

# EDEN<sup>5</sup> - motor



Version 2.1 Stand 18.12.2013

USER MANUAL

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## **Dear MAC PARA pilot**

We congratulate you on your purchase of a MAC PARA paraglider. Extensive development work and numerous tests make the Eden 5 a very high performance paramotoring glider with maximum possible safety. The Eden 5 is constructed for thermal and cross-country flying, and will enable pilots to get maximum enjoyment. The Eden 5 offers very easy inflation and simple ground-handling characteristics by take off, excellent handling in flight and easy landing. Please read this manual carefully before you start, this way you will get the most out of your glider. MAC PARA wish you many pleasant flights with your Eden 5.

## **Please read this manual carefully and note following details:**

Paragliding is a sport, which demands, besides the optimum equipment, a high degree of attentiveness, good judgement, and theoretical knowledge. Paragliding can be a dangerous sport, which may lead to injury and death. This paraglider meets at the time of delivery requirements of the EN (European Norm) 926 or LTF (German Certificate of Airworthiness). Any alternations to the paraglider will render its certification invalid! The use of this paraglider is solely at the user's own risk! Manufacturer and distributor do not accept any liability. Pilots are responsible for their own safety and their paraglider airworthiness. The paraglider carries no warranty! The author assumes that the pilot is in possession of a valid paragliding licence for glider's category, insurance etc.

Before delivery, as well as during production, each paraglider goes through a strict visual inspection, and is test-flown by your dealer. Stamps on the placard, together with a completed test-flight certificate, confirm this. Check that the paraglider has been test-flown before your first take-off. If it has not, consult your dealer.

Any inadequate use or misuse increases the risks considerably. The Eden 5 must not be used outside the certified weight range. The Eden 5 must not be used during rain or snow-fall. The Eden 5 must not be used in high or gusty winds. The Eden 5 must not be used in cloud and fog. The Eden 5 must not be used by pilots without sufficient knowledge or experience.

If, after carefully reading this handbook, you still have questions, suggestions or criticism regarding this product do not hesitate to contact your dealer or us. We will be glad to help and advice.

**MAC PARA wish you many pleasant flights with your**

**Eden 5**

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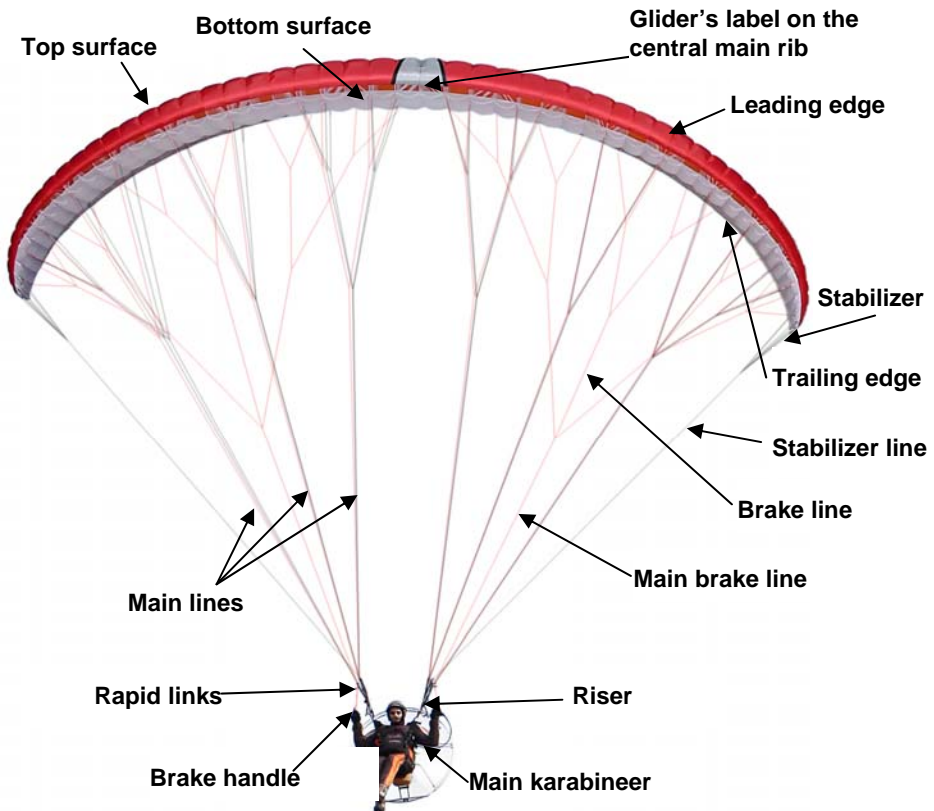
# OPERATING LIMITS, OVERALL PLAN

## Operating limits

The Eden 5 is light sport aircraft with an empty weight of less than 120 kg in the category paraglider. The Eden 5 has been tested in according to EN926-2 by certification laboratory European Para Academy to EN-B category for paragliding. The Eden 5 is certified for solo flight. The Eden 5 has been load and shock-tested and passed with a load corresponding to 8G of the maximum weight in flight 145 kg. Its flying tests have shown that the glider remains stable and controllable over a wide range of normal and abnormal flight conditions. Nevertheless, turbulence and gusting winds can lead to a partial or complete collapse of the canopy. Therefore never fly in such conditions.

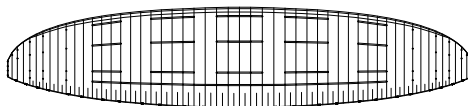
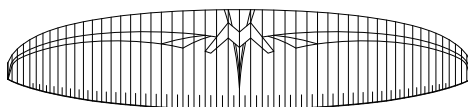
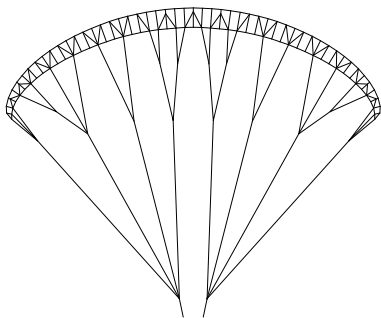
Any changes made to this paraglider invalidate the certificate of airworthiness.

## Overall plan



## Construction of the canopy:

The canopy of the EDEN 5 consists of 52 cells over the wingspan. The wingtips are slightly pulled down and this produces a kind of stabilizer. The Eden 5 is combination of two and third rib diagonal-construction paraglider. Every second or third main rib is attached to the 3 or 4 suspension lines. Between these main suspension ribs, intermediate ribs are suspended by diagonal ribs. These diagonal ribs lead to top surface of canopy. This construction ensures a smooth top surface and precise airfoil reproduction. The internal reinforcements maintain the precise form of the canopy and provide stability. The cell openings on the under-surface of the profile's nose provide airflow into the glider. Stretch resistant flares, integrated with diagonal ribs at the suspension points, ensure an even distribution of load throughout the canopy. A stretch resistant Mylar reinforcements combined with plastic rods on the leading edge help to keep airfoils in right shape and this guarantees a high level of stability. Large cross spots allow effective airflow inside the canopy, providing good re-inflation without reducing the profile accuracy. The Eden 5 is made of the proven Nylon fabrics Porcher Sport Skytex Rip-stop 9017 E32A, 9017 E38A and 9017 E29A. Like any synthetic material, this can deteriorate through excessive exposure to UV.



## Rigging system:

The lines of the Eden 5 are made of proven strong and stretch resistant covered Aramid/Kevlar lines and non covered Dynema and Vectran lines. The entire rigging system comprises individual suspension lines looped and stitched at each end. The sheathed Aramid and unsheathed Dynema and Vectran lines cascade unsheathed lines have strengths from 65 kg up to 280 kg.

The suspension lines are comprised of “cascaded top lines” (attached to the under-surface), “cascaded middle lines” (cascade 2 to 2 top lines together on middle main lines), and “main lines”. Main lines lead to the “quick link” (a Maillon which connects lines and risers). The “stabilizer lines” connect the upper stabilizer lines on the outer suspension points with the quick link. The “brake lines” are not load carrying suspension lines. They lead from the trailing edge of the canopy to the main brake lines and run through the pulleys on the C-risers to the brake handles.

## TECHNICAL DESCRIPTION

A mark on the main brake line indicates the position of the brake handle. This adjustment, on the one hand, allows sufficient brake to be applied during extreme flying situations and when landing, while on the other hand, this ensures that brakes are not permanently applied to the canopy (especially when fully accelerated). This trimming should not be altered. For differentiation purposes the main A-lines are coloured red, the main brake lines are orange, all remaining main lines are yellow. Also the main suspension loop, on the bottom of the riser, is covered red. This is where the main karabiner should be hooked in, which then in turn connects the risers to the harness. The Eden 5 is equipped with 4 risers per side (A, A1, B, C). The two central A-lines per side are attached to the main A-risers while outermost A main lines are attached to A1 risers. The 3 B-main lines and the stabilizer lines are attached to the B-riser. The 3 C-main lines to the C-riser. The main brake lines leads through the pulleys on the C riser.

The line connections are made to triangular Maillons (quick links) fitted with a rubber "o-ring" in the form of a "figure eight" which prevents any slipping of the lines on the quick link. See line plan for details.

### Speed system:

The Eden 5 is equipped with a stirrup operated speed-system, which returns automatically to normal position when the stirrup is released. The serial risers of the Eden 5 have a lockable trimmer for accelerated flight by paramotoring.

The speed system affects the A-, A1- and B- risers and changes the angle of attack. In normal flight all risers have an overall length of 49,5 cm without quick links. When the stirrup is pushed out the A-risers are shortened by up to a maximum of 14 cm, the A1-risers are shortened by up to a max of 14 cm, the B-risers by up to a max. of 11 cm, the C-risers retain their original length. These measurements influence the certification! An incorrectly fitted speed system causes loss of certification!

Most modern harnesses have pulleys attached for speed system fitting. In case not, it is important to attach pulleys (sewn on tabs) in such a way that they allows the pilot to maximize the power vector of his / her legs without "pushing back" in the harness.

The Eden 5 speed system, including Brummel-hooks supplied, must be assembled as per instructions. The speed system cord is firmly attached (use bowline or other nonslip knot) to the foot stirrup (webbing or alloy bar). The other end of the cord is run through a pulley on the harness and then in an upward direction to be then firmly attached to the Brummel-hooks! The length of the cord leading to the stirrup should be adjusted so that it is easy to put your feet into the stirrup in flight but still short enough to allow full speed system travel. (Use of 2 stirrups in a ladder fashion can enable you to reach the full range if your legs are not long enough.) Ensure both cords on the stirrup are of equal length, to avoid putting a turn in the glider.

