OBSESSION – safe travel

U-TURN

- Handbook – English Rev.1.02
- Maintenance Guide Rev.1.6
- DHV Example Certification
-DHV Example Registration

Stand: März 2007 / Revision 1.02

Text: Stefan Preuß
Text and Graphics: Ernst Strobl

You've got the stuff to fly!

The U-Turn team would like to congratulate you on the purchase of your new U-Turn paraglider. You have made an excellent choice. We wish you long and enjoyable flights and many happy landings with your U-TURN OBSESSION.

The Research and Development team at U-Turn can proudly look back at many successful years in the flight sport industry. Our own concepts not only meet but exceed industry standards. The combination between the latest computer based technology and the know-how of experienced test pilots and professional pilots provides an excellent ground for quality. We certainly keep our customers needs in mind, and always appreciate your input and constructive criticism. Should there be any open questions please feel free to contact your U-TURN dealership or our company. We are glad to assist you in any possible way.

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

U-TURN GmbH
Paragliders and Kites
Esslinger Straße 23
D-78054 Villingen-Schwennigen
Tel. +49 (07720) 807111
Fax: +49 (07720) 807112
Internet: www.u-turn.de
E-mail: info@u-turn.de

Please read the handbook carefully before using your U-Turn OBSESSION for the first time. We composed this handbook, in order to make the handling of your new U- Turn OBSESSION as safe and easy for you as possible.

Business Reply Card

U-TURN GmbH
Esslinger Straße 23
D-78054 Villingen-Schwennigen

NAME:.....

FIRST NAME:.....

STREET:.....

ZIP CODE/CITY:.....

TELEPHONE:.....

E-MAIL:.....

.....

PARAGLIDER TYPE:.....

SERIALNUMBER:.....

Date of purchase:.....

Dealership:.....

.....

Tested by:.....

Flying hours:.....

Paraglider since:.....

Miscellaneous:.....

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.....

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☐ Yes, I would like to get the newsletter by email.

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Introduction

Paragliders made by U-Turn are a class of its own. U-Turn stands for uncompromising safety, best components and outperforming flight-characteristics. Fly it and be happy, as U-Turn is the brand for those who appreciate the difference. The limits of physics are unbribable. To do the most practicable within this given frame is our goal. We concede: This is an ambitious and somehow immodest demand, but you'll find U-Turn always at the cutting edge of technology. Oscar Wilde once said in his very british understatement his taste is just basic: Only the best is always good enough. The U-Turn team agrees with this attitude: We always want to deliver the best possible glider. Not more, but certainly not less. Customer's wishes are key for the U-Turn stuff, so we appreciate any comments. Please feel free to contact your competence center or U-Turn directly when you're in need for a good piece of advice.

General Description: OBSESSION

OBSESSION – while the union of speed and safety in the High End 1-2 by U-Turn with a aspect ratio of 5.55 provides maximum power, it also offers multiple reserves due to the progressive AFS-System.
What could be better than to glide over a beautiful landscape? With the OBSESSION by U-Turn this experience of freedom and nature becomes just a tad more attractive. And faster. And safer. Because now Ernst Strobl's newest construction has become available; with the aspect ratio of 5.55 for maximum power, but thanks to the meticulously constructed technology and the AFS, also with the safety of DHV 1-2 Glider. Precisely where the line is drawn between the DHV 1-2 and the DHV-2 is where the OBSESSION fits in. The canopy defines accurately the result, that maximum power and the safety of the DHV 1-2 levels add up to. One of the impressive features of the canopy is the enormous glide ratio even at high levels of speed. Of course this High-End 1-2 features the long accelerator way typical for U-Turn, for precise dosing and elevated end speed, not mention an agility that doesn't let you wish for anything more. The complete know-how from the development of the Acro-Reference G-Force 360 was infused into the very dynamic direct handling of the OBSESSION. Even very flat and narrow climbing in thermal are very manageable, and with minimal sinking while flying a curve the OBSESSION shines. In other words: during climbing in thermal the pilot can feel that the OBSESSION undoubtedly has genes that so far were reserved for higher level gliders.
Aside from the astounding power and the aspect ratio of 5.55 the OBSESSION also has a very high stability, which is mostly attributable to the refined AFS-System.
The dynamic base design of the canopy allows for a higher impact of the AFS, without sacrificing too much fun or potential power as a result of the strong braking system.
The area that is affected by the AFS on the OBSESSION has been increased by 20% compared to the Infinity II. That is how we achieved more impact and higher stability in turbulent air without sacrificing the fine coordination of the system. The new Glider also has many attachement points due to the big amount of bifurcation line. In the upper area the OBSESSION has paper thin 0.6 Liros Lines, about 40cm in length. By that the pressure to each attachement point s being reduced and the force is spread out more evenly on the canopy.
Strobl explains: 'Although the bifurcation line take up a minimal amount of power, by using them I could construct the wing to be more powerful and keep the same resistance against collapses, which compensates for the loss due to air resistance.

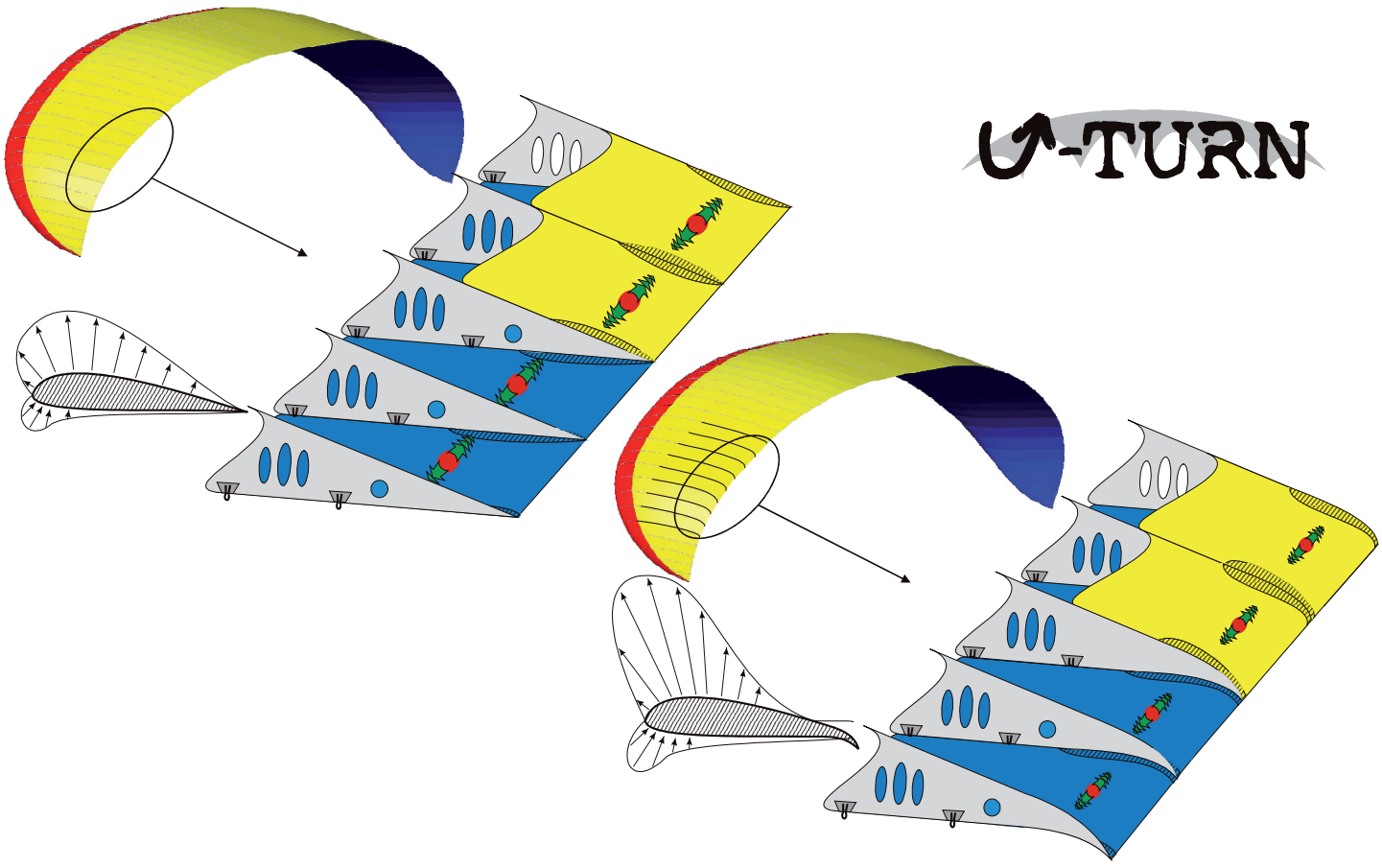
General Description: OBSESSION

The OBSESSION is very resistant to collaps even in turbulent air. And should the threat ever arise to leave the safe zone, the canopy will provide timely feedback. In choosing the materials, Strobl decided to use the cloth that proved itself during the Trans Speed Europe by MadMikeKueng. After exhausting tests with multiple prototypes in various sizes it was decided: "Neither during take off nor in flight or during landing has a lighter material provided improvement," says Strobl. As far as UV-proofing and general strength this cloth by Porcher Marine was by far the best. In order to ensure the efficiency of the glider and to preserve the value of the canopy, including an easy take off, the OBSESSION is equipped with the Mylar Fix System, that is known from the Infinity II, and quickly proved itself. The Mylar Fix System prevents the leading edge from bending by using a loop-system the glider keeps its shape and therefore its ideal power capacity. "The goal was to produce a very powerful glider with the safety features of a 1-2", says U-Turn co-founder Thomas Vosseler, content with the achieved level of safety.
"Nevertheless" he adds, "the OBSESSION is not made for beginners, nor is it suitable for teaching. Those who passed the exam and would like to step it up from the DHV Bodyguard by U-Turn, should choose the Infinity II with AFS. Although the Infinity II is a DHV-1-2 glider, it is much closer to level 1.

