiral it is essential to induce the turn gradually; if you apply the brake too quickly you may enter a spin. If this happens, release the brake immediately and let the glider recover before trying again. Keep a steady tension on the inside brake and observe the increased angle of bank and sink rate. A little brake on the outer wing will help stabilize the glider at a high sink rate.

To recover from a spiral, simply release the inside brake. Do this gradually to prevent an uncontrolled steep climb caused by the excess energy built up during the dive. Be prepared for the glider to climb a little and to damp out the subsequent dive. Be warned that steep spiral dives are equal to high G loading on both you and your glider!

WARNING! Never pull Big Ears in a spiral dive, as it's relatively easy to overload the paraglider, pilot and equipment.

B-Line Stalls

To induce a B-line stall, start from normal, un-accelerated flight. Reach up and take hold of both B risers, still with your hands in the brake loops, and pull down simultaneously by approximately 10 to 15 centimetre. The first few centimetres of travel will be quite hard, but as the glider settles into the stall so the effort becomes less.

The glider will drop back a little as it stalls, and then centralize over your head. With 15 centimetre or so of pull a sink rate of up to 6 meters per second can be achieved. With less pull you will get a decrease in sink rate. The B-risers should not be pulled beyond this point, as it may result in the canopy entering an unstable phase or going into a frontal rosette. Should you inadvertently have pulled too far down on the B-risers, simply release them a little again until the wing is again stable above you, showing the characteristic deep crease along the B-level and being fully stretched out spanwise.

To recover from a B-line stall, let up both B risers simultaneously and quickly. The UP K2 will dive forwards slightly as it regains forward speed, so be ready to dampen this out. If you release the B risers slowly there is a danger that the glider might enter a deep stall. The glider will almost always recover with no pilot input from a deep stall, but refer to the 'Deep Stall' section for correct recovery.

Big Ears

This is the best quick descent method for tandem paragliding due to the gentleness of the manoeuvre – your passenger will be grateful!

To pull the ears in, reach up and get hold of the outermost A line on both front risers and pull them down, simultaneously, by about 10 to15 cm until the tips collapse. Keep these two lines in your hands, to prevent the wing re-inflating.

We suggest keeping the brake toggles in your hands while inducing Big Ears. The glider will remain fully steer-able through weight shifting during the manoeuvre. The sink rates will be

around 2 to 3 meters per second. Releasing the two A-lines will normally have the tips re-inflating on their own, otherwise light braking will assist the re-inflation.

Do not perform other manoeuvres whilst using Big Ears, as the structure of the canopy could become overloaded.

Inducing large Big Ears on the UP K2 when flying near its lower weight limit requires great caution on the amount of brake input used, as it may deep stall in extreme cases. Should this happen use the recovery technique described in the ‘Deep Stall’ section.

Flying outside the normal flight envelope

Behaviour in extreme situations

The UP K2 is designed to be very aerodynamically stable. However as with all paragliders extreme turbulence or piloting error may induce unwanted behaviour from the canopy. To ensure that you are able to handle these situations correctly we strongly recommend that you attend a safety-training (SIV) clinic, where you can learn to master your wing outside the normal flying envelope under professional guidance.

Safety training manoeuvres should only be practiced in calm air with sufficient altitude, and under the instruction of qualified instructors. We would like to use this occasion to once again remind you to never fly without a reserve parachute!

The manoeuvres and possible flight configurations described in the following may occur following a conscious effort on the part of the pilot, through turbulence or through pilot input error. Any pilot flying in turbulent air or making piloting mistakes may end up experiencing these flight configurations and therefore find themselves in danger, particularly if they are not adequately trained to master them.

WARNING! Mistakes during the execution of the following manoeuvres may seriously compromise the safety of pilot.

Collapsing the paraglider

As with all paragliders extreme turbulence may lead to the canopy partly or fully collapsing. This is normally not critical. The K2 will reinflate quickly and reliably and is easy to control during the incident.

Asymmetric collapse

Should an asymmetric collapse occur, it is best to stop the turn by opposite weight shift and counter steering. If you let the glider turn then it is possible that, although the collapse will clear quickly, the other wing might suffer a small closure. Any closure will normally reopen independently, but it is a good idea to help it with a good long pump (not short hectic pumps) with the brake on the affected side, whilst maintaining course with the other brake.

With large asymmetric collapses it is important to counter steer carefully to avoid stalling the open side. This can lead to the canopy entering a stall before it fully reopens.

