Owner's manual

STELVIA S, STELVIA M & STELVIA L

Owner's manual for paragliders
STELVIA S, M & L

General Informations

Name of the model: STELVIA S,STELVIA M, STELVIA L

Name & address of the manufacturer:

Mcc Aviation SA
Route de Forel 34
CH-1091 Grandvaux
www.mccaviation.ch
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The STELVIA is certified in B category according to EN 926-2: 2014, EN 926-1: 2015 & NfL 91/09 standards.

Owner's manual version Mai 2018.

This manual meets the requirements of EN 926-2: 2014 regarding the content and the information that have to be supplied to the end users.

The last update of this manual is available on www.mccaviation.ch

Required piloting skills

Certified in B category, the STELVIA is a paraglider with good passive safety and forgiving flying characteristics. It proves to show some resistance to departures from normal flight.

However, considering its layout aspect ratio of 5.7, its fine handling and its quick reactions, the STELVIA is clearly a sport wing. It is not suitable for basic and lower level training.

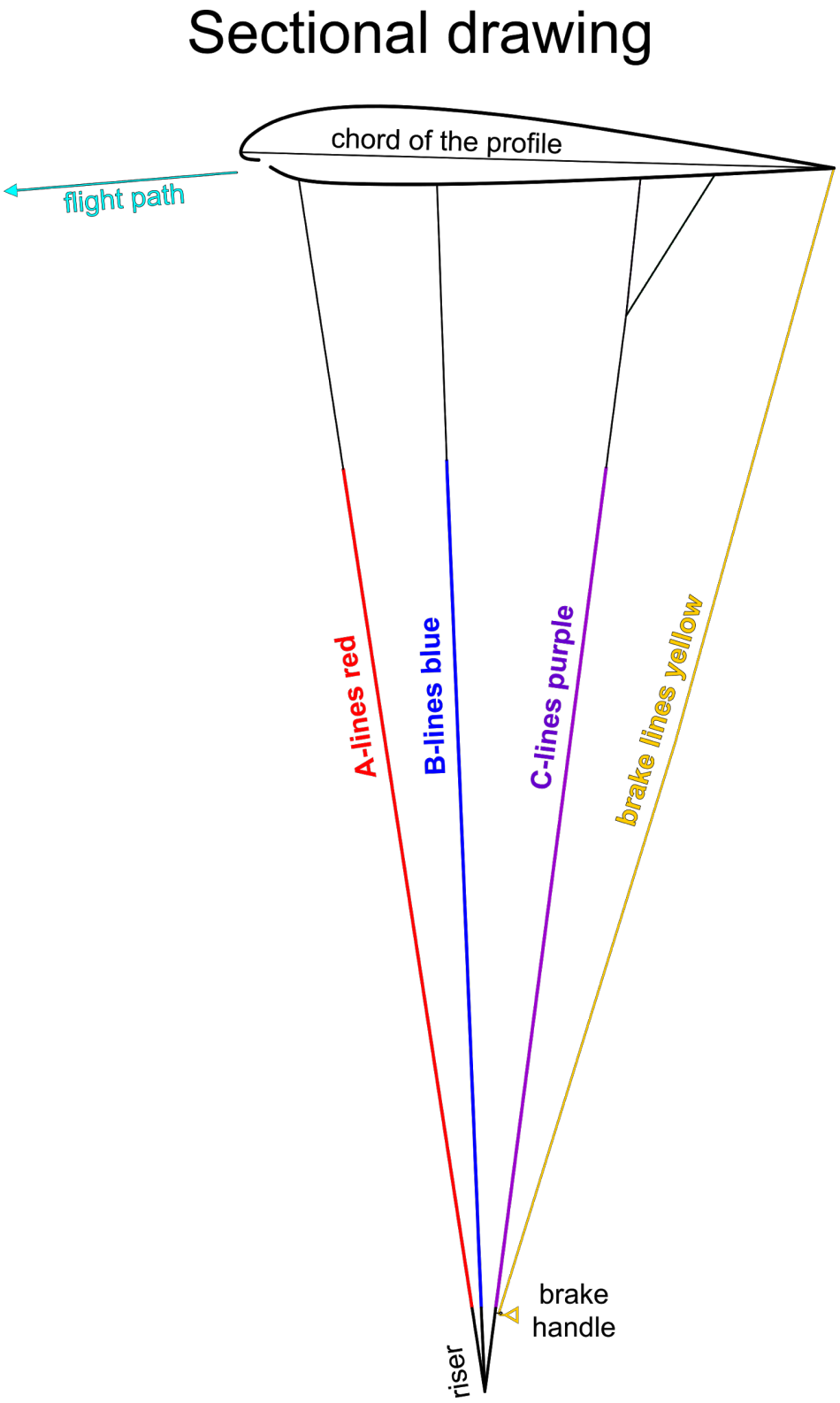
The STELVIA is a sport model designed for experienced pilots who have been practising for minimum two years, keep flying on a regular basis of at least 50 flight hours per year and master an active and well measured piloting, even under stress.

