XC Racer 2

Flow PARAGLIDERS

WELCOME

"Flow is a term used to describe the complete (body-mind-soul) feeling of being so totally engaged in an activity that there is a sense of complete immersion in the experience. Self-conscious thoughts give way to feeling at one with the activity and the environment, and time is no longer an ever-present consideration."

The experience of flying a paraglider is what inspires us. The pure, focused concentration, the feeling of complete immersion with the environment, and the intrinsic pleasure in the activity itself are all sure signs of the flow experience.

Thank you for flying Flow paragliders. We hope you will be satisfied with this product and wish you many happy flights. We strongly recommend that you read this manual before the first flight. This manual is designed to help you to quickly familiarize with this beautiful glider.

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General information

User manual for the FLOW XCRacer2

This manual offers all the necessary information that will familiarise you with the main characteristics of your new paraglider. Although this manual informs you about your glider, it does not offer the instruction requirements necessary for you to be able to pilot this type of wing. Flying instruction can only be taught at a paragliding school recognized by the Flying Federation of your country. Nevertheless, we remind you that it is important that you carefully read all the contents of the manual for your new XCRacer2.

The Flow Paragliders XCRacer2 is our EN D 2liner glider designed for the experienced pilot. The XCRacer2 is in the vanguard of paragliding design. A glider made for champions who are chasing XC distance records or the top of the podium. A no compromise project, where all the latest innovation technologies are applied offering maximum efficiency. Despite the performance it delivers, the XCRacer2 is a well-balanced glider and pilots who are accustomed to fly high performance gliders will feel comfortable and at ease with the XCRacer2.

The XCRacer2 has been certified as EN D, having met all the requirements of E EN 926-2:2013+A1:2021 & NfL 2-565-20

Please note that any changes to the paraglider will invalidate the result of the certification. Correct usage of the glider is the pilot‘s responsibility. The manufacturer and distributor do not accept liability for loss or damage as a result of the misuse of this paraglider. It is the pilot’s responsibility to comply with legal regulations and to maintain the airworthiness of the aircraft.

This guide meets the requirements specified by EN 926-2:2013+A1:2021 & NfL 2-565-20 for user manuals.

User manual version V2 dated: 12/2023.
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PILOT'S PROFILE

The XCRacer2 is more solid and offers better performance than the previous version. A new profile in combination with a new arc, updated trim and sail tension gives this glider unprecedented performance and comfort in flight. It allows the pilot to fly at its maximum with a great deal of comfort and glider authority. Top speed has increased and glide at speed has improved. The rear riser gives the perfect tension to feel and control the glider. We created a glider with real world performance to fly and compete in equal terms against the CCC gliders. was built for experienced XC or competition pilots who are looking for a top-level performance glider in a comfortable and accessible package. XCRacer2's biggest quality is its stability while on bar. Other strengths worth mentioning are its superb glide, its excellent thermaling ability combined with its incredible top speed. The XCRacer2 is a new glider concept. The design and structure were carefully engineered to perfection to allow the pilot to fly hard but with a free mind, knowing the glider won't give unexpected surprises.

Even though the XCRacer2 transmits a great deal of comfort in flight it is important to emphasise that a glider of this calibre should only be flown by pilots who have experience in flying high aspect ratio gliders, who are competent in the recovery techniques. For pilots who understand about active piloting and who are confident to fly in turbulent conditions and have an understanding of flying 2 liners high performance gliders.

XCRacer2 is not suitable for beginner or intermediate pilots, aerobatics, training, or tandem flights.

SPECIFICATIONS

XC RACER 2	S	M	ML	L
FLAT AREA	21.75m2	23.25m2	24.75m2	26.55m2
PROJECTED AREA	18.63m²	19.52m2	21.20m2	22.74m2
FLAT WINGSPAN	12.5m	12.68m	13.30m	13.70m
PROJECTED SPAN	10.01m	10.30m	10.73m	11.11m
ASPECT RATIO	7.0	7.0	7.0	7.0
PROJECTED AR	5.45	5.45	5.45	5.45
MAX CHORD	2.21	2.27	2.36	2.48
NUMBER OF CELLS	83	83	83	83
GLIDER WEIGHT * ESTIMATED	4.8	5.2	5.6	5.9
TAKE OFF WEIGHT	80-95	90-105	100-115	110-125
CERTIFICATION (EN 926-2 & LTF)	EN D	EN D	EN D	EN D

TAKE-OFF, FLIGHT, AND FLYING TECHNIQUES

The XCRacer2 should be flown as a normal paraglider. However, there are several points listed below which should help you to familiarize with your new paraglider quicker.

The XCRacer2 was designed as a foot launchable solo paraglider only. The XCRacer2 may be tow-launched. It is the pilot's responsibility to use suitable harness attachments and release mechanisms and to ensure that they are correctly trained on the equipment and system employed.