## Trimmers:

The Eden 5 PPG has a wider in flight speed range due to the range of different trimmer settings. The trimmers have a acceleration range of 5cm. On the faster setting (trimmers fully open and extended) the Eden 5's speed increases. On lower trimmer setting (neutral – trimmer pulled all the way down), the wing is in the adjustment of EN-B certification.

It is important to check and set the trimmers in the same position for each riser before take-off and in flight to avoid unwanted turns.

The speed of the Eden 5 with closed trimmers (trimmers pulled all the way down) is around 39-42km/h with a relatively low effort of the engine. With additional brake pressure the cruising speed is around 34-37 km/h. This will give you the best sink rate and requires the least amount of thrust from your engine for level flight. This position is ideal for economy navigation tasks.

With the trimmers fully open the speed is around 42-45 km/h. You will notice the main brakes will become harder to pull. This is normal. With fully released trimmers the canopy becomes more solid. To fly at maximum speed with your Eden 5, fully release trimmers and push the speed bar out all the way by pushing on it with your feet. The maximum speed is around 54-57km/h.

**Note! The Eden 5 is not certified in this configuration! Accelerator may be used only with closed trimmers. You must expect higher fuel consumption in accelerated flight.**

**WARNING! Do not use the brakes when the Eden 5 is fully accelerated with trimmers all the way open and speed bar pushed all the way out.**

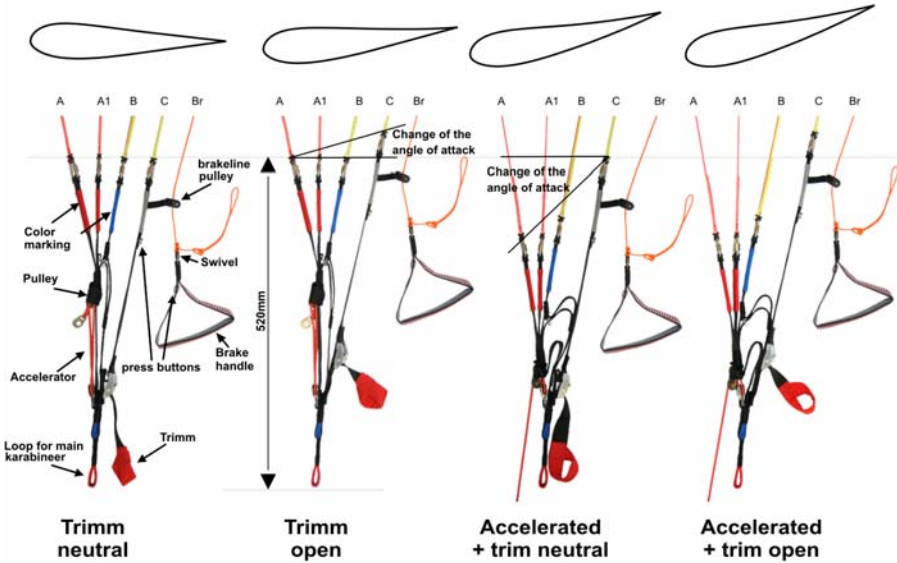
**WARNING!** For free flight the red colored riser's loops must be connected to the main main carabiners together with the loops of the trimmers. The trimmer strap must be pulled all the way down. It is the default - Neutral position. See pictures below.



*Paramotoring*



*Paragliding*



Slower

Faster

## Riser`s lengths of Eden 5

	A	A1	B	C
Trimsetting - Neutral	520	520	520	520
Trimmers released	520	520	520	570
Accelerated (Neutral)	380	380	410	520

The lengths are measured from the main attachment point to the lower edge of rapid links.



## Tissue

(PORCHER SPORT, Rue du Ruisseau B.P. 710,38290 ST. QUENTIN FALLAVIER, FRANCE)

Top Sail - Leading Edge - SKYTEX 40 E32A - 100% nylon 6.6 , 33 Dtex, 40 g/m<sup>2</sup>

Top Sail - Trailing Edge - SKYTEX 40 E38A - 100% nylon 6.6 , 33 Dtex, 40 g/m<sup>2</sup>

Bottom Sail - SKYTEX 40 E38A - 100% nylon 6.6 , 33 Dtex, 40 g/m<sup>2</sup>

Main ribs, Diagonals - SKYTEX 40 E29A - 100% nylon 6.6 , 33 Dtex, 40 g/m<sup>2</sup>

Ribs - SKYTEX 40 E38A - 100% nylon 6.6 , 33 Dtex, 40 g/m<sup>2</sup>

Reinforcement main ribs - Grille Polyester 200 g/m<sup>2</sup>

Reinforcement Ribs - W382 Polyester 180 g/m<sup>2</sup>

## Lines

(EDELMAN+RIDDER+CO. Achener Weg 66, D-88316 ISNY IM ALLGAEU, GERMANY)

Upper lines, Stabilizer. - Aramid A-6843-065, Breaking Load 65 kg

Upper lines, Middle cascade C - Aramid A-6843-080, Breaking Load 80 kg

Upper lines, Middle cascade A,B - Aramid A-7343-140, Breaking Load 140 kg

Main lines C1 - Aramid/Polyester A-7343-190, Breaking Load 190 kg

Main lines A1,B1,C2,C3 - Aramid/Polyester A-7343-230, Breaking Load 230 kg

Main lines A2,A3,B2,B3 - Aramid/Polyester A-7343-280, Breaking Load 280 kg

Wing tip line - Aramid/Polyester A-7343-090, Breaking Load 90 kg

Main brake line - Dynema/Polyester A-7850-240, Breaking Load 240 kg

(Rosenberger Tauwerk GmbH, Poststr. 11, D95192 Lichtenberg, GERMANY)

Upper lines A,B - Liros Dynema - DC 100, Breaking Load 100 kg

(Cousin Trestec, Comines CEDEX, France)

Brakelines - top cascade - Vectran - 0,6mm Breaking Load 50 kg

Top cascade lines C,D, Brake lines - Vectran - 0,9mm Breaking Load 115 kg

Brakelines - Vectran - 1,2mm Breaking Load 145 kg

## Attachment straps

(STUHA a.s., DOBRUSKA, Opočenská 442, 518 01 Dobruška CZECH REPUBLIC)

STAP-POLYESTERBRIDLE 13 mm, Breaking Load 70 kg

## Risers

(Cousin Trestec, 8 rue Abbé Bonpain 59 117 Wervicq-sud France, FRANCE)

Aramid-Polyester 3455 12 mm Breaking Load 1100 kg

## Thread

(AMANN SPONIT Ltd, Dobronická 635, 148 25 PRAHA 4, CZECH REPUBLIC)

Lines-SYNTON 60, Main lines-SERABOND 60, Canopy-SYNTON 40, Riser-SYNTON 20

## Rapid links

(ELAIR SERVIS, Axmanova 3913/9,767 01 KROMERIZ, CZECH REPUBLIC)

NIRO TRIANGLE 200 - Max. Load 200 kg

## Rigifoils

(MERKUR SLOVAKIA s.r.o.,Kamenné pole 4554/6,031 01 Liptovský Mikuláš, SLOVAKIA)

Rigifoils - Bison - Kopolyamid 6/12 2,00 mm/2,7 mm

## TECHNICAL SPECIFICATIONS

High Performance Size		Eden <sup>5</sup> 22 (XS)	Eden <sup>5</sup> 24 (S)	Eden <sup>5</sup> 26 (M)	Eden <sup>5</sup> 28 (L)	Eden <sup>5</sup> 30 (XL)	Eden <sup>5</sup> 33 (XXL)
Zoom flat	[%]	87	92	95,7	100	104	108
Area flat	[m <sup>2</sup> ]	21,78	23,80	25,75	28,12	30,41	33,41
Area projected	[m <sup>2</sup> ]	19,45	21,25	23,00	25,11	27,16	29,83
Span flat	[m]	11,04	11,55	12,01	12,55	13,05	13,68
Span projected	[m]	9,28	9,71	10,10	10,55	10,97	11,5
Aspect ratio flat	-	5,6	5,6	5,6	5,6	5,6	5,6
Root cord	[m]	2,42	2,53	2,63	2,75	2,86	3,00
Cells	-	52	52	52	52	52	52
Weight	[kg]	4,7	4,95	5,2	5,6	6,0	6,4
Weight range-free flying*	[kg]	60-75	67-85	75-95	85-110	105-130	115-145
Weight range-free flying*	[lbs]	132-165	148-187	165-209	187-243	231-287	254-320
Min.speed	[km/h]	23-25	23-25	23-25	23-25	23-25	23-25
Max.speed	[km/h]	36-38	36-38	36-38	36-38	36-38	36-38
Top speed (accelerator)	[km/h]	48-50	48-50	48-50	48-50	48-50	48-50
Glide ratio	-	9,7	9,7	9,7	9,7	9,7	9,7
Min. Sink rate	[m/s]	1,05	1,05	1,05	1,05	1,05	1,05
Weight range - PPG**	[kg]	no	no	100-125	110-137	120-148	no
Weight range - PPG**	[lbs]	homologation	homologation	220-275	242-302	265-326	homologation

\* free flying pilot equipped = weight naked + cca. 20 Kg (44 lbs)

\*\* powered pilot equipped = weight naked + cca. 35 - 40 Kg (77- 88 lbs)

## HARNESSES

The Eden 5 is certified for free flying with GH type certified ABS harnesses. Nearly all harnesses available on the market are „GH“ type. These harnesses have the distance between the seat plate and carabineers 42-47 cm depending on the size of the harness . Please note: the hang point position changes the position of the brakes relative to the pilot's body.

The distance between carabineers (adjustable on chest strap ) is 42 cm for the glider sizes S and M , 44 cm for the glider size L, 46 cm for the glider sizes XL and XXL. Differences of more than 5cm change the basic characteristics of the glider and are potentially dangerous.

Nearly all on the market ABS harnesses are "GH" harnesses and suitable for the Eden 5. These "GH" harnesses are different to "GX" harnesses, which have a lower attachment point for the main karabiners and effective cross bracing. The Eden 5 was not tested with harnesses with an effective cross bracing system.

## CHECK ON A NEW PARAGLIDER

Before delivery, as well as during production, each paraglider goes through a strict visual inspection. Additionally we recommend that you to check your new glider in accordance with the following points. We recommend that you make this check after flying extreme manoeuvres or after tree landings or similar.

