Flow
PARAGLIDERS

FUTURE

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 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 Future Power XS, Future Power S, Future Power M and Future Power L

Flow Future Power is a safe, fun and easy paramotor wing with excellent glide and a very efficient speed system and trimmers system designed as an EN A class glider.

Future Power is an EN A beginner's glider, designed not only as a school glider to be used for students during their training and also to pilots who are willing to progress in the sport safely, chasing their first XC flights allowing them to fly safely and comfortably.

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.

Future Power has a high level of passive safety. The Future Power has been certified as EN A, having met all the requirements of EN 926-2 / 2013and LTF NFL II 91/09.

This user manual version V01.02 is dated: 08/2023.

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PILOT'S PROFILE

"Future Power: for the pilot today."

FUTURE POWER is the perfect wing to learn on and progress, a one glider concept for school and beyond.

Excellent roll stability, collapse resistance and pitch stability, making it a glider with outstanding levels of passive safety.

Future Power is the ideal glider for progression, during and after flight school. Its compact plan shape and aspect ratio make the Future Power an easy and safe glider to learn the art of flying. It's also the ideal glider for the first Cross Country flights. It has playful and fun handling which will entice even the more demanding pilot.

Our innovative technology and design solutions combined give not only a breakthrough level of safety but new performance discovery to the EN A class.

The performance levels are unprecedented and match the glide of most EN B's. Long distance flights are easily achievable with this glider.

Future Power is a new concept in Paramotoring design where EN A glider can be fun and have incredible performance.

Key tech elements worth mentioning are:

- A new shark nose low drag airfoil, inspired by our high-end 2 liners yet specially designed for this glider.
- A reduced 3 liner line layout and use of Liros' PPSL lines, the best diameter to load ratio in the market today, which translates to thinner lines – less drag.
- Easy to operate and intuitive risers with magnetic brake clippers and roller cam trimmers.
- Use of state-of-the-art materials and manufacturing processes, making the glider light yet robust and durable.

We have worked closely with schools to achieve the best possible entry level glider. A no compromise approach to achieve easy inflation, superior roll stability and a consistent round up flare for landings. Those are the key ingredients that make the Future Power the perfect glider for teaching new pilots to fly.

Our philosophy is to build gliders that are easy to fly and have that confidence inspiring feel to it, so the pilot can concentrate on what is more important, to fly the air.
It's a glider to be used not only for schools but pilots seeking a worry free pleasant and enjoyable flight experience.

Future Power is an amazing glider to take XC. Our team of experienced pilots really enjoys flying it and we are happy to have brought out this glider which we believe will be the perfect first glider for many new Paramotoring pilots discovering the sport we all love.

A glider that pilots won’t outgrow easily. Future Power is a glider that pilots can use for many seasons and will help to consolidate the foundations of the art of soaring the skies with the birds in the quest of one day flying like them.

SPECIFICATIONS

FUTURE	XS	S	M	L
FLAT AREA	23.9 m2	25.3 m2	27.5 m2	29.2 m2
PROJECTED AREA	20.75 m2	21.97 m2	23.88 m2	25.35 m2
FLAT WINGSPAN	10.82 m	11.14 m	11.66 m	12.02 m
PROJECTED SPAN	8.85 m	9.11 m	9.55 m	9.84 m
ASPECT RATIO	4.9	4.9	4.9	4.9
PROJECTED AR	3.8	3.8	3.8	3.8
MAX CHORD	2.73	2.27	2.92	3.01
NUMBER OF CELLS	40	40	40	40
GLIDER WEIGHT	4.5 kgs	4.75 kgs	4.9 kgs	5.2 kgs
TAKE OFF WEIGHT	60-105 kgs	80-115 kgs	95-135 kgs	110-155 kgs
CERTIFICATION	LTF/EN A	LTF/EN A	LTF/EN A	LTF/EN A

TAKE-OFF, FLIGHT, AND FLYING TECHNIQUES

Flow Future Power should be flown as a normal paramotor wing. However, there are several points listed below which should help you to familiarize with your new paraglider quicker.

Future Power was designed as a foot launchable solo paramotor and can also be used on trikes. 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.
- Check trimmers are in the neutral position.

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 Future Power 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 Flow Future Power 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

Flow Future Power was designed to perform well in turns. Asymmetrical 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. 25% 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 10-20 % enables you to keep your wing under control – to brake further when pitching and to release when the canopy banks up.

