AXIS PARAGLIDERS

PILOT´S MANUAL

VENUS SC

VERSION 1.1

VENUS SC VERSION 1.1 ISSUED 31.08.21

CONTENTS

THANK YOU FOR TAKING THE TIME TO READ THIS BOOKLET

1. INTRODUCTION

When setting out to design our cross-country glider we had a clear target: we wanted to create the best paraglider possible for experienced and cross-country pilots. Pilots who want top performance and sensitive handling, but who rightly demand security.

The Venus SC has evolved from our highly successful competition glider the Mercury Sport and shows the same friendly handling that made the Mercury such a popular glider choice with both cross-country and competition pilots.
The Venus SC is a 3-line concept.
The combination of unsheathed Liros Dyneema and Cousin Vectraline give the Venus SC an impressive reduction in drag when compared to the Venus III with consequent increase in speed and glide.
Performance is at the top of the EN C, LTF C class.

With an internal structure based on the successful Mercury Sport competition glider the Venus SC includes our unique differential speed system. This means pilots can achieve a good sink-rate at half or one-third speed bar and maintain good stability at maximum speed: in short, it gives the glider excellent usable speed.

The Venus SC is a performance glider (EN-C) and is meant for qualified pilots who hold a full paragliding pilot license. It is designed as an ideal cross-country glider, suitable for very experienced pilots who fly regularly and who will enjoy a performance glider with good safety characteristics.

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 authorized Axis dealer.

SAFETY NOTICE

By the purchase of this equipment, you are responsible for being a certified paragliderpilot and you accept all risks inherent with paragliding activities including injury anddeath.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 ordamages under any circumstances.If any aspect of the use of our equipment remains unclear, please contact your localparagliding instructor, Axis dealer or the Axis importer in your country.

THANK YOU FOR CHOOSING THE VENUS FROM AXIS.

www.axispara.cz

2.PRE FLIGHT

PRE-DELIVERY INSPECTION

The Venus SC 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.

Trimmers

Venus SC is delivered without trimmers.

Brake-line length

When you receive your new Venus SC, 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 maneuvers
- 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 break line should be tied securely to its control handle with a suitable knot.
Break line travel at maximum weight in flight:

	max. weight in flight	max. weight in flight	max. weight in flight
	up to 80 kg	80 to 100 kg	greater than 100 kg
approximately constant	greater than 55 cm	greater than 60 cm	greater than 65 cm

Other adjustments or changes to your Venus SC lead to a loss of guarantee, airworthiness and validity of the 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 Venus SC 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, glider, harness, clothing and accessories.

PRE-FLIGHT SAFETY

Before flying this glider, you should:

- Have the appropriate practical and theoretical training
- Have the required license 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.
- Carabiners on risers are closed and/or tightened

3. FLYING THE VENUS SC

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

Launch

The key to successful launching is to practice ground-handling on flat ground as often as possible. The Venus SC 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 stabilize 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.

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 Venus SC 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 Venus SC can be maneuvered by steering carefully with the rear risers or by weight shift.

Using the speed system

The speed system on the Venus SC comes supplied with Brummel hooks ready to attach to your own speed bar of choice. When you have done this, check the speed system runs smoothly by hanging in your harness before flying.
In particular check that the speed system won't be engaged when in normal flight. Unnecessary knots and loops in a speed system are not recommended.

Maximum useable speed is one of the strong points of Axis paragliders and the Venus SC is no exception. However, in spite of this exceptional stability, any collapse at full speed will be more severe than the same event experienced at trim speed. Always keep both hands on the controls when flying fast and be ready to release the speed system immediately at the first sign of a collapse. Use the speed system carefully when flying close to the ground or the terrain.

Landing

On your first flights you may be surprised at how well the Venus SC 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 meter 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.

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 cloud base 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 maneuvers 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 wingtip you deflate, 3m/s to 6m/s sink rate can be achieved. While in big ears your forward speed can be increased by using the speed system.

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

Initiation:Reach up as high as possible andtake 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 stay in until you pressurize the glider 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 Venus SC 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 maneuver.

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 Venus SC should recover 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.

Important notice!: A pilot who is dehydrated and/or not accustomed to spiraling can lose consciousness in steep spiral dive! |As with all types of aircraft, we advise to assist the glider to exit from spiral dive in a controlled manner. Due to its long lines the VENUS SC can generate extremely high G-force in spiral dive. You should use only moderate spirals so as not to put unnecessary load on you and your lines.

C. FLYING IN TURBULENT CONDITION

Deflations can occur when flying in turbulence but in most situations the Venus SC will stabilize 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 maneuvers are initially practiced under qualified supervision and preferably during a safety training course.