- Inspection of the canopy for tears or damage, especially the seams which join the ribs to the upper and lower surfaces, but also the area of the attachment tapes and brake-line connections.
- Inspection of the lines for damage to the stitches. The line lengths must be checked after 50 hours flying time and whenever the flight behaviour of the glider changes.
- Inspection of attachment tapes for damage to the stitches. It is also important to check the attachment tapes and brake-lines for tangles.
- Inspection of the risers for faultless condition. Rapid links must be secured.

With even slight damage the glider loses its airworthiness!

## SETTING UP THE CONTROLS

The glider is delivered with a standard set-up for paragliding and its speed can reach 39 - 42 km/h depending on the weight of the pilot. The brake-lines should always be adjusted so that the first brake-lines just come under tension when the brake handles have been pulled 5-10 cm. The test results relate to this brake-line adjustment. This adjustment, on the one hand, allows sufficient brake to be applied during extreme flying situations and when landing, while on the other hand, it ensures that the canopy is not permanently braked (especially when fully accelerated). We strongly recommend brake adjustments be supervised by a paramotoring instructor or done by a pilot that understands the importance of proper brake line length. Improper brake line adjustment can lead to unsafe reactions of your glider. With a brake line adjusted too short the canopy will lose its easy take off behaviour.

Before flying the Eden 5 please check the setting of the brake lines and adjust them in accordance to your hang points of your paramotor.

When flying paramotors with **lower hang points** (main carabineer **50-60 cm from seat plate**) the main carabiner should to be connected in the lower (red colored) riser's loop. When flying paramotors with **higher hang points** (main carabineers higher than **70 cm** or trikes) the main carabiner should be connected to the higher (blue colored) riser's loop. Depending on your preferences and your Paramotor the brake lines must be set even longer!

Once you choose your appropriate brake line length that matches your paramotors hang point style, check the set up by inflating the glider in an open area with a constant breeze with the engine off. When the canopy is stabilised above your head, check that the trailing edge of the wing is not being pulled down. When you gently pull the brakes you should only have 5-10 centimetres of movement before the brakes start to pull down on the trailing edge of the wing. Make sure that the brake length is the same for both sides. It is safer to have brake length a bit longer than too short.

## SETTING UP THE CONTROLS

NOTE!! If in doubt about the brake-line adjustment, it is preferable to leave them too long, as any necessary shortening can easily be achieved by wrapping them round your hand.

The length of the control lines for free flying measured from the first cascade line is:

**320 cm for Eden 5-22,    335 cm for Eden 5-24,    350 cm for Eden 5-26,**

**365 cm for Eden 5-28,    380 cm for Eden 5-30 ,    395 cm for Eden 5-33.**

The available brake travel before stalling the wing depends on the size and loading. By max. load it is approximately

55cm for the Eden 5-22,    61cm for the Eden 5-24,    63cm for the Eden 5-26, 68cm for the Eden 5-28,    70cm for the Eden 5-30    and    75cm for the Eden 5-33.

(The publication of the brake travel is claimed by the EN 926.)

### Fitting the speed-system:

Most modern paramotoring harnesses have pulleys for speed system fitting. The Eden 5 speed system is supplied with Brummel-hooks and must be assembled as per instructions.

Take your speed bar and make sure it is firmly attached to the foot stirrup (webbing or alloy bar) using a bowline or other non-sliding knot. Take off the Brummel hook on the speed bar cord if you haven't already done so. Hold the free end of the cord and run it through the pulley on each side of your paramotor harness. Next, lead the cord up to meet the Brummel-hooks on the riser of the paraglider. Firmly attach the Brummel hook on the end of the speed bar cord so that Brummel hooks can be attached to each other. Ensure both cords from the speed bar are equal length to avoid putting an unwanted turn in the glider. The length of the cord leading to the foot bar stirrup should be adjusted so that it is easy to put your feet into the stirrup in flight but still short enough to allow full speed system travel. (The use of 2 stirrups in a ladder fashion can enable you to reach the full range if your legs are not long enough.)

**Test your speed system for the correct length on the ground by hanging your paramotor to simulate the real flying position. While you are a few feet off the ground, attach your risers to your harness and have someone hold them while you try pushing the speed system checking for proper length and set up.**

The full range of the speed system is reached when the 2 pulleys on the risers join together. Before launch, attach the glider's risers to the harness with the main carabineers first before attaching the speed system. Ensure that the speed system is untangled and operates freely before flying. There should be a spare inch or so before the speed bar activates the speed system. Remember that it is always safer to set the margin of play too big than too small.

The following information is NOT under any circumstances a manual for practising paramotoring. We would like to advise you of important information to increase safer flights and security while flying the EDEN 5.

## Paraglider Preparation

After unpacking and laying out the paramotoring glider in a slight horseshoe pattern, the following checks must be made:

### Checklist before every flight:

#### Checking and inspecting the wing:

- Canopy without any damage?
- Risers without damage?
- Maillons (quick links) closed tight?
- Stitching of the main lines near the risers o.k.?

All main lines run free from the riser to the canopy? Brake lines free?

#### Before putting on the harness:

- Warm up your engine and stop the engine before clipping in the risers.
- Rescue/reserve handle and deployment pins secure?
- Buckles (leg- , front riser) closed?
- Main carabineers attached and properly closed?

#### Before take-off:

- Ensure helmet is on and chin strap fastened.
- Attach speed bar system and connect properly.
- Check that the risers are not twisted.
- Look to see the trimmers are properly set to neutral (white stitching).
- Check the brake handle and brake lines are free and not twisted.
- Confirm nothing will get in propeller's way.
- Centre yourself relative to the wing (all lines same tension).
- Test engine to deliver full power.
- Check wind direction.
- Check for obstacles or tripping hazards on the ground.
- Identify free airspace.
- Look out for obstructions in the direction of desired flight path.

### Preparing for take-off:

As with any aircraft, a thorough pre-flight check must be made prior to each flight. Before every launch check lines, risers and canopy for damage! Do not launch with even the slightest damage!

## FLYING THE EDEN 5

Also check the maillons connecting the lines to the risers. They must be closed tight.

### Getting ready for Flight

Put on the harness/paramotor with care and check that the handle of the reserve parachute is securely fastened to prevent accidental deployment. Look to see that the flaps of the outer container are fastened securely and correctly. The main carabineers must also be checked carefully. Replace carabineers if any damage is visible or if you have accumulated 300 flying hours. Finally, connect the paraglider risers to your harness with the main self-locking carabineers. Check carefully that they are properly closed.

ATTENTION! Never fly with an open main carabineer!

ATTENTION! Do not take off if you find any damage on your equipment!

### Forward Launch Technique

The Eden 5 is very easy to launch. With a very weak or zero wind it requires an appropriate launch technique. Before take-off, recheck the canopy, trimmer setting, wind direction and the air space around you. When you are ready to take off, hold all A-risers and the brake handles in each hand. If there is wind present then just hold the centre A risers in each hand.

The A-lines are identified by red coloured sleeves on the risers. Before take-off, place yourself in the centre of the glider while holding the A risers. Let the B and C risers fall into the bend of your arm. Continue holding the A risers with arms outstretched behind you. Pull up the canopy with good forward momentum. (The stronger the headwind the fewer run-ups you need plus less pull on the A's to inflate your canopy). After the initial inflation you may need to keep applying forward pressure on the A-risers depending on the wind conditions. Do not pull down on the A's.

**1. Paragliding forward technique** – Follow the above technique to get the glider overhead. As soon as the glider is above you, stop pulling on the A-risers. A good progressive run ensures your Eden 5 will inflate and come up equally and quickly. If the canopy should surge forward, control it by gently braking. Next, do quick visual checks of the canopy looking upwards to ensure the canopy is completely open (otherwise, abort the take-off). Only then is the final decision to continue the launch. If anything doesn't feel completely safe, the launch should be aborted. If the glider feels solid and evenly inflated continue moving forward until the glider lifts you off. It is easier to take-off in a light headwind by applying the brakes slightly. After the take-off, gently release the brakes to gain forward momentum. Shortly after take off the brakes should be gently reapplied to stabilize the glider during cruising flight and possibly correcting for drift.

**2. Paramotoring technique** – Layout and start the inflation technique the same as stated above. Once the canopy is inflated up to the angle of about 80° degrees, open up the throttle to full power and lean back. This helps counter the engines thrust allowing it to push you forward rather than leaning forward towards the ground. Continue to run in an upright position. This is important. When you approach take off speed gently apply the

brakes (max 30% of the brake range). The faster the trimmer setting is, the more brake input is required for take-off. Set the trimmers to neutral for easy launching. Once you have safely taken off continue heading into the wind. Release the brakes to gain enough altitude to allow you to get into your harness safely.

Experienced paraglider pilots that start paramotoring have a tendency to lean forward with slightly applied brakes. When taking off with a paramotor you need to stand up straight and allow the thrust of the engine to push your body horizontally forward rather than diagonally down.

It is important to not get into the harness as soon as you leave the ground. Right after take-off you are relatively low to the ground. The possible danger is if the engine happens to quit or loose thrust you quickly will be put back on the ground. Not rushing into your seat/harness allows your legs to act as landing gear instead of the bottom of your paramotor.

The recommended technique of getting into your harness is to climb to a safe height into the wind and then gently throttle back before getting into the seat. If you need to use your hand to help you get into your harness, be sure to put the brake toggle on the snap button first to avoid it being sucked into the prop. Also note that properly fastened leg straps makes getting into the harness much easier. Check this before take-off in a simulator or with your paramotor instructor.

**WARNING!! Do not jump or lift your legs immediately after or during your take off!** This could have disastrous consequences when done with a paramotor if the wing has not reached the proper take off speed to create the necessary lift. Keep running, keep running and keep running until you are running through the air.

**WARNING!!** Do not attempt to get into the seat while holding the brake handles.

**WARNING!!** Do not use the forward launch technique in very strong winds. Make sure you don't pull the risers too much towards yourself or downwards as this can cause a frontal collapse or make an asymmetric collapse during take-off.

## Reverse launch Technique

The Eden 5 is easy to reverse launch.

The most important skill to perform the reverse launch successfully is to fully understand ground handling. You need to be able to keep the wing directly overhead and into wind while taking off on flat ground. When doing a reverse launch in strong winds the Eden 5 can surge forward quickly or lift off sooner than desired. To avoid this, walk towards the canopy during inflation. We recommend pulling the trimmers down to the neutral position.