Finally it is possible, although highly unlikely, that a wingtip gets caught in the lines following a collapse. Should this happen the pilot should attempt to maintain heading by weight shifting to the opposite side and carefully braking that same side. A big earnest pump with the brake on the afflicted side should clear the “cravatte”. If this fails all UP wings have a separate stabilo line going from the C riser to the stabile – a pull on this line will clear even stubborn cravattes.

Full frontal collapse

A negative angle of attack occurring through turbulence or from simultaneously pulling down both A-risers results in a full frontal collapse of the leading edge of the canopy. The UP K2 will normally reinflate quickly on its own, but can be assisted through the application of a light double-sided symmetrical brake input.

The stalls

When a paraglider flies through the air a laminar and a turbulent airflow forms around the surface of the wing. When the laminar airflow along the top surface is interrupted, dangerous flight configurations follow – we say that the wing stalls. This is most often the consequence of attempting to fly with too high angle of attack.

In more detail we differ between three different forms of stall.

BEWARE! Spin and full stall are both dangerous and somewhat unpredictable manoeuvres. Do not stall or spin your paraglider on purpose. However it is very important to learn how to recognize the symptoms of a glider about to stall or spin so that you can take correct action to avoid it happening.

Deep Stall

The UP K2 has no inherent tendency towards deep stall. It will recover from a deep stall brought about by over braking, by pulling on the rear risers, or by releasing the B-risers too slowly after a B-stall, on its own without any pilot input as soon as the brakes or the risers are released.

Should you however find yourself in a deep stall (as described above this could happen through flying too light on the wing and pulling big ears) the situation can be rectified by simultaneously pushing both A-risers forward until the glider resumes normal flight. Avoid applying brake to one side if you think that you are in a deep stall as this could lead to a spin.

Always remember that practicing manoeuvres where you fly close to minimum airspeed must only be carried out under professional supervision and with plenty of altitude.

Full Stall

Full stalling the glider is only really sensible and useful during the landing. When landing the pilot consciously stalls the wing by applying both brakes 100% just before touching down. The canopy falls behind the pilot and empties itself.

When the glider is tested before the release it is put through the same motions, but at greater altitude. First it is slowed down to minimum airspeed, then the airflow along the top of the wing breaks away and the wing falls back, pulling the pilot with it. It is important to not release the brakes again at this moment, as this will have the canopy violently shooting forwards and diving down in front of the pilot. In extreme cases it can dive below the pilot, who could then fall into the sail.

After dropping back into full stall the canopy will form a horseshoe where the tips flutter about quite violently. These movements are transferred to the pilot's arms through the brake lines. Holding the wing in a full stall requires considerable strength!

Before releasing the brakes and allowing the wing to resume level flight it is important to stabilize the stalled wing. This is done by releasing the

brakes slowly until the entire wing is almost completely re-inflated. In this phase the wing will be pitching somewhat over the cross axis. The pilot waits until the wing is in front of him and releases the remaining part of the brake travel. When timed correctly the wing will then resume level flight by surging slightly forward whilst accelerating to normal trim speed. However you must be prepared to dampen the surge and deal with any subsequent collapses occurring because the wing surges too far or doesn't come out of the full stall completely symmetrically.

Test pilots also carry out tests where they release one brake before the other while in full stall. This manoeuvre only serves to test the wings behaviour and should not be flown purposely as this is a situation where all paragliders react very dynamically. It is often followed by very large, dynamic asymmetric collapses that must be dealt with correctly to avoid dangerous situations.

Spin

The negative spin occurs when one side of the wing is stalled whilst the other is still flying. This can happen when, if flying very slowly, one brake is pulled quickly to below the seat. When the glider starts to spin, it will turn quickly around the vertical axis, with the stalled side flying backwards. To recover from a spin, simply release the brake on the stalled side. The glider will immediately speed up and, most likely, suffer an asymmetric collapse. Recover as described above.

If you suspect that a spin is imminent then immediately release the inside brake. The glider will accelerate smoothly and resume normal flight with little altitude loss.

Wingovers

Wingovers are induced by flying alternating turns; each time letting the pendulum effect increase the bank angle.

BEWARE! The UP K2 is a agile glider, and it is quite easy to get to an excessively high angle of bank in just a few turns. Practice wingovers gently at first, as there is a chance of quite large collapses at high bank angles.

Also notice that a wingover flown with more than 90 degrees bank angle is classified as illegal aerobatics in some countries!

