



Sirius

PILOT'S MANUAL

Thank you for taking the time to read this booklet.



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About Axis



1. INTRODUCTION

When setting out to design our new tandem glider we had a clear target: we wanted to create the best tandem paraglider possible for recreational and commercial tandem pilots. Pilots who want maximum comfort and enjoyment with minimum stress, performance with sensitive handling, but who rightly demand ever more security.

The Sirius is an intermediate glider. Certified EN-B (“Paragliders with good passive safety and forgiving flying characteristics. Gliders with some resistance to departures from normal flight”), designed for pilots who want to be relaxed and safe in the air and offer a full feeling of security to their passengers. However, as with all tandem paragliders it is necessary that the pilot is familiar and well trained and able react appropriately to any unexpected or unusual behaviour from the passenger.

This manual provides information about the glider, which will help you to fly safely and keep your wing in good condition. If after reading this manual you have any further questions, please don't hesitate to contact us or any authorised Axis dealer.

Thank you for choosing the **Sirius** from **Axis**.

www.axispara.cz

www.axispara.co.uk

SAFETY NOTICE

By the purchase of this equipment, you are responsible for being a certified paraglider pilot and you accept all risks inherent with paragliding activities including injury and death. Improper use or misuse of paragliding equipment greatly increases these risks. Neither Axis nor the seller of Axis equipment shall be held liable for personal or third party injuries or damages under any circumstances. If any aspect of the use of our equipment remains unclear, please contact your local paragliding instructor, Axis dealer or the Axis importer in your country.



2. PRE FLIGHT

Pre-delivery inspection

The Sirius is delivered with a rucksack, inner bag, compression strap and this manual. The dealer or your instructor should have made a test inflation and test flight before delivery to you.

Brake-line length

When you receive your new Sirius, the brake-line length is set the same as the Axis test glider. This length has been finely tuned by Axis test pilots and it should not be necessary to adjust it.

If you feel it is necessary to adjust the brake-line length to suit physical build, height of harness hang points, or style of flying we recommend you test-fly the glider after every 20mm of adjustment.

There should always be free brake travel when the glider is flown hands-up. This means when you look at your brake lines in flight with your hands up, there should be a slight bow, or arc, to the line – the brake lines should not be tight. This is to prevent the brakes being applied when the speed-system is used.

Brake lines that are too short:

- May lead to fatigue from flying with your hands in an unnatural position
- May impede recovery from certain manoeuvres
- Will certainly reduce your glider's speed range.

Brake lines that are too long will:

- Reduce pilot control during launch
- Reduce control in extreme flying situations
- Make it difficult to execute a good flare when landing.

Each brake line should be tied securely to its control handle with a suitable knot.

Other adjustments or changes to your Sirius lead to a loss of guarantee, airworthiness and validity of certification and may endanger both yourself and others.

If you have any suggestions on improvements let us know and our test pilots will try out your ideas in a controlled situation.



Weight range

The Sirius must only be flown within the certified weight range as shown in this manual. The weight range quoted is the total in-flight weight which includes pilot, passenger, glider, harnesses, clothing and accessories.

Pre-flight safety

Sirius is a tandem paraglider and therefore requires a pilot who is qualified to fly paragliders and is also qualified / experienced enough to deal with a passenger and the potential unexpected behaviour of the passenger during flight.

Before flying this glider you should:

- Have the appropriate practical and theoretical training
- Have the required licence and insurance
- Be fit to fly and unaffected by stress or drugs
- Wear a suitable helmet
- Use a suitable harness and emergency parachute
- Make a thorough pre-flight check.



3. FLYING THE SIRIUS

We recommend you practice inflating your glider before flying it, and make your first flights in gentle conditions on a familiar flying site.

A. Normal flight

Pre-flight check

A proper pre-flight check is essential for safe flying.

Before launch lay the glider out into a slight arc and check that:

- Cell openings are free of obstructions
- Lines are free of tangles or knots
- No twigs, grass or other objects are tangled in the lines
- Risers are correctly connected
- Brake lines run freely through the pulleys
- Knots on brake handles are secure
- Carabiners on risers are closed and/or tightened

Trimmers / risers diagrams??

