NOVA

DOUBLESKIN

Manual

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NOVA

Thank you for your trust

Many thanks for choosing a NOVA wing. NOVA stands for innovative, technically sophisticated, high quality products. Your paraglider was developed using modern design and simulation software, it was intensively tested and during and after production it underwent stringent quality control procedures.

This manual contains important information on using your paraglider. We recommend reading it carefully in advance of your first flight with the wing. Please contact us or your NOVA partner with any queries or suggestions.

Further information on this wing and other products can be found at www.nova.eu.

We wish you great flights and safe landings.

Your NOVA development team

Philipp Medicus
Chief designer

MY NOVA

NOVA offers comprehensive guarantees and services. To claim or use these services, you must register your wing at our myNOVA web site within 14 days of purchase (invoice date).

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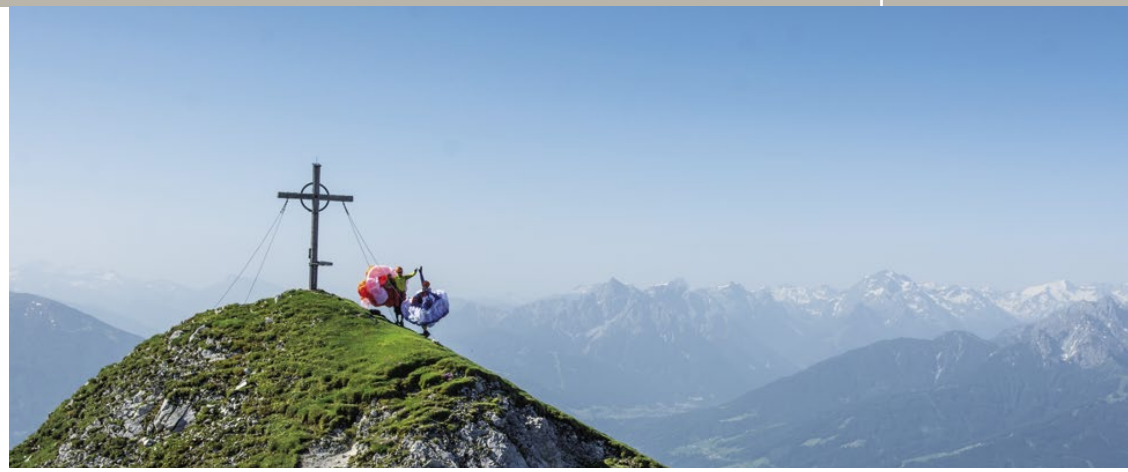
GERMAN MANUAL 3

Version 1.0 | July 2019
The respective current and valid manual can be found on our website: www.nova.eu



About NOVA

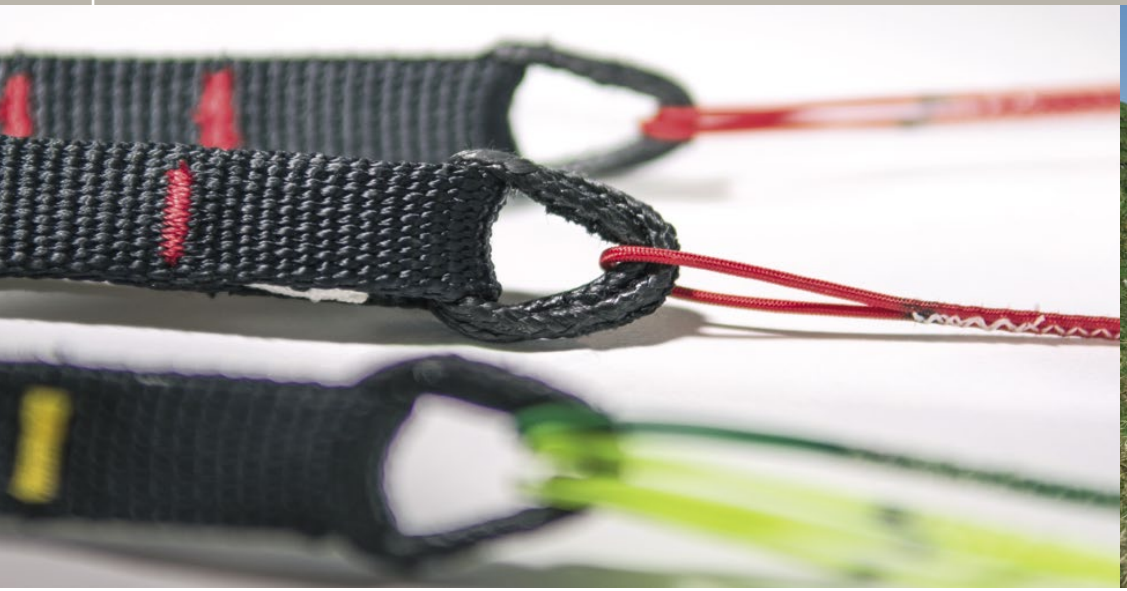
Driven by the idea of creating better wings, we founded NOVA in 1989. The company quickly grew into a significant manufacturer. We rapidly consolidated and expanded our market position.

Our headquarters are in Terfens, near Innsbruck. Thanks to this location we are 20 minutes from our local flying site, the Rofan. Due to its proximity to lake Achensee, it is ideal for glider testing. Alternatively, the Zillertal, the Stubaital or the southern Alps are close by.

As a paragliding manufacturer, being close to mountains is essential. Firstly we need appropriate terrain for good development work. Secondly, we need to have our finger on the pulse and need to be closely connected to our customers. In Tyrol and the surrounding areas paragliding is more than a sport. This positive attitude translates into our products, which assists us to keep making better paragliders.

NOVA has a highly qualified staff team, nearly all of whom share the same passion for flight as the pilots who choose to fly NOVA wings. This passion and our know-how are the drivers of our innovation. For example, it lead us to being pioneers in the area of flow simulation, where we can reasonably accurately predict many of the characteristics of a new wing design on a computer.

The starting point of our mission is to build paragliders which are safe and simultaneously high performance. Performance and safety, or rather the correct ratio between the two, make for lots of flying fun – and that is what it is all about!



Quality

When discussing quality in paragliding, often the focus is on externally visible issues: seams, fabric or symmetry. These are all important indicators for us too, but at NOVA we feel the term quality encompasses more.

Quality means a cycle of processes which begins with the right idea and ends in comprehensive customer service. In between lies responsible development and testing; serial production with routine inspection and a network of responsible dealers and approved service centres.

We don't just want to offer you a good wing – we want to give you the right one. Our highest priority is earning and maintaining the long-term trust of our customers. We equate quality with the satisfaction of our customers. If we matched your expectations, then we have provided a quality service.

Flying and nature

On the one hand, flying means experiencing a particular form of freedom. On the other, there is a requirement to follow laws and ethical ground-rules. Please show respect to your fellow pilots, but also consider the interests of landowners (both take-off and landing), air law and your impact on the environment.

For the sake of our sport and our environment, we ask you to undertake paragliding in an environmentally-friendly way. Please do not litter and please avoid scaring animals by flying too close to them. Especially in winter, this stress can be life-threatening for wild animals.

Being considerate to the needs of animals is your contribution to the preservation of their habitat. At the same time, respectful behaviour also avoids conflict with other interest groups like landowners, whose income is reliant on healthy numbers of wild and domesticated animals.

