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USER MANUAL



INTOX

USER MANUAL

INTOX

Contens

A. General

Introduction	2
Warnings and precautions	3
Operating limits	3
Construction	4
Trim	4
Safety equipment	4
Speed system	5

B. Flying operations

Checklist	6
Take-off	7
Flight	7
Steering	7
Approach and landing	8
Flight with speed system	8
Towed flight	9

C. Extreme and critical manoeuvres

Collapse of the canopy	9
- Asymmetrical collapse	10
- Symmetrical collapse - "Big-Ears"	10
- frontal deflation	11
Stalls	11
- Parachutal stall with steering lines	11
- B-line stall	12
- Spin (Negative spiral)	13
- Fullstall	13
Spiral dive	14

D. Descent rates

E. Maintenance and repairs

Material list

Line plan

Test flight certificate / Technical data

A. General

Introduction

We congratulate you on your purchase of a MAC Intox.

Please read this manual carefully before you start, this way you will get the most out of your glider.

Extensive development work and numerous tests make the *Intox* a high performance paraglider with maximum possible safety, excellent achievement and a lot of fun-potential.

The *Intox* is constructed for pilots expecting an easy take-off and landing, light and precise handling in thermals, stability and good performance from the paraglider.

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 or death. Avoid flying in strong turbulence, strong winds and especially in thunderstorms and Foehn 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. 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.

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

MAC Para Technology
wish you many pleasant flights with your

INTOX

WARNINGS AND PRECAUTIONS

The purchaser of this product takes responsibility for all risks, associated with the paraglider, including injury and death. Wrong usage will considerably increase these risks. The purchaser is aware that a completed course and a pilot licence for the relevant country is required for paragliding.

Every arbitrary change to the paraglider will evoke termination of the airworthiness.

The Intox must not be flown:

- If it is out of the weight range
- In rain, snow-fall and in turbulent weather conditions
- In strong wind
- In cloud and fog
- By pilots with insufficient experience

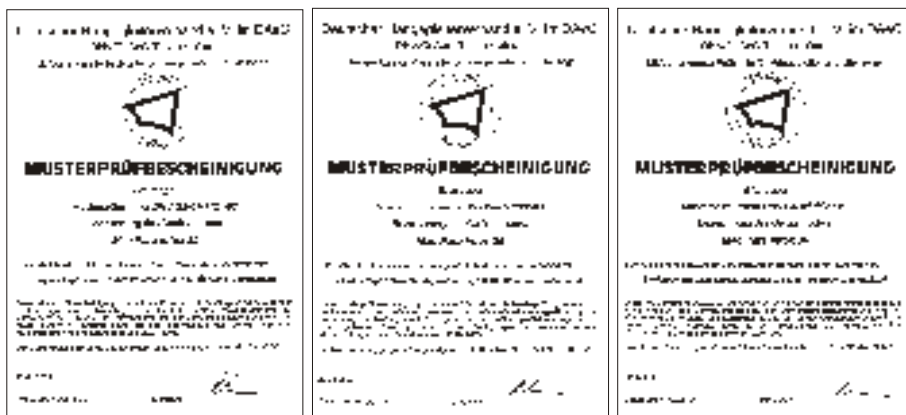
The *Intox* is a solo-pilot paraglider.

Operating limits

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

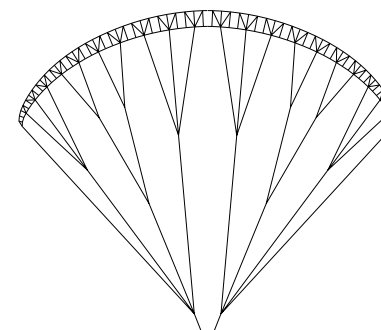
The *Intox* has been tested by DHV test pilots to DHV 2 GH category.

Flight 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. It also has been load and shock-tested and passed with a load corresponding to 8G of the maximum weight in flight (1040 kg).



Construction

The *INTOX* construction uses a system where every third cell and diagonal rib is attached to the lines. These diagonal ribs lead from the suspension points to the upper surface. The line construction is clear from the line plan.



