

Sky Paragliders Flight Manual

FIDES 2

Sky Paragliders' FIDES 2 is the result of a development program lasting more than 18 months. The plan was to design, within a reasonable time period, a paraglider with the following characteristics:

1. Take-Off

- even inflation
- comes overhead smoothly with no sticking point before take off
- no tendency to overshoot the pilot

2. Flight

- even paraglider, good damping and stable in all ordinary flying conditions
- spontaneous reopening in the event of symmetric, or up to 80% asymmetric deflation in accordance with DHV standards
- safe in event of asymmetric tucks of a lesser size
- good pitch stability
- gradual and precise response to control input with an obvious point of resistance before stall point
- fairly noticeable transition phase (parachutal) between flight and stall
- no spin tendency

3. Landing

- ability to significantly reduce the glide ratio using the first half of the brake range
- no tendency to spin when braking on approach
- good conversion

4. Flight

- both easy handling and good damping
- easy to core thermals using just controls (without weight-shift)

5. Certification and safety

- AFNOR "standard" rated or DHV 1
- the paraglider must recover from all test manoeuvres without pilot intervention
- the paraglider must remain easy to control during asymmetric collapses between 30% and 80% of span
- well damped behaviour should minimise pilot stress

Construction

The FIDES 2 are manufactured in Sky Paragliders' factory in the Czech Republic. Each component produced is subjected to very rigorous quality control in the factory and subjected to a second conformity control in the Aero Concept workshops in Switzerland. The best materials have been rigorously tested and selected based on very strict technical criteria. It is with pleasure that we have noted that European expertise is able to meet the highest quality requirements for all the highly technical elements of the structure.

Fabric:

- Ribs and diagonals: Porcher Marine Skytex 9017, coating E29A
- Upper surface: Porcher Marine Skytex 9017, coating E77A
- Lower surface: Porcher Marine Skytex 9017, coating E38A

Lines:

- Upper cascade: polyethylene sheathed with polyester, Edelrid series 7850
- Lower cascade: polyethylene sheathed with polyester, Edelrid series 7850

Risers:

- 20mm polyester webbing (830 daN)

Quick links:

- triangular 3.5mm stainless steel quick links (750 daN) Péguet (France)

<u>Fides 2</u>	<u>XS</u>	<u>S</u>	<u>M</u>	<u>L</u>
Layout surface (m ²)	22.36	24.19	26.17	28.30
Layout span (m)	10.25	10.66	11.09	11.54
Layout aspect ratio	4.70	4.70	4.70	4.70
Number of cells	38	38	38	38
Take-off weight (kg)	56-74	69-90	82-105	100-130
Glider Weight (kg)	4.2	4.5	4.8	5.1
Min Sink rate (m/s)	<1.2	<1.2	<1.2	<1.2
Max Glide ratio	>7.5	>7.5	>7.5	>7.5
Min-Max speed (km/h)	21-35	22-36	22-36	22-36
Speed with accelerator (km/h)	43	44	45	45
Certification	AFNOR Standard	DHV 1	DHV 1	DHV 1

Comments on certification

All certification manoeuvres have been carried out in tests over a body of water in a stable air mass with known temperature, humidity and pressure conditions. They have been carried out by professional pilots, trained to react in the most appropriate way in the event of a problem.

Certification reports are available on demand from Sky Paraglider:

- alexandre.paux@sky-cz.com
- info@sky-cz.com

Harness settings

For the certification flights, the test pilot used a Sky Paragliders Axel S harness, fitted with ABS (Automatic Bracing System), with a distance from the seat board to the base of the karabiners of 41 cm.

The distance between the centres of the tops of the karabiners was set at 41cm.

We therefore recommend using an ABS harness, with distance from seat board to base of the karabiners between 40 and 44cm, as well as a chest strap set so that the distance between the centres of the tops of the karabiners is 39 to 43cm.

A tighter chest strap increases the risk of twists in the lines, which could happen in particular following a large asymmetric tuck. A looser chest strap leads to a deterioration in behaviour during asymmetric tucks (slower reopening).