Check the trimmers before each take-off,

Trimmers closed (C & D straps of the risers are same like A & B)

- It is recommended to use the setting for:
 - take-off on a steep slope
 - heavy passenger flights (overall flight weight about xx kg)
 - thermalling - for maximum comfort and efficiency

Trimmers released (C & D straps of the risers are longer than A & B)

- It is recommended to use the setting for:
 - normal take-off conditions
 - light passenger flights (overall flight weight about xx kg)
 - increasing the flight speed

Launch

The key to successful launching is to practice ground-handling on flat ground as often as possible. The Sirius inflates easily and steadily using forward or reverse launch techniques. There is no tendency to overshoot the pilot. To forward (alpine) launch in light or nil wind there is no need to pull the risers hard. Allow the glider to stabilise overhead and run positively forward checking the canopy is fully inflated and clear of any knots or tangles. Reverse launching is recommended in strong wind.



Caution: The pilot must ensure that the passenger is well instructed and understands the launch procedure.

Flight

The best glide speed in calm air is achieved in the hands-up position. The best sink rate is produced with both brake lines drawn down equally to about 20% of their range.

Turning

The handling characteristics of the Sirius require no special or non-standard procedures. Brake pressure is progressive. This gives a responsive and sporty feel to the handling. In an emergency (e.g. a broken brake line) the Sirius can be manoeuvred by steering carefully with the rear risers or by weight shift.

Landing

On your first flights you may be surprised at how well the Sirius glides. Take account of this when making your landing approach and give yourself the opportunity for S-turns or a longer approach than you might be used to.

For a normal, into-wind landing evenly pull the brakes all the way down when you are about one metre from the ground. Under nil-wind conditions, or if you are forced to make an emergency downwind landing, a wrap on each brake will allow you to make a stronger flare.

Caution: The pilot must ensure that the passenger is well instructed and understands the landing procedure. Ensure the passenger can move easily and is ready to react when they touch the ground.

B. Losing altitude

Most pilots will, at some time, want to lose height. This may be because of a change in the weather, you are at cloudbase and don't want to go any higher, or simply because you want to finish your flight quickly.

Ideally, the best way to lose height is to find an area of sink and stay in it. This way you can fly normally to the ground. However, if there is no sink, or if you are in strong lift and want to go down, a rapid descent method may be needed.

There are three main rapid descent methods:

- Big ears
- B-line stall
- Spiral dive

Each of these descent methods places extra, different stresses on gliders and should be avoided if you want to extend the life of the glider.



It is important these manoeuvres are initially practiced under qualified supervision and preferably during a safety training course.

Big ears

This is the easiest and safest technique for descent while maintaining forward speed. Depending on how much of the wing-tip you deflate, 3m/s to 6m/s sink rate can be achieved.

The Sirius can be steered with big ears in by weight-shift alone.

Initiation: Reach up as high as possible and take hold of the outer A-line on each side of the glider. Pull one in first, maintain direction, and then pull in the second. Hold them in firmly. Make sure the lines are pulled down equally on each side and your big ears are even.

Recovery: Under normal circumstances the ears will come out on their own when the lines are released. Opening may be accelerated by slightly pumping the brakes.

B-line stall

This is an effective way of making a rapid descent but doesn't allow any forward speed.

Initiation: Take hold of the B-risers just below the maillons and smoothly pull them down, twisting your hands until the canopy shows a span-wise crease at the B-line attachment points. It is difficult to pull at first but becomes easier as the aerofoil creases. Your sink rate will increase while your forward speed will reduce to practically zero. Don't release the lines immediately - the glider should be left to settle before releasing.

Recovery: Let go of the risers smoothly but determinedly and symmetrically. The Sirius automatically returns to normal flight without any deep stall tendencies but may dive slightly forward. If the risers are released slowly and very unevenly the glider could start to spin.