The OBSESSION is available in sizes S(65- 90kg), M(80-110kg), L(100-130kg). The U-Turn claw has a new design and combined with its sporty silhouette it lend the glider a rather dynamic appearance.

AFS

With the AFS-system U-Turn introduces a world first to the market. To fly safely means to fly actively - the system employed on the OBSESSION allows this to happen automatically to a certain level. The secret of the AFS-system is based on a pre-tensioning principle. In the area of the brake attachment points the undersurface is pre-tensioned. Whilst the sail is gliding through smooth air, there is enough pressure inside and the pre-tensioning is neutralised: The effect of internal pressure is more powerful than the pre-tensioning and the trailing edge stays aerodynamically perfect in the air like a conventional glider.
When entering turbulent air with the OBSESSION the system adjusts immediately, even the slightest drop of internal pressure allows the system to react. The pre-tensioning at the trailing edge is effectively like pulling the brakes.
Ernst Strobl recalls the fine-tuning, „Our computer-based calculations were impressively confirmed during our tests".
The system is extremely responsive so that a top-quality manufacturing is key. U-Turn Co-founder Thomas Vosseler adds, „We will guarantee a strongly supervised manufacturing process".
The AFS works like the Electronic Stability Programs known in the automotive industry, you could call it an „ESP for the air". It intervenes for the benefit of safety when an inexperienced pilot, or a pilot in trouble, enters turbulence and is unable to fly actively.
Andreas Schubert, who has taught 10 % of all new pilots in Germany over the last ten years confirms, „This is a major step as far as safety is concerned. The main reason for accidents, the full collapse of the canopy, is minimized dramatically".
Even without AFS the OBSESSION would be a very safe glider says Strobl. Due to the extremely pulled down winglets and the resulting spread of the canopy the OBSESSION has far more than average resistance to collapses. Schubert confirms, „The OBSESSION glides stably ahead even after an accelerated asymmetric collapse, a situation that may happen after leaving a thermal, even with 50% of the wing area collapsed". This is simply outstanding.
The computer optimised wing layout leads to very good thermal lift and maximizes the stall characteristics, both improving safety.

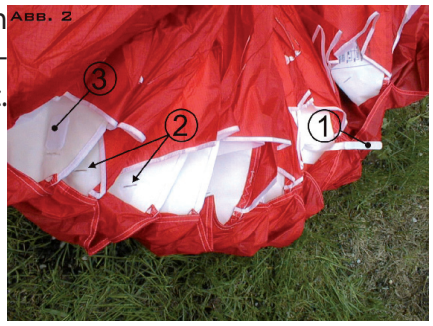


Mylar Fix System

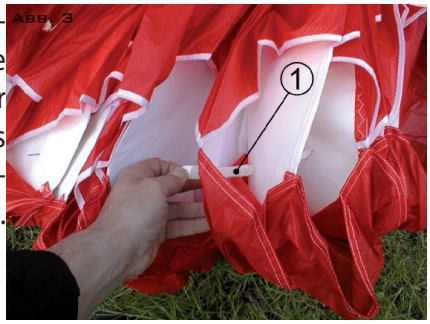
U-Turn stands for innovatives ideas and with the Mylar Fix System the company has once again proven itself as a trendsetter. The system allows the pilot to pack the paraglider, even during light wind conditions alone and without help at the packing area, in such a way as to ensure that the profile front side Mylar-reinforcements do not get creased. This caring method leads to a significantly longer lifetime of the paraglider and better performance simoultaneously. Serious creasing of the leading profile can be avoided for years when carried out correctly and with sufficient care during the folding operation.
This is very important because creased reinforcements even for short time area strain reliefs in flight tend to return to the creased condition. The result: The paraglider will not be correctly in the air stream and loses performance and ultimately will be more susceptible for unwanted flying situations. This behaviour is similar during the start phase. The less the reinforcements are creased the easier it is to raise and start the OBSESSION AFS. A small detail which however can hardly be overestimated in its use and impact and contributes significantly to uphold the value and high performance of the OBSESSION.

On the right and left (from the middle of the glider) Mylar reinforcement is reinforced velcro. 1) Take this out of the velcro anchorange

…and thread through the slots in Mylar reinforcements 2 and 3 etc.



Press each reinforcement neatly onto the next. That will make for a strong packing that is protected from bending.



Once all reinforcements are precisely beaded and gathered up you can attach the velcro to its counterpart and the neatly stacked Mylar reinforcement will stay in shape.

Ensure that the velcro sits tight – and the profile edge stays in shape.

That's what the finished glider looks like. Now the back part can be folded rail by rail and rolled up.

New features

Along with these safety features the U-Turn OBSESSEION also offers comfort features to enhance the fun of the sport. With the Easy Fix, the harness of the gliders are being fixed after the glider is folded.
The Dirt-Outs on the flying terrain, make the removal of dirt and foliage in the canopy easier.
In fact the U-Turn OBSESSION does not only set new safety standards, it also changes the way paragliders are constructed. Although the entire developmental process was dictated by safety, Ernst Strobl managed to create a piece of equipment that is guaranteed fun. With that in mind, the U-Turn OBSESSION is, without compromise, made to be safe, without compromising the joy of paragliding.

Important: Having the necessary level of experience never substitutes the need to familiarize yourself with the glider before leaving the ground. Please carefully read the handbook and take advantage of the support your flight school, as well as U-Turn, offer.

Please always remember that aviation can potentially be dangerous and your safety lies in your own hands. We strongly encourage you to fly conservatively; this includes the choices you make concerning flight conditions as well as the choices you make during flight.

General description - Material specifications

Bezeichnung der Verwendung	Herstellerbezeichnung	technische Maße / Dimension	Lieferant / DIN Nr.
im Gesamtsystem		Gewicht / Festigkeit	
Aufhängungsschlaufen	Nylon	7,2 g/m / Bruchlast 110kg / 13mm Breite	Kolon Industrial Co. Korea
Beschleunigerleine	Nylon	Ø 4,0mm = Bruchlast 350 daN	
Beschleuniger- Bremsrolle	GIN Rolle		Gin Gliders Korea
Beschleunigerschloß	Brummelhook		Gin Gliders Korea
Bremsaufhängungen	Nylon	7,2 g/m / Bruchlast 110kg / 13mm Breite	Kolon Industrial Co. Korea
Bremsgriff	High Tenacity Polester Yarn 22mm	25 g/m / 1000 kg Bruchlast	Technl Sangles, France
Bremsgriffaufhängung	High Tenacity Polester Yarn 22mm	25 g/m / 1000 kg Bruchlast	Technl Sangles, France
Bremsgriffbefestigung	Magnet		Gin Gliders Korea
Bremsstammleine 2,3mm Ø	Dyneema Lines	2,3mm = 250daN	Gin Teijin Korea
Leinen, DSL70, DC 60 PSSL120, 160, 200, 275	Lyros lines	siehe Obsession Gerätebeschreibung	Rosenberger Tauwerke
Gurtumlenkungen	Stainless Steel	8g / Ø 3,8mm / Bruchlast 800kg	Ansung Precision CO. Korea
Leinenschlösser	Stainless Steel	12g / Ø 4,3mm / Bruchlast 1000kg	Ansung Precision CO. Korea
Obersegel - A - B - C	9092 E89A - 9017 E77A - 9017 E77F	45 g/m² - 40 g/m² - 40 g/m² (PA 6.6 HT)	Porcher Marine, NCV, France
V-Tape	9017 E29A	40 g/m² (PA 6.6 HT)	Porotex, Germany
Profilnase Verstärkung	P 250	225 g/m²	Dimension-Polyant, Germany
Rippen, Profile	9017 E29A	40 g/m² (PA 6.6 HT)	Porotex, Germany
Tragegurt	High Tenacity Polester Yarn 22mm	25 g/m / 1000 kg Bruchlast	Technl Sangles, France
Untersegel - A - B - C	9017 E38A - 9017 E38A - 9017 E38F	40 g/m² (PA 6.6 HT)	Porcher Marine, NCV, France
Verstärkung Anlenkpunkte B/C/D	LI 420	180 g/m²	Porcher Marine, NCV, France
Nähfaden Rippe	High Tenacity Polester Yarn 1500/2	0,05 g/m² / 2,9 kg Bruchlast	Amann & Söhne GmbH, Germany
Nähfaden Leinen	High Tenacity Polester Yarn 1500/3	0,083 g/m² / 3,2 kg Bruchlast	Amann & Söhne GmbH, Germany

