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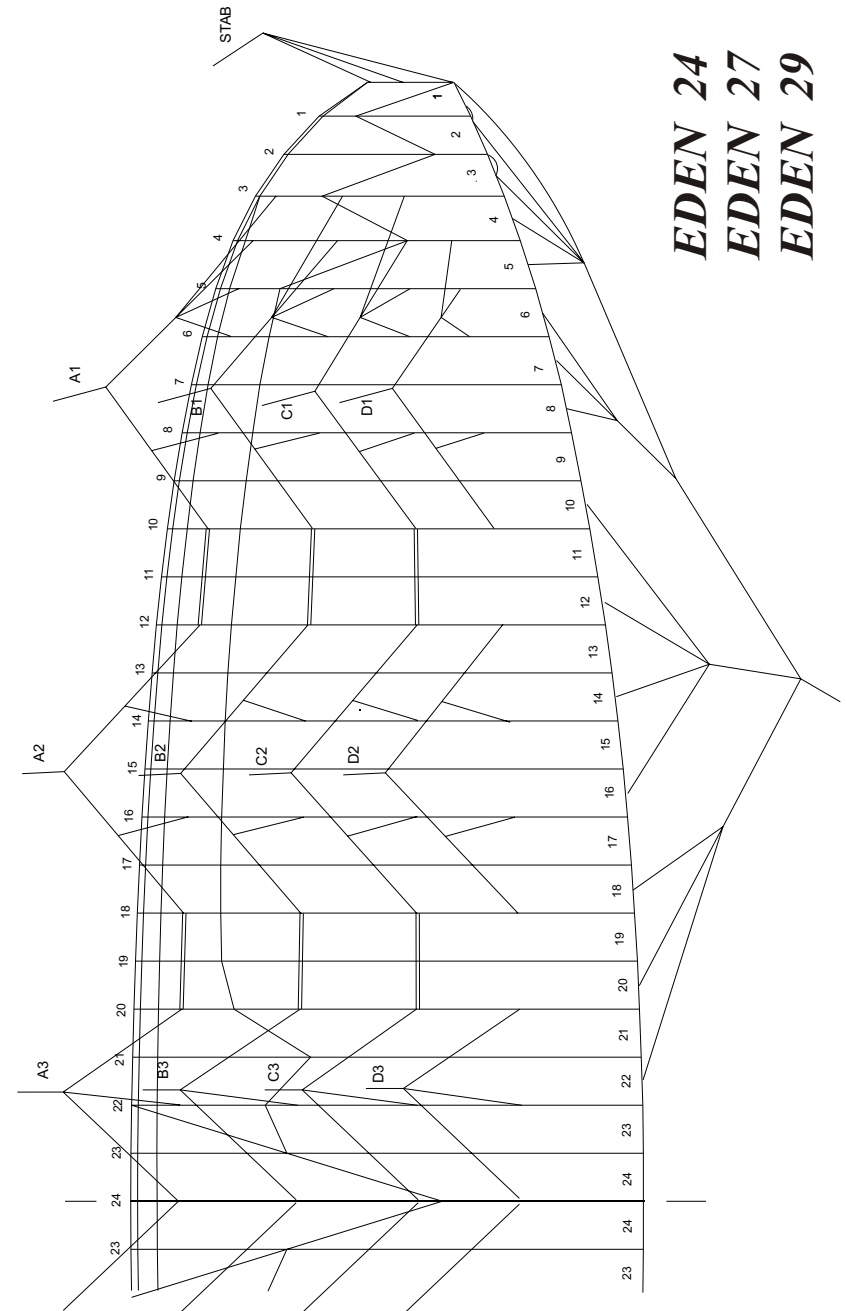
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