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Owner's Manual
Cruiser 5 Paramotor

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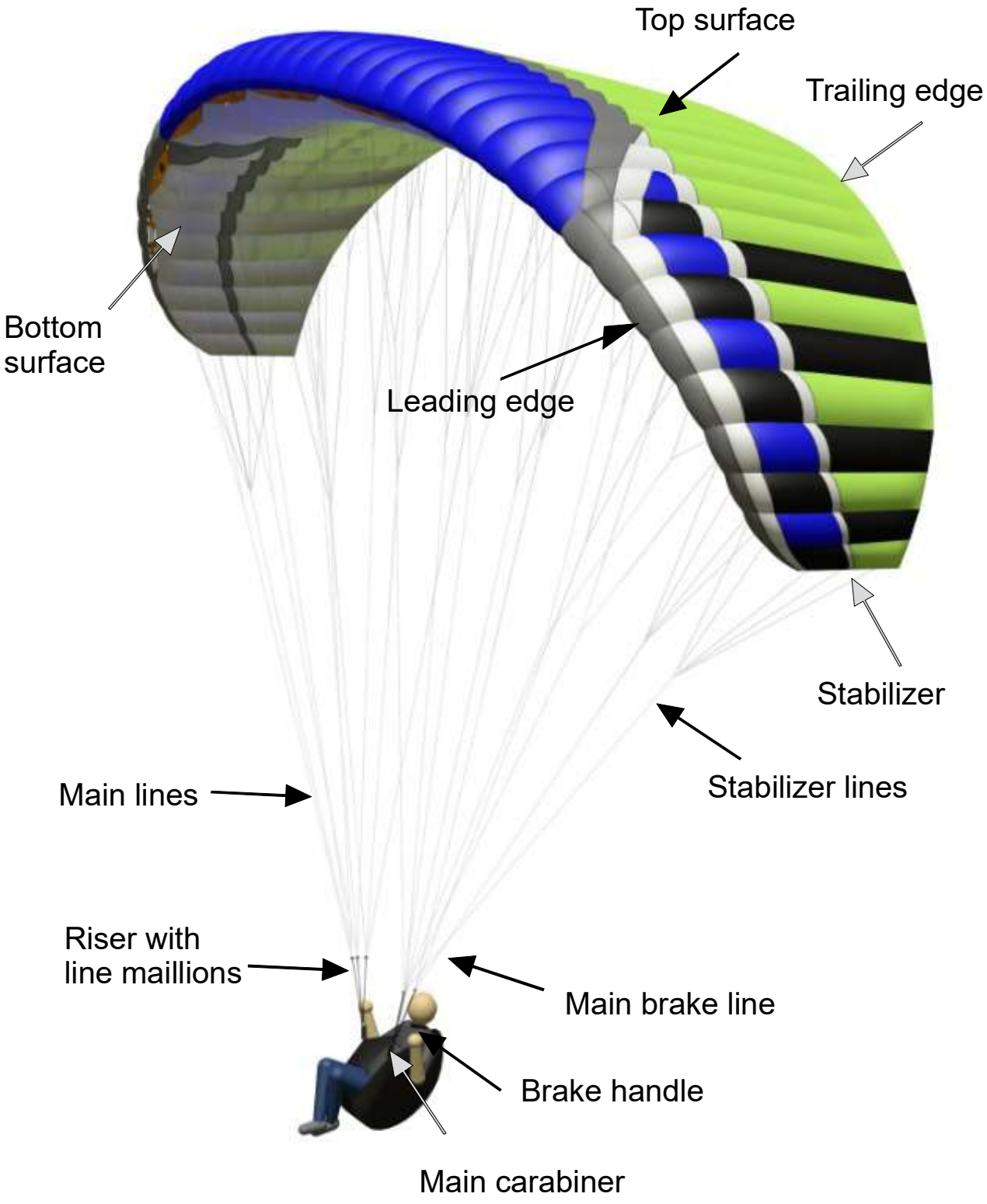
Overview:



1. Dear Independence Pilot

We are pleased to welcome you to the community of Independence paraglider pilots. The Cruiser 5 Paramotor was developed for paramotor pilots who enjoy excellent performance, high speed and good handling without compromising on safety.
Like every paraglider, the Cruiser 5 Paramotor has its own individual character and needs to be flown accordingly. To enable you to enjoy your wing to the fullest, we have prepared this operating manual.

2. Important Information:

Reading this operating manual is madatory!

The wing must not be operated without first carefully studying this manual in order to avoid operating errors. We expressly point out that no liability can be accepted for any consequences resulting from improper use.

This paraglider wing forms part of a so-called light air sports aircraft with an empty mass of less than 120 kg. Wings for weight-shift-controlled ultralight aircraft of the powered paraglider and powered paraglider trike types with an empty mass of less than 120 kg are fully subject to the German Aviation Act (LuftVG) and the regulations issued for its implementation. The wing was developed in accordance with the requirements of DIN 79018 and tested internally. The flight tests were carried out by an independent pilot. In its non-powered configuration, which is identical apart from the risers without trimmers and the different weight limits, it complies at the time of delivery with the German airworthiness requirements LTF NFL 2-565-20 and the European Standard EN 926-2:2015-06, in each case Category A.

It is expressly pointed out that for use in non-powered mountain flying, only the Cruiser 5 operating manual, Version 1.0 dated 17 September 2024, is binding.

All information and characteristics required for operating the Cruiser 5 Paramotor, such as adaptation to the propulsion system, take-off, landing, flight behaviour, behaviour in the event of flight disturbances and emergency manoeuvres, are significantly influenced by the propulsion system used and must therefore be taken from the corresponding operating instructions. These instructions must also state whether the Cruiser 5 Paramotor is suitable for use with the respective propulsion system.

We expressly point out that no liability can be accepted for any consequences resulting from improper use and/or failure to observe all operating instructions required for safe operation.

New wings must be test-flown by the seller. This test flight must be confirmed by date and signature on the enclosed measurement record and on the identification plate.

Any unauthorised modification to the paraglider will invalidate its operating approval!

For the proper operation of this wing, the applicable national regulations and statutory requirements must always be observed. Even where national regulations do not expressly require it, we recommend using only certified propulsion units. Furthermore, for your own safety, a reserve parachute certified in accordance with EN 12491 and sufficiently dimensioned in terms of size and design should always be carried.

The pilot is responsible for the airworthiness of the aircraft. The pilot is also responsible for ensuring compliance with all statutory requirements necessary for operating the aircraft, such as pilot licensing and insurance.

It is assumed that the user's skills meet the requirements of the aircraft.

The use of the paraglider is entirely at the pilot's own risk. Any liability on the part of the manufacturer or distributor is excluded!

This operating manual has been prepared to the best of our knowledge and belief. However, it is entirely possible that certain details may change over time as a result of technical developments in aviation, changes to certification tests and/or changes to training methods. It is therefore advisable to obtain suitable updates concerning any revised training recommendations or test procedures, either directly from us or from the relevant organisations.

3. Target Group:

The Cruiser 5 Paramotor has been internally tested in accordance with DIN 79018, and the flight tests were carried out by an independent test pilot. In accordance with DIN 79018, it is suitable for the training and instruction of paramotor pilots.
Whether the Cruiser 5 Paramotor is ultimately suitable for your intended flying application and your level of skill should always be determined in a personal consultation with a qualified dealer.

We recommend that every pilot completes a safety training course and spends as much time as possible ground handling the wing. Perfect wing control, both on the ground and in the air, is the key to maximum flying enjoyment and the best guarantee for safe flying.

4. Technical Description:

Canopy Design:

The Cruiser 5 Paramotor is manufactured from lightweight, double-coated Dominico 20D nylon fabric. The NCV fabric incorporates a reinforcing mesh of stronger fibres, preventing further tearing should the fabric become damaged. The fabric is water-repellent, UV-resistant and highly tear-resistant, even along the seams.

The Cruiser 5 Paramotor consists of 38 cells. The wing tips (stabilizers) are slightly pulled downwards and smoothly blended into the canopy contour.

The canopy is inflated through openings on the underside of the leading edge. Cross-ventilation between the cells is achieved by precisely positioned cross ports in the ribs.
Each load-bearing rib is suspended from the line attachment points and reinforced in this area.
Between the individual line attachment points, the canopy is supported by diagonal ribs. These distribute the line loads over the entire wing surface and help maintain the intended airfoil shape.