General remarks about paragliding

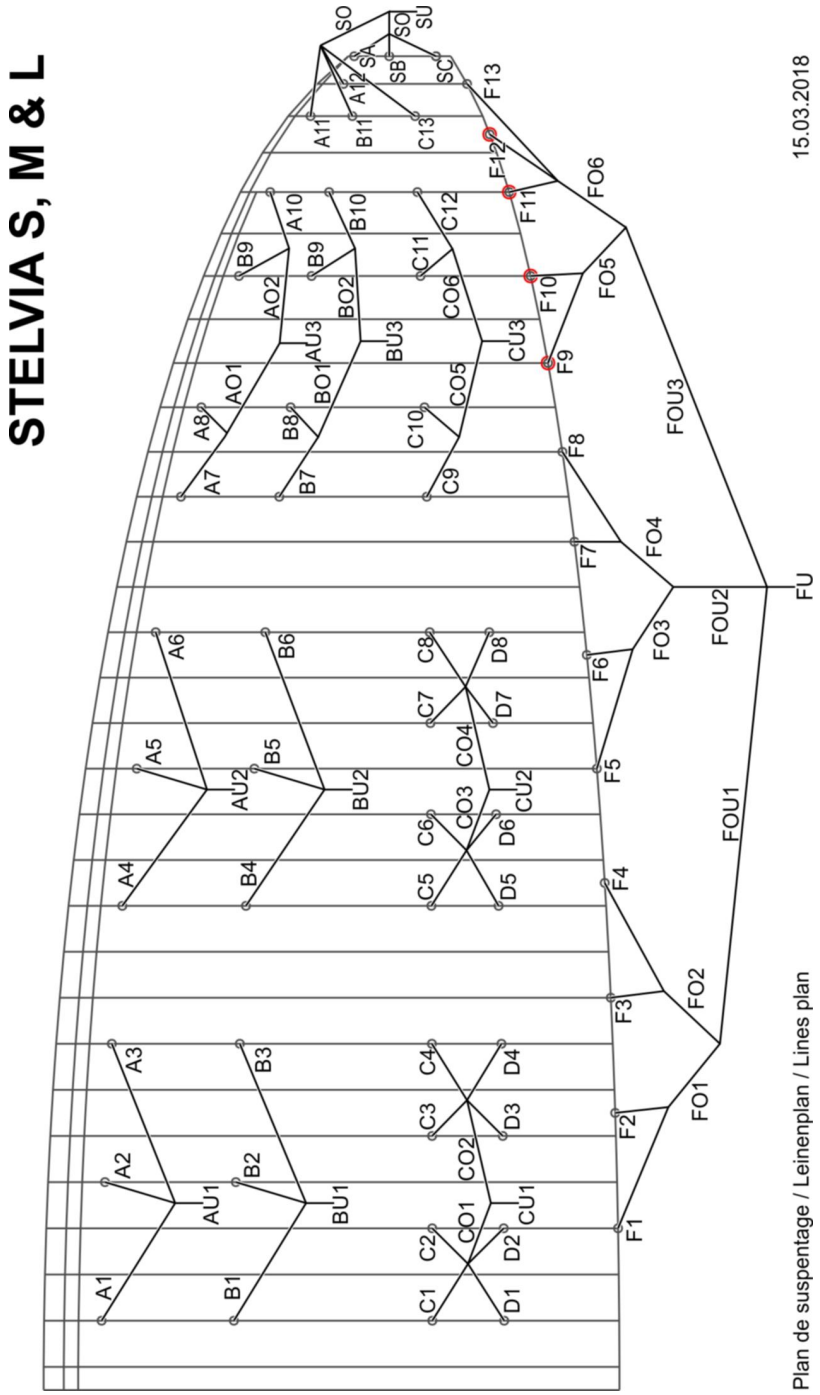
Paragliding is a risky sport ; a careful practise is therefore highly advisable.