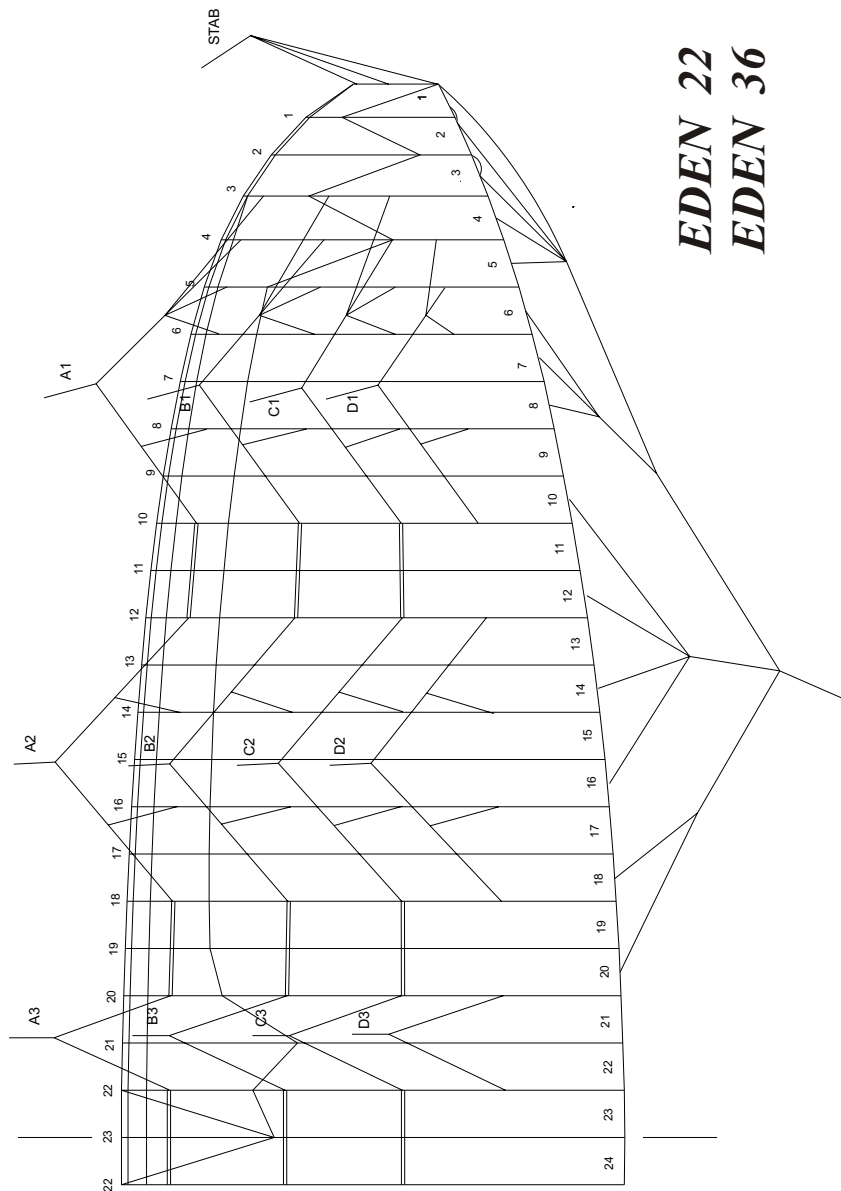
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EDEN 24
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EDEN 22 **EDEN 36**

