

BION
2

NOVA

Manual
_EN



BION 2 -
flexibility and comfort



Performance Paragliders

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



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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Version 1.1 | August 2016
 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 groundrules. 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, like birds of prey or deer, by flying too close to them. Especially in winter, this stress can be life-threatening to 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.



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 BION 2

Introduction

Like its predecessor, the BION 2 excites professional tandem pilots as well as enthusiastic recreational pilots who want to share their most beautiful moments. Take off, enjoy, land safely: the BION 2 is a reliable partner which takes its responsibility seriously. With maximum performance, it will never let you or your passenger down.

Excellent take off and landing characteristics

Like the previous model, the BION 2 has excellent launch characteristics. Just a light pull is necessary to make the canopy **rises above the pilot and passenger in a controlled and even manner**. In comparison to its predecessor, this tandem is more comfortable to land due to the new wing design and the optimised brake configuration. In the final landing phase the wing converts every brake input and **ensures a safe and controlled flare**.

Maximum potential and fun

The BION 2's precise handling means that a little brake input results in the desired reaction. Thanks to the significant trim travel and the resulting wide speed range, the wing maintains its precision **across**



the entire weight range. This balance of flight characteristics, coupled with great performance, provides new opportunities for cross-country pilots.

Prepared for every eventuality

Anyone who flies a tandem carries a great responsibility. Your demand for a high degree of safety will be fulfilled with the BION 2. We made sure the BION 2 is »NOVA standard« by testing it **more than the required certification tests** and we can guarantee the highest degree of passive safety. These high safety standards should be a dream come true for all responsible tandem pilots.

Technical summary

The BION 2 has 49 cells across the entire span; of these, five are closed cells at each wing tip. It features three line areas. For an easier overview, the lines in the A-area at the leading edge are coloured red. The brake lines (orange) and stabilo lines (green) are not counted as part of the three line areas.

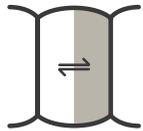
All technical data can be found on page 74.



THREE LINER

The BION 2 has only three line areas. This reduces drag and simplifies line sorting. The risers have also benefited from eliminating the fourth line area. They are lighter, easier to handle and this makes inflating the canopy simpler.

BION 2 technologies



SMART CELLS

Optimised cell widths

SmartCells counteract the variable force distribution within the wing that is caused by the line attachments. In NOVA paragliders constructed using SmartCells, the cell widths have been adapted to the load - basically, intelligent cells. Wings with SmartCells fly more calmly, are more compact and glide better.



THREE LINER

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.



DOUBLE 3D SHAPING

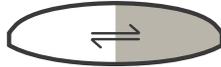
Flat profile nose

Anyone who tries to fold a piece of paper around a ball will notice that there are always creases. The nose profile of a paraglider is the same - the sail cloth has to adjust to both the profile and ballooning effect (cells are round, not straight). Double 3D Shaping uses additional seams to reduce creasing and therefore increases the performance of the wing.



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.



LOW ASPECT RATIO

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 and durable

Paragliders in the weight-optimised category are lighter than conventional paragliders but offer the same mechanical stability and durability. These wings are lighter to carry, easier to launch and are therefore suitable for hike & fly. Weight-optimised is aimed at pilots who appreciate light weight without compromising on durability.



WEIGHT OPTIMISED



BION 2 target group

The BION 2 is aimed at a wide range of pilots. On the one hand, it is suitable for commercial tandem pilots, whose priority is simple handling and a durable wing. On the other hand is the recreational tandem pilot, who is looking for a wing on which s/he can undertake relaxed and extended thermic flights. This type of pilot will especially appreciate the BION 2's balanced handling, high speed and glide performance.

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 BION 2 in size L is designed and certified for tandem use. **Size M may also be used for solo flying.**

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.

Recommendations

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 be written on the paraglider's information label. Generally this will be situated in the centre cell (at the profile rib).

my

NOVA

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 ↗

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

Accessories included

Your paraglider will be delivered with a glider bag (rucksack), spreaders, inner bag, riser bag, 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 centimetres free play. This is essential for two reasons:

- If the trimmer 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 trimmer 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.

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.

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

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.

It is a question of personal preference whether you wish to fly at the upper, lower or middle of the stipulated weight range. Low wing loading brings the advantages of, for example, high damping, a less dynamic feel and a great climb rate. The disadvantage is less speed, less agility and reduced internal wing pressure. On the other hand, high wing loading means more speed, a more taut canopy and more agility, which has increased dynamics as a consequence.



Flying the BION 2

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

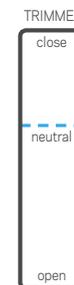
General

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.

1. **Buckled-up:** leg and chest straps are connected, chin strap on the helmet is closed
2. **Clipped-in:** risers are not twisted, spreaders are correctly attached, carabiners are locked
3. **Trimmer setting:** closed on both sides

4. **Lines:** A-lines are on top, all lines are sorted and free of knots, the brake lines run cleanly through the pulleys
5. **Canopy:** wing is laid out on launch in an arc with leading edge open
6. **Wind and air space:** wind is suitable for take off, air space is clear

The BION 2 distinguishes itself by its easy inflation behaviour (both during forward and reverse launch) and without wanting to hang back. **We recommend launching the wing with trimmers closed (the slowest position).** With the trimmers closed, the wing will reliably inflate with hardly any overshooting. Overall, the take off characteristics are very straightforward, forgiving and require no special skills – only the standard techniques for forward and reverse launching. 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.



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

Tow launch

When towing, the BION 2 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 BION 2 has the best glide performance in a neutral trim position with no brake input. 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 opening the trimmers. 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.

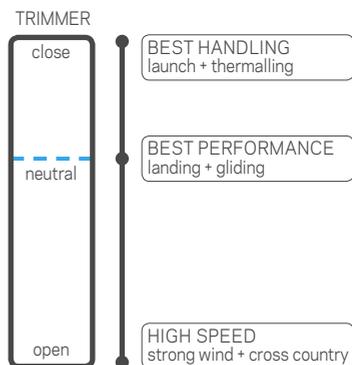
The correct reaction is to increase the brake input to prevent the forward pitch.

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

Speed system

The BION 2 is fitted with trimmers. In normal flight the trimmers are closed. This means all risers appear to be the same length. Opening the trimmers will accelerate the wing.



Using the trimmers

The BION 2 can only be accelerated in flight using the trimmers, because this lowers the angle of attack and increases the flying speed. In comparison to trim speed, the increase in speed is approximately 10 km/h.

The trimmers are useful when flying into wind, to be able to glide further in sink or to make faster progress on a cross-country flight.



The BION 2 risers

When the trimmers are fully closed, the maillons are not at the same level, as is normally the case; the C-riser can be shortened even more in comparison to the A-riser. This trimmer setting offers the best handling in thermals by reducing sink.

When the BION 2 trimmers are fully open the wing impresses with an unusually high top speed, which provides you with more safety on windy days.

Turning

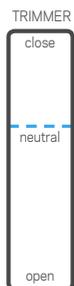
Turning a wing is the combination of inner brake, outer brake and weight-shift. The key is the correct dose of each element. One of the features of the BION 2 is its sensitive handling. Small brake inputs are sufficient to fly precise turns.

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.

Landing



Landing the BION 2 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. Neutral (blue markings on the trimmer), is the ideal trimmer setting for landing.

Rapid descent techniques

To descend rapidly, we recommend using big ears or a spiral dive. Below you will see an explanation of currently used descent techniques:

1) Big ears

With the BION 2, big ears are extremely effective and easy to execute. To initiate big ears, symmetrically pull down the outermost A-risers (red).

A clip on the C-riser allows the »big ear line« (the outermost A-line) to be fixed into position over a longer period. The extent of the big ears can easily be adjusted by pulling the A-line further. Before the clip can be used, the neoprene cover must be pulled away from the clip.

While the risers are being pulled down, or whilst the A-line is fixed to the clip, the wing tips will remain folded in and the sink rate will increase.

We recommend additionally opening the trimmers to increase the sink rate and forward speed. This also equalises the higher angle of attack caused by the increased drag of the ears.

To release the big ears, simply raise the A-risers or release the line from the clip and the BION 2 returns to normal flight.

If a wing tip does not inflate automatically, then a short pump of the brake will assist.

Please note: Before every take off, the pilot must ensure that the neoprene cover completely conceals the clip. Failure to conceal the clip under the neoprene cover could result, for example, in a brake line being accidentally caught in the clip and this could lead to a serious accident.

2.) B-line stall

We do not recommend a B-line stall with the BION 2.

3) Spiral dive

The spiral dive is the most difficult of descent techniques and should only be attempted by pilots who have thoroughly mastered this manoeuvre on a solo wing. Because of the greater line length of a tandem wing, the acceleration forces affecting the pilot are normally higher than on a solo wing.

The manoeuvre has two phases:

- First, weight-shift and brake on the inner side should be used to initiate increasingly tighter turns. 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.

During initial attempts, the manoeuvre exit should be initiated well before the glider enters a full spiral dive, so that the pilot can practice a controlled exit. The exit is initiated by releasing the inner brake and the pilot returning to the normal flying position. 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 their harness and the pilot should release the pressure to avoid the wing locking into the spiral (see explanation below). 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 BION 2's rotational movement. Exiting the spiral is then performed as described above. If the pilot strongly weight-shifts to the centre, the BION 2 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.

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

The sink rates reached in the spiral may be between 10 m/s and 20 m/s. The force on the pilot's body can reach up to 3g and depending on the person's constitution, in extreme cases, this can lead to unconsciousness.

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.

Please note: if flown at the bottom of the weight-range, the spiral dive must be executed with open trimmers in order to avoid the wing entering a spin during the manoeuvre initiation.

C-line stall

We do not recommend a C-line stall with the BION 2.

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.

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.

Please note: we recommend performing a full stall with the trimmers closed. (See page 56)



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



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.

The available brake travel up to the stall point is approximately 70 cm for size M and approximately 75 cm for size L.

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.

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 opening the trimmers), B-line stall as well as using a lot of brake. If the flying conditions permit, opening the trimmers a little is advisable.

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



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

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. (trimmers closed)
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.



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:

www.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.



Powered flight

Basics

Your paraglider can be used for paramotoring. Before your initial flight, please check the current registration status on our website. You will find this at www.nova.eu/en/gliders/. Please select your paraglider, click Downloads on the product page and open the document on the Motor page. This lists the motorised operating conditions, for example the recommended weight range, as stipulated in the DGAC registration.

If there is no Motor tab in the Download section, this means that the DGAC has not (yet) registered your paraglider for motorised flight.

Please check if the French DGAC registration is recognised in your country. Please also confirm that your paramotor and your wing are compatible or if there are any known peculiarities. Please contact your paramotor manufacturer or dealer. Additional training is necessary for paramotoring.

Take off with a paramotor

Choose a long, flat or slightly downward sloping field. Inflate the wing and wait until it is over your head. Ensure you have an upright body position and once the wing is above you, gently engage the throttle.

Motorised flying

Motorised flying is fundamentally different from hill flying. The torque of the engine has a marked influence on the flying characteristics of the wing. The increased inertia of the pilot can lead to negative consequences in extreme flight behaviour.

Controlling pitch

Abrupt, rapid acceleration can make the glider pitch back. Please accelerate sensitively and decelerate gently. Controlled brake input should be used if the glider pitches forward.

Safety advice

Before accelerating, the wing should be above the pilot's head, be stable and flying straight ahead. In turbulent air care should be taken when using the speed system or trimmers. Always remember that the engine may fail – make sure you have an emergency landing option.

Service and guarantee¹

my 

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 flying 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 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 for accidental damage for one year after registering the glider at myNOVA (please note: there is a 50 euro +VAT excess³). 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 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.

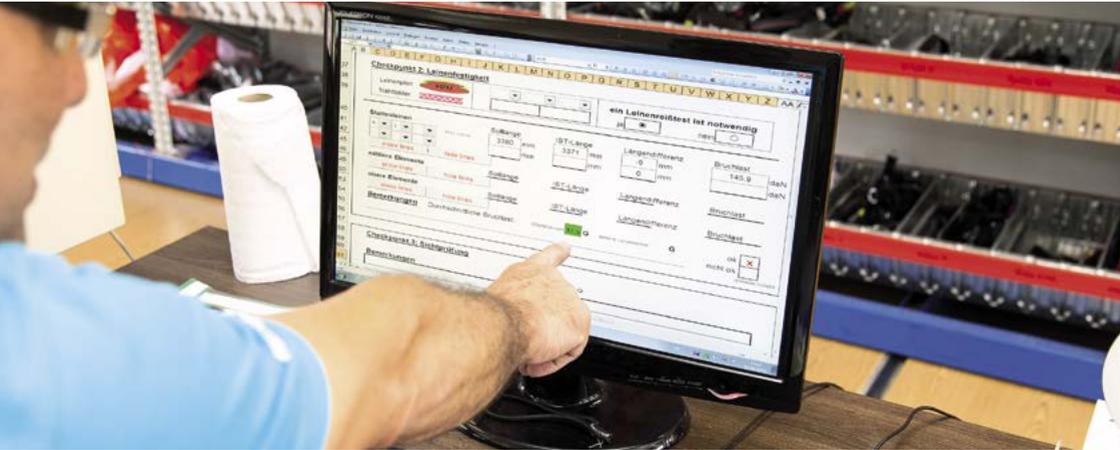
Like during the **NOVA Trim Tuning**, the person servicing the glider will measure all the lines and feeds the data automatically into the diagnostic software. Using the measurements, the software calculates the sail trim and suggests possible trim corrections.

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.





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.

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.



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/

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 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.

Regardless of the above specified deadlines, the paraglider must be inspected no later than 100 operating hours.

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/

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



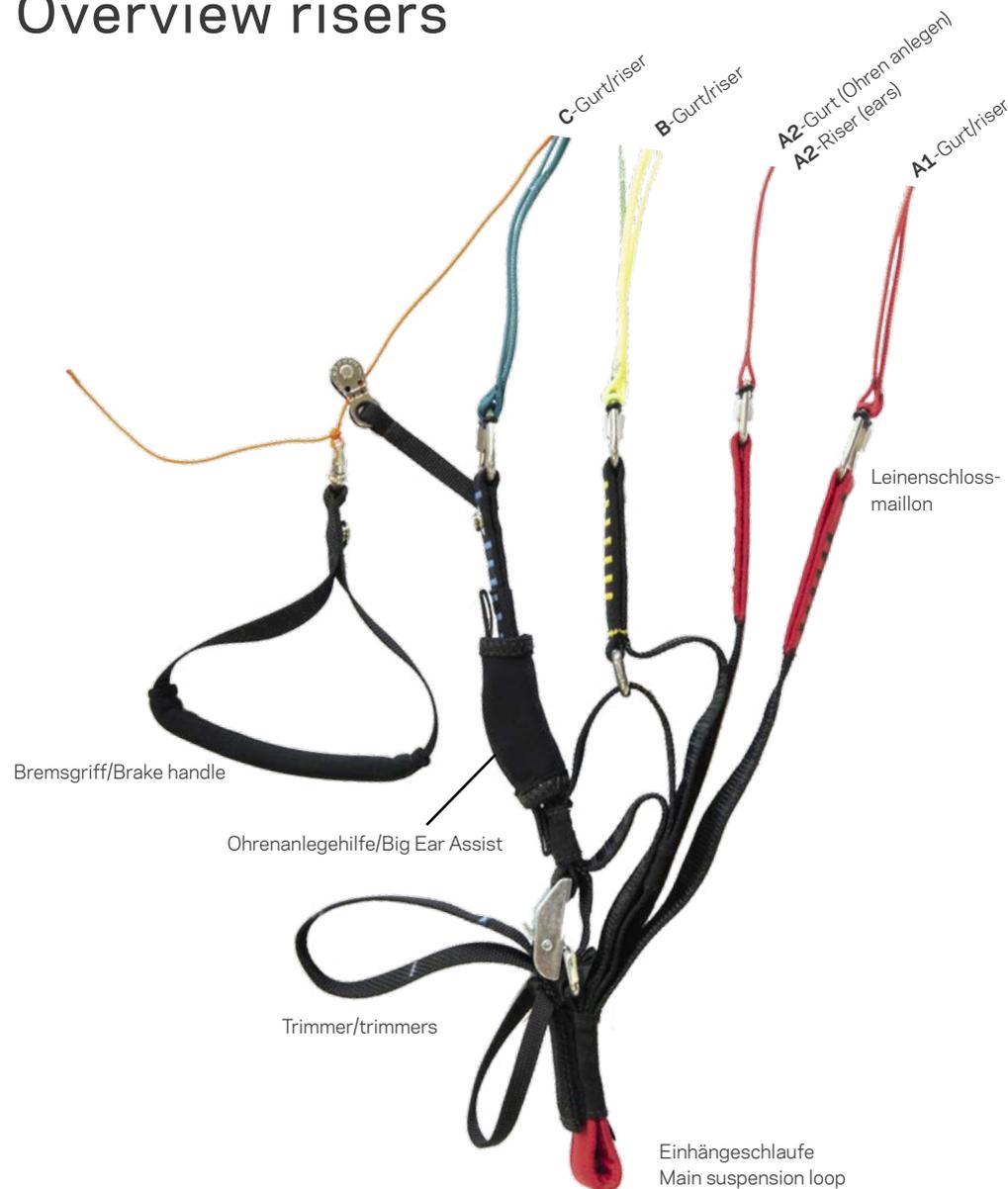
Technische Daten | Technical data

TYP	TYPE		M	L
Anzahl Zellen	Number of cells	m	49	49
Projizierte Spannweite	Projected span	m	10,75	11,43
Projizierte Fläche	Projected area	m ²	31	35
Projizierte Streckung	Projected aspect ratio		3,73	3,73
Ausgelegte Spannweite	Flat span	m	14,11	15,00
Ausgelegte Fläche	Flat area	m ²	37	41,75
Ausgelegte Streckung	Flat aspect ratio		5,39	5,39
Leinendurchmesser	Line diameter	mm	2,5/1,2/1	
Leinenlänge	Line length	m	7,25	7,73
Gesamtleinenlänge	Total line length	m	334,8	355,7
Max. Profiltiefe	Max. chord	m	3,27	3,48
Min. Profiltiefe	Min. chord	m	0,73	0,78
Gewicht	Weight	kg	7,5	7,9
Zugelassener Gewichtsbereich*	Certified take off weight* kg		90-200	120-225
Die technischen Daten für den Motorflug findest du online: www.nova.eu/BION-2 All technical data on powered flying can be viewed online: www.nova.eu/BION-2				
Zulassung (EN/LTF)	Certification (EN/LTF)		B	B

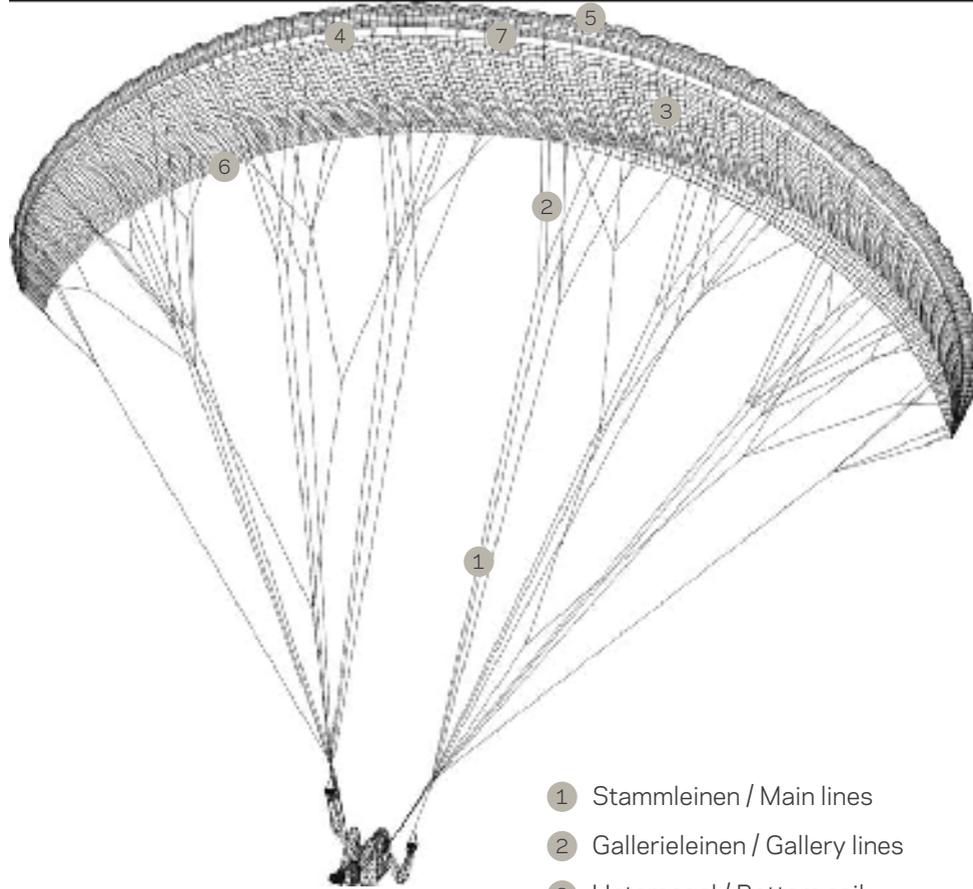
*) Pilot und Passagier inkl. Ausrüstung und Flügel | Pilot and passenger incl. equipment and wing

Technische Änderungen vorbehalten | Subject to change without notice

Übersicht Tragegurt Overview risers



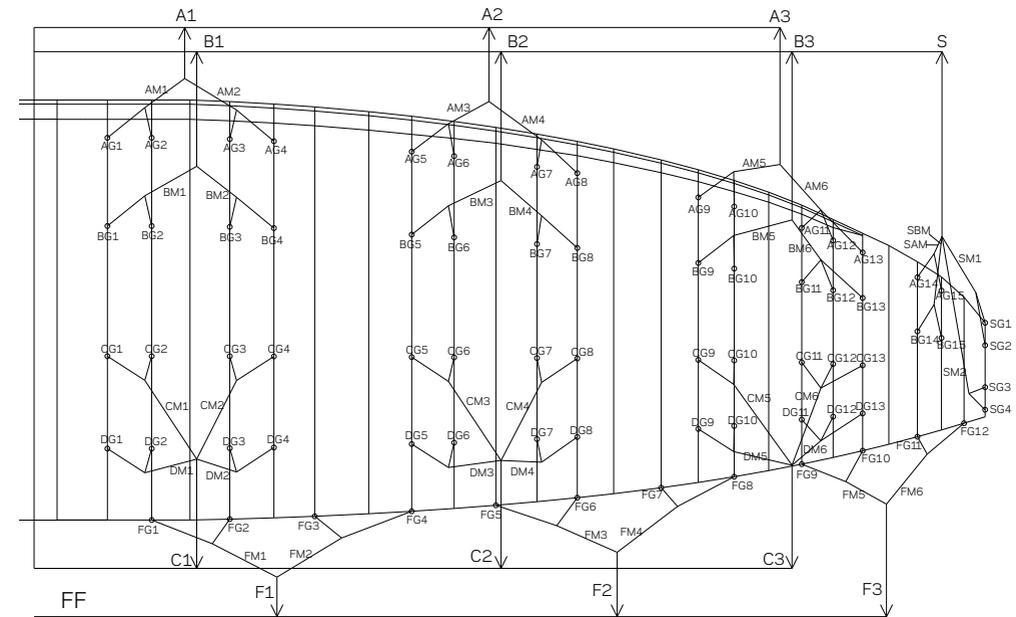
Übersicht Schirm Overview glider



- 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



Einzelleinenlänge | Line lengths

	M	L
A1	490,3	520,8
A2	496,7	528,5
A3	467,1	498,3
AM1	196,8	209,0
AM2	201,6	214,4
AM3	192,0	203,9
AM4	193,0	205,4
AM5	214,7	228,1
AM6	167,3	178,0
AG01	79,2	84,1
AG02	73,2	77,9
AG03	67,0	71,2
AG04	68,1	72,5
AG05	69,8	74,1
AG06	66,8	71,1
AG07	64,3	68,3
AG08	66,4	70,6
AG09	60,8	64,6
AG10	54,9	58,4
AG11	89,0	94,5
AG12	82,2	87,4
AG13	81,4	86,6
AG14	45,5	48,3
AG15	34,9	37,1
B1	486,4	517,1
B2	494,3	526,4
B3	468,2	499,4
BM1	190,9	202,7
BM2	195,8	208,3
BM3	185,6	197,2
BM4	187,7	199,7
BM5	207,7	220,7
BM6	162,5	172,9

	M	L
BG01	79,3	84,2
BG02	73,2	77,8
BG03	66,9	71,0
BG04	68,2	72,5
BG05	69,7	74,0
BG06	66,9	71,2
BG07	64,1	68,0
BG08	66,5	70,8
BG09	60,6	64,4
BG10	55,0	58,6
BG11	88,2	93,7
BG12	82,3	87,5
BG13	81,7	86,9
BG14	44,6	47,4
BG15	36,4	38,7
C1	498,9	529,8
C2	506,3	538,0
C3	545,6	581,7
CM1	181,5	192,7
CM2	186,2	198,1
CM3	176,4	187,4
CM4	178,2	189,6
CM5	131,3	139,5
CM6	87,3	93,0
CG01	79,4	84,4
CG02	73,0	77,7
CG03	66,8	70,9
CG04	68,3	72,6
CG05	69,8	74,1
CG06	66,8	71,1
CG07	64,0	67,9
CG08	66,6	70,8
CG09	61,1	65,0

Einzelleinenlänge | Line lengths

	M	L
CG10	53,9	57,3
CG11	86,3	91,7
CG12	82,7	87,9
CG13	83,8	87,6
DM1	203,9	216,8
DM2	208,5	222,0
DM3	196,9	209,4
DM4	196,3	209,1
DM5	145,4	154,5
DM6	98,0	104,4
DG01	79,2	84,2
DG02	73,2	77,9
DG03	67,2	71,3
DG04	68,1	72,5
DG05	69,9	74,3
DG06	66,7	70,9
DG07	64,6	68,6
DG08	66,1	70,4
DG09	61,5	65,4
DG10	53,3	56,8
DG11	87,2	92,6
DG12	82,5	87,7
DG13	82,8	88,1
S1	529,5	565,6
SAM	109,9	116,8
SBM	109,7	116,6
SM1	93,7	99,7
SM2	107,7	114,6
SG01	32,3	34,4
SG02	37,1	39,4
SG03	31,9	34,0
SG04	42,3	45,0
FF	272,0	271,5

	M	L
F1	275,1	292,5
F2	291,1	310,4
F3	313,2	334,4
FM1	187,9	199,5
FM2	142,4	151,6
FM3	130,8	138,8
FM4	128,3	136,5
FM5	96,7	102,7
FM6	90,4	96,2
FG01	139,4	145,9
FG02	106,7	112,2
FG03	133,6	141,0
FG04	119,5	127,2
FG05	105,9	112,6
FG06	89,0	95,0
FG07	85,5	91,0
FG08	87,7	93,4
FG09	79,6	84,8
FG10	67,0	71,3
FG11	55,5	59,4
FG12	58,8	62,2

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.



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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