Trim

The glider is delivered with a standard set-up and its speed can reach 36 - 38 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. 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.*

All harness with the DHV GH approval are suitable for use on the *INTOX*.

Safety equipment

An optimal outfit should be standard for every paraglider pilot. Always wear stout footwear a helmet, and gloves. Clothing should be warm and allow sufficient freedom of movement. An emergency rescue-system can be life-saving in case of mid air collision, irrecoverable collapses or material failure, and is therefore imperative.

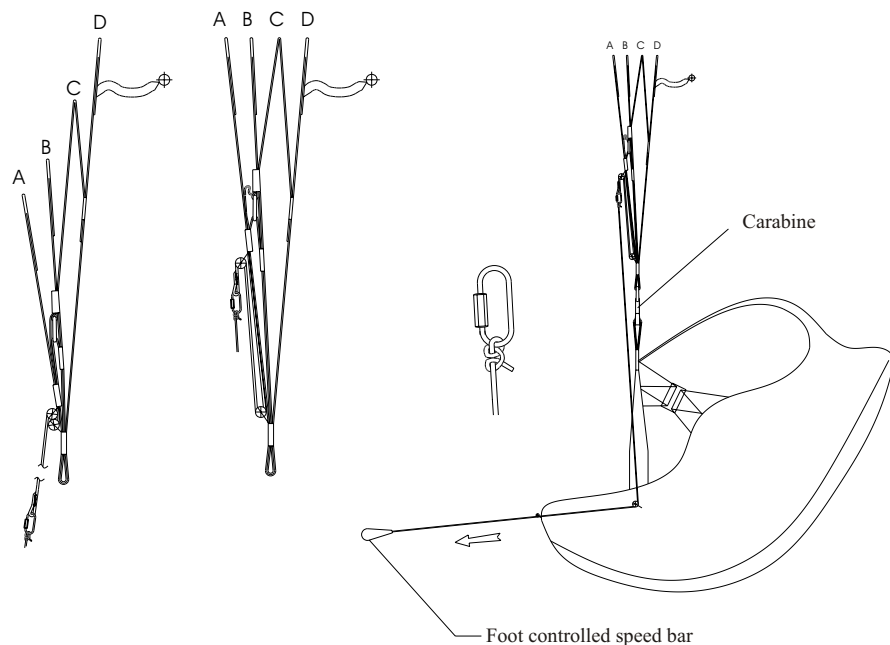
Speed system

To fly faster than trim speed the *INTOX* is equipped with a foot operated original speed system, which allows a 10-13 km/h gain in speed.

The speed system consists of:

1. Adjustable risers
2. Roller pulley system
3. Foot controlled speed bar

Riser	A	B	C	D
Trimposition	49,5 cm	49,5 cm	49,5 cm	49,5 cm
Accelerated	32 cm	35 cm	41 cm	49,5 cm



B. Flying operations

New glider check and before every flight checks.

In addition to all the usual pre-flight checks, please pay particular attention to the items in the following checklist:

Checklist

1. Inspection of canopy for tears or damage, especially the seams which join the ribs to the upper and lower surfaces, also the area of the attachment tapes and brake-line connections.
2. Inspection of the lines for damage, including to the stitches on the connecting loops. It is also important to check the suspension lines 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. Pay special attention to 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.
6. Check whether the rescue-system is correctly installed and secured.
7. Inspection of the main karabiner. Inspection of the attachment and security of the karabiner.

WARNING! Remember; don't take off with a wet glider. In such conditions it will be more difficult to launch and the glider's behaviour in extreme situations can be different from that of a dry glider.

PRE LAUNCH-CHECK

1. Are openings open and the leading edge in form of a horseshoe?
2. Are lines and brake lines free?
3. Are the main karabiners correctly fastened?
4. Is your helmet on and fastened?
5. Are the weather conditions, the wind strength and direction, safe for take off?
6. Is the air space in all directions clear?

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 horseshoe. 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 D-risers).

Flight

Always fly with sufficient clearance from the terrain. The *INTOX* 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.

Turns with brakes

The pilot applies the brake on the side to which he wishes to turn. To minimise height loss, the brake on the outside of the turn is lightly applied.