The pilot must check the airworthiness of his equipment, and in particular of his paraglider before each single take-off. The pilot is the only master aboard and flies at his own risks.

Sectional drawing of the STELVIA

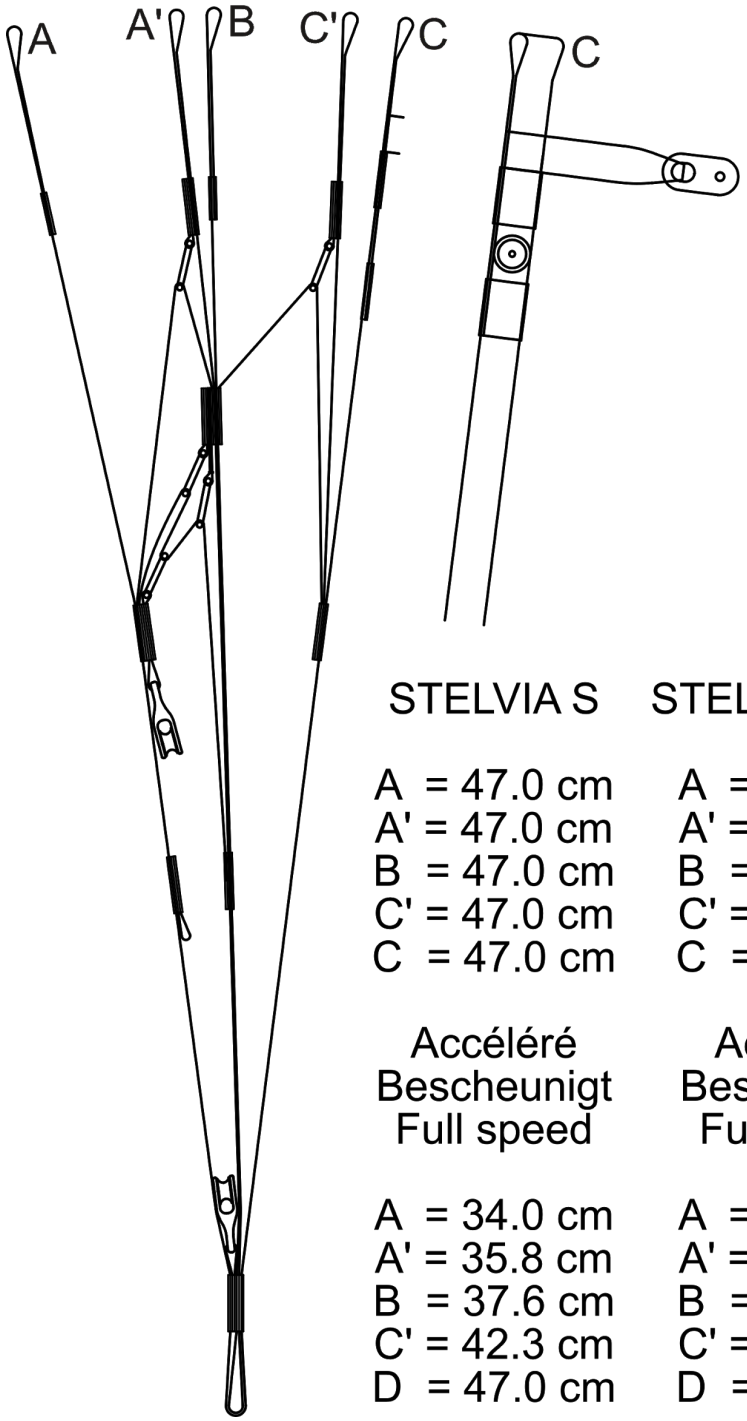


Plan of the lines



Drawing of the risers

Elévateur / Tragegurt / Riser



STELVIA S	STELVIA M & L
A = 47.0 cm	A = 50.0 cm
A' = 47.0 cm	A' = 50.0 cm
B = 47.0 cm	B = 50.0 cm
C' = 47.0 cm	C' = 50.0 cm
C = 47.0 cm	C = 50.0 cm
Accéléré Bescheunigt Full speed	Accéléré Bescheunigt Full speed
A = 34.0 cm	A = 36.0 cm
A' = 35.8 cm	A' = 37.9 cm
B = 37.6 cm	B = 39.8 cm
C' = 42.3 cm	C' = 44.9 cm
D = 47.0 cm	D = 50.0 cm