Before take-off

- Check the canopy for rips or tears. Also, inspect the internal structure (ribs, diagonals) and seams.
- Check that the lines are not damaged or tangled.
- Check if the quick links connection between lines to risers are undamaged and tightened.
- Check that the risers are not damaged or twisted.
- Check if the speed system works freely and make sure that the lines are long enough.
- Check that the brake handles are correctly attached and that each line runs freely through the pulley.

Take-off

Lay the paraglider out with the leading edge in a horseshoe shape. Hold the A risers close to the quick links and move forward until the lines get stretched. You should now be perfectly centred with your wing. With no wind or light headwind, with lines stretched, The XCRacer2 inflates rapidly and rises over your head with some dynamic steps. We recommend that you do not pull risers too forward or down, which could cause a collapse of the leading edge, but simply follow them until the glider reaches its angle of flight. It is important that the centre of gravity of your body stays in front of your feet during the inflation of the glider to constantly load the risers. A controlled inflation allows you to check the canopy and lines during the last phase as it comes up and thus avoids the need to use brakes. Depending on the wind conditions or the slope, an adequate use of brakes can help you to take-off quicker.

Landing

Because of the exceptional glide for this type of glider, high caution is recommended in the stages of approaching and landing. The XCRacer2 is a fast glider, any action on the brakes may cause significant reactions. It is therefore recommended to execute the first flights in a familiar environment and under easy conditions. With negative steering, there is more time for the manoeuvres to be performed steadily, which results in reducing the pendulum movements of the paraglider. Reminder: Negative steering involves applying the brakes symmetrically by about 30% of the maximum range to slow the paraglider and a simultaneous turning by means of releasing the outside brake. Speeding up just prior to landing allows a more effective flare and therefore a gentler landing.

Turning

XCRacer2 was designed to perform well in turns. Negative steering (see above) on one hand slows the paraglider in certain phases of the flight and on the other hand reduces excessive rolling during turn reversals. It is not only designed to turn (with approx. 15% brake) but also to fly slowly in order to help identify the areas of lift and to keep the paraglider flatter to minimize the sink rate in a turn (with 5% brake). Symmetrical brake-input at 5-10 % enables you to keep your wing under control – to brake further when pitching and to release when the canopy banks up.

RAPID DESCEND

Techniques

To descend, the paraglider must fly away from the areas of lift. In case any problems occur, the following techniques might be used to increase the sink rate.

- ***Spiral Dive**:* The XCRacer2 is a manoeuvrable wing which responds to any input easily. To initiate the spiral, apply one brake progressively to about 35% and hold it in its position. The speed of rotation, brake pressure and the centrifugal force experienced will all progressively increase. The angle or the speed of rotation can be decreased or increased by releasing or pulling the brake by several centimetres in conjunction with weight shifting. Once mastered, the spiral dive allows you to descend by more than 10 m/s. Movements which are extremely abrupt or badly synchronized or a very quick initiation of the spiral can result in a spin. To exit the spiral dive, the kinetic energy must be converted to potential energy by slowly releasing the inside brake.
  CAUTION: Spiral dives should be executed with care with this type of glider due to high G forces The risk on blacking out on this type of wing can occur.

- ***B-line Stall:*** This manoeuvre is not possible on this glider. Traditional B-line stalls are not possible with 2 liners. Pulling the B-lines firmly will result in a full stall. Do not do it.

- ***Big ears***: Due to the incredible solid aerofoil on this glider, big ears in a traditional way doesn't work on the XCRacer2. We recommend the pulling the **Bmain3 tip Stall** technique for this descend manoeuvre.

  For this specific glider, big ears can be done with a the **Bmain3 tip stall**. First apply ¼ of speed bar to increase the trim speed slightly then pull the Bmain3 (stabile) line until the wingtip section of the glider has stalled. To resume normal flight simply release Bmain3 and the glider will resume its normal flying envelop.

  *The traditional way to do big ears is the following (note in big ears are not applied to this glider): take the line **Amain3** and simultaneously, smoothly pull them outward and downward. The wingtips will fold in. Let go of the lines and the ears will re-inflate automatically. If they do not re-inflate, gently pull on one of the brake lines asymmetrically first. Once one side is inflated then give another pump on the*

opposite side. For directional control while using the Big Ears, use weight shift. We recommend the pilot to re-inflate asymmetrically, to avoid unnecessary change on the angle of attack, more so if you are flying near the ground or flying in turbulence.

- *Drag Chute:* A Spiral dive with the combination with a Drag Chute is the most recommended descent technique to de deployed for the XCRacer2. We recommend pilots flying the XCRacer2 to always fly with one. The D-Chute will allow the pilots to enter a spiral dive without the extreme G – forces and still reach descent rates of up to minus 10 m/s.

PERFORMANCE & USE OF BRAKES

Use of brakes

XCRacer2's best glide is at a trim speed (no brakes) – about 39 km/h. The minimum sink rate is achieved by applying approx. 15% of the brakes. When using more than 30% of the brakes, the aerodynamics and the performance of the glider are likely to deteriorate and the effort to manoeuvre will increase quickly. In case of extremely high brake pressure there is a great risk of a stall. Which occurs at a full brake travel (100% of the brakes) 50cm. In normal flying conditions the optimal position for the brakes, in terms of performance and safety, is within the top third level of the braking range.