At both the leading and trailing edges, a tension band is integrated into the canopy. Designed using our proprietary software, it ensures an optimised load distribution across the wing.

Line System:

Depending on the installation position, the lines of the Cruiser 5 Paramotor are manufactured from polyester-sheathed aramid and polyester-sheathed PES / Dyneema. The breaking strength of the individual lines varies from 70 to 340 daN, depending on their function.
Depending on their position, the lines are divided into gallery lines (attached to the canopy), middle lines, main lines (attached to the risers), stabiliser lines (stabiliser), and brake lines (from the canopy to the brake handle).
The gallery lines are colour-coded and divided into the A / B / C / D line levels and the brake line for easier inspection and identification.

The line layout and part numbers are shown in the individual line plan.

Risers:

The Cruiser 5 Paramotor riser is a hybrid riser specially designed for powered flight. It is fully compatible with the non-powered version of the riser, except for the rear trimmer.

The A-riser is divided into a main A-riser, carrying two main lines, and an A' riser, carrying one outer A-line.
The B-riser carries three B-main lines plus one stabiliser line, while the C-riser carries three C-main lines.
The main brake line is routed to the brake handle via a guide pulley on the C-riser.

Apart from the trimmer, no other adjustable devices are fitted.

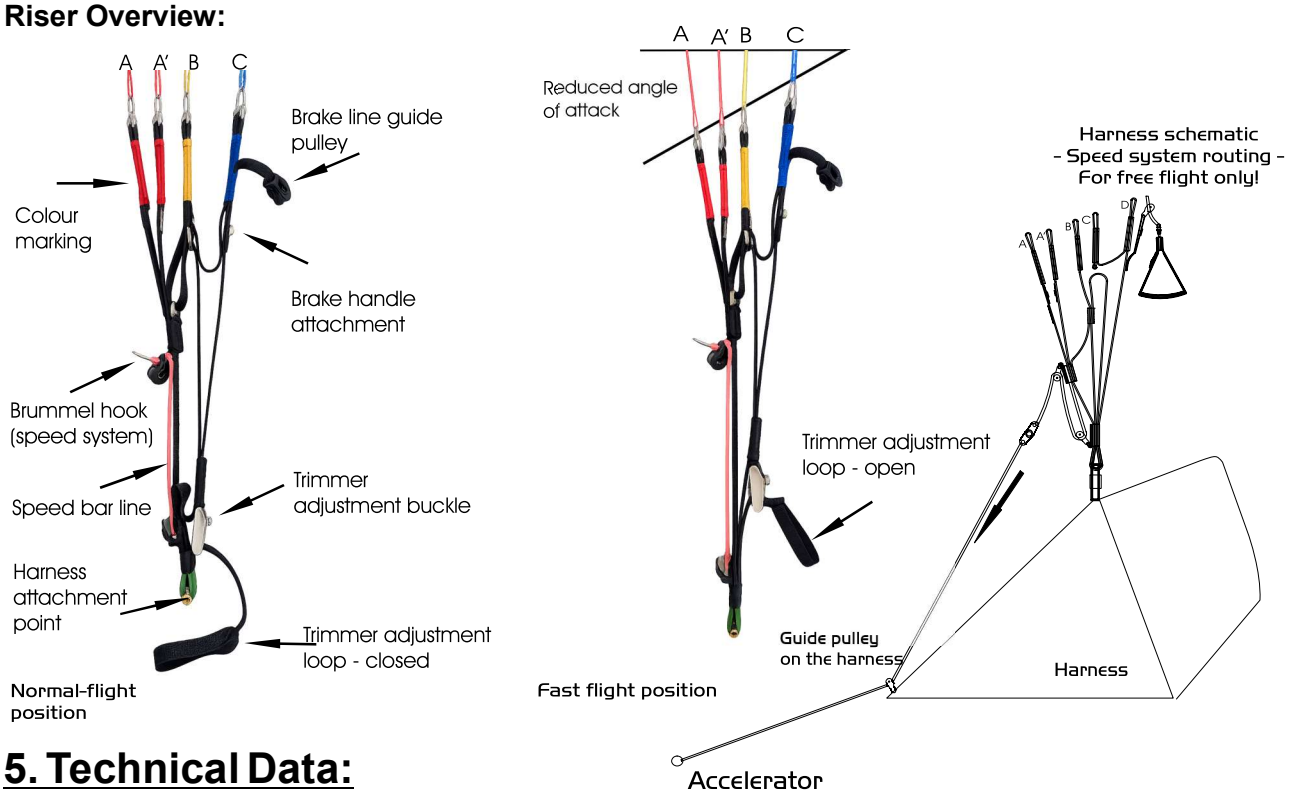
Speed System:

For Powered Flight:

The trimmer system is operated by means of the adjustment loop on the rear C-riser.
The speed bar is actuated via a foot-operated speed system with two pulleys and is connected to the speed system using a Brummel hook. Thanks to the trimmer, both systems can be used simultaneously.
The foot-operated speed system must not be used together with a motor trimmer.
The Cruiser 5 Paramotor is equipped with a foot-operated speed system that automatically returns to its original position after use.

For Free Flight
The trimmer system on the C-riser is not suitable for free flight. For the operation and use of the speed system, please refer to the Cruiser 5 Owner's Manual, Version 1.0 dated 17 September 2024.

Riser Overview:



5. Technical Data:

size		XL - 32	L - 29	M - 26,5
Flat area	m²	32	29	26,6
Flat wingspan	m	12,33	11,74	11,25
Flat aspect ratio	A/R	4,75	4,75	4,75
Projected area	m²	27,22	24,67	22,31
Projected wingspan	m	9,62	9,15	8,50
Projected aspect ratio	A/R	3,39	3,39	3,39
Min. powered take-off weight	Kg	125	110	95
Max. powered take-off weight	Kg	170	140	120
Min. free-flight take-off weight	Kg	100	80	75
Max. free-flight take-off weight	Kg	135	115	105
Trim speed (free-flight)	Km/h	37	37	37
Maximum speed (free-flight)	Km/h	52	52	52

Maximum propeller output for powered flight: < 30 kW

Specifications are subject to change without notice.

6. Harness

For powered flight, the riser length must correspond to the length approved by the engine manufacturer, and the harness attachment width (distance between the main carabiners) must not exceed 55 cm.

For free flight, please refer to the Cruiser 5 Owner's Manual, Version 1.0 dated 17 September 2024.

7. Inspection of the Paraglider:

Every paraglider is thoroughly inspected and measured several times before delivery. Nevertheless, we recommend carrying out a careful inspection of your new wing according to the following checklist.The same inspection should also be performed after intensive flying, demanding flight manoeuvres or a tree landing.

- Check all stitching on the line attachment loops, risers and canopy for damage.
- Check that all lines are undamaged and correctly stitched.
- Check that all line maillons are securely tightened and that the plastic inserts are correctly fitted.
- Inspect all panels, ribs and V-tapes for tears or damage.

Any damage, no matter how minor it may appear, must be inspected and repaired by a qualified professional. A damaged paraglider is not airworthy!

8. Brake Line Adjustment:

The two main brake lines are each connected to a branched brake line system attached to the trailing edge of the canopy.
At the risers, the brake lines run through guide pulleys and are connected to the brake handles. During transport, the brake handles are secured to the risers by means of two press studs.
The brake line length is correctly adjusted at the factory and normally does not require any adjustment.
The factory setting is permanently identified on the main brake line by an additional protective sheath. During flight, the brake lines must have at least 5 cm of free travel before the brakes begin to engage. This setting should not be altered.

Incorrect adjustment of the brake line length changes the wing's flight characteristics and may significantly reduce flight safety.

9. Flight Operation:

The following chapters are not intended to provide flight instruction. Their purpose is to explain the specific characteristics of the Cruiser 5 Paramotor and to provide important information regarding safe operation.

Special flight manoeuvres or flight configurations other than those described in this manual are not recommended.