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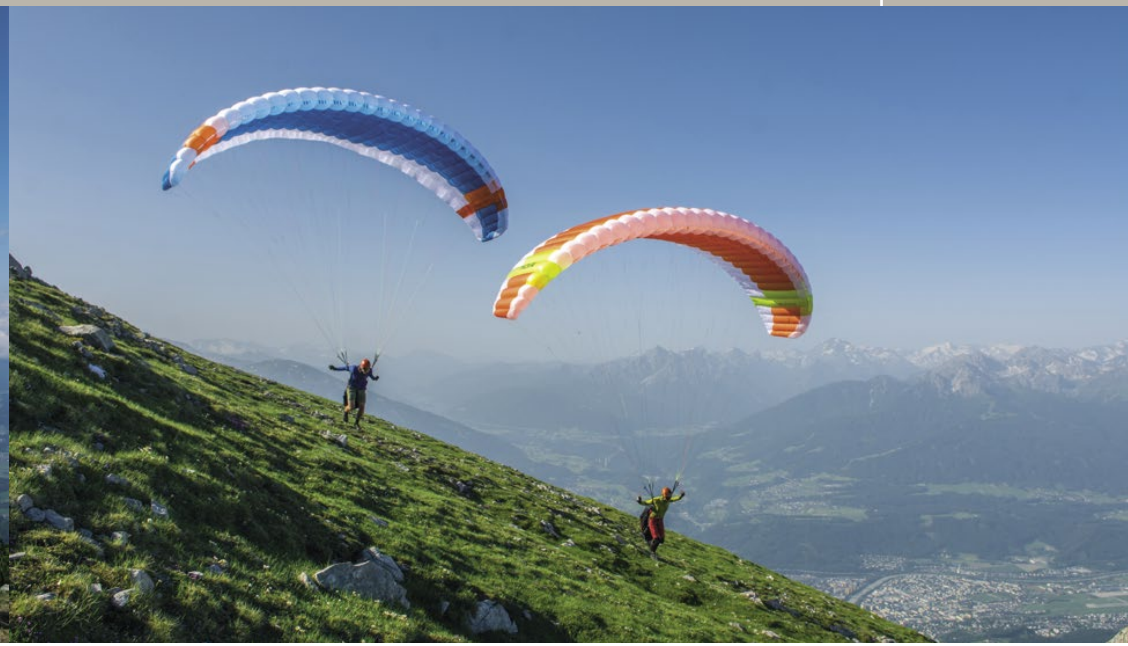
Acceptance of our sport depends on the good behaviour of every pilot. Please make your contribution to the positive image of the paragliding community.



The DOUBLESKIN

Introduction

The DOUBLESKIN is the lightest paraglider in the world*, which has an upper and lower surface (2.1 kilos/size 17). With its tiny packing volume, it is pure joy in the air thanks to its superior aerodynamics in comparison to single-surface wings. So carefree ascent is just as much fun as the flight and landing.

(*with the same flat area, EN certification, selection of the Ultralight Riser option and not including single-surface wings. Valid: 06/19)

Tip: pilots with a take off weight between 75 and 90 kilos can fly the size 17 DOUBLESKIN within an extended weight as a dynamic EN/LTF B.

One for all

The DOUBLESKIN is designed for absolute flying pleasure, because its lightweight construction has all the advantages of a single-surface glider, while the lower surface was retained to ensure optimum flying characteristics. Extreme lightweight cloth and optimised slots in the profile ribs make this the complete compact package. So you can travel with little baggage and climb the mountains on foot – sizes of the DOUBLESKIN offer an extended weight range for even more dynamics and speed. In size 17, this extended weight range is certified as EN/LTF B, sizes 20 and 23 are EN/LTF A.

Into the Wind

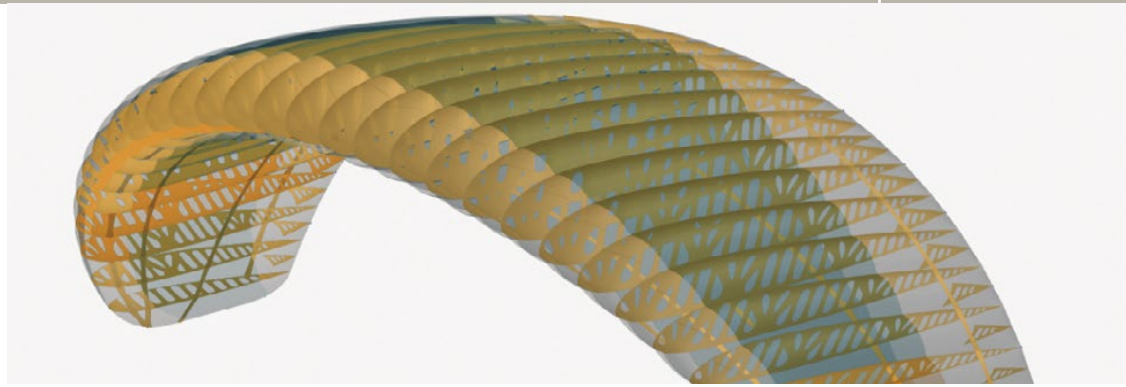
Even when you need some speed, you can rely on the DOUBLESKIN, because it stays bravely on track and performance remains high. We consider this characteristic to be an aspect of safety, because during hike & fly the wind does not always behave as forecast. This brings us to the topic of handling in thermals – this where the DOUBLESKIN is at its best. If you are looking for a very light, playful »all-inclusive« paraglider for your next trip or for new adventures in your local flying area, this is the wing for you.

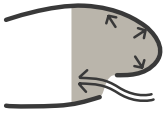
Technical summary

The DOUBLESKIN is an wing with 33 cells and a flat aspect ratio of4,4. DOUBLESKIN is a wing made from very light sail cloth. Care should be taken when handling the wing. It is possible that the durability may be reduced in comparison to paragliders made from conventional cloth.

All technical data can be found on page 72.

DOUBLESKIN technologies

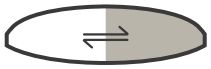




AIR SCOOP

Under pressure

NOVA Air Scoop is an optimised air intake, which increases the internal wing pressure. NOVA's Air Scoop principle is similar to the ram-air inlet duct on a sports car: increased airflow produces higher pressure. Higher internal pressure in a paraglider means improved performance through increased structural stability and collapse resistance.



LOW ASPECT RATIO

More compact

The aspect ratio of a glider is not the only factor in passive safety, but still a very important one. A high aspect ratio favours cravats after asymmetric collapses, generally shortens brake travel and normally makes wings more difficult to fly. Nova's analytical tools permit us to build performance wings even with a low or moderate aspect ratio.

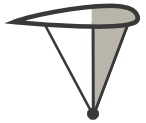
ZIG-ZAG 3D-SHAPING

Zig-Zag 3D-Shaping

Zig-Zag 3D-Shaping is the next step to an even smoother wing nose. This is the seam near the leading edge, which forms a striking zig-zag pattern and is cleaner, i.e. aerodynamically more favourable. On the DOUBLESKIN, this seam is supplemented by a 3D-Shaping seam on the upper surface, which runs along the entire span.