Technical data and Information

- Number of cells: 61

- Number of risers: 5 risers (A, A', B, C' & C)

- No trimmers on the certified models.

- Minimum brake range to stall point according EN 926-2: 2013 standard :
  STELVIA S & M : 55-60 cm
  STELVIA L : 60-65 cm

- The setting of the lines and of the brakes must at all time remain within the allowances, as required by the EN 926-2: 2014 standard (+/- 1 cm compared to the total length as indicated on the list of lines and plan of lines).

- Except for brakes and speed system, there is no other adjustable devices available on the certified models.

- Lists of lines on Annex A

STELVIA	**S**	**M**	**L**
Take-off load (kg)	70-90	80-100	90-115
Recommended Take-off load (kg)	73-85	84-97	96-110
Weight of the paraglider (kg)	4.1	4.3	4.55
Layout area (m2)	23.36	25.00	26.67
Projected area (m2)	20.52	21.96	23.43
Layout span (m)	11.54	11.94	12.33
Projected span (m)	9.45	9.77	10.09
Layout aspect ratio	5.7	5.7	5.7
Projected aspect ratio	4.35	4.35	4.35
Number of cells	61	61	61
Min.-trim.-max. speed (km/h)	25-38-54	25-38-54	25-38-54
EN Certification	B	B	B

Limits of use

The STELVIA paragliders are certified for solo free flight only. Weather and thermal conditions must remain suitable for paragliding at any time and the very skills of the pilot have to be taken into account to decide whether to fly or not.

Moderate winds (4 on the Beaufort scale or 20-28 km/h) can already be tricky due to turbulence near the ground on the leeward side behind obstacles or wind shears created by thermal activity

Acrobatic maneuvers, which are maneuvers during which the canopy dives in pitch or roll over 30° from the trim straight glide shall not be considered as the normal use of your STELVIA paraglider.

The pilot must comply at any time with laws and regulations applicable to paragliding.

The pilot should also comply with the requirements resulting from the certification (take-off load, dimensions of the harness, lines setting, brakes setting, etc.) and the safety information provided by this manual.

The behaviour of the STELVIA when used on the winch or with an engine (paramotor) is not part of the certification according to the EN 926-2: 2014 standard.

Operating the STELVIA

The STELVIA requires no special or unusual operating technique.

However you'll find hereunder some useful reminder which might help you to become more familiar with your new wing.

Preflight check of the paraglider

Check of the canopy: check the canopy for wears ; also check that the inner structure (ribs and diagonals) is not damaged and that the seams are all right.

Check of the lines: check that the lines, including the seams and the end loops are not damaged. Also check that the lines are not tangled and are perfectly sorted out.

Check of the rapid links: check that all the rapid links are screwed tight.

Check of the risers: check that the risers are not damaged and are not twisted or tangled. Check that the speed system can be operated freely and that the ropes are long enough as to avoid unintended operation of the speed system. Check that the brake handles are in correct position and that the brake lines run freely through the brake pulleys.

Take-off

Lay out the paraglider with the leading edge **in a horseshoe shape**. Holding the A risers close to the quick links move forward until the lines are tight.

You should now be perfectly centered in your wing. In nil wind or a light headwind, with lines tight take several strides. The STELVIA will inflate rapidly and rise over your head.

Do not pull the risers too hard, either forward or down as this could cause a collapse of the leading edge. Simply follow them with your arms until the glider reaches its

angle of flight above your head.

It is important that the centre-of-gravity of your body remains in front of your feet (flight direction) during the inflation of the glider so that the load through the risers remains constant.

A controlled inflation avoids excessive need of the brakes and allows you to visually check the wing and lines during the last phase of the launch, before acceleration to takeoff speed.