Turns with brakes and weight shifting

The pilot applies the brake on the side to which he wishes to turn and shifts his weight to the same side. Turns can also be made with the harness alone, by shifting the weight to the inside of the turn. This weight shift has a greater effect, the more loosely the chest-strap is fastened. An optimal steering technique is achieved by a combination of braking and weight shift. The combination of brakes and weight shift is the best technique to turn *INTOX*.

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

Warning! We do not recommend this method of turning while in standard flight, because the danger of a stall is high.

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 maximum energy in the glider. 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 1 m above the ground), pull both brakes fully down until the glider is sufficiently slowed.

In a light headwind pulling the brakes only lightly is enough to give a soft landing. In calm conditions, 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.

Flight with speed system

To accelerate the paraglider we recommend the following steps:

- a) Extend the speed bar
- b) Use the speed bar 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 *INTOX* is suitable for towed flight. Make sure you use proper equipment, experienced personnel and all relevant safety precautions for towing.

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 INTOX 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

Remember this is a glider with unspectacular reactions to disturbances in the air. Whenever in doubt, let up 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 start to practising 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!! If you fly with your hands through the brake handles, you may lose valuable time for activating the rescue system.

Asymmetric collapse

This form of collapse is usually caused by turbulence.

Initiation

On one side of the glider, 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 50 % of the leading edge to close up, and results in the canopy going into a spiral towards the collapsed side. If the harness is too loosely adjusted, 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

The *INTOX* will re-open by itself after a turn of about 40° (depending on the weight in flight) with a loss of height of about 5-7 m. This depends on the adjustment of your harness. The time this takes, and the associated loss of height, can however be noticeably reduced by appropriate action by the pilot (especially in turbulence). By applying opposite brakes on the still inflated side, the outside of the turn, it is possible to stop any 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.

If the canopy remains in a turn after a collapse it can begin to stabilize in a spiral dive. It is necessary to react to prevent this. Try to stop the spiral dive by using prompt opposite braking and weight shifting to the outside of the turn.

WARNING!! Especially in turbulence, you must first stop the canopy from 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.

WARNING!! 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. 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.

Symmetric collapse - "Big-Ears"

Initiation

Whilst maintaining contact with the brakes, grip the outermost A-lines. 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).

Recovery

As soon as you release the A-lines, the *INTOX* 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 deflation

If you anticipate strong turbulence, first step off the speed-bar. Sometimes you may have to apply both brakes to avoid a deflation.

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 roll in (the further you pull the more area folds in).

Recovery

As soon as you release the A-risers, the *INTOX* opens by itself and the glider will recover with a small surge. You can speed up this process by light braking.

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 with steering lines

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. To solve such a situation, please look at "Full Stall."

Recovery

As soon as you release both brakes symmetrically, the glider will independently recover from the parachutal stall. If it will not, you can help; pull the A-risers until the canopy goes forward again. Another possibility is to pull the brake lines until the canopy falls backwards and then immediately release them. Consequently the canopy will move forward and recover

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

WARNING! We do not recommend the use of B-line Stalls to increase sink rate. They can apply heavy loads to the canopy and too quick an initiation or recovery, with a maximum suspended weight, can lead to damage.

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 *INTOX* 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 starts 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.

WARNING! In parachutal stalls asymmetric use of the brakes can cause a spin! If you have to land during a parachutal stall, when near the ground do not use the brakes, because reducing the surface area increases the sink rate. If the glider shows a propensity for deep stalls it is necessary to send it for a check.

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 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 the brakes on the un-collapsed side, outside of the curve, are too much pulled, it can lead to a stall and to a new spin.

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

Full stall

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

The Full stall can come:

- 1) When flying directly into a thermal whilst already flying with deep brake
- 2) When flying with deep brake, more than 100%

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

Progressively ease off on both brakes. Once 90% of the leading edge has reopened the brakes can be fully released. Ensure that the release is even on both sides. The glider exits the full stall on its own with no tendency to surge forward.

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

Spiral dive

The *INTOX* has very effective spiral dive. This allows rapid descent without stalling. The *INTOX* has no tendency to stabilise in a spiral dive.