Less is more

Our idea of a three-liner with less line length allows us to construct wings with very good performance and a high degree of passive safety. The way we have conceptualised the lines has made it possible to manufacture wings which are collapse resistant; but when they do collapse, the collapsed area is generally less extensive. This significantly improves the wing's extreme flight behaviour.



THREE LINER

Comfort on the ground

All NOVA paragliders are made to be easy to use. For packing you can use a concertina bag, but it is not essential. Our extensive experience with rods has taught us that the packing method has little influence on the durability of the wing. Bent rods quickly spring back into their original shape.

EASY PACKING

Light as a feather and robust

Very light but still durable: light weight NOVA wings weigh little but are still robust enough to withstand the hard conditions of the mountains. The profiles are made out of durable cloth, so that this highly-stressed component does not deform – like it can with ultra-light material. This means we are able to guarantee consistent flying characteristics.

LIGHT WEIGHT

DOUBLESKIN target group

One wing, various uses. Find out more in the weight-range section.

The DOUBLESKIN is perfect for hike & fly enthusiasts who don't just want to fly »top-to-bottom«, but who may also want to fly cross-country. The good performance when accelerated, the small packing volume and little weight allow you to travel with as little baggage as possible.

General information

As an aircraft, paragliders must conform to applicable air law. Depending on your country of origin, instruction may be compulsory. Additionally, there are statutory requirements (for example air law) which must be adhered to.

The DOUBLESKIN is designed and certified to carry one pilot. It may not be used as a tandem wing.

Paraglider pilots must be able to prove that they have the valid licences and must have insurance as is required by their country of origin. Pilots must be capable of judging meteorological conditions correctly. Depending on a country's applicable regulations, the use of a helmet and back protector, as well as carrying a parachute, is mandatory and highly advisable.

Pilots must accept responsibility for the risk inherent in participating in the sport. Paragliding is an adventure sport and can lead to severe injuries and death.

We recommend that inexperienced pilots and those with a heightened desire for safety should undertake paragliding under the auspices an accredited school or instructor. Many of our NOVA Partners can offer this service.

Recommendations

We advise pilots to choose their wings conservatively: it is preferable to fly a lower class wing than to overstretch yourself. One can only get the full potential from a wing if it feels comfortable. If the wing is too demanding, this does not lead to increased performance and it can increase the risks.

After buying a new wing we recommend undertaking an SIV/pilotage course. On this course we recommend practising the manoeuvres which simulate the incidents which most commonly occur during everyday flying – in particular asymmetric and frontal collapses. Furthermore we recommend regular flying, ground handling, as well as further theoretical training. We advise that you continuously study flight theory and practice and that you also study the particulars of your chosen flying equipment. As the owner of your equipment it is your responsibility to comply with checking and maintenance requirements. More information on this in the »Care and maintenance« section.

Operating limits

The following flying conditions and situations are outside the permitted operating limits of the wing:

- Flying with precipitation (rain, snow, hail) must be avoided at all costs. Precipitation has a negative impact on the flying characteristics of the wing. Amongst other things, the stall point and parachutal stall behaviour changes.
- Low temperatures combined with high humidity can lead to icing, which also has a negative impact on the wing's flying characteristics (parachutal/deep stall, shortening of the brake travel).
- Operating the paraglider is only permissible within the recommended weight range. The weight range can be found in the technical data.
- Sand, dirt and snow (especially in large quantities) have a very negative effect on the flying behaviour of the wing. Before each launch, check your glider for foreign matter and execute a proper pre-flight checking sequence.
- This paraglider was not designed for aerobatics.

On receiving your paraglider

Initial flight

Before sale, every NOVA wing is checked and flown by a NOVA dealer. The name of the pilot and date of this first flight must written on the paraglider's information label. Generally this will be situated in the centre cell (at the profile rib).

MY NOVA

This registration must be completed within 14 days of purchase (invoice date).

Registration

In order to take advantage of the full guarantee and services, for example **NOVA Protect,** you must register the paraglider at our web site: my.nova.eu ↗

Accessories included

Your DOUBLESKIN is delivered with an Ultralight Compression Bag 22L, riser bag, holding pins, a »Simpleflag« windsock, manual, self-adhesive repair tape and stickers.

Glider modification

At delivery, the specifications of a new paraglider conform to those used during the certification process. Any user modification (for example, change of the line length, modification of the riser) means the glider no longer conforms to its certification. We recommend consulting NOVA before any modification.

Care should be taken when modifying the brake line length: in the factory, the brake line is set so there is 10 to 15 centimetres free play. This is essential for two reasons:

- If the speed system is engaged, the brake line travel is reduced. A brake line modified to achieve shorter travel would mean that the wing would be automatically braked when accelerated. Firstly, this would reduce the effectiveness of the speed system and secondly this could induce a stall.
- The free play of the brake has an effect on extreme flight incidents. If the brake line length is modified, this can influence the reaction of the glider.

Suitable harnesses

Your paraglider is certified for use with a harness classified as GH (without cross-bracing). This group contains nearly all currently available harnesses. The certification sticker on your harness provides information on its classification.

The choice of harness has a major influence on the flying characteristics of your paraglider.

Some harnesses allow particularly effective weight-shift, but at the same time turbulence is directly fed back to the pilot. Other harnesses are more damped and therefore more comfortable – but the disadvantage is that they are less agile. Every pilot must decide for themselves which set-up is suitable for him/herself.

For hike & fly, we recommend flying the DOUBLESKIN in combination with the NOVA MONTIS harness. On the one hand the two products are perfectly matched; on the other, combining the MONTIS with the INVERTO gives you an innovative airbag reversible harness with a high degree of passive safety at only 1.3 kg total weight.

MONTIS+

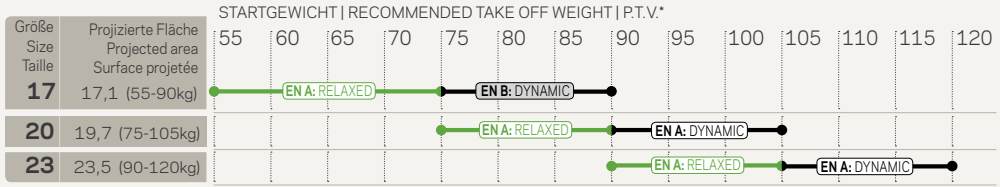
The MONTIS is a mountaineering harness which weighs approximately 300 grams. Combined with the INVERTO it offers a high degree of passive safety.

Weight range

Your paraglider is certified for a stipulated weight range. If you fly the glider outside this range, you are outside the operating limits of the equipment. Therefore the paraglider does not conform to the flying characteristics determined during the certification process – this means your certification is no longer valid.

The DOUBLESKIN is certified as EN/LTF A in all sizes. Size 17 is certified as EN/LTF B, if flown in the extended weight range (75 – 90 kilos). Nevertheless, speed, sink rate, handling and the flying feeling differ depending on the wing-loading.

Despite being mainly EN-A rated – depending on the total take-off weight – **we did not design this wing as a school glider.** The Ultralight Risers require a certain routine in order to avoid riser twists when clipping in and the ultra-light fabric may be more prone to getting damaged during extensive ground-handling sessions.



RELAXED

Low wing-loading: for best sink rate and not too dynamic behaviour.

DYNAMIC

High wing loading: flying in high mountains (when flying down and »getting off« are priorities), strong-wind soaring (e.g. at the coast) or generally more dynamic and higher speed. The Dynamic range is NOT suitable for new pilots.