Emergency Steering

If for some reason the UP K2 cannot be controlled with the brakes, for example if the brake handle has come off the main brake line, it can be steered and landed with the rear risers. Be aware that, when rear riser steering, the glider is a great deal more responsive to pilot input, and the stall happens very suddenly.

Further references

Rain-induced deep stall

There are two reasons why flying with a wet wing increases the risk of deep stalling:

First reason is that the canopy cloth may absorb water, making it much heavier and moving the centre of gravity around in unpredictable ways, increasing the risk of a stall/deep stall. The more water a wing can absorb the higher the risk, which means that older wings with damaged coating are more

prone to these deep stalls than new wings. It should also be noted that a wing already flying close to the edge due to line shrinkage or other factors will deep stall sooner due to water absorption.

Second reason has to do with the actual rain drops on the top surface – if enough large rain drops form that the entire top surface is covered, but they don't join together to either flow off or become a homogenous mass, the surface will become so rugged that the airflow separates and the wing stalls.

This phenomenon has been observed on hang gliders and gliders for years but only recently have we discovered that paragliders may also be affected. It is more likely to happen with new wings where the cloth is still highly hydrophobic and the drops thus do not penetrate but remain on the surface.

We know from computer simulations and practical tests that this is physically possible but we also suspect that it occurs very seldom in real life flying.

In both cases the brake line travel becomes very short and even small input may suddenly induce an airflow separation; in some cases even a gust or a sudden thermal may change the angle of incidence enough to cause the deep stall.

If you find yourself flying in unavoidable rain we strongly recommend that you avoid any sudden movements or radical brake line input, that you do not pull Big Ears or B-stall, and that you steer clear of turbulence and avoid a deep flare on landing.

WARNING! Avoid flying in very humid air or in rain. A wet canopy may have very unpredictable flying characteristics, one of which is a radically increased risk of deep stall!

Adhesive logos

Always make sure that your intended logo will not in any way influence the glider behaviour. If in doubt we suggest avoiding the attachment of advertising logos on the wing. UP cannot be held responsible for any mishaps caused by intentional after-sales changes done to the wing.

BEWARE! Attaching heavy adhesive logos made out of unsuited material to the wing may result in the revocation of the glider certification.

Overloading

The UP K2 is a very strong paraglider, and flying all the usual SIV and acro manoeuvres will not normally pose a structural problem. However, frequent acro training does accelerate the ageing process dramatically, and UP recommends having wings that are often used for acro or SIV-type manoeuvres subjected to checkups at shorter intervals than normally stipulated.

Salt water

If you do most of your flying near the sea, where the air is humid and salty, the wing may age faster. In this case we suggest you have it checked more often than prescribed in this manual.

Maintenance and cleaning

Taking care of your paraglider

The wear and tear that your paraglider suffers depends on a number of factors; how frequently it's flown, whereabouts in the world you fly it, how much UV it gets and how well you look after it. Bear in mind the following maintenance points.

Packing your UP K2

Fold your wing as shown in the illustration here below. By doing so you will increase the working life of your wing simply because the reinforcements in the leading edge are not bent or folded every time you pack away your wing after a flight. Undamaged reinforcements positively influence the launching characteristics, the performance and even the safety, as wrinkled reinforcements cause the leading edge to become wrinkled too, to the detriment of the in-flight behaviour following disturbances.

Pack the glider in a slightly different way every time, so that it's not always the same bit of material that gets the maximum exposure.

Also, to avoid mechanical abrasion we suggest you lay your wing on the compression sack every time you pack it.