U-TURN

Take-off weight-area load

Start Weight (kg)	60	65	70	75	80	85	90	95	100	105	110	115	120	125	130
OBSESSION S	2,3	2,5	2,7	2,9	3,0	3,2									
OBSESSION M					2,8	3,0	3,2	3,3	3,5	3,7	3,9				
OBSESSION L									3,2	3,4	3,5	3,7	3,9	4,0	4,2

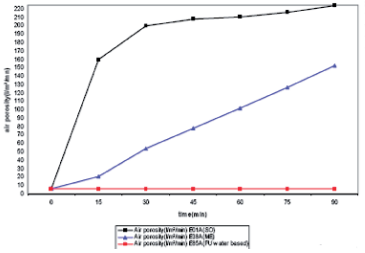
OBSESSION	S	M	L
Startgewicht	65 - 90 kg	80 - 110 kg	100- 130 kg
Fläche ausgelegt	26.3 m²	28.5 m²	31.0 m²
Fläche projiziert	23.3 m²	25.3 m²	27.5 m²
Spannweite ausgelegt	12.0 m	12.5 m	13.0 m
Spannweite projiziert	10.1 m	10.5 m	11.0 m
Streckung	5.5	5.5	5.5
Streckung projiziert	4.3	4.3	4.3
Zellenzahl	55	55	55
V-Trimm	~38 Km/h	~38 Km/h	~38 Km/h
V-Min	~23 Km/h	~22 Km/h	~22 Km/h
V-Max	~55 Km/h	~55 Km/h	~54 Km/h
Konstruktionsmerkmale / Besonderheiten	AFS, V-Tapes, Zugbänder, Mylar Fix System; Geteilter A-Tragegurt	AFS, V-Tapes, Zugbänder, Mylar Fix System; Geteilter A-Tragegurt	AFS, V-Tapes, Zugbänder, Mylar Fix System; Geteilter A-Tragegurt
Zahl der Tragegurte	5	5	5
Zahl der Leinenstockwerke	2	2	2
Fußbeschleuniger/Trimmer	Fußbeschleuniger	Fußbeschleuniger	Fußbeschleuniger
Kappengewicht	6.0 kg	6.4 kg	6.8 kg
DHV Trimmspeed Test	DHV 1-2 *	DHV 1-2	DHV 1-2 *
DHV V-Max Test	DHV 1-2 *	DHV 1-2	DHV 1-2 *

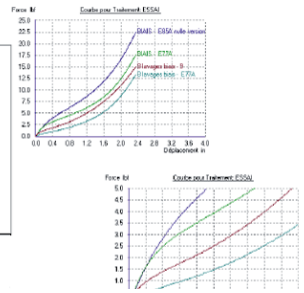
Materialeinsatz	Hersteller	Bezeichnung	Material		
Obersegel	Porcher Marine, NCV,	9092 E85A/ 9017 E85A	High Tenacity Nylon 6.6	Water-repellent	~ 45g/m² / ~ 40g/m²
Untersegel	France	9017 E38A	High Tenacity Nylon 6.6	classic	~ 40g/m²
Profile		9017 E29A	High Tenacity Nylon 6.6	Hard finish	~ 40g/m²
V-Rippen		9017 E29A	High Tenacity Nylon 6.6	Hard finish	~ 40g/m²
Verstärkungen	Porcher Marine	W420	Gewicht 160 g/m²		
Verstärkungen Mylar an Öffnung	Dimension-Polyant	P280	Gewicht 280 g/m²		
Kaskaden, Bremsleinen, Stammleinen	Liros, Rosenberger PPSL120/160/200/275, DSL70, DC60		Dyneema		
Tragegurte	Techni Sangles, France	22mm / 1100kg 98 / 25g/m	High Tenacity Polyester Yarn		

You will find further details regarding the construction and measurement of the U-Turn OBSESSION in the "Typenkennblatt" or, in case of equipment with example registration, in the "Luftsportgerätekennblatt" in accordance with paragraph four of the "Luftverkehrszulassung". (See attachments)
You can find possible technical changes in the attachment to this manual.

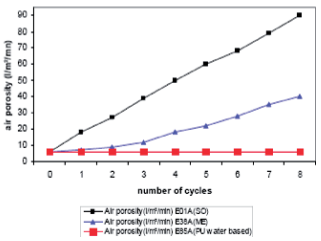
☞Warning: any self inflicted changes to the construction that go beyond the allowed adjustment options, void the operating license and are potentially life threatening. Use of this paraglider is at your own risk. The producer and distributor cannot be held liable.

FLUTTER TEST





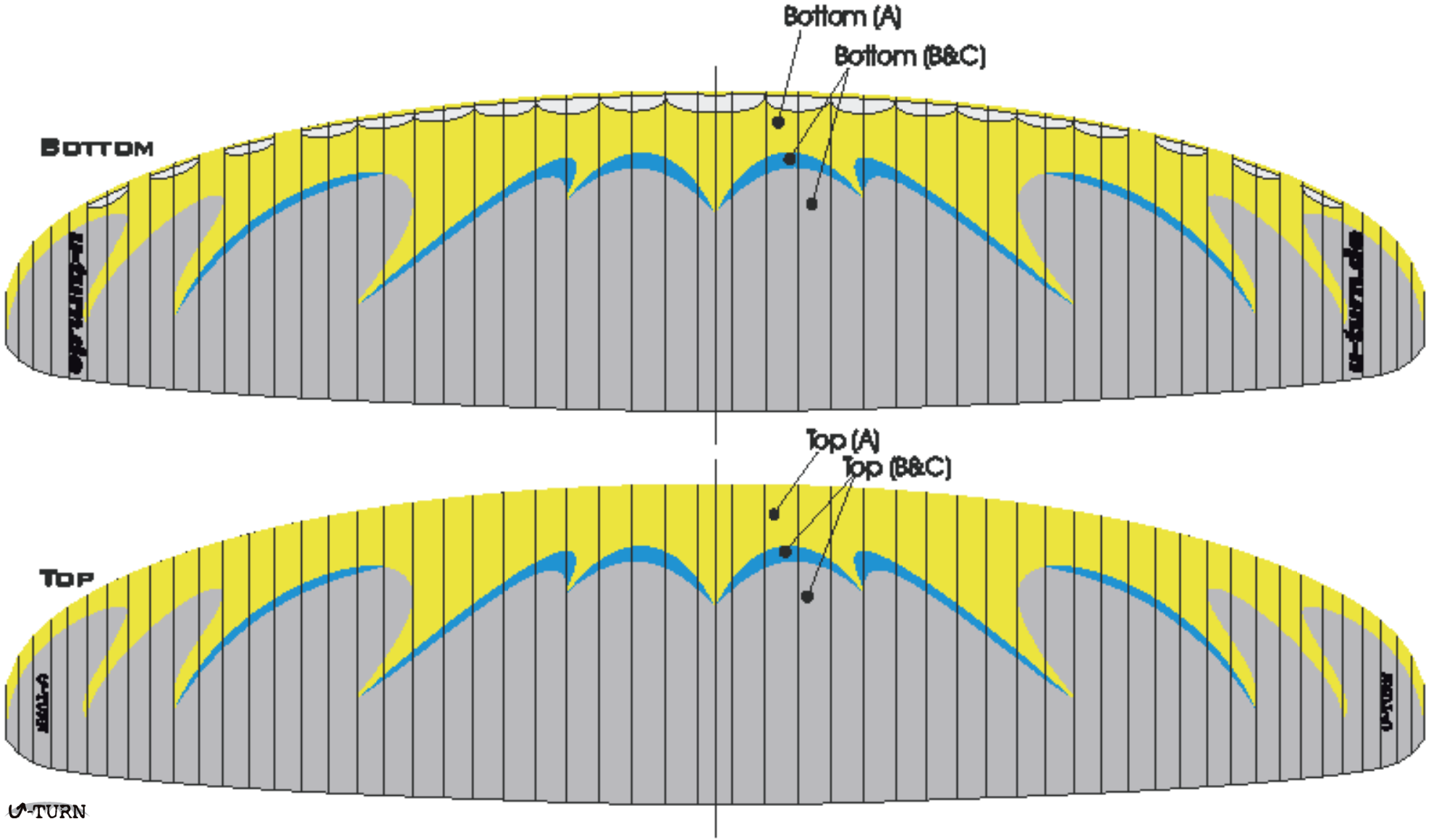
TUMBLER TEST



NCV

Le tissu du parapente

On page 5,material list, you can find information on which NCV Material Nylon is used and where.