Ultralight Riser

The DOUBLESKIN comes with a choice of Ultralight or Light riser. The Ultralight Risers weigh 60 grams less than the Light version. As with all extreme lightweight risers, when using the Ultralight Risers it is advisable to carry out a double pre-flight check to avoid twisting.

Flying the DOUBLESKIN

We recommend completing your first flights with your new wing in calm conditions. This will give you the opportunity to get to know your glider. Launches and ground handling on a training hill will also help to familiarise yourself with the paraglider.

Take off

General

The pilot has the responsibility to check that their entire equipment is in full working order. In particular, the wing, harness and the parachute.

Immediately before launch we recommend the following pre-flight check, which should be conscientiously performed before every take off. Sadly, many launch accidents result from an omitted pre-flight check.

Overall, the launch behaviour is very simple. The wing forgives errors. No special skills are needed to launch the wing.

1. Buckled-up: leg and chest straps are connected, chin strap on the helmet is closed
2. Clipped-in: risers are not twisted, speed system is correctly connected, carabiners are locked
3. Lines: A-lines are on top, all lines are sorted and free of knots, brake lines run cleanly through the low friction rings
4. Canopy: wing is laid out on launch in an arc with leading edge open
5. Wind and air space: wind is suitable for take off, air space is clear

The DOUBLESKIN distinguishes itself by its easy inflation behaviour (both during forward and reverse launch) and without wanting to hang back. The wing climbs cleanly and directly without a tendency to overshoot.
Confident launches can only be learnt by practise – there is only a limited knowledge to be gained from books and descriptions. So here is a tip: Use every opportunity on a training hill to perfect your launch technique. Ideally, have an experienced colleague or instructor with you to provide feedback.

TIP

Take off: For an **optimal inflation** we recommend holding **both A-risers together with the B-riser** and applying little force. That way, the wing climbs cleanly and reliably above the pilot.

Holding pins

By means of small loops and wooden pins the paraglider can be easily secured for take-off in very steep and slippery terrain – e.g. on snow. This prevents the glider from sliding down while being laid out. If you inflate the canopy, the pins will release automatically. The pins can be attached to the specially provided tabs of the wing using the loops provided.

Importand: Please make sure you remove the pins before folding the glider. You should store them separately to avoid damage to the sail cloth.

Tow launch

When towing, the DOUBLESKIN displays no peculiarities. Please note that it is important to climb away from the ground at a shallow angle.

We recommend the use of a tow adapter. This adapter is connected to the main carabiners and links them with the tow release.

Normal flight

The DOUBLESKIN has its best glide performance at trim speed, i.e. when the brakes are fully released. In calm air, the wing will travel the greatest distance over a given height.

With headwind or a sinking airmass, maximum glide can be achieved by using the speed system. During accelerated flight in turbulent air, attention should be paid to the dynamic reaction of the wing in case of a collapse. Lots of height above the ground is advisable.

In strong turbulence it is advisable to gently pull both brakes to increase stability. The brakes provide feedback about the surrounding air, which is needed for active flying.

!

Cases of an escalation of a collapse can be prevented by active flying.

By active flying we mean the constant control and correction of the angle of attack in turbulent air. For example, if a pilot flies from an area of lift to an area of sink, if there is no pilot input, the angle of attack will be reduced and the wing will pitch forward. Reduced brake pressure will indicate the start of this pitch movement to the pilot.

The correct reaction is to increase the brake input to prevent the forward pitch.

Some of the required techniques can be practised during ground handling, for example, by attempting to keep the wing flying above your head without looking at it. This exercise is also useful for successful forward launches.

Accelerated flight

Fitting the speed system

The majority of harnesses are fitted with two pulleys per side. Some (lightweight) harnesses instead have two simple rings or loops. The two speed bar cords are pulled from top to bottom through both pulleys/rings and fitted to the foot bar.

The correct length adjustment is important. If it is too short, there is the danger that the wing is constantly accelerated, which should be avoided at all costs. If the cords are too short there is the risk that the speed bar is unreachable.

If the cords are set too long, it is not possible to accelerate the wing to its maximum speed.

We recommend setting the cords a little too long when first fitting the speed system, so that the free play can be judged during flight. Then the slack can be taken up if necessary. Brummel hooks with three holes assist with the simple adjustment of the cord length.

Using the speed system

Before take off or on connecting the risers to the harness, the Brummel hooks on the speed system must to attached to those on the harness. Please make it part of your pre-flight routine to connect the speed system – it is important for your safety.

The DOUBLESKIN is fitted with a very effective and smooth-running speed system. Up to the maximum speed, the glide performance remains very high. Pitch correction, i.e. active flying, in accelerated flight should not be performed through the brakes, but using the speed system.

!

Please note: using the brakes during accelerated flight is not only detrimental to performance, but (in comparison to non-accelerated flight) it increased to likelihood of collapses!

Therefore if the wing pitches forward, the pilot should not brake, but reduce the acceleration.

In accelerated flight, steering should be performed either by weight-shift or through asymmetrical speed bar use (by increasing the acceleration on the left side, the wing will turn right).

Speed system geometrical data

If the entire range of the speed-system is utilised, in comparison to the C-risers the A-risers are shortened by approximately 12.0 cm.

Turning

Turning a wing is the combination of inner brake, outer brake and weight-shift. The key is the correct dose of each element. One of the features of the DOUBLESKIN is its sensitive handling. Small brake inputs are sufficient to fly precise turns.

In thermals, in addition to the inner brake, we recommend lightly braking on the outside as well – this helps to control bank and speed of rotation, i.e. you get better feedback from the wing. Additionally this increases the stability of the wing tip. Tight, controlled turns and smooth direction changes need practise but should be a skill all pilots have mastered.

Please note: if the paraglider is no longer steerable using the brake lines (for example if they have become tangled) then the wing has limited steering capacity through the C-risers. This, in combination with weight-shift, still allows reasonable turn correction. Using this technique also permits a safe landing. The C-risers should not be pulled so hard that they cause the wing to stall.

Please note: a full stall – if initiated too early – can lead to heavy landings or even serious accidents. Therefore the brakes should only be pulled fully immediately before touching the ground (<0.5 meters).

Landing

Landing the DOUBLESKIN is very simple. In turbulent conditions it is advisable to make your approach whilst pulling a little brake in order to increase stability and to increase the feeling for the wing's movement.

Immediately before touchdown the brakes should be pulled hard – even to the point of stall.

Rapid descent techniques

To quickly lose height, we recommend three possible manoeuvres.

We have ordered these by degree of difficulty:

1) Big ears

To use big ears, both outer A-lines (fitted on a separate riser – split A-risers) should be pulled down simultaneously. The brake handles (without an additional wrap) remain in your hands. As long as the lines are held down the wingtips remain folded and this increases the sink rate.

If the speed bar is used as well, this increases sink and speed. This also equalises the higher angle of attack caused by the increased drag of the ears. With »big« big ears (if the A3 line is pulled further), it is necessary to use the speed-bar to avoid the angle of attack becoming critically high.

To release the ears, release the A-lines fully and allow them to return to their normal flying position. If the ears do not open automatically, the pilot can use a quick, sharp tug on the brakes to assist the opening.

With »big« big ears (if the A3 line is pulled further), it is necessary to use the speed-bar to avoid the angle of attack becoming critically high.