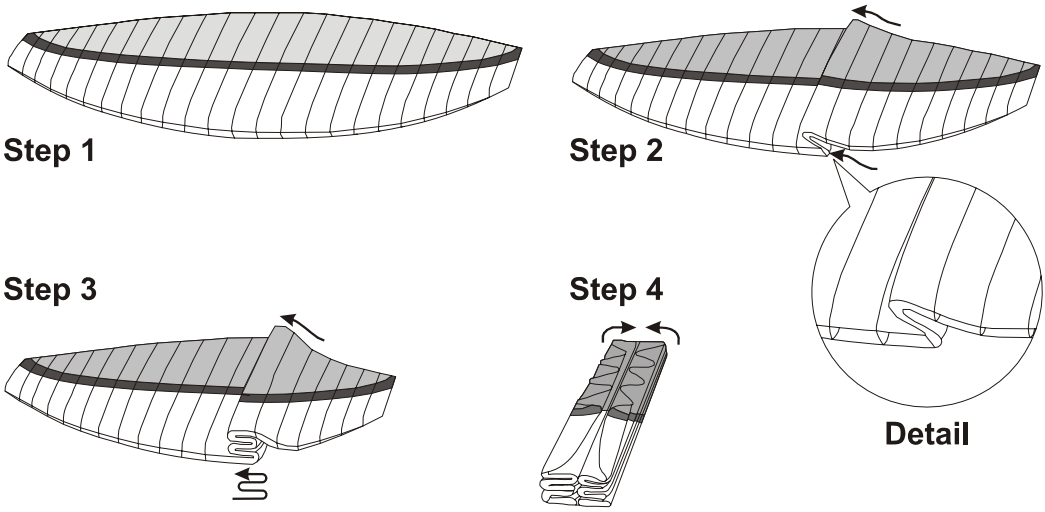


Illustration 8: Packing the UP K2

Paraglider fabric

We use a top grade polyamide cloth to build our paragliders, which has a special protective coating against UV radiation and air permeability. The cloth will suffer though; if it's exposed to large amounts of UV (i.e. bright sunlight). Do not leave your glider lying in the sun for any longer than is absolutely necessary, only unpack and rig right before launching and do yourself the favour of repacking right after landing. Modern paraglider textiles have improved much in terms of UV durability but UV exposure remains the deciding factor of a paragliders' life expectancy. First the colours start to fade, then the coating and the structural integrity of the synthetic fibres begins to deteriorate.

On UP gliders the coated side of the cloth is facing inwards. This means that the coating is subjected to less mechanical abrasion while the porosity-limiting capabilities remain the same

When choosing an area to lay out the glider before launching, try to find somewhere that is relatively free of stones and sharp rocks. Pay particular attention to the top surface, where it lies on the ground.

Never step on your glider – stepping on it will weaken the cloth, especially if the surface beneath it is hard or contains sharp objects. We recommend keeping an eye on spectators on launch. Many, especially children, do not fully appreciate the fragility of the lines and cloth. It is usually easy to explain this to spectators and parents.

When folding your wing please make sure that there are no insects caught inside. Many insect species contain acids that could damage the cloth. Grasshoppers may use their sharp mandibles to attempt to gnaw their way out of a folded canopy, making it full of holes in the process. Beside they exude a dark and strong colorant that will stain the cloth if grasshoppers are packed inside. Shoo them off before packing. Note that, contrary to popular belief these particular insects are not attracted to any particular colours.

If the glider gets wet, then dry it as soon as possible, but not in direct sunlight! If you pack you wing away wet it may grow mildewy and, if also subjected to heat, the fabric fibres may begin to decompose.

A new wing straight off the shelves is often compressed hard. The compression serves to reduce shipping costs but should note be repeated once the wing has been unpacked and flown for the first time. Also note that, in spite of it being a comfortable seat, the glider bag should not be used as such.

Should you accidentally put your UP K2 into seawater rinse it out thoroughly with fresh water and dry it slowly in the shade (see Chapter Cleaning).

Paraglider lines

The lines used on the UP K2 are high grade Dyneema® lines from Cousin Trestec. Keep the following points in mind:

- The lines should be checked regularly for damage.
- Please take care to avoid abrasion and damage to the lines' protective sheeting
- The lines should not be knotted or bent unnecessarily.
- The main brake line at the handle should not have too many knots. Each knot weakens the line.
- After any line over-stressing (tree landings, water landings and other extreme situations) all lines must

be checked for condition and length and should be replaced where necessary.

- If any change in flying characteristics is noticed then the lines should be checked possibly exchanged. Immediately send your wing to UP International or to a UP certified checking facility if you feel that something is wrong!

Storage and transport

A paraglider should always be dry when packed, but this is particularly important after the last flight of the season. But even a completely dry wing should still be stored open in a dry, clean and dark place. If you do not have room for such winter storage we recommend you open all compression straps on the bag as much as possible and leave the bag lid off so that air can circulate around the packed canopy. Make sure no mice or cats make their sleeping quarters in you wing, and keep it well distant from solvents and acids. Petrol and other petrochemicals is especially abrasive for nylon and will dissolve the cloth if allowed near.
The storage temperature should be between 10 and 25 degrees Celsius, and the relative humidity between 50 and 75%.

Do not expose your UP K2 to extreme heat (storing it the boot of a car parked in the sun). The heat may cause moisture to be pressed through the fabric, thereby damaging the coating. High temperatures in combination with moisture are a particularly volatile mix that will accelerate the hydrolysis process where the fibres and the coating are decomposed.