U-TURN

U-Turn GmbH
Esslingerstr.23
78054 Villingen-Schwenningen
Germany

LINE ORDER SHEET / BESTELLFORMULAR FÜR LEINEN

Name, Address:

e-mail:

Paraglider name / Gleitschirm Name:

Size / Größe:

Other / Sonstiges:

Serial number / Serien Nummer:

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

Beipackzettel für Reparaturen und 2 Jahres Checks.

NAME: _____

ADRESSE: _____

PLZ, ORT: _____

LAND: _____

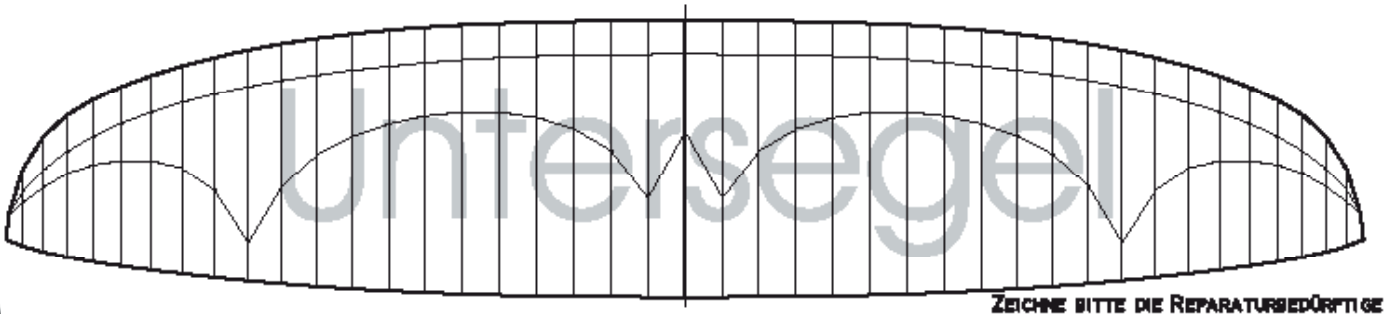
TELEFON: _____

E-MAIL: _____

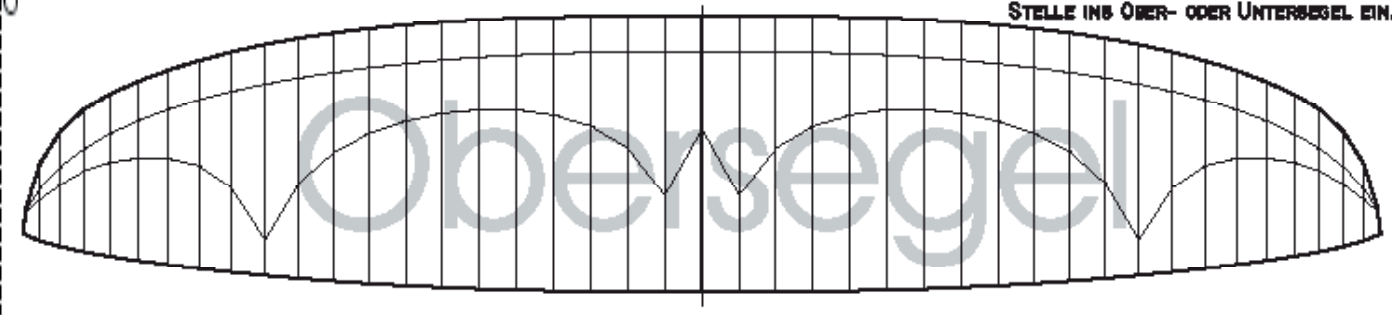
KOMMENTAR/BEMERKUNGEN: _____

U-TURN

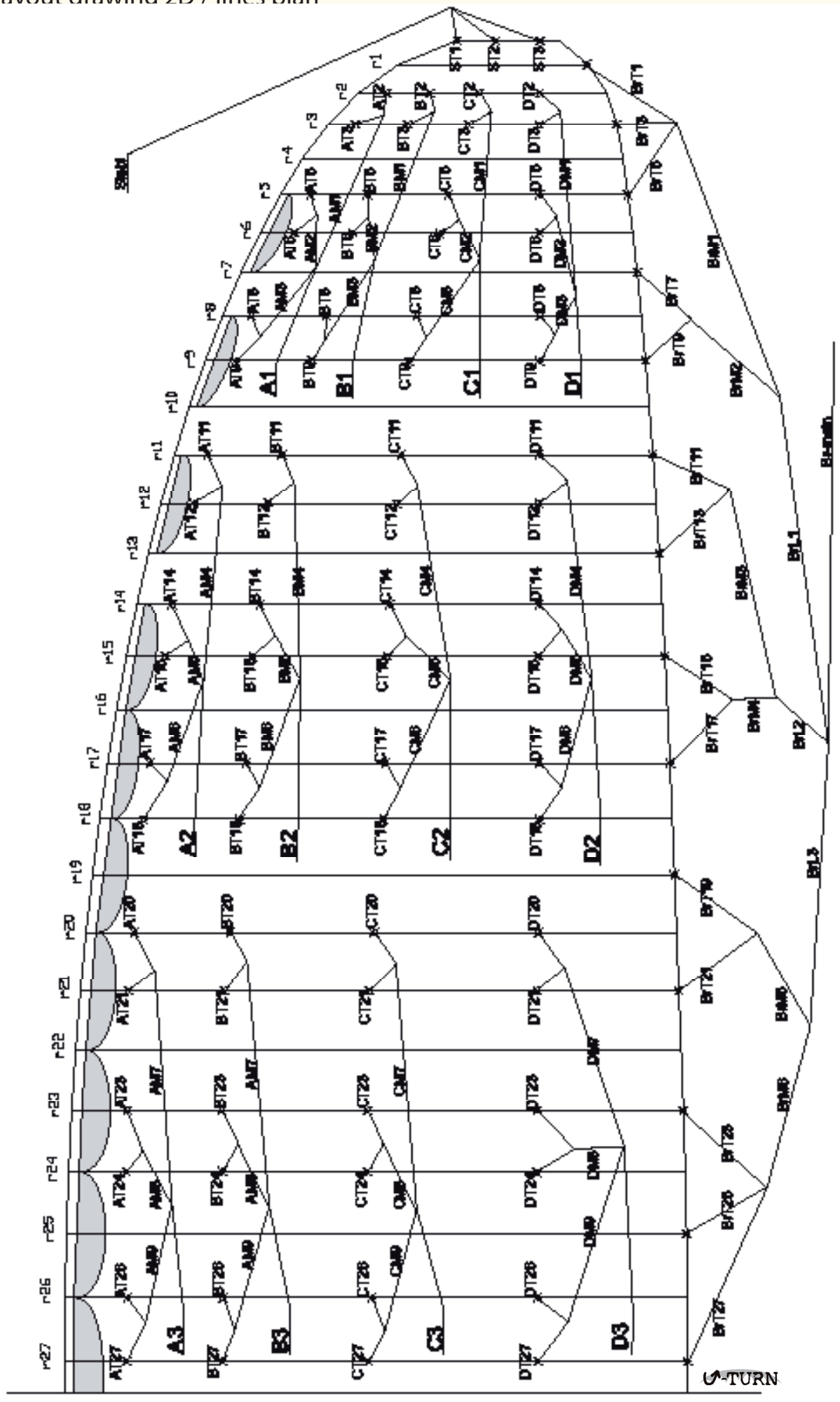
- ☐ 2 JAHRES CHECK
- ☐ LUFTDURCHLÄSSIGKEITS- PRÜFUNG
- ☐ LEINEN PRÜFUNG INKL. FESTIGKEITSPRÜFUNG
- ☐ REPARATUR DES EINGEZEICHNETEN SCHADENS
- ☐ RÜCKRUF BEI SICHTUNG DES GLEITSCHIRMS