2) B-line stall

A B-line stall is instigated by symmetrically pulling both B-risers (approximately 15 centimetres). It is recommended – for maximum grip as well as safely executing the manoeuvre – to grab the risers at the top. i.e. at the maillon.

Immediately after pulling the risers, the wing will lose its forward speed and after a short oscillation will descend in a stable parachutal stall.

When executing a B-line stall, we recommend watching your canopy – whilst always keeping an eye on your height above ground, so that you are able to exit the manoeuvre at the correct time.

The B-line stall is released by simultaneously raising your B-risers back to their normal flying position. If they are released too slowly, an unintended consequence can be a parachutal stall (see the section on parachutal stall).

The brakes should remain in your hands the entire duration of the manoeuvre and no additional wrap should be taken. When exiting the B-line stall it is important that the brake is completely free so that the wing can fully accelerate to trim speed.

3) Spiral dive

The spiral dive is the most demanding descent technique and should be learned at great height, preferably during an SIV/pilotage course.

The manoeuvre has two phases:

- First the pilot weight-shifts into the turn and then uses the inner brake to induce an ever tightening turn (note: do not jerk the brake, but pull it smoothly and continuously). With increasing acceleration, there will be a moment where the G-forces rapidly increase and the nose of the glider begins to point to the ground until (during a successfully performed spiral dive) the nose is nearly parallel with the ground.
- At this point the wing will reach sink rates of 20 meters per second (m/s) or more. The acceleration can be more than three times gravitational force (>3g). The pilot must be aware of these forces.

These physical demands can be simulated in a g-force trainer. We recommend such g-force training to all pilots.

Before learning to spiral, pilots should practise controlled exits from steep turns. These exits are performed by using the outer brake, whilst the inner brake initially remains in the same position. The outer brake is pulled until the rotational movement slows. To achieve a smooth exit without pitching forward, the outer brake must be released more as soon as the wing starts to level, i.e. as soon as the wing is no longer horizontal.

The actual spiral dive – as outlined above – only occurs after the above described transition phase, i.e. the diving of the wing. At this moment the pilot is pushed outwards in his harness. The pilot should release the pressure to avoid the wing locking into the spiral.

Then the sink rate can be varied using the inner and outer brake.

If the pilot's weight remains on the outside, releasing the inner brake is sufficient to continuously slow the rotational movement of the glider. Exiting the spiral is then performed as described above.

If the pilot strongly weight-shifts to the centre, the glider may lock into the spiral, regardless whether the brakes have been released. In this case symmetrical braking or braking on the outside may help, as well as weight-shifting to the outside.

In conclusion: it is essential to practise this manoeuvre gently and in stages. The exit must be controlled. Important safety information:

- if the pilot wishes to reduce the spiral or rotational movement, it is recommended that the first action is to pull the outside brake, rather than to release the inside brake;
- the pilot must be aware of the physical demands of rotation (vertigo) and acceleration (g-forces).
- if the pilot weight-shifts to the inside of the rotation, the wing may lock into the spiral;
- because of the fast descent rate, the pilot must constantly monitor the height above ground and exit the spiral in good time.

C-line stall

This manoeuvre is occasionally recommended as a descent technique. It is instigated by symmetrically pulling the C-risers. The wing loses its forward momentum and begins to descend. This manoeuvre is basically possible, but should only be practised with a qualified instructor.

Collapses

Asymmetric collapses

When flying into strong turbulence, one side of the paraglider may collapse. This happens because the turbulence causes the angle of attack on that side to decrease to the extent that lift is no longer generated, the lines de-pressure and the wing collapses.

Such a collapse normally only affects a small part of the whole span and the wing will not react significantly. During larger collapses which affect 50 percent or more of the span, the wing will clearly react: due to the increased drag of the collapsed side, the glider will begin to turn towards that side. Simultaneously the wing will pitch forward because of the reduced area carrying the wing loading, i.e. because this causes that side of the wing to accelerate.

The pilot can prevent this turn and forward pitch by braking the uncollapsed side of the wing. Braking the uncollapsed side is essential, especially near the ground. This manoeuvre should be practised with induced collapsed at height, preferably during an SIV/pilotage course.

If the open side is braked too much the glider may spin – see the section on spins.

Frontal collapse

A frontal collapse is also a consequence of turbulence. Unlike an asymmetric collapse, during a frontal collapse the whole leading edge folds downwards.

All our paragliders open automatically after frontal, as well as asymmetric collapses (as stipulated in the certification standards). To speed up the re-inflation of the leading edge after a frontal collapse, we recommend a very short stab of both brakes. It is important to then release both brakes completely.

Stalls

Spin

If the pilot brakes one side of the glider too much, a spin will result. In a conventional turn, the axis of rotation is remote from the wing. When a wing spins, the axis of rotation moves within the wing span. The over-braked side of the wing slides back.

The correct pilot reaction is to immediately release both brakes. Occasionally it is necessary to stop the canopy pitching forward.

Full stall

If both brakes are symmetrically pulled too far, a full stall will result. This means that the wing loses its forward momentum, whilst the pilot continues to travel forwards. From the pilot's perspective it feels like the wing falls backwards. At this moment it is essential that the brakes are not fully released as there is a risk that the wing will dive – potentially underneath the pilot.

The available brake travel up to the stall point depends on the size of the wing:

- 61 cm for size 17
- 66 cm for size 20
- 69 cm for size 23

These figures give a rough indication. Their inclusion in this manual is required by EN 926. In turbulent air, a stall may occur markedly sooner or later than these figures indicate. Therefore these figures only have limited significance.

A full stall is a complex manoeuvre and an explanation of its correct execution is beyond the scope of this manual. Anyone wishing to learn this manoeuvre should undertake an SIV/pilotage course.

Parachutal/deep stall

A parachutal or deep stall is defined as flight without forward momentum and with a large sink rate. All our paragliders automatically recover from a parachutal stall so long as the brakes are released, the wing is in an airworthy condition and the pilot flies within the operating limits of the glider.

If the wing is porous or its lines have been altered to the extent that it is no longer airworthy, then the risk of deep stall is increased. A wet or icy canopy also carries an increased risk of deep stall.

If a danger situation occurs (for example, unexpected rain) then any manoeuvre with a high angle of attack should be strictly avoided. This includes big ears (without speed bar), B-line stall as well as using a lot of brake. If the flying conditions permit, using a little speed bar is advisable.

Please note: if the brakes are pulled for longer than a quick tug, the wing will go into a full stall!

In the case of a deep stall, the speed bar should be utilised. The wing should then return to normal flight. If this is not the case, we recommend pushing the A-risers forward.

Alternatively, it is possible to recover from a deep stall with a quick, symmetrical tug on the brakes which allows the canopy to pitch backwards. The subsequent forward pitching returns the wing to normal flight.

During a parachutal stall close to the ground it is important to judge whether there is sufficient height for the wing to recover from this oscillation. In this case, a (hard) landing in parachutal stall is preferable to landing while the wing is still in pitching forwards or backwards.

Cravats

If a part of the wing is so tangled in the lines that it cannot free itself (possibly after a collapse), it is referred to as a cravat. This occurrence cannot be discounted on any model of paraglider.