9.1. Pre-flight Preparation:

A thorough pre-flight inspection must be carried out before every take-off.
Inspect the risers, lines and canopy carefully for any signs of damage. Also ensure that all line maillons are securely tightened and secured against rotation with their plastic retainers.
Put on the harness with the utmost care. After fastening the harness, check once again that all buckles are correctly closed and secured.
Also verify that the reserve parachute container is correctly closed and that the reserve handle is properly seated (refer to the operating manual of the harness).
If any defect or irregularity is found, do not attempt to take off under any circumstances.
The Cruiser 5 Paramotor launches most easily when laid out in a shallow arc. During layout, always position the canopy facing into the wind.
Carefully separate all line levels, including the brake lines, and arrange the risers correctly. All lines must run freely, without twists, tangles or knots. No line may remain underneath the canopy.
Once all preparations have been completed, connect the harness main carabiners to the risers. Ensure that both carabiners are fully closed and correctly locked.

Checklist:

Wing:

- Canopy free from damage?
- Risers free from damage?

- All line maillons securely tightened?
- Suspension lines free from damage?
- All suspension lines free from twists, tangles or knots? Brake lines also free from twists, tangles or knots?

Harness / Propulsion Unit:

- Propulsion unit ready for take-off in accordance with its operating manual?
- Reserve parachute container securely closed?
- Reserve handle correctly installed?
- All buckles and main carabiners securely closed?

Take-off:

- Helmet on?
- Risers connected correctly and not twisted?
- Brake handles and correct risers in hand?
- Pilot positioned centrally so that all lines are under symmetrical tension?
- Wind direction suitable?
- Launch area clear of obstacles?
- Airspace clear?Helmet on?
- Risers connected correctly and not twisted?
- Brake handles and correct risers in hand?
- Pilot positioned centrally so that all lines are under symmetrical tension?
- Wind direction suitable?
- Launch area clear of obstacles?
- Airspace clear?

9.2. Take-off:

The Cruiser 5 Paramotor is exceptionally easy to launch. In general, we recommend using both A-risers (A and A') for inflation. Depending on the launch technique, wind conditions and terrain, the paraglider may also be inflated using only the centre A-risers.
For easier identification, the different riser levels are colour-coded and clearly labelled.
Before take-off, the pilot holds the A-risers and brake handles on each side and applies light tension to the A-lines. On shallow launch sites and in light wind conditions, the pilot may alternatively take one step back towards the canopy to generate additional momentum during inflation.
At the beginning of the launch run, the arms should be extended sideways and slightly backwards in line with the A-risers. As the wing rises, the hands are guided smoothly upwards.
As with any paraglider, the most important factor during inflation is not the amount of force applied, but maintaining constant, even tension.
Since the Cruiser 5 Paramotor inflates very easily, it should be lightly braked on steep launch sites or in strong wind conditions to prevent the canopy from overshooting.
During a reverse launch in strong wind, premature lift-off can easily be avoided by moving towards the wing while it is inflating.

The best preparation for safe and controlled strong-wind launches is still many hours of ground handling practice.

9.3. Cruising flight:

The Cruiser 5 Paramotor achieves its best cruising performance with the trimmers released.
One trimmer may be pulled in slightly to compensate for the engine's torque effect.

9.4. Turbulent Conditions:

Although the tendency to collapse is generally lower during powered flight due to the higher wing loading and increased angle of attack than in free flight, the trimmers should always be closed when flying in turbulent conditions.

In turbulence, always maintain light brake pressure and actively control the wing with the brakes to keep the canopy overhead. This greatly reduces the likelihood of asymmetric or symmetric collapses.

In accordance with EN 926-2, the maximum symmetrical brake travel is:

at take-off weights up to 80 kg: minimum 55 cm
from 80 kg to 100 kg: minimum 60 cm
above 100 kg: minimum 65 cm

All brake travel values stated above are measured from the point at which the trailing edge begins to move, excluding the free brake travel.

9.5. Accelerated Flight:

To increase airspeed for cruising flight, both rear trimmers can be released equally.
Please note that flying in the accelerated configuration increases the wing's susceptibility to collapses. See also section 9.4.
The foot-operated speed system must not be used during powered flight.

Free Flight:
The rear trimmers must not be used.
For operation of the foot-operated speed system, please refer to the Cruiser 5 Owner's Manual, Version 1.0, dated 17 September 2024.

9.6. Turning Flight:

The outstanding manoeuvrability of the Cruiser 5 Paramotor is the result of its specially designed control characteristics. The wing responds to brake inputs directly and without delay.
Very flat turns with minimal loss of altitude can be achieved by weight shift alone (the pilot leaning towards the inside of the turn).
For rapid changes of direction, a combination of weight shift and brake input on the inside of the turn is recommended.
For thermal flying, the most efficient technique is a combination of weight shift, moderate braking on the inside of the turn and carefully controlled additional brake input on the outside wing.
By alternately applying and releasing brake pressure on the inside and outside brake lines (active flying), both the turn radius and bank angle can be adjusted, allowing optimum centring in the thermal.
Any rolling motion caused by engine torque can be reduced by appropriate brake input.

Warning: Pulling the brake lines too far or too quickly may result in a stall.

The onset of an asymmetric stall is clearly noticeable: the inside of the turn becomes soft and the inner third of the wing almost stops flying.
If this occurs, immediately release the inside brake.

9.6. Active Flying:

Active flying enables many collapses to be prevented before they occur.
Active flying means using weight shift and brake inputs to keep the paraglider flying as efficiently and as stably as possible.
In turbulent air and rough thermals, the canopy should be kept as nearly overhead as possible by applying smooth and well-judged brake inputs.
When entering a strong thermal, the wing's angle of attack increases. By releasing the brakes while entering the thermal, the canopy is allowed to accelerate and will remain almost directly above the pilot.
The opposite applies when entering sink: in this case, moderate brake input should be applied.

9.7. Landing:

The Cruiser 5 Paramotor is straightforward and easy to land.
During the final approach into wind, allow the wing to glide with slight brake pressure applied.
At approximately one metre above the ground, progressively increase the brake input to raise the angle of attack and flare the wing.

Maximum brake travel should coincide with the moment of touchdown.
In strong headwinds, brake input must be applied very progressively in order to avoid an inadvertent stall before landing.
We would also like to recommend never attempting to lose excess height by repeatedly pumping the brakes, as this is a hazardous technique.
Likewise, steep turns or changes of direction during the final approach must always be avoided.
After landing, avoid allowing the wing to fall leading edge first onto the ground. This may damage the profile reinforcements and, over time, accelerate wear in the leading-edge area.

10. Extreme Flight Situations:

10.1. Asymmetric Collapse:

An asymmetric collapse is probably the most common in-flight incident encountered in paragliding. Should the Cruiser 5 Paramotor collapse in turbulent air, the collapse will normally be limited to the outer section of the wing.
To maintain the flight direction, apply brake input to the opposite, inflated side of the wing.
If a large portion of the canopy has collapsed, brake input on the open side must be applied very carefully to avoid a stall.
Once the turn has been stopped by appropriate counter-steering, the collapsed side may be reinflated by applying one or more firm pumping actions on the brake of the collapsed side.
If no active pilot input is made, the Cruiser 5 Paramotor will normally reopen by itself within less than half a turn.
If the canopy does not reopen automatically due to severe turbulence or because of a line-over, the wing may enter a stable spiral dive.
When flying in the fully accelerated configuration (trimmers released), the wing reacts much more dynamically, particularly with regard to shooting forward and turning.

10.2. Line-over:

Large collapses or other extreme situations may result in a line-over on any paraglider. In this situation, part of the collapsed wingtip becomes trapped in the lines, preventing the canopy from reopening completely.
Without corrective pilot input, the wing will normally enter a stable spiral dive.
The first priority is to stop the turning motion by applying carefully controlled counter-brake.
If the rate of turn continues to increase despite corrective action and the remaining altitude is low, deploy the reserve parachute immediately.
If sufficient altitude is available, the following recovery techniques may be attempted:

- Apply controlled counter-brake and then make a rapid, decisive and deep brake input on the affected side in an attempt to reopen the canopy.
- Pull the colour-marked stabiliser line.
- If these actions are unsuccessful and sufficient altitude remains, a full stall may be attempted to clear the line-over.

Warning:

The recovery manoeuvres described above are extremely demanding and may result in a considerable loss of altitude. If the pilot feels unable to perform these manoeuvres safely, or if insufficient altitude is available, the reserve parachute must be deployed immediately.

