

PARAGLIDER

Trango XC

Owners Manual and Service Booklet

Serial Number: _____



Trango XC

The data and statements contained within this manual may be changed without prior notice. No part of these documents may be copied or transmitted for any purpose in any manner or by any means, either electronic or mechanical, without explicit written permission from Ultralite Products International.

Table of contents

WELCOME IN OUR TEAM.....	8
SAFETY INSTRUCTIONS	9
DEVELOPMENT OF PARAGLIDERS.....	9
TECHNICAL DESCRIPTION	10
CERTIFICATION CLASS	10
<i>LTF and EN classification</i>	10
<i>Target group and recommended flying experience</i>	10
<i>Necessary skills for normal flights*</i>	10
<i>Necessary skills for dealing with disturbances & rapid descent methods</i>	11
<i>Suitability for training</i>	11
RECOMMENDED WEIGHT RANGE	11
TECHNICAL DATA UP TRANGO XC	12
KONSTRUKTION	13
<i>Leistungsdaten</i>	Fehler! Textmarke nicht definiert.
<i>Airfoil Stabilizing System?</i>	14
CANOPY MATERIAL	14
LEINEN	15
TRAGEGURTE MIT PITCH-TRIMMER	15
UP BACKPACK.....	18
<i>Adjustment of the backpack</i>	19
<i>Packing tips</i>	19
BEFORE THE FIRST FLIGHT.....	20
ADJUSTMENTS.....	20
<i>Position of the brakes</i>	20
<i>Speed system</i>	21
<i>Speed system</i>	22
SUITABLE HARNESSSES	22
RESCUE SYSTEM.....	23
USE OF THE UP TRANGO XC	23
AEROBATICS	23
MOTORISED PARAGLIDING	23
FLIGHT PRACTICE AND SAFETY	24
FLIGHT PRACTICE.....	24
PRE-FLIGHT CHECK	24
LAUNCHING	24
SPEED CONTROL.....	25
<i>Using the brakes</i>	25
<i>Using the Speed System</i>	25

TURNING	25
LANDING	26
WINCH TOWING	26
<i>Attaching the towline release system</i>	26
FLIGHT SAFETY	28
THERMALS AND TURBULENCE	28
GETTING DOWN FAST	28
<i>Steep Spiral Dive</i>	29
<i>B-Line Stalls</i>	29
<i>Big Ears</i>	29
FLYING OUTSIDE THE NORMAL FLIGHT ENVELOPE	31
BEHAVIOUR IN EXTREME SITUATIONS	31
COLLAPSING THE PARAGLIDER	31
<i>Asymmetric collapse</i>	31
<i>Full frontal collapse</i>	32
THE STALLS	32
<i>Deep Stall</i>	32
<i>Full Stall</i>	32
<i>Spin</i>	33
WINGOVERS	33
EMERGENCY STEERING	33
FURTHER REFERENCES	33
<i>Rain-induced deep stall</i>	33
<i>Adhesive logos</i>	34
<i>Overloading</i>	34
<i>Flying near the sea</i>	34
<i>Umweltgerechte Entsorgung</i>	Fehler! Textmarke nicht definiert.
<i>Natur- und landschaftsverträgliches Verhalten</i>	Fehler! Textmarke nicht definiert.
MAINTENANCE AND CLEANING	36
TAKING CARE OF YOUR PARAGLIDER	36
<i>Paraglider fabric</i>	38
<i>Paraglider lines</i>	38
<i>Storage and transport</i>	39
CLEANING	39
REPLACING ASS BATTENS	40
MAINTENANCE	41
<i>Airworthiness Check</i>	41
<i>UP Craftsmanship</i>	41
<i>Original spare parts</i>	41
<i>Airworthiness check</i>	42
<i>Auslieferungsservice</i>	Fehler! Textmarke nicht definiert.
UP WARRANTY	42

<i>National warranty conditions</i>	42
<i>International UP warranty</i>	42
CHECKING THE UP TRANGO XC.....	43
PACKING AND CHECKING OF THE RESCUE SYSTEM	43
SENDING THE UP GLIDER AND OTHER UP PRODUCTS	44
UP HOMEPAGE	44
SOME FINAL WORDS	45
ATTACHMENT	46
Line Layout Plan	48
DHV Certification Documents for UP Trango XC S-L	49-56
SERVICE BOOKLET	57
Glider- and Pilot data	57
Used by the UP Service centre in connection with periodic service.....	59
Product registration card	61

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 Trango XC. 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 Trango XC.

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 Trango XC!

Your UP International Team

Safety instructions



Please read this owner's manual thoroughly before your first flight with the UP Trango XC 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 Trango XC, but it does not replace attending a paragliding school. It is important to note the following points:

- at the time of delivery the UP Trango XC conforms to German Hang Gliding Association (DHV - LTF) and EN requirements (see certification information later in this manual)
- This paraglider has been built and tested in accordance with German law. It is identical to the tested sample and is airworthy.
- 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 history. 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 in 1972 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 history, to be particular about which products earn the UP badge.

Technical description

The UP Trango XC was developed by UP according to the special demands on a powerful high performance glider. Some characters of the competition of "UP Proto Gliders" were taken over thereby, so that the UP Trango XC owns beside an outstanding performance also a very agile and direct 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 following recommendations from the DHV safety officer serve to aid the pilot in identifying the right class of wing to fly for their skill level. They are based on years of analysing accident statistics, and on the collective experience of flying schools, flying instructors and SIV instructors.