Remember finesse is essential when flying a Paramotoring. Gentle but firm inputs will always keep your glider under control.

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 Future Power 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:* B-line Stall Grasp the B risers at the quick links and pull them down symmetrically. The paraglider will enter a B-line stall and drop backwards before stabilizing overhead. The descent rate increases to 6 - 8 m/s. To exit the B-line stall raise both hands together in a single, positive movement so that the risers are at full extension. On releasing the B-risers, your Future Power should return immediately to normal flight.

- *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

Flow Future Power's best glide is at a trim speed (no brakes) – about 38 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.

Use of Speed Bar

Flow Future Power is equipped with a speed system. The profile of Future Power 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.

Use of Trimmers

Future Power is equipped with trimers. They can be used to speed up the glider. They will have a similar effect as if using speed bar.
Letting trimmers out will make the glider fly faster.
Pulling trimmers all the way in, means the glider is at trim position (neutral)
Neutral position is ideal for taking off and landing.

ASSYMETRIC & FRONTAL COLLAPSES

Despite the tests proving Future Power recovers on its own after collapses, it is an EN A glider with the highest level of passive safety, but we still recommended active piloting is in case of an asymmetric or frontal collapse. Active piloting will reduce the loss of altitude and a change of direction and it will teach the pilot to be in control at all times.

Asymmetric Collapse

Despite the great roll and pitch stability of the profile of the Future Power, 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 Future Power 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 Future Power 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 Future Power using the C-risers (rear riser). The movements must be well controlled as the deformation of the wing, due to the traction on the C-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

All manoeuvres should be carried out under supervision of experienced Paramotoring instructors, above water and with a rescue boat.

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
FUTURE POWER XS	43cm	44cm
FUTURE POWER S	43cm	46cm
FUTURE POWER M	43cm	46cm
FUTURE POWER 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 Future Power is a robust piece of equipment but as any flying aircraft it 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 every two years, or after 100 hours and anytime there is a change in its behaviour. 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

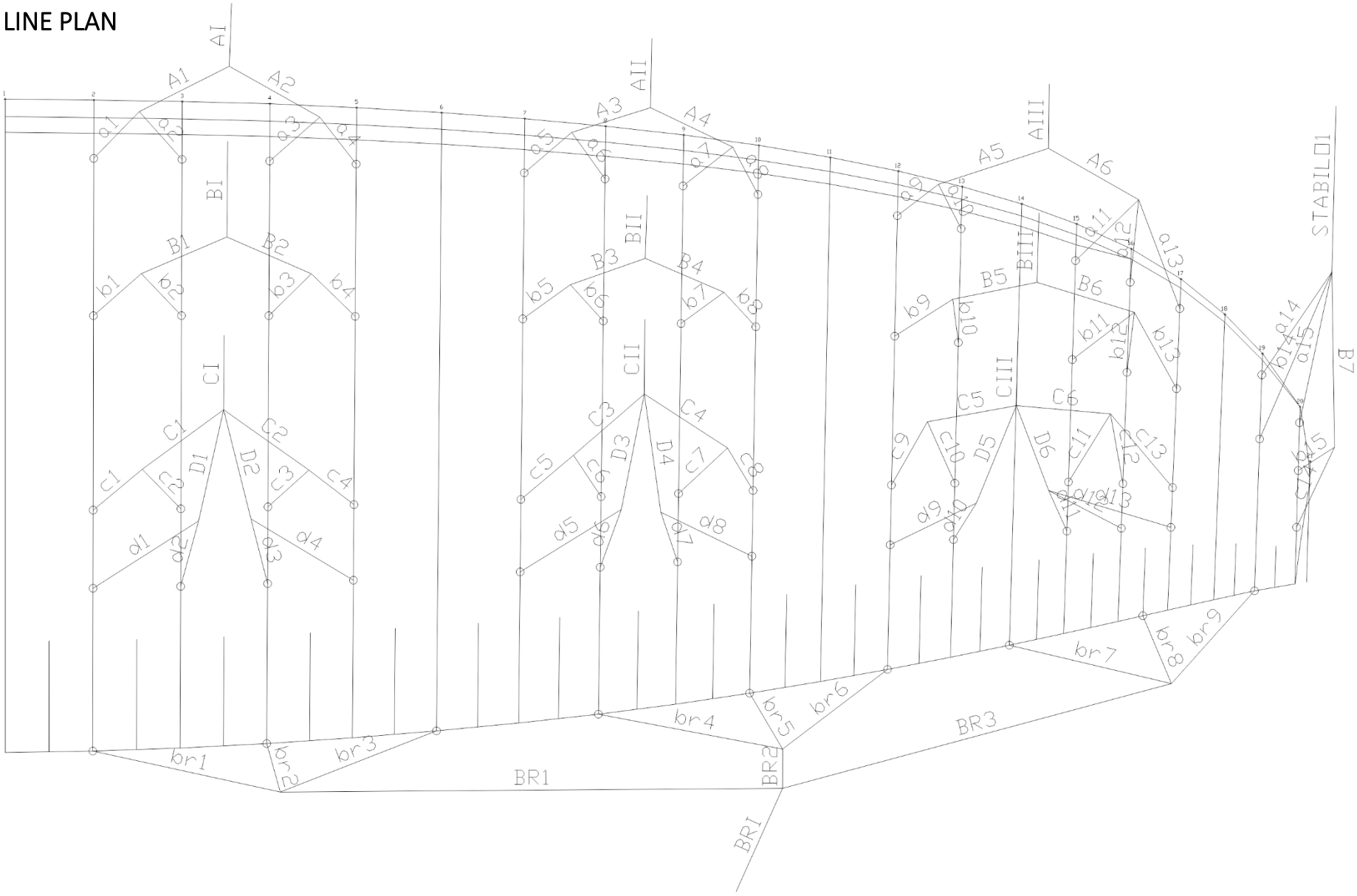
The Flow Future Power is guaranteed for two years or 250 hours against any production fault since the date of purchase.
The guarantee does not cover:

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

SUMMARY - RECOMMENDATIONS

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 council.

LINE PLAN


AI
AII
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STABILO1
BI
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C3
C4
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C6
D1
D2
D3
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D5
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BR2
BR3
br1
br2
br3
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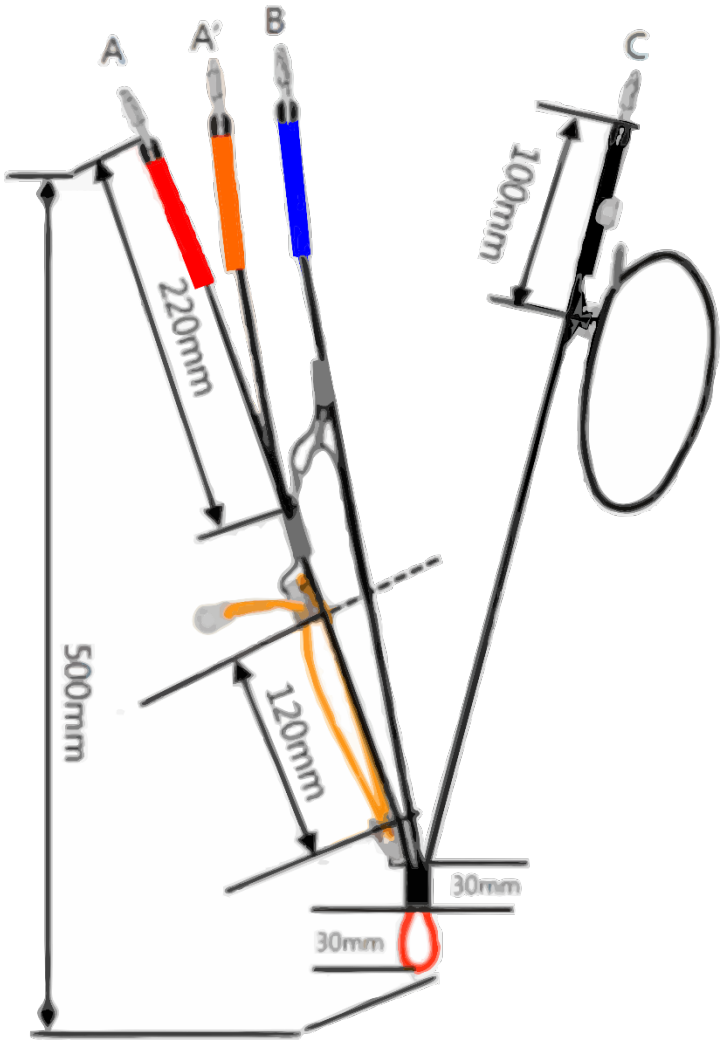
br7
br8
br9

RISER DIAGRAM

Sizes XS, S, M and L.