A. General

Introduction

We congratulate you on your purchase of a MAC-paraglider. Please read this manual carefully. Extensive development work and numerous tests make the *EDEN* a high performance glider with maximum possible safety. May you experience many “Eden flights“.

As an option for still greater flight comfort we recommend one of our harnesses from the MAC-series with cross-bracing. You can of course fly the *EDEN* with other authorised harnesses with ABS system or cross-bracing.

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.

Avoid flying in strong turbulence, strong winds and especially in thunderstorms and Föhn conditions. These could lead to uncontrollable flight conditions and result in a crash. If you have the slightest doubt about weather, wind or terrain, don't take off.

Before delivery, as well as during production, each paraglider goes through a strict visual inspection, and is test-flown by your dealer. A stamp 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.

If, after carefully reading this handbook, you still have questions, telephone us or your dealer; we will be glad to help.

MAC Para Technology Ltd wish you many pleasant flights with your . *EDEN*

Operating limits

The *EDEN* has been developed for foot-launch, and for solo flights.

The *EDEN* has been tested by company pilots to AFNOR-performance category and has passed the requisite load- and flight-tests. These 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.

Trim

The glider is delivered with a standard set-up and its speed can reach 35 - 37 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 10 - 15 cm. The test results relate to this brake-line adjustment. In extreme situations other settings may lead to the glider reacting differently.

To be able at all times to react quickly enough to possible problems, you should not let go of the brake handles during the flight (it may be possible to hold both handles in one hand). Alter the line length to bring the handles to a suitable height when using your harness.

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.

Safety equipment

An optimal outfit should be a matter of course for every paraglider pilot. Always wear stout footwear, a helmet, and gloves. Clothing should be warm and allow sufficient freedom of movement.

A rescue-system can be life-saving in case of an irremediable disturbance of the canopy, collapse in the air or material failure, and is therefore imperative.

B. Flying operations

Checklist

1. Inspection of 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.
2. Inspection of the attachment tapes for damage to the stitches. It is also important to check the attachment tapes and brake-lines for tangles. The line lengths must be checked after 50 hours flying time and whenever the flight behaviour of the glider changes.
3. Inspection of the risers and maillons for faultless condition. Special inspection of the maillons for traces of corrosion under the lines.
4. Inspection of the knotting of the steering handle to the brake-lines. The brake-lines must run freely.
5. Inspection of the harness. The harness must show no signs of wear or other damage. You must also check the harness after a hard landing.

PLAN OF LINES

EDEN 22

	AV	BV	CV	DV	BRV	BRS
color mater.	pink dynema	yellow dynema	yellow dynema	yellow dynema	pink dynema	pink dynema
STAB	98	97	100		91	
					105	
					109	
3	96	92	94.5		108	
4	91	88	91.5	93	114	113
5	90	87	91	93	114	113 228
6	93 140	89.5 140	93 140	96 140	115.5	
8	95.5 140	91 140	96 140	101.5 140	121	
10	103.5	98	103	111		
					185	
12	107	101	106.5	115	184	
14	103.5 140	97 140	102.5 140	112 140	192	282
16	106 140	99 140	105.5 140	115 140	209	
18	114.5	107	113	123		
					216	282
20	250	242	248	259	228	
22	250.5	242.5	248.5	259.5		
MEANLINES	4,00 m				A3 + B3 2,15 mm Technora	
					A2 + B2 2,10 mm Technora	
					A1,B1,C1,C2,C3,D2,D3 1,70 mm Technora	
STABILO	4,70 m				D1	1,10 mm Technora
BRAKELINE	2,10 m + 30 cm					2,50 mm Dynema

PLAN OF LINES

EDEN 24

	AV	BV	CV	DV	BRV	BRS
color mater.	pink dynema	yellow dynema	yellow dynema	yellow dynema	pink dynema	pink dynema
STAB	98	97	100		91	
					105	
					109	
3	96	92	94.5		108	
4	91	88	91.5	93	114	113
5	90	87	91	93	114	113 228
6	93 140	89.5 140	93 140	96 140	115.5	
8	95.5 140	91 140	96 140	101.5 140	121	
10	103.5	98	103	111		
					185	
12	107	101	106.5	115	184	
14	103.5 140	97 140	102.5 140	112 140	192	282
16	106 140	99 140	105.5 140	115 140	209	
18	114.5	107	113	123		
					216	
20	250	242	248	259	228	282
22	250.5	242.5	248.5	259.5	245	
24	259.5	251.5	257.5	267.5		

		A3 + B3	2,15 mm	Technora
MEANLINES	4,15 m	A2 + B2	2,10 mm	Technora
		A1,B1,C1,C2,C3,D2,D3	1,70 mm	Technora
STABILO	4,85m	D1		1,10 mm	Technora
BRAKELINE	2,25 m + 30 cm			2,50 mm	Dynema

6. Check whether the rescue-system is correctly installed and secured.

7. Inspection of the karabiner. Inspection of the attachment and securing of the karabiner.

Take-off

Find a suitable take-off spot, from which you can abort the take-off at any point. After checking the glider, following the checklist, lay it out with the cell-openings upwards so that the canopy forms the shape of a horse-shoe. In a strong wind don't spread the canopy too far, so that there is less resistance when pulling up.