Asymmetric collapse

The Venus SC will normally re-inflate after an asymmetric collapse without input from the pilot, but the wing will turn 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 your 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 weight shift 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 Venus SC will regain airspeed with a surge. Be careful not to brake while the glider is behind you as this could induce a stall.

Deep stall

The Venus SC 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 maneuver 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 Venus SC 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 Venus SC may surge slightly in front of the pilot.

If the brakes are released prematurely or too quickly there is a possible tendency for the glider to surge strongly. 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 Venus SC 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.

Procedure for steering in case of failure of primary controls

Should you find yourself in the situation where the brake handles are unusable the Venus SC can be steered with weight shift or by gently pulling down on the rear risers. You should reattach both brake handles to the risers hold the rear risers in each hand and steer using weight shift and the appropriate C riser. It is important to remember that the effective travel of the C-line for steering is much shorter than with the brakes.

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

There are no any special flying procedures or configuration needed for this Venus SC. Venus SC is designed for single seat flying and should not be used for tandem flying!

Tow launch

The Venus SC is suitable for towing by pilots who have the relevant towing rating. The Venus SC has no tendencies towards deep stall/parachuting. There is sufficient margin to counter steer the glider in a normal towing situation.
Make sure you use proper equipment, experienced personnel, the recommended techniques and all relevant safety precautions for towing.

Motorized flight

The Venus S is not certified for motorized flight. Our current range of gliders suitable for paramotoring can be found in the paramotoring section on ***www.axispara.cz*** .

4. CARE, MAINTENANCE AND REPAIRS

The materials used to construct your Venus SC 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 authorized 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 authorized Axis supplier.
- After 100 hours of flying or two years, whichever is sooner, your Venus SC must be checked and tested by the manufacturer's authorized agent.
- **Venus SC should be kept in best possible conditions to prevent any failures and/or non-standard flying modes/reactions to actual air conditions.** It's your responsibility as a pilot to ensure that your wing is airworthy at all times.

5. TECHNICAL DETAILS

The aspect ratio of 6.60, the high number of cells (64), and the reduced total line length gives the Venus SC its proven high performance.

The inner structure is a direct development from Axis's Mercury Sport competition glider. The changes in the internal structure mean higher passive safety. The canopy is reinforced by tapes which connect attachment points inside the cells – this prevents distortion and helps the canopy keep its form.

A new line system helps to reduce the length of the main lines. The brake attachments have been moved to the trailing edge to create more precise handling and feedback.

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

Testing and certification

The Venus SC has passed certification EN-C. The certification of each canopy and its serial number is found on a label inside of a central rib.

The Venus SC 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 Venus SC has not been tested by the manufacturer or by the testing authority.

There are no other adjustable or removable or variable devices other than speed-system Brummel hooks and standard brake handles (for adjustment, please check page 4).

Test sample glider for each size was checked by testing laboratory after the test flights in accordance to the data in this manual – all suspension lines, control lines and risers. For overall line lengths was used tolerance of +/- 5 mm.

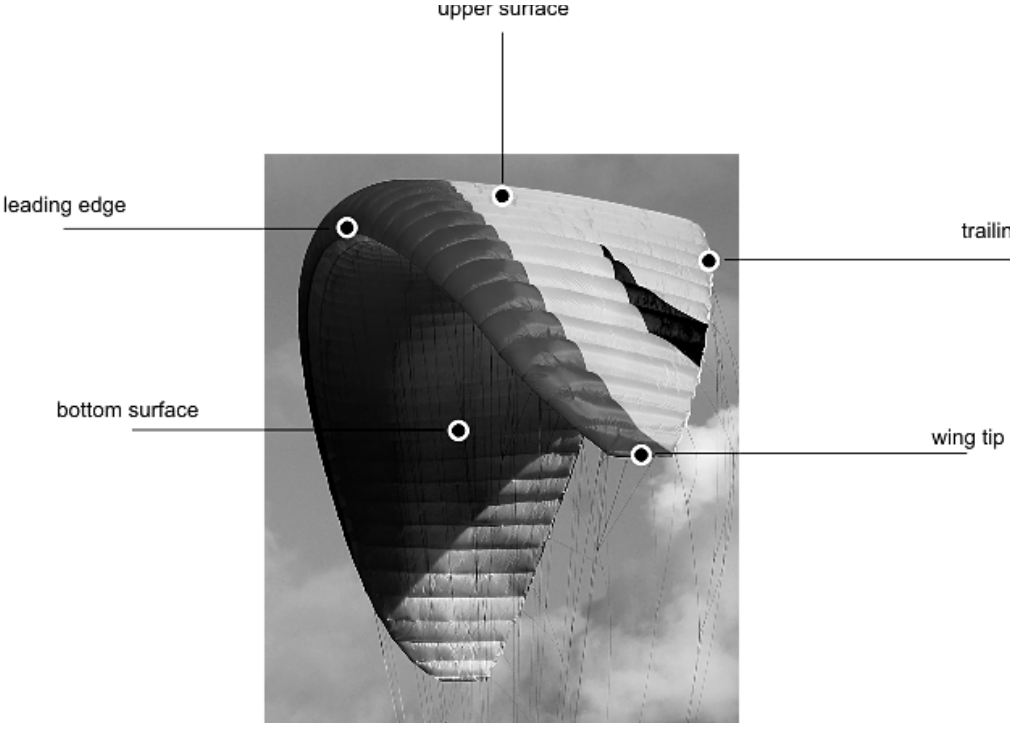
Dimensions given in the User's Manual where checked by testing laboratory – Air Turquoise SA.