Active B Riser Control

When gliding at trim speed or in accelerated flight, we recommend piloting the wing with the B-risers. This gives an improved feel and control over the wing enabling you to fly actively without using the brakes (which would cause drag and pitch movements). The direct feel allows you to stop collapses before they happen and maintain higher speeds and higher levels of efficiency.

Use of Speed Bar

XCRacer2 is equipped with a speed system. The profile of XCRacer2 has been designed to fly stable through its entire speed range. It is useful to accelerate when flying in strong winds or in extreme descending air. For fitting and positioning the speed bar consult the instructions of the harness manufacturer. Before every flight check that the speed bar works freely and that the lines are long enough to ensure that it is not engaged permanently. Use of the speed bar increases the maximum speed of the paraglider by up to 30% of the trim speed. However, it does reduce the angle of attack and therefore there is a risk of a frontal (or asymmetric) collapse. We therefore do not advise to use the speed bar near the ground.

ASSYMETRIC & FRONTAL COLLAPSES

Despite the tests proving XCRacer2 recovers on its own after collapses, it is a EN D glider therefore active piloting is recommended in case of an asymmetric or frontal collapse. Active piloting will reduce the loss of altitude and a change of direction.

Asymmetric collapse

Despite the great stability of the profile of the XCRacer2, heavy turbulent conditions may cause part of the wing to collapse asymmetrically. This usually happens when the pilot has not foreseen this possible reaction of the wing. To prevent the collapse from happening, pull the brake line corresponding to the compromised side of the wing, this will increase the angle of attack. If the collapse does happen, the XCRacer2 will not react violently, the turn tendency is very gradual, and it is easily controlled. Lean your body towards the side that is still flying in order to counteract the turn and to maintain a straight course, if necessary, slightly slow down the same side. The collapse will normally open by itself but if that does not happen, pull completely on the brake line on the side, which has collapsed (100%). Do this with a firm movement. You may have to repeat this operation to provoke the re-opening. Take care not to over-brake on the side that is still flying (turn control) and when the collapse has been solved; remember to let the wing recover its flying speed.
Bring both brakes down symmetrically to speed up the reopening of the paraglider, and then raise your hands back up immediately.

Frontal (symmetric) collapse

The profile of the XCRacer2 has been designed to widely tolerate extreme changes in the angle of attack. A symmetric collapse may occur in heavy turbulent conditions, on entry or exit of strong thermals or lack of adapting the use of the accelerator to the prevailing air conditions. Symmetrical collapses usually re-inflate without the glider turning, but you can symmetrically apply the brake lines with a quick deep pump to quicken the re-inflation. Release the brake lines immediately to recover optimum flight speed.

FULL STALL

Certain 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:

- A poorly timed or an extensive use of brakes when the air speed of the wing is reduced.
- Soaked or heavily drenched leading edge (from rain or a cloud) can result in a stall due to an uneven airflow over the leading edge.

Whatever the cause, a full stall can be either symmetrical or a in a configuration of a spin.

Your first reaction should be to fully raise both hands. This normally allows the glider to return to normal flight but If nothing happens after a few seconds, apply the speed bar to encourage the wing to regain normal flight. Ensure the glider has returned to normal flight (check your airspeed) before using the brakes again.

FLYING WITHOUT BRAKES

If a brake line or pulley breaks, it is possible to fly the XCRacer2 using the B-risers (rear riser). The movements must be well controlled as the deformation of the wing, due to the traction on the B risers, is greater than that produced by using the brakes

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CRAVATS

If the tip of your wing gets stuck in the lines, this is called a cravat. Due to the large amount of drag, cravats can turn your wing into a spiral dive very quickly. This can be disorientating and difficult to control if allowed to develop. To recover from a cravat immediately, anticipate the movement of the wing, first stabilise the direction of your wing with outside brake and weight shift. Once you have control of the rotation and sink rate, apply strong deep pumps of the brake on the cravated side whilst weight shifting away from the cravat. It is important to lean away from the cravat otherwise you risk spinning or deepening the spiral. The aim is to empty the air out of the wing tip whilst it is unloaded. Correctly done, this action will clear the cravat. If it is a very large cravat and the above options have not worked, then a full stall is another option. This should not be attempted unless you know what you are doing and have a large amount of altitude. Remember, if the rotation is accelerating and you are unable to re-open the wing or control the decent rate, you should throw your reserve parachute whilst you still have enough altitude.