LTF and EN classification

The UP Trango XC has been tested to conform to the LTF D and EN D glider classes.

Target group and recommended flying experience

Performance pilots with extensive experience flying no less than 75h/year in a variety of conditions. Perfect for the performance oriented XC pilot.

Necessary skills for normal flights*

Managing a high-performance paraglider requires above-average flying skills acquired during several years of very frequent flying in the most diverse conditions.

* recommendations by the DHV safety officer

Necessary skills for dealing with disturbances & rapid descent methods

Dealing correctly with high-performance paragliders following disturbances in the air demands quite a lot from the pilot in terms of reaction speed and skills. Safely controlling such a wing during spiral dives or other extreme SIV manoeuvres requires continuous training in order to remain on top of the situation. Besides, pilot mistakes following collapses could rapidly lead to cascade incidents and must thus be avoided.

Suitability for training

The UP Trango XC is not suited for training.

Recommended weight range

The UP Trango XC 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, 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. UP International manufactures the Trango XC in 4 different sizes. If you find yourself having to choose between two not entirely ideal sizes we recommend you let your choice be guided by your personal preference for being either a little light or a little heavy on a wing.

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

Technical Data UP Trango XC



Size	S	SM	M	L
Surface area flat [m ²]	23,2	25,5	27,6	30,0
Surface area projected [m ²]	19,7	21,7	23,6	25,4
Flat span [m]	12,1	12,7	13,3	13,8
Projected span [m]	9,6	10,1	10,5	10,9
Flat aspect ratio	6,4	6,4	6,4	6,4
Projected aspect ratio	4,7	4,7	4,7	4,7
Number of Chambers	71	71	71	71
Number of Cells	72	72	72	72
Number of supported Cells	26	26	26	26
Total line length incl. Brake [m]	293	308	321	333
Total number of lines incl.Brake	168	168	168	168
Line dimensions [mm]	0,65 / 0,7 / 1,1 / 1,2			
Glider weight [kg]	5,65	6,1	6,6	6,9
Vtrim/Vmax [km/h]	39/57	39/57	39/57	39/57
Takeoff weight [kg]	63-85	77-95	90-107	104-125
LTF Category	D	D	D	D
EN Category	D	D	D	D
Description	Performance			

Design and construction

The Trango XC differs from its predecessor the Trango 3 in far more aspects than just the optics. Many of these details are only visible at a second glance, but they are responsible for our decision to abstain from just continuing the numbering tradition by adding a „4“ to the respected Trango name. The Trango XC is very much a new wing, and the „XC“ in the title is meant to convey this fact.

These are the most important design characteristics in overview:

- Homogenous canopy curvature: The Trango XC has less arch than the predecessor. This has increased the projected AR from 4.2 to 4.7 (12%) with a flat AR increase from 6.1 to 6.4 (5%). This has helped improve the already impressive climbing ability of the Trango 3 to new levels, in spite of an overall reduction in flat area.
 - Uncompromising 3-liner: less parasitic drag due to less lines allow for more performance and more fun!
 - High-speed airfoil with the renowned and almost legendary UP safety – the Trango XC remains true to the UP Philosophy and the heritage of the predecessor
 - Highly efficient and light speed system, adopted from the Open Class
 - 2. Generation UP Pitch Trimmer
 - New Stabilo design – better handling, easier stall behaviour and reduced induced drag
 - Full Race Concept - 100% unsheathed lines
 - ASS² - 2. Generation of the UP Airfoil Stabilising System.
- Partial Brake Tension System (BTS) – a new way to attach the brake lines, where the centre lines are moved forward a little to reduce deformation of the trailing edge
 - Space-Frame-Concept – the UP way of saying that every little part of the internal life of the canopy is only subjected to tensile loads in one direction, thus the allegory to Space Frames. It allows us to dimension all parts very accurately, to the benefit of canopy complexity and weight, plus it reduces the susceptibility to cravattes.

Performance data

Ever since the Trango series was first introduced a decade ago the gliders in the family have been defining the Serial Class. Trango's have always been known for uncompromising performance coupled with very easy extreme flight behaviour. The Trango XC is no exception, mastering as it does the balancing act between performance and safety in the perfect way. As is the case for all UP wings the performance is monitored all the way through the design process. Our R&D people use the combination of two software packages, the „LT-Parafoil“ and „Paralabs“ to check every new innovation for performance benefits before it is released to to be incorporated in real-life designs.

Airfoil Stabilizing System²

The UP innovation known under the name ASS has been adopted by many other manufacturers. In the Trango XC it has been refined even further.

A thin, felxible Nylon batten renders the



use of LE supporting Mylar completely unnecessary, thereby increasing both longevity and user-friendliness of the wing. The batten has no known maximum service life and we fully expect it to be as good as new when the rest of the wing is ready for recycling. It ensures perfect launching/inflation characteristics every time, both now and in as many years as you care to stick with your new Trango XC. Should an ASS batten become damaged they are easy to replace. A small pocket towards the end of the in-sewn channel allows any user to remove damaged battens in mere seconds, and a new one can be inserted just as easily. (see the chapter „changing the ASS battens“).

Canopy material

The UP Trango XC 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 Marine (France), with the Designation 9092 E85A (top surface, cloth weight 46 g/m²), 9017 E38A (bottom surface, cloth weight 40 g/m²), 9092 E29A (supported ribs and V-Tapes, cloth weight 45 g/m²) and 9017 E29A (not supported ribs, cloth weight 40 g/m²).