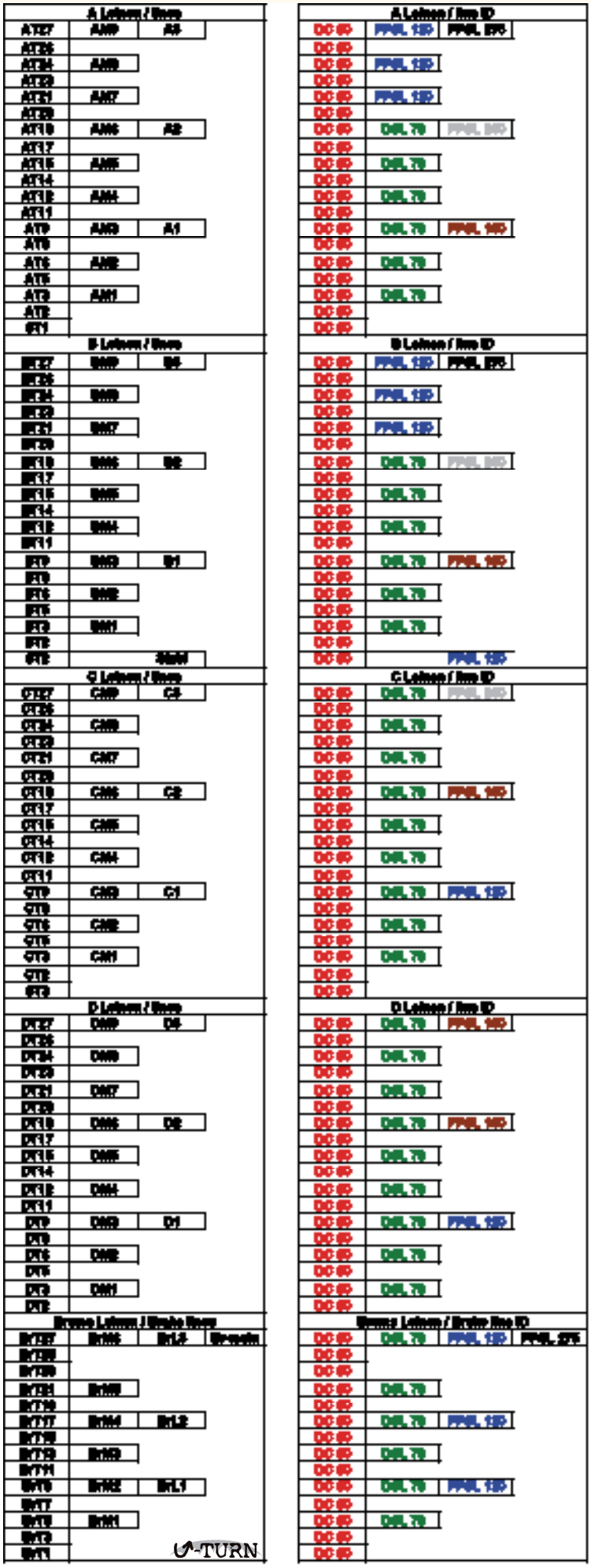


ZEICHNE BITTE DIE REPARATURBEDÜRFTIGE STELLE INS OBER- ODER UNTERSEGEL EIN...



General layout drawing 2D / lines plan





Rosenberger Tauwerk GmbH
Poststrasse 11
95192 Lichtenberg

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Fax: +49 92887124

http://www.liros.de

Leinenhersteller	LIROS	LIROS	LIROS	LIROS	LIROS
Typenbezeichnung	PPSL 275	PPSL 200	PPSL 160	PPSL 120	DSL 70	DC 60
Nennfestigkeit unverarbeitet	283 daN	241 daN	177 daN	159 daN	92 daN	84 daN
Durchmesser	1,9 mm	1,42 mm	1,4 mm	1,15 mm	0,95 mm	0,6 mm
Material Kern	Dyneema/PES	Dyneema/PES	Dyneema/PES	Dyneema/PES	Dyneema/PES	Dyneema/PES
Material Mantel	Polyester	Polyester	Polyester	Polyester	Polyester	
Längenbezogene Masse der Leine	2,95 g/m	1,6 g/m	1,34 g/m	1,00 g/m	0,67 g/m	0,24 g/m
DHV Leinenfestigkeit nach 5000 Knickungen	217 daN	191 daN	158 daN	135 daN	85 daN	75 daN

Lines and risers

We use DC60, DSL70, PPSL120, PPSL160, PPSL200 Lyros lines as well as PPSL275 with a special weaved Dyneema core. They have a high tear strength and are unlikely to bend. This stretch resistance denies changes in flight characteristics caused by different stretching after a short time of usage. An optimum of safety and strength in relation to drag is achieved by the use of different line diameters.

The whole line system consists of single elements that are sewed and looped on both ends. All suspension and brake lines are forked in the upper part. The different colour of the lines guarantee easy handling and control. All suspension lines are looped seperately in rapidlinks and conected to the risers. The rapidlinks have collectorclips built in to prevent slipping of the lines. The main brakeline is looped through a reel at the D-riser with a colourmarking where a brakegriphas to be tied on.

The manufacturer setting is 0 travel plus 5cm. Shortening more than 5cm is not allowed and results in a „brake" condition in flight which is extremely dangerous for takeoff, flight and landing.
The basic setting provides sufficient braking action at landing and in extreme flight conditions besides a comfortable armposition in trimmed flight.

Please note that with the height of the harness mounting also the relative brakedistance changes. When adjusting the setting, both sides have to be symmetrically and a permanent knot has to be used. Optimum solution is the „Spierenstich" knot with its high slide resistance and its little effect on the lines.

Risers

The A- and B- risers have a different colour to ensure positive identification at takeoff and during a B-stall descent. The lenght of all risers has been choosen in a way to get easy acsess to all lines and lineshackles inflight for special manoeuvers.
Made of rigid and stretch resistant Poyster-belts, the OBSESSION risers guarantee a long-term, stable trim.

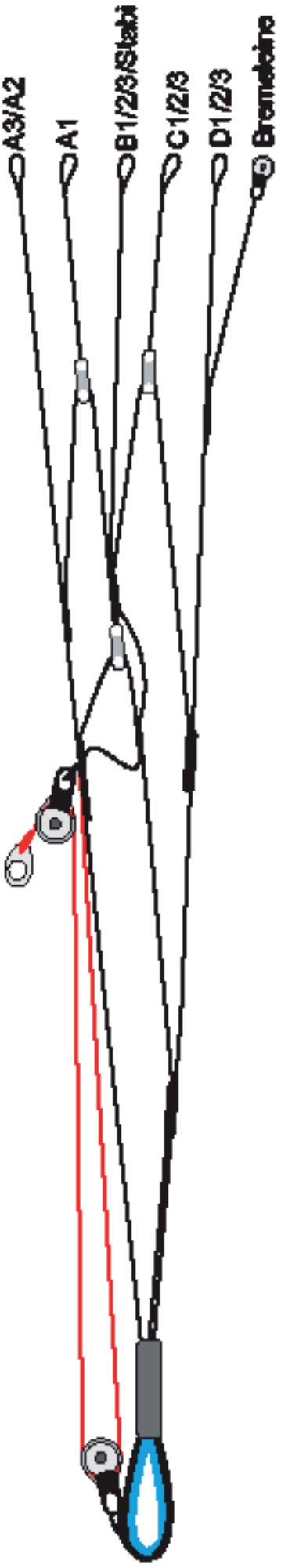
Speed System

The OBSESSION is equipped with a very effective leg-actuated speedsystem that increases the speed btw. 13 and 17 km/h depending on model and pilots weight area load respectively. During extreme manoeuvers the speedsystem should not be activated, when entering an extreme manoeuver it should be imideately deactivated. All extreme manoeuvers (i.e. stalls...) get more dynamically at higher speed.

Because the maximal adjustment of the accelerator is related to the safety characteristics of the canopy it may happen, that – using certain harnesses - the broad accelerator adjustment is not available.

Suitable Harness

All officially approved harnessystems with mounting about the breast height are suitable for the OBSESSION (they have to be DHV rated GH). The lower the mounting, the better is the the steering by shifting of the bodyweight.
The positioning of the mounting also changes the relative brakedistance. If you have any questions about the usage of your harness with the OBSESSION, ask your U-TURN dealer or directly contact U-TURN. We assist you in any possible way.



Tragegurt A3u2/A1:	Tragegurt B:	Tragegurt C:	Tragegurt D:
normal: 530 mm/530mm	normal: 530 mm	normal: 530 mm	normal: 530 mm
beschleunigt 350 mm/360mm	beschleunigt: 370 mm	beschleunigt: 450 mm	beschleunigt: 530 mm

Suitable Rescue System

It is required by the law and absolutely neccessary for safe operation of your paraglider that you always carry a rescue system with you. When choosing a rescue system, watch out that it is approved and suitable for the intended takeoff weight.

Operation

This instruction manual only pays attention to those points of flying technique which are important for the OBSESSION. It is not meant to substitute a basic flying education in an approved flying school! If a flying education and the appropriate experience is missing, paragliding is dangerous to life.

Field of Operation

The OBSESSION has been developed and tested for ordinary takeoffs, winching, and is also well suitable for motorized operations. An unauthorized or unapproved use of the OBSESSION, or operation out of its operational limits is improper and dangerous.

Aerobatics

Aerobatics are illegal and dangerous. There is a danger of unpredictable flight conditions that could result in overstressing material and pilot.