SIV AND COLLAPSE LINES

The XCRacer2 was certified with the use of collapse lines, therefore if you wish to induce collapses during SIV training, collapse lines must first be installed correctly. Collapse lines are available as an optional extra and should be added to the wing before inducing collapses. The collapse lines will come with an added-on instruction manual and an extra manual explaining how they should be installed properly. Be sure to attach to both sides of the canopy for symmetric deflations. Flow Paragliders would like to remind you that SIV manoeuvres should be learnt under the supervision of a qualified instructor and always used with caution. We strongly recommend expert tuition over water with all the necessary safety precautions in place. Only attempt SIV with this wing if you have previous SIV experience with a high aspect ratio wing. Ensure that you fully understand the correct and safe use of this equipment before attempting SIV

ADJUSTMENT OF THE HARNESS

For test flights the pilots used ABS harnesses with the following set-up:

SIZE	Distance from seat board	Distance between hang points
XCRacer2 S	43cm	44cm
XCRacer2 M	43cm	46cm
XCRacer2 ML	43cm	46cm
XCRacer2 L	43cm	46cm

We recommend adjusting the harness in a very similar way to the test adjustment. Excessive cross-bracing increases the risk of twisting the risers. A looser setting will result in a tendency to lean towards the collapsed side. Lower hang points reduce the roll-stability of your harness and can slow down the reopening of asymmetric collapses. Higher hang points (+ 2 up to +4 cm) have no influence on inflight safety and can therefore be tolerated.

MAINTENANCE & CHECKS

The Flow XCRacer2 is a high-end piece of equipment and should be technically and periodically checked to ensure proper airworthiness.

Maintenance tips

The life of your paraglider therefore depends largely on the care which you maintain and use it. To maximize life span of your wing, respect the following rules:

- Avoid dropping the canopy on its top surface or on its leading-edge during inflation or landing.
- Avoid dragging it across the ground when moving it.
- Avoid exposing your glider unnecessarily to sunlight.
- Choose a packing technique that doesn't damage the plastic rods and that doesn't crease the internal structure excessively. A concertina type bag is the ideal bag for folding the XCRacer2.

Always use the protective bag to avoid direct contact with the harnesses and buckles of any friction between the blade and the rucksack.
Never store your paraglider when it is damp.
If immersed in sea water rinse immediately with fresh water. Do not use any detergents. Dry your paraglider away from direct light in a dry and well-aired place.
Empty any foreign bodies from your paraglider regularly, for example sand, stones or 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 mould growth.

Periodic inspections

The paraglider has undergone a series of tests during the production process and consequent flight tests before the delivery. It is delivered with a standard brake setting same to the one used during the testing. Periodic Checks & Repairs: for safety reasons, it is recommended that the paraglider is checked at least every two years, or after 100 hours and anytime there is a change in its behaviour. However, if you are a frequent flyer (more than 100 hrs per year), we recommend that you check your glider every 100 hours. The person performing the check should inform you about the condition of your glider and if some parts will need to be checked or changed before the next normal service check period.

WARRANTY

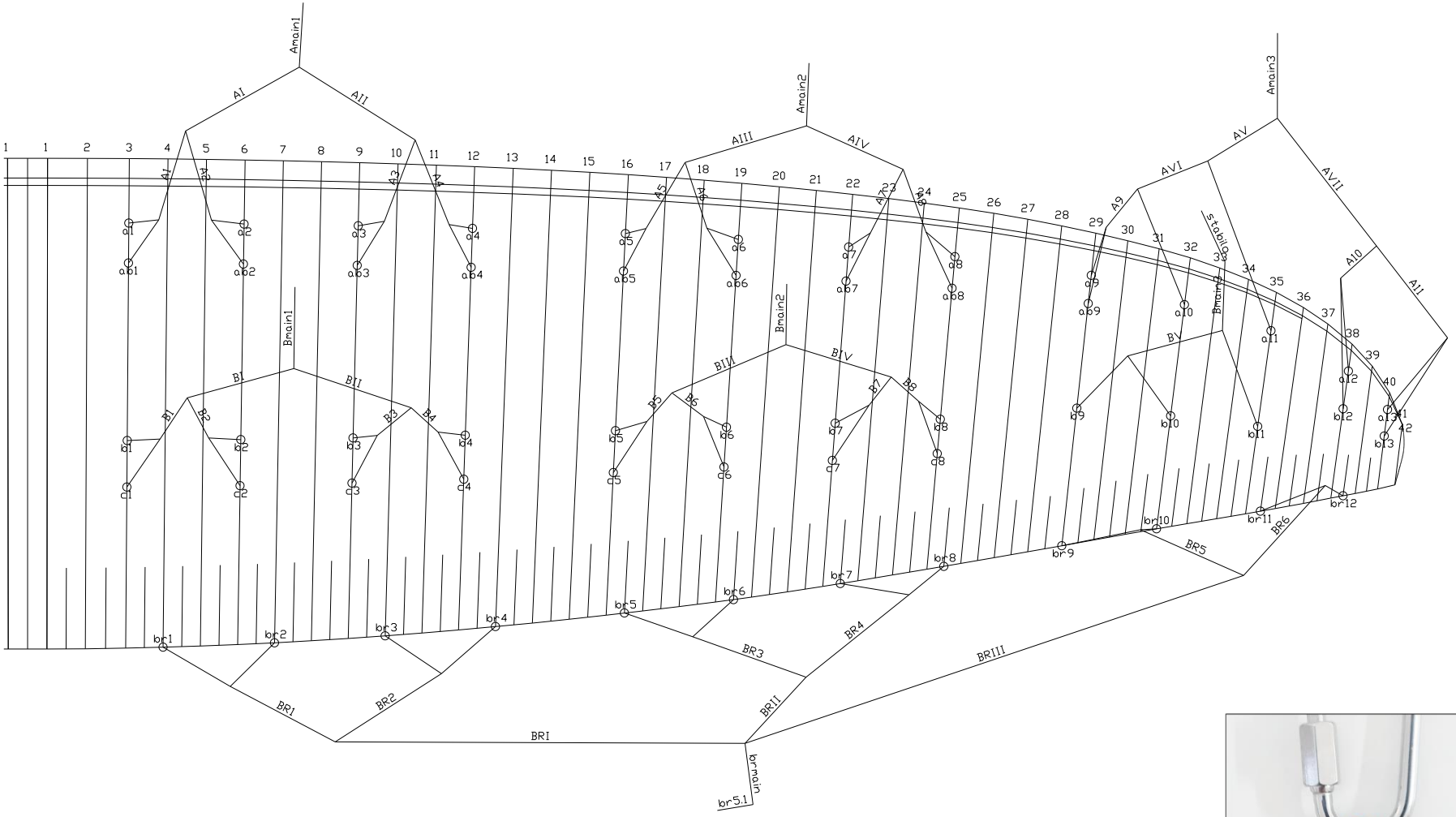
Flow paragliders' **warranty** covers any material defects or any production fault for two years or 250 hours since the date of purchase.
The guarantee does not cover:

- Damage caused by misuse.
- Neglecting the regular maintenance
- Overloading or misuse of the glider
- Damage caused by inappropriate landings.

SUMMARY

Safety is the single most important thing in our sport. We recommend to always be alert of the weather, fly as regularly as you can and ground handle as much as possible. Practicing ground handling will keep your skills alive and will support you especially when conditions at launch aren't perfect or the site is difficult.
Please always respect the weather! Monitor the conditions and the forecast closely and understand which conditions are right for your level of flying or for flying in general. Lots of pilots get hurt due to misjudging weather conditions and we don't want you to be one of them.
We would also like to emphasise respecting our beautiful nature and looking after your flying sites. If you need to dispose the wing, please don't dispose of it in the normal household waste but in an environmentally responsible way. If you are unsure, please contact your local council or government.

LINE PLAN



- On a new line set, double loops should be added on Bmain1, Bmain2 and Stabilo lines

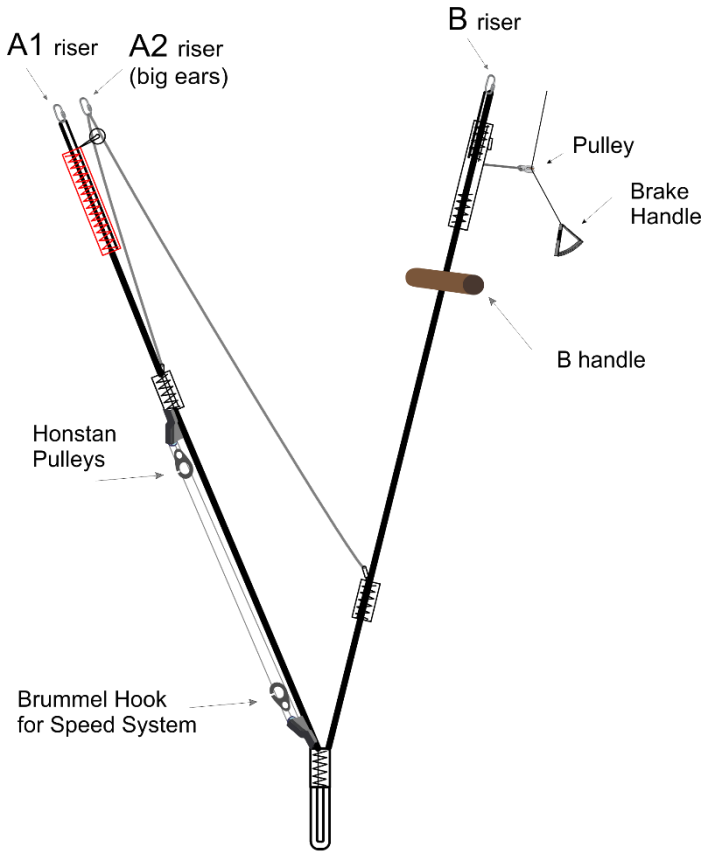
RISER DIAGRAM

The XCRacer2 has been designed with 2 risers per side. The A1 riser is covered with RED webbing, to allow for easy identification. The A risers are split into two, the smaller riser - holding only the outermost A line . They also feature ergonomic handles for efficient B-riser control.
The risers do not feature trimmers.