Spiral dive

The spiral dive is the most effective way of making a fast descent. During the spiral dive the pilot and glider will experience strong centrifugal forces which strain the glider. As such it should be considered an extreme manoeuvre.

Initiation: Weight shift and smoothly pull on one brake so the glider goes from a normal 360-degree turn into a steep turn and from there into a spiral dive. Once established in the spiral the descent rate and bank angle can be controlled with weight shift and the outer brake.



Recovery: The Sirius recovers from a spiral spontaneously as soon as the brakes are released and weight shift returns to neutral. To exit allow the spiral to slow for a turn or two by applying outer brake and weight shift then release smoothly. Always finish a spiral dive at a safe altitude.

Remember: The pilot must be aware that the above manoeuvres might be more difficult to make than they are accustomed to on a solo glider, due to the size of the tandem glider. The pilot must be well trained to handle these manoeuvres even when flying with the maximum take off of xx kilograms.

Caution: The pilot must ensure that the passenger is well briefed before attempting rapid descent methods. Passenger reactions may be unpredictable and the pilots must ensure that they are experienced enough to deal with unexpected reactions.

D. Flying in turbulent conditions

Deflations can occur when flying in turbulence but in most situations the Sirius will stabilise without pilot input. Flying with a little brake applied equally will help to prevent deflations and allow you to experience more direct feedback.

Active flying will help avoid deflations. The aim is to keep the glider above your head in all situations by responding correctly to the glider's movements by using the brakes and weight shift.

It is important these manoeuvres are initially practiced under qualified supervision and preferably during a safety training course.

Asymmetric collapse

The Sirius will normally re-inflate after an asymmetric collapse without input from the pilot, but the wing may turn slightly towards the collapsed side. You should always maintain course and direction by weight-shifting away from the collapsed side. This can be reinforced by applying a small amount of brake on the opposite side to the deflation. If the collapse stays in, the collapsed side can be re-inflated by pumping the brake on the collapsed side in a firm and smooth manner.

If you experience a big collapse while accelerated, the canopy will fall behind you due to the difference in inertia between you and the canopy. You must wait until you pendulum back under the canopy before dealing with the deflation. Reacting too early can risk stalling the glider completely. Release the speed-bar immediately if you have a big collapse during accelerated flight and, while keeping weightshift neutral, apply slight brake to the open side. Let the glider enter a turn if space allows in order to avoid a spin or stall.

Symmetric collapse

A symmetric, or frontal, collapse will normally reopen without any pilot input. The Sirius will regain airspeed with a small surge. Be careful not to brake while the glider is behind you as this could induce a stall.



Deep stall

The Sirius has no tendency to either get into, or stay in, a deep stall. If the glider does enter a deep stall, accelerate the glider out of the deep stall by either pushing on the A-risers or by using the speed bar. Never try to steer out of a deep stall. A wet glider has a higher tendency to deep stall, so if you pass through rain accelerate a little and avoid using big-ears until the glider is dry.

Full stall

This is an extreme manoeuvre that should rarely, if ever, be required. To induce a full stall take one or two wraps of the brake lines and pull both of them down smoothly. Hold them down, locking your arms under your seat until the canopy falls behind you and deforms into a characteristic crescent shape. In a stable full stall the canopy will oscillate back and forth. Be careful not to release the brakes prematurely or asymmetrically.

The Sirius recovers from a full stall automatically after the brakes are released. During correct recovery, where the brakes are let up a little to allow air to enter the glider prior to being released when the glider is in front of you, the Sirius shows no tendency to surge strongly in front of the pilot.

If the brakes are released prematurely or too quickly there is a possible tendency for the glider to surge. This can be corrected by simultaneous equal braking on both sides. Be careful not to release the brakes asymmetrically as this can cause a large asymmetric collapse followed by a tendency to enter a spin.

Negative spin

Should a spin occur the Sirius is capable of recovering automatically when the brakes are released. As the glider surges forward slow it down with the brakes to avoid the possibility of an asymmetric collapse. Always wait for the glider to be in front of you or above you - never brake while it is behind you as this can risk a stall.

