

**Flow**  
PARAGLIDERS



**COSMOS**



## 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.



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## General Information

### *User manual for Cosmos XS, Cosmos S, Cosmos M and Cosmos L*

The Flow Cosmos is an easy and fun paraglider with excellent glide and a very efficient speed system designed as a low end EN B class glider.

The Cosmos is aimed at pilots who are willing to progress in the sport safely, chasing their first XC flights but who are also comfortable with the technical control of this type of glider.

The pilots should understand the implication of flying an EN B-class wing.

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.

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

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## PILOT'S PROFILE

The Cosmos was designed to be nothing but a fun paraglider. With that in mind we concentrated on the handling and the fun factor of the glider. Coupled with a shark nose profile and reduced line plan we have a glider which sits in the low end of the EN B class.

Its passive safety makes the ideal glider to progress safely in the sport and to gain experienced as a first Cross Country glider. It has a usable performance and handling for even those pilots with more experience who often fly in the B category. Novice pilots will enjoy its passive safety and experienced pilots will be delighted to explore the fun factor and amazing LD and real-world performance the Cosmos delivers.

## SPECIFICATIONS

<b><i>COSMOS</i></b>	XS	S	M	L
FLAT AREA	24.2m <sup>2</sup>	25.80m <sup>2</sup>	27.3m <sup>2</sup>	29.3 m <sup>2</sup>
PROJECTED AREA	21m <sup>2</sup>	22.22m <sup>2</sup>	23.44m <sup>2</sup>	25.47m <sup>2</sup>
FLAR WINGSPAN	11.18m	11.55m	11.88m	12.34m
PROJECTED SPAN	9.05m	9.29m	9.48m	10.03
ASPECT RATIO	5.17	5.17	5.17	5.17
PROJECTED AR	3.9	3.9	3.9	3.9
MAX CHORD	2.65	2.73	2.81m	2.93
NUMBER OF CELLS	50	50	50	50
GLIDER WEIGHT	5.0	5.5	5.8	6.2
TAKE OFF WEIGHT	60-85	70-95	85-105	95-120
CERTIFICATION	LTF/EN B *	LTF/EN B	LTF/EN B	LTF/EN B*

## TAKE-OFF, FLIGHT, AND FLYING TECHNIQUES

The Flow Cosmos 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 Cosmos was designed as a foot launchable solo paraglider and can also 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 Cosmos 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 Cosmos 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 Cosmos 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 Cosmos 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 Cosmos 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 Cosmos'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 Cosmos is equipped with a speed system. The profile of Cosmos 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 Cosmos recovers on its own after collapses, it is a EN B 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 Cosmos, 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 Cosmos 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 Cosmos 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 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 Cosmos using the C-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*

All manoeuvres should be carried by the supervision of experienced paragliding instructors, above water and 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
COSMOS XS	43cm	44cm
COSMOS S	43cm	46cm
COSMOS M	43cm	46cm
COSMOS 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 Cosmos 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 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 Cosmos 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

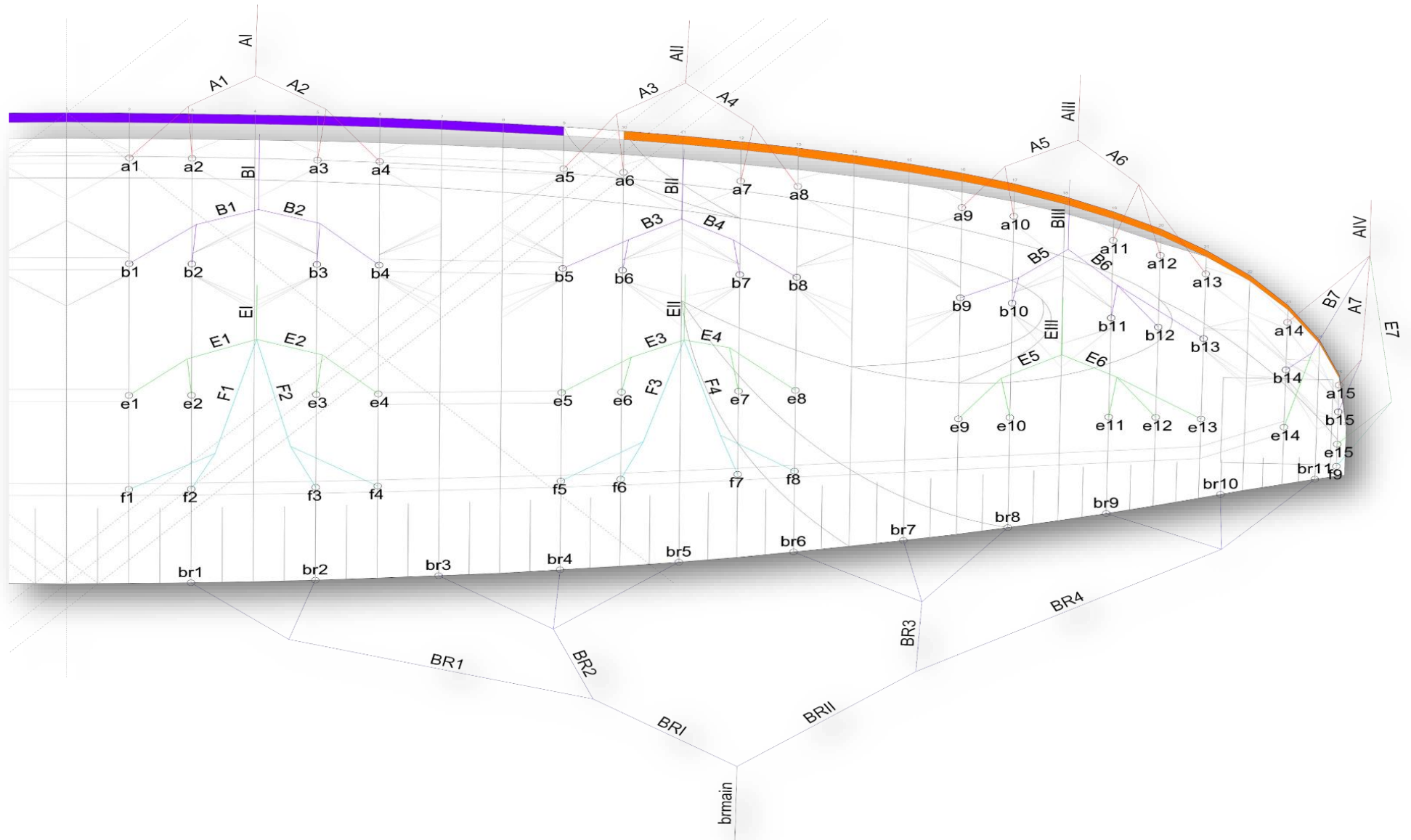
## **SUMMARY**

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. 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

