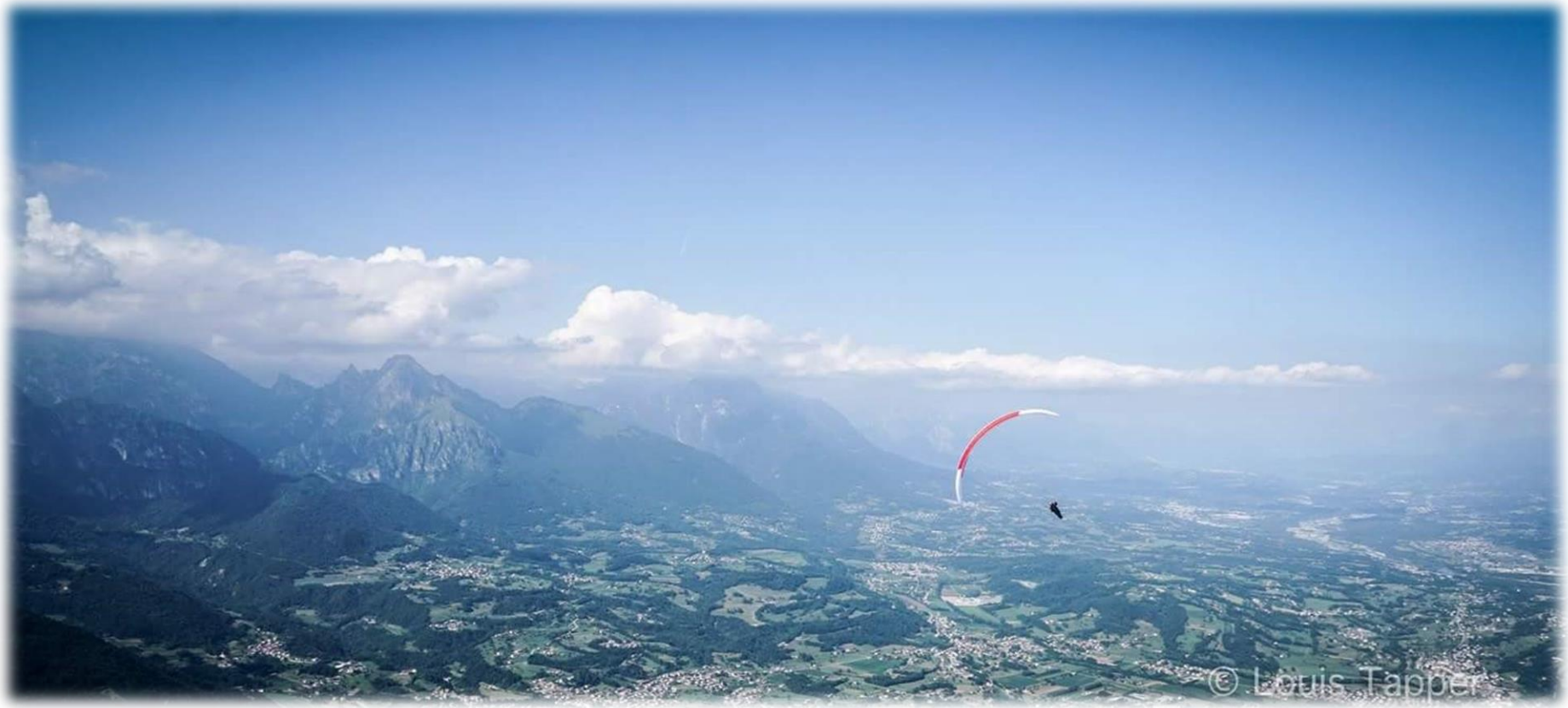

Flow
PARAGLIDERS
XC
RACER

WELCOME

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.

The Flow Paragliders XCRacer is our EN D 2liner glider designed for the experienced pilot. The XCRacer 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 XCRacer is a well-balanced glider and pilots who are accustomed to fly high performance gliders will feel comfortable and at ease with the XCRacer.



General information

User manual for the FLOW XCRacer

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 XCRacer.

The Flow XCRacer has been certified as a EN D, having met all the requirements of EN 926-2/August 2005. and LTF NFL II 91/09.
Maximum brake range at maximum take-off load: 50cm - according to EN 926-2/2005.