Forward launch

This is possible in almost all wind conditions except strong headwinds. It is essential to stand in line with the canopy, especially when the glider has longer lines. Before take-off, place yourself centrally at the gliders axis. Let the B – C and D-risers fall into the crook of your arm and pull the canopy dynamically up by the A-risers. The stronger the headwind the less run-up you need to pull the canopy up. As soon as the glider is above you, stop pulling on the A-risers. Now do a visual check upwards, to see if the canopy is completely open. Otherwise, abort the take-off. Now accelerate continuously until you lift off. In a weak headwind it is easier to take-off if after reaching minimum flying speed you pull the brakes slightly. After the take-off, gently release the brakes again.

WARNING

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

Rear launch

To be used in moderate to strong headwinds. Please note that in a strong headwind you may need a helper, as you could easily lose control of the canopy. If the headwind is too strong, take some of the pressure out of the canopy by taking in one or both of the brake-lines (or the C-risers).

Flight

Always fly with sufficient clearance from the terrain. The *EDEN* glides best with open brakes, descends best with lightly applied brakes. In turbulence fly with brakes lightly applied to avoid canopy collapse. If the canopy pendulums forward, this should be corrected by prompt braking. A pendulum movement of the canopy backwards is corrected by loosening the brakes in good time.

Steering

Turns can be initiated using the brakes in two different ways.

Positive turns

The pilot pulls the brake on the side to which he wishes to turn. To minimise sinking, the brake on the outside of the curve is lightly applied.

Negative turns

First both brakes are pulled, then the brake on the outside of the curve is released; the brake on the inside is held steady.

Turns can also be flown with the harness alone, by shifting the weight to the inside of the curve. This weight shift has a greater effect, the more loosely the cross-bracing is fastened.

An optimal steering technique is achieved by a combination of braking and weight shifts.

A further possibility for steering is best limited to emergencies (if the brake-lines break, for example). This entails gently pulling the front (watch out for collapse of the canopy) or back (beware asymmetrical stall) risers. We recommend that you do not use this form of steering in normal flight.

Approach and landing

To avoid stressful situations in the approach to landing, it is important to initiate the process at an adequate altitude. This leaves you enough time to observe and appropriately deal with wind direction and any other aircraft in your vicinity.

The final approach should generally be made into the wind and with fully released brakes, in order to maintain the canopy at its most steerable. If the air is turbulent, it is better to land lightly braked to minimise the possibility of the canopy collapsing. In order to land on your feet, rather than lying on your back, you will need to lean forward in the harness not lower than 5 m above the ground. At an adequate height (about 2 m above the ground), pull both brakes fully down until the glider is sufficiently slowed.

In a light head-wind pulling the brakes only lightly is enough to give a soft landing. In a calm, or even tailwind, you must pull the brakes as abruptly as possible. This dynamically increases the angle of attack and gives you the maximum braking effect.

PLAN OF LINES

EDEN 27

	AV	BV	CV	DV	BRV	BRS
color mater.	pink dynema	yellow dynema	yellow dynema	yellow dynema	pink dynema	pink dynema
STAB	104	103	106,5		97	
					112	
					116	
3	102	97,5	100,5		115	
4	97	93,5	97,5	99	121,5	120
5	96	92,5	97	99	121,5	120 243
6	99	150 95	150 99	150 102	150 123	
8	101,5	150 97	150 102	150 108	150 128,5	
10	110	104,5	109,5	118		
					197	
12	114	107,5	113,5	122,5	196	
14	110	150 103	150 109	150 119	150 204,5	300
16	113	150 105,5	150 112	150 122,5	150 222,5	
18	122	114	120	131		
					230	
20	267	258,5	265	276,5	242	300
22	267,5	259	265,5	277	260	
24	277	268,5	275	285,5		
MEANLINES	4,40 m				A3 + B3 2,15 mm Technora	
					A2 + B2 2,10 mm Technora	
STABILO	5,15 m				A1,B1,C1,C2,C3,D2,D3 1,70 mm Technora	
					D1 1,10 mm Technora	
BRAKELINE	2,40 m + 30 cm					2,50 mm Dynema