In the case of a cravat, we recommend the following:

1. Brake on the opposite side: In the same way as during an asymmetric collapse, the wing will try to turn in the direction of the cravatted side. If the pilot does not use the opposite brake (on the open side), then the rotation of the wing can quickly turn into a locked-in spiral dive which either requires great effort or in some cases it is actually impossible to exit. It is essential to prevent this rotation.
2. Open the cravat by pumping the brake: A hearty pull of the brake on the tangled side may release the cravat. A timid pull of the brake rarely works.
3. Pull the stabilo line: If a pull of the brake line is unsuccessful, pulling the stabilo line may work. The stabilo line is the outermost line on the B-riser and is green in colour.
4. Collapse the cravatted side: Collapsing the tangled side by pulling the A-risers may be effective.
5. Full stall: A pilot who has mastered the full stall manoeuvre has an effective method of releasing a cravat.
6. Parachute: Throw your reserve parachute without delay if you have lost control of your wing and you are unsure whether you have sufficient height for further recovery attempts. If possible, stabilise the wing by using opposite brake until the parachute is fully open.

Many pilots hesitate too long to throw their parachutes or they fail to use it completely. Utilising your rescue parachute is preferable to being under an uncontrollable wing.

Make a habit of mentally rehearsing throwing your parachute by, for example, practising putting your hand on the parachute handle during flight. This is useful preparation should the worst happen.

Many clubs or schools offer an opportunity to practise throwing your reserve parachute on a zip line. The most effective practise is obviously actually throwing the parachute during an SIV/pilotage training.

Care and maintenance

With care and careful handling, a paraglider can remain in a technically perfect state for many years – even if used intensively. An exception to this are lightweight paragliders which degrade more rapidly with intensive use. We recommend the following:

- The wing should not be unnecessarily exposed to UV radiation, for example if left for a long time in direct sunlight on take-off or landing.
- When folding the glider it is advisable not to bend the rods in the leading edge.
- If the wing is wet or even only damp when being packed, it should be fully dried as soon as possible. Storing the glider damp can lead to permanent damage.
- When landing or groundhandling, try to avoid hitting the leading edge hard on the ground. This can lead to damage.
- The lines should be protected from dirt and sharp rocks. Never step on the lines if on stony ground.
- Over a period of time, dampness in combination with dirt can lead to lines shrinking and the glider going out of trim.
- Salt water (including sweat) and sand damage lines and sail cloth. This has a negative effect on their durability and strength.
- Do not drag your wing across the ground – particularly not the rods in the leading edge.

EASY PACKING

To us, paragliding means freedom. And freedom means not having to deal with complicated equipment.

Packing the glider

Keep it simple! NOVA paragliders can be stored in a concertina bag, but it is not essential (we haven't found that concertina bags prolong the life of the wing). If in a hurry, they can be stuffed into the inner bag (but please don't store them like this in the long-term!).

We use the conventional packing method for our own wings: lay the wing flat with lines on top and then fold towards the middle. The cell openings should be in line and can then be used as a reference. Then fold, rather than roll, the glider as this improves the comfort when carrying it in the glider bag. When folding the wing, please ensure that the rods in the leading edge are not bent. This simple and comfortable packing method is made possible by our conservative use of rods – they are only used in the profile nose.

Storage

It is best to store paragliders in a dry place, away from direct sunlight. Permanently storing the wing at high temperatures (for example, in a car during summer) should be avoided. The wing should not be tightly packed when stored for long periods. It is preferable to leave it more loosely packed in the inner bag.

Cleaning

To clean the canopy, use only water and a soft cloth/sponge (no detergents!).

Remove sand, dirt or little stones from the inside of the canopy. Sand is abrasive and this accelerates the aging of the wing. To remove dirt from the trailing edge, we have fitted Velcro to the ends of the wing tips. Open this to shake out unwanted dust/dirt.

Repair

Repairs should only be performed by the manufacturer or authorised service centres. A list of authorised service centres can be found at our web site at:

nova.eu/en/try-buy/

Exceptions are replacing lines, the repair of small tears (up to 5 centimetres which do not require stitching) or holes in the sail cloth which can be fixed with original NOVA repair tape (supplied with the glider).

Spare parts, like additional repair tape or replacement lines, are available from authorised service centres or directly from NOVA.

Disposal

The synthetic materials used in the construction of a paraglider should be responsibly disposed of. When you wish to dispose of your glider, please return it to NOVA or to your local NOVA partner, where it will be dismantled into its individual components and properly disposed of.

Ultralight Compression Bag

Every DOUBLESKIN is delivered with an Ultralight Compression Bag (22 L, 34 g). The NOVA Compression Bag reduces the volume of the wing, protects it from sweat and helps to pack it flatter, which makes carrying it in your rucksack more comfortable.

1. Fold the glider in a way that the two halves of the wing make narrow strips, which are placed on top of each other.
2. Then fold the narrow folded glider, rather than rolling it up. The result is an approximately 25 x 40cm cuboid.

3. Slide the wing into the Ultralight Compression Bag.
4. Place the Ultralight Compression Bag on the floor and push the air out of the main opening using your knees.
5. Close the main opening by rolling it up several times.
6. It isn't necessary to push out every last bit of air. Please proceed with caution! The Ultralight Compression Bag should be primarily used for protection from sweat and harmful environmental effects, rather than to press out all the air.

Service and guarantee[1]

MY NOVA

After purchase, please register your wing within 14 days in our database: my.nova.eu ↗

Registration is required if you wish to take advantage of our extended warranties and guarantees. More information on our warranty and guarantee terms and conditions can be seen here:

www.nova.eu/en/guarantee-conditions/

Our services

Optimise your wing.

Through use, paraglider lines shrink or stretch. Generally, A and B-lines stretch, whereas C-lines shrink. As a result the wing flies slower and the handling is less agile. All lines are subject to shrinkage – regardless of which material they are made from or which manufacturer produced them.To ensure your complete flying fun and your safety, we developed **NOVA Trim Tuning (NTT)**[2] with the help of paragliding instructor and mathematician Ralf Antz.

After 15 to 20 Operating hours this stretching or shrinking is basically complete. We recommend that you then immediately send the wing to us or an authorised partner.

We will measure all the lines, analyse the trimming using special software and then put your wing back to its optimal flying condition.

If you take the opportunity of this service, you will benefit from the **3 Years No Full Service Required:** after the **NTT** your wing only needs to be checked again three years after the date of purchase (provided you do not exceed the number of Operating hours stated in the manual).

[1] The guarantee and service provision is limited, subject to conditions and not offered to the same extent in all countries. Detailed information is available can be seen here: www.nova.eu/en/guarantee-conditions/

[2] The warranty is only included in the purchase price in selected countries and, if included, may only be redeemed in the country of purchase.

Complete protection included.

NOVA Protect offers complete protection for your paraglider: your wing is covered once for accidental damage during one year after registering the glider at myNOVA (please note: there is a 50 euro +VAT excess[3]). We will repair tears, replace lines or panels.
If your wing is irreparably damaged, we will deduct the current value when purchasing a new NOVA paraglider.
This means we offer a unique service which gives you the security that– if the worst should happen – the anguish over a damaged new wing is reduced. Every new NOVA wing is covered by **NOVA Protect**. The only condition is the one-off product registration at myNova.

[3] This service covers damage incurred because of an accident while flying. Damage in other circumstances, personal injury, theft or other loss are excluded from this policy.