Depending on the wind conditions or the slope, judicious use of the brakes may assist a cleaner launch.

Landing

Due to the exceptional glide of STELVIA, caution is recommended during approach and landing.

STELVIA is an agile and sensitive glider. Each brake input may initiate a significant glider reaction. It is therefore recommended that first flights are performed in a familiar environment, on a large landing site and under stable meteorological conditions.

An advantage of negative steering is that it allows more time for manoeuvres to be performed precisely, and results in reduced pendular motion of the paraglider.

Reminder: Negative steering involves slowing down the glider by applying brakes symmetrically to about 30% of the maximum range, then making a turn by steadily releasing the outside brake.

Speeding up just prior to landing allows a more effective flare and a gentler touch-down in nil or light winds.

Turning

STELVIA is designed to turn efficiently and will core thermals even without the need for weight-shift piloting.

Negative steering (see above) slows down the paraglider in certain phases of flight and consequently reduces excessive roll during turn reversals.

Your glider is not only designed to turn rapidly (with approx. 30% brake) but also to fly slowly in order to help identify areas of lift and to maintain a flatter turn to minimize sink rate during the turn (with 20% brake).

Symmetrical brake-input at 20-25% enables you to control the glider – to brake further if the canopy pitches forward and to release if the canopy pitches backwards

Rapid descent techniques

As a general rule, in order to descend, fly away from areas of lift. If, for whatever reason, you are taken unawares by the development of conditions, you may consider using the following techniques to increase your sink rate.

Big ears

Slide your finger up the outer A'-riser and then pull it down by making an arc of circle outwards and downwards until the wingtip folds back under the leading edge. We recommended that you perform each "ear" successively and not both simultaneously.

Keep the lines taut to stop the wingtips from reopening until the manoeuvre is finished. Depending on the size of the big ears initiated, the sink rate can increase by up to 3–4 m/s. If necessary, it is possible to initiate small alterations in direction by weight shift control.

As soon as the lines are released, the paraglider should spontaneously reopen. However, you can speed up the reopening by „pumping" the brakes in a single sweeping movement. When pumping the brakes it is recommended that one side of the paraglider be opened after the other. Pulling both brakes simultaneously to reopen ears may result in a stall.

Spiral dive

STELVIA is a manoeuvrable wing that responds to pilot input precisely and progressively.

To initiate a tight spiral, apply one brake progressively to about 50% and hold it in this position. The speed of rotation and the brake pressure will increase progressively and the centrifugal force on the pilot will also increase.

The angle and speed of rotation can be decreased or increased by releasing or depressing the brake by several centimeters respectively. Once mastered, the spiral dive allows you to descend at rates greater than 10 m/s. Extremely abrupt or badly synchronised brake inputs or too-rapid initiation of the spiral may result in an asymmetrical collapse and/or a spin.

CAUTION !

A deep spiral is a radical manoeuvre. The kinetic energy generated must be dissipated by slowly releasing the inside brake throughout, at least, one whole revolution.

B-line stall

Grasp the B-risers (third row of risers and lines since the front, blue stitchings and blue lines) at the quick links, and ease them down symmetrically. Do not snatch them down.

The paraglider will enter a B-line stall and feel to drop backwards before the pilot stabilises underneath the wing. The descent rate increases to 6 - 8 m/s.

To exit the B-line stall raise both hands together in a single, positive movement so that the risers are at normal full extension again.

On releasing the B-risers, your STELVIA should return immediately to normal flight.

An adjustment error, control error or certain aerological conditions may lead to a prolonged deep stall phase. A push on the speed bar should initiate rapid exit from the B-line stall state.

If the speed bar is not connected, pulling on the A-risers by 2-3 cm will have the same result.

CAUTION !

Unlike big ears and spiral dives (see above) a glider in a B-line stall is in a true stalled configuration.

For this reason, a B-line stall should never be performed close to the ground.

Performance & use of brakes

STELVIA‘s best glide is at trim speed (no brakes) – about 38-39 km/h.

The minimum sink rate is achieved by applying approx. 15% brake.

When using more than 30% brake the aerodynamics and the performance of the glider deteriorate and the brake pressure rapidly increases.

The higher the brake pressure, the greater the risk of an impending stall which will occur at full brake travel (100% brake; 55-60 cm).