PLAN OF LINES

EDEN 29

	AV	BV	CV	DV	BRV	BRS
color mater.	pink dynema	yellow dynema	yellow dynema	yellow dynema	pink dynema	pink dynema
STAB	108	107	110,5		101	
					116	
					120	
3	106	101,5	104,5		119	
4	101	97	101,5	103	126	125
5	100	96	101	103	126	125 253
6	103	156 99	156 103	156 106	156 128	
8	105,5	156 101	156 106	156 112,5	156 133	
10	114,5	108,5	114	123		
					205	
12	118,5	112	118	127,5	204	
14	114,5	156 107	156 113,5	156 124	156 212,5	312
16	117,5	156 109,5	156 116,5	156 127,5	156 231,5	
18	127	118,5	125	136		
					239	
20	277,5	269	275,5	287,5	251	312
22	278	269,5	276	288	270	
24	288	279,5	286	297		
MEANLINES	4,60 m			A3 + B3 2,15 mm Technora		
				A2 + B2 2,10 mm Technora		
STABILO	5,38 m			A1,B1,C1,C2,C3,D2,D3 1,70 mm Technora		
				D1 1,10 mm Technora		
BRAKELINE	2,50 m + 30 cm				2,50 mm Dynema	

Flight with speed system

To make faster flight possible, the *EDEN* is equipped with a special speed system.

The *EDEN*'s speed system comprises:

- a) adjustable quadruple risers
- b) pulleys
- c) speed bar

To accelerate the paraglider we recommend the following steps:

- a) lightly brake the canopy
- b) extend the speed bar
- c) use brakes to control speed

Never activate the speed system in turbulence, at low altitude, or when approaching a landing (the lower angle of attack results in less stability despite the higher speed).

Towed flight

The *EDEN* is suitable for towed flight, as well as flight with a para-motor.

WARNING!! Please always ensure that the brake lines are adjusted to the lengths recommended here. Setting them shorter could lead to a tendency to stall during towed flight. Apart from this, there are no special procedures.

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

C. Extreme and critical flight manoeuvres

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 the carrying of a reserve parachute, is imperative.

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

Collapse of the canopy

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!! If you fly with your hands through the brake handles, you may lose valuable time for activating the rescue system.

Asymmetrical collapse

This form of collapse occurs most frequently, caused by turbulence.

Initiation:

Pull the outermost A-lines slowly down, until the edge of the canopy folds in. The canopy collapses furthest if you pull the A-risers violently down. This causes up to 70 % of the leading edge to close up, and results in the canopy going into a spiral towards the collapsed side. If the harness has no, or too loosely adjusted, cross-bracing, in a more extreme collapse you will fall in the direction of the folded-in side, thus unintentionally magnifying the canopy's tendency to turn.

Recovery:

Basically the *EDEN* will re-open by itself from closures of up to 90%. The time this takes, and the associated loss of height, can however be noticeably reduced by appropriate action by the pilot.

Apply opposite brakes on the uncollapsed side, the outside of the curve, to stop the turning movement of the canopy. If you react immediately, 30% brake on the open side should suffice to hold the canopy on a straight course.

WARNING!! Especially in turbulence, you must first stop the canopy turning, before you pump out the collapsed side. When the canopy is stable again, open it by pulling the brake lines on the closed side. If it is tangled, pumping the brake line should help. WARNING!! Take care to avoid applying too much brake when pumping out the deflation, as this may disrupt the airflow over the canopy and lead to a stall.

Symmetrical collapse - "big ears"

Initiation:

Grip the outermost A-lines, after putting your hands through the brake handles. Work your hands as high as possible on these A-lines, until you have enough line to be able to pull on them without pulling the A-risers as well. Pull both A-lines down simultaneously. The further you pull the A-lines, the greater the area of canopy that will collapse (and the greater will be the sink rate).