To reverse launch the Eden 5 in wind, get the canopy over your head by using the A and C riser method. Holding onto the C lines stop it from over shooting and guiding the A lines in the opposite hand help it come up. This stops you from applying both brakes and pushing your hands back towards the propeller.

## FLYING THE EDEN 5

Hold the A lines in the left hand along with the left brake handle and the throttle (if you have it on the left side), and the C lines in the right hand along with the right brake handle (and the throttle if you have it on the right side). Once the canopy is above your head you release the A and C risers then turn 180 degrees into wind while keeping the glider under control. Once you feel equal pressure and a stable canopy above you then you can accelerate. Once you are safely airborne, continue heading into the wind to gain enough height.

Do not try to climb too steeply by applying too much brake. The additional drag caused by brakes decreases actual climbing rate. If there are no obstacles present, it is safer to fly level for a while after take-off and gain some speed before converting it to height. As already mentioned, don't try to get into the seat immediately after you leave the ground as you are still relatively low. Instead, continue into the wind, climb to a safe height, and then gently throttle back before getting into your harness/seat.

It is better to start to learn this A and C reverse technique without the paramotor. Once you practise a bit you can start trying it with the paramotor. Using this technique allows you to build a wall directly into wind while standing in the centre of the canopy.

When deflating the canopy on the ground in strong winds or aborting a launch, pull down on the C risers instead of the brakes. Using the brakes in strong wind will cause more lift. This could lift the pilot up off the ground and dangerously drag him/her back.

**Golden rule!** For any aircraft the most important thing on take-off is proper amount of speed. High angles of attack and low speeds are more likely to cause a stall.

**ATTENTION!** You should always be able to land safely in case of engine failure.

Too much brake input during take-off is risky. Depending on the design and power of your paramotor unit, it is possible that you will notice engine torque moments while not sitting properly in your harness. Be ready to counter-steer with a brake input to correct turning tendencies and keep you flying straight. Different settings of trims on each riser and shifting your weight to the opposite side of the turn tendency will help to keep the glider in a straight direction after take-off.

The reverse launch technique can take some time to master. Turning the wrong way can result in the pilot taking off with twisted risers. Practice the reverse launching technique on a training hill or slight slope first with your instructor to build up your confidence. Again, make sure your engine is off until you have practised enough to prevent the lines from getting sucked into the spinning propeller. If this does happen contact your nearest Mac Para dealer for replacement lines or glider repair.



Wind	Trim settings	Launching technique & additional settings
under 1 (m/s)	Released for 1-2 cm.	<b>Forward launch</b> - start with lines under tension - try to minimize use of the brakes. - correct position of the wing by moving toward in appropriate direction rather than by using brakes - use of full thrust when canopy at 80°
1 - 3 (m/s)	Neutral	<b>Forward launch</b> - start with lines under tension - you can use brakes to correct the position of the wing during the run, but moving in the appropriate direction during the run is most effective technique. - use of full thrust when canopy at 80°
over 3 (m/s)	Neutral or closed for 1-2 cm	<b>Reverse Launch</b>

## Flight

After take-off and applying full power the glider will be at a higher angle of attack. Some paramotoring configurations may have a tendency to roll under full power. The torque and gyro moments produced from different engines can lift you to one side developing a back and forth swinging motion. This happens more often on larger engines with bigger propellers flying with lower wing loadings. The safest way to deal with this is to throttle back and release the brakes. Do not let go of the brakes. Novice paramotoring pilots tend to be especially prone to overreacting.

The Eden 5 can reach speeds of 39-45 km/h on neutral setting depending on the weight of the pilot.

Always fly with sufficient clearance from the terrain.

With power off the Eden 5 best glide rate is with open brakes. Flying the Eden 5 with minimal altitude loss can be reached by lightly applying brakes and having the trimmers closed (pulled all the way in).

We recommend that your first flights with your Eden 5 be done with trimmers set on the neutral setting (trimmers pulled all the way down) This is where the Eden 5 is a conventional paraglider wing. With this trimmer setting, try to fly with a small amount of brake at the point where they just begin to feel heavier.

## FLYING THE EDEN 5

In turbulent air fly with brakes lightly applied (10-15 cm) to maintain some internal pressure and trimmers set to neutral. This will help avoid canopy collapse. If the canopy pendulums forward correct this by promptly applying the brakes. A pendulum movement of the canopy backwards is corrected by easing up on the brakes to let the canopy move forward.

When you have become fully confident in your wing try experimenting with slower and faster trim-settings, weight-shift and speed bar. The more time you spend on your Eden 5 the more likely you will enjoy the extra speed and security it will offer you.

### Different trimmer settings

**NOTE: Adjusting trimmers in flight requires more pilot attention.**

With the trimmers fully open (trimmer buckle over the neutral) the wing's speed increases (good for flying long distances). The canopy becomes stiffer higher internal pressure. On faster trimmer settings or when flying with a speed bar the brake pressure increases and the handling changes. When the trimmers are fully opened and the speed bar is pushed all the way forward, do not pull the brakes. Some pilots with free-flying experience may have a tendency to keep the brakes slightly applied at all times. Such a technique, while quite reasonable on a free-flying wing, is not advisable for paramotoring. When you apply the brakes with released trimmers and full speed bar the wing may collapse because it loses its stability.

**Warning!!! On faster trim settings with fully accelerated speed bar do not touch the brakes! Doing so will result in major collapse!**

**WARNING! The Eden 5 was not getetstet at fast trimmer settings and at full acceleration. Therefore angle changes may only be done only by the trimmers or only by the accelerator when trimmers are all the way pulled down.**

On the slower settings (trimmer buckle pulled down), sink rate improves and handling becomes lighter, giving you an improved climb rate for thermaling and shorter and slower take-offs and landings. Do not hesitate to use thermals in order to gain some altitude and save fuel.

**Note!! If trims are not adjusted the same, the wing will turn. Trimmer setting is an important part of the checklist before every flight!**

### Accelerated flight (speed bar applied)

When flying with the speed system applied the angle of attack is lower and the canopy can collapse more easily than in normal (trim) flight. The faster the canopy is flown the more dynamic the collapses and stalls will be and the more skill will be required for quick recoveries. Therefore do not use speed system in turbulent conditions, close to the ground or near other airspace users. Always fly with sufficient clearance from the terrain and always keep the brake handles in your hands!

To use the speed system, simply place your feet on the stirrup and push forward in a horizontal plane. If a loss of back pressure of the stirrup on your legs is noticed, this is a warning that the canopy is probably about to collapse. Release the stirrup and thus the speed system immediately. With this feeling you may actually prevent most collapses from happening while using the speed system. If a collapse should still occur, release the speed system immediately and correct the collapse as described below.

**Warning!! As already noted, do not apply brakes when fully accelerated with trimmers fully opened! Braking increases lift near the trailing edge. The main lift point moves backwards causing a loss in stability leading to big frontal or side collapse. Quickly letting off the throttle after being fully accelerated (maximum speed bar and trimmers open) will cause the “pendulum effect”. The glider can then surge forward which automatically decrease the angle of attack. This can easily lead to collapse in turbulent air. See drawings on pages that follow.**

### Steering - turns:

The Eden 5 is a very responsive paraglider and reacts very directly and instantly to any steering input. Weight shift input quickens turns and ensures minimal height loss. Any weight shift has a greater effect the more loosely the chest-strap is fastened. A combined technique of weight shift and pulling on the inside brake line is the most efficient turning method, whereby the radius of the turn is determined by the amount of inside brake pulled and weight shift. A stalling wing tip announces itself by a gentle surge backwards of the wingtip. If this occurs you will need to release the brakes immediately.

In case it is impossible to control the Eden 5 with the brake lines the C-risers may be used to steer and land the canopy. Attention! Pulling brake too fast or too hard can result in the canopy entering a negative spin.

### Active Flying (Thermaling and Soaring):

In turbulent conditions the glider should be flown actively with brakes lightly applied to avoid canopy collapse. This improves stability by increasing the angle of attack of the canopy. The canopy should not rock back or surge forward much but should remain above the pilot. In turbulent flight, if the canopy pendulums forward, this should be corrected by prompt braking. A pendulum movement of the canopy backwards is corrected by releasing the brakes in good time. This is part of basic active flying.

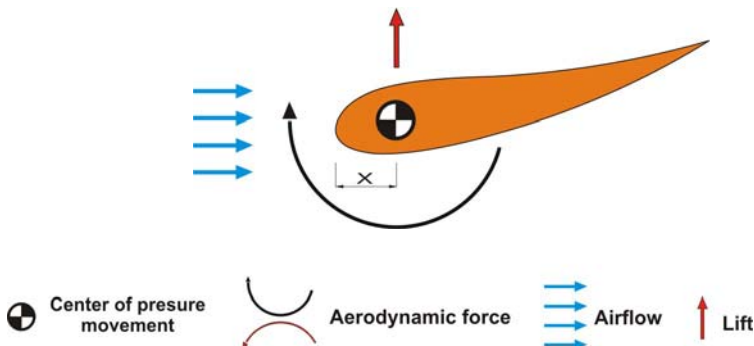
**Attention!** Pulling brake too fast or too hard can result in the canopy entering a negative spin.

## FLYING THE EDEN 5

Study the following drawings of different trimmer settings and speed-system to see their influence on the wing stability.

### Released trimmers without brakes

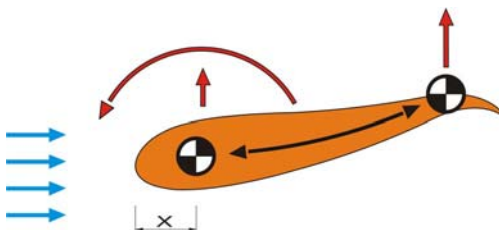
Preferred setting for fast and safe flying. The centre of gravity of the air foil is moved forward, the wing has higher resistance to collapses. Pitching moment decreases.