Porcher paraglider cloth is renowned for low porosity, high hydrophobic properties and long-lasting colour fastness and tear resistance.

Lines

The UP Trango XC uses the same line configuration as our competition wings, i.e. unsheathed Aramide lines at all levels.

The lines are Liros LTC in the diameters 0.8, 0.9 and 1.1 mm and have very good proven records for dimensional stability. They are also known to be very strong. At all loops the lines have been spliced to double their original diameter, thus strengthening them in these crucial spots.

The line layout is simple, with three levels (A, B and C) plus brake lines. All line splicings are sewn, and the looping is done using the familiar Larks Head knot – this assembly method reduces the strain on the loops and the risk of tensile strength reductions over time. The finished lines, including stitches, are under rigorous and continuous control at the assembly line, assuring the high quality levels always associated with UP products.

Each glider ½ has the following line layout:

A-level: A1-A3

B-level: B1-B3

C-level: C1-C3(Stabilo)

Brake lines

The individual brake lines are gathered in one main brake line which travels through a low-friction pulley mounted on the rear (C) riser. The main brake line has a mark to show where the brake handle is attached by factory default.

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®!

Riser with Pitch- Trimmer

The A- and B-risers are marked with colours in order to help the pilot quickly identify them both on launch and in the air.

In order to make pulling „BigEars“ easier the A-risers are split so that the outer A line has its own mini riser (see ill. 2)

At trim speed all risers are 550mm long. Upon activation of the speed system the A1/2, the A3, the B and the C3 risers are pulled variable amounts, in order to reduce angle of incidence more in the centre of the wing than towards the wing tips. In order to reduce the power needed to apply speed we are using a high-grade pulley from the yachting industry, made by US manufacturer Ronstan.

A distinctive feature of the UP Trango XC is the elaborate trimmer system, known as the UP Pitch Trimmer. By now in its 2. incarnation Dieser sogenannte Pitch- Trimmer der 2. Generation, these trimmers are normally only seen on full-blown competition wings due to the limitations imposed by the LTF certification procedure. On the Trango XC it primarily serves to improve climbing in thermals. Closing the trimmers slows the canopy down while simultaneously subtly changing the airfoil. This in turn ensures that brake travel and handling remains the same even with fully closed trimmers. The trim speed is reduced by about 3 km/h with fully closed trimmers. We recommend using the trimmers only in weak, homogenous climbs as the benefits aren't discernible in rough and

broken lift – in such conditions having a bit more speed and dynamic is often a good thing. The trimmers should only be used for thermalling as they will affect the glide ratio negatively in a straight line. Finally the trimmers are handy for landing in tight little spots.



NOTICE! The pitch trimmers should not be applied during launching, as the inflation will be slowed down.



NOTICE! The trimmer tapes are simply looped onto the risers and may be replaced with the extras (included) if the wear becomes apparent.