Asymmetric and front collapse

Even though classification tests show that the FIDES 2 is able to re-open quickly and without pilot intervention from the most risky of manoeuvres, we recommend that you automatically intervene during asymmetric or frontal collapses; by doing so you will minimise your paraglider's height loss and direction change.

Intervention in event of frontal collapse:

- pump both brakes down symmetrically to accelerate the re-opening and lift hands back up immediately

Intervention in event of asymmetric collapse

- maintain the paraglider on a straight course with a good counter-braking on the opposite side to the collapse.
- accelerate re-opening of the collapsed side by pumping the brake on the side of the collapse

Flat spin and held in asymmetric collapse

Flat spin and held in asymmetric collapses are manoeuvres which are only carried out in testing with the aim of enabling a detailed evaluation of the safety level of paragliders on the market. These two manoeuvres carry significant risks and cause a very large height loss.

Flying

In general, the FIDES 2 is flown in an entirely conventional way. You will however find below several points which should enable you to familiarise yourself more quickly with your new paraglider and to and make the most of its performance.

Take Off

Spread your paraglider out on the ground with the leading edge in the shape of a semi-circle whose radius is slightly shorter than the length of the lines. Take the front risers (red lines) at the quick links, move forward until the front left and right lines are gently tensioned. By doing so you are perfectly centred in relation to the canopy.

In nil wind or a light head wind, with tensioned lines, the FIDES 2 inflates quickly and rises progressively overhead with several committed strides.

We recommend that you do not over pull the risers forward or downwards, which could cause a leading edge deflation, but to simply guide them until the glider reaches its flight position. It is important that your body's centre of gravity remains in front of your feet during glider inflation to keep constant tension on the risers.

A calm and progressive inflation makes it possible to carry out a visual check of the canopy and lines during the final phase of the inflation and therefore to avoid the need to brake the glider.... to then reaccelerate it to its flight speed. Depending on the wind and slope a prudent application of brake can allow you to leave the ground more quickly.

Landing

The FIDES 2 offers excellent performance and in particular a glide ratio of more than 7 which must be correctly managed during approach and landing. It is a glider which is both easy to handle and reactive in turn inversions. Final corrections which are too sudden can cause significant roll. We therefore recommend you take your first flights at a site which you are familiar with, with a spacious and clear landing area.

By making your whole approach using negative flying at a reduced speed, you will have more time to do it calmly and you will greatly reduce pendulum motions of your paraglider. Remember: negative flying consists of lowering both brakes symmetrically to about 30% to slow the glider, then making turns by easing off the outer brake.

An increase in speed in the last few metres of flight enables maximum exploitation of the conversion to land gently.

Turning

The FIDES 2 has been designed to turn pleasantly and so that it is easy to core thermals even without active weight shift flying.

Negative flying (see above) on the one hand allows slowing the glider during certain phases of flight and on the other reduces roll in wingovers. It is not only suitable for the landing approach (with about 30% brake) but also allows flying more slowly to locate areas of lift and to keep the paraglider flatter to optimise sink rate in turns (with about 15% brake)

Rapid descent techniques

In general, to descend, avoid areas of lift. If for any reason you need to descend rapidly, due to changing conditions, you can use the following techniques to increase your sink rate:

A. Big Ears

- pull the risers specially designed for this, outwards then downwards until the wingtips fold under
 - keep them pulled in to prevent the wingtips from reopening
 - depending on the size of the deflation, the sink rate can be increased to 3 to 4 m/s.
- As soon as you release the lines, the paraglider should reopen gradually by itself. You may however speed up re-opening by pumping each brake in turn.

Warning! For safety reasons we recommend pulling in and re-opening the ears one at a time and never simultaneously!

B. Spiral dive

Your FIDES 2 is an easy to handle glider which reacts precisely and progressively to the controls. To engage a spiral dive, gradually lower one brake about half way and maintain the brake in this position. The rotation speed gradually increases, as does the brake pressure and the centripetal force which you are subjected to. You may increase or decrease the bank and speed of rotation by easing off or pulling the brake several centimetres.