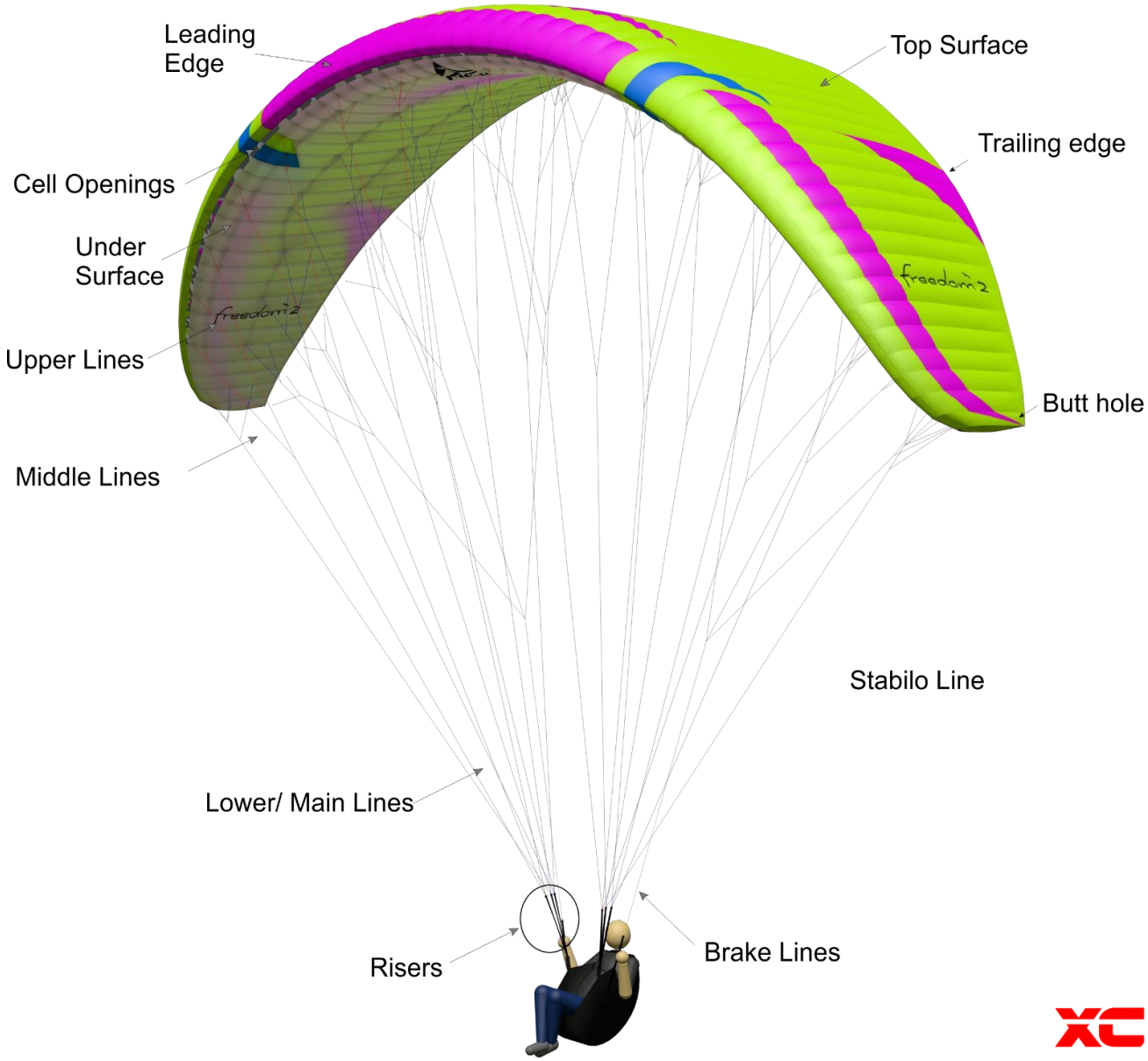
The XRCRacer2 doesn't feature any other adjustable, removable or variable device.

Sizes S, M, ML, L

NON ACCELERATED	ACCELERATED
A1 – 515mm	A1 – 360mm
A2 – 510mm	A2 – 442mm
B – 515mm	B – 515 mm



OVERALL ILUSTRATION



MATERIALS

CANOPY	FABRIC CODE	SUPPLIER
Upper surface Leading edge/ rear section	Porcher SKYTEX 38/ Porcher SKYTEX 27 CLASSIC 2	Porcher Industries - France
Bottom Surface	Porcher SKYTEX 27 CLASSIC 2	Porcher Industries - France
Supported Ribs	Porcher 7000 E91	Porcher Industries - France
Unsupported Ribs	Porcher 9017 E29	Porcher Industries - France
Leading Edge Reinforcement	2.5/1.8/ Plastic pipe	Porcher Industries - France

SUSPENTION LINES	FABRIC CODE	SUPLIER
Upper Cascades	Edelrid 8001 130/090/070/050kg – LIROS DC 30	EDELRID – Germany Liros Germany
Middle Cascades	Edelrid 8001 190/130/090/070/050kg Liros DC 30	EDELRID – Germany Liros Germany
Main Lines	Edelrid 8001 360/230/190/130/050kg Liros PPSL 160	EDELRID - Germany LIROS GMHB - Germany

RISERS	FABRIC CODE	SUPPLIER
Shackles	Maillon Rapide	Peguet Maillon Rapide - France
Riser Webbing	12mm zero stretch polyester webbing	Guth&Wolth GMBH - Germany
Pulleys	Pulleys Ronstan ball bearing	Ronstan - Australia

In case of any doubts regarding the information in the manual contact your FLOW PARAGLIDERS dealer.
For spare parts or information in how to obtain them get in contact with us directly or with your local dealer.