F. Test Flight Certificate

Paraglider type: ***EDEN*** _____

Serial number: _____

Test flown on: _____

by: _____

Pilot's signature: _____

Confirmation by dealer: _____

Technical data

	<i>EDEN</i> 22	<i>EDEN</i> 24	<i>EDEN</i> 27	<i>EDEN</i> 29	<i>EDEN</i> 36
Zoom	-	0.94	1.00	1.04	-
Area (flat)	23.05 m ²	24.40 m ²	27.60 m ²	29.85 m ²	36.17 m ²
Area (projected)	20.18 m ²	21.50 m ²	24.30 m ²	26.30 m ²	32.25 m ²
Span (flat)	10.81 m	11.30 m	12.04 m	12.52 m	13.57 m
Aspect ratio	5.07	5.23	5.25	5.25	5.09
Root chord	2.70 m	2.70 m	2.88 m	2.99 m	3.38 m
Cells	44	46	46	46	44
Weight	5.40 kg	5.60 kg	6.00 kg	6.45 kg	8.00 kg
Pilot weight (all-up)	60-80 kg	69-90kg	85-110kg	96-125 kg	125-162 kg
Minimum flying speed			23 km/h		
Maximum trim speed			36 km/h		
Maximum speed			46km/h		
Glide ratio			+ 7.7		
Min sink rate			1.15m/s		

D. Descent rates

Fly as far as possible from steep rises, to give yourself space to lose height.

Speed system and "big ears"

sink rate approximately 4-6 m/sec

Spiral dive

this allows rapid descent without stalling. Sink rate, depending on pilot, 5 - 15 m/sec

Central collapse

sink rate approximately 6 - 7 m/sec

B-line stall

sink rate approximately 5 - 10 m/sec

Important! - end the stall with sufficient time for the airflow to re-establish itself.

On principle, always fly in such a way that you do not need to lose height in a hurry.

E. Maintenance and repair

Repairs may only be carried out by MAC Ltd. Tears in the canopy must be professionally sewn. Adhesive patches are only adequate for very minor damage.

The glider must always be kept cool and dry. If possible it should be stored lightly folded in a well ventilated place. Protect the glider from dampness and sunlight. Exposure to UV degrades the fabric. A damp or wet canopy must be air-dried in a shady place. Do not expose the glider to temperatures of greater than 50 degrees C, as this can cause softening and shrinking of the attachment tapes.

The lines must be checked after every 50 hours flying time and whenever the flight behaviour changes. Consult your dealer or MAC Ltd.

Clean the canopy only with warm water or a dilute soap solution. Do not use solvents.

Happy landings
Petr Recek
MAC PARA TECHNOLOGY

Recovery:

As soon as you release the A-lines, the *EDEN* opens independently. You can speed up its opening by light braking. If in extreme cases the lines get tangled, pumping (pulling repeatedly) the brake lines should help.

Frontal tuck

Initiation:

Hold the brake handles in your hands and grip the A-risers at the level of the maillons. Now pull down far enough to make the whole leading edge fall in (the further you pull, the more area folds in).

Recovery:

As soon as you release the A-risers, the *EDEN* opens by itself. You can speed up this process by braking. If the A-risers are held too long, the canopy could fold in the middle with the wing tips going forward. The canopy stays in this shape. Recovery is as described for central collapse.

Central collapse

Initiation:

Put your hands through the brake handles and grip the innermost A-lines. Work your fingers high enough to let you pull these lines without pulling the A-risers as well. Now pull the A-lines simultaneously down until the canopy folds in the middle and the wing tips move forward (you must pull the A-lines quite far down, and hold on tightly). Take care that the lines do not catch. The canopy now has the form of a butterfly and sinks fast but with relatively little forward speed.

Recovery:

As soon as you release the A-lines, the glider normally opens on its own. The opening process can be hastened by lightly pulling the brakes on both sides. Take care that the canopy opens symmetrically.

Stalls

Turbulence or rapid braking can lead to a pendulum effect, and thus to changes in the angle of attack. In extreme cases this can make the airflow break away from the upper surface of the canopy even without the brakes being activated.