Motorised Paragliding

The OBSESSION is well suitable for motorized operation due to ist outstanding takeoff performance, its wide weight range and its easy handling. Please note that a separate approval is neccessary for the glider / motor-combination. If you intend to operate the OBSESSION motorized, please contact the motor manufacturer, U-Turn and the DULV (Deutscher Ultraleichtflug Verband) for official approval.
Use only approved motor / glider combinations and adhere to theaeronautical regulations as well as the training requirements.

Pre-Flight Check

A careful preflight-check is absolutely mandatory. Double-check everthing when you don´t fly yourself and make sure the person flying your OBSESSION does the same. Also ensure that the pilot flying your OBSESSION, knows its operational limits and has the required license.
All lines, risers and the canopy have to be carefully checked for damage before every takeoff. Even in case of minor damages takeoff is not an option.
After the glider is unpacked and layed on the ground in a halfcircle-shape, check following items:

- Lay down the canopy to draw on the middle line before the outer lines, when pulling up the glider with the A-risers, to get an easy and stable takeoff.
- Set yourself up into the wind to get a symmetrical load on both sides when pulling up the canopy.
- The risers may not be twisted to enable smooth looping of the brakelines.
- Make sure no lines are under the canopy to avoid a dangerous situation on takeoff.
- Preflight all other equippment after the check of the glider carefully.

Take off

The U-Turn OBSESSION has a very easy take off. It is one of very few gliders that received a rating of "Take off speed: minimal" in the DHV-certification. It is important to evenly lay out the canopy with care. The middle of the glider is determined by the U-Turn OBSESSION logo at the leading edge. It is sufficient to only hold the A-main harnesses. Being that the U-Turn OBSESSION shows no tendencies to shooting forward it only needs to be slowed down minimally in the take-off phase. Necessary correction in direction using the brakes should only be performed once the canopy is above the pilot, otherwise the glider might fall back due to excessive braking.

The remaining harness should not be held during take off. The canopy will fill up with evenly distributed pull but altogether very light startimpulse. Unlike other gliders it is not necessary to fill the U-Turn OBSESSION with strong inflation motion or even several fast steps. This is also true for very little wind and even zero wind. The easiest and safest way to start the U-Turn OBSESSION is moderate inflate.

Once the pilot ensures that the canopy is fully opened above him, the final decision for take off can be made. After several forceful steps they take off.

Turning

The OBSESSION has a normal agility and reacts directly and instantly to steering inputs. You can fly flat turns with little altitude loss by shifting of bodyweight. A combination of appropriate pull on the inner brakeline and shift of bodyweigth is the best way for a coordinated turn. The turn radius depends on the amount of pull on the brakeline.

At about 75% of brakeline travel, the OBSESSION increases bank significantly and performs a fast steep turn that can be continued to a diving spiral. The diving spiral has to be initiated and terminated slowly. The bank angle is controled by increasing and decreasing the pull on the inner brakeline.

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

Active flying

The OBSESSION should be flown with light braking on both sides when there is turbulent air. An increase in angle of attack provides better stability. When entering heavy thermics or strong turbulences watch out that the canopy does not get behind the pilot. To avoid that, release the brakes a bit to get an increase in speed when entering the updraft.

If the canopy gets in front of the pilot when leaving a updraft or entering a downdraft the brakes have to be applied to counter that. Accelerated flight however is adviseable when flying thru a downdraft zone. The OBSESSION is very stable overall, never the less is active flying a big flight safety factor. Collapsing and deforming of the canopy can be avoided by active flying (as above mentioned) in turbulent air.

Landing

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

Winching

Because of its excellent landing characteristics, the OBSESSION is well suitable for winching operations. Take the following points into account:

- maximum linetension for winching is 100kp.
- if not operating at your usual winch, get aquainted with the local procedures and get a good briefing by a local pilot.
- bodyposition and pulling up the canopy does not differ from a normal takeoff. The canopy has to be completely over the pilot at takeoff. No early steering inputs to avoid falling back of the canopy or being pulled off with a non flyable glider. Never give the takeoff-command before you have total control over your glider. Don´t turn too much during the takeoff-phase and before reaching the minimum safe altitude.
- never whinch the OBSESSION with loads outside the allowable weight range
- all involved persons, machines and accessories have to have the appropriate licenses, approv als, certifications for winching.

Advanced Handling

Even with its high stability and good flight characteristics it is possible that the OBSESSION gets into an extreme flight condition due to pilot mistakes or turbulent air. To be prepared for such situations and able to handle them in a calm and superior manner it is best to take part in a flight safety course.
Advanced manoeuvers may only be flown at sufficient altitude, in calm air and with professional supervision (i.e. during a safety course). Once again we mention that a rescuesystem is required by the law.
The following extreme manoeuvers can be either caused intentionally, by pilots mistakes or by bad weather conditions. Every pilot can get in such a situation! All mentioned extreme manoeuvers are dangerous if they are performend without the appropriate knowledge or enough altitude or the neccessary introduction.

A wrong execution of these manoeuvers may have fatal consequences!

Wingover

The pilot has to perform right and left turns with increasing bank until the desired angle is reached. Soft braking during up or down swing will prevent the wing ends from closing. Collapsing is only a factor when the bank angle is very high.

Frontstall

A negative AoA caused by turbulences or the simultaneous pulldown of the A-risers by the pilot, results in a frontal collaps of the leading edge. The OBSESSION normally comes out of a frontstall by itself very quickly. Smooth and symmetric applying of the brakes assists the opening of the canopy positively.

Stall

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

Warning: Practicing stalls should be done with enough safe altitude. Never apply asymetric brakes during a stall, it could cause a spin.

Fullstall

To enter a fullstall pull both brakes full travel (ensure no twisted or wrapped lines). The canopy has to be stabilized before recovering the fullstall. Relaxe both brakes slowly and symmetrically to recover. If done right, the canopy overshoots a little forward without collapsing. Avoid an asymmetric recovery at all means. The dynamic forces drive the canopy to overreact and a collaps could occur.

Caution: Never release the brakes at the beginning of the recovery when the canopy tilts forward, the canopy may accelerate foreward in a way that makes contact or even falling into the canopy possible.

The fullstall is a dangerous manoeuver and should not be performed intentionally except during a flight safety course.

Emergency Piloting

In any situation where normal steering with the brakelines is not possible, the OBSESSION can be steered with the back risers easily.

Negative Turn

To enter a spin the pilot has to fully and quickly pull one of the brakelines when he is near the stallpoint. The glider rotates fast around its center while the inner wingtip flies backwards. For recovery just release the applied brake to let the glider accelerate.

Warning: The spin is a dangerous manoeuver and should not be performed intentionally except during a flight safety course.

Collaps

Even with its high stability and very good reaction in turbulences, strong turbulences can cause the OBSESSION to collaps. That situation is not really dangerous and clears itself automatically and not impulsivly. To support the recovery, firmly apply brakes on the according side and simultaneosly steer opposite on the open side. When a large part of the canopy is collapsed be careful and smooth when applying opposite steering to avoid a complete departure of airflow and entering a fullstall.

How to avoid collapses

Single side collapses close to the ground are the number one reason for accidents with paragliders. To avoid them, or how to handle the situation when it happened, some tips and tricks from U-Turn test- and competition pilot Ernst Strobl:

The best way to avoid collapses upfront is the right choice of the paraglider. A lot of pilots fly a glider that is a little too hot to handle for them. So why dont you get a glider with a lower rating but in the end fly better and higher in the updrafts and have a lot more fun and by the way be safer, too. To optimize the feeling for your glider on the ground, try the following:

Practise on the ground with the right wind at a suitable location. Slowly pull up the canopy and try to hold it up as long as possible without looking towards it. That is a good way to improve the feeling for your glider and is a prerequisite for „active flying“ (the key to avoid collapses). Very important is also a close look at the terrain. Watch for obstacles that could cause turbulences (buildings, trees, ...). On certain days, for example a freshly mowed madow as landing field, could cause a lot of thermal activity. Fly very alert on a thermal active day. Watch your canopy, collapses most of the time, announce themself. Light braking in turbulences mostly avoids a collaps. You should have already practised that on the ground.Should a collaps occur close to the ground don´t always try to prevent a turn away. There is a danger when the braking on the open side is to strong, to lose the airflow on this side and stall the glider. Rather use the turn away motion to try to open the collapsed side.
Apply smooth braking on the open side, depending on the size of the collaps, and maybe a little pumping action. Some canopies open a lot better whe the brakes are fully applied once on the according side, but that depends on the brakeline adjustment and your armlength. Wrapped lines are cleared by braking the opposite side at enough altitude and pumping the affected side a couple of times. Watch out for a possible stall. If that does not clear the situation, try to pull down the outer line as much as possible. If you are too low for that, stabilize the canopy on the opposite side to avoid turning away, and leave the lines like they are. Instead of any -risky manoeuver rather concentrate on the landing. In the end one more advice in order to have all kinds of situations under controll.