Disposal and environmental information

Environmental protection plays an important role in the selection of materials and the manufacture of an AXIS product.We are privileged to fly in areas of outstanding natural beauty. Respect and preserve nature by minimizing your impact on the environment. When visiting an area, contact the local club for details of environmentally sensitive areas and local restrictions.

We use only non-hazardous materials that are subjected to continuous quality and environmental impact assessments. When your paraglider reaches the end of its useful life in a number of years' time, please remove all metal parts and dispose the lines, canopy and risers in a waste incineration plant or recycling center and/or dispose of it with consideration and follow any local regulations.

Size	XS	S	M	L	XL
Zoom		96,3	100	103	106,5
Max Wing Chord		234,00	244,70	252,00	260,61
Area		23,43	25,43	26,97	28,84
Span		12,47	12,95	13,34	13,79
Aspect Ratio	6,60	6,60	6,60	6,60	6,60
Projected Area		20,35	21,37	23,45	24,24
Projected Span		9,70	10,08	10,38	10,73
Projected A/R	4,10	4,63	4,75	4,59	4,10
Number of Cells	64	64	64	64	64
lines consumption					
Take Off Weight	62-82	75-95	85-105	95-117	105-130
Min. Speed					
Trim Speed	40	40	40	40	40
Acc. Speed		54	60	54	
Min. Sink Rate		1,02	0,9	1,02	
Gliding Ratio					
Homologation		EN-C	EN-C	EN-C	



LINE CHART

All measurements are done under a gradual tension of 50N.
Line tolerance is +/- 10mm

Venus SC small size

A1	7524	B1	7461	C1	7545	A13	6554	F1	7815
A2	7483	B2	7414	C2	7498	B13	6574	F2	7527
A3	7431	B3	7363	C3	7447	C13	6615	F3	7319
A4	7444	B4	7376	C4	7460	SA	6503	F4	7243
A5	7325	B5	7266	C5	7362	SB	6538	F5	7026
A6	7275	B6	7219	C6	7314	SC	6597	F6	6915
A7	7198	B7	7148	C7	7242			F7	6866
A8	7201	B8	7155	C8	7243			F8	6878
A9	7061	B9	7032	C9	7082			F9	6732
A10	6969	B10	6946	C10	6991			F10	6708
A11	6868	B11	6856	C11	6861			F11	6680
A12	6858	B12	6853	C12	6867			F12	6754