Flow Paragliders PTY LTD. – 7/249 Scottsdale Drive, Robina QLD 4226, Australia – info@flowparagliders.com.au

Line Type

a1	Red	8001-90		ab1	Red	8001-90		c1	Red	DC 30
a2	Red	8001-90		ab2	Red	8001-90		c2	Red	DC 30
a3	Red	8001-90		ab3	Red	8001-90		c3	Red	DC 30
a4	Red	8001-90		ab4	Red	8001-90		c4	Red	DC 30
a5	Red	8001-90		ab5	Red	8001-90		c5	Red	DC 30
a6	Red	8001-50		ab6	Red	8001-90		c6	Red	DC 30
a7	Red	8001-50		ab7	Red	8001-90		c7	Red	DC 30
a8	Red	8001-90		ab8	Red	8001-90		c8	Red	DC 30
a9	Red	8001-90								
ab9	Red	8001-90		b1	Red	8001-90		br1	Red	DC 30
a10	Red	8001-90		b2	Red	8001-50		br2	Red	DC 30
a11	Red	8001-90		b3	Red	8001-50		br3	Red	DC 30
a12	Red	DC 30		b4	Red	8001-90		br4	Red	DC 30
a13	Red	DC 30		b5	Red	8001-90		br5	Red	DC 30
				b6	Red	8001-50		br6	Red	DC 30
A1	Red	8001-190		b7	Red	8001-50		br7	Red	DC 30
A2	Red	8001-130		b8	Red	8001-90		br8	Red	DC 30
A3	Red	8001-130		b9	Red	8001-90		br9	Red	DC 30
A4	Red	8001-190		b10	Red	8001-50		br10	Red	DC 30
A5	Red	8001-190		b11	Red	8001-90		br11	Red	DC 30
A6	Red	8001-130		b12	Red	DC 30		br12	Red	DC 30
A7	Red	8001-130		b13	Red	DC 30				
A8	Red	8001-190						BR1	Red	DC 30
a9	Red	8001-90		B1	Red	8001-190		BR2	Red	DC 30
A10	Red	DC 30		B2	Red	8001-130		BR3	Red	DC 30
A11	Red	DC 30		B3	Red	8001-130		BR4	Red	DC 30
				B4	Red	8001-190		BR5	Red	DC 30
AI	Red	8001-230		B5	Red	8001-190		BR6	Red	DC 30
AII	Red	8001-230		B6	Red	8001-130				
AIII	Red	8001-230		B7	Red	8001-130		BRI	Red	8001-50
AIV	Red	8001-230		B8	Red	8001-190		BRII	Red	8001-50
AV	Red	8001-230		BV	Red	8001-130		BRIII	Red	8001-50
AVI	Red	8001-190								
AVII	Red	8001-90		BI	Red	8001-190		brmain	Red	8001-190
				BII	Red	8001-190		br5.1	Red	10-200
Amain1	Red	8001-360		BIII	Red	8001-190				
Amain2	Red	8001-360		BIV	Red	8001-190				
Amain3	Red	8001-190		stabilo	Red	ppsl 160				
				Bmain1	Red	8001-230				
				Bmain2	Red	8001-230				
				Bmain3	Red	8001-190				

Individual measurements - **SIZE S** (mm)

a1	**305**		**ab1**	**268**		**b1**	**290**		c1	381		br1	846
a2	292		ab2	252		b2	291		c2	382		br2	641
a3	294		ab3	257		b3	285		c3	377		br3	527
a4	299		ab4	264		b4	277		c4	363		br4	507
a5	276		ab5	247		b5	264		c5	351		br5	494
a6	266		ab6	236		b6	254		c6	336		br6	400
a7	265		ab7	240		b7	264		c7	338		br7	412
a8	271		ab8	251		b8	276		c8	335		br8	491
a9	257					b9	839					br9	499
ab9	237					b10	747					br10	442
a10	811					b11	1475					br11	661
a11	1529					b12	342					br12	772
a12	278					b13	304						
a13	245											BR1	1453
						B1	1012					BR2	1444
A1	1116					B2	881					BR3	1369
A2	1022					B3	891					BR4	1284
A3	984					B4	928					BR5	1453
A4	1041					B5	872					BR6	1181
A5	937					B6	750						
A6	806					B7	703					BRI	2719
A7	778					B8	712					BRII	2625
A8	797					BV	778					BRIII	2278
a9	637												
A10	210					BI	844					brmain	1221
A11	300					BII	787					br5.1	1115
						BIII	844						
AI	649					BIV	825						
AII	658					stabilo	615						
AIII	667												
AIV	631					Bmain1	4545						
AV	1462					Bmain2	4530						
AVII	2428					Bmain3	3930						
Amain1	4609												
Amain2	4640												
Amain3	2995												