Visit a safety-training above water. There is no better way to practice the right behavior than simulating a dangerous situation. Don’t get caught off guard by your first collaps. In addition, during safety-training you can familiarize yourself with the particulars of your equipment and you gain confidence in your glider as well as your own abilities.
Thus far the expert advise concerning collaps, by Ernst Strobl

Rapid Descent

In any situation where you have to get down ASAP for different reasons (weather, extreme updraft, or other dangers), there are a couple of techniques that are described in this chapter.

Caution: The described manoeuvers stress your paraglider more than normal and should only be performed for practise or in a real emergency!

Spiral Dive

Like a normal turn, it is very easy to get the OBSESSION into a spiral dive. The spiral dive gets you a descent rate up to 20 m/s. To be settled for the real thing, practise it in optimum conditions. The diving spiral gets the pilot down faster than other techniques and is therefore best suited for an emergency descent. They move down verically within the airmass. Don´t forget the G-forces when diving down, and take that into consideration before initiating a rapid descent.

Caution: If initiation is to fast there is a danger of a spin, in this case release the brake an try a smoother initiation.

Warning: Never fly a spiral dive when „big earing" the glider. It is illegal aerobatics and may overstress the pilot and the material. It is illegal aerobatics and may overstress the pilot and the material.

Big Ears

Pull down on the outer A-risers one after the other (grab the line shackles) about 15-20cm to collaps the wingtips. Hold the brakegrips together with the A-risers. The glider stays fully steerable and descents with 4-7m/s straight forward. If you release the A-risers, the collapsed cells open automatically.
Should there be any problem with the reopening, apply easy braking.
„Big earing" is due to the high wingload a very stable flight condition and well suited for turbulent air. Be aware that you reduce the trimspeed, but that can be compensated by accellerating with your legs.

WARNING: Don´t fly extreme manoeuvers in this configuration, it is dangerous due to the danger of overstressing your glider. Fullstalls and spins are dangerous for a rapid descent because a wrong termination could have fatal consequences no matter what glidertype you are flying.

B-Stall

Another very efficient method is the B-Stall. It allows for a rate of descent of 6 to over 9 meters per second. Check the airspace under and behind you prior to initiating a B-Stall. To imitate it you hold the two B-harness above the lines carabiner. While you hold the brakes in your hands at all times, pull them down progressively and symmetrically. Now you stay in this position. Your sail will stop, partially empty, and stabilize itself above your head. End the move by returning the harness symmetrically into their original position.
We recommennot to simply let the harness snap shut as this puts a lot of pressure on the material.
In the paragraph titled "advanced handling" you can read what to do if you get caught unexpectedly in a stall.

ALL KINDS OF RAPID DESCENTS SHOULD BE PRACTISED
IN SMOOTH AIR AND WITH ENOUGH ALTITUDE TO BE PREPARED FOR EXTREME SITUATIONS WHEN YOU NEED THEM!

Maintenance and Care

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

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

- Don't expose your glider to the sun when there is no need to.
- Consider the choice of terrain where you lay out the glider for takeoff.
- Assymetrical and random folding patterns prolong the lifetime of the material especially in the middle section.

Pelase take following points into consideration:

- regular checks for damage
- no unneccessary bending
- after an overstress (treelanding, waterlanding and extreme situations), the lines have to be in spected an maybe exchanged

- in case of changing inflight handling characteristics, the lines have to be checked for their correct length
- don't tie the brakelines on the grips if not needed, it weakens the lines

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

U-Turn does not warranty and cannot be held liable for any 2-year inspection and repairs not performed by them.

Safety Advices and Liability

This glider complies with DHV, AFNOR (SHV and ACPUL) regulations, for the tested type, at time of delivery (see appendix).
The operation of the glider is at your own risk. The manufacturer and the dealer don´t take any liability for accidents and follow on damages. Please consider all safety notes, cautions and warnings for safe flying.
Further, we assume that the pilot has the necessary certifications and that the legal limitations are being followed. Use of the equipment is at your own risk. Follow the safety instructions for a safe flight. Special emphasis on following points:

- stick to the rules and regs of the country you fly in
- required licenses and actual experience
- use only suitable, approved and certified accessories (helmet, harness, safety systems...)
- appropriate weather condition
- suitable terrain
- all required checks done and airworthiness of the glider
- personal shape of the pilot
- know your manual and stay within the published limits

Maintenance Guide

By

U- Turn GmbH
As the

Developer and Producer

Of

Paraglider

Stand: 1.02.2007 / Revision 1.6

Text: DHV
Text and Graphics: Ernst Strobl
All technical details in this manual have been carefully checked by U-TURN. However we like to mention that we don't take any liability for possible mistakes, neither in legal responsibility, nor in liability cases that derive from mistakable details. We preserve the right to change this manual in any way to achieve technical improvements.

I - Inspection and review Intervals

Regular inspection in accordance with the "Luftgeraeteprueforddnung" for model-tested paraglider: for schooling equipment annually, for private consumers every second year. Tandems for commercial use have to be inspected annually. Tandems for private use only every 2 years. The reviews have to take place in the above referenced intervals or latest after 150 hours of flight. Ground handling should be counted as flight hours.

Generally speaking: If you experience any unusual behavior during flight, the producer should be contacted immediately and the paraglider should be sent in for inspection.

II - Who is allowed to perform the inspection?

Aside from the producer or a person or company appointed by them, only the owner of the glider is allowed to performe the 2-year-inspection – if he has the necessary qualifications.

III - Personal Qualifications for the Post Sale Inspection

Personal Qualifications for the Post Sale Inspection of single paraglider exclusively for personal use:

- Ownership of a valid, unlimited "air traffic license" for paragliders or an equivalent there of
- Satisfactory type specific instruction with the producer. (a 3-month apprenticeship is necessary)
- A paraglider inspected exclusively for personal use is not to be used by third parties.

Personal Qualifications for reviews of paragliders for third party usage and Tandems:

- An adequate formal education to perform such inspection
- A profession in the field of "air sports equipment", six practicing months are necessary in the past 24 months.
- Adequate, payable, type specific instruction with the producer for a minimum of 2 weeks
- Annual, type specific, continuous training and education

IV - Necessary Equipment and documents

- Dial gauge preferably by Kretschmer with Manual
- "Bettsometer" with Manual
- Producer's Maintenance Guide
- Original materials and -replacement parts, as well as the original material list of the gear
- Airworthiness instruction for the gear
- "Luftsportgerätekennblatt" (see handbook)
- Table of lines length (see handbook)
- previous inspection protocols (if available)
- Inspection protocol form for documentation purposes
- lit-up table for checking the rescue

1. Identifying the gear

Identification of the flight object by the seal of approval or the type plate

- Are all production documents included?
- Is the type plate and seal of approval at hand, legible and correct?
- If not, please order from the producer or your retailer


All datas and any changes should be documented in the review protocol

1.1 Inspection of the rescue equipment

Before packing the rescue equipment, the packer should inspect it. If it has been opened during a rescue, another thorough inspection is necessary.

If a packed rescue glider needs to be repacked, a release control is to be performed.
The release power should be between a minimum of 3 and a maximum of 6 kg.

2. Inspection of the Upper and Lower sails, seams, rescue system

Holes and Tears
The upper and lower sail on paragliders as well on recue systems should be inspected path by path from the leading edge to the trailing edge. If you aware faultiness in any of the aspects addressed below, please contact the producer.

- Check for holes, small or bigger sized tears, expansions or friction damage
- Check for defects on the surface, other abnormalities on the canopy such as old patches
- To check the rescues for holes, friction spots and expansions it is necessary to use a ligth table

Friction spots and expansions:

- In case of bigger and critical damage and expansion spots, the affected paths have to be replaced by the producer

All datas and any changes should be documented in the review protocol

3. Examination of the V-rips

Check the cells from the leading edge to the trailing edge one by one, to ensure that the seams, partition and reinforcements are in good standing, meaning free of tears, expansions, friction damage or damage to the surface. If the V-rips are faulty, or the seams are loose or missing, you must submit the paraglider to the producer or an authorized inspection site.

All datas and any changes should be documented in the review protocol

4. Checking the tear strength

To be executed with the "Bettsometer" (BMAA approved Patent number GB2270768 Clive Betts Sails). The step by step instruction can be found in the manual.

- Poke a needle sized hole into the upper and lower sails of the A-lines attachement to test the tear strength.
- The maximum limit is determined to be 500g, and a length of less than 5mm.

All datas and any changes should be documented in the review protocol.

5. Measuring porosity of the canopy

On all of the following measuring points the permeability should be at least minimum 20 sec (according to Kretschmer). In the event of lesser readings, the paraglider has to be submitted to the producer.

Measuring locations:
The measurement of the porosity according to the Kretschmer measuring method (please follow the manual closely) should be performed in the following locations of the canopy.