Correctly executed, the spiral dive enables you to descend at more than 10m/s. However, movements that are too abrupt and badly coordinated or entering the spiral too quickly could cause a spin!

Depending on your harness setting or your position in it, it is possible that the FIDES 2 could remain in the spiral when you have released the brake. You must therefore exit the spiral by pulling on the outer brake to the rotation. Warning, kinetic energy built up in a spiral must be released gently by gradually increasing the diameter of the turn in order to avoid a very violent conversion and subsequent surge.

Carried out badly, the spiral can become a dangerous manoeuvre; the technique required to control it should be learnt under the instruction of a professional school.

C. B Line Stall

Grasp the B risers at the quick-links and pull them down symmetrically. The paraglider stalls and pitches back slightly before stabilising above your head. Sink rate increases up to 6 to 8 m/s. To exit the stall raise both hands with a single, swift, symmetrical movement. Once you have released the B risers the FIDES 2 as a rule, regains its flight immediately. Incorrect settings (brakes too short) or of piloting or specific aerological conditions (very strong humidity) can however lead to a prolonged parachutal phase. Simply pushing the speed bar enables rapid exit from a stable parachutal stall. If the speed system is not attached a symmetrical pull on the A and B risers gives the same result.

Beware: unlike big ears and a spiral dive, the B line stall is a manoeuvre during which your glider is no longer flying.

This is a stall and should therefore never be carried out close to the ground.

Performance and brake ranges

Your FIDES 2 gives the best glide ratio at hands up speed, which is about 36 km/h. Minimum sink rate is achieved by applying around 10% brake.

From around 30% brake, the aerodynamic efficiency of the FIDES 2 and therefore its performance deteriorates noticeably and brake pressures increase rapidly. A very obvious strong point indicates stall point which is also the maximum brake travel (100%).

In normal flying conditions, the brake range which gives both maximum safety and maximum performance is the range between hands-up position and a third of the brake travel.

Maintenance

The lifespan of your paraglider depends primarily on how carefully you use and maintain it.

Avoid allowing the glider to fall heavily on the upper surface or on the leading edge during inflation or landing. Do not drag it on the ground to lay it out or move it.

Avoid unnecessary exposure to sunlight or any other light source.

Choose a packing technique which protects the reinforcements, do not crumple and do not compress the internal structure (ribs and diagonals) unnecessarily. To maximise your FIDES 2's lifespan, we advise against the use of a stuff sack; the resulting crumpling of the fabric speeds up deterioration of the coating, in particular that of the internal structure (ribs and diagonals).

Always use the inner protection bag to avoid direct contact with the harness buckles and all friction between the canopy and the carry bag.

Never store your paraglider wet or even damp. If your paraglider has been wet by sea water, rinse with soft water. Never use dissolvent or detergent to clean your paraglider. Dry your paraglider out of direct light in a dry and well aired place.

Empty your paraglider regularly. Twigs, sand, stones, etc. ruin the fabric when it is packed away and organic debris of vegetable or animal origin (insects) can encourage the development of mould.

Inspections

Before delivery

Your paraglider has been rigorously inspected, once in the factory and a second time before leaving the Swiss workshop and should have been test flown by the seller. Check that the date and the name of the person responsible for each of these inspections has been marked on the manufacturer's label printed in the centre cell. If missing contact your dealer.

Your paraglider is supplied with a standard brake length corresponding to the length used in certification tests.

Periodic inspections and repairs

For safety reasons, we recommend a glider inspection at least annually, and/or each time you notice an alteration in its behaviour.

Warranty

Your FIDES 2 is under warranty for any manufacturing defect for two years from date of delivery.

The warranty does not cover:

- Deterioration due to insufficient maintenance, inadequate use or use in inappropriate conditions or incapacity.
- Normal wear of material due to very intensive use