Initiation

Weight-shift and pull the brake on one side gradually. Let the glider accelerate for two turns and enjoy the growing speed and high G-force. You can achieve sink rates up to 17m/s. Once you have entered the spiral you can control your descent rate and bank angle with weight shift and brakes. We recommend lightly applying the outer brake to avoid asymmetrical collapse on outer side of canopy.

Recovery

Weight-shift to a normal flying position and release both brakes. The glider stops spiral diving by itself in 360 degrees.

If you apply inner brake and decelerate the glider for two or three turns, big pendulum effects can be avoided.

*WARNING!! Some gliders have a tendency to stay in the spiral when the sinkrate 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. With weight-shifting to the normal sitting position the *INTOX* will however come out of the spiral without pilot input. Practise spiralling with caution and lesser 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!*

Remember: The steeper the turn, the greater the G-force.

D. Descent rates

First fly as far as possible from any areas of lift, to give yourself space to lose height.

Symmetrical collapse - "big ears"

Sink rate approximately 3-5 m/sec

Spiral dive

This allows rapid descent without stalling. Sink rate, depending on pilot, 5 - 17 m/sec

B-line stall

Sink rate approximately 5 - 8 m/sec

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

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

E. Maintenance and repair

The INTOX is produced from the best materials (see Material Description). The glider must be checked as a minimum, every second year or after 100 flying hours. Do not step on the lines. Although the lines were tested with the "DHV-bend test" they can be damaged if stepped on whilst on a hard surface, or if they come into contact with sharp objects.

If this happens contact your dealer for replacement lines. The lines must be checked after every 50 hours flying time and whenever the flight behaviour changes. Consult your dealer or 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 lines. Clean the canopy only with warm water or a dilute soap solution. Do not use solvents. Only with correct care can the lifetime of the glider be extended.

Only MAC Para or SKYLINE Flight Gear can make big repairs. Tears have to be professionally sewn. Only minor damage can be repaired with adhesive patches.

The INTOX is delivered with a stuff-sack, T-shirt, MAC rucksack, speed-bar and user manual.

If you follow all the steps described in this manual, we are sure that you will enjoy your MAC Paraglider.

Happy landings

Peter Recek - Constructor
MAC PARA TECHNOLOGY

FABRIC OF CANOPY

NCV - PORCHER MARINE, FRANCE

Extrados - SKYTEX S 09017/E38A - 100% nylon 6.6 , 33 Dtex, 40 g/m2
Intrados - SKYTEX S 09017/E38A - 100% nylon 6.6 , 33 Dtex, 40 g/m2
Mean ribs 3,6,9,12,15,18,21,24,27,30 - SKYTEX S 09017/E29A - 100% nylon 6.6 , 33 Dtex, 40 g/m2
Intermediate ribs 1,2,3,5,7,9,11,13,15,17,19,21,23,25,27 - SKYTEX S 09017/E38A
Diagonal ribs - SKYTEX S 09017/E29A - 100% nylon 6.6 , 33 Dtex, 40 g/m2
Reinforcement mean ribs – W 0420 Grille Polyester 200 g/m2
Reinforcement intermediate ribs – W 0382 Polyester 180 g/m2

LINES

EDELMAN+RIDDER+CO., GERMANY

Upper lines - Aramid/Polyester A-6843-080
Middle lines A, B - Aramid/Polyester A-6843-160
Middle lines C, D - Aramid/Polyester A-6843-120
Brake lines - Dynema/Polyester A-7850-100
Mean lines C1,C2,C3,D1,D2,D3 - Aramid/Polyester A-6843-160
Mean lines A1,B1 - Aramid/Polyester A-6843-200
Mean lines A2,A3,B2,B3 - Aramid/Polyester A-6843-240
Stabilo line - Aramid/Polyester A-6843-080
Mean brake line - Dynema/Polyester A-7850-240

BRIDLE (ATTACHMENT LINES)