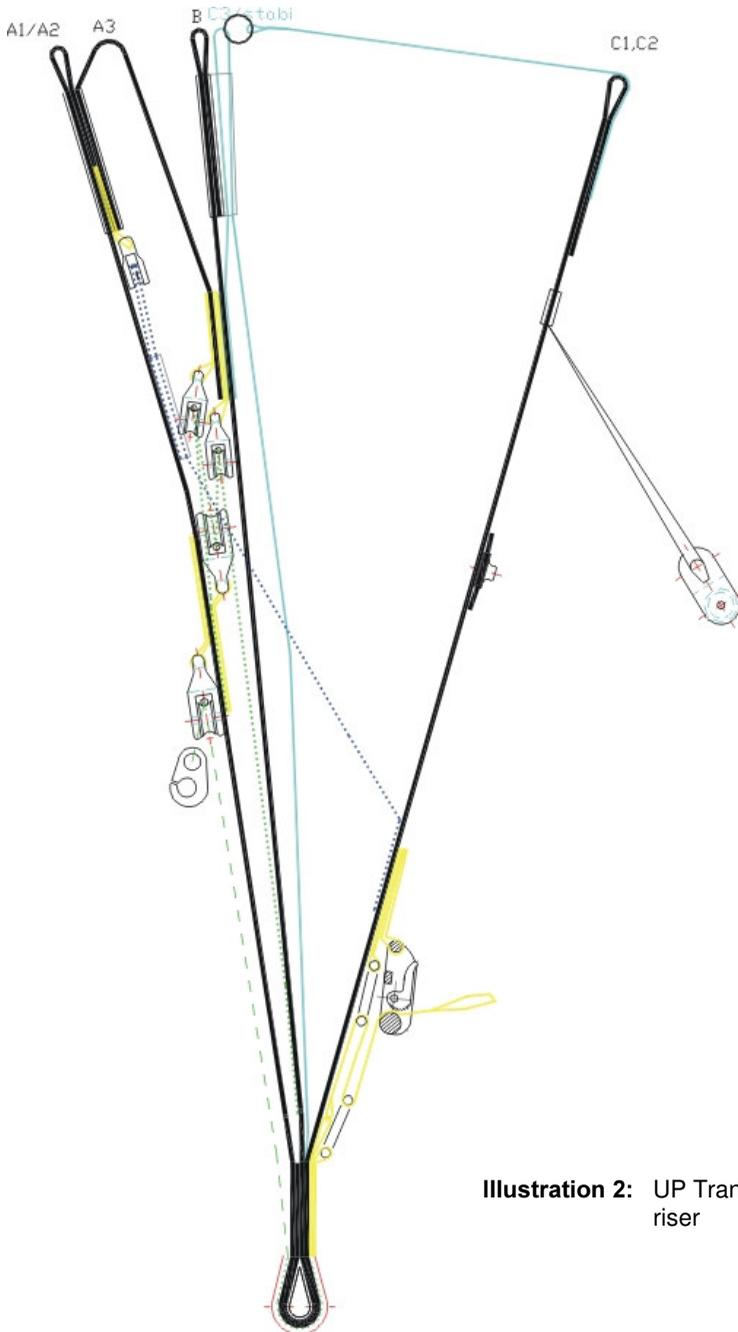


Illustration 2: UP Trango XC riser

UP Backpack

The UP Trango XC 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.

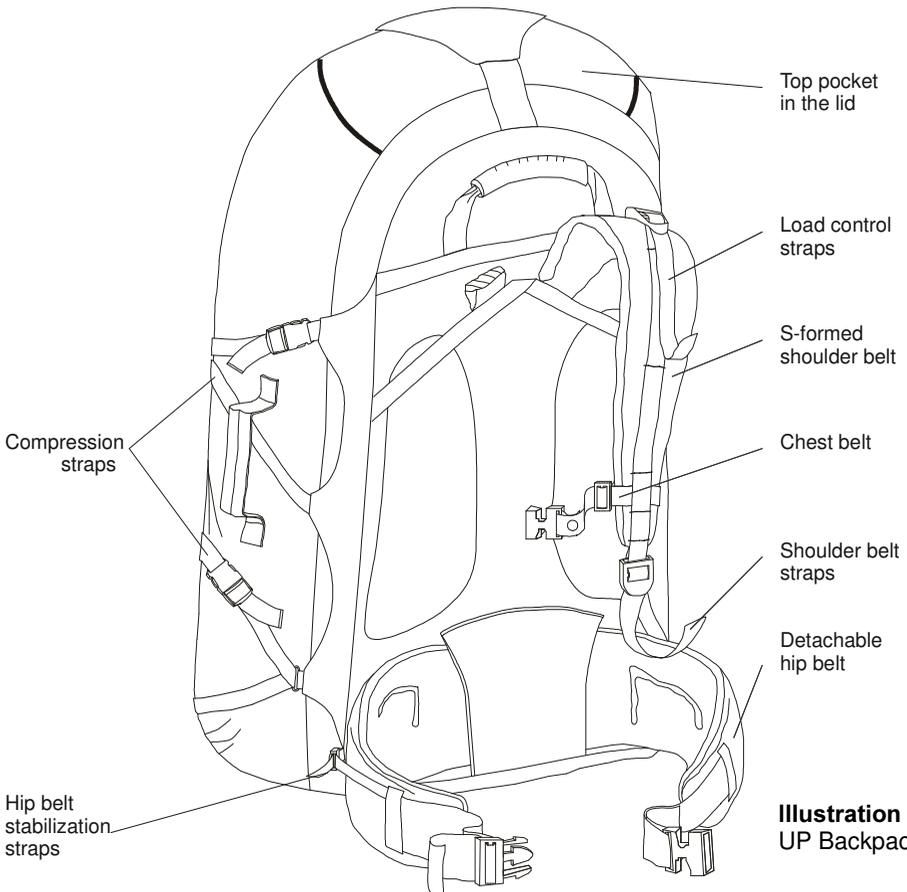


Illustration 3:
UP Backpack

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.

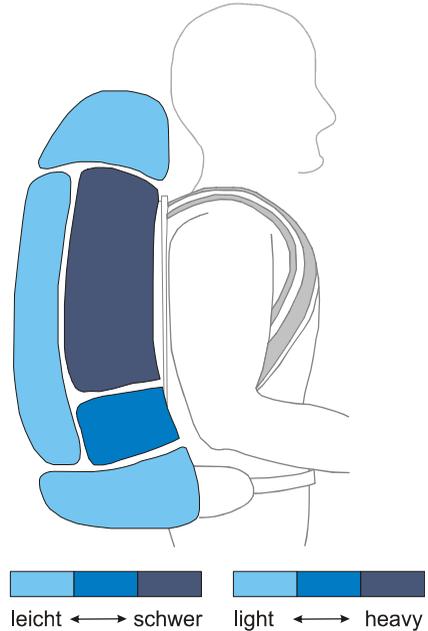


Illustration 4: Ideal load distribution in the UP rucksack

Before the first flight

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



BEWARE! Before the first flight the UP Trango XC 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 Trango XC 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 Trango XC 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 Trango XC 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 Trango XC 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!

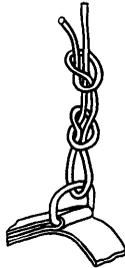
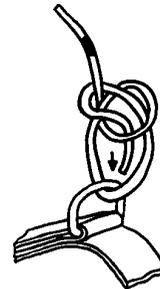
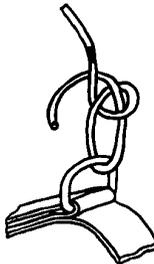
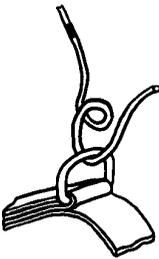


Illustration 5 and 6:
Fishermans- and
bowline-knots



Speed system

It is important that the speed system is connected correctly, and the length checked, to ensure smooth operation in flight.