Cleaning

If you feel it necessary to clean your UP K2 at any time then use lots of lukewarm water and a soft sponge. More stubborn stains can be cleaned with a weak soap solution, and rinsed thoroughly. Then leave it to dry in a shady but well-ventilated area.

BEWARE! Never use chemical cleaning agents, brushes or hard sponges on the material, as these destroy the coating and affect the strength of the cloth.
The canopy will become porous and will loose structural strength. Never attempt to clean your paraglider in a washing machine. Even without using detergents the simple mechanical abrasion will quickly finish the canopy and render it useless. Also avoid dipping it in a swimming pool; the chlorine will damage the cloth. If you MUST rinse the parachute, f.ex. following a sea water landing, do so with a gentle spray with fresh water. Frequent spraying will accelerate the ageing process.

Checks and repairs

Paragliding is a wonderful sport; flying as free as a bird in the air, enjoying the peace and tranquillity. But the air is an alien environment that commands respect and a responsible attitude from the pilot. At UP we don't just put our knowledge and experience into the development of paragliders, but also into their maintenance, service and repairs to ensure that you can fly safely at all times.

Repairs or inspections must only be carried out by UP International or a UP approved repair/checking facility.

Maintenance

All care and maintenance must be carried out in accordance with UP recommendations. To ensure that this happens we strongly advise you to only let UP recognised service centres touch your wing – this is also a prerequisite for the UP Warranty to be valid. So there's a lot speaking for letting UP, or a UP affiliate, look after your K2!

Airworthiness Check

In Germany and Austria all paragliders must be checked according to the following time schedule:

- 2 years after purchase
- Every two years after that, or sooner if prescribed by the UP checking facility during the last check
- After 150 hours, or
- After 100 Flights

These limits have been set by the German Free Flight Federation (DHV) and make no less sense for wings flown outside of Germany/Austria. Contact your local dealer for information about the nearest UP approved checking facility.

We will happily service the glider more often, if you feel that it is necessary.

UP Craftsmanship

In order to ensure that your UP K2 maintains its very high inherent performance and safety we highly recommend that you employ UP, or a UP affiliate, with any repairs or maintenance. Our service staff is trained and skilled, and knows the UP wings better than anyone.

UP Warranty

Conditions and extent of the UP International Warranty can be found in the following pages. For further information please ask UP International directly, or you local representative. The UP importer in your country is always delighted to clear any questions with you.

National warranty conditions

In some countries the local laws stipulate different warranty rules than those outlined here. Please note that these local rules only apply in the country where you have purchased your wing. Information about local rules and conditions are available from your local dealer.

International UP warranty

Warranty conditions:
The international UP warranty covers material- and workmanship faults and is valid for 24 months from the delivery date. Outside of Germany and Austria

UP-approved service centres may perform these checks.

The UP warranty covers the cost of materials and workmanship on gliders accepted by UP to fall under the warranty. The UP warranty does not cover damage caused by accidents, or by changes made to the glider. Likewise, parts that are damaged due to normal wear and tear are exempt from warranty coverage. Fabric colour changes that do not influence the behaviour or safety of the wing are not covered by the warranty, and neither are faults caused by the exposure to solvents or salt water, or plain incorrect handling of the wing.

For any warranty claim to be accepted the following conditions must be adhered to:

- The paraglider was used under normal circumstances and was maintained according to the instructions given by UP International. Note that these include instruction for the correct packing, storing and cleaning
- The paraglider was only used in accordance with its DHV certification
- A complete logbook showing all flights, with duration and location, must be presented upon request
- Only original UP spares have been used, and only UP, or a UP affiliate service centre, has performed repairs or service jobs on the paraglider
- A complete, correct registration card has been filled in and sent to UP within 14 days of the purchase. Note that you may also register your paraglider with UP via the UP homepage www.up-paragliders.com >service >UP Product registration

UP reserves the right to refuse any claims not honouring one or several of these conditions. However, in some cases an “ex gratia” settlement may be offered.

Checking the UP K2

According to German and Austrian aeronautical legislation (§ 14 Abs. 5 LuftGerP) the owner of a glider can check the airworthiness by his own, or authorise a third person (for example manufacturer/importer) to do this.

To perform your own airworthiness check, UP International must give you a briefing. This briefing could be done after an agreement with UP International and is only valid for the UP K2. The owner gets the so-called "Nachprüfanweisung" after completing a successful checking at UP International.