This user manual version V2-05 is dated: 12/2017.

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 926-2:2005 as well as LTF NFL II 91/09 for user manuals.

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PILOT'S PROFILE

The Flow XCRacer was built for experienced XC or competition pilots who are looking for a top-level performance glider in a comfortable and accessible package. XCRacer'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 XCRacer is a new glider concept. The design and structure was 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 XCRacer 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.

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

SPECIFICATIONS

XC RACER	S	M	ML	L
FLAT AREA	21.75m2	22.80m2	24.75m2	26.55m2
PROJECTED AREA	18.63m²	19.52m2	21.20m2	22.74m2
FLAR WINGSPAN	12.34m	12.66m	13.20m	13.66m
PROJECTED SPAN	10.01m	10.30m	10.73m	11.11m
ASPECT RATIO	6.95	6.95	6.95	6.95
PROJECTED AR	5.38	5.4	5.4	5.4
MAX CHORD	2.21	2.27	2.36	2.48
NUMBER OF CELLS	82	82	82	82
LINE CONSUMPTION	196.57m	203.4m	210.8m	225.5m
GLIDER WEIGHT	5.0	5.5	5.8	6.2
TAKE OFF WEIGHT	70-90	85-105	95-115	105-125
CERTIFICATION	EN D *	EN D *	EN D	EN D*

TAKE-OFF, FLIGHT, AND FLYING TECHNIQUES

The Flow XCRacer 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 XCRacer was designed as a foot launchable solo paraglider only. The XCRacer 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 if lines are not damaged or tangled.
- Check the quick links connection between lines to the risers are undamaged and tightened.
- Check if the risers are not damaged or twisted.
- Check if the speed system works freely and 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 Flow XCRacer 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 stay 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 XCRacer 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

XCRacer 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. 30% 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 15% brake). Symmetrical brake-input at 20-30 % enables you to keep your wing under control – to brake further when pitching and to release when the canopy banks up.

RAPID DESCEND

Techniques

In order 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 Drive**:* The Flow XCRacer 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 will increase progressively as well as the pressure on the brake and the centrifugal force that is perceived. The angle or the speed of rotation can be decreased or increased by releasing or pulling the brake by several centimetres. Once mastered the spiral allows you to descend by more than 10 m/s. Movements which are extremely abrupt or badly synchronized or very quick initiation of the spiral can result in an asymmetrical collapse or a spin. CAUTION: A deep spiral is no harmless manoeuvre. The kinetic energy obtained must be reduced by slow releasing of the inside brake.

- ***B-line Stall:*** This maneuvre 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***: Big ears is a moderate descent method, reaching -3 or -4 m/s, speed reduces slightly between 3 and 5 km/h and piloting becomes limited. The angle of attack and the wing loading also increases.

  Push on the accelerator to restore the wing's horizontal speed and the angle of attack. To activate ears, 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 first and then 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.

PERFORMANCE & USE OF BRAKES

Use of brakes

XCRacer'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) 65cm. 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 to pilot 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

XCRacer is equipped with a speed system. The profile of XCRacer 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 XCRacer 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 XCRacer, 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 incidence. If the collapse does happen, the XCRacer 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 XCRacer 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 XCRacer 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.

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 XCRacer 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. 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. Collapse lines are available as an optional extra and should be added to the wing before inducing collapses. Be sure to attach to both sides of the canopy for symmetric deflations.

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
Racer XCRacer XS	43cm	44cm
Racer XCRacer S	43cm	46cm
Racer XCRacer M	43cm	46cm
Racer XCRacer 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 XCRacer is a fine piece of equipment and should be technically 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.
- Don't expose it unnecessarily to sunlight.
- Choose a packing technique that doesn't damage the plastic rods and that doesn't crease the internal structure excessively.