The three-year-no-worry offer.

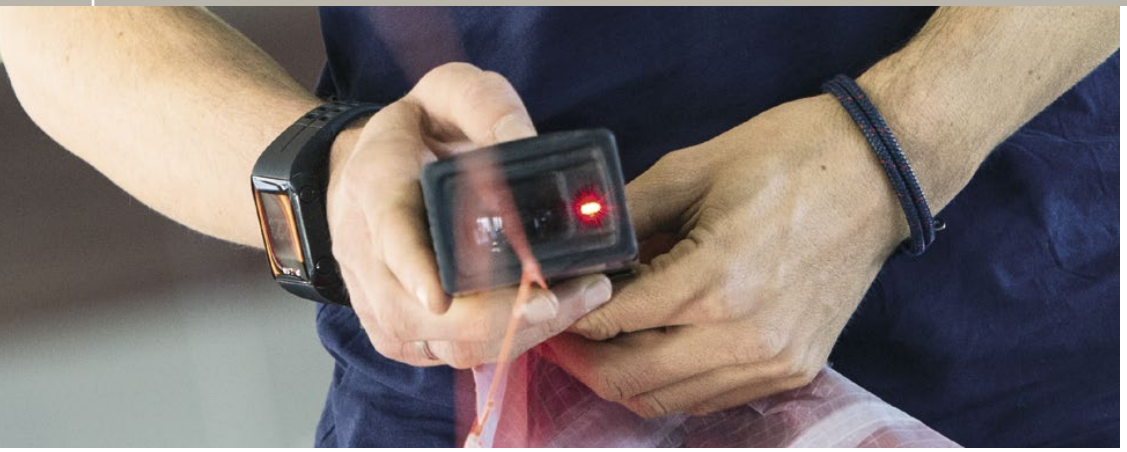
Imagine two years have passed and you have to do your 2 year check. Then fly a wing from NOVA! If your wing has had the **NOVA Trim Tuning**, then we will extend the period until the next service check from two to three years (from date of purchase) – provided you do not exceed the number of Operating hours before a service is needed, as stated in this manual. The extension of the interval before the next service is due allows you to concentrate on what you enjoy: the flying. We at NOVA wish you great flights!

Full four year warranty.

For additional peace of mind, we guarantee your paraglider for a further three years as standard. This guarantee covers material as well as workmanship.
If your **NOVA Trim Tuning** and a **NOVA Full Service** was completed by an authorised NOVA partner, **4 Years On Materials** comes into effect and this extends the guarantee to four years.
If we are unable to repair the problem, we will deduct the current value when you purchase a new NOVA paraglider.

More than a check.

When it comes to checks we are very particular – that's why we don't just call it a check, but a **NOVA Full Service**. We check all the details of the paraglider: porosity, line lengths, correct trimming, etc. With our in-house developed software package, the **Quality Assurance Database (NOVA QAD)**, the person servicing the wing can view previous checks. You too can view your glider's service history – which is obviously protected by a password.
Like during the **NOVA Trim Tuning**, the person servicing the glider will measure all the lines and feeds the data automatically into the diagnostic software. Using the measurements, the software calculates the sail trim and suggests possible trim corrections. These are evaluated by the person servicing the glider and then implemented through loops at the carabiners.
All measurement and check data is held centrally and we can download and analyse this data at any time. This allows us to determine how, in what distribution and to what extent the lines go out of trim. Using this data we can draw conclusions and improve our know-how on lines for future gliders.
As a technical and innovative company we are always concerned with further development and safety.



QUALITY ASSURANCE DATABASE

Everything available, anytime.

To us, a paraglider is more than just a few kilograms of plastic. We breathe digital life into it. Registration at MyNOVA is its birth certificate; and the service data for its entire life is collected in our **Quality Assurance Database**. For the following two reasons our long-running system is not only practical, it is also vital for continuing quality assurance:

Firstly, thanks to a user account our clients have unlimited access to all their important data – for example, the **NOVA Full Service** log, Trim Tuning data or even a change of owner.

Secondly, we gain a deeper insight into the durability of the material and lines through the collection of this data. This helps us inform our clients quickly in case of problems. Also, it helped/helps us to decide which materials are most suitable for everyday paragliding. It assists us to keep producing better paragliders.

All the service and guarantee conditions are linked to terms and conditions. Details on our services are available at: www.nova.eu/en/guarantee-conditions/

NOVA approved service centres also have access to the database. The person responsible for the service can gain information on the wing before even opening it up. The **Quality Assurance Database** therefore improves the knowledge transfer – in the interest of our customers.

Particulars and exceptions

Subsequent check intervals are two years unless the checker specifies one year due to the questionable condition of the glider.

We also recommend annual checks if the glider is used in areas where it is exposed to a lot of stress/adverse conditions: in very sandy or rocky areas, salty sea air and if the wing has been in contact with salt water. Anyone who regularly flies aerobatics should submit their glider for an annual check. In this case, there is an even greater responsibility on the pilot to regularly check the wing for damage.

Gliders used for commercial purposes (school gliders, tandems) must be checked annually.

Regardless of the above specified deadlines, the paraglider must be inspected no later than 100 flying hours or 200 launches, whichever comes first.

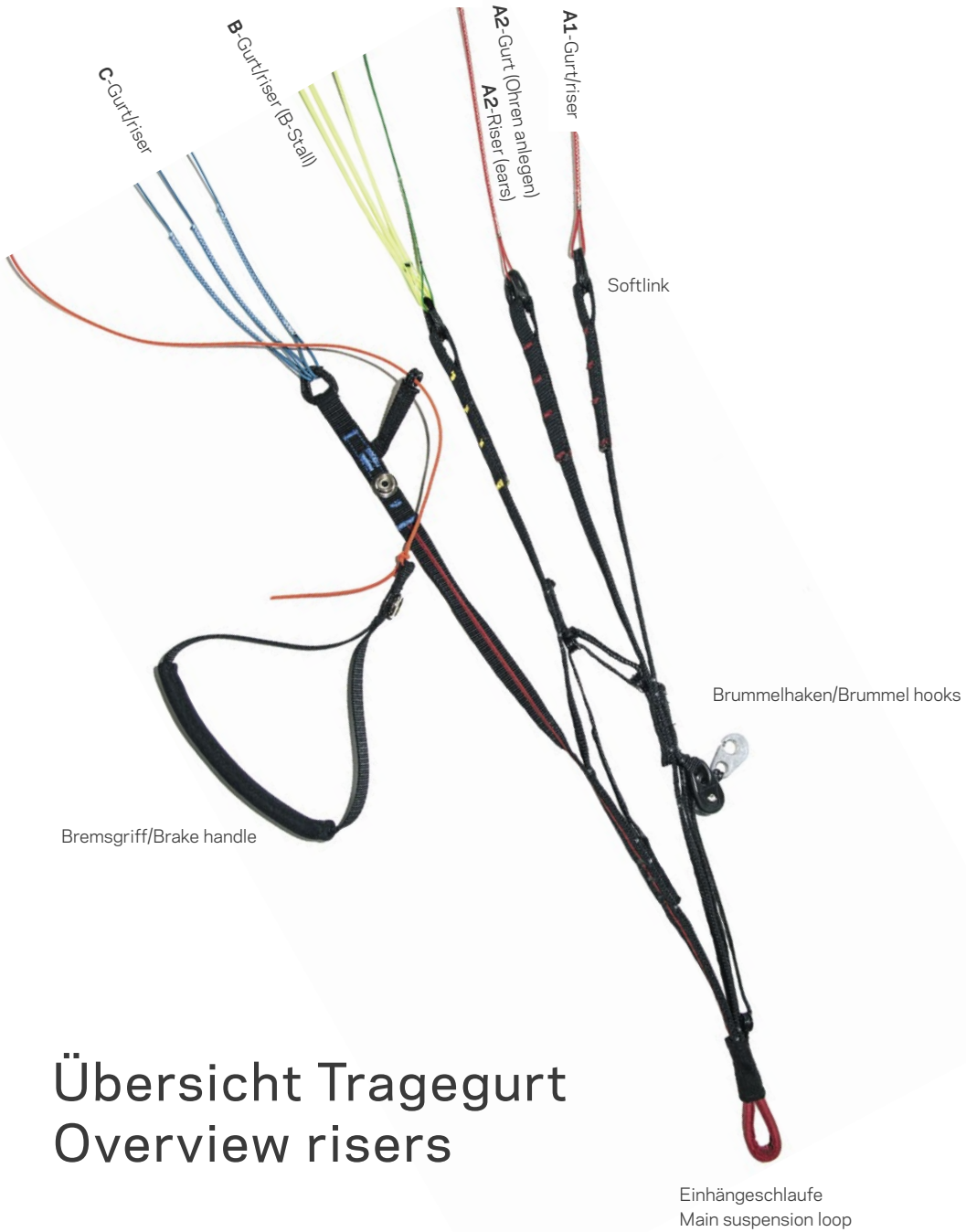
The **NOVA Full Service** is confirmed with an official stamp. Failure to comply invalidates the airworthiness. You can find authorised service partners on our website:
www.nova.eu/en/try-buy/

Technische Daten | Technical data

DOUBLESKIN			17	20	23
Anzahl Zellen	Cells	m	33	33	33
Projizierte Spannweite	Proj. wingspan	m	7,6	8,1	8,8
Projizierte Fläche	Proj. surface area	m²	17,1	20	23,5
Projizierte Streckung	Proj. aspect ratio		3,3	3,3	3,3
Ausgelegte Spannweite	Flat wingspan	m	9,4	10,1	11,1
Ausgelegte Fläche	Flat surface area	m²	20	23	27,5
Ausgelegte Streckung	Flat aspect		4,4	4,4	4,4
Leinendurchmesser	Line diameter	mm	0,7 / 0,8 / 1,0 /1,2 / 1,3		
Leinenlänge	Line length	m	5,05	5,50	6,05
Gesamtleinenlänge	Total line length	m	214	230	253
Max. Profiltiefe	Max. profile depth	m	2,6	2,8	3,0
Min. Profiltiefe	Min. profile depth	m	1,1	1,2	1,3
Gewicht	Weight	kg	2,1	2,4	2,8
Zulässiges Startgewicht*	Certified take off weight*	kg	55 - 90	75 - 105	90 - 120
Zulassung (EN/LTF)	Certification (EN/LTF)		A: 55 - 75 kg/ B: 75 - 90 kg	A	A

*) Pilot inkl. Ausrüstung und Flügel | Pilot incl. equipment and wing

Technische Änderungen vorbehalten | Subject to change without notice

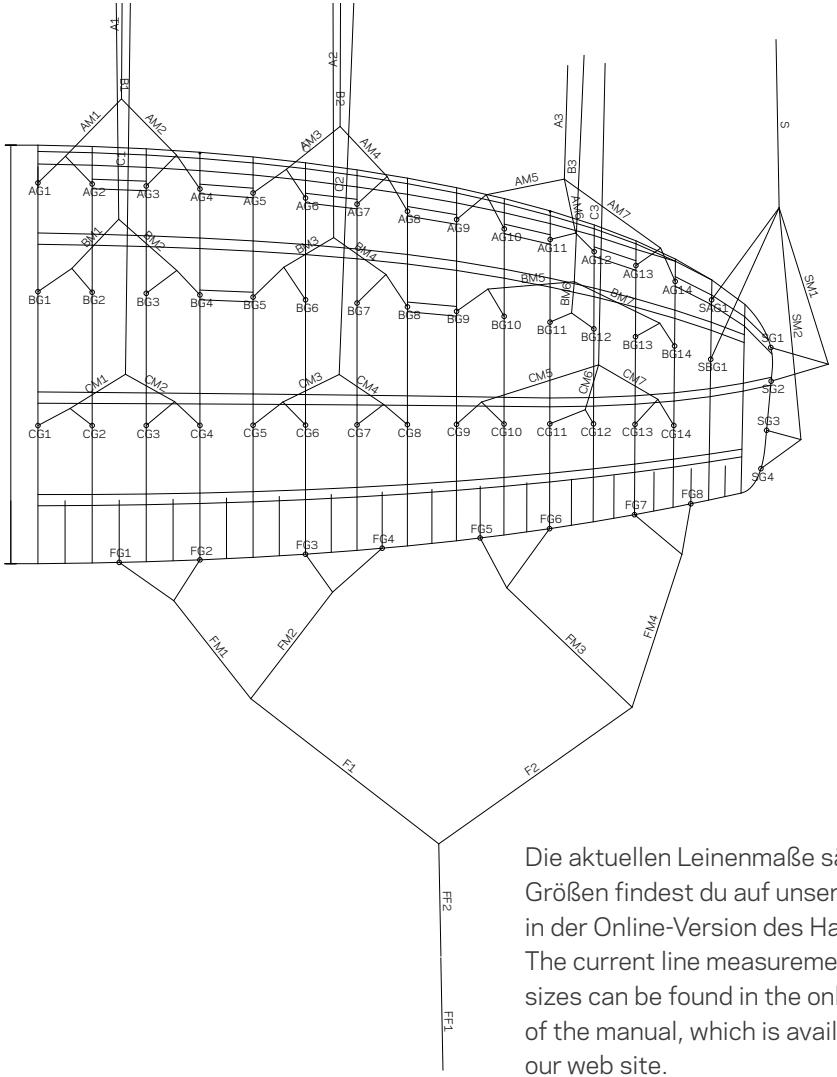


Übersicht Tragegurt
Overview risers

Übersicht Schirm
Overview glider

1. Stammleinen / Main lines
2. Gallerieleinen / Gallery lines
3. Untersegel / Bottom sail
4. Zellöffnungen / Cell Openings
5. Obersegel / Top sail
6. Hinterkante / Trailing edge
7. Typenschild / Nameplate

Leinenplan / Line plan



Die aktuellen Leinenmaße sämtlicher Größen findest du auf unserer Website in der Online-Version des Handbuchs.
The current line measurements of all sizes can be found in the online version of the manual, which is available from our web site.

Impressum | Imprint
Fotografie | Photography: NOVA, Paul Nagl

Bei jedem Gleitschirm von NOVA ist ein reichhaltiges Bündel an Service- und Garantieleistungen inkludiert.
Beim Kauf eines Schirms erwirbt man mehr als nur das Produkt.

Every NOVA paraglider comes with a big package of extra services and guarantees.
When you buy the wing you get more than just the product.

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info@nova.eu, www.nova.eu

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