Should the owner decide to check the wing by himself, or employ a 3rd party to do so they must make sure that UP’s guidelines are adhered to. Failing to do so will void the certification.

DHV and UP International highly recommend that you let the manufacturer/importer or a DHV accepted service company do the check of airworthiness.

Packing and checking of the rescue system

Only by regularly having your rescue parachute repacked can you guarantee its flawless operation! As with the glider, the rescue parachute should be examined every 2 years by either the manufacturer or an Authorised Service Centre. We offer a certified service for re-packing, checking and installing the parachute into your harness. We will also carry

out any repairs necessary, all fully guaranteed.

Sending the UP glider and other UP products

The best way to send your paraglider, rescue parachute, harness etc. to our service team is in a stable box via post or UPS. Enclose a note of what requires doing (2 Year Check, repair, repack etc.) and also your daytime contact details. We will return your equipment either by post or UPS. Please indicate preferred method of payment (either bank cheque or C o d)/

Should you require any further information about the services we offer, please contact us at the address and phone number below. We are also able to give you information about your nearest Authorised Service Centre, as well as other manufacturers who are authorised to check and repair UP gliders and equipment.

UP International GmbH
-Abteilung Service-
Kreuzeckbahnstraße 7
D-82467 Garmisch-Partenkirchen

Email: service@up-europe.com
Fon: +49 (0) 88 21-7 30 99-19
Fax: +49 (0) 88 21-730 99-16

UP Homepage

The UP Homepage gives you information about the latest news and products from UP. You will find any technical information and accessories for your UP K2, as well as many useful things that are necessary for flying.

Beside paragliders, harnesses and flying equipment you will also find the new “Skywear” collection with the latest flying garments and the “News” section, which will keep you updated with all activities around UP.

www.up-paragliders.com

Some final words

With paragliding a fundamental new air sport has emerged; one that makes independent flight possible for almost everybody. The technical simplicity, the mobility of the wing and the ease of learning the basic flight techniques have all combined to make paragliding appear simple and straightforward.

As long as you fly with the necessary respect for the demands and dangers, then these ideals of paragliding will be fulfilled. You should decide for yourself whether conditions are suitable before you proceed with the flight. You should always be aware that any kind of air sport is potentially dangerous if you overstep the natural and physical laws, whether from ignorance or unreasonableness.

“Probably there are only a few sports where success requires, besides physical fitness, understanding the processes in nature to such a high degree - a fact which distinguishes paragliding as sport especially.”* The charm of flying lies in “understanding the processes in nature”, because you have to try again and again to fathom the logic and fly with regard to the decisions you make.

If you want to realise the dream of flying, the dream of free movement in the air, fly not to impress others - fly for the sheer joy of it.

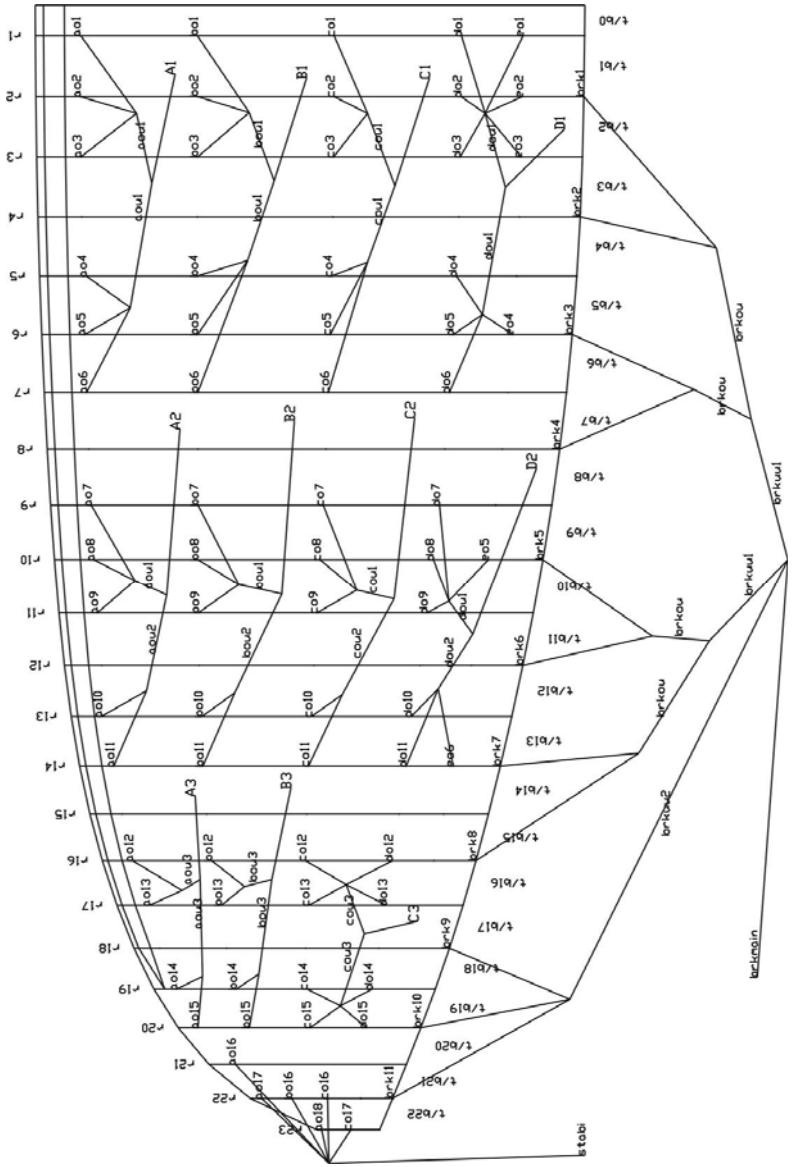
We at UP wish you delightful, beautiful and accident free flying with your UP K2.