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 once a year, 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), then we recommend that you get your glider every 100 hours. The checker 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

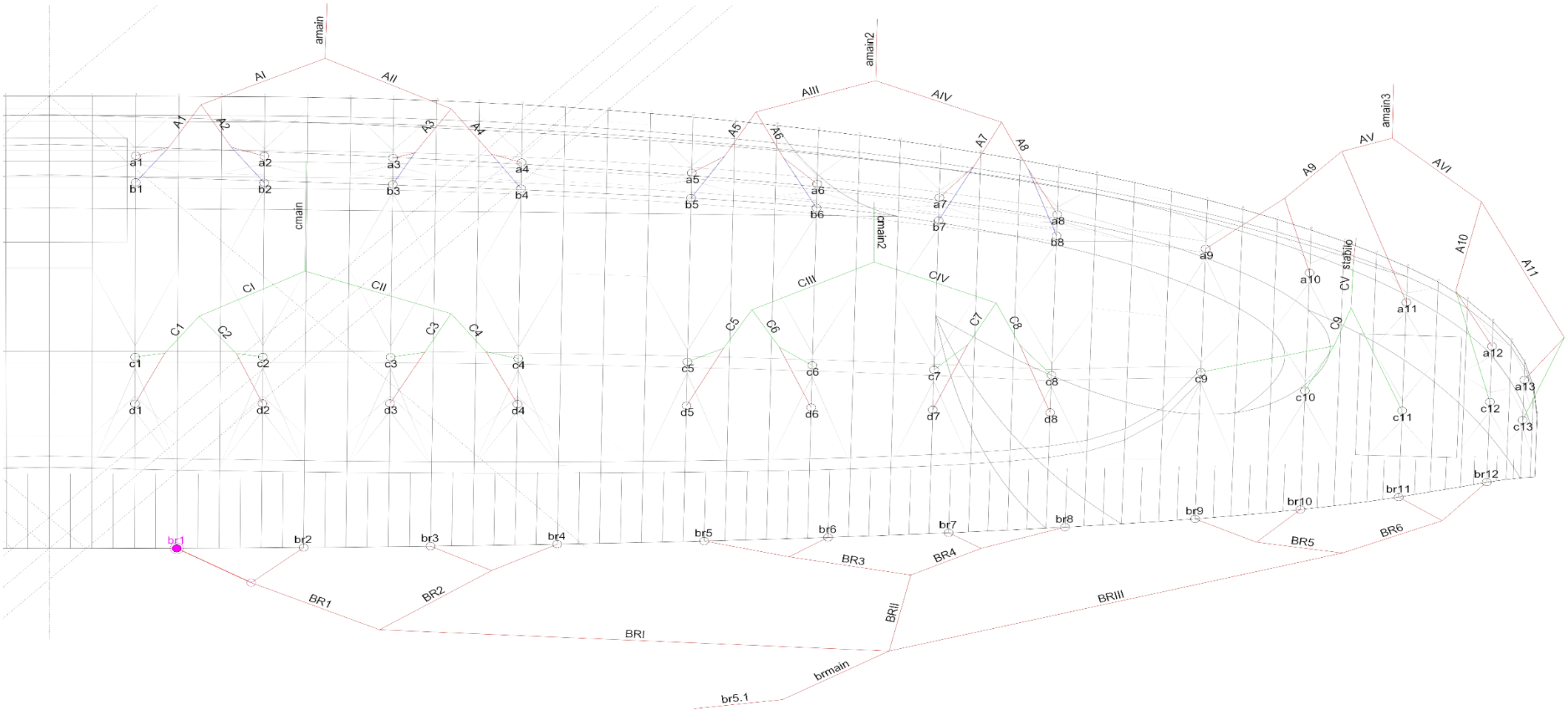
The Flow XCRacer is guaranteed for two years or 250 hours against any production fault since the date of purchase.
The guarantee does not cover:

- 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. Lot's 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 council.

LINE PLAN


amain
amain2
amain3
AI
AII
AIII
AIV
AV
AVI
A1
A2
A3
A4
A5
A6
A7
A8
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cmain
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CV stabilo
CI
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d1
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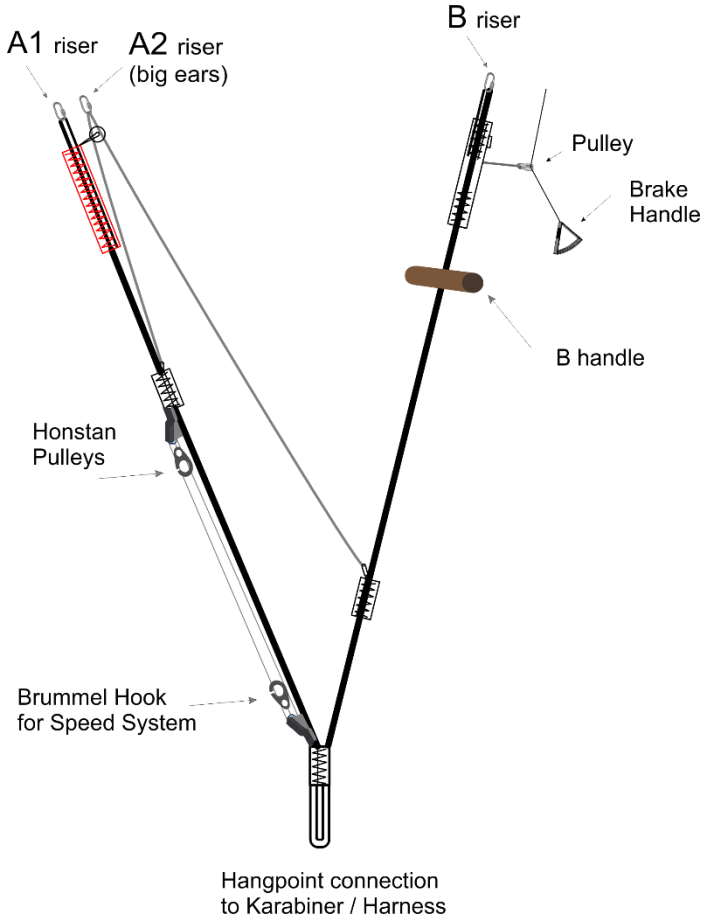
br2
br3
br4
br5
br6
br7
br8
br9
br10
br11
br12
BR1
BR2
BR3
BR4
BR5
BR6
BRI
BRII
BRIII
brmain
br5.1

RISER DIAGRAM

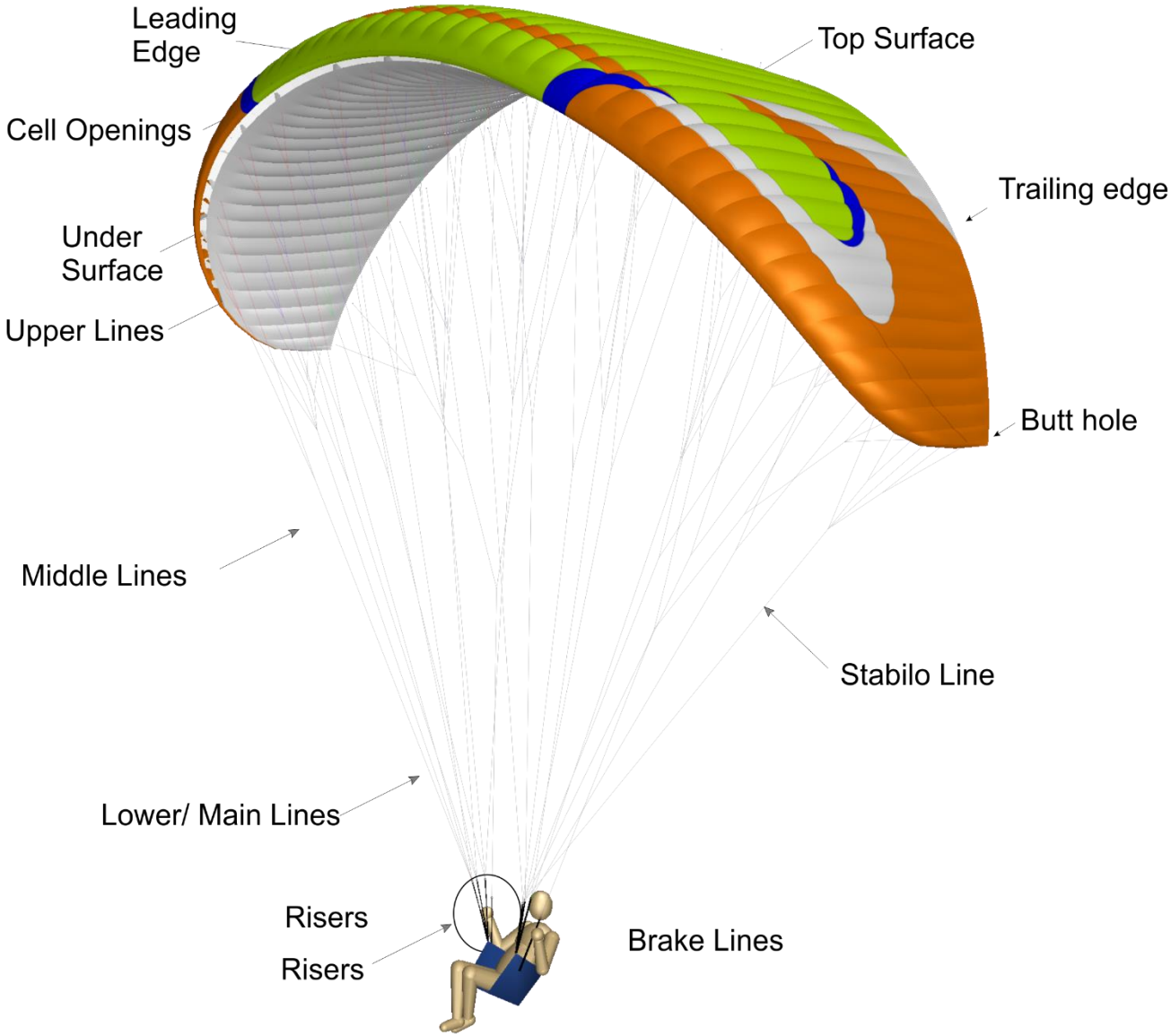
The Flow XCRacer has been designed with 2 risers per side. The A1 riser is covered with RED webbing, to allow for easy identification. The A risers are split into two, the smaller riser - holding only the outermost A line - is A2 and has been designed this way to make applying big ears simple. They also feature ergonomic wooden handles for efficient B-riser control. The risers do not feature trimmers.

Sizes S, M, L

NON ACCELERATED		ACCELERATED	
A1	515mm	A1	360mm
A2	510mm	A2	442mm
B	500mm	B	500mm



OVERALL ILUSTRATION



MATERIALS

CANOPY	FABRIC CODE	SUPLIER
Upper surface	Dominico DOKDO 30D MF	Dominico terch Corp. - Korea
Bottom Surface	Porcher 7000 E71	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
Thread	210D/3, 420D/3	Coats Thread - Thailand
SUSPENTION LINES	**FABRIC CODE**	**SUPLIER**
Upper Cascades	Edelrid 8000U 130/090/070/050kg - Edelrid 9200 030kg	EDELRID - Germany
Middle Cascades	Edelrid 8000U 190/130/090/070/050kg Edelrid 9200 030kg	EDELRID - Germany
Main Lines	Edelrid 8000U 360/190/130/050kg Liros DSL 140kg	EDELRID - Germany LIROS GMHB - Germany
RISERS	**FABRIC CODE**	**SUPLIER**
Shackles	Maillon Rapide	ANSUNG PRECISION - Korea
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.

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LINE MEASUREMENTS

The overall length (riser lines + mid lines + upper lines) has to be checked under 5Kgs of tension. The difference between the measured length and the original length should not exceed +/- 10mm. The changes that could appear are a slight shrink on the B's and/or a slight stretch on the A's. The consequences of these changes can include a slower trim speed, difficult inflation etc.

Dimensions given in the user's manual was checked by the testing laboratory

Name	Length	Line type
a1	291	8000U-90
a2	279	8000U-90
a3	268	8000U-90
a4	273	8000U-90
a5	279	8000U-90
a6	260	8000U-70
a7	256	8000U-70
a8	261	8000U-70
a9	1363	8000U-50
a10	1248	8000U-50
a11	1838	8000U-50
a12	513	9200-30
a13	418	9200-30
A1	1319	8000U-130 R
A2	1214	8000U-90 R
A3	1194	8000U-90 R
A4	1244	8000U-130 R
A5	1103	8000U-90 R
A6	983	8000U-90 R
A7	1033	8000U-90 R
A8	1068	8000U-90 R
A9	648	8000U-130 R
A10	250	9200-30
A11	330	9200-30
AI	803	8000U-190 R
AII	803	8000U-190 R
AIII	713	8000U-190 R
AIV	617	8000U-190 R
AV	1885	8000U-190 R
AVI	2887	8000U-90 R
amain	4951	8000U-360 R + RED COVER
amain2	5106	8000U-360 R + RED COVER
amain3	2924	8000U-190 R + RED COVER
b1	256	8000U-90
b2	243	8000U-90
b3	233	8000U-90
b4	240	8000U-90
b5	251	8000U-90
b6	230	8000U-70
b7	228	8000U-70
b8	233	8000U-70
c1	725	8000U-50
c2	628	8000U-50
c3	548	8000U-50
c4	531	8000U-50
c5	418	8000U-50
c6	379	8000U-50
c7	389	8000U-50
c8	394	8000U-50
c9	1384	8000U-50
c10	1292	8000U-50
c11	1923	8000U-50
c12	516	9200-30
c13	448	9200-30
C1	886	8000U-70 R
C2	885	8000U-50 R
C3	934	8000U-50 R
C4	987	8000U-50 R
C5	830	8000U-50 R
C6	736	8000U-50 R
C7	723	8000U-50 R
C8	748	8000U-50 R

C9	671	8000U-50 R
CI	1119	8000U-130 R
CII	1119	8000U-130 R
CIII	909	8000U-130 R
CIV	863	8000U-130 R
CV	4124	8000U-130 R
stabilo	615	PPSL160
cmain	4573	8000U-360 R + RED COVER
cmain2	5003	8000U-190 R + RED COVER
d1	798	8000U-50
d2	707	8000U-50
d3	630	8000U-50
d4	606	8000U-50
d5	503	8000U-50
d6	458	8000U-50
d7	458	8000U-50
d8	445	8000U-50
f1	1405	8000U-50
f2	1299	8000U-50
f3	1300	8000U-50
f4	1337	8000U-50
f5	1377	8000U-50
f6	1260	8000U-50
f7	1262	8000U-50

f8	1264	8000U-50
f9	2152	8000U-50
f10	2028	8000U-50
f11	1968	8000U-50
F1	1326	8000U-70 R
F2	1289	8000U-70 R
F3	1295	8000U-70 R
F4	1236	8000U-70 R
F5	4732	8000U-70 R
FI	4740	8000U-90
FII	4602	8000U-90
br1	744	9200-30
br2	400	9200-30
br3	501	9200-30
br4	432	9200-30
br5	585	9200-30
br6	380	9200-30
br7	388	9200-30
br8	523	9200-30
br9	451	9200-30
br10	383	9200-30
br11	354	9200-30
br12	519	9200-30
BR1	1426	9200-30

BR2	1104	9200-30
BR3	945	9200-30
BR4	853	9200-30
BR5	643	9200-30
BR6	706	9200-30
BRI	2805	8000U-50 R
BRII	2538	8000U-50 R
BRIII	2653	8000U-50 R
brmain	2464	8000U-190
br5.1	1114	10-200

BRIDLE CHECKSHEET LENGTHS (mm)

Total line lengths with riser (mm)

A		
	Specimen Measures	Diff
a1	7881	
A2	7771	
a3	7743	
a4	7793	
a5	7722	
a6	7582	
a7	7527	
a8	7570	
a9	7341	
a10	7221	
a11	7170	
a12	7098	
a13	7082	

B		
	Specimen Measures	Diff
b1	7851	
b2	7736	
b3	7708	
b4	7761	
b5	7694	
b6	7554	
b7	7502	
b8	7545	

C		
	Specimen Measures	Diff
c1	7813	
c2	7724	
c3	7692	
c4	7728	
c5	7673	
c6	7543	
c7	7491	
c8	7522	
c9	7314	
c10	7222	
c11	7182	
c12	7102	
C13	7112	

D		
	Specimen Measures	Diff
d1	7883	
d2	7798	
d3	7776	
d4	7804	
d5	7758	
d6	7622	
d7	7565	
d8	7573	

BRAKES		
	Specimen Measures	Diff
br1	8352	
br2	8081	
br3	7869	
br4	7829	
br5	7576	
br6	7390	
br7	7312	
br8	7452	
br9	7291	
br10	7229	
br11	7257	
br12	7452	