WARNING!! All canopies need some time after a stall (in extreme cases a couple of seconds) before the airflow builds up again.

You should therefore carry out all manoeuvres involving stalls at an adequate height, as it will take a certain amount of time before the glider flies with its normal sink rate.

Parachutal stall

Initiation:

Pull the brakes slowly down until you have no more forward speed. The canopy now loses internal pressure and the lower surface pushes further and further up between the suspension points. The loss of internal pressure is greater the longer the glider is held in this situation. During the parachutal stall the canopy always remains open. You will probably have to feel for the right brake position at first. If you apply too much brake, the canopy falls away backwards and the glider finds itself on the brink of a full stall. Loosen the brake lines immediately, until the canopy is once more above you. If you hesitate too long, the canopy will surge forwards. Once you have mastered playing with the brakes you can even fly backwards. (Switch between extremely slow flight and parachutal stall by playing with the brakes.)

Recovery:

As soon as you release both brakes, symmetrically, the glider will independently recover from the parachutal stall.

WARNING!! In a parachutal stall, asymmetrical application of the brakes can lead to a spin. If you must land from a parachutal stall, on no account apply the brakes very close to the ground, as a reduction in area increases the descent rate.

B-line stall

Initiation:

Put your hands through the brake handles and grip the B-risers at the height of the maillons. Now pull the B-risers slowly down, until the canopy folds (parallel to its long axis). The glider will now stabilise itself and sink rapidly, with virtually no forward speed. Keep hold of the B-risers throughout the manoeuvre.

Recovery:

Release the riser at first rapidly but then gently. After the B-line stall on no account just let go of the B-risers, as this can cause overloading. As soon as the risers have been released, the EDEN will usually fly normally of its own accord. Otherwise you have two possibilities:

1. Pull the A-risers, until the canopy regains forward speed. WARNING! Don't pull too far, or a frontal tuck will develop.
2. Pull the brake lines until the canopy wants to fall backwards, and then instantly open both brakes symmetrically. As a result the canopy will shoot forwards, thus regaining forward speed.

So begin with option 1, and only rely on option 2 when you have enough experience with the manoeuvre.

Spin (negative spirals)

If you find yourself in an unintentional spin and you are high enough, you should:

1. Release the brakes immediately. The glider will stop rotating, if it does not apply sufficient outside brake to stop rotation.
2. Gently apply the brakes to avoid a central collapse of the canopy and the possibility of a cravat (one of the tips becoming entangled in the lines)

NOTE: In the case of a cravat which pumping of the brakes fails to release - apply 50% -70% brake on the open side of the canopy to stop rotation. Then pull the caught line carefully to release it then pump out the affected side.

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

Deliberate Initiation:

Pull both brakes to a point just before a parachutal stall, then pull one side completely down and release the other side. As a result the glider sinks rapidly and turns fast around a vertical axis through the canopy. You must watch out that you don't twist too much, as this tangle can block the movement of the brake lines. The more upright you sit, the less the tendency to twist.

Recovery:

As soon as you release the brakes, the EDEN will normally stop the spin on its own. Otherwise apply opposite brake to stop the rotation.

WARNING!! As soon as the turning movement stops, loose the brakes immediately otherwise you will spin in the other direction. Now pull both brakes as fast as possible, until the canopy falls backwards, then open both brakes rapidly and symmetrically.

Full stall

This is included only to expand your knowledge of how the canopies performance. Not recommended as a descent technique.

Initiation:

Take wraps until the glider is lightly braked (when the hands are right up). Now gently pull both brake lines, until the canopy falls away behind - at this point, dynamically pull the brakes fully down. Press your hands against your body. The glider is now over you, with the wing tips flapping. As a result you sink rapidly with no forward movement.

Recovery:

Let go quickly of both brake lines simultaneously. The glider ends the full stall on its own without surging forward.

WARNING!! If the brakes are released rapidly and asymmetrically, the glider may turn through almost 90 degrees and suffer an extensive asymmetric collapse.