The link between the foot stirrup and the risers consists of two cords and two brummel hooks. The speed stirrup itself is composed of a foot bar and webbing with loops sewn on either end to attach the cords. These cords should be run up through the eyelets and pulleys on the harness to connect with the pulley system on the front of the risers (see Illustration). This illustration refers to the UP harness, but many harnesses are similar. If in any doubt, please ask the harness dealer/manufacturer.

The length of the cords should be set so that, at full leg extension, the pulleys on the risers are just touching each other. Any shorter and the stirrup will be difficult to reach; longer and the top of the speed range will be unavailable.

During take off it is advisable to fix the accelerator stirrup underneath the harness to avoid any danger of tripping over it.

Suitable harnesses

Any harness with hang points near chest height is suitable for use with the UP Trango XC. The lower the hang point of the harness, the better the pilot can steer by weight shift. A DHV or ACPUL certified harness is recommended.

The harness design should also guarantee that it's possible to accelerate the UP Trango XC 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.

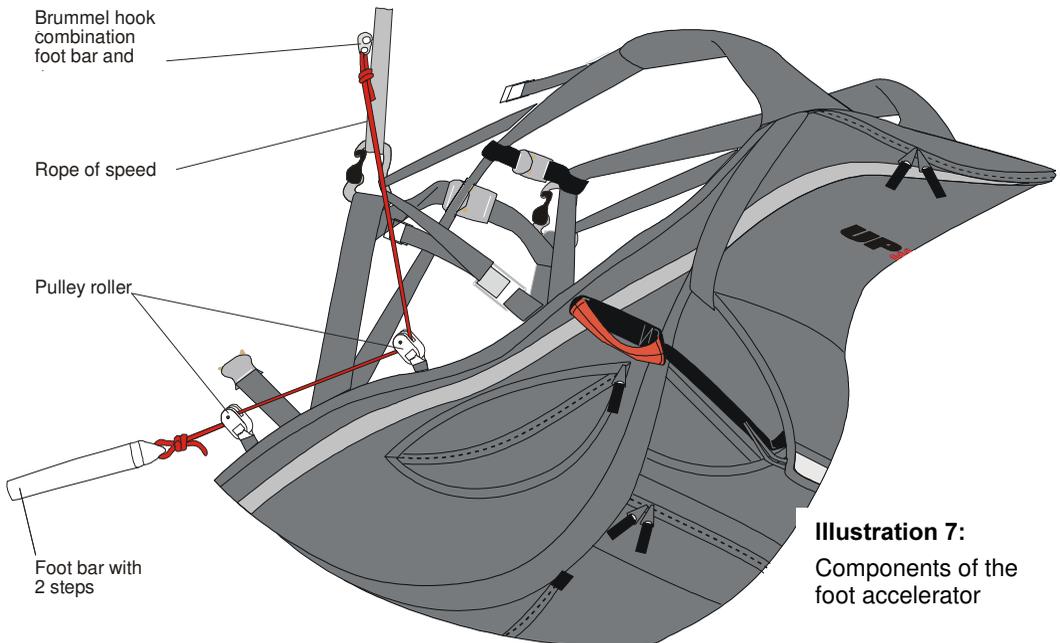


Illustration 7:
Components of the foot accelerator

Rescue system

It is strongly recommended that you have a rescue system (reserve parachute) fitted at all times. In some countries it is mandatory, so check if you plan to travel. Make sure that the reserve system you have is the correct size, and that you are fully conversant with it's use.

For fitting the reserve system, follow the instructions of the harness manufacturer.

Use of the UP Trango XC

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

If you wish to fly your UP Trango XC 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.

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 a high performance paraglider like the UP Trango XC.

Flight practice

Pre-flight check

Make sure whenever you get your UP Trango XC 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 Trango XC. 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.
4. Right before the launch you should check the air space (also behind you).
5. Once again check the wind direction before take-off.

Launching

The take-off characteristics of the UP Trango XC 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. By stronger wind the start can be facilitated if the UP Trango XC is inflated solely with both the internal A-risers (front A-riser). 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 Trango XC 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 Trango XC 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 10-15cm 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 Speed System

The UP Trango XC is supplied with a speed system, which is activated by a foot stirrup. Full application increases the speed by approximately 18 to 20 km/h. In certain circumstances the use of the speed system is extremely effective, and it should be an integral part of your flying.

The speed system should be used when you are flying through sinking air, when trying to achieve best glide in a headwind, or trying to cover the ground as quickly as possible. But it is important to remember that the glider will be more susceptible to collapses at high speeds, so the speed system should not be used in extreme turbulence. If, with the speed system applied, a collapse occurs then it should be released immediately. Some warning of an imminent collapse is afforded by the tension felt in the speed system; should the tension suddenly reduce then the stirrup should be released and the glider returned to normal trim speed.



BEWARE! All extreme flight situations, such as collapses, happen more dramatically at increased speed. Therefore the speed system should not be operated near the ground or in noticeable turbulence.

Turning

The UP Trango XC is an agile glider and reacts immediately to pilot input. Brake input and amount of weight shift induced will define the radius and bank angle on the UP Trango XC, 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 Trango XC 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 Trango XC begins a fast and steep turn, which can be made into a steep spiral (refer to chapter heading "steep spiral").