Individual line measurements - **SIZE M** (mm)

a1	**311**		**ab1**	**273**		**b1**	**323**		**c1**	**414**		br1	780
a2	301		ab2	261		b2	320		c2	412		br2	566
a3	295		ab3	258		b3	312		c3	405		br3	453
a4	296		ab4	262		b4	307		c4	394		br4	448
a5	274		ab5	248		b5	301		c5	391		br5	485
a6	265		ab6	238		b6	291		c6	375		br6	384
a7	347		ab7	323		b7	296		c7	371		br7	385
a8	357		ab8	335		b8	301		c8	359		br8	467
a9	287					b9	905					br9	412
ab9	265					b10	812					br10	375
a10	857					b11	1578					br11	614
a11	1606					b12	377					br12	735
a12	314					b13	337						
a13	279											BR1	1500
						B1	1040					BR2	1490
A1	1150					B2	910					BR3	1410
A2	1050					B3	921					BR4	1320
A3	1020					B4	960					BR5	1500
A4	1080					B5	901					BR6	1220
A5	970					B6	775						
A6	835					B7	727					BRI	2810
A7	805					B8	737					BRII	2650
A8	825					BV	805					BRIII	2355
a9	659												
A10	210					BI	870					brmain	1500
A11	300					BII	815					br5.1	1115
						BIII	870						
AI	690					BIV	850						
AII	700					stabilo	615						
AIII	710												
AIV	590					Bmain1	4705						
AV	1510					Bmain2	4685						
AVI	795					Bmain3	4040						
AVII	2510												
Amain1	4770												
Amain2	4800												
Amain3	3100												

Individual line measurements - **SIZE ML** (mm)

a1	**335**		**ab1**	**296**		**b1**	**348**		**c1**	**440**		**br1**	**768**
a2	323		ab2	282		b2	353		c2	445		br2	551
a3	327		ab3	288		b3	349		c3	442		br3	436
a4	330		ab4	295		b4	343		c4	430		br4	434
a5	307		ab5	279		b5	333		c5	422		br5	487
a6	298		ab6	271		b6	326		c6	410		br6	392
a7	320		ab7	296		b7	335		c7	411		br7	383
a8	327		ab8	307		b8	344		c8	404		br8	486
a12	309					b9	979					br9	426
ab9	288					b10	881					br10	382
a10	900					b11	1665					br11	620
a11	1674					b12	411					br12	752
a13	348					b13	377						
a14	317											BR1	1550
						B1	1080					BR2	1540
A1	1190					B2	940					BR3	1420
A2	1090					B3	950					BR4	1350
A3	1050					B4	990					BR5	1550
A4	1110					B5	930					BR6	1260
A5	1000					B6	800						
A6	860					B7	750					BRI	2900
A7	830					B8	760					BRII	2750
A8	850					BV	830					BRIII	2430
a9	680												
A10	210					BI	900					brmain	1550
A11	300					BII	840					br5.1	1115
						BIII	900						
AI	710					BIV	880						
AII	720					stabilo	615						
AIII	730												
AIV	670					Bmain1	4845						
AV	1560					Bmain2	4825						
AVI	820					Bmain3	4170						
AVII	2590												
Amain1	4920												

Amain2	4950												
Amain3	3200												

Individual line measurements - **SIZE L** (mm)

a1	**384**		**ab1**	**345**		**b1**	**379**		**c1**	**472**		**br1**	**871**
a2	374		ab2	333		b2	387		c2	479		br2	645
a3	379		ab3	341		b3	384		c3	477		br3	521
a4	384		ab4	348		b4	375		c4	461		br4	505
a5	360		ab5	331		b5	359		c5	448		br5	487
a6	353		ab6	324		b6	353		c6	435		br6	391
a7	353		ab7	328		b7	364		c7	439		br7	396
a8	356		ab8	336		b8	373		c8	434		br8	502
a9	347					b9	1065					br9	502
ab9	327					b10	963					br10	445
a10	961					b11	1768					br11	688
a11	1757					b12	456					br12	820
a12	396					b13	424						
a13	365											BR1	1611
						B1	1122					BR2	1601
A1	1237					B2	977					BR3	1517
A2	1133					B3	987					BR4	1424
A3	1091					B4	1029					BR5	1611
A4	1154					B5	967					BR6	1310
A5	1039					B6	831						
A6	894					B7	779					BRI	3014
A7	863					B8	790					BRII	2910
A8	883					BV	863					BRIII	2526
a9	707												
A10	210					BI	935					brmain	1611
A11	300					BII	873					br5.1	1115
						BIII	935						
AI	720					BIV	915						
AII	730					stabilo	615						
AIII	740												
AIV	700					Bmain1	5040						
AV	1621					Bmain2	5020						
AVI	852					Bmain3	4355						
AVII	2692												
Amain1	5110												
Amain2	5145												

Amain3	3320												