In normal flying conditions the optimum brake position, in terms of performance and safety, is within the top third of the braking range.

Use of speed bar

Your STELVIA is equipped with a highly efficient speed system. For fitting and positioning of the accelerator system and speed bar, consult the instructions provided by your harness manufacturer.

Before each take-off, check that the entire accelerator system works freely and that the lines are long enough to prevent the speed bar from being activated involuntarily in flight (lines too short).

If the harness is fitted with a front mounted reserve, the speed bar lines must pass under the reserve container and the reserve bridle so that the reserve can be deployed correctly.

Use of the speed bar increases the maximum speed of the paraglider by up to 40% of the trim speed. Whilst the STELVIA remains stable at full speed, no paraglider is immune from deflations in certain conditions and the deflation point can be sudden when flying at high speed.

Use of the speed system does reduce the angle of attack and therefore there is an increased risk of a frontal or asymmetric collapse. For this reason we do not advise use of the speed bar near to the ground or in turbulent air.

Asymmetric or frontal (symmetric) collapses

Despite tests showing that STELVIA recovers spontaneously after collapses, active piloting is recommended in the event of an asymmetric or frontal collapse. Active piloting will reduce the loss of altitude and a change of direction.

- **In the event of a frontal (symmetric) collapse**: Before automatic reopening occurs, bring both brakes down swiftly & symmetrically to speed up reopening of the leading edge, then immediately bring your hands back up to normal flying position.

- **In the event of an asymmetric collapse**: Keep the paraglider flying as straight as possible by leaning away from the collapsed side and applying sufficient (just enough, not too much) brake to maintain course. Speed up the reopening of the closed side by a single, positive input on the collapsed side & repeat if necessary.

Full stall

Certain pilot behaviour or weather conditions can cause a full stall. This is a serious deviation from normal flight and can be difficult to manage. If a stall occurs at less than 100 m above the ground**, throw your reserve parachute.**

Main causes of a full stall:

Poorly timed or excessive use of the brakes when the air speed of the wing is reduced (e. g. when coming out of a spiral or speeding up after a B-line stall)**.**

Rain-induced Deep or Full stall :

A soaked or heavily drenched leading edge (from rain or a cloud) can result in a full

stall or deep stall due to uneven airflow over the leading edge as a result of rain drops and an increase of weight to the wing.

Whatever the cause, a stall can be either symmetrical or asymmetrical (a spin). In both cases the brake line travel becomes very short and even small input may suddenly induce an airflow separation; in some cases even a gust or a sudden thermal may change the angle of incidence enough to cause the deep stall.

If you find yourself flying in unavoidable rain, we strongly recommend that you avoid any sudden movements or radical brake input, that you do not pull Big Ears or B-stall, and that you steer clear of turbulence and avoid a deep flare on landing.

In both cases the pilot has two possible courses of action:

- If the full stall happens above 100 m it is strongly recommended to initiate standard stall recovery assuming the pilot is familiar with the process (i.e. a complete execution of the full stall, stabilization of the wing and progressive lifting of the hands to resume normal flight).
- If the full stall happens below 100 m or if the pilot is unfamiliar with stall recovery the reserve parachute should be deployed immediately.

Steering without brakes

If a brake line or pulley breaks, it is possible to steer STELVIA using the C-risers (rear risers).

The movements should be finely controlled as the deformation of the wing due to the traction on the D-risers is greater than that produced by using the brakes.

Tip: Practice this method of steering to be prepared before a real brake failure!

Special steering

No other manœuvre or steering technique is recommended.

Comments on the testing procedures

All manoeuvres were carried out over water in a stable air mass with standard temperature, humidity and pressure.

They were carried out by professional pilots, trained to react to any problem in the most appropriate manner.

Test reports are available on our website: www.mccaviation.ch and on the test laboratory website : www.para-test.com

Harness adjustment

During testing procedures, the pilots have been using ABS type harnesses with following dimensions:

	Distance from seatboard to inner bottom of carabiners	Distance between centerlines of inner bottom of carabiners
STELVIA S	40-43 cm	40-44 cm
STELVIA M	41-44 cm	42-46 cm
STELVIA L	42-45 cm	44-48 cm

We recommend the use of a harness with adjustments as close as possible to those used during the certification tests.