Remember: A wrong manoeuvre at the wrong time may change a straightforward situation into a dangerous problem. Extreme manoeuvres also expose your glider to forces which may damage it. Practice these techniques under adequate supervision preferably during a safety training course.



4. CARE, MAINTENANCE AND REPAIRS

The materials used to construct your Sirius have been carefully chosen for maximum durability. If you treat your glider carefully and follow these guidelines it will last you a long time. Excessive wear can occur by bad ground-handling, careless packing, unnecessary exposure to UV light, exposure to chemicals, heat and moisture.

Ground-handling

Choose a suitable area to launch your glider. Lines caught on roots or rocks lead to unnecessary strain on the attachment tabs during inflation. Snagging lines may rip the canopy fabric or damage lines.

When landing, never let the canopy fall on its leading edge. The sudden pressure increase can severely damage the air-resistant coating of the canopy as well as weaken the ribs and seams.

Dragging the glider over grass, soil, sand or rocks, will significantly reduce its lifetime and increase its porosity.

When preparing for launch or when ground-handling, be sure not to step on any of the lines or the canopy fabric.

Don't tie any knots in the lines.

UV damage

Protect your canopy and lines from unnecessary exposure to sunlight.

Storage

Avoid packing your glider when it is wet. If there's no other way, then dry it as soon as possible away from direct sunlight. Be careful to avoid storing your canopy when damp or wet: this is the most common reason for canopy degradation.

Don't let your glider come into contact with seawater. If it does, rinse the lines, canopy and risers with fresh water and dry it away from direct sunlight before storing.

After flight or when storing, always use the inner protection sack.

When storing or during transport make sure your glider isn't exposed to temperatures higher than 50°C.

Never let the glider come into contact with chemicals. Clean the glider with clean lukewarm water only. Never clean using abrasives.

For long-term storage don't pack the glider too tightly. Leave the rucksack zip open when possible to allow any moisture to evaporate.



Repairs

Small holes in the canopy can be repaired using adhesive tape.

Larger repairs or cell replacement should only be carried out by the manufacturer's authorised agent.

Damaged lines should be replaced by your Axis dealer. When a new line has been fitted always check its length against its counterpart on the opposite side of the wing. After replacing a line always inflate the glider on flat ground to check that everything is in order before flying.

After tree or water landings always examine the glider carefully. If you suspect the glider may be damaged in any way contact your nearest authorised Axis supplier.

After 100 hours of flying or two years, whichever is sooner, your Sirius must be checked and tested by the manufacturer's authorised agent.



5. TECHNICAL DETAILS

The Sirius has a relatively high-curve profile for a glider in its class. This provides for great performance, quick turning ability and a high degree of safety.

The canopy is reinforced by tapes which connect attachment points inside the cells – this prevents distortion and helps the canopy keep its form, and also allows fewer line attachment points and so less lines and less drag.

Split A-risers allow for easier identification of lines for big ears.

All the stitching is on the inside of the canopy for greater protection.

Testing and certification

The Sirius has passed certification **EN-B**. The certification of each canopy and its serial number is found on the wingtip label. Certification is valid for all harnesses of ABS type. This type of harness allows a certain degree of adjustment to be made to the length of the waist strap. The recommended distance between the carabiners is **42** cm. (38 cm in case that the body weight of the pilot (passenger) is less than 50 kgs, 46 cm if more than 80 kgs.)