### Released trimmers with brakes applied

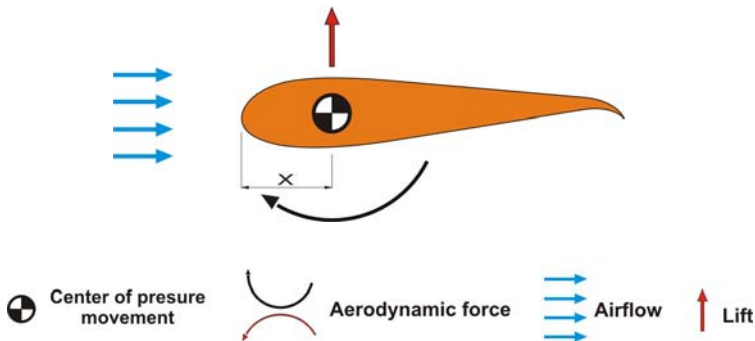
This ensures more lift in the centre of the wing and also increases the pitching moments. Even slight brake input (especially on full speed bar) produce lift close to the trailing edge. The centre of gravity of the air foil is moved back and the higher pitching moment significantly decreases the stability.

**Warning!! Especially in turbulence this can lead to a collapse on full speed with trimmers released! Therefore we recommend pilots only steer by pulling on the torque compensator line and not touching the brakes.**



## Closed trimmers

Using the trimmers in the closed position with applied brakes gives you the slowest speed and most sensitive feeling of the Eden 5. The canopy behaviour is a classic paraglider.



## Approach and Landing:

It is important to start to prepare for landing at an adequate altitude to avoid surprises. This leaves you enough time to observe and appropriately deal with wind direction and any other aircraft in your vicinity. The final leg of the landing approach must be into the wind. There are two methods in landing a paramotor. One without power (this minimises the risk of propeller damage in the event of a fall) and the second with power.

### Power off landing

When deciding to land your paraglider check the wind direction and your height. The next step is to power off your engine at about 30m. Glide toward your landing like a paraglider with trimmers set in the neutral setting with your brakes released. During your final glide just before touch down, you need to decelerate the glider by pulling your brakes converting your excess speed into lift before your feet touch the ground. Proper timing and how fast to pull your brakes depends on conditions. A general rule is to pull down on your brakes when your feet are approximately 0.5m over the ground. If too much brake is pulled too early, the glider may climb gaining height resulting in a sudden drop to the ground. Strong wind landings require correspondingly less brake. Your instructor will assist you to understand how to properly time your brake pull (also called a flare). Every pilot should practice landings without power because one day your engine will fail (run out of gas etc.) and this skill could be useful.

### Power on landing

Fly towards your desired landing area at a shallow angle. Start to flare the wing before touch down to loose speed then switch off your engine immediately after touchdown. In no wind conditions, be prepared to run a few steps after touchdown and pull the brakes few times dynamically (like a fluttering bird). This stops the canopy over your head and gives you time to turn and put the glider gently on the ground. Do not apply full brakes before you are safely on the ground. Do not turn unless the propeller stops turning.

The advantage of the power on landing is that if you get it wrong you can power up to launch and try again. The disadvantages are the increased risk of expensive propeller/cage damages if you approach too fast or forget to flare in time. Another danger is falling over with the engine running and getting your lines caught in the propeller. Make sure you switch off the engine before the wing deflates on top of you.

**Attention!** The final glide on approach during the landing should be straight and not done with any steep or alternating turns. This can result in dangerous pendulum movements too close to the ground.

**Attention!** Do not allow the canopy to come crashing down onto the leading edge. This can destroy the internal structure of your glider and affects the life of the ribs at the leading edge.

#### Special Notes:

- If possible, get familiar with the landing field before the approach.
- Check the wind direction before landing.
- Landing with power off requires much less space.
- Practice makes the master. Practice until you feel totally safe.

**WARNING!! The Eden 5 is not suitable for jumps from aircraft.**

**WARNING!! The Eden 5 is not designed to be used for aerobatics.**

This section describes flying conditions which can be deliberately induced, or which can develop unintentionally due to turbulence or pilot error. Any pilot who flies through turbulence is sure to be faced with these special flight conditions at some point. So take a good look at these flight manoeuvres or prepare for them by SIV (safety training over water). Mastering these flying conditions significantly improves your active flight safety. Sufficient height, as well as carrying a reserve parachute, is imperative.

**WARNING!!** All the critical flight conditions described here require a thorough knowledge; otherwise carrying them out may be very dangerous. Sufficient height above the ground is imperative. Bear in mind that all deformations of the canopy can increase the sink rate by 2 - 10 m/sec, depending on the degree of deformation. Carrying out these manoeuvres wrongly may lead to a crash.

Remember this is a glider with unspectacular reactions to disturbances in the air. Whenever in doubt, raise the brakes and let the glider fly. The glider has a high internal pressure, resistance to tucking and very high degree of passive safety. It is recommended that at this stage you already practise an active flying style. The key to active piloting is keeping the glider above your head at all times. We recommend in principle that you hold the brake handle in your hand whenever possible, or fly with your hands through the brake handles, to allow you to react immediately to any possible disturbances.

**Warning!!! In according to its construction some manoeuvres could not be tested. It is asymmetric and frontal collapses in the combination of accelerator and open trimmers.**

### Asymmetric collapse:

A negative angle of attack can cause all or part of the leading-edge of the Eden 5 to collapse (e.g. in turbulent air). Basically the Eden 5 will re-open spontaneously from closures of up to 70% with a change of direction of up to 360°. The time this takes, and the associated height loss, can however be noticeably reduced by appropriate action by the pilot. Apply opposite brake on the inflated side, the outside of the curve, to stop the turning movement of the canopy. This should be accompanied by appropriate weight-shift. If you react immediately, 30% brake on the open side should suffice to hold the canopy on a straight course. In the event of a big collapse, this braking should be applied very carefully to avoid stalling the remaining inflated wing. The pilot's correction for direction can be aided by a pumping out the deflation; a slow, long pumping action of the brake of the deflated side of the wing helps the canopy to re-inflate. If the glider does not self recover and the pilot does not correct the canopy can enter a stable spiral dive!

### “Cravat” / Line-over:

In the event of some lines becoming tangled during flight (caused by whatever), the following action is recommended: The pilot stabilizes the glider by gently applying the brakes. Please be aware that in this condition the brake pressure can be higher and the brake travel shorter.

# EXTREME FLYING MANOEUVRES

Without pilot input a line-over will result in a stable spiral dive.

Here are the various options to untangle a line-over:

- pumping the collapsed side.
- pulling the stabilizer line or lines causing the problem.
- should both measures fail, it may be possible to untangle the line-over by inducing a full stall. This manoeuvre, however, should only be carried out by advanced pilots with experience in extreme flight situations and with sufficient altitude available.

Attention! If these manoeuvres fail or if in any doubt, the pilot should instantly use their emergency parachute system!

## Front Tuck:

A front tuck can be induced by strongly pulling the A-risers or by sudden, heavy turbulence. The entire leading edge spontaneously collapses. Gentle braking on both sides will reduce the lateral pendulum motions and simultaneously accelerate re-inflation.

The Eden 5 generally self recovers from an initiated front tuck. When having a very large front tuck, a frontal rosette can happen (the wingtips move forwards: shaping a horseshoe). Gentle braking can avoid this deformation.

A quick recognition of the situation and a quick reaction by braking on both sides as long as the collapsed wing is behind the pilot helps the recovery and limits the altitude loss.

## Parachutal stall (deep stall):

In a parachutal stall the paraglider has no forward momentum combined with a high descent rate. A parachutal stall can be caused by, among other reasons, a too slow exit from a B-line stall or severe turbulence. Porous canopies (UV influence) or canopies out of trim (stretched or shrunken lines) are much more susceptible to a parachutal stall and therefore should not be flown. These are some of the reasons regular checks should be carried out on your glider. A wet canopy or temperatures below zero centigrade (0°C) may also cause a stable parachutal stall. The Eden 5 will usually spontaneously recover from a parachutal stall within 2-3 seconds. If the canopy remains in a parachutal stall, it is sufficient to gently push both A risers forward or to push the accelerator.

Attention! If brakes are applied while in a parachutal stall, the glider may suddenly enter a full stall!

If a parachutal stall occurs on landing approach, the pilot should prepare for a hard landing and make a parachute roll landing. In close proximity to the ground, due to the forward surging pendulum effect, a recovery may be more dangerous than a hard landing in parachutal stall.



## Full-stall:

To induce a full stall, apply full brake on both sides. The glider slows down steadily until it stalls completely. The canopy suddenly surges backwards a long way. In spite of this uncomfortable reaction of the canopy, both brake lines must be consequently held down with all your strength until the canopy is stabilized (directly overhead). This usually takes 3-6 seconds. The Eden 5 generally flies backwards during a full stall but doesn't always form a front rosette. A frontal rosette can be formed by entering the full stall slowly. When entering (braking) fast, the canopy will not always form the desired front rosette. Attention! Always apply both brakes evenly!

To recover from a full stall, Smoothly release both brakes simultaneously until 90% of leading edge reopens, then release brakes rapidly. The glider ends the full stall on its own without surging forward.

**WARNING!!** If the brakes are released rapidly and asymmetrically, the glider may surge almost 90° and suffer an extensive asymmetric collapse.

The danger of overcorrecting and overreacting exists during all extreme flight manoeuvres. Thus, any corrective action must be gentle and steady and done with feel!

## Spin (or negative spin):

Pulling brake on one side too fast or too hard can result in a negative spin. During a spin the canopy turns relatively fast around the centre section of the canopy while the inner wing flies backwards (hence the term negative).

There are two usual reasons for an unintentional spin:

- One brake line is being pulled down too far and too fast (e.g. when inducing a spiral dive)
- When flying at low speed one side is being braked too hard (e.g. when thermaling).

To recover from an unintentional spin, the pulled down brake line should be immediately released as soon as a spin is suspected. The canopy will accelerate and return to its normal straight and stable flying position, without losing too much height. If the spin is allowed to develop for some time, the glider surges a long way forward on one side and a dynamic asymmetric collapse or a line-over can occur. Gently apply the brakes to avoid side or central collapse of the canopy and the possibility of a cravat (one of the tips becoming entangled in the lines). See part collapses.

**WARNING!!** If you are LOW and are in an unintentional spin, or if the canopy is caught in a cravat USE YOUR RESERVE.

## Wingover:

To induce a wingover the pilot flies consecutive alternating turns to gradually steepen the angle of bank. During wingovers with a high bank angle, the outside wing begins to unload. Further increase of the angle of bank must be avoided, because any possible resulting collapse may be quite dynamic!

## EXTREME FLYING MANOEUVRES

**WARNING!** Full-stall, spin and wingover (over 90 degree angle of bank) are prohibited aerobatic manoeuvres and may not be performed during normal flying. Incorrect recovery procedures or overreacting of the pilot may have dangerous consequences! Attention! The Eden 5 is not designed to be used for aerobatics.