NON-ACCELERATED		*ACCELERATED*	
A	500mm	A	380mm
A1	500mm	A1	380mm
B	500mm	B	340mm
C	500mm	C	500mm

*Difference should not be more than +/- 5mm



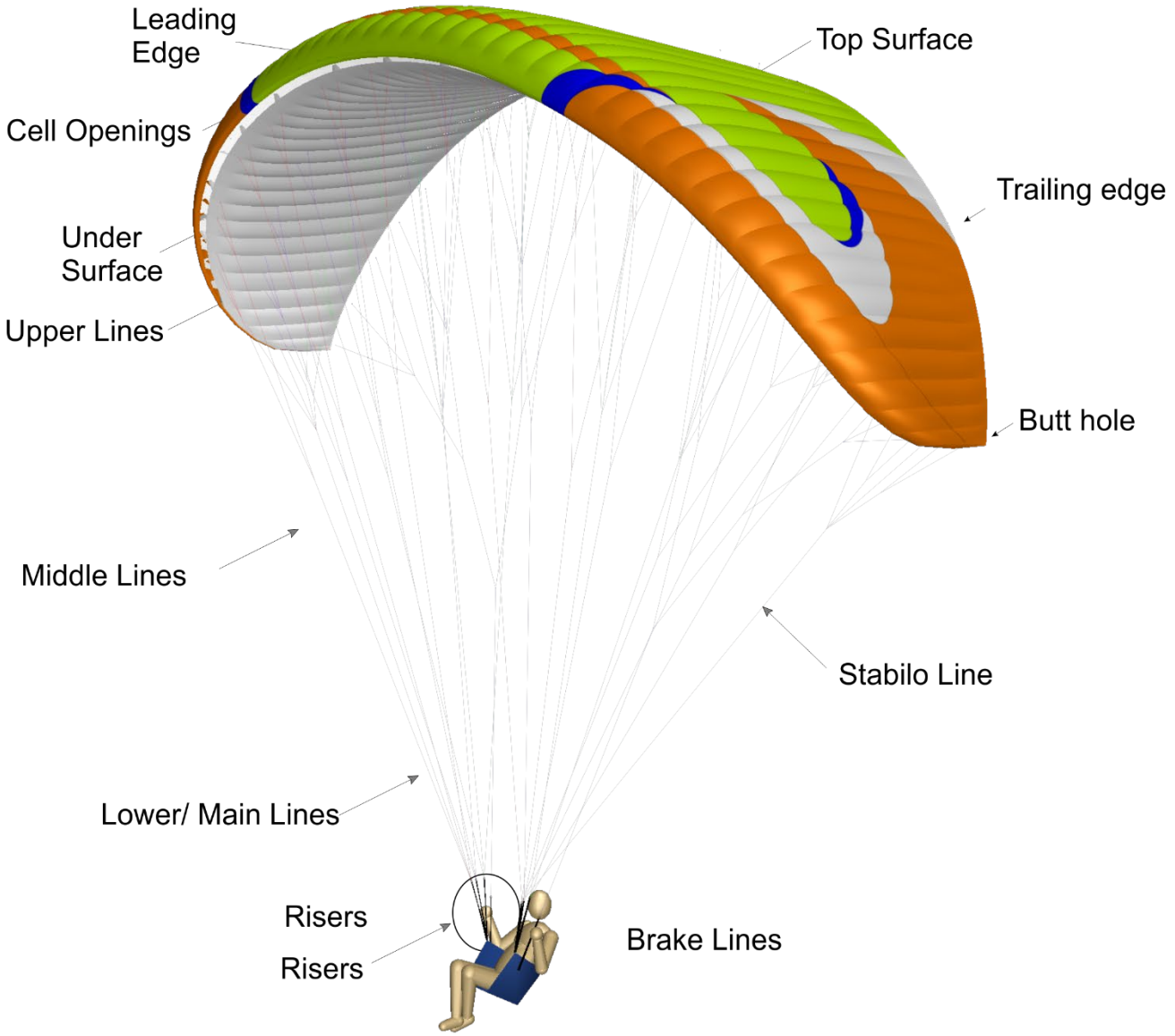
Future Power has 3 risers, with a split A. It has trimmers.