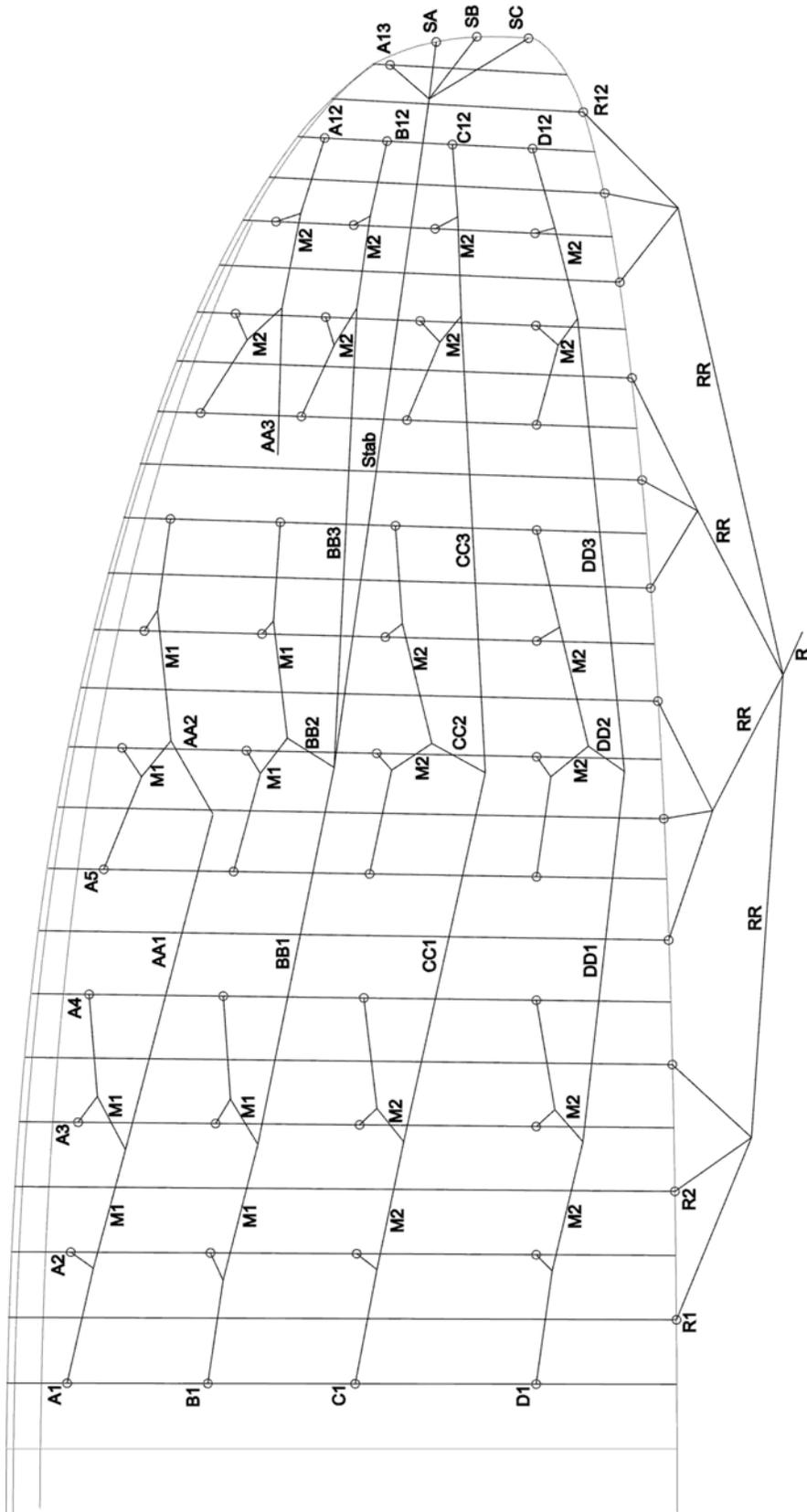
In common with all other paragliders, when cross-bracing is wider than the recommended **42** cm (38, 46 cm), weight-shift control increases and the glider feels more responsive. However, automatic recovery from a collapse when using slack cross-bracing can be slower and more unpredictable. When cross-bracing is tighter, the pilot feels more stable but the effectiveness of weight-shift is less effective.

The Sirius has been designed for hill and/or tow launches. It is not a paramotor wing. The use of a power unit, paramotor or motor with the Sirius has not been tested by the manufacturer or by the testing authority.