### Alternative (emergency) steering:

If for some reason it becomes impossible to control the Eden 5 with the brake lines the C-risers may be used to steer and land the canopy. Attention! Of course the range is much shorter (5-10 cm) then with the brakes. It is also possible to control the direction of the flight by pulling on a stabilizer line or by weight-shifting.

## RAPID DESCENTS

### Spiral dive:

A spiral dive is the fastest way to lose altitude, however, the very high G-forces make it difficult to sustain a spiral dive for long and it can place high loads on the pilot and glider. By tensing ones abdominal muscles and a higher body tension you can to some extent resist the high G-forces. Don't forget proper breathing! As soon as any, even slight, light dizziness or impaired vision is noticed the spiral should be exited immediately.

The Eden 5 has a very effective spiral dive. This allows rapid descent without stalling. To enter a spiral dive the pilot should weight-shift on one side while slowly pulling the brake gradually on the same side as weight-shifting. During a spiral dive the angle of bank can be controlled by increasing or reducing the amount of inside brake. When spiral diving the Eden 5 it is recommended that the outside brake is lightly applied. This helps stabilize the wing and enables an easier and safer exit from the spiral. To exit, release the inside brake slowly. The Eden 5 did not show a tendency to remain in a stable spiral by sink rates up to 10 m/s during testing. At high sink speeds or if the pilot keeps his weight on the inside, the wing can stay in a continued deep spiral and has to be actively exited. This is done by weight shifting to the outside and gentler braking of the outside wing.

**WARNING!!** Nearly all gliders will have a tendency to stay in the spiral if the sink-rate exceeds around 15-m/s, depending on weight-shifting, wing loading and G-force. In fact most gliders need a counter-input to end a turn.

Attention! Due to energy retention, the glider will climb a lot after a deep spiral-dive release. If you apply inner brake and decelerate the glider for two or three turns, big pendulum effects can be avoided.

**WARNING!!** Practise spiralling with caution and lower sink-rates to get a feel for the gliders behaviour. A pilot who is dehydrated or not accustomed to spiralling can lose consciousness in a steep spiral dive!

## Big ears:

When in big-ears, the horizontal speed is higher than the sink rate, unlike a spiral dive or a B-line stall. This rapid descent technique is used to quickly and horizontally exit a dangerous area in the desired direction. In order to collapse the outside wing, pull the outside A-lines.

When the pilot holds the outside A1-risers on both sides and pulls them down, the Eden 5 easily tucks the outside wings and enters a stable descent mode. The pilot keeps hold of the brake handles along with the outside A1-risers in his hands. By braking on one side and weight-shifting, the canopy remains steerable. In order to increase the sink rate as well as the horizontal speed, this manoeuvre should be done together with use of the speed system. Apply the speed system after big ears are induced (step into the speed-bar before you grab the outer A1-risers). Big-ears substantially reduces the risk of canopy stability problems in turbulent air. To exit Big-ears release the A1-risers. The canopy does very slowly self-recover. To quicken the recovery, the pilot can dynamically pull down and immediately release the brakes of the glider.

**WARNING!** Never do big-ears in spirals, as this may drastically reduce the number of lines taking the already high loads, causing structural failure.

**Attention!** All rapid descent techniques should first be practised in calm air and with sufficient height so the pilot can use them in emergency situations! By far the best technique is to fly correctly and safely, so you never have to descend rapidly!

## B-line stalls:

To induce a B-line stall symmetrically pull down slowly on both B-risers, until the canopy folds (parallel to its long axis). The airflow over the top surface is almost fully detached and the canopy enters a vertical descent flight mode without forward movement. Further pulling of the B-risers reduces the surface area more and increases the sink rate. (Up to 8 m/s) Be careful, pulling too far or too rapidly may cause a frontal horseshoe to form. To exit from this flight mode release the B-risers at first rapidly but then gently (1 sec). The canopy surges forward re-attaching the airflow over the top surface and resumes normal flight. When the B-risers are released, the brakes should not be activated. This will give the canopy the chance to gain speed and resume normal flight. On exit from a B-line stall on no account just release the B-risers, as this can cause overloading. If canopy does not recover apply both brakes gently to recover or pull the A-risers, until the canopy regains forward speed.

## Summary:

For all extreme manoeuvres and rapid descents please note:

- first practise manoeuvres with an instructor during safety training!
- before inducing any manoeuvre the pilot must check that there are no other airspace users below him!
- during the manoeuvre the pilot must have the canopy within his view!

## GOLDEN RULES

- Always carry out full pre-flight checks before launching.
- Never place your paramotor downwind of the glider.
- Check that there is no fuel leakage. Do you have enough fuel for the flight? It is always better to have too much than too little in case of an emergency landing.
- Check for any loose articles that could trail or fall into the propeller while flying and fasten them securely.
- If you spot a problem, no matter how small, land and fix it at once.
- Always put on and secure your helmet before getting into the harness.
- Do not fly over water, between trees or power lines and other places where engine failure will leave you helpless and in danger.
  
- After landing, control the wing facing the direction of flight to keep the lines out of the propeller. Turn to face your glider to avoid falling backwards in high winds once the engine is turned off.
- Keep in your mind the turbulence caused by other powered gliders, heavy trikes or other aeroplanes.
  
- Keep in mind the turbulence caused by your own paramotor, especially when flying sharp turns, spiralling or flying low.
- It is unwise to fly hands-off the brakes below 100m because of possible engine malfunction requiring immediate attention.
- Unless it is absolutely necessary (e.g. collision avoidance), do not make tight turns against the torque moments. During steep climbs you easily can enter a stall under power and increase your chances to induce a negative spin.
- Never trust your engine! It can stop at any moment. Always fly being prepared for this especially at low altitudes by looking for safe landing areas.
- Avoid low flying downwind. It drastically reduces your options for safe landings.
- Listen for change in engine performance or noise. A new engine tone or a new vibration may indicate trouble. Do not wait for the problem to grow. Land and check it out.
- Be certain of your navigation

Not everyone is a friend of your paramotor noise. Keep within the rules and the laws. Care must be taken when flying near livestock and animals.

Looking after your canopy correctly will prolong the life of your paraglider.

### Deterioration: a few tips!

- The canopy is mainly made of NYLON, cloth which, like any synthetic material, deteriorates through excessive exposure to UV. Hence, it is recommended that you reduce UV exposure to a minimum by keeping the paraglider packed away when not in use. Even when packed in the bag do not leave it in the sun.
- Keep the canopy and lines clean as dirt may penetrate into the fibre and damage the lines or the cloth.
- Ensure that the lines are not folded tightly. It's extremely important to avoid any sharp bending of the lines, especially the main lines. Pay careful attention to the lines to avoid damaging them. Any over stretching of lines apart from the strain imposed during normal flight, should be avoided as over stretching is irreversible.
- Be careful, not to allow snow, sand or stones to enter inside the canopy's cells: the weight can change the angle of attack, or even stall the glider; additionally the sharp edges can destroy the cloth!
- Check line lengths after tree or water landings. They can stretch or shrink lines.
- Never drag the wing over rough ground! This will damage the cloth on the wear points. When preparing the wing on a takeoff with rough ground, don't pull the wing over it (i.e. by pulling the brakes). Please try to pack the wing on soft ground.
- Uncontrolled strong wind takeoffs or landings can result in the leading edge of the canopy hitting the ground at high speed which may cause rips in the profile and damage the rib material.
- We advise you to fold the glider "accordion wise", rib to rib. This packing procedure takes slightly longer and is easier to do with an assistant, but it guarantees the rigidity of the plastic profile reinforcements. This is very important for the performance of your glider!
- Prevent lines from catching on anything as they may be over stretched. Do not step onto the lines. Although the lines were tested with a bending test they can be damaged if stepped on whilst on a hard surface, or if they come into contact with sharp objects.
- Do not always fold the canopy symmetrically to the centre cell as this can cause constant stress on the centre cell (centre cell always to the outside).
- Clean the paraglider with fresh water after contact with salt water. Salt water crystal can reduce line strength, even after rinsing in fresh water. Replace lines immediately after contact with salt water. Also check canopy material after water landings, as waves can place uneven forces and cause cloth to distort in specific areas. Always remove gliders from the water by holding only the trailing edge. Clean the paraglider with water and a soft sponge. Do not use any chemicals or spirits for cleaning, as these can permanently damage the cloth

# LOOKING AFTER YOUR PARAGLIDER

## Storage:

Store the paraglider in a dry space at ambient temperature away from chemicals and UV light.

- Never pack or store the glider wet. This shortens the life of the cloth Always dry glider thoroughly before any packing or storage.
- During transport it has to be considered, that some materials of the paraglider are temperature sensitive. Avoid subjecting your wing to high temperatures (e.g. the luggage space of a parked car in the sun)!

When sending your wing as a parcel, take extra care with packing.

## Repairs and checks:

- Tears in the canopy must be professionally sewn. Adhesive patches are only adequate for very minor damage.
- Repairs should only be carried out by the manufacturer, distributor or authorized workshops. Only original spare parts may be used!
- The lines must be checked after every 50 hours flying time and whenever the flight behaviour changes
- Any changes to the canopy lines or risers, except those approved by the manufacturer, will void the certificate of airworthiness.
- The Eden 5 must be checked as a minimum, after two years or after 100 flying hours by the manufacturer or authorized workshops.

## Disposal:

- The synthetic materials used in a paraglider need professional disposal. Please send disused canopies back to us: we will dismantle and dispose of it.

## In Conclusion:

The Eden 5 is a modern paraglider. You will enjoy many safe years of flying with your Eden 5 if you look after it correctly and adopt a mature and responsible approach to the demands and dangers flying can pose. It must be clearly understood that all air sports are potentially dangerous and that your safety is ultimately dependent upon you. We strongly urge you to fly safely. This includes your choice of flying conditions as well as safety margins during flying manoeuvres. We recommend once more that you only fly with a certified harness, reserve parachute, and helmet. Also the certification placard must be present on the glider. Every pilot should be suitably qualified, have a valid license and 3rd party insurance. The Eden 5 is delivered with a stuff-sack, Velcro compression strap, MAC PARA backpack, repair kit and user manual.

**Full line lengths Eden 5**

All lengths are measured from riser`s main attachment point up to the tissue of canopy on attachment points. Brake lines are measured from the Swivel on brake handle up to the trailing edge.