SEE YOU UP IN THE SKY –
UP International

* from Helmut Reichmann from the book "Streckensegelflug"

Attachments

Line plan



Deutscher Hängegleiterverband e.V. im DAeC
DHV/OeAeC-Technikreferat
LBA-anerkannte Prüfstelle für Hängegleiter und Gleitsegel
Beauftragter der österreichischen Luftfahrtbehörde

Herstellerangaben zum Luftsportgeräte-Kennblatt

Gleitsegel

I. Musterprüfung

1. Gerätemuster: **UP K2**
2. Hersteller: **UP International Sportartikel GmbH**

II. Merkmale und Betriebsgrenzen

1. Gerätemasse(kg): **8,6**
2. Zulässiges Startmasse minimal (kg): **135** maximal (kg): **220**
3. Anzahl der Sitze: **2**
4. Klasse: **1-2GH**
5. Gurtzeugbeschränkung: **GH**
6. Fußbeschleuniger: **nein**
7. Trimmer: **ja**
8. Projizierte Fläche (m²): **35,27**
9. Windenschlepp: **ja**
10. Tragegurtlängen (mm):

Tragegurt A:	Tragegurt B:	Tragegurt C:	Tragegurt D:
normal: **340**	normal: **340**	normal: **340**	normal: **340**
beschleunigt: **340**	beschleunigt: **360**	beschleunigt: **385**	beschleunigt: **430**

11. Leinenlängen (mm), **von der Kappenmitte beginnend**:

	A	B	C	D	E		Bremse	
1	8765	8710	8770	8900	9005		9900	2
2	8665	8610	8670	8805	8910		9520	4
3	8645	8590	8650	8785	8885		9310	6
5	8630	8575	8635	8765			9180	8
6	8630	8580	8635	8765	8860		9025	10
7	8695	8645	8700	8820			8875	12
9	8595	8550	8600	8720			8790	14
10	8520	8470	8520	8640	8730		8765	16
11	8505	8460	8505	8615			8630	18
13	8460	8410	8445	8540			8500	20
14	8450	8410	8435	8525	8585		8455	22
16	8275	8230	8260	8340				
17	8185	8150	8180	8245				
19	8030	8010	8030	8080				
20	7965	7940	7960	8005				
21	7855							
22	7650	7630	7650					
23	7510		7555					

12. Sonstige Besonderheiten:

III. Betriebsanweisung in der Fassung vom: 01.01.08

Ort, Datum, Stempel und Unterschrift des Herstellers:

Garmisch, den 01.01.2008

UP International GmbH
Kreuzeckbahnstr. 7
82467 Garmisch-Partenkirchen
Germany
Phone: +49-8821-73099-0
Fax: +49-8821-73099-16
www.up-paragliders.com
info@up-paragliders.com

Bearbeitungsvermerk DHV:
Kennblatt geprüft
am:

von:

Standard Einweisungskontrollblatt für neu gekaufte UP Gleitschirme

Käufer Name/Vorname: _____

Adresse: _____

Befähigungsnachweis Nr. :_____ neuer Gleitschirm, Typ:_____

Bisherige Anzahl Flüge: _____ Seriennummer des Schirms:_____

Folgende Übungen sollten am Übungshang unter Aufsicht absolviert werden:

Auslegen und Sortieren der Leinen	☐	Durchführen mehrerer Starts	☐
Aufziehtechnik vorwärts und rückwärts	☐	Laufen mit gebremstem Schirm	☐
Aufziehen mit schlecht ausgelegtem Schirm	☐	Slalomlaufen	☐

Das Beherrschen der oben angeführten Manöver ist die Grundlage, um die Reaktionen des neuen Gleitschirmes kennenzulernen. Zugleich werden wichtige Reflexe eintrainiert, um den Schirm in turbulenter Luft angemessen handhaben zu können. Ungewollte Klapper und andere extreme Flugzustände können dadurch reduziert bzw. wesentlich besser beherrscht werden.

Folgende Manöver sollten während Höhenflügen unter Aufsicht mit Funk mit dem neuen Gleitschirm absolviert werden:

Übungen:		**Einweisungen:**	
Schnelle Kurvenwechsel	☐	Einweisung in das Beschleunigungssystem	☐
Enge Vollkreise in beide Richtungen	☐	Seitliches Einklappen mit Kurs halten	☐
Steilspirale	☐	Eventuellen Sackflug richtig ausleiten	☐
B-Leinen Stall	☐		
Ohren anlegen	☐		

Diese Übungen dürfen nur mit einem Rettungsgerät erfolgen. In Thermik und Turbulenzen können alle diese Flugzustände plötzlich auftreten und es dient der eigenen Sicherheit, diese mit jedem Schirm neu zu erfliegen.

Diese Übungen ersetzen nicht ein Sicherheitstraining, dessen Besuch wir jedem Piloten im Interesse seiner eigenen Sicherheit empfehlen. Deine Flugschule kann Dir dies sicher bestätigen.

Wir bestätigen, dass oben genannter Gleitschirm von uns testgeflogen wurde, und die aufgeführten Manöver vom Käufer beherrscht werden:

Unterschrift Fluglehrer: _____

Unterschrift Käufer:_____

Ort / Datum: _____

Service booklet

Glider- and pilot data

Model: **K2**

Size: ❒

Serial number:

Colour: _____

Date of purchase: _____

First flight date: _____

Dealer stamp and signature

Pilot (1. owner)

Name: _____

Family name: _____

Street: _____

Town: _____

Postal code: _____

Country: _____

Telephone: _____

Fax: _____

Email: _____

Pilot (2. owner)

Name: _____

Family name: _____

Street: _____

Town: _____

Postal code: _____

Country: _____

Telephone: _____

Fax: _____

Email: _____

Pilot (3. owner)

Name: _____

Family name: _____

Street: _____

Town: _____

Postal code: _____

Country: _____

Telephone: _____

Fax: _____

Email: _____

Please verify that your UP Service Centre has correctly filled in the form!

1st Service

Performed date: _____

Service jobs undertaken:

Assignment Nr.
Stamp

2nd Service

Performed date: _____

Service jobs undertaken:

Assignment Nr.
Stamp

3rd Service

Performed date: _____

Service jobs undertaken:

Assignment Nr.
Stamp

Please verify that your UP Service Centre has correctly filled in the form!

4th Service

Performed date: _____

Service jobs undertaken:

Assignment Nr.
Stamp

5th Service

Performed date: _____

Service jobs undertaken:

Assignment Nr.
Stamp

6th Service

Performed date: _____

Service jobs undertaken:

Assignment Nr.
Stamp

Product registration card

Model: **K2**

Size: ❒

Serial number: _____

Date of purchase: _____

First flight: _____

Preflown by: _____

Owner

Name: _____

Family name: _____

Address: _____

_____

_____

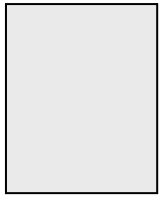
Telephone: _____

Fax: _____

Email: _____

Dealer stamp and signature

Cut out this card and mail it to UP within 14 days of purchase, or register your new UP K2 via www.up-paragliders.com>Service>UP>Product Registration



Ultralite Products
International GmbH
Kreuzeckbahnstrasse 7
82467 Garmisch-Partenkirchen
GERMANY

UP International GmbH Kreuzeckbahnstrasse 7
82467 Garmisch-Partenkirchen
Tel. +49 (0) 88 21-73099 0
Fax: +49 (0) 88 21 73099 16
info@up-paragliders.com
www.up-paragliders.com