Excessive cross-bracing (chest strap very tight) increases the risk of risers twisting during certain manoeuvres.

A looser setting may result in a tendency to fall towards the collapsed side.

Lower hang-points reduce the roll-stability of your harness and can slow down the reopening of asymmetric collapses.

Slightly higher hang points have no influence on in-flight safety and can therefore be tolerated.

Advice on Maintenance

- Avoid dropping the canopy on its top surface or on its leading edge during inflation or landing.
- Do not drag it across the ground when moving it.
- Do not expose it unnecessarily to sunlight.
- Choose a folding technique that does not damage the leading edge and that does not crease the internal structure excessively.
- To maximize the life of your glider, we do not recommend the use of stuff sacks; the creasing of the material will decrease the life expectancy of the fabric, in particular for the internal structure.
- Always use the protective bag to avoid direct contact with the harnesses and buckles, and unwanted frictions inside the rucksack.

- Never store your paraglider when it is damp. If immersed in sea water, rinse it thoroughly in fresh water. Do not use any detergents.
- If you do most of your flying near the sea, where the air is humid and salty, the wing may age faster. In this case we suggest you have it checked more often than prescribed in this manual.
- Empty any foreign bodies from your paraglider regularly, for example sand, stones, animal or vegetable matter which may eventually decay. Twigs, sand, pebbles, etc... damage tissue in successive folds, and organic debris of vegetable or animal origin (insects) can promote mold growth.

STELVIA is fitted with debris release slots at the wing tips. Debris can be shaken from the closed cells through to the wing tip and the release slot opened to remove particles. Check that you reseal the debris release slot when completed.

Storage and transport

Store your loosely packed glider in a cool (10-25°C) and dry (< 70% humidity) place.

Hot car boots or damp basements lead to damaging of the cloth.

A paraglider should always be dry when packed, but this is particularly important after the last flight of the season. But even a completely dry wing should still be stored open in a dry, clean and dark place.

If you do not have room for such winter storage we recommend you open all compression straps on the bag as much as possible and leave the bag open so that air can circulate around the packed canopy.

Make sure no vermin make their sleeping quarters in your wing, and keep it well distant from solvents and acids. Petrol and other petrochemicals are especially abrasive for nylon and will dissolve the cloth if allowed near.

High temperatures in combination with moisture are a particularly volatile mix that will accelerate the hydrolysis process where the fibres and the coating are decomposed.

Repairs

Repairs should be achieved by a specialist. The use of ill fitted spare parts or materials or a wrong repair process can be very dangerous on an aircraft. For safety reasons, always have your paraglider repaired by a specialist.

Paragliding and nature conservation

Being a good pilot is not only knowing how to take-off, land and fly long distances, it is also being conscious about the beautiful natural surrounding and behaving in a way that helps to protect the environment. Take only pictures and memories and leave at most footprints. Keep on the footpath, do not damage the vegetation and do not disturb the wildlife.

Checks

Before delivery

Your paraglider has been carefully checked throughout the whole production process in our production facility. It has been double-checked and measured in our workshop in Grandvaux in Switzerland and it has been tested in flight by a professional test pilot.

It is delivered with the standard lines and brakes settings which matches the settings used during the certification flights.

Periodic checks and repairs

For your own safety, we advise you to have your paraglider checked at least once a year or after 100 flight hours whichever is sooner and anytime there is a noticeable change in its behaviour.

The checks must be done by Mcc Aviation in Grandvaux or by an authorised representative. Our workshop is equipped as a production facility, with all machines, original materials and spare parts and trained staff.

In France, the after-sales service is made by several professional workshops throughout the country. Contact Mcc Aviation, they will provide you a list of authorised workshops.

Recycling

Your paraglider is mainly (99%) made with plastic materials (polyamide, polyester, etc.) and with some metal parts (quick links, pulleys, rings), which can easily be put aside.

Guarantee

Mcc Aviation new paragliders are covered by a guarantee according to the law (cf. art. 197 CO or art.5 of the directive 1999/44/CE).

Mcc Aviation SA commits itself to correct a possible defect or replace the faulty piece. The guarantee period starts from the date of delivery of the paraglider to the authorized dealer.

The guarantee does not cover damage caused by normal aging, by an accident, by misuse or by neglecting the regular maintenance.

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