**Eden 5 22 (XS)**

Center	A	B	C	D	Brakes
1	6924	6851	6943	7027	7430
2	6874	6800	6891	6974	7170
3	6845	6776	6863	6944	6978
4	6865	6792	6874	6956	6902
5	6814	6749	6821	6899	6761
6	6794	6731	6802	6872	6640
7	6754	6699	6757	6800	6543
8	6615	6571	6611	6642	6552
9	6554	6518	6530	6557	6485
10	6525	6493	6511	6521	6417
11	6237	6195			6382
12	6125				6340
13	6059	6054	6071	6120	6381

**Eden 5 24 (S)**

Center	A	B	C	D	Brakes
1	7302	7221	7315	7404	7899
2	7245	7163	7257	7350	7625
3	7217	7139	7229	7317	7391
4	7238	7161	7246	7329	7309
5	7185	7108	7183	7269	7153
6	7162	7088	7163	7242	7016
7	7126	7056	7114	7173	6924
8	6980	6923	6963	7007	6931
9	6914	6868	6876	6917	6833
10	6881	6842	6861	6881	6779
11	6582	6541			6748
12	6468				6706
13	6401	6400	6423	6473	6759

**Eden 5 26 (M)**

Center	A	B	C	D	Brakes
1	7576	7496	7590	7682	8160
2	7521	7438	7532	7623	7870
3	7493	7413	7501	7592	7634
4	7510	7428	7519	7605	7550
5	7454	7376	7455	7546	7388
6	7431	7358	7433	7513	7242
7	7392	7323	7382	7443	7148
8	7243	7185	7224	7267	7155
9	7174	7126	7136	7175	7043
10	7138	7096	7114	7140	6984
11	6839	6795			6934
12	6718				6888
13	6648	6645	6669	6725	6950

**Eden 5 28 (L)**

Center	A	B	C	D	Brakes
1	7902	7814	7914	8006	8492
2	7842	7753	7851	7947	8193
3	7813	7724	7821	7913	7978
4	7835	7744	7837	7925	7894
5	7774	7694	7775	7867	7720
6	7750	7675	7751	7834	7580
7	7709	7641	7697	7761	7474
8	7554	7493	7531	7577	7482
9	7481	7434	7443	7483	7397
10	7447	7401	7419	7443	7330
11	7095	7050			7288
12	6969				7244
13	6896	6895	6917	6968	7288

**Eden 5 30 (XL)**

Center	A	B	C	D	Brakes
1	8187	8097	8206	8300	8861
2	8126	8041	8143	8244	8620
3	8099	8011	8110	8208	8360
4	8120	8032	8125	8221	8271
5	8054	7972	8060	8155	8101
6	8029	7951	8038	8123	7939
7	7988	7913	7976	8047	7828
8	7825	7760	7807	7855	7840
9	7752	7700	7713	7758	7724
10	7714	7668	7687	7717	7652
11	7380	7330			7607
12	7250				7560
13	7173	7164	7189	7248	7601

**Eden 5 33 (XXL)**

Center	A	B	C	D	Brakes
1	8483	8392	8499	8603	9237
2	8420	8325	8433	8537	8909
3	8393	8295	8401	8501	8644
4	8409	8319	8416	8516	8554
5	8343	8255	8346	8445	8373
6	8317	8233	8322	8413	8200
7	8272	8194	8266	8335	8091
8	8103	8035	8085	8135	8101
9	8026	7971	7992	8034	7985
10	7993	7943	7968	7993	7905
11	7647	7600			7863
12	7508				7812
13	7428	7426	7455	7519	7862

# LINE PLANS

## Line descriptions:

The following printed line plans show the line configurations.

## Line strengths in colours

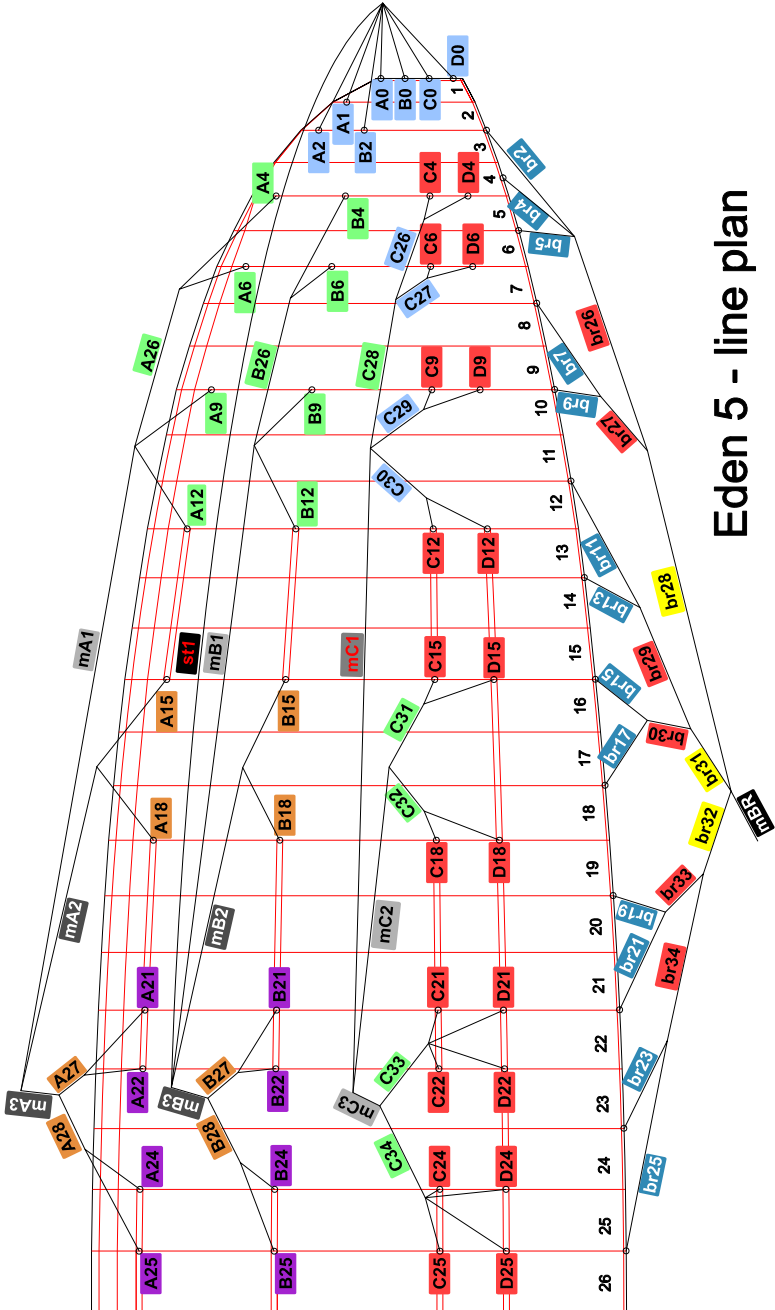


## Riser lengths Eden 5

	A	A1	B	C
Trim-Neutral	520	520	520	520
Trimmer - Open	520	520	520	570
Accelerated	380	380	410	520

The lengths are measured from the main attachment point to the lower edge of rapid links.





Eden 5 - line plan

# LINE LENGTHS

Line	Length of line [ cm ]						Material
	Eden 5 22	Eden 5 24	Eden 5 26	Eden 5 28	Eden 5 30	Eden 5 33	
mA1	425	450	470	490	510	530	Aramid/Polyester A-7343-230
mA2	425	450	470	490	510	530	Aramid/Polyester A-7343-280
mA3	425	450	470	490	510	530	Aramid/Polyester A-7343-280
A0	73,8	80,7	84,2	86,6	92,1	92,5	Aramid/Polyester A-6843-065
A1	80,3	87,5	91,3	94	99,8	100,5	Aramid/Polyester A-6843-065
A2	91,3	99,2	103,5	106,7	113	114,2	Aramid/Polyester A-6843-065
A4	90,5	96,2	98,9	103,7	107,4	111,2	Aramid/Polyester A-6843-080
A6	92,8	98,6	101,4	106,3	110,2	114	Aramid/Polyester A-6843-080
A9	184,9	196	202	212,2	220,3	228,4	Aramid/Polyester A-6843-080
A12	198,6	210,5	217	227,9	236,6	245,3	Aramid/Polyester A-6843-080
A15	202,9	214,5	221,2	232,3	241,2	250,1	Aramid/Polyester A-7343-140
A18	205	216,7	223,5	234,7	243,7	252,7	Aramid/Polyester A-7343-140
A21	83,1	85,4	89,4	94	98,4	100,7	Liros DC 100
A22	81,3	83,6	87,6	92,1	96,4	98,7	Liros DC 100
A24	83,8	86,1	90,2	94,8	99,2	101,6	Liros DC 100
A25	89,1	91,7	96	100,9	105,5	108,2	Liros DC 100
A26	87	92	95	100	104	108	Aramid/Polyester A-6843-080
A27	130	140	143	150	155	162	Aramid/Polyester A-7343-140
A28	130	140	143	150	155	162	Aramid/Polyester A-7343-140
st1	480	508	528	553	573	598	Aramid/Polyester A-7343-090
mB1	425	450	470	490	510	530	Aramid/Polyester A-7343-230
mB2	425	450	470	490	510	530	Aramid/Polyester A-7343-280
mB3	425	450	470	490	510	530	Aramid/Polyester A-7343-280
B0	73,2	80,7	84,2	86,6	92	92,5	Aramid/Polyester A-6843-065
B2	87,4	95	99,2	102,2	108,3	109,4	Aramid/Polyester A-6843-065
B4	88,1	92,6	95,1	99,8	103,4	107	Aramid/Polyester A-6843-080
B6	89,7	94,3	96,9	101,6	105,3	108,9	Aramid/Polyester A-6843-080
B9	180,7	190,5	196,3	206,2	214	221,9	Aramid/Polyester A-6843-080
B12	193,5	204	210,3	220,9	229,3	237,8	Aramid/Polyester A-6843-080
B15	196,8	207,5	214	224,7	233,3	241,9	Aramid/Polyester A-7343-140
B18	198,5	209,4	215,9	226,7	235,4	244	Aramid/Polyester A-7343-140
B21	76,4	77,7	81,5	85,7	89,7	91,8	Liros DC 100
B22	74,8	76,1	79,8	83,9	87,9	89,8	Liros DC 100
B24	77,1	78,6	82,4	86,6	90,7	92,7	Liros DC 100
B25	82,4	84,2	88,2	92,7	97	99,3	Liros DC 100
B26	87	92	95	100	104	108	Aramid/Polyester A-6843-080
B27	130	140	143	150	155	162	Aramid/Polyester A-7343-140
B28	130	140	143	150	155	162	Aramid/Polyester A-7343-140
mC1	425	450	470	490	510	530	Aramid/Polyester A-7343-190
mC2	425	450	470	490	510	530	Aramid/Polyester A-7343-230
mC3	425	450	470	490	510	530	Aramid/Polyester A-7343-230
C0	75,5	82,9	86,5	89	94,5	95	Aramid/Polyester A-6843-065
C4	44	46	48	50	52	54	Vectran 0,9
C6	44	46	48	50	52	54	Vectran 0,9
C9	52	55	58	60	62	65	Vectran 0,9
C12	61	65	67	70	73	76	Vectran 0,9
C15	61	65	67	70	73	76	Vectran 0,9
C18	61	65	67	70	73	76	Vectran 0,9