Landing

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

- 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.
- We recommend launching the Trango XC when towing with open trimmers.

- 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 90 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

The optimal attachment point for the towline release is always in the systems' centre of gravity. On a paraglider that means the connection point between the risers and the harness, preferably right onto the lower end of the risers. UP International has developed special tow-release connectors for the UP Trango XC to ensure the optimal

connection between the pilot and the towline. For safety reasons we suggest that you always use these connectors when towing the UP Trango XC.

When using towline release systems incorporating distance-tubes between the risers it is important to ensure that the risers are not pulled together by the system (use webbing loops designed for climbing to increase the length of your release system). It is also very important to fit a bungee to the system that will keep it from hitting you in the face in the event of a towline failure



BEWARE! If you are using a front-mounted reserve system it is very important to verify the unhindered deployment before every flight. In case of doubt please only tow using a textile release system.

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 Trango XC 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 Trango XC 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.



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 Trango XC 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

Always initiate this manoeuvre from straight level flight. Due to the complexity of the risers the B-stall must be executed by holding the B-maillons just above the risers. Grab hold of the maillons – without holding on to the extra maillon for the stable line – and pull approximately 10-15cm straight down. We recommend keeping the brake lines in your hands

while executing the manoeuvre. 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 Trango XC 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

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 20-30cm 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 steerable 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 Trango XC 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 Trango XC 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

Asymmetric collapse

As is the case with all high performance paragliders, asymmetrical collapses without the proper pilot input can be relatively dynamic. It is very important to always fly attentively and react to possible disturbances immediately. Wing tip collapses can almost always be prevented through active flying.

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 weightshifting 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 the Trango XC has a separate stabilo line (C3) going from the B-riser to the stable – 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 Trango XC 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 Trango XC 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 Trango XC 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 Trango XC 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 brakeline 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 brakeline input, that you do not pull BigEars 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.



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 Trango XC 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.

Flying near the sea

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.

Environmentally responsible disposal

A paraglider is made up of synthetic fibres which must be disposed of correctly. Once the paraglider reaches the end of its service life it must thus be handled correctly and not just binned. UP is happy to take care of this for you if you return the wing to us.

Looking after Mother Nature

We'd like to close this chapter with an appeal; always practise your sport in a way that nature isn't penalised for your passion. Don't walk outside of cleared paths, don't leave garbage lying around, don't make unnecessary noise and do not disturb the precarious equilibrium of the mountain environment.

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

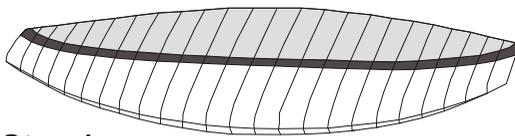
Packing your wing

The Trango XC design uses no Mylar reinforcements in the leading edge. This means that you can pack it any way you prefer, the leading edges is unsusceptible to packing damage. This doesn't mean that you can't use the Mylar-protecting packing method depicted here below:

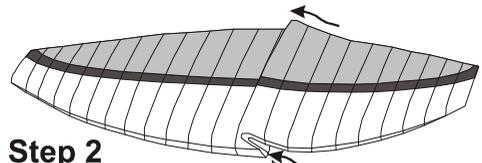
If you are storing your UP Trango XC for extended periods we recommend using the accordion folding method, seen here below. The UP Accordion bag is an ideal partner for this purpose.

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.

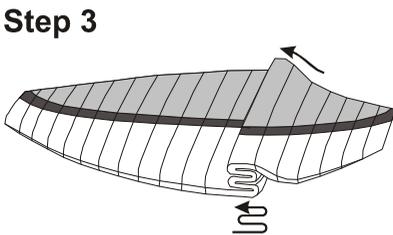
Also, to avoid mechanical abrasion we suggest you lay your wing on the compression sack every time you pack it.



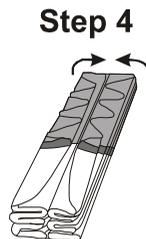
Step 1



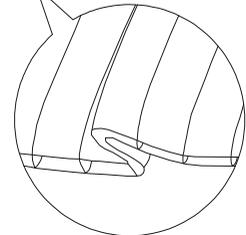
Step 2



Step 3



Step 4



Detail

Illustration 8: Packing the UP Trango XC

There is however a small trick you can use to be good to your new wing, see the following illustrations:



Choose your own method of folding the wing into a narrow sausage.



Then fold the sausage from the trailing edge forward...



... all the way to the leading edge.



Do NOT fold the leading edge under, as shown here above.



The leading edge should be on the outside of the bundle when you are finished – secure the bundle with the compression strap.

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 mildew 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 Trango XC 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 Trango XC are high grade Aramid lines. 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'
- 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 Trango XC 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 Trango XC 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 of fresh water. Frequent spraying will accelerate the ageing process.

Replacing ASS battens

Due to the ASS reinforcement system the Trango XC leading edge is very robust. Should a reinforcement batten break they are however very easy to replace. A small pocket extension at the top end of the batten pocket allows easy removal of the damaged batten; simply push the batten a bit further into the pocket extension and release the other end.



Use the damaged batten to measure a perfect new one from the extra batten material. The new ends should be sanded/filed round and covered with woven sticky tape before use. When inserting the new batten, make sure it is inserted all the way so it cannot accidentally come out.



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 and inspections should only be carried out by UP or a UP approved service facility.