- Riser A (red) is used for inflation
- Riser A' (orange) is used for big ears
- Riser B (blue)
- Riser C (black)

Use of Trimmers

Future Power is equipped with trimers. They can be used to speed up the glider.
Letting trimmers out will make the glider fly faster.
Pulling all the way in, means the glider is at trim position (neutral)
Neutral position is ideal for taking off and landing.

OVERALL ILLUSTRATION



MATERIALS

CANOPY	FABRIC CODE	SUPPLIER
Upper surface	Skytex 38g	Porcher - France
Bottom Surface	Dominico DOKDO 30D MF	Dominico Tech Corp. - Korea
Supported Ribs	Skytex 38g	Porcher - France
Unsupported Ribs	Skytex 38g	Porcher - 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**	**SUPPLIER**
Upper Cascades	LIROS PPSL 65/125	LIROS GmbH - Germany
Middle Cascades	LIROS PPSL 65/ 125/180	LIROS GmbH - Germany
Main Lines	LIROS PPSL 180/225	LIROS GmbH - Germany
RISERS	**FABRIC CODE**	**SUPPLIER**
Shackles	Maillon Rapide	ANSUNG PRECISION - Korea
Riser Webbing	20mm zero stretch polyester webbing	Guth&Wolf 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.

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 C's and/or a slight stretch on the A's and B'S The consequences of these changes can include a slower trim speed, difficult inflation etc.
Measurements taken from the canopy attachment point to the bottom of the risers.

BRIDLE CHECK LENGHTS:

The spreadsheets are found under the download Future Power download section of our website

LINE TYPES

Name	Manufacturer	Name	Manufacturer	Name	Manufacturer	Name	Manufacturer	Name	Manufacturer
a1	PPSL65	b1	PPSL65	c1	PPSL65	d1	PPSL65	br1	PPSL65
a2	PPSL65	b2	PPSL65	c2	PPSL65	d2	PPSL65	br2	PPSL65
a3	PPSL65	b3	PPSL65	c3	PPSL65	d3	PPSL65	br3	PPSL65
a4	PPSL65	b4	PPSL65	c4	PPSL65	d4	PPSL65	br4	PPSL65
a5	PPSL65	b5	PPSL65	c5	PPSL65	d5	PPSL65	br5	PPSL65
a6	PPSL65	b6	PPSL65	c6	PPSL65	d6	PPSL65	br6	PPSL65
a7	PPSL65	b7	PPSL65	c7	PPSL65	d7	PPSL65	br7	PPSL65
a8	PPSL65	b8	PPSL65	c8	PPSL65	d8	PPSL65	br8	PPSL65
a9	PPSL65	b9	PPSL65	c9	PPSL65	d9	PPSL65	br9	PPSL65
a10	PPSL65	b10	PPSL65	c10	PPSL65			Br10	PPSL65
a11	PPSL65	b11	PPSL65	c11	PPSL65			Br11	PPSL65
a12	PPSL65	b12	PPSL65	c12	PPSL65				
a13	PPSL65	b13	PPSL65	c13	PPSL65				
a14	PPSL65	b14	PPSL65	c14	PPSL65			BR1	PPSL65
a15	PPSL65	b15	PPSL65	c15	PPSL65			BR2	PPSL65
								BR3	PPSL65
A1	PPSL 125	B1	PPSL 125	C1	PPSL 125	D1	PPSL 125	BR4	PPSL65
A2	PPSL 125	B2	PPSL 125	C2	PPSL 125	D2	PPSL 125		
A3	PPSL 125	B3	PPSL 125	C3	PPSL 125	D3	PPSL 125	BRI	PPSL65
A4	PPSL 125	B4	PPSL 125	C4	PPSL 125	D4	PPSL 125	BRII	PPSL65
A5	PPSL 125	B5	PPSL 125	C5	PPSL 125				
A6	PPSL 125	B6	PPSL 125	C6	PPSL 125			brmain	DFLP 200/35
AI	PPSL 275	BI	PPSL 200	CI	PPSL 200				
AII	PPSL 275	BII	PPSL 200	CII	PPSL 200				
AIII	PPSL200	BIII	PPSL 160	CIII	PPSL 160				


Flow