10.3. Frontal Collapse:

A frontal collapse usually occurs after excessive pulling on the A-risers, during accelerated flight, or when encountering strong sink.
Although this type of collapse may appear dramatic, it is generally not critical if the collapse is shallow.
In most cases, little or no turning occurs. The canopy normally reopens quickly and immediately resumes normal flight.
Recovery may be accelerated by applying moderate and symmetrical brake input.
Recognising the situation early and responding promptly with controlled brake input helps minimise altitude loss and prevents the incident from developing further.
When flying in the fully accelerated configuration (trimmers released), shooting forward and turning are significantly more pronounced.

For this reason, the trimmers should remain closed whenever turbulence is expected.

10.4. Deep Stall:

In a deep stall, the paraglider has little or no forward speed while descending at a significantly increased sink rate.
A deep stall may be caused by, among other things, releasing the B-risers too slowly after a B-stall, aged or porous canopy fabric, damaged lines or ribs, pulling on the C-risers, or flying outside the approved take-off weight range. A wet canopy or very low air temperatures may also increase the tendency to enter a deep stall.
Flying in the rain should be avoided whenever possible, as raindrops on the canopy increase the minimum flying speed (Vmin) and therefore increase the tendency to enter a deep stall. Very low temperatures can have a similar effect, particularly if brake input is applied and/or the line geometry is no longer correctly trimmed.
A deep stall can be recognised by the very low level of airflow noise despite fully released brakes, while the canopy remains in an unusual position above the pilot.
In this situation, the brakes must remain fully released.
Provided the canopy and lines are in proper airworthy condition, the Cruiser 5 Paramotor will normally recover to normal flight within 2 to 3 seconds.
If, for whatever reason, this does not occur, push the A-risers forward or apply the speed system.
If the wing remains in a sustained deep stall for no apparent reason (e.g. wet canopy, flight in rain or an excessive take-off weight), it must be inspected before the next flight.

Warning:
Never apply the brakes while the wing is in a deep stall, as this will immediately result in a full stall.
A stable deep stall must not be recovered close to the ground because of the risk of a pendulum movement. Instead, prepare for a hard landing using an appropriate PLF (Parachute Landing Fall) if necessary.

10.5. Full Stall:

A full stall is initiated by pulling both brake lines fully down.
Once the stall point has been reached, the canopy suddenly loses internal pressure and drops abruptly behind the pilot.
Despite the canopy's pronounced reaction, it is essential to keep both brakes fully applied until the deflated canopy has returned above the pilot (approximately 3 to 6 seconds) and has stabilised in that position.
Only then should the recovery be initiated by releasing both brake lines symmetrically and at a moderate rate (recovery time ≥ 2 seconds).
The optimum recovery consists of two phases:
Pre-inflation of the canopy by slowly releasing the brakes to approximately shoulder height until the canopy has fully reopened across the entire span.
Recovery by completely releasing the brakes.
Releasing the brakes too quickly, asymmetrically, or too early may result in a major collapse or a frontal collapse.

Warning:
An incorrectly executed recovery from a full stall may cause the canopy to shoot far forward. In extreme cases, the canopy may shoot below the pilot.

10.6. Trudeln:

A spin occurs when one side of the wing is stalled.
The airflow over the stalled half of the wing reverses. The heavily braked trailing edge is then flown by airflow coming from behind, while the opposite side of the wing continues to fly normally. As a result, the paraglider rotates around its vertical axis.
A spin generally has two possible causes:
- pulling one brake too far and too quickly (for example when entering a spiral dive),
- applying excessive brake on one side while flying slowly (for example when thermalling).

If an unintentionally initiated spin is released immediately, the wing will normally return to straight flight with only a small loss of altitude.
If the spin is maintained for longer, the canopy may accelerate during recovery and shoot forward asymmetrically.
This may result in a dynamic collapse or even a line-over.

10.7. Wingover:

A wingover consists of alternating steep left and right turns with progressively increasing bank angles.

If the manoeuvre becomes excessively dynamic, the outside wing may become unloaded.
If the bank angle continues to increase and the pilot reacts incorrectly, a large dynamic collapse may occur.

Full stalls, spins and wingovers are advanced manoeuvres that may have life-threatening consequences on any paraglider.

10.8. Alternative Steering:

If the brake lines become unusable, the Cruiser 5 Paramotor can be safely steered using the rear risers.
The control travel available before reaching the stall point is naturally much shorter when steering with the rear risers than when using the brake lines. On the Cruiser 5 Paramotor, this travel is approximately 10–15 cm.
Gentle turns can also be achieved by pulling the stabiliser lines or by using weight shift.

11. Rapid Descent Techniques:

11.1. Spiral Dive:

The spiral dive is the most effective method of achieving a rapid descent. However, it places high loads on both the pilot and the equipment.
It should be borne in mind that, depending on the pilot's physical condition, the outside temperature (particularly in cold conditions) and the achieved sink rate, loss of consciousness may occur sooner or later.
Many pilots unconsciously reduce their breathing rate or even hold their breath while flying a spiral dive, which further increases the risk of losing consciousness.
At the first signs of nausea, impaired awareness or deteriorating vision, the spiral dive must be terminated immediately.
The spiral dive is initiated by gradually increasing brake input on one side while simultaneously shifting body weight towards the inside of the turn.
Thanks to its direct handling characteristics, the Cruiser 5 Paramotor quickly develops a steep bank angle and enters a spiral dive.
As soon as the canopy adopts a pronounced nose-down attitude, the pilot should follow this movement by shifting body weight towards the outside of the turn.
The sink rate and bank angle can be increased by progressively applying more brake on the inside of the turn.
Applying slight brake pressure to the outside brake helps prevent the outer wingtip from collapsing.
Recovery from the spiral dive is initiated by slowly releasing the inside brake.
Releasing the brake too quickly converts the high airspeed (which may exceed 100 km/h) into a pronounced pendulum movement. This may result in a considerable reduction in airspeed at the end of the pendulum movement, followed by the canopy pitching back.
It must also be expected that the wing may encounter its own turbulent wake.
Because of the considerable loss of altitude during a spiral dive, always ensure that sufficient safety altitude is available before initiating this manoeuvre.

Warning

Almost every paraglider will eventually reach a sink rate at which the canopy adopts a pronounced nose-down attitude and, even after the brakes have been released, remains in this position while continuing the spiral dive (stable spiral dive).
The Cruiser 5 Paramotor achieved EN 926-2:2013 Category A during certification. However, under unfavourable conditions, the wing's behaviour may become more demanding than indicated by its certification. Possible influencing factors include:

- harness geometry (suspension height),
- chest strap adjustment,
- turbulent air,
- holding onto the risers,
- shifting body weight towards the inside of the turn,
- and similar influences.

Should a stable spiral dive nevertheless occur, recovery is achieved by shifting body weight towards the outside of the turn while applying carefully controlled opposite brake.

Warning:
A stable spiral dive may subject the pilot to very high G-forces and requires considerable physical effort.

11.2. Big Ears:

The Big Ears manoeuvre is a simple, although not particularly effective, rapid descent technique in which the forward speed remains relatively high while the increase in sink rate is moderate. It is therefore better suited to reducing the glide ratio and increasing the horizontal distance from a hazardous area than to achieving a rapid descent.
To perform Big Ears, both wingtips are folded in symmetrically by pulling down the outer A-risers (A').
This manoeuvre increases the sink rate to approximately 5 m/s while reducing the glide ratio.
Applying the speed system will further increase both the sink rate and the forward speed.

Recovery is achieved simply by releasing the outer A-risers. The Cruiser 5 Paramotor will normally reopen automatically. If necessary, the pilot can assist the reopening by applying light brake input.

Warning:
Never combine a spiral dive with Big Ears, as this places excessive loads on the centre A-lines.

11.3. B-Stall:

The B-stall is easy to perform with the Cruiser 5 Paramotor. Pull both B-risers down slowly and symmetrically by approximately 20 cm. The airflow separates from the aerofoil and the wing enters a vertical descent.
Recovery is achieved by returning both B-risers smoothly to their original position within approximately one second.
If the wing starts to turn during the B-stall or forms a rosette, the manoeuvre must be terminated immediately.