Our service team are all professional pilots with a wealth of experience examining and repairing paragliders. You can be sure that they will look after your equipment in a conscientious manner and the quality of work done will be second to none.

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 Trango XC!

Airworthiness Check

The UP Trango XC must be checked according to the following time schedule (which ever comes first):

- 2 years after purchase
- Every two years after that, or sooner if prescribed by the UP checking facility during the last check
- After 100 hours, or
- After 80 Flights

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

Contact your local dealer for information about the nearest UP approved checking facility.



BEWARE! 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!

UP Craftsmanship

In order to ensure that your UP Trango XC 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.

Original spare parts

Your new UP paragliders is composed of many high-class components with a long lifespan. If you need to exchange any of these components, please

make sure you use only original spares all around. Aside from ensuring the continued validity of the certification, this will also contribute positively to your personal safety in flight.

Airworthiness check

UP has been in the free flying business for longer than most. Our extensive experience is your guarantee that we can perform the best possible airworthiness checks on your equipment.

During the airworthiness check the canopy is checked inside and out for damage, along with the entire suspension system, the risers and all connections.

Our checking facilities are equipped with state-of-the-art measuring and suspension devices, like carefully calibrated porosity metres, computer based laser-assisted line length verification systems and breaking-load measuring equipment.

Aside from the qualitative measurements the actual look and feel of the glider, as seen by the experienced staff by UP, is a crucial factor when determining the state of a wing. If the person checking the wing is in any doubt about the airworthiness of a particular wing it is handed over to the UP test pilots for a test flight, which will determine the actual state of affairs even better than the best qualitative checking ever can.

All this serves to ensure that gliders checked by UP International still live up to the demands posed by ourselves to our new products, and by the testing authorities – a good incentive for our customers to make sure that their UP wings are always checked by UP, or by a UP approved checking facility!

Quality check on service

Before your glider leaves UP all scheduled tasks will be rechecked one final time.

Aside from this the wing will be subjected to a thorough visual inspection in order to ensure that it conforms to the strict norms stipulated by UP.

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.

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 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 Trango XC

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 Trango XC. 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
GERMANY**

Email: service@up-europe.com
Telefon: +49 (0) 88 21-7 30 99-19
Fax: +49 (0) 88 51-92 92 60-16

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 Trango XC, 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 Trango XC.

SEE YOU UP IN THE SKY –
UP International

* from Helmut Reichmann from the book
"Streckensegelflug"

Attachments 46

Line Layout Plan 47

DHV Certification Documents for UP Trango XC S-L 49-56

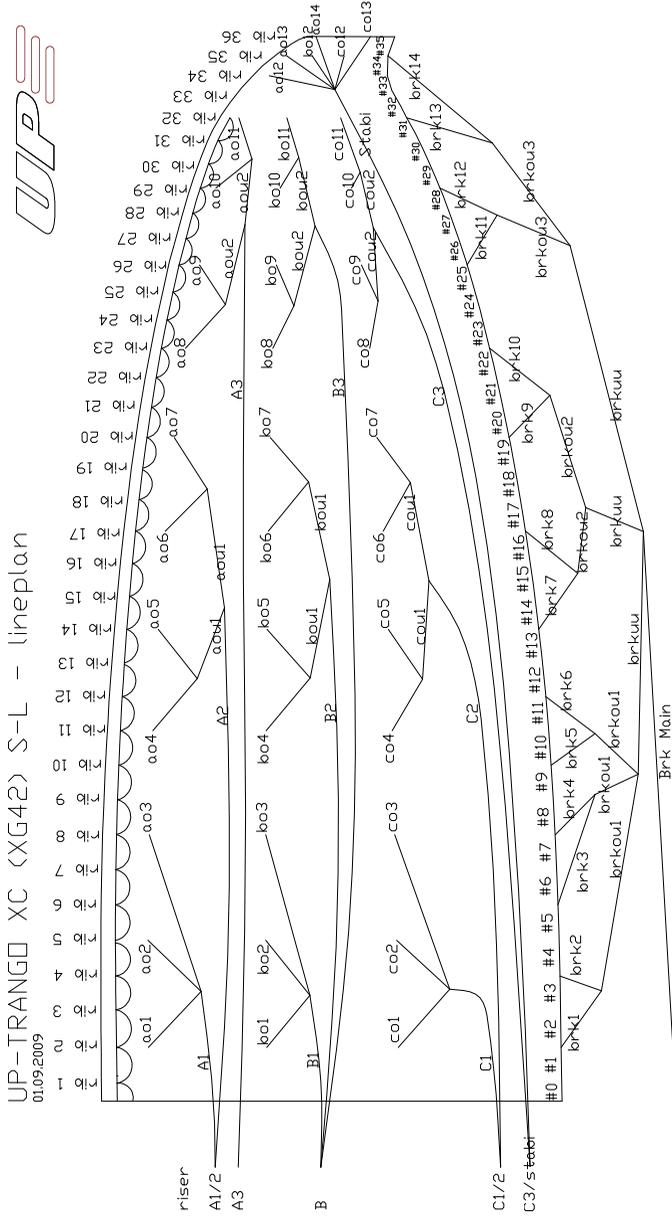
Service Booklet..... 57

Glider-and plot data..... 57

Used by the UP Service centre in connection with periodic service.... 59

Product registration card 61

Line plan



Herstellerangaben zum Luftsportgeräte-Kennblatt

Gleitsegel

I. Musterprüfung

1. Gerätemuster: **UP Trango XC S**
2. Hersteller: **UP International GmbH**

II. Merkmale und Betriebsgrenzen

1. Gerätemasse(kg): **5,65**
2. Zulässiges Startmasse minimal (kg): **63** maximal (kg): **85**
3. Anzahl der Sitze: **1**
4. Klasse: **D**
5. Gurtzeugbeschränkung: **GH**
6. Fußbeschleuniger: **ja**
7. Trimmer: **ja**
8. Projizierte Fläche (m²): **19,67**
9. Windenschlepp: **ja**