STAP a.s., CZECH REPUBLIC

POLYESTERBRIDLE 17.54.11 – 137 311 134

RISER

MOUKA TISNOV ltd., CZECH REPUBLIC

Polyester 366 018 025 910 25x1,5 mm

THREAD

AMANN SPONIT ltd., CZECH REPUBLIC

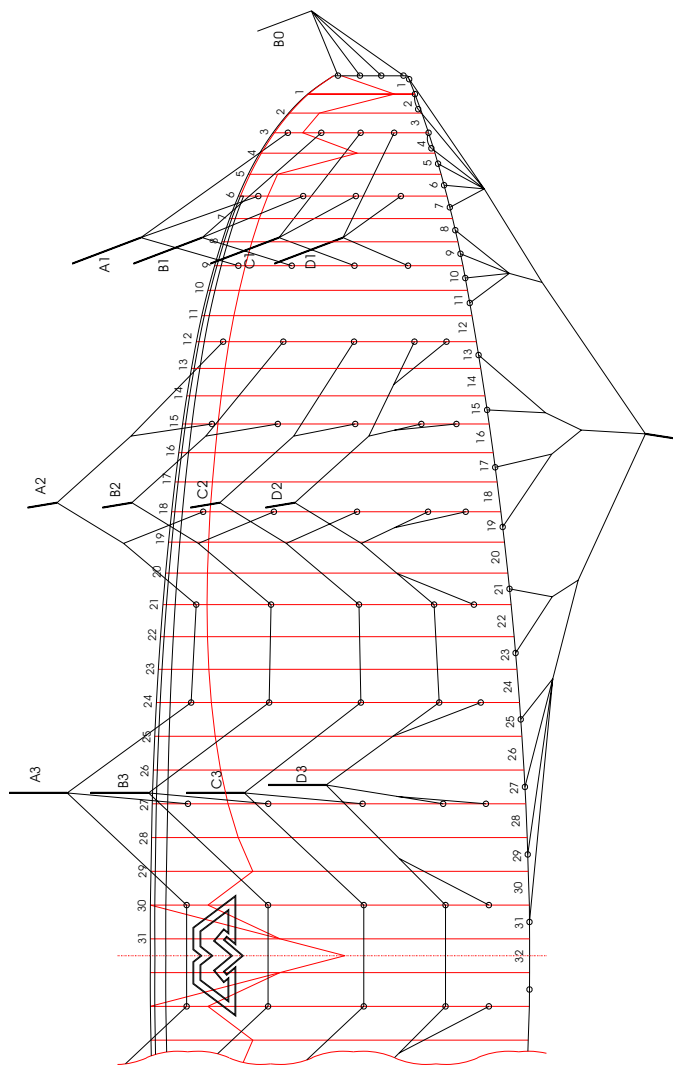
Thread lines - SYNTON 60, Thread -mean lines - SERABOND 60
Thread glider - SYNTON 40, Thread - riser - SYNTON 30

MAILLONS

ELAIR SERVIS, CZECH REPUBLIC

NIRO TRIANGLE 200

LINE PLAN



Test Flight Certificate

Paraglider type: **INTOX** _____

Serial number: _____

Test flown on: _____

by: _____

Pilot's signature: _____

Confirmation by dealer: _____

TECHNICAL DATA

oom flat

	INTOX 22	INTOX 25	INTOX 28	INTOX 30
	0,89	0,947	1	1,041
Area flat [m2]	22,06	24,98	27,85	30,18
Area projected [m2]	19,17	21,71	24,2	26,23
Span flat [m]	11,34	12,06	12,74	13,26
Aspect ratio flat	5,83	5,83	5,83	5,83
Root cord [m]	2,43	2,58	2,73	2,84
Cells	63	63	63	63
Weight [kg]	5,9	6,2	6,6	6,9
Weight range [kg] *	65 - 85	75 - 95	85 - 110	98 - 127
Min.speed [km/h]	22 - 24	22 - 24	22 - 24	22 - 24
Max.speed [km/h]	36 - 38	36 - 38	36 - 38	36 - 38
Top speed (accelerator) [km/h]	48 - 50	50 - 52	50 - 52	50 - 52
Glide ratio	8,4	8,5	8,5	8,5
Min. Sink rate [m/s]	1,05	1,05	1,05	1,05
Certification	-	DHV 2	DHV 2	DHV 2