Possible causes include: Turning: asymmetric input on the B-risers or pulling one B-riser together with one C-riser.
Rosette: excessive travel of the B-risers.

Summary:

All rapid descent techniques should be practised only in calm air and with sufficient safety altitude, preferably as part of a SIV (Safety Training) course, so that they can be performed safely in an emergency.
The following recommendations apply to all extreme flight manoeuvres and rapid descent techniques:

- Practise these manoeuvres for the first time only under the supervision of a qualified instructor or during a recognised safety training course.
- Before initiating any manoeuvre, ensure that the airspace below the pilot is clear.
- During every manoeuvre, maintain visual contact with the canopy while continuously monitoring your altitude.During every manoeuvre, maintain visual contact with the canopy while continuously monitoring your altitude.

12. Packing, Care, Storage, Repairs, Maintenance and Disposal

The condition of your paraglider is directly related to your safety in flight. A well-maintained and properly cared-for wing can have twice the service life of one that is neglected. To ensure that your Cruiser 5 Paramotor provides many years of safe and enjoyable flying, please observe the following recommendations.

Packing:

To maximise the service life of the wing and to avoid unnecessary bending of the nylon rods in the leading edge, we recommend packing the wing cell on cell (accordion packing) or rolling it loosely from the stabiliser towards the centre, taking care not to bend the nylon rods.
Improper packing methods, particularly during long-term storage, may permanently deform parts of the wing.

Care:

- Ultraviolet radiation gradually damages the canopy fabric. For this reason, the wing should not be left exposed to direct sunlight any longer than necessary.
- When laying out the wing, take care to prevent both the canopy and the lines from becoming excessively dirty. Dirt particles embedded in the fabric may damage the material over time.

- After a tree or water landing, the line lengths should be checked.
- Do not drag the paraglider across the ground, as this will damage the canopy coating.
- Moisture damages the fabric coating and reduces the service life of the wing.
- If the lines become snagged on the ground, they may become overstretched or even break during take-off.
- Never step on the lines.
- When packing the wing, place the supplied inner packing bag underneath it to minimise abrasion and prevent damage to the canopy.
- Avoid bending or sharply folding the lines whenever possible.
- After contact with salt water, the paraglider must be rinsed thoroughly with fresh water as soon as possible.
- Any insects that have entered the cells should be removed alive whenever possible—not only out of consideration for wildlife, but also because they release corrosive body fluids.
- Clean the paraglider only with clean water. Avoid mechanical cleaning such as brushing or rubbing. Chemical cleaning agents will damage both the fabric and the lines.

Storage:

- Always store the paraglider completely dry. If the wing becomes wet, spread it out and allow it to dry as soon as possible—but never in direct sunlight.
- Do not store the paraglider near chemicals, solvents or corrosive gases.
- During transport and storage, especially inside vehicles, ensure that the wing is not exposed to unnecessarily high temperatures.

Repairs:

- Small tears in the fabric that do not run along a seam may be repaired temporarily using self-adhesive ripstop repair tape available from authorised paragliding dealers.
- All other damage—such as large tears, tears along seams, torn-out line attachment loops, broken or damaged lines—must only be repaired by the manufacturer or an authorised service centre.
- Only original spare parts may be used. A complete list of all lines used in this wing can be found in Section 16 – Line Length Schedule. Replacement lines are available exclusively from the manufacturer.
- Any modification to the paraglider that has not been expressly approved by the manufacturer invalidates the certification and operating approval.

Maintenance:

- The Cruiser 5 Paramotor must be inspected by the manufacturer or an authorised service centre at least every two years or every 100 operating hours, whichever occurs first.
- The line lengths should be checked every 20 flight hours and compared with the original specification sheet.

Disposal:

- The materials used in the construction of a paraglider require environmentally responsible disposal. Please return worn-out or permanently unserviceable wings to us. We will ensure that they are disposed of properly in an environmentally responsible manner.

13. Respect for Nature and the Environment:

This should go without saying, but we would nevertheless like to emphasise it once again:

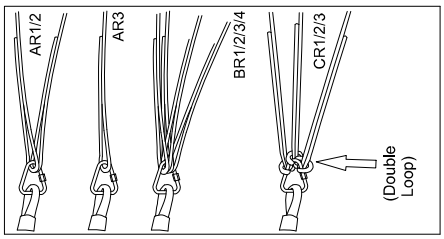
Please enjoy our sport in a way that protects and preserves nature and the environment.
Stay on marked paths, do not leave any litter behind, avoid unnecessary noise, and respect the sensitive natural environment, especially in mountainous areas. Particular consideration for nature is expected at launch sites.

14. Line Lengths

Line Ageing and Trim Adjustment

It has long been assumed that paraglider lines gradually stretch during use. This is indeed the case for the centre A- and B-lines, which carry the highest loads in flight.

However, both aramid (Kevlar) and Dyneema lines develop microscopic fractures in their individual fibres over time, causing the line to increase slightly in diameter.
The rear C-lines as well as the outer A-, B- and C-lines are subjected to only very small loads during flight—often no more than a few grams. As a result, these lightly loaded lines tend to shrink gradually, simply because the load is insufficient to keep them fully tensioned. From a technical point of view, there is very little that can be done to prevent this behaviour.
To compensate for this effect, the Cruiser 5 Paramotor is delivered from the factory with a slightly faster trim (a few millimetres added to the C-lines).
The lightly loaded lines are also supplied with an adjustment knot, allowing the line length to be increased if necessary.
This enables both the authorised inspection centre and the pilot to re-trim the wing easily without replacing the lines.
The line lengths should be checked every 20 flight hours and compared with the original line specification.
It is perfectly normal for lines to shrink by up to 30 mm after intensive use.
All changes in line length occur gradually. They do not happen suddenly and do not result in an immediate loss of flight safety. In most cases, the pilot will simply notice that the wing penetrates less effectively into wind or that its overall performance has gradually decreased.



Factory-installed double loops on the BR4 and C main lines for trim adjustment during service life.

Line Designations:

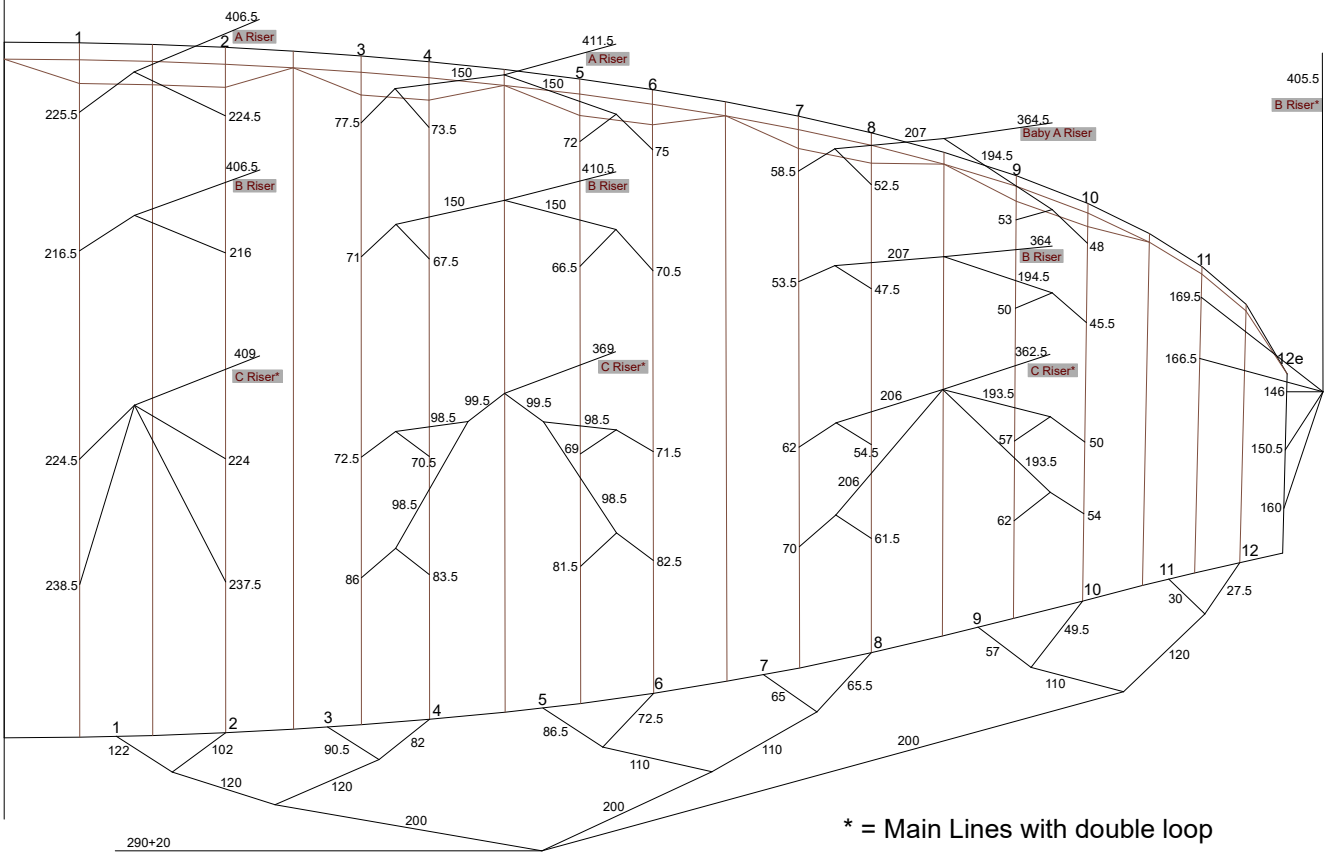
All lines used on Independence paragliders follow the same designation system. When ordering replacement lines, always determine the correct line designation according to the explanation below and specify the wing model and size.