10. Tragegurtlängen (mm):

Tragegurt A1/2 – A3:	Tragegurt B:	Tragegurt C3:	Tragegurt C1/2:
normal: 550 - 550	normal: 550	normal: 550	normal: 550
beschl.: 325 - 350	beschleunigt: 380	beschleunigt: 455	beschleunigt: 505

Herstellerangaben zum Luftsportgeräte-Kennblatt

Gleitsegel

I. Musterprüfung

1. Gerätemuster: **UP Trango XC SM**
2. Hersteller: **UP International GmbH**

II. Merkmale und Betriebsgrenzen

1. Gerätemasse(kg): **6,1**
2. Zulässiges Startmasse minimal (kg): **77** maximal (kg): **95**
3. Anzahl der Sitze: **1**
4. Klasse: **D**
5. Gurtzeugbeschränkung: **GH**
6. Fußbeschleuniger: **ja**
7. Trimmer: **ja**
8. Projizierte Fläche (m²): **21,7**
9. Windenschlepp: **ja**

10. Tragegurtlängen (mm):

Tragegurt A1/2 – A3:	Tragegurt B:	Tragegurt C3:	Tragegurt C1/2:
normal: 550 - 550	normal: 550	normal: 550	normal: 550
beschl.: 325 - 350	beschleunigt: 380	beschleunigt: 455	beschleunigt: 505

Herstellerangaben zum Luftsportgeräte-Kennblatt

Gleitsegel

I. Musterprüfung

1. Gerätemuster: **UP Trango XC M**
2. Hersteller: **UP International GmbH**

II. Merkmale und Betriebsgrenzen

1. Gerätemasse(kg): **6,6**
2. Zulässiges Startmasse minimal (kg): **90** maximal (kg): **107**
3. Anzahl der Sitze: **1**
4. Klasse: **D**
5. Gurtzeugbeschränkung: **GH**
6. Fußbeschleuniger: **ja**
7. Trimmer: **ja**
8. Projizierte Fläche (m²): **23,6**
9. Windenschlepp: **ja**

10. Tragegurtlängen (mm):

Tragegurt A1/2 – A3:	Tragegurt B:	Tragegurt C3:	Tragegurt C1/2:
normal: 550 - 550	normal: 550	normal: 550	normal: 550
beschl.: 325 - 350	beschleunigt: 380	beschleunigt: 455	beschleunigt: 505

Herstellerangaben zum Luftsportgeräte-Kennblatt

Gleitsegel

I. Musterprüfung

1. Gerätemuster: **UP Trango XC L**
2. Hersteller: **UP International GmbH**

II. Merkmale und Betriebsgrenzen

1. Gerätemasse(kg): **6,9**
2. Zulässiges Startmasse minimal (kg): **104** maximal (kg): **122**
3. Anzahl der Sitze: **1**
4. Klasse: **D**
5. Gurtzeugbeschränkung: **GH**
6. Fußbeschleuniger: **ja**
7. Trimmer: **ja**
8. Projizierte Fläche (m²): **25,44**
9. Windenschlepp: **ja**

10. Tragegurtlängen (mm):

Tragegurt A1/2 – A3:	Tragegurt B:	Tragegurt C3:	Tragegurt C1/2:
normal: 550 - 550	normal: 550	normal: 550	normal: 550
beschl.: 325 - 350	beschleunigt: 380	beschleunigt: 455	beschleunigt: 505

SERVICE BOOKLET

Glider- and pilot data

Model: Trango XC

Size: S SM M L

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: _____

Assignment Nr.
Stamp

Service jobs undertaken:

2nd Service

Performed date: _____

Assignment Nr.
Stamp

Service jobs undertaken:

3rd Service

Performed date: _____

Assignment Nr.
Stamp

Service jobs undertaken:

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

4th Service

Performed date: _____

Assignment Nr.
Stamp

Service jobs undertaken:

5th Service

Performed date: _____

Assignment Nr.
Stamp

Service jobs undertaken:

6th Service

Performed date: _____

Assignment Nr.
Stamp

Service jobs undertaken:

Product Registration card

Model: Trango XC

Size: S SM M L

Serial number: _____

Date of purchase: _____

First flight: _____

Preflown by: _____

Owner

Name: _____

Family name: _____

Address: _____

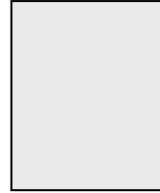
Telephone: _____

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 Trango XC via www.up-paragliders.com>Service>UP>Product Registration



Ultralite Products
International GmbH
Altjoch 19 A
D-82431 Kochel am See



UP International GmbH

Kreuzeckbahnstrasse 7
82467 Garmisch-Partenkirchen
Germany

Tel. +49 (0) 88 21-73099 0
Fax: +49 (0) 88 21 73099 16

info@up-paragliders.com
www.up-paragliders.com