Perform inspections on the Upper and Lower sails respectively:

- Middle cell, about 20-30cm behind the leading edge
- 3rd cell from the middle left/right about 20-30cm behind the leading edge
- 10th cell left/right about 20-30cm behind the leading edge

All datas and any changes should be documented in the review protocol

6. Connectors

Checking the harness and lines locks

- Is there friction damage, breaks, tears or excessive wear and tear?
- Are all seams tight?
- Is the accelarator accessible and intact?
- Are the "Bremsschlaufenbefestigungen" still tight?
- Are the lines locks free of corrosion, and is the winding accessible?

Measuring with a weight of 5kg, compare the reading with the required data in the DHV- type identification sheet. You can find the acceptable variations in the instructions of the producer.

All datas and any changes should be documented in the review protocol

7. Lines

Checking of the lines strength

Selection of the lines: Choose a medium A- and B- main line as well as a middle or main line of the A and B surface, and test its strength with the tensile-testing apparat.
Selection of the lines: Choose a medium A-, B- and C- main line, as well as – if available- a medium A- and B- middle floor line, and with the help of a tear resistance check for their tear resistance. Velocity of the cylinder: v=30cm/min
breaking/ tensile strength data see attachment on page 28

All datas and any changes should be documented in the review protocol

Caution!! Every line diameter an individual set value is assigned.

Should one line not withstand the listed tension load and tear strength, all other lines of this diameter have to be replaced as well. If the inspected lines meet the testing criteria, only these stressed lines must be replaced by new ones. All replaced lines are to be marked with a black marker near the shackle, and documented in the protocol, including the date of replacement and the number of flight hours. For the following inspection, another, original line will be tested. The different lines diameter are assigned a minimum line sewing length (see attachment on page28)!

8. Inspection of the lines length and the fixing of the lines

Visually check the main floor-, upper floor-, and breaking lines for tears, bends and friction damage. First the "A-line-level, then B etc.

- Are all lines and all fixings of the lines adequately sewed and attached?
- Are the coatings of the lines precise?
- Are all loops, knots, seams in good condition?
- Is there any friction damage?

Measuring the lines length:

Measuring the lines length is part of the regular data check:

- The lines have to be measured with a weight equivalent to 5kg, in order to obtain comparable results. You can find the respective lines length in the chapter titled "Technical data" in your handbook.
- Start measuring from the "Leinenschäkel" to the canopy (including the loops of the lines on the canopy) in accordance with the DHV-Method.
- The DHV numbering beginns at the stabilo to the middle. The measuring of the opposite wing side can be performed under the same conditions, by symmetrical comparison
- The results are also to be logged in the protocol and compared with the lines length of the DHV-"Typenkennblatt". Acceptable variations are no more than +/- 1,5cm.
- A faulty line is to be replaced immediately. Please find the correct lines type in your manual (page 9), order from the producer and replace or have it replaced.

All datas and any changes should be documented in the review protocol.

9. Visual check of trim

Before any test flight, a visual inspection of the canopy (spread and inflated as well) and lines must be performed. Special attention should be paid to the length of the steering lines (breaking lines). Only if all doubts concerning the steering lines" (breaking lines) has been addressed, a test flight should be conducted.

10. Description of the Materials and Technical Data

See Manual on page 6, 7 and 8

11. Miscellaneous

- All measurement and repairs on the paraglider have to be logged into the protocol in their en tirety
- If packing and repacking the rescue system it is essential to follow its specific packing instructions. See the rescue systems manual
- Only use original parts for replacement
- For sewing repairs use the original sewing template. Use materials of equal strength and quality as the original.
- The protocols need to be signed and dated.
- Keep all protocols for at least 4 years.

12. 11. Completed Inspections:

Very important!

Prior to performing any repairs or test on your paraglider, we ask you to carefully read the following this will provide you with necessary information on qualifications and conditions for performing the 2yr inspection.

- According to the new DHV/OeaeC regulations, the customer (paraglider owner) can perform the 2yr Inspection himself, with the help of the proper inspection instructions as well as the necessary testing equipment and subject to their own responsibility. It is not necessary to send the paraglider in to the producer for that.
- The 2yr inspection is only to be performed by the paraglider owner, provided, they possess the necessary requirements, or by the producer and his authorized inspection site. Check with your producer for a list of authorized inspection sites.
- The owner must be aware of the responsibility they take on, in performing the 2yr inspection is only legally recognized if signed, dated and provided with the inspectors name in print.
- According to the DHV, it is necessary to repack the rescue every 4 moth.
  Valid operating time: 8 years, afterwards up to 12 years if annually re-examine.
- Please check with your insurance company for conditions on performing the 2yr inspection yourself.
- A post sale inspection is only valid if the protocol is complete. Before performing the inspection, check with the producer for updates or changes in the inspection process
- Important: If the proper equipment is not available, please send your paraglider to the producer
- Any kind of guaranty expires, if paragliders, harnesses and protects are not checked, inspected, repaired, packed, new or repacked (also other kinds of maintenece assignments) by a non authorized U-Turn site.
- All maintenance must be performed in accordance with the required readings according to the manual and the specific instructions by the producer and publications by the IHB.
- In the event of any unusual findings during the maintenance process – you must contact the TL, who will then decide on the best way to proceed.
- All parts used for repair must be original material or replacement parts.

Attachments:

7. Minimal breaking/ tensile strength data

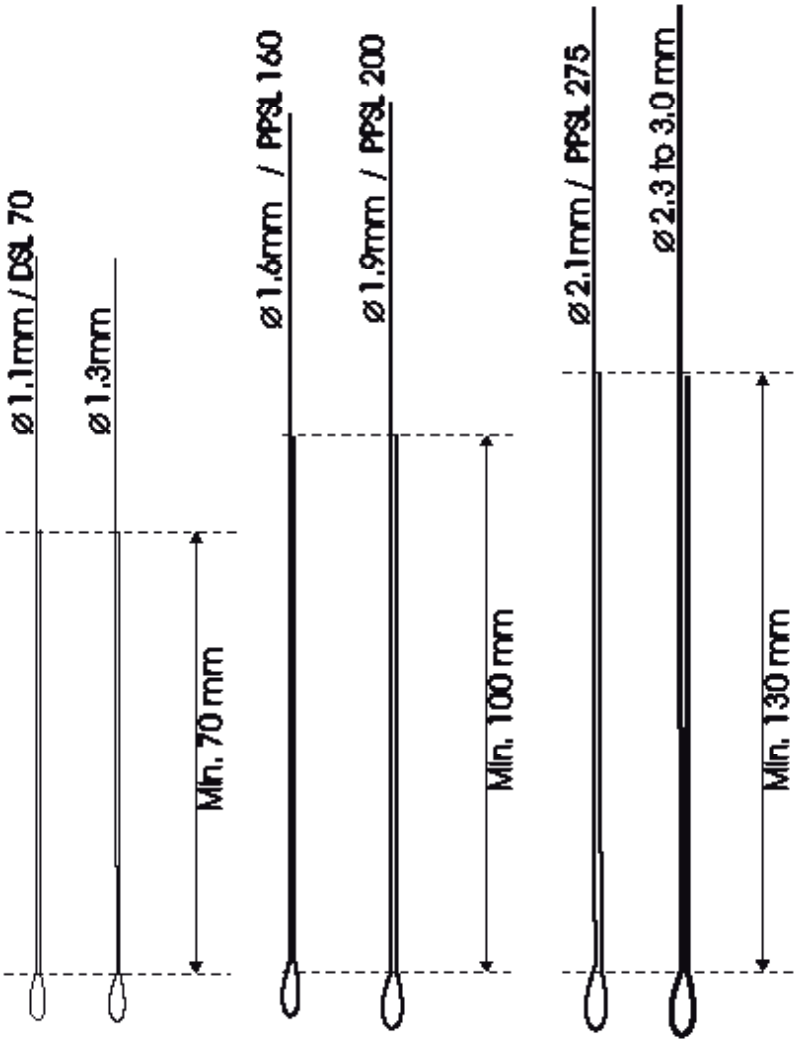
TNS-GU Linen - Teijin Ltd.		
Leinen Durchmesser	Min. Reissfestigkeit	Max. Reissfestigkeit*
1,1mm	20 kg	47 kg
1,3mm	30 kg	60 kg
1,55mm	45 kg	99 kg
1,6mm	50 kg	112 kg
1,9mm	52 kg	112 kg
2,3mm	90 kg	181 kg

UNOS Linen - Rosenberger Tauwerke		
Leinen Bezeichnung	Min. Reissfestigkeit	Max. Reissfestigkeit*
DC 60	35 kg	74 kg
DSL 70	40 kg	85 kg
PPSL 120	65 kg	135 kg
PPSL 160	80 kg	155 kg
PPSL 200	95 kg	191 kg
PPSL 275	115 kg	245 kg

* according to the nominal break value, average break-load after 5.000 bucklings of the line.

Important: If the minimal breaking/tensile load falls below the limit within the 2-years-check, please contact the technical manager of U-Turn!

Attachments7. Every line diameter has a minimal line sewing length dedicated.



Attachment:

Attachment: