MAC PARA

ELIXIR

Operating Manual

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Contact

MAC PARA TECHNOLOGY spol. s r.o.
Televizni 2615
Tesla area
756 61 Roznov pod Radhostem
Czech Republic, EUROPE
Web: macpara.com
E-mail: mailbox@macpara.cz
Phone: +420 571 11 55 66
Mobile: +420 602 575 750
GPS: 49°27‘41.204“N, 18°7‘38.941“E
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Besuche außerhalb der Öffnungszeiten nur nach telefonischer Voranmeldung!

Layout: Thomas Baumann, Urs Braun

MACPARA.com **Official MACPARA** **fb.comMacPara** **flymacpara**

Thank you!

We are pleased to welcome you to the community of MAC PARA paraglider pilots.

Our paragliders are the result of meticulous and extensive development and testing, with the aim of producing modern, high-performance and maximally safe paragliders.

MAC PARA Philosophy

It all began with a passion for every kind of flying: model aircraft, real aircraft and paragliders. We are proud that paragliding is our sport and that MAC PARA has been an important part of it for many years.

Customer satisfaction and trust are among the most important principles of MAC PARA. New ideas, continuous development, extensive testing and new products created with a great deal of experience enable our company to help shape the future of paragliding.

Our goal, and our greatest reward, is a satisfied and happy pilot.

Performance, speed, safety or light weight? Listening to the needs of pilots, finding optimal solutions and implementing new ideas have often formed the basis for our successful paragliders. MAC PARA is known worldwide as a manufacturer of high-quality paragliders and paramotor wings.

In line with our philosophy, we develop and produce only those wings for the different categories that are safe and enjoyable to fly. The MAC PARA research and development team always focuses on creating the right combination of handling characteristics, performance, safety and comfort.

We produce paragliders that are safe and provide the right dynamic feel to make flying enjoyable and to maintain and strengthen the pilot's confidence.

The use of the highest-quality materials, extensive testing and certification according to international standards — EN, LTF and DGAC — result in products that everyone can enjoy.

Flying is our passion.

Paragliding is our sport.

Yes, we enjoy it!

Contents

Elixir Operating Manual

Please read this manual carefully and observe the following instructions.

This operating manual is important because it contains all the information required for flying and maintaining the paraglider. Detailed knowledge will help you fly safely and get the best out of every flight.

The Elixir was designed for pilots who prefer easy take-off and landing behaviour, smooth and precise handling in thermals, stability and very good performance. It is not suitable for beginners, aerobatics or tandem flights. It is assumed that the user's skills correspond to the requirements of the aircraft.

Reading this operating manual is mandatory.

WARNING:

The paraglider must not be operated without carefully studying this manual, in order to avoid incorrect handling. We explicitly point out that no liability can be accepted for consequences resulting from improper use. The pilot is responsible for the airworthiness of the aircraft.

The pilot is also responsible for ensuring that all legal requirements necessary for operating this aircraft are met, for example pilot licence, insurance and other national regulations.

At the time of delivery, this paraglider complies with the requirements of the German airworthiness regulation LTF and the European standard EN 926-2. Any unauthorised modification to the paraglider invalidates the operating permit.

New wings must be test-flown by the seller. This initial test flight must be confirmed with date and signature on the enclosed measurement protocol and on the paraglider's type plate. Use of the paraglider is at your own risk. Liability on the part of the manufacturer or distributor is excluded.

If the paraglider is resold, the operating manual must be handed over to the buyer.

The following operating instructions have been prepared according to the current state of the art and to the best of our knowledge and belief. However, it is possible that, due to technical developments in flying, changes in certification tests and/or teaching methods, various details may change over time. It is therefore advisable to regularly obtain information that goes beyond the contents of this manual. These updates are available from your dealer, from MAC PARA and from other relevant sources.

MAC PARA TECHNOLOGY Ges.m.b.H. wishes you many beautiful flights with your Elixir.

Foto: © Thomas Baumann

Your MAC PARA Elixir

The Elixir is a two-liner in the sport category, class C.

Congratulations on purchasing the MAC PARA Elixir. Intensive development work and the testing of numerous prototypes have resulted in an exceptional paraglider. It is characterised by excellent performance combined with pleasant and efficient handling. High pilot comfort and stability are maintained throughout the entire weight range. Its performance is at the top of its category across the entire speed range.

Design

The Elixir has 73 cells and uses technology with reinforced profiles, thin Nitinol rods and lightweight materials. This results in a low canopy weight.

The number of cells, the internal diagonal system and the line geometry have all been tuned to achieve the correct canopy stiffness, providing maximum flight comfort in active air. The cell structure ensures aerodynamic optimisation while also allowing attractive colour design of the canopy.

Character and Performance

The Elixir is a semi-light high-performance wing for cross-country flying, but due to its low weight it is also suitable for hike-and-fly. The canopy provides ideal feedback about what is happening in the air.

The wing impresses with its high stability across the entire speed range. In accelerated flight, the Elixir remains stable and is easy to control via the B-risers.

Its character and easy flight behaviour make the Elixir the ideal choice for pilots seeking maximum performance combined with comfort on board.

Low Weight and Easy Launch Behaviour

The Elixir launches easily thanks to its clever design and lightweight materials. The size and position of the openings in the leading edge have been specifically designed for this purpose.

Even in calm conditions, the canopy fills evenly across the entire span and rises easily overhead. In stronger wind, inflation and pitch behaviour are easy to control. This clearly sets the Elixir apart from its competitors.

In extreme flight manoeuvres, the behaviour remains predictable and typical for a C-class glider.

Perfection

The negative 3D shaping at the leading edge, the mini-ribs and the new shape of the stabilisers help reduce drag and increase performance.

The special design of the Nitinol reinforcements contributes significantly to easier launching, increased paraglider lifespan and smoother flight behaviour. The Nitinol rods, with different diameters, are fitted with glued end caps to protect the fabric — another example of our attention to detail.

Effective Handling

The Elixir is a well-balanced two-liner with appealing handling. Steering is very pleasant and responds immediately to brake inputs, without the need to support the outside of the canopy. Bank angle is easy to achieve, and even a small brake correction is enough to change the angle of bank. Naturally, active piloting is required in strong or turbulent thermals.

Pitching can be easily controlled with the B-handles and requires very little input using the brakes. This further improves the already very good climb performance in thermals.

The Elixir handles weak, strong and demanding thermal conditions simply and efficiently. Brake travel is relatively short, and brake-line forces are low to moderate. In addition, the forces increase progressively, providing an adequate safety margin.

Control via the B-risers is simple and intuitive. Thanks to B-riser control, an experienced pilot can achieve a higher average speed even when flying in turbulent air.

The Elixir Pilot

Thanks to its performance, the Elixir is suitable for frequent flyers with cross-country ambitions who have the necessary level of paraglider control. It is designed for pilots who expect high performance, dynamics, precision and agility from their paraglider while also wanting a high level of safety.

An active flying style is essential. Only in this way can you exploit the full performance potential and fly safely.

And Finally...

Landing becomes a pleasure thanks to the excellent flare characteristics offered by the wing. After landing, the wing is packed in a Certina bag or in the supplied transport bag.

It does not really matter how: the wing can simply be rolled up “like in the old days” or folded in another way. Cell-to-cell packing can be left to others. As long as the Nitinol rods are not treated too brutally, the wing will look like new again at the next launch.

Operating Limits

The Elixir is a lightweight, semi-light air sport aircraft in the paraglider category and is ideally suited both for extended cross-country flights and hike-and-fly adventures.

It is certified according to LTF NFL HG GS 2-565-20 and EN 926-2 in category C and is approved exclusively for single-seat operation.

It was developed for experienced pilots who fly regularly and may only be operated within its operating limits. These limits are exceeded if one or more of the following applies:

- Use outside the permitted weight range.
- Flight in rain, including drizzle, with a wet canopy, in clouds, fog and/or snowfall.
- Flight at temperatures below -10 °C or above 50 °C.
- The pilot does not have sufficient knowledge or experience.
- Aerobatics, extreme flying or flight manoeuvres with bank or pitch angles of more than 135 degrees.
- Modifications to the canopy, suspension lines or risers.
- Flight in turbulent weather conditions and wind speeds higher than two thirds of the maximum achievable flying speed of the aircraft, depending on take-off weight.

The Elixir has been certified in different sizes for specific weight ranges. It must be flown within the certified weight range. This range is indicated on the type plate and in the technical data.

The weight refers to the total take-off weight: pilot weight including clothing, wing, harness and equipment.

EN 926-2:2013 describes weight measurement as follows: for all weights, a tolerance of ±2 kg is permitted. Therefore, a slight overload of the wing is within the EN tolerances.

It is important to understand how wing loading can influence the dynamic behaviour of the glider. If the Elixir is flown with high wing loading, the result is a more dynamic, responsive and direct flight behaviour. At the same time, its ability to “carry” in thermic conditions is reduced: the wing converts vertical lift components into altitude less effectively, and glide performance is reduced.

In the middle and lower weight range, the dynamics are reduced. The flight behaviour becomes more manageable, and centring thermals becomes easier. If in doubt, a test flight should always be carried out.

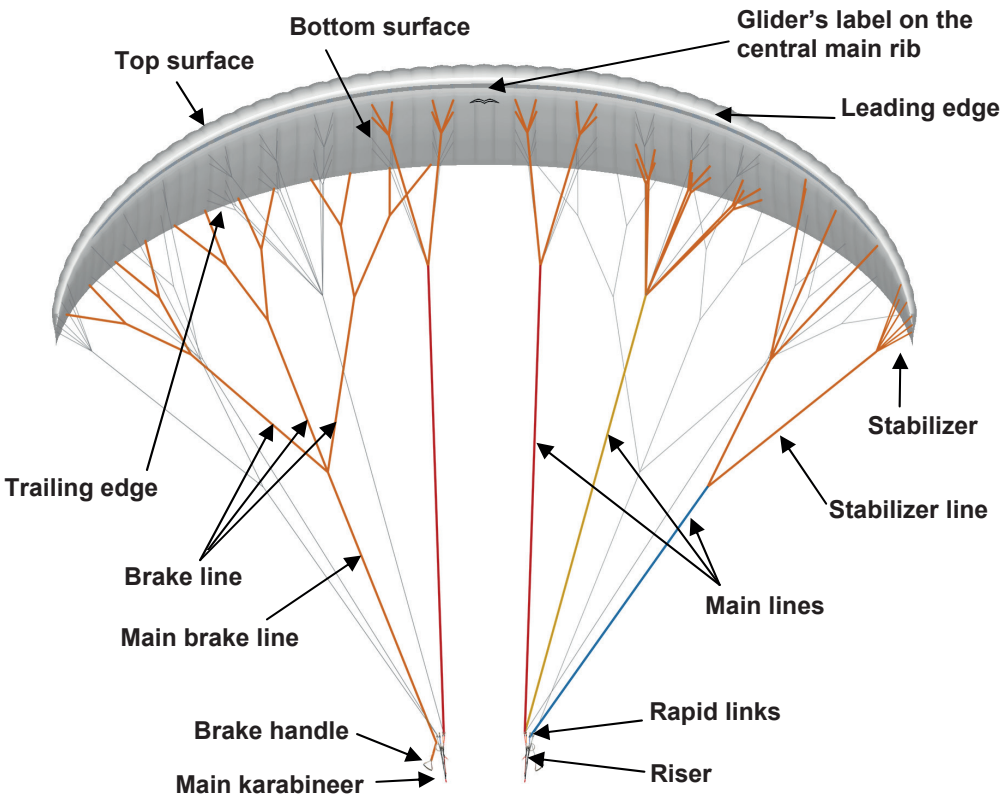
NOTE:

Determine your take-off weight by standing on a scale with your complete flying equipment and flying clothing, including footwear, drink and any other items carried.

Additional ballast can be used to adapt wing loading to the flying conditions. Some harness manufacturers already have corresponding ballast compartments pre-installed in their harnesses, allowing optimal flying with water ballast.

If you want to use your own harness for this purpose, pay attention to the optimal centre of gravity, for example a ballast compartment under the seat and not in the storage compartment in the back section, as well as the maximum take-off weight of your harness. Improperly installed ballast can pose a significant safety risk. If in doubt, ask your harness manufacturer.

We recommend that all pilots complete safety training and practise as much as possible with their wing on the ground, i.e. groundhandling. Perfect control of the wing on the ground and in the air is the key to maximum flying enjoyment and the best insurance for accident-free flying.



Liability

Use of the paraglider is at your own risk. The manufacturer cannot be held liable for any personal injury or material damage arising in connection with MAC PARA paragliders.

Any modifications — to the paraglider construction, or also to the brake lines beyond the permitted tolerances — improper repairs, or missed inspections, annual or two-year checks, will invalidate the operating permit and warranty.

Every pilot is responsible for their own safety and must ensure that the aircraft is checked for airworthiness before every launch. A launch may only be carried out if the paraglider is airworthy.

Furthermore, the pilot must comply with the applicable national regulations. The paraglider may only be used with a pilot licence valid for the flying area or under the supervision of a recognised flight instructor.

Every pilot bears sole responsibility for all risks involved in practising paragliding, up to and including injury and death. Neither the manufacturer nor the seller of a paraglider can guarantee the pilot's safety or be held responsible for it.

Within the scope of liability and warranty conditions, the paraglider must not be flown if one or more of the following applies:

- The inspection period has expired.
- The check has been carried out by the owner or improperly by an unauthorised body.
- The equipment is insufficient or incomplete, for example reserve parachute, protector or helmet missing.
- The pilot has insufficient experience or training.

The pilot is responsible for taking care of nature and the landscape when practising paragliding.

WARNING:

Before the first flight, the dealer, flight instructor or authorised person must inflate the paraglider at a training slope for inspection and carry out a check flight before delivery. The initial test flight must be recorded on the type plate.

Technical Description

Canopy Construction

The canopy of the Elixir is made from Porcher Sport Skytex ripstop nylon fabrics; see material list. These synthetically manufactured fabrics contain a reinforcing thread grid that prevents further tearing and increases tensile strength at the seams. The coating makes the fabric UV-resistant and air-tight.

The Elixir has 67 cells. The wingtip, or stabilo, is pulled downward and integrated smoothly into the canopy.

The canopy is inflated through openings on the underside of the profile nose. Cross-ventilation is achieved through precisely dimensioned holes, known as cross ports, in the profile ribs.

Each load-bearing profile rib is suspended by three or four lines. These are sewn into the profile and reinforced. Tension bands are sewn between the individual suspension points to regulate sail tension.

Mylar reinforcements combined with Nitinol rods fitted with end caps guarantee high profile shape retention and stability.

A low-stretch band is also sewn into the leading and trailing edges, ensuring an advanced tension distribution across the entire canopy, calculated by our design software.

Suspension System

The gallery lines on the Elixir are made from proven unsheathed Aramid/Kevlar lines. The brake lines in the upper gallery and the main brake lines are made from Dyneema/polyester.

The strength of the individual lines depends on their location and varies from 50 to 360 daN.

Depending on their location, the suspension lines are divided into upper gallery lines, at the canopy; middle gallery lines; main lines, at the risers; stabilo lines, at the wingtips; brake lines, at the trailing edge; and main brake lines, at the brake handle.

Across the chord, they are divided into A1/A2/B/C levels and brake. A total of three main lines per level and side are attached to the corresponding riser.

The stabilo lines are attached to the mA1 lines together with the mA1/1 lines. The brake or steering lines are combined into the main brake line.

The line layout is shown in the line plan; see “Line Plan” on page 53.

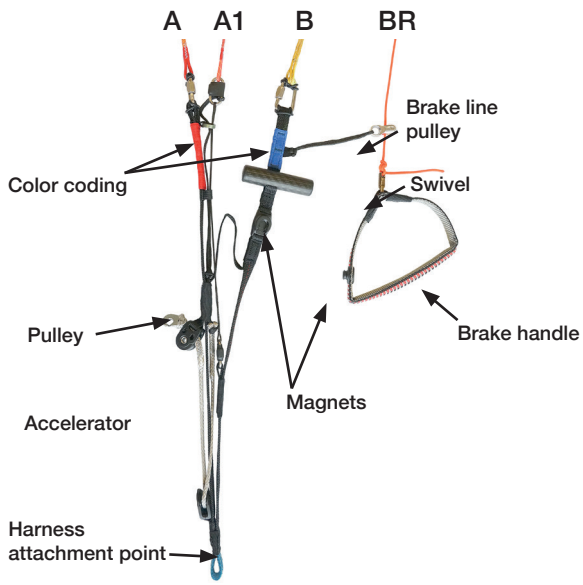
Risers

The 2 risers are colour-coded to make it easy to identify each side. Two central A main lines are attached to each A-riser. The outermost A main line is attached to a pulley line at the side of the A-riser.

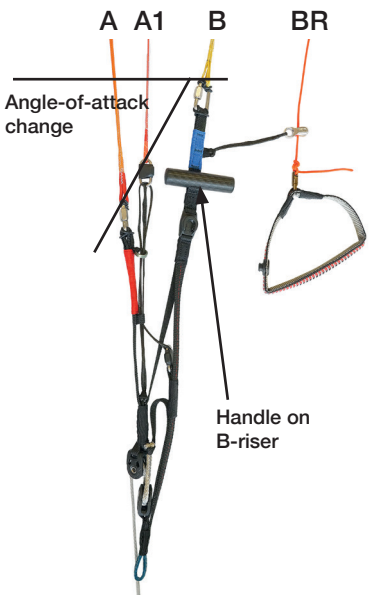
Three B main lines are attached to each B-riser. The risers are equipped with an accelerator system that automatically returns to the normal position when the speed bar is released.

The B-risers are equipped with handles for B-riser control. The main brake line is routed through a pulley on the B-riser to the brake handle.

The risers have no trimmers. The stainless-steel maillons are secured with a rubber ring to prevent unintended slipping of the lines.Inbetriebnahme



Trim flight



Accelerated

Initial Operation

Before the First Flight

We advise pilots to first familiarise themselves with their paraglider by practising inflation exercises on a training slope or on flat ground. First flights with the new paraglider should take place in calm conditions at a familiar flying site.

> WARNING:
>
> Your new Elixir must, under all circumstances, first be flown in calm conditions. It is advisable to fly gentle spirals in both directions so that the connecting knots between the lines tighten. The Nitinol rods also slightly stretch the seams during this process, making the sail smoother.

A careful pre-flight check is mandatory for every aircraft. Make sure that you perform every check with the same level of care.

Harness

The Elixir was tested and certified with ABS harnesses of type GH. Practically all modern harnesses belong to the GH harness group. Older harnesses with rigid cross-bracing are unsuitable and must not be used.

When choosing a harness, note that the height of the suspension points influences flight behaviour. The lower the suspension point, the more agile the paraglider becomes. Also note that brake travel changes with the height of the suspension.

Before flying the Elixir, the harness, including speed system, must be adjusted. Take the necessary time to try different settings until you have found the most comfortable and best seating position.

The chest-strap length setting changes the distance between the two carabiners and influences the stability and handling of the paraglider. A narrower carabiner distance slightly improves stability, but at the same time increases the risk of twisting after a collapse and the tendency to remain in a stable spiral dive. A wider distance improves feedback from the paraglider but slightly reduces stability.

In general, too narrow a carabiner distance should be avoided.

Maximum suspended weight	<80 kg	80–100 kg	>100 kg
Distance / width	40 ± 2 cm	44 ± 2 cm	48 ± 2 cm

We recommend setting the chest-strap distance according to the table and adjusting it slightly if necessary.

Pod Harnesses

With modern pod harnesses, the suspension height can vary significantly. To achieve a balanced relationship between performance and safety with a pod harness, the appropriate flying techniques must be mastered and applied with sufficient experience.

If disturbances or unusual flight attitudes occur during flight, an upright sitting position must be assumed immediately. Actively or passively flown extreme flight manoeuvres in a reclined position significantly increase the risk of twisting. As the rotational speed of the paraglider increases, so does the risk of the harness twisting.

Adjusting the Speed System

The Brummel hooks supplied with the speed system must be connected before first use. Before every launch, check whether the speed-system lines are correctly routed through all pulleys of the harness. The instructions in the manual of the respective harness are decisive.

The speed-system lines are attached to the riser acceleration system using the Brummel hooks or the loops provided. The line length must be adjusted so that the lowest pedal is directly under the seat. The pilot must be able to position the heel securely in the lower step.

The speed system must be adjusted so that there is sufficient slack in normal flight at trim speed and the front risers are not unintentionally pulled down. If the setting is too short, the wing is already pre-accelerated in unaccelerated flight, which can negatively affect launch and flight behaviour.

The setting is correct when the entire acceleration travel can be used without any tension on the system during trim flight. The full effect of the speed system is reached when the limiter straps between the A and B risers are tensioned.

The foot accelerator must not be set too short. In unaccelerated flight, the front risers must not be under tension. Before every launch, check the free and correct function of the entire speed system.

Brake Lines

The brake lines have free travel so that the trailing edge is not unintentionally braked during accelerated flight. They may be wrapped around the hand approximately half a turn, but no more.

WARNING:

The brake lines must under no circumstances be shortened, in order to avoid dangerous flight states.

Flight Operation

Pre-flight Check

Before every flight, follow a consistent routine, just like a pre-flight check on an aircraft. This is very important for flying safely. Through mental training, the checklist can be stored internally and recalled every time.

We recommend the following procedure:

Paraglider Checklist

- Canopy free of damage?
- Risers free of damage?
- Maillons firmly closed and secured against twisting?
- Suspension lines free of damage?
- All suspension lines free and without tangles or knots?
- Brake lines free and without tangles or knots?
- Paraglider dry?

Harness

- All buckles closed?
- Main carabiners closed?
- Reserve container closed?
- Reserve handle correctly attached?
- Reserve pins correctly installed?

Pre-launch Check

- Risers attached and not twisted?
- Speed system attached and not twisted?
- Brake handle and correct riser taken in hand?

- Blind reach to the reserve handle performed?
- Pilot positioned in the centre so that all lines are symmetrically tensioned?
- Wind direction suitable?
- Obstacles on the ground?
- Airspace clear?

WARNING:

If any defect is found, do not launch under any circumstances.

NOTE:

If the wing shows clear creases after long storage in the packing bag or heavy compression, you should perform several inflation exercises before the first launch and smooth the leading edge slightly. This ensures that the airflow attaches correctly to the profile during the launch phase. Smoothing the leading edge is especially important at low temperatures.

Launch

The Elixir launches best when the canopy is laid out in a curved shape facing into the wind. The line levels, including the brake lines, must be carefully separated and the risers arranged. All lines must run freely, without tangles or knots. No lines may lie underneath the canopy.

The key to successful launch technique is practising ground-handling with the wing as often as possible.

Forward Launch — Nil Wind

We recommend a forward launch only in nil wind or light tailwind.

Lay out the wing in a semicircular shape and use only a light initial impulse to lift the canopy from the ground. Once the wing has lifted off the ground, further accelerated pulling-up is not necessary; let the canopy rise by itself.

During inflation, guide both A-risers without shortening them, using a flat hand, in an even, curved upward movement. Avoid pulling hard on the risers. Follow the movement of the paraglider with your hands and wait until the wing fills and comes overhead.

This prevents the wingtips from coming forward and forming a U-shape. Laying out the wing in a pronounced V-shape, aggressive pulling or pushing the risers forward, and uncontrolled running usually cause the wingtips to come forward early and require the launch to be aborted.

As the paraglider rises above your head, you should run forward. Look up and make sure the paraglider is fully inflated before you launch. If a disturbance occurs — collapse, cravat, knot, etc. — abort the launch immediately by stalling the paraglider with the brakes.

Reverse Launch

Reverse-launch technique is generally recommended for the Elixir. With this launch method, it is easier for the pilot to control the rising canopy and make fine corrections. This technique is therefore especially recommended in stronger wind conditions.

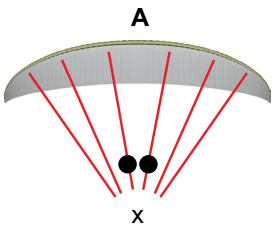
There are successful techniques.

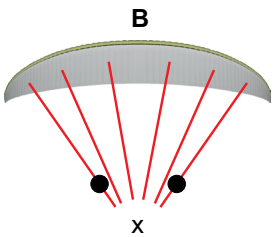
- Clip into the paraglider as for a forward launch. Take the brakes in your hands. Turn around by bringing the risers over your head.
- Turn to face the paraglider, take both risers in your hands and twist them half a turn to the right if you will later untwist to the right, and vice versa. Clip in, including the speed system, and take the upper brake handles into the correct hands.
- Now take the central A-risers in one hand, with the brake looped in, and the other brake in the other hand.

We recommend first pre-inflating the paraglider by lifting the central A-risers up to B-level height so that it is slightly ventilated. This gives you a good overview of the lines and allows you to check that there are no tangles or knots.

Now make sure the airspace is clear and gently pull/lift the paraglider up using the A-risers. Brake slightly at the apex, turn around and launch.

In strong wind, it is advisable to take a few steps toward the paraglider during inflation.





Tips for Launching

- Practise regularly with groundhandling to improve your launch skills.
- If the wing does not rise centrally, move underneath the lower wing side or brake the leading wing side.
- For strong-wind launches, it has proven useful to hold only the central A main line on each side above the maillons in one hand and the outermost B main line on each side above the maillons in the other hand. The brake handles remain in your hands.
- Pull on the A-lines and correct the rising path and direction using the B-lines. If the canopy rises too quickly, you must be ready to immediately take a few quick steps toward the canopy.
- By actively pulling and releasing the B-risers, the wing can be kept

on the ground in stronger wind, from approximately 6 m/s. This prevents the wing from rising unintentionally over the pilot.

- During reverse launch and groundhandling, make sure the brake lines do not rub over the risers or main lines. In other words, before correcting with the brake lines, the wing should already have lifted its trailing edge off the ground; otherwise, the risers or B main lines may be damaged.
- The stronger the wind, the less of the canopy should be laid out. If necessary, use a cobra launch from the edge of the wind window. enster starten.

Gliding at Trim Speed

With the brake lines fully released, the Elixir has a trim speed of approximately 38 to 40 km/h, depending on wing loading, and flies straight ahead with inherent stability.

The brake lines are used to adapt speed to the flight situation in order to achieve an optimum balance of performance and safety. Best glide in calm air is achieved in the unbraked state.

In turbulent air, we recommend flying with the brake lines pulled down by 10 to 15 cm. The current angle of attack of the canopy is then higher, and airflow undercutting at the profile nose is made more difficult.

In calm air, the Elixir reaches minimum flight speed, depending on wing loading and wing size, at approximately 55 to 80 cm of brake travel. All stated values are measured from the point where the trailing edge begins to be pulled down, i.e. without the free travel.

WARNING:

Flying too slowly near stall speed increases the risk of an unintended stall. This speed range should only be used for landing.

Accelerated Flight

Accelerated flight enables better glide into wind and better penetration against the wind. During accelerated flight, the paraglider is less stable and the risk of a collapse is significantly greater.

Once you are familiar with the flight behaviour of the Elixir, you can begin using the acceleration system. Approach maximum speed carefully and observe the brake position.

When using the acceleration system, the brake lines must be fully released: never brake at the same time.

The brake-line length is set at the factory so that, in fully accelerated flight with the brakes fully released, the trailing edge is not braked. A braked trai-

ling edge reduces performance and increases the likelihood of collapses.

Activate the acceleration system by pressing the speed bar evenly forward with your feet. If it is activated too abruptly, the paraglider will dive before stabilising itself.

WARNING:

Never brake the wing during accelerated flight. Braking increases lift near the trailing edge. The main lift point moves rearward. This can cause the wing to lose stability.Tipps zum beschleunigten Flug

Tips for Accelerated Flight

Without going into the details of the McCready theory, for advanced pilots it has proven useful to fly, when accelerating, generally at trim speed over the ground. This means more speed bar into headwind, and no speed bar with tailwind.

- The reactions of the paraglider during an accelerated collapse are significantly more dynamic than at trim speed. In turbulence, you should therefore always come fully or partially out of the speed system.
- Never use the speed system close to the ground.
- If the paraglider collapses while flying accelerated, first immediately release the speed system and sit upright before stabilising the paraglider.

And yes: if you are a “kilometre-eater” who wants to collect as many XC points as possible, you will probably only avoid accelerating in thermals. The polar curve of the Elixir is so flat that performance decreases only slightly when accelerated. But always be aware of the risk you are taking of experiencing large dynamic collapses.

Turning

The Elixir is an agile wing and responds to brake inputs without delay. The best climb performance is achieved when the Elixir is flown through turns with sufficient speed and weight-shift.

Too much brake input increases sink in turns and reduces climb performance. The tendency to spin is extremely low. Excessive brake-line pull is indicated early by the outer wing dropping back.

During your first flights, always maintain sufficient distance from the slope and keep adequate safety reserves until you are familiar with the correct control of the wing.

As brake-line pull increases, the bank angle increases and the wing flies faster and steeper turns, but it may then enter a spiral dive.

Tips for Turning

- The Elixir has exceptionally low sink in turns and therefore turns very flat. Move your hands with the brake lines along the risers to ensure symmetrical pull on the wing.

- In thermals, it has proven effective to initiate the turn first with weight-shift and only then assist with the brake line. It may be helpful to fully release the outside brake during the turn.

- If the turn radius is to be reduced further, it is extremely helpful not to pull the inside brake further down, but to move the hand across the centreline toward the outside. This makes the brake act more on the outer part of the wing, and the glider immediately enters a tighter turn without impairing performance.

Active Flying

The pilot constantly reacts to decreasing and increasing brake pressures with the aim of maintaining constant pressure on the brake lines and thereby keeping the wing as vertically above the pilot as possible.

The Elixir has good inherent pitch stability. Nevertheless, the wing can collapse in turbulence or during manoeuvres.

Flying a paraglider in stronger and turbulent conditions requires safe control of the angle of attack. This procedure is generally called active flying. Many collapses can thereby be prevented before they occur.

Active flying also means controlling pitch and internal pressure of the wing through weight-shift and control inputs, using brakes and/or B-handles.

The wing can be controlled via the brakes or the B-risers. However, in very turbulent air, we recommend using the brakes.

Air movements acting on the canopy often change the angle of attack in an undesirable way. When flying into lift, the angle of attack increases and the wing falls behind the pilot; the wing pitches back. Brake-line tension decreases. In sink, the wing moves forward, the angle of attack decreases, and the pilot falls behind the wing.

Every change in angle of attack is announced early by a change in control pressure on the brakes and/or B-handles; see below. Control pressure gives the pilot direct information about the angle of attack and thus about what the canopy is doing or is about to do. This enables the pilot to react quickly and stop larger disturbances before they develop.

Active flying is constant correction with both brake lines and/or B-handles. Control movements follow increasing or decreasing pressure immediately and without delay. Inputs are usually small, 10–30 cm, but may be quite significant, especially during strong forward pitch movements.

WARNING:

If the wing is behind you and accelerates forward, never release the brakes. Otherwise the wing may overtake you and there is a risk of falling into the sail.

Tips for Active Flying

- The paraglider automatically adjusts its angle of attack to the air mass it is flying through. It therefore makes little sense to try to influence this with continuous brake corrections. Doing so reduces the wing's performance.

- To control larger pitch movements, short brake impulses with greater amplitude are more effective than movements that are too timid.

B-Riser Control

B-riser control is an essential part of flying the Elixir through turbulence with small pitch movements. The Elixir responds very well to B-riser control, and the required forces are appropriate. However, the travel is very small.

When gliding at trim speed or accelerated, we recommend steering the Elixir using the B-risers. This gives you improved feel and control over the wing, allowing you to fly more actively without using the brakes, which would increase drag and pitch movements.

The aim is to control the pitch so that the paraglider does not collapse and remains overhead. This avoids unnecessary drag and extreme flight behaviour.

The glide performance of the Elixir can be noticeably improved using B-riser control. It also gives the pilot very good feedback about air movements, to which they can react immediately.

In accelerated flight, the pilot can make angle-of-attack corrections by pulling down the B-risers. Pulling the B-risers increases the angle of attack, causing the nose to rise and preventing the sail from being compressed in the chordwise direction. This increases the collapse resistance of the wing.

WARNING:

B-riser control should not be used in strong turbulence. If you are unsure, immediately return to trim flight, release the B-risers and fly the wing actively as usual using the brakes.

When using B-riser control, be careful not to pull too strongly on the risers, as parts of the wing or the entire paraglider may otherwise stall.

Tips for B-Riser Control

- Always keep the brake handles in your hands when using B-riser control and first undo any wraps of the brake line.
- The downward pull should be smooth. Only small movements along the risers are required.
- It is important to recognise how much, or how little, pull is needed to achieve the optimal speed.
- When using B-riser control for the first time, act cautiously and with measured pull to avoid large pitch movements. Gradually familiarise yourself with the new control method and gain sufficient practical experience to use it intuitively and efficiently.
- For practice, it is useful while gliding to apply slight pull on the B-risers along the risers, about 4 to 7 cm, to feel the wing's reactions to turbulence and compensate for them.
- You can also react very well to one-sided loading or unloading. If the tension increases on one side, pull that side slightly further down to steer the wing toward the lifting air.

Descent Techniques

In some flight situations, a very rapid descent may become necessary in order to avoid imminent danger in time. Examples include strong lift under a cumulus cloud, approaching rain or developing thunderstorms.

The various descent techniques should first be practised in calm air and with sufficient altitude, so that they can be used safely and effectively in demanding or extreme situations. They include different manoeuvres that increase the sink rate in a controlled way while remaining manageable.

On modern two-liners, the two-phase stall and spiral dive are usually among the common rapid-descent methods. Big ears are not easy with the Elixir.

Spiral dives allow significantly higher sink rates but are technically more demanding to fly and can lead to very high G-loads. An elegant alternative is the use of a drag parachute. This can provide similar sink rates, but with no or significantly lower G-loads for the pilot.

> We strongly recommend practising all rapid-descent methods only under professional guidance as part of safety training.

Spiral Dive

The spiral dive is the most effective descent technique and can achieve sink rates of more than 20 m/s. However, it places high loads on both material and pilot.

The spiral dive is suitable as a descent technique in strong lift and light wind. Very high turning speeds with high G-loads can be reached. Therefore, approach this manoeuvre carefully. At the beginning, practise only with low sink rates.

Be aware that, depending on your physical condition on the day, outside temperature, especially cold, and the sink rate achieved, you may lose consciousness sooner or later due to G-loading. Many pilots slow their breathing during a spiral or start pressure breathing, which further increases the risk of losing control.

At the first signs of nausea, reduced consciousness or narrowing of vision, tunnel vision, the spiral must be exited immediately.

The Elixir meets the EN/LTF requirements for the spiral dive and under normal conditions does not tend to remain stable in the spiral. The certification test flights are carried out with a defined carabiner distance. Deviations from this setting can significantly change the manoeuvre.

The spiral dive is initiated from full speed by flying an increasingly tight turn with clear weight-shift to the inside of the turn. Bank angle and sink rate are controlled by weight-shift and by dosed pulling or releasing of the inside brake line.

Once you are in the spiral dive, you must shift your body weight back to the centre and also apply some outside brake to keep the outer wing open and stable.

The spiral dive is exited slowly and steadily over several rotations. To do this, slowly release the inside brake, bring your body into a neutral position and apply a little brake to the outside of the turn. If the wing still shows a strong tendency to pitch up, the inside brake is briefly and carefully applied again. This enables an exit with minimal pendulum movement.

A rapid exit causes the high airspeed, up to over 100 km/h, to be converted into altitude in a strong pendulum movement. Extreme slowing at the end of the pendulum movement followed by a canopy drop is the result.

At very high sink rates, braking the outer wing half and/or weight-shifting outward may be required to exit the spiral.

The Elixir has no tendency to remain stable in the spiral, but some parameters can negatively influence this. These include incorrect chest-strap adjustment, total flying weight outside the certified weight range, or a very extreme spiral dive with a sink rate of more than 14 m/s.

You should always be prepared and able to pilot the paraglider out of such a stable spiral dive and exit it safely. To do so, shift your body weight to the outside and use the outside brake correctly and progressively until the extreme spiral motion transitions back into normal flight.

Never try to exit a spiral dive with hard or rapid opposite inputs. This leads to an aggressive climb and uncontrolled, violent pitch movements.

You must also expect to enter your own wake turbulence, or rotor.

NOTE:

Frequent spiral dives can not only lead to premature ageing of the paraglider but can also significantly impair its performance.

WARNING:

Due to the extreme altitude loss in a spiral dive, always ensure sufficient safety altitude. Maintain a safety altitude of at least 150 to 200 metres above ground.

Tips for the Spiral Dive

- Be aware that brake forces are massively increased in a spiral dive.
- Also, in a spiral dive there is hardly any horizontal escape from danger.

Spiral Dive with Drag Parachute

An anti-G drag parachute helps reduce the high G-forces that can occur in a spiral dive. Drag parachutes can massively reduce G-forces by up to 40%.

These anti-G parachutes are simple and easy to handle and are especially effective with high-aspect-ratio paragliders such as the Elixir. Anti-G parachutes are attached on one side, preferably on the opposite side to the reserve, to the carabiner, and are deployed only during a spiral dive.

After the spiral dive, the G-chute can be pulled in or stalled by pulling its control line. Once pulled in, it can be packed back into the harness pocket and kept for reuse. Before landing, it must be pulled in or stalled.

NOTE:

If you fly with a pod harness, spreading your legs in the pod can open it and create considerable drag. In other words, you already have a small “anti-G” on board.

WARNING:

It is important to note that such flying techniques require experienced pilots and should only be used under safe conditions. Safety always has top priority.

Big Ears

Big ears are a possible, although not very effective, descent technique in which forward speed is higher than the sink rate. The manoeuvre is therefore more suitable for reducing glide performance and moving horizontally away from a danger source than for descending rapidly.

By applying big ears, the sink rate can be increased to approximately 3–5 m/s and the glide ratio halved.

To apply big ears, both outer wing sections are folded in by symmetrically pulling down the outer A-risers, A1. Initiating the manoeuvre usually requires comparatively high force.

Folding is easier if the speed system is first activated to approximately 30%. The maximum difference between A- and B-risers is then approximately 4 cm. Immediately afterwards, the outer A-lines are pulled downward. If the pulling movement is not only downward but also slightly backward, folding the outer wings is much easier.

Additional use of the speed system can significantly increase both sink rate and forward speed.

To exit, simply release the outer A-risers. The canopy usually opens slowly and independently, depending on loading. To speed up opening, the pilot can give small brake impulses.

WARNING:

Never fly a spiral dive with both ears applied, as this can load the central A-lines beyond their limits.

Applying big ears increases the angle of attack and therefore the risk of a stall. For this reason, always use the speed system at the same time when flying with big ears.

B3 Descent

The B3 descent achieves a moderate sink rate with the advantage that the wing remains steerable and continues to fly forward.

To increase the sink rate, first accelerate the wing by approximately 25%, then pull the outermost B-lines firmly and symmetrically at the same time. To end the manoeuvre, progressively release the pull and then release the speed system.

WARNING:

Again: applying ears increases the angle of attack and therefore the risk of a stall. Always use the speed system at the same time when flying with ears applied.

Drag Parachute / Anti-G

An anti-G drag parachute is used to significantly reduce the high centrifugal forces, or G-loads, during a spiral dive.

It enables very rapid descent with significantly fewer rotations per minute, reducing physical load by approximately 30–50%.

B-Line Stall

The traditional B-line stall is not possible with the Elixir. Pulling firmly on the B-lines leads to a full stall. Do not do this.

Manoeuvre	Sink rate m/s	Ground speed	Airspeed	Material load	Pilot G-load
Big ears	3	increased	increased	moderate	none
Big ears and speed system	3–5	faster	increased	moderate	none
Spiral dive	10–20	none	very high	high	very high
Spiral dive with one ear folded	10–15	none	high	high	low
Anti-G	10–20	lower	lower	hardly increased	very low

Landing Approach and Landing

The Elixir is easy to land. Before landing, you should assume an upright position in the harness, with your head in front of the risers.

Never land without first sitting upright. Landings on your backside are dangerous and can cause injury, even when a good back protector is used.

On final approach into wind, let the wing glide unbraked or slightly braked. At approximately 1 m above the ground, the angle of attack is increased by progressively applying brake, thereby flaring. The moment of landing should coincide with full brake application.

NOTE:

In strong headwind, brake input must be very carefully dosed to avoid a stall before landing. Only when the pilot is safely standing on the ground should the canopy be stalled quickly, and the pilot should turn around quickly to avoid being thrown onto their back and dragged.

We would like to take this opportunity to strongly advise against the risky habit of “pumping” to lose height during an approach that is too high. Likewise, landings with steep turns or alternating turns on final approach must be avoided.

After landing, the wing should not be allowed to fall nose-first onto the ground. This can destroy the profiles and, over time, damage the material in the nose area.

NOTE:

Make sure you have enough landing space available to reduce speed before flaring the wing.

WARNING:

The landing technique recommended by the DHV using the speed system with fully applied brakes is highly risky with high-performance wings such as the Elixir and is strongly discouraged. The inherent dynamics of the wing can lead to massive surging and collapses close to the ground with the slightest incorrect manipulation.

Areas of Use

Winch Towing

The Elixir is certified for winch towing.

Depending on the country, winch towing may only be permitted with a valid winch-tow endorsement. In Germany, winch towing with a paraglider is generally only permitted if the pilot and winch operator hold a qualification certificate for winch towing, the paraglider is suitable for towing, and the winch and tow release are certified as suitable for paraglider towing.

The specific features of a towing site and the equipment used — winch, tow release, etc. — should always be discussed beforehand with the winch operator and launch marshal.

The launch sequence during winch towing initially resembles a forward launch. A curved layout of the canopy also promotes even filling and rising of the wing during a winch launch. This significantly reduces the need for corrections during the launch phase and enables a controlled and safe launch.

After the pilot has inflated the canopy to the apex, they lift off the ground due to the pull of the tow rope. Under no circumstances should the launch command be given before the wing is fully under control.

> WARNING:
>
> The most common cause of parachutal stall during winch towing is releasing the A-risers too early during the inflation phase. The pilot should ensure that the canopy is overhead before giving the “start” command.

Any directional corrections with the brakes should only be made once the canopy is already above the pilot, since excessive braking can cause the wing to fall back or be towed while not in a flyable state.

Strong directional corrections during the launch phase and before reaching safety altitude must be avoided.

After the pilot has left the ground, they are slowly towed at a shallow angle up to a safety altitude of 50 metres.

> CAUTION:
>
> During the first phase of winch towing, the pilot must remain ready to run and must not sit back into the harness, so that they can land safely in the event of winch failure or a rope break.

The paraglider must be flown with open brakes so that the angle of attack is not additionally increased by the brakes and a stall can be avoided.

Steering during winch launch should, as far as possible, be carried out only by weight-shift. Short, strong brake impulses may assist directional correction without excessively braking and stalling the wing.

WARNING:

Brake pressure during winch towing is significantly increased and must under no circumstances be overcome carelessly. The wing has such a high angle of attack that it is flying near the stall limit.

Aerobatics

The Elixir was not developed or tested for aerobatics. In Germany, aerobatics with a paraglider are prohibited.

Aerobatics are defined as flight states with an inclination of more than 135 degrees around the lateral or longitudinal axis. All forms of acrobatic flight manoeuvres with the Elixir are illegal and unlawful. The pilot puts themselves in mortal danger.

When performing such manoeuvres, there is a risk of incalculable flight attitudes that can lead to material damage and structural failure and ultimately to a crash.

Two-Seater Operation

The Elixir is not certified for two-seater operation.

Motorised Operation

The Elixir is not certified for motorised flight.

Extreme Flight States and Hazards

Hazard Briefing

Any pilot who flies in turbulence or makes control errors risks entering an extreme flight state.

All extreme flight manoeuvres and flight states described here are dangerous if performed without adequate knowledge, without sufficient safety altitude or without instruction. These states require special reactions and skills from the pilot.

You need time and sufficient altitude to recover from extreme situations. Always maintain sufficient distance from rock faces and other obstacles in turbulence.

The best method for remaining calm and reacting correctly in an emergency is training as part of a safety course. Under professional guidance, the pilot learns to control extreme flight states.

Another safe and effective method for becoming familiar with the reactions of the paraglider is regular groundhandling. Launch manoeuvres such as forward, reverse and cobra launch, as well as manoeuvres such as stalls, asymmetric collapses, front stalls and others, can be practised very effectively.

Safety Training SIV

The Elixir is optimised for cross-country and thermal flying and was developed for experienced pilots who have gained sufficient experience and competence in safety training.

It is unsuitable for pilots attending safety training for the first time.

During safety training, uncontrolled flight states can occur that are outside the operating limits of the glider and may overload the aircraft. This can result in changes to line trim and canopy material, which in turn can lead to a general deterioration in flight characteristics. A check afterwards is certainly recommended.

> In principle, damage resulting from safety training is excluded from warranty.
>
> WARNING:
>
> Collapses on the Elixir cannot be correctly induced without folding lines. Accelerated asymmetric collapses in particular must be carried out according to the test specifications; otherwise, unpredictable collapse behaviour and impulsive reopening may occur.

Collapses outside the test standard require immediate pilot intervention and special pilot qualifications.

NOTE:

Folding lines for safety training, including installation instructions, can be obtained from your dealer or from the manufacturer.

Collapses

Due to the flexible shape of a paraglider, negative airflow in turbulence can cause part of the sail to collapse unexpectedly and lose pressure.

In the event of a collapse, first control your flight direction by gently countersteering on the open side and move away from terrain, obstacles or other pilots. Only then deal with the collapse and its reopening, for example by applying quick, larger brake impulses on the collapsed side.

Asymmetric Collapse

An asymmetric collapse is probably the most common disturbance in paragliding. If the Elixir collapses in turbulent air, this usually occurs only in the outer wing area.

To maintain flight direction in this flight state, the opposite, open wing half is lightly braked. If a large part of the canopy has collapsed, the open side may only be braked very carefully to avoid a stall.

The paraglider may enter parachutal stall, turn away or enter a fast rotation. If turning away is prevented by countersteering, the canopy can simultaneously be reopened on the collapsed side with individual, quick brake impulses of fairly large amplitude that immediately return to the neutral position.

In large and accelerated collapses, you must immediately release the speed system, sit upright and sit as symmetrically as possible in the harness.

Countersteering must be carried out sensitively, as too much countersteering on the intact wing side can lead to a stall and further uncontrolled flight manoeuvres, or cascading behaviour.

Asymmetric Collapse with Cravat

After large collapses, cravats cannot be ruled out, where the wingtip of the collapsed side becomes caught in the lines.

Here too, the paraglider must be prevented from turning away by counterbraking and weight-shift. Open the collapse with a steady, firm brake input on the collapsed side.

During this “pumping”, one pumping movement should last about one second. Pumping too quickly will not refill the wing; pumping too slowly can bring the paraglider to or beyond the stall point.

WARNING:

When opening a cravat, keep other aircraft and the terrain in view and monitor your distance from the ground. Do not hesitate to throw the reserve if rotation due to a cravat increases uncontrollably or if you are at low altitude.

After large collapses, a cravat may occur in rare cases. Releasing it via the stabilo line is only of limited practicality on the Elixir and is often frustrating.

For very experienced pilots, a short one-sided stall on the cravatted side may help to re-inflate the wing section from behind and release the cravat.

However, this manoeuvre is delicate, requires very good wing control and may only be practised with sufficient altitude and under professional instruction as part of safety training. If rotation increases or no success is achieved, the reserve parachute must be deployed immediately.

Symmetric Collapse / Front Stall

Symmetric collapses of the sail are also caused by negative angles of attack. A front stall, or symmetric collapse, usually opens by itself without pilot input. The paraglider pitches forward and regains speed.

If necessary, opening can be accelerated by a short brake impulse of 15–20 cm with both brakes or B-handles.

WARNING:

Do not apply too much brake, otherwise the wing cannot regain speed and may enter parachutal stall.

In extreme front stalls across the entire chord depth, the wingtips may move forward so that the wing forms a U-shape. Recovery is also achieved by light symmetrical braking on both sides, while ensuring that both wingtips return as evenly as possible to normal flight.

WARNING:

In the event of a collapse, immediately release the acceleration system and then apply the recovery procedures described.

Parachutal Stall

In parachutal stall, the paraglider has no forward speed and at the same time a greatly increased sink rate. The airflow has separated from the paraglider, and the wing enters a stable flight state without forward motion. The paraglider sinks almost vertically at 4 to 5 m/s, and the wind noise decreases noticeably.

A parachutal stall can have various causes, such as flying too slowly, excessive take-off weight, mistrim, flying with a wet paraglider or after a front stall.

If the canopy and lines are in airworthy condition, the Elixir will regain speed automatically within 3 to 4 seconds with the brake lines released. If this does not happen for any reason, activate the speed system.

Make sure the wing has returned to normal flight, checking the actual speed of the wing through the surrounding air, before applying the brakes.

If a wing has been in a persistent parachutal stall for no obvious reason, it must be inspected before the next flight.

Flying in Rain

Flying in rain is not recommended, as this significantly increases the likelihood of parachutal stall.

To minimise the risk in rain, strong brake input and big ears should be avoided. Instead, select a safe landing field, apply the speed system and continuously maintain a good and even flying speed.

Initiation of Stall / Full Stall / Two-Phase Stall

The two-phase full stall, also known as the two-phase stall or two-stage stall, is a demanding manoeuvre for experienced pilots. It is particularly relevant for modern two-liners such as the Elixir, because classic descent techniques such as B-stall or big ears are often not useful or not feasible on these wing types.

The aim of the manoeuvre is to bring the wing in a controlled way into a stable stall state or backfly. Forward speed is greatly reduced, while sink rate increases significantly.

Unlike an abrupt full stall, the transition is performed in a controlled manner in two phases in order to avoid strong dynamic reactions of the wing as much as possible.

On the Elixir, big ears are not a realistic rapid-descent method. For very experienced pilots, alternative rapid-descent options include in particular the spiral dive, possibly with a drag parachute, and the two-phase full stall. Both manoeuvres require a very high level of wing control and may only be trained with sufficient altitude and under professional instruction.

In the first phase, the wing is brought to the stall point by symmetrical braking. A calm, steady and symmetrical control movement is crucial. The pilot must reliably recognise the onset of stall and then stabilise the wing by slightly releasing the brakes. The brakes must then be held in this position.

In the second phase, the wing is held in backfly or in a stabilised stall. The canopy must not be loaded asymmetrically. Unclean control inputs, asymmetrical brake movements or restless weight-shifts can lead to rotation, cravats or uncontrolled flight states.

Recovery is particularly critical. It must be controlled, symmetrical and carried out with sufficient altitude. The wing must be given enough time to regain speed. Releasing the brakes too quickly or asymmetrically can lead to strong surging, collapses or further dynamic reactions.

The two-phase full stall is not a manoeuvre for self-instruction. It requires safe mastery of the full stall, backfly and dynamic wing reactions.

> We strongly recommend learning and practising this manoeuvre only under professional guidance and over water as part of safety training.
>
> WARNING:
>
> Too much brake can cause the paraglider to stall again.

Spin

A spin is a stable flight state in which one side of the paraglider is stalled while the other side continues to fly forward and generate lift. The paraglider rotates around the stalled wing side.

During normal thermal flying, you are far from the point at which the paraglider begins to spin. If you notice that you have unintentionally initiated a spin, for example by too much brake on the inside of the turn, you should immediately release the excessively pulled brake. This allows the stalled wing side to regain speed and fly normally again.

Depending on the type of recovery and the dynamics of the rotation, however, the canopy may surge forward on one side and collapse laterally.

In a prolonged spin, the pilot may only release the brakes at the moment when the wing, during its rotation, is above or in front of the pilot.

If the spin does not stop, check whether the brakes are really fully released.

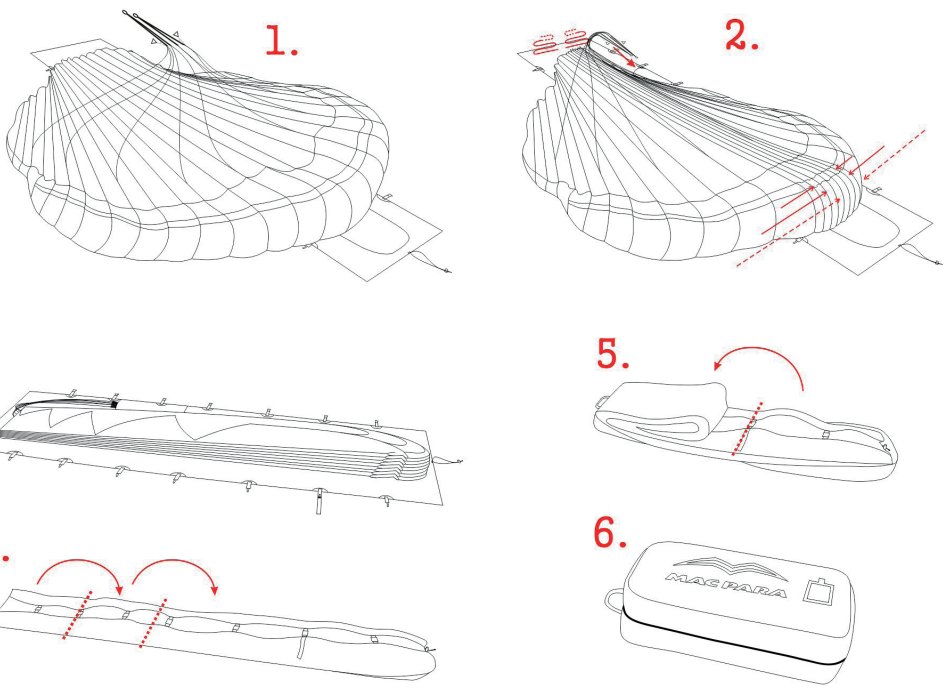
> WARNING:
>
> Full stall and spin are flight manoeuvres that are life-threatening if recovered incorrectly. These manoeuvres should therefore be avoided. It is more important to recognise the beginning of stall so that it can be prevented by immediate pilot reaction.

Always monitor your altitude and do not hesitate to deploy the reserve immediately if in doubt.

Alternative (emergency) steering

If for some reason it becomes impossible to control the Elixir with the brake lines the outermost B-line may be used to steer and land the canopy.

Attention! Of course the range is much shorter (5-10 cm) than with the brakes.



Care

Proper care extends the lifespan of your paraglider. Follow the instructions below so that your paraglider remains airworthy and safe to fly for as long as possible.

A paraglider is especially stressed by frequent groundhandling, improper packing and unnecessary UV exposure. Chemicals, heat and moisture are also very harmful.

Packing the Paraglider

Although this paraglider with Nitinol rods can be folded in the old way, i.e. rolling the canopy, and the materials of the wing are not damaged by this, what matters is how the wing is subsequently handled.

Excessive compression, for example using an extremely small backpack, and careless handling during transport can lead to unwanted material damage or bending of the Nitinol rods.

To extend the lifespan of your wing in the best possible condition, it is very important to pack the wing carefully and then handle it with care.

It is therefore recommended to use the Certina bag packing method exactly as shown, so that all cells lie next to each other and the materials of the wing are not unnecessarily stressed.

The nose reinforcements at the leading edge are placed one on top of the other to avoid bending or deformation. This type of packing ensures that the leading edge is treated gently, which increases the lifespan, performance and launch behaviour of the wing.

If the reinforcements have been bent or deformed, they deform more easily during flight, which changes airflow and can lead to performance loss and changes in flight behaviour. The leading-edge reinforcements also perform an important function during launch. The less they are bent, the easier the wing fills and launches.

1. Place the gathered paraglider on the Certina packing bag. Never drag it over rough surfaces such as gravel or asphalt. This can damage seams and the surface coating.

2. Begin on one side of the wing and place the profiles as precisely as possible on top of each other up to the wingtip. Make sure the leading edge is not bent.

3. The wing is now folded lengthwise in accordion fashion, and the leading edges lie on top of each other without being bent.

4. Place the risers in the riser pocket and close the plastic buckles so that the wing does not slip. Close the zip and make sure no lines get caught in the zip.

5. Fold the wing lengthwise according to the symbols printed on the Certina bag. Close the zip and make sure no lines or fabric are trapped in the zip.

Storage

Even if your paraglider was completely dry and well packed after the flight, you should take it out of the backpack for long-term storage and leave it lying flat in the Certina packing bag if possible. This is the best care for the Nitinol reinforcements.

Store the paraglider in a dry place, away from chemicals and UV light. It should be stored at a temperature between 10 and 25 °C and a relative humidity between 50 and 75%.

> Never pack or store the wing wet. This shortens the lifespan of the fabric. Always dry the wing thoroughly before packing or storing.

Also make sure that the paraglider is not stored in a place where animals such as mice, dogs or cats could use it as a sleeping place.

> Do not store the paraglider near chemicals. Petrol, oil or solvent vapours, for example, cause the material to deteriorate and can considerably damage your paraglider and harness.

If your equipment is in the backpack, keep it as far away as possible from possible chemical vapours.

UV light and high temperatures can damage your wing. In strong sunlight, storage in a closed car can produce temperatures that destroy the fabric. The wing should also be protected from unnecessary UV exposure.

When sending your wing in a parcel, pay particular attention to solid packaging.

Maintenance and Care

Care is important to ensure that the fabric and wing remain durable and retain their properties.

Unpack your paraglider only immediately before the flight and pack it again directly after landing.

Modern paraglider fabrics offer better protection against the sun, but UV radiation in particular remains one of the decisive factors in fabric ageing. The colours fade first, and then the coating and fibres begin to age.

When choosing a launch site, try to find a place that is level and free of stones and sharp objects. Never step on the wing or the lines.

Also pay attention to the behaviour of spectators at the launch site, especially children. Do not hesitate to point out how sensitive the paraglider is.

When packing, make sure there are no insects inside the wing; they produce acids that can cause holes in the fabric. Grasshoppers make holes by biting into the fabric and excreting a dark liquid that leaves stains. Keep animals away when packing the paraglider. Contrary to common belief, insects are not attracted to any particular colour.

The Elixir uses Nitinol rods, a rigid construction, to maintain profile shape and canopy stability. To ensure that these retain their shape, it is important to fold the paraglider correctly, as explained in the section “Packing the Paraglider”.

The Nitinol rods of the Elixir can be replaced through small openings in the pockets. If you find that one of these rods has been damaged or deformed, it can be replaced by a MAC PARA authorised service workshop.

Make sure that no snow, sand or stones enter the canopy of the wing. The weight can change the angle of attack or even make the wing unairworthy. Sharp edges can also destroy the fabric.

Make sure that the lines are not sharply kinked. It is extremely important to avoid strong bending of the lines, especially the main lines.

Do not step on the lines. Like the fabric material, lines lose strength primarily through UV radiation. Protect your lines from unnecessary moisture and UV exposure.

Check the line lengths, or have them checked by a workshop, if you notice changes in the flight characteristics. This should be done after 50 flight hours. The A and B lines, as well as the corresponding risers, can stretch, while the B-lines can simultaneously shrink.

> Never drag the paraglider over the ground. This damages the fabric. If you prepare the wing for launch on uneven ground, do not drag it across the ground by pulling on the outer wing. Please try to pack the wing on soft ground.

Uncontrolled strong-wind launches or landings can cause the leading edge of the wing to hit the ground at high speed, which can lead to tears in the profile and damage the rib material. Such damage is often not visible at first glance, and repairs to paragliders are very expensive.

After contact with salt water, clean the paraglider with fresh water. Salt-water crystals can reduce line strength even after rinsing with fresh water.

WARNING:

Replace the lines immediately after contact with salt water. Also check the paraglider material after landing in water, because waves can cause uneven forces that may distort the fabric in certain areas. Always pull the wing out of the water by the trailing edge and replace the lines after salt-water contact.

For cleaning, it is best to use only lukewarm fresh water and a soft sponge. For more stubborn dirt, a mild detergent is recommended, which must then be carefully and thoroughly rinsed out. Allow your wing to dry in a shaded and well-ventilated place.

WARNING:

Do not pack your wing too tightly after use and never sit on the backpack, even if it is very comfortable.

Maintenance

Type Plate

MAC PARA paragliders have a type plate on the centre rib. It is helpful to state the model name and size of the paraglider when contacting your MAC PARA dealer with questions or when ordering spare parts or accessories.

Regular Inspection

The risers with maillons, lines and materials must be checked regularly for damage, abrasion and correct function at regular intervals, for example after landing.

> WARNING:
>
> You are responsible for your equipment. Your safety depends on it. Changes in the flight behaviour of a wing are signs of ageing and improper handling.

Inspection

In Germany and Austria there are legal regulations regarding paraglider inspections. These regulations only state that an inspection must be carried out. How the inspection is carried out is not covered by these provisions.

The term “two-year check” comes from the time when all wings had to be checked every two years as a matter of routine. Today, the manufacturer specifies the interval and documents it on the certification sticker on the wing.

The inspection has two main purposes. First, it checks whether the paraglider has undergone trim changes or damage since the factory inspection or the last inspection. If so, the correct and type-certified condition is restored. Second, material tests such as air permeability and tear strength of the fabric and breaking strength of the lines are carried out to detect potentially dangerous material weakening or wear.

Visual Inspection of the Canopy

The upper and lower surfaces, leading edge, trailing edge, ribs, including any V-ribs, cell walls, seams, flares and line loops are inspected for tears, shear deformation, stretching, coating damage, repair areas and other abnormalities.

If the pilot and/or inspector is in doubt about the correct flight behaviour of the paraglider, a check flight can be made after workshop work.

The inspection result must be recorded in the inspection protocol.

Air Permeability

The time required for a defined volume of air to pass through a defined surface area is measured. The measurement is taken at several points on the upper surface and behind the leading edge.

Tear Strength of the Fabric

The tear strength of the fabric is measured according to the TS-108 standard for parachutes. The test is performed using a Bettsometer, B.M.A.A. Approved Patent No. GB2270768, Clive Betts Sales.

This is a test procedure that does not damage the fabric. The tear propagation resistance of the fabric is tested on the upper and lower surfaces in the area of the A-line attachment points.

Breaking Strength of the Lines

The upper, middle and lower A-lines and the lower B-lines are loaded until they break, and the breaking load reached is determined and recorded. These lines are then replaced with new ones.

Line Length

The total length, riser plus main, middle and gallery lines, is measured under a 5 kg load. A tolerance of ±10 mm is permitted for the measured value, but no more. For the brake lines, a tolerance of ±25 mm is permitted.

A value of maximum ±40 mm may be calculated as a measuring-system correction, i.e. a value added to or subtracted from all lines.

Possible line-length changes include slight shrinkage of the B-lines and/or slight stretching of the A-lines. Line lengths have a major influence on flight behaviour. Correct line lengths and symmetry are also important for performance and handling.

WARNING:

MAC PARA therefore recommends checking the lines after 50 to 100 flight hours or once a year.

NOTE:

The entire line set should be replaced after 150 flight hours.

Lines age and lose strength even when the paraglider is rarely or never used. The function and safety of your paraglider can then be impaired. Wear indicators include slight raised areas or fraying. The lines must then be replaced immediately.

Use only inspected and approved lines available from MAC PARA.

One upper, one middle and one lower A-line, as well as one lower B-line, should be tested for breaking strength. Each line is tested to breaking point and the value recorded.

The minimum value for all A and B lines is 14 G, calculated from the maximum certified flying weight of the wing.

The additional minimum strength for the middle gallery line and for the upper gallery line should be the same. If the breaking strength is too close to the calculated minimum value, the specialist should specify a time interval after which the line strength must be tested again.

Regularly check line lengths, especially if you notice a change in launch or flight behaviour. Signs of wear are slight irregularities. The lines must then be replaced immediately. Use only tested and approved lines available from MAC PARA.

WARNING:

Under no circumstances use knots to shorten the lines. Every knot significantly weakens the line and can cause the line to break under high load.

Risers

A visual inspection is carried out for abrasion and wear. The length difference should not exceed or fall below ±5 mm.

Inspection Intervals

A full inspection must be carried out at least every two years, first counted from the date of purchase.

A qualified specialist should carry out a complete inspection no later than after 24 months or 150 hours, including groundhandling, whichever occurs first. For groundhandling, its duration must be added to the total operating hours of the paraglider at least with a factor of 2.

It is the pilot's responsibility to ensure that the paraglider is always airworthy. A complete inspection gives you safety and extends the lifespan of your wing.

Additional inspections should be carried out by a qualified person after a crash or a hard leading-edge landing, or if you notice a deterioration in performance or flight behaviour.

NOTE:

MAC PARA recommends a regular line check after one year or 50 flight hours.

For a trim check, it is sufficient to check only the lengths of the main lines together with the risers:

All main lines in the second group, mA2 and mB2, must be the same length.

All main lines in the third group, mA3 and mB3, must be the same length.

The maximum difference between individual line lengths is 10 mm. If the difference is greater, send your wing to MAC PARA or an authorised workshop for inspection and trim correction.

NOTE:

Failure to observe inspection intervals will invalidate the warranty and operating permit. A properly maintained flight log containing all flight and training hours helps you determine the deadlines in good time.

Validity of Inspection and Documentation

The documentation and result of the inspection must be clearly identifiable by the inspector, including date and location/name of the inspector, and must be entered near the type plate.

The target, actual and difference values of the line lengths must be recorded in the line measurement sheet. The inspection protocol must be kept together with the operating manual.

The completion of the inspection and the due date of the next inspection must be recorded with date, signature of the inspector and inspector number on or next to the type plate.

Repairs

Small tears in the fabric that do not run along a seam may be provisionally closed with adhesive-coated ripstop from a specialist paraglider shop.

All other types of damage, such as large tears, tears at seams, torn-out line loops, broken or damaged lines, may only be repaired by an authorised specialist company or by the manufacturer.

Only original spare parts may be used.

Any modification to the paraglider, except those approved by the manufacturer, invalidates the paraglider's operating permit.

Disposal

The materials used in a paraglider require proper disposal. Please send retired equipment back to us. We will dispose of it professionally.

Environmentally Responsible Behaviour

This should really go without saying, but it is nevertheless explicitly mentioned again here: please practise our nature-based sport in a way that protects nature and the landscape.

- Do not walk off marked paths, do not leave any rubbish behind, do not make unnecessary noise and respect the sensitive balance in mountain environments. At the launch site in particular, our consideration for nature is required.

NOTE:

In our wonderful sport, performance must not come first — safety must. To fly safely, good initial training, continuous further training, tireless practice and gaining experience are indispensable.

Hazards such as weather, terrain and environment must be anticipated. This can only be achieved by flying as much as possible, training groundhandling and developing a watchful eye for weather development.

- Observe and respect the weather, and try to understand which conditions are suitable for your current flying level. Never exceed those limits.

Quality Guarantee

At MAC PARA, we take the quality of our products extremely seriously. All wings are manufactured to the highest standards, either in our own production facility or in Sri Lanka.

Every wing undergoes a very strict final inspection, during which all production steps are checked once again. We take responsibility for material defects that are not the result of normal wear and tear or improper use.

If you experience any problems with your wing, please contact your dealer or MAC PARA.

Construction

Line Designations

All lines on MAC PARA wings are designated according to the same system. When ordering replacement lines, always determine the designation according to the following description and order by stating the wing type and size.

The first character indicates the line level: A, B, Br = brake. Numbering begins from the stabilo at 0 and continues consecutively toward the centre of the canopy.

Gallery lines, or top lines, are designated with the level and the number starting from the stabilo.

Example: A28 = the A-line at the 28th rib from the stabilo.

> CAUTION:
>
> Line lengths are measured on stretched lines. Splicing and sewing shorten these lines by approximately 1.3 to 2.0 cm.

Make sure that you have the correct line plan available:

- Loop-to-loop
- Measuring plan

Total Line Lengths

The lines are laid out and loaded with 5 daN. Measurement is taken from the riser attachment point to the canopy, including the suspension-line loop.

> NOTE:
>
> The brake lines are measured including the gathering-system lines.

Adjusting the Brake Lines

The two main brake lines lead to a multi-branch line cascade attached to the trailing edge. On the risers, the brake lines run through a guide pulley and are connected to a handle.

These brake handles are attached to the risers during transport by two magnetic buttons. The brake-line length is correctly set at the factory and normally does not need to be changed.

Elixir	22	24	26	29
Brake-line length	330 cm (225+105)	345 cm (240+105)	360 cm (255+105)	380 cm (275+105)
Brake travel at max. flying weight, approx.	55 cm	60 cm	65 cm	70 cm

The brake lines must have at least 5 cm of free travel in flight before the brakes engage. Changing the brake-line length is generally not necessary. Improper alteration of the brake-line length changes the flight behaviour and impairs the safety of the aircraft.

The brake-line lengths are measured from the first line cascade; the available brake travel to stall depends on wing size and take-off weight.

WARNING

The brake lines have free travel so that the trailing edge is not unintentionally affected in accelerated flight. They may be wrapped around the hand by about half a turn, but no more.

The brake lines must under no circumstances be shortened, in order to avoid dangerous flight states-

The brake lines must have at least 5 cm free travel in flight before the brakes engage. Changing the brake-line length is generally not necessary. Improper alteration of the brake-line length changes the flight behaviour and impairs the safety of the glider.

The brake-line lengths are measured from the first line cascade; the available brake travel to stall depends on wing size and take-off weight.

Riser Lengths

Elixir	A	A1	B
Trim	520	520	520
Accelerated	380	420	520

The lengths are measured from the riser attachme nt point to the lower edge of the screw shackle.

Summary

The Elixir is a modern paraglider. However, it must be clearly understood that all air sports are potentially dangerous and that your safety ultimately depends on you.

We strongly recommend that you do everything possible to fly safely. This includes choosing appropriate flying conditions and

maintaining safety margins during flight manoeuvres.

We recommend flying only with a certified harness, one or two reserve parachutes and a helmet. The certification label must also be present on the paraglider.

Every pilot should be appropriately qualified, hold a valid licence and have liability insurance.

The Elixir is supplied with a Certina packing bag, repair kit and operating manual.

Your safety while flying, and ultimately your life, depend on the condition of your paraglider. A well-maintained and properly handled paraglider can reach more than twice the usual lifespan.

Please also observe the following points so that the Elixir carries its pilot safely through the air for as long as possible.

Happy flying and have fun with your Elixir.

And we look forward to all feedback

Peter Receck and the entire MAC PARA team

MAC PARA Service Center

MAC PARA operates company-owned service centres that carry out checks and repairs of all kinds. The workshops have many years of experience and in-depth product-specific know-how.

MAC PARA's worldwide service network includes additional authorised centres that provide the same services.

All information about periodic inspections, repairs and the relevant addresses can be found on our website:

https://www.macpara.com/de

Support

On our website you will find detailed information about MAC PARA and our products, as well as contact details for questions, including our international representatives.

Contact

MAC PARA TECHNOLOGY spol. s r.o.

Televizní 2615Tesla Area

756 61 Rožnov pod Radhoštěm

Czech Republic, Europe

Email: mailbox@macpara.cz

Telephone: +420 571 11 55 66

Construction Materials

Fabrics

Porcher Sport

Component	Material
Upper and lower surface — leading edge	SKYTEX 32 Universal
Upper and lower surface	SKYTEX 27 Classic II
Ribs, diagonal segments	SKYTEX 27, 32 HARD

Lines

Edelman + Ridder + Co

Component	Material / breaking load
Upper gallery A, B, C, brake lines, mB1/1	Aramid 8000/U-050, breaking load 50 kg
Upper gallery A, Middle gallery A,B, stabilo	Aramid 8000/U-070, breaking load 70 kg
Upper gallery A, Middle gallery A	Aramid 8000/U-090, breaking load 90 kg
Main lines mB1	Aramid 7343-090, breaking load 90 kg
Middle gallery B	Aramid 8001-135, breaking load 135 kg
mA1/1, middle gallery A, main lines mB2	Aramid 8000/U-190, breaking load 190 kg
Main lines mA1	Aramid 8000/U-230, breaking load 230 kg
Main lines mB3	Aramid 8000/U-280, breaking load 280 kg
Main lines mA2, mA3	Aramid 8000/U-360, breaking load 360 kg
Main brake line	Dynema 0010-300, breaking load 300 kg

Attachment-Point Webbing

Stuha A.S

STAP-POLYESTERBRIDLE 13 mm

Risers

Cousin Trestec

Aramid-Polyester 3455, 12 mm

Thread

Amann Sponit

SERAFIL 60, SYNTON 20

Maillons

Elair Servis

NIRO TRIANGLE 200

Rigifoils

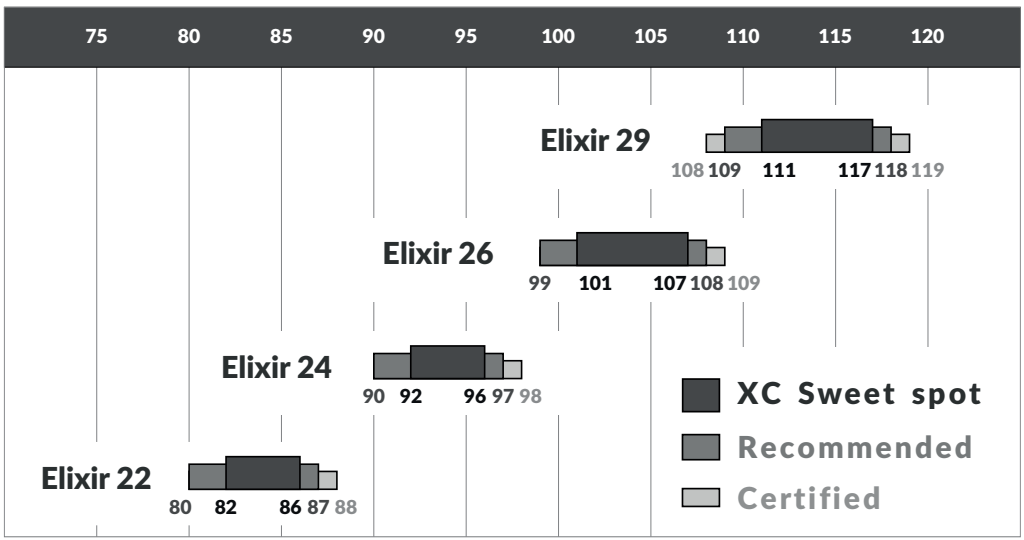
Nitinol 0.6 mm, 0.8 mm

Elixir – Technical data

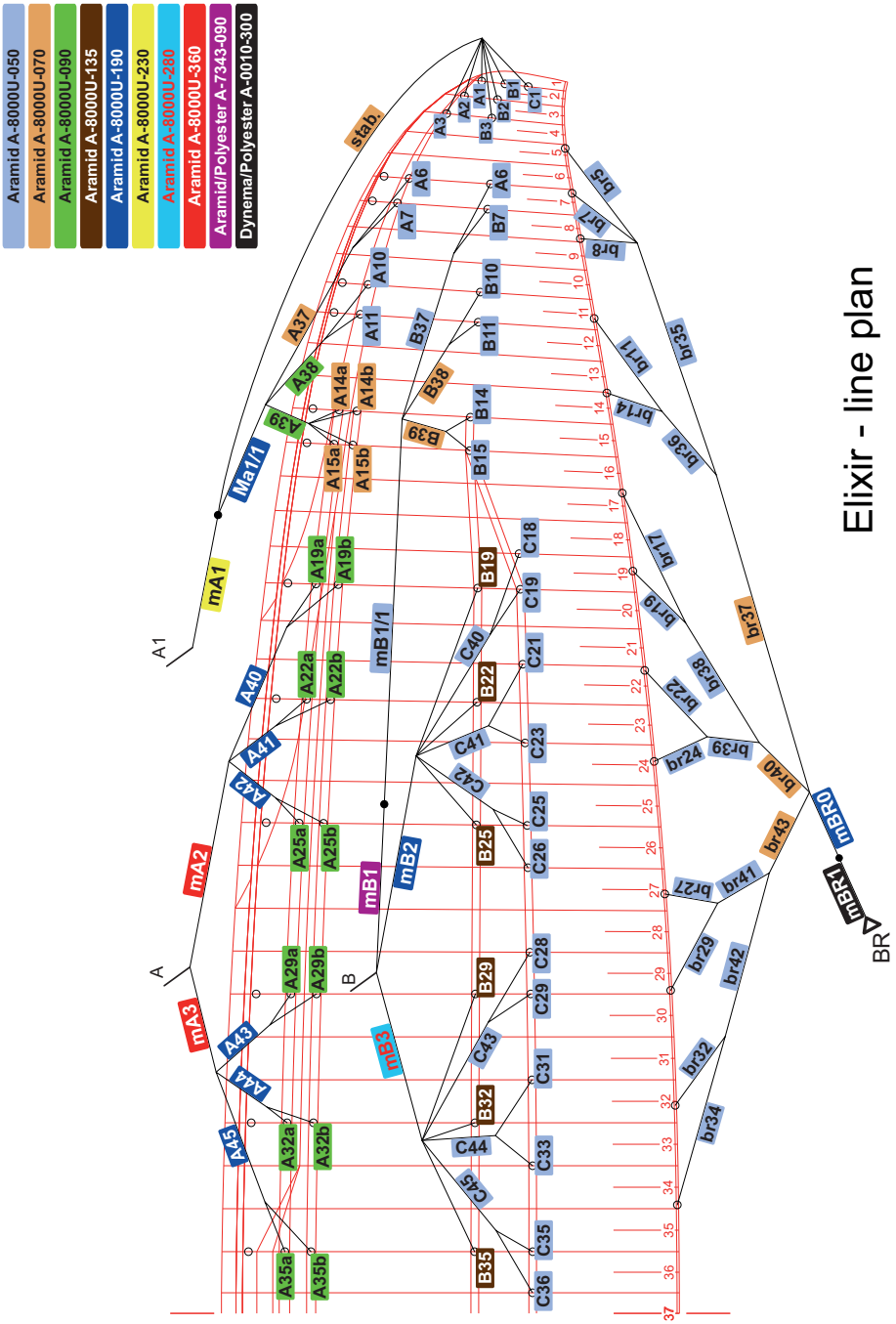
LTF / EN-C	Elixir 22 (S)	Elixir 24 (M)	Elixir 26 (L)	Elixir 29 (XL)
Flat scale / zoom [%]	94,5	99,0	103	108,5
Flat area [m²]	21,92	24,06	26,05	28,90
Projected area [m²]	17,35	19,04	20,61	22,87
Flat span [m]	12,11	12,67	13,19	13,90
Flat aspect ratio	6,68	6,68	6,68	6,68
Root chord [m]	2,29	2,40	2,49	2,63
Cells	73	73	73	73
Weight [kg]	4,00	4,35	4,55	4,92
Weight range [kg]*	80 - 88	90 - 98	99 - 109	108 - 119
Weight range [lbs]*	176 - 194	198 - 216	218 - 240	238 - 262
Minimum speed [km/h]	25-27	25-27	25-27	25-27
Maximum speed [km/h]	39-41	39-41	39-41	39-41
Maximum speed accelerated [km/h]	56-58	56-58	56-58	56-58

* Startgewicht = Nacktgewicht + ca. 15-20 kg

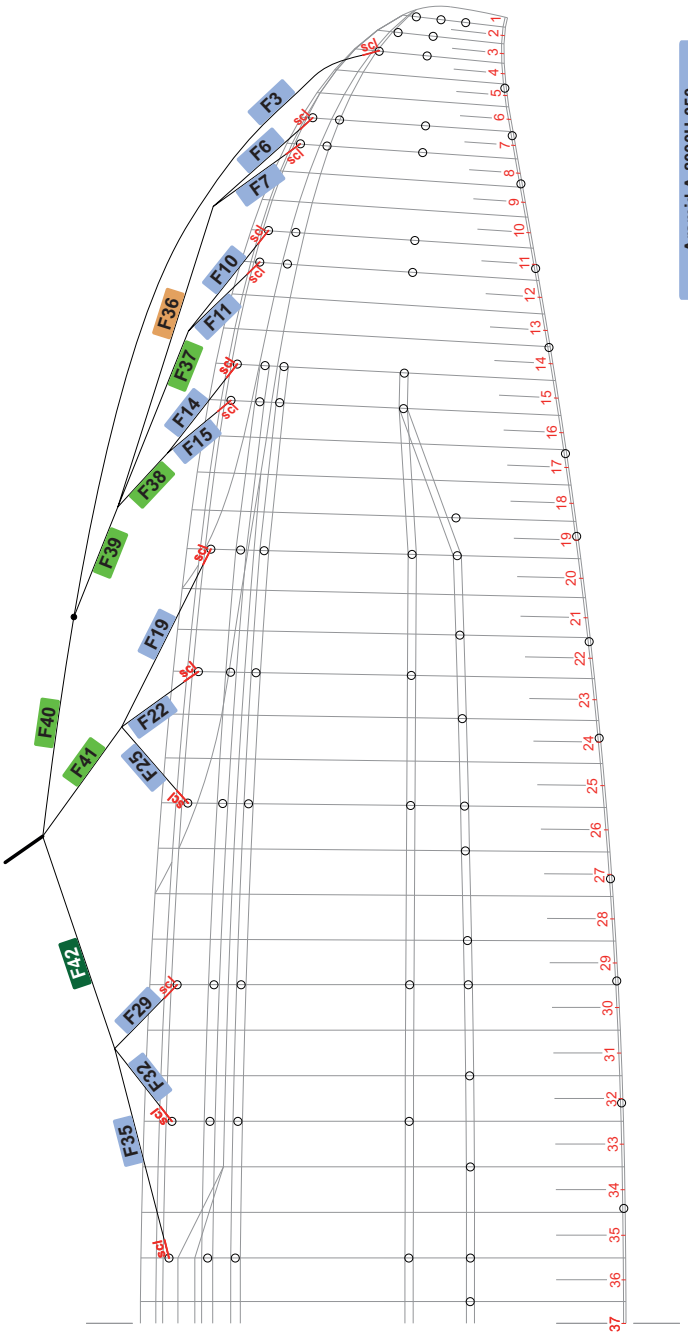
Recommended weight range



Line plan


Aramid A-8000U-050
Aramid A-8000U-070
Aramid A-8000U-090
Aramid A-8000U-135
Aramid A-8000U-190
Aramid A-8000U-230
Aramid A-8000U-280
Aramid A-8000U-360
Aramid/Polyester A-7343-090
Dynema/Polyester A-0010-300
Elixir - line plan
mA1
mA2
mA3
mB1
mB1/1
mB2
mB3
Ma1/1
mBR0
mBR1
A
B
A1
BR

Folding lines



Aramid A-8000U-050
Aramid A-8000U-070
Aramid A-8000U-090
Aramid A-8000U-130
scl - Short Connection Line

Elixir - folding lines

Overall line lengths

Elixir 22

Center	Aa	Ab	B	C	Br
1	7582	7562	7582	7741	7845
2	7481	7461	7479	7684	7695
3	7500	7481	7498	7611	7520
4	7450	7431	7444	7585	7520
5	7372	7353	7362	7595	7370
6	7391	7375	7379	7626	7315
7	7307	7297	7288	7588	7260
8	7270	7258	7260	7534	7375
9	7145		7149	7472	7225
10	7119		7144	7450	7205
11	7064		7089	7452	7215
12	7057		7090	7474	7215
13	6914		6933		7300
14	6878		6915		
15	6884		6927	7012	

Elixir 24

Center	Aa	Ab	B	C	Br
1	7916	7899	7920	8078	8192
2	7814	7797	7812	8018	8039
3	7834	7817	7832	7942	7855
4	7780	7760	7775	7916	7851
5	7690	7671	7678	7927	7685
6	7713	7698	7697	7959	7628
7	7625	7618	7609	7921	7566
8	7591	7580	7587	7860	7599
9	7458		7466	7788	7543
10	7434		7460	7765	7522
11	7374		7405	7770	7533
12	7365		7407	7795	7531
13	7218		7239		7618
14	7177		7217		
15	7184		7232	7319	

Elixir 26

Center	Aa	Ab	B	C	Br
1	8204	8188	8209	8375	8519
2	8098	8077	8095	8315	8362
3	8116	8102	8117	8235	8168
4	8065	8046	8062	8206	8164
5	7977	7961	7970	8217	7998
6	8000	7984	7986	8250	7938
7	7905	7892	7882	8208	7876
8	7861	7851	7852	8152	7904
9	7726		7723	8085	7845
10	7697		7722	8058	7829
11	7640		7667	8064	7837
12	7630		7668	8088	7836
13	7477		7497		7926
14	7438		7480		
15	7441		7490	7583	

Elixir 29

Center	Aa	Ab	B	C	Br
1	8636	8613	8637	8814	9000
2	8521	8498	8519	8750	8830
3	8542	8521	8541	8665	8630
4	8485	8463	8478	8636	8630
5	8395	8373	8384	8646	8450
6	8417	8398	8404	8682	8390
7	8318	8307	8290	8638	8325
8	8274	8261	8255	8576	8360
9	8126		8125	8506	8292
10	8097		8121	8479	8267
11	8034		8059	8485	8275
12	8025		8060	8510	8275
13	7868		7890		8375
14	7826		7869		
15	7833		7882	7980	

Inspections

Aircraft type: ELIXIR

Serial number:

Production date:

Name	Company / Workshop	Date	Signature

FLY IN PEACE