Venus SC medium size

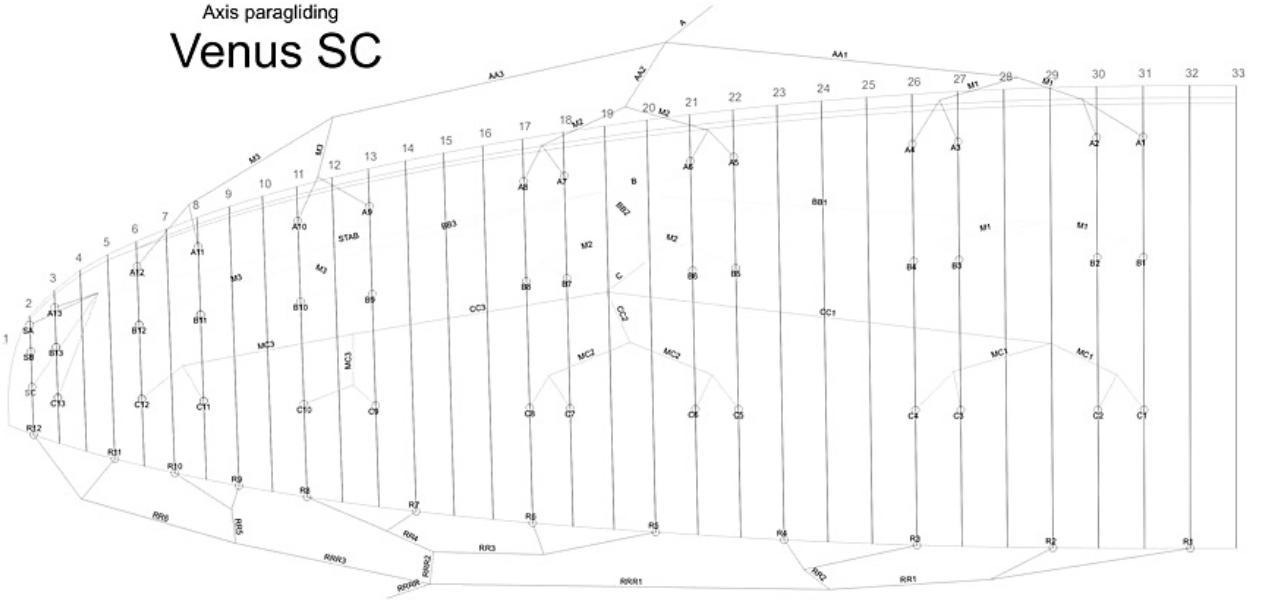
A1	7835	B1	7760	C1	7839	A13	6851	F1	8122
A2	7786	B2	7712	C2	7791	B13	6853	F2	7815
A3	7734	B3	7660	C3	7742	C13	6844	F3	7602
A4	7747	B4	7675	C4	7754	SA	6781	F4	7518
A5	7630	B5	7559	C5	7651	SB	6810	F5	7325
A6	7577	B6	7508	C6	7599	SC	6844	F6	7211
A7	7496	B7	7435	C7	7520			F7	7159
A8	7498	B8	7437	C8	7525			F8	7171
A9	7334	B9	7293	C9	7352			F9	6991
A10	7233	B10	7199	C10	7257			F10	6967
A11	7155	B11	7119	C11	7023			F11	6939
A12	7154	B12	7121	C12	7009			F12	6992

Venus SC large size

A1	8064	B1	7983	C1	8063	A13	7037	F1	8366
A2	8016	B2	7935	C2	8019	B13	7041	F2	8053
A3	7962	B3	7883	C3	7962	C13	7109	F3	7831
A4	7975	B4	7902	C4	7980	SA	6966	F4	7745
A5	7849	B5	7783	C5	7869	SB	7001	F5	7512
A6	7799	B6	7729	C6	7820	SC	7061	F6	7396
A7	7717	B7	7658	C7	7740			F7	7340
A8	7720	B8	7661	C8	7743			F8	7355
A9	7527	B9	7492	C9	7558			F9	7203
A10	7420	B10	7399	C10	7465			F10	7178
A11	7313	B11	7295	C11	7286			F11	7150
A12	7314	B12	7299	C12	7273			F12	7229

Axis paragliding

Venus SC



RISER CONFIGURATION

VENUS SC

Accelerator travel is 12,5 cm

Specification of materials

Canopy

Upper surface: Porcher Sport: Skytex 9017 E25A, universal, 38 g/m2
Lower surface: Porcher Sport: Skytex 70000E3H, classic II, 27 g/m2
Ribs: Porcher Sport: Skytex 9017 E29A, hard finish, 40 g/m2
Porcher Sport: Skytex 70000E91, hard finish, 27 g/m2
Reinforcement: Polyamide rods
Thread: Bonded nylon D60, D40

Suspension system

Lines

LIROS: Dyneema DC 120/ comp line, 0.85mm, minimum strength 120 daN
LIROS: Dyneema DC 60/ comp line, 0,7 mm, minimum strength 60 daN
LIROS: Dyneema DC 200/ comp line, 1,6mm, minimum strength 200 daN
LIROS: Dyneema DFLS 200/ PES cover, 1.42mm, minimum strength 200 daN
Cousin Trestec: Vectraline 12100/ comp line, 0.6mm, minimum strength 50 daN
Cousin Trestec: Vectraline 16140/ comp line, 0.7mm, minimum strength 75 daN
Cousin Trestec: Vectraline 16330/ comp line, 1.0mm, minimum strength 145 daN
Cousin Trestec: Vectraline 12240/ comp line, 1,2mm, minimum strength 200 daN

Risers:

Cousin Trestec: technora/PES webbing ref3455, width 12mm, minimum strength 1100 daN

Maillons:

Elair Servis: Niro triangle 4/200, minimum strength 200 daN

Speed system pulleys:

Riley Fittings Australia: RM 302
Harken USA, Ball Bearing Pulley 467

All spare parts could be obtained from Axis Para at www.axispara.cz or our local dealer in your country.

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 Venus SC, a new generation of glider.

We welcome feedback from you about your new Venus SC. Send it to us at **info@axispara.cz.**

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 Venus SC!

www.axispara.cz

Type :

Serial number :

Manufacturing date :

Local dealer contact :

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Airport Brno - Medlánky
Turistická street
621 00 Brno
Czech republic
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Contact your local dealer
www.axispara.cz/dealers

AXIS PARAGLIDERS