Line	Length of line [ cm ]						Material
	Eden 5 22	Eden 5 24	Eden 5 26	Eden 5 28	Eden 5 30	Eden 5 33	
C21	82,7	84,5	88,5	93	97,3	99,6	Vectran 0,9
C22	81,2	82,9	86,9	91,3	95,6	97,8	Vectran 0,9
C24	83,9	85,7	89,8	94,4	98,8	101,2	Vectran 0,9
C25	89,2	91,4	95,7	100,5	105,1	107,7	Vectran 0,9
C26	46,6	49,2	49,8	52,6	54,3	56	Aramid/Polyester A-6843-065
C27	48	50,7	51,3	54,2	56	57,8	Aramid/Polyester A-6843-065
C28	87	92	95	100	104	108	Aramid/Polyester A-6843-080
C29	133,7	140,7	143,7	151,9	158	163	Aramid/Polyester A-6843-065
C30	139,1	145,9	150,5	158,4	164,1	170	Aramid/Polyester A-6843-065
C31	144	151,2	156	164,1	170,1	176	Aramid/Polyester A-6843-080
C32	146,1	153,3	158,2	166,4	172,5	178,5	Aramid/Polyester A-6843-080
C33	130	140	143	150	155	162	Aramid/Polyester A-6843-080
C34	130	140	143	150	155	162	Aramid/Polyester A-6843-080
D0	79,2	87	90,8	93,5	99,2	99,9	Aramid/Polyester A-6843-065
D4	45,8	48	50	52,1	54,2	56,3	Vectran 0,9
D6	47,5	49,7	51,8	54	56,2	58,3	Vectran 0,9
D9	56	59,2	62,3	64,5	66,7	70	Vectran 0,9
D12	66,5	71	73,2	76,5	79,8	83	Vectran 0,9
D15	68	72,5	74,8	78,2	81,5	85	Vectran 0,9
D18	68,6	73,3	75,6	79	82,4	85,7	Vectran 0,9
D21	90,5	92,7	97,1	102	106,7	109,4	Vectran 0,9
D22	89,3	91,5	95,8	100,6	105,2	107,8	Vectran 0,9
D24	92,3	94,6	99	104	108,8	111,5	Vectran 0,9
D25	97,5	100,1	104,8	110	115	118	Vectran 0,9
mBR	320+30	335+30	350+30	365+30	380+30	395+30	Dynema/Polyester A-7850-240
br2	48	50	53	56	57	60	Vectran 0,6
br4	44	46	48,5	51,5	52,5	55	Vectran 0,6
br5	48	50	53	56	57	60	Vectran 0,6
br7	48	49	52	55	57,5	59	Vectran 0,6
br9	54,5	55,5	59	62	64,5	67	Vectran 0,6
br11	60,5	64,5	68	71	74	79	Vectran 0,6
br13	59,5	63,5	67	70	73	78	Vectran 0,6
br15	64	68,5	72	75,5	79	83	Vectran 0,6
br17	76	82,5	87	91	95	100	Vectran 0,6
br19	61,5	64,5	67,5	71,5	73	77	Vectran 0,6
br21	69	72,5	76	80	82	86	Vectran 0,6
br23	58,5	61	64	67,5	68	72	Vectran 0,6
br25	84,5	88,5	93,5	97,5	92	104	Vectran 0,6
br26	106,5	113	116	122	126	135	Vectran 0,9
br27	110	118	120	127	130	138	Vectran 0,9
br28	160	171	178	185	194	199	Vectran 1,2
br29	117	125	130	135	140	144	Vectran 0,9
br30	122	130	135	140	145	150	Vectran 0,9
br31	154	165	170	179	186	193	Vectran 1,2
br32	188	203	210	220	230	240	Vectran 1,2
br33	117	125	130	135	140	144	Vectran 0,9
br34	146	160	165	173	180	185	Vectran 0,9

Mentioned line lengths are marked on stretched lines that are pulled under 5 kg. The real length measured from one loop to other loop differs in according to type of the line, its diameter and type of processing method (sewing or splicing).

When replacing a line always compare the symmetry with opposite side.

## Check-intervals

All paragliders used in flight must be checked at least every 24 months. For paragliders used by paragliding schools the period is 12 months.

## Personnel authorised to carry out checks

A valid flying license and training course by National association are the basis for permission to carry out paraglider checks

## Identification of glider

An identity sticker with details of certification and serial number is attached to the glider.

## Components of the check

### Porosity

The porosity should be checked with a porosity meter (JDC). Compare the resultant data with the producer's manual.

Porosity measures should be taken on at least three points of both the top and bottom surface. The first point should be placed 20-30 cm from leading edge in the middle of canopy. Second and third points are placed left and right from first measure point at 25% of the span. One additional measurement should be made on the top surface of the wing tip.

The identified time should be higher than 30 second (JDC). In the event of the result being less than 30 seconds, the result of the check is a fail.

### Overall strength check

The check of canopy strength should be made with a Bettsometer (B.M.A.A approved Patent No. GB 2270768 Clive Betts Sales). On the top and bottom surfaces make small holes with a needle at the Aline attachment points. The exact verification should be made in accordance with the Bettsometer user manual.

### Line strength check

Line strengths should be as specified in accordance with the certification requirements. One main line should be taken from each array and have its strength checked with a tension-meter.

Required strengths should be higher than:

- A + B main lines x measured value > 8 x maximum take-off weight and higher then 800 kg for the A + B arrays.
- C + D mean lines x measured value > 6 x maximum take-off weight and higher then 600 kg for the A + B arrays.

Replacements for damaged lines must be with new original lines. Line lengths are taken from the lines data page.

## Line length measurement

Lines should be separated and each line measured under a tension of 5 kg. Measurement is made from the line karabiner to the canopy according to the method of certification. Rib numbering begins in the middle of canopy and leads to the wing tip.

Measured full lengths should be documented in the inspection record and are compared with certified full line lengths protocol. Lengths should not differ by more than 10 mm. The opposite sides should be checked for symmetry.

## Canopy line-attachment points check

Attachment points should be checked for damage and stretching. Defects, loops and flares should be repaired.

## Canopy fabric check

Ribs, diagonal ribs, top and bottom surface should be checked. Any damage to sewing or tears to the fabric, which could influence flying characteristics must be repaired.

## Lines

All lines should be checked for tears, breaks any damage to the sheath or signs of wear. Special attention should be paid to the sewing of the line loops. Damaged lines must be replaced.

The results should be documented in the inspection record.

## Connector check

All line carabineers, trimmers (if used), speed systems and pulleys should be inspected for visible damage. Open or improperly secured connectors should be secured in accordance with the producers recommendations.

## Risers

Both risers should be checked for tears, signs of wear or any damage and measured with a pull of 5 daN strength. Measured data should be documented in the inspection record. The difference must not be higher then 5 mm when compared to specified lengths.

## Final check

The glider sticker and check sticker must be inspected for readability and correctness. The check must be documented with date, signature and stamp on the canopy and in the user manual.

Finally the call to practise our sport with respect for nature and wildlife! Don't walk outside marked routes, don't leave any waste, don't make needless noise and respect the sensitive biological balance in the mountain eco system: especially in the take off area!

# CHECKS

Name	Company	Date	Signature & Stamp

# TEST FLIGHT CERTIFICATE

Paraglider type:

## EDEN 5 PPG –

Serial number:

—  
.....

Test flown on:

\_\_\_\_\_ by  
**MAC PARA TECHNOLOGY**

Confirmation by dealer: \_\_\_\_\_

### Technical data

High Performance Size		Eden <sup>5</sup> 22 (XS)	Eden <sup>5</sup> 24 (S)	Eden <sup>5</sup> 26 (M)	Eden <sup>5</sup> 28 (L)	Eden <sup>5</sup> 30 (XL)	Eden <sup>5</sup> 33 (XXL)
Zoom flat	[%]	87	92	95,7	100	104	108
Area flat	[m <sup>2</sup> ]	21,78	23,80	25,75	28,12	30,41	33,41
Area projected	[m <sup>2</sup> ]	19,45	21,25	23,00	25,11	27,16	29,83
Span flat	[m]	11,04	11,55	12,01	12,55	13,05	13,68
Span projected	[m]	9,28	9,71	10,10	10,55	10,97	11,5
Aspect ratio flat	-	5,6	5,6	5,6	5,6	5,6	5,6
Root cord	[m]	2,42	2,53	2,63	2,75	2,86	3,00
Cells	-	52	52	52	52	52	52
Weight	[kg]	4,7	4,95	5,2	5,6	6,0	6,4
Weight range-free flying*	[kg]	60-75	67-85	75-95	85-110	105-130	115-145
Weight range-free flying*	[lbs]	132-165	148-187	165-209	187-243	231-287	254-320
Min.speed	[km/h]	23-25	23-25	23-25	23-25	23-25	23-25
Max.speed	[km/h]	36-38	36-38	36-38	36-38	36-38	36-38
Top speed (accelerator)	[km/h]	48-50	48-50	48-50	48-50	48-50	48-50
Glide ratio	-	9,7	9,7	9,7	9,7	9,7	9,7
Min. Sink rate	[m/s]	1,05	1,05	1,05	1,05	1,05	1,05
Weight range - PPG**	[kg]	no	no	100-125	110-137	120-148	no
Weight range - PPG**	[lbs]	homologation	homologation	220-275	242-302	265-326	homologation

\* free flying pilot equipped = weight naked + cca. 20 Kg (44 lbs)

\*\* powered pilot equipped = weight naked + cca. 35 - 40 Kg (77-88 lbs)



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