Technical specification

Max Wing Chord	cm	345,00
Area	m²	40,81
Span	m	14,70
Aspect Ratio	-	5,30
Projected Area	m²	34,40
Projected Span	m	11,28
Projected A/R	-	3,70
Number of Cells	-	52
Take Off Weight	kg	120-220
Min. Speed	km/h	23
Trimm Speed / Slow down	km/h	36
Trimm Speed / Accelerated	km/h	50
Min. Sink Rate	m/s	1
Gliding Ratio	-	8,7
Homologation	-	EN-B



Line plan



Total line lengths

SIRIUS									
A1	909,1	B1	899,05	C1	900,8	D1	916,85	F1	967,65
A2	900,3	B2	890,4	C2	892,25	D2	908,5	F2	944,15
A3	898,1	B3	888,15	C3	890,55	D3	906,6	F3	935,85
A4	903,05	B4	893,75	C4	895,95	D4	911,9	F4	923,7
A5	896,75	B5	888,95	C5	891,3	D5	907,1	F5	909,9
A6	888,3	B6	881,9	C6	884,4	D6	900,1	F6	911,4
A7	883,85	B7	878,4	C7	881,3	D7	896,9	F7	904,35
A8	884,5	B8	880,05	C8	883	D8	897,75	F8	894,45
A9	869,45	B9	865,8	C9	870,15	D9	884,05	F9	895,75
A10	855,25	B10	852,55	C10	857,95	D10	870,4	F10	882,95
A11	840	B11	839,1	C11	843,25	D11	855,25	F11	871,7
A12	829,05	B12	828,05	C12	831,4	D12	840,7	F12	861,45
		SA	799,35						
		SB	792,15						
		SC	793,45						
		SD	802,8						

Line length including riser, all line cascades and attachment point loop.



Specification of materials

Canopy

Upper surface and Lower surface rear part: Porcher Sport: Skytex 9017 E77A, water-repellent, 40 g/m²

Upper surface and Lower surface leading edge part: Porcher Sport: Skytex 9092 E85A, evolution, 45 g/m²

Ribs: Porcher Sport: Skytex 9017 E29A, hard finish, 40 g/m²?

Reinforcement: Porcher Sport: SR Scrim-2420

Thread: Bonded Nylon D60 (canopy, lines PPSL 120, PPSL 160)

Bonded Nylon D40 (lines PPSL 200, PPSL 275, Technora 230/1.8, Technora 360/2.1, Technora 450/2.5)

Suspension system

Lines

LIROS: Dyneema PPSL 120/1.15, minimum strength 120 daN
(Explainer: Dyneema power polyethylene serial line, 120kg breaking strain, 1.15mm diameter, minimum strength circa 120kg)

LIROS: Dyneema PPSL 160/1.40, minimum strength 160 daN

LIROS: Dyneema PPSL 200/1.42, minimum strength 200 daN

LIROS: Dyneema PPSL 275/1.90, minimum strength 275 daN

Cousin Trestec: Technora 230/1.8

Cousin Trestec: Technora 360/2.1

Cousin Trestec: Technora 450/2.5

LIROS: Dyneema DFLS 200/1.42, minimum strength 200 daN

Risers:

PES webbing 1400/25 mm, Mouka Tisnov, CZ

Maillons:

Rapid Triangle 300/4, ELAIR Service, Vojtech Bezdek, CZ

Trimmer:

25 mm KAMET, Jan Grac, CZ



6. ABOUT AXIS

Axis started to design and make paragliders in 2001. Success swiftly followed and now many of the world's best competition pilots choose to fly Axis. They have won podium places at competitions around the world, including at recent World Cup events and the World Championships.

The lessons learned from these thousands of hours of competition success have been used to develop the Sirius, a new generation of tandem paraglider.

We welcome feedback from you about your new Sirius. Send it to us at *info@axispara.cz* or *info@westslopepg.com*

Please note

We have made every effort to ensure that the information in this manual is correct but please remember it is for guidance only. It is not a training manual. It must not be used as a substitute for proper training under the direction of an approved body.

The manual is subject to change without prior notice. Check the websites for updates and the latest information regarding Axis products.

Enjoy your Sirius!

www.axispara.cz
www.westslopepg.com