The first letter identifies the line level (A, B, C, D; K = brake). Numbering starts at the centre of the wing with 1 and continues consecutively towards the stabiliser.
Gallery lines are designated by their line level and consecutive number, counted from the centre of the wing. Example: A5 = fifth A-gallery line from the centre of the wing (Cruiser 5 Paramotor 24-S: 68.5 cm). The upper stabiliser gallery line is identified by the suffix "E". Example: B12E = upper B stabiliser gallery line (Cruiser 5 Paramotor 24-S: 143 cm).
Middle lines are identified by the suffix "M". Example: BM3 = third B-middle line from the centre of the wing (Cruiser 5 Paramotor 24-S: 196.5 cm). If an additional intermediate line level is present between the Gallery lines and the Middle lines, it is identified by the suffix "MU" (U = Upper). Example: CMU1 = first C-upper middle line from the centre of the wing (Cruiser 5 Paramotor 24-S: 93.5 cm).
Main lines are identified by the suffix "R". Example: AR2 = second A-main line from the centre of the wing (Cruiser 5 Paramotor 24-S: 390.5 cm).

Line Types Used on the Cruiser 5 Paramotor:

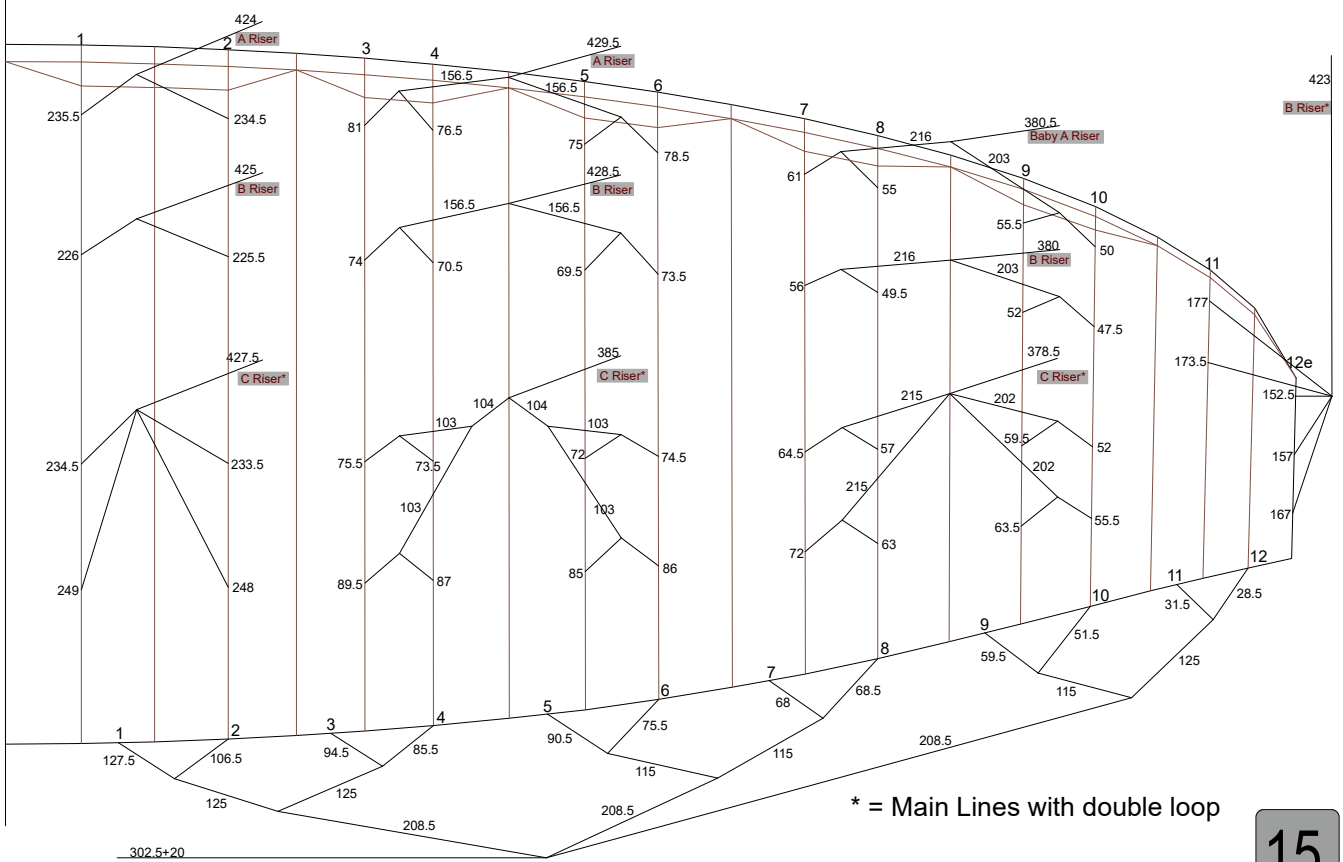
Designation	A1 - A6	A7 - A12	B1 - B6	B9 - B12	C1 - C11	D1 - D11	
Type	7343-140	7343-090	7343-140	7343-090	7343-090	7343-090	
Designation	AM1 - AM 2	AM3 - AM4	BM1 - BM2	BM3 - BM4	CM1 - CM4	DM1 - DM4	CL1 - CL2
Type	7343-190	7343-140	7343-190	7343-140	7343-140	7343-140	7343-190
Designation	AR1, AR3	AR2	BR1, BR3	BR2	BR4	CR1, CR3	CR2
Type	7343-280	7343-340	7343-280	7343-340	7343-190	7343-280	7343-340
Designation	K Riser	KL	KM	KTop			
Type	10-200	DSL-070	DSL-070	DSL-070			

14.1. Individual Line Lengths Cruiser 5 Paramotor M - 26



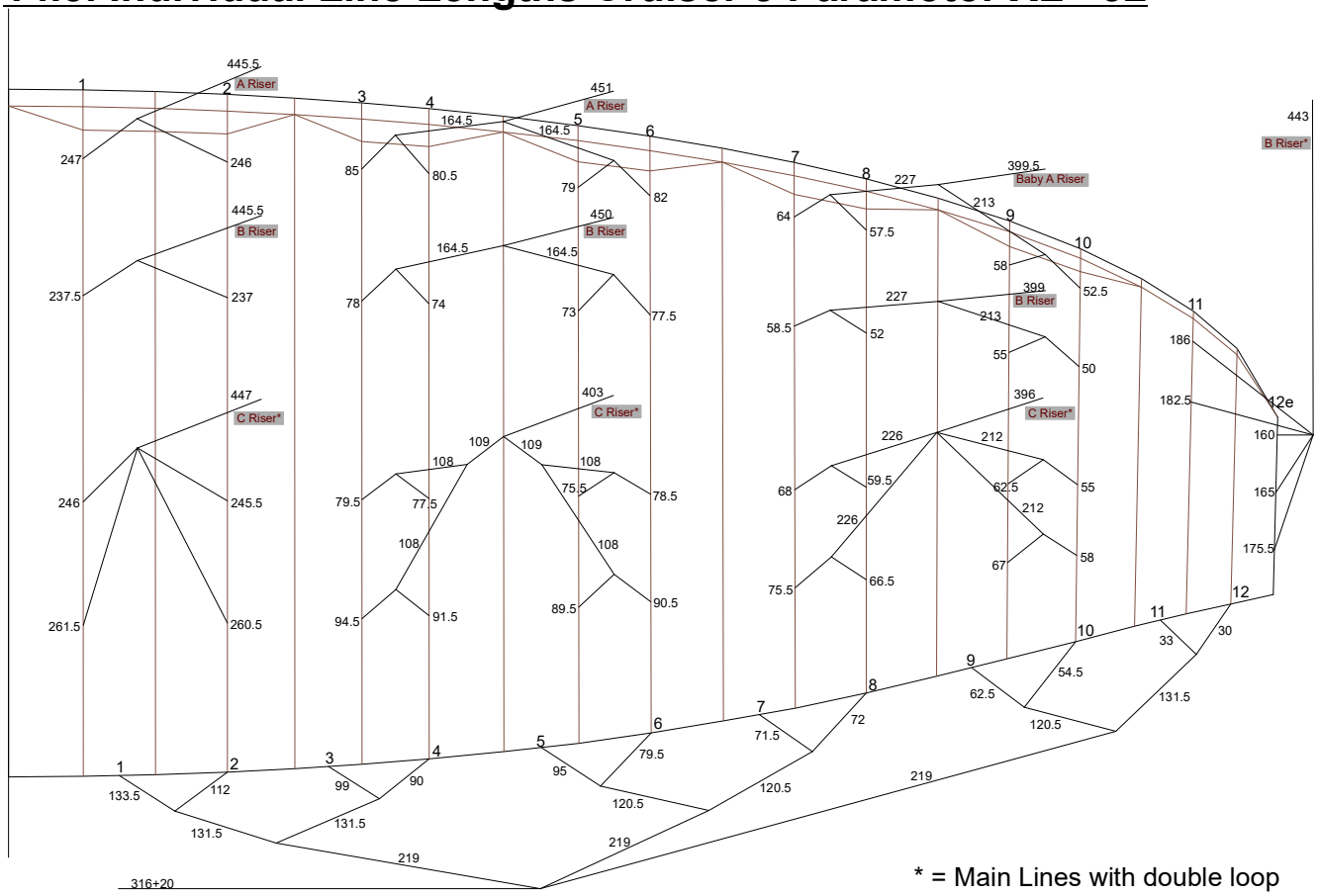
* = Main Lines with double loop

14.2. Individual Line Lengths Cruiser 5 Paramotor L - 29



* = Main Lines with double loop

14.3. Individual Line Lengths Cruiser 5 Paramotor XL - 32



* = Main Lines with double loop

15. Overall Line Lengths

All line and riser lengths listed below correspond to the certified test wing in accordance with EN 926-2:2013. The specified lengths have been verified by the certification authority and are within the tolerances permitted by the standard.

The lengths are measured under a 50 N load from the riser attachment point to the lower surface of the canopy. Brake line lengths are measured from the riser attachment point to the end of the main brake line.

15.1. Overall Line Lengths Cruiser 5 Paramotor 26,5

in mm	1	2	3	4	5	6	7	8	9	10	11	12
A	6850	6840	6915	6875	6860	6890	6825	6765	6645	6595	6265	6030
B	6760	6755	6840	6805	6795	6835	6770	6710	6610	6565	6235	6075
C	6840	6835	6900	6880	6865	6890	6810	6735	6635	6565	6170	
D	6980	6970	7035	7010	6990	7000	6890	6805	6685	6605		
Bremse	7320	7120	7005	6920	6865	6725	6650	6655	6570	6495	6400	6375

15.2. Overall Line Lengths Cruiser 5 Paramotor 29

in mm	1	2	3	4	5	6	7	8	9	10	11	12
A	7130	7120	7200	7155	7140	7175	7105	7045	6920	6865	6520	6275
B	7045	7040	7120	7085	7075	7115	7050	6985	6880	6835	6485	6320
C	7135	7125	7180	7160	7145	7170	7090	7015	6910	6835	6420	
D	7280	7270	7320	7295	7275	7285	7165	7075	6950	6870		
Bremse	7635	7425	7305	7215	7165	7015	6940	6945	6855	6775	6675	6645

15.3. Overall Line Lengths Cruiser 5 Paramotor 32

in mm	1	2	3	4	5	6	7	8	9	10	11	12
A	7455	7445	7535	7490	7475	7505	7435	7370	7235	7180	6805	6545
B	7360	7355	7455	7415	7405	7450	7375	7310	7200	7150	6770	6595
C	7440	7435	7500	7480	7460	7490	7405	7320	7210	7135	6700	
D	7595	7585	7650	7620	7600	7610	7480	7390	7255	7165		
Bremse	8000	7785	7655	7565	7505	7350	7270	7275	7180	7100	6995	6965

15.4. Riser Lengths Cruiser 5 Paramotor

mm	Trimm length	Speedsystem accelerated	C-Trimmer accelerated
A	530	365	530
A`	530	365	530
B	530	410	565
C	530	530	620

Lengths measured from the riser attachment point to the lower edge of the maillon.

16. Inspection Instructions for the Cruiser 5 Paramotor

These inspection instructions are intended to ensure the continued airworthiness of the paraglider to be inspected. In Germany, they are based on the Ordinance on the Inspection of Aeronautical Equipment (LuftGerPV) and define the minimum technical requirements for the wing and the scope of the inspection.

Depending on the country in which the wing is operated, additional national requirements may apply. However, the minimum requirements specified in these instructions shall not be reduced.

Warning: Fly market GmbH & Co. KG accepts no liability for inspections carried out by the responsible person or inspection centre. All inspections are performed entirely under the responsibility of the person carrying out the inspection.

If there is any doubt regarding the inspection procedure or the airworthiness of the paraglider, the manufacturer must be contacted.

16.1. Scope of Inspection

- In Germany, paragliders are subject to mandatory periodic inspections in accordance with §13 (2) LuftGerPV:

  "The airworthiness of ultralight aircraft in accordance with §1 (4) of the German Air Traffic Licensing Regulations (LuftVZO) shall be inspected by, or on behalf of, the owner in accordance with the manufacturer's instructions.

  The owner is responsible for ensuring that the inspections are carried out completely and within the prescribed intervals.

  Any defects found on the aircraft or in the inspection instructions shall be reported to the manufacturer without delay."
- Inspections may be carried out by the manufacturer, by persons authorised by the manufacturer, or by a person with sufficient technical competence who fulfils the minimum qualification requirements specified in Section 16.3.
- Under §13 (2) LuftGerPV, German regulations permit owners to inspect their own equipment. However, the manufacturer does not recommend this, as owners generally do not possess the necessary technical qualifications, experience or measuring equipment.
- If any defect is found during the inspection, the paraglider must not be flown until the defect has been rectified by the manufacturer or by a service centre authorised by the manufacturer.

16.2. Inspection Intervals

Training paragliders and commercially operated tandem paragliders must be inspected every 12 months.All other paragliders must be inspected every 24 months or after 100 operating hours, whichever occurs first.

The line lengths should be checked every 20 flight hours and compared with the original specifications.

16.3. Personnel Requirements for Inspections

Inspection of paragliders used exclusively for personal single-seat flying.The person carrying out the inspection shall meet the following minimum requirements:

- Holder of a valid, unrestricted paraglider pilot licence or an equivalent recognised licence.
- Sufficient technical knowledge to inspect the paraglider concerned (for example through type-specific training provided by the manufacturer or importer).

Inspection of paragliders used by third parties and tandem paragliders. The person carrying out the inspection shall possess sufficient technical expertise to carry out paraglider inspections. This expertise should be demonstrated, for example, by:

- a vocational qualification relevant to this type of inspection,
- at least two years' professional experience in the manufacture or maintenance of paragliders, hang gliders or technically comparable aircraft,
- adequate type-specific training (for example training provided by the manufacturer or importer).

16.4. Required Documentation

- Current version of the inspection instructions (to ensure that the latest version is used)
- Glider certification data sheet
- Production inspection report
- Previous inspection reports (for subsequent inspections only)
- Maintenance and calibration records for the measuring equipment
- Manufacturer's instructions for rectification of defects
- Airworthiness directives, where applicable

16.5. Test Equipment

The following equipment shall be used for the individual inspections:

- Air permeability tester: JDC or equivalent
- Length measuring device: steel measuring tape or laser measuring device
- Line strength tester in accordance with EN 926-1, Section 4.6.3: electronic measurement with a sampling rate of at least 100 Hz and a loading speed between 0.7 m/min and 1.0 m/min
- Canopy strength tester: Bettsometer, B.M.A. GB 2270768

All measuring equipment shall be calibrated and maintained at regular intervals in accordance with the respective manufacturer's instructions.

16.6. Inspection Procedure

Identification of the Paraglider:

- After the paraglider has been received, a visual inspection shall be carried out and the wing shall be identified using the manufacturer's official documentation.
- The type label and all markings shall be checked for correctness, completeness and legibility.

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 attachment loops shall be inspected for tears, distortion, stretching, damage to the coating, repairs and any other abnormalities. The inspection results shall be recorded in the inspection report.
- If tears in seams or other damage are found, repairs must be carried out using original replacement parts and the original stitching pattern only. Repairs using self-adhesive repair tape or non-original replacement parts are not permitted.

Visual Inspection of the Lines:

- If any damage to the lines is found (stitching, tears, kinks, sheath damage, abrasion, thickened sections, exposed core, etc.), the affected lines shall be replaced using original replacement parts and the original stitching pattern.

Visual Inspection of the Connecting Components:

- All maillons, as well as any fitted trimmers and speed systems, shall be inspected for abnormalities such as cracks, abrasion and restricted movement. Both risers shall be inspected for chafing, tears and excessive wear.

Measurement of Line Lengths / Risers:

- Each individual line shall be laid out and subjected to a load of 5 daN. The measurement shall be taken from the riser attachment point to the canopy, including the line attachment loop. Alternatively, the measured overall line lengths shall be recorded in the inspection report and compared with the specified line lengths. Compliance with the tolerances specified in the manufacturer's instructions shall be documented in the inspection report.
- The measured values may differ by a maximum of ±10 mm from the specified values. In addition, the measured values shall not indicate any significant trim shift.
- A trim shift is deemed to exist, for example, if:
  - more than 50 % of the lines reach the tolerance limit, with the tolerance being exceeded only in either the positive or the negative direction (example: the A/B lines are 10 mm longer, while the C/D/E lines remain within the specified values),
  - or 25 % of the lines deviate from the tolerance limits in both directions (positive and negative) (example: the A/B lines are 5–10 mm longer, while at the same time the C/D/E lines are 5–10 mm shorter than the specified values (typical rearward trim shift due to ageing)).
- Individual lines may be corrected in the event of a trim shift by shortening or lengthening them at the line attachment maillon in order to restore the correct trim (for example by shortening excessively long A-lines or lengthening excessively short C-lines). If the correct trim has been restored by this measure, the absolute overall line lengths shall not differ by more than ±30 mm from the specified values.
- Both risers shall be measured under a load of 5 daN. The measured values shall be compared with the values specified in the certification data sheet and recorded in the inspection report. A maximum deviation of ±5 mm between the riser lengths is permitted.

Verification of Line Strength

- Verification of the line strength shall be documented in accordance with the requirements for certification testing specified in EN 926-1:2016 and LTF 2-565-20:

  The Cruiser 5 is equipped with highly durable Dyneema and aramid lines manufactured by Edelrid and Liros. Therefore, provided that the paraglider is in an otherwise good overall condition, the breaking strength test may be omitted after the first 24 months in favour of maintaining uniform line ageing.
- Main lines: One main line from the centre of each line level (A, C and D) shall be removed and tested to determine its breaking strength using a tensile testing machine. The removed lines shall be identified in the inspection report. This is important to ensure that, during a subsequent inspection, the line replaced during the previous inspection is not tested again. During subsequent inspections, the corresponding main lines on the opposite side or adjacent to the centre main line shall be tested (i.e. AR2, CR2).
- Gallery lines / Middle line level: Above each main line, one corresponding line leading towards the canopy shall also be removed and tested for breaking strength. If the measured breaking strength of the A-line is at least 1.5 times the specified value (for example: specified value 50 daN, measured breaking strength > 75 daN), further testing of the B-, C- and D-line levels may be omitted.
- Minimum Breaking Strength of Individual Lines – Cruiser 5:

Line Position	Limit (daN)
A1 - A6	50
A7 - A12	36
B1 - B6	50
B8 - B12	36
C1 - C12	36
D1 - D11	36

Line Position	Limit (daN)
AM1 - AM 2	74
AM3 - AM4	50
BM1 - BM2	74
BM3 - BM4	50
CM1 - CM4	50
DM1 - DM4	50

Line Position	Limit (daN)
AR1, AR3	117
AR2	134
BR1, BR3	117
BR2	134
BR4	84
CR1, CR3	117
CR2	134
CL1 - CL2	84

Canopy Strength Test:

- The canopy strength shall be tested using the Bettsometer (B.M.A.A. approved Patent No. GB 2270768, Clive Betts Sales). During this test, a needle-sized hole is made in the upper and lower surface in the area of the A-line attachment, and the fabric is tested for its tear propagation strength. The acceptance criteria are a minimum force of 400 g and a maximum tear length of 5 mm.
- The exact test procedure is specified in the operating instructions for the Bettsometer. The measured value shall be recorded in the inspection report.

Air Permeability Test:

- The air permeability of the fabric shall be measured using a suitable air permeability tester. Measurements shall be taken at a minimum of five measuring points. These measuring points shall be distributed across the wingspan, approximately 20–30 cm behind the leading edge. At least two measuring points shall be located within the centre third of the wing. The measured values shall be recorded in the inspection report.
- Acceptance criteria: No measuring point shall show a value of less than 15 seconds. If any measurement is below 15 seconds, the paraglider shall no longer be considered airworthy.

Visual Inspection of Trim and Configuration:

- All lines shall be checked in accordance with the line layout plan to ensure that they are correctly configured from the canopy to the risers and that all line levels run freely without interference.

Check Flight:

- A check flight is only required after major repairs.
- During the check flight it shall be determined whether the flight characteristics of the paraglider being inspected have changed in comparison with those of a new paraglider.
- The inspector shall possess sufficient flying skill and experience to compare the certification requirements with the flight behaviour of the paraglider being inspected and to identify any changes in its flight characteristics.
- In particular, the inspector shall be familiar with the paraglider model and its flight characteristics.
- The certification requirements applicable at the time the model was certified shall also be known.
- As a minimum, the check flight shall include the following: As a minimum, the check flight shall include the following: inflation behaviour, tendency to remain in deep stall (recovery from a B-stall), tendency to enter a negative spin, brake travel, asymmetric collapses exceeding 50 %.
- If the inspected paraglider exhibits abnormal flight behaviour in any respect, it shall not be flown again and shall be returned to the manufacturer for inspection. Under no circumstances shall the inspector attempt to rectify the fault.

16.7. Documentation

- All inspection results, together with the paraglider details (model, size, serial number and year of manufacture), shall be recorded in the inspection report. A sample inspection report is available from the manufacturer.
- All repair and corrective work shall also be recorded in the inspection report.
- The overall condition of the paraglider shall be assessed in accordance with the options provided in the inspection report. This overall assessment shall take into account all measured values, including strength, air permeability, etc.
- In the event of a negative inspection result, the manufacturer shall be contacted in order to determine the further course of action (e.g. returning the paraglider to the manufacturer for repair).
- Any unusual defects shall be reported to the manufacturer immediately.
- After completion of the inspection, the paraglider shall be marked adjacent to the type label with the appropriate inspection endorsement. This endorsement shall include at least the date of the next inspection, place, date, signature and inspector's name.
- All inspection documents (inspection report and measurement report) shall be prepared in triplicate. One copy shall be provided to the owner, one to the inspector and one to the manufacturer. The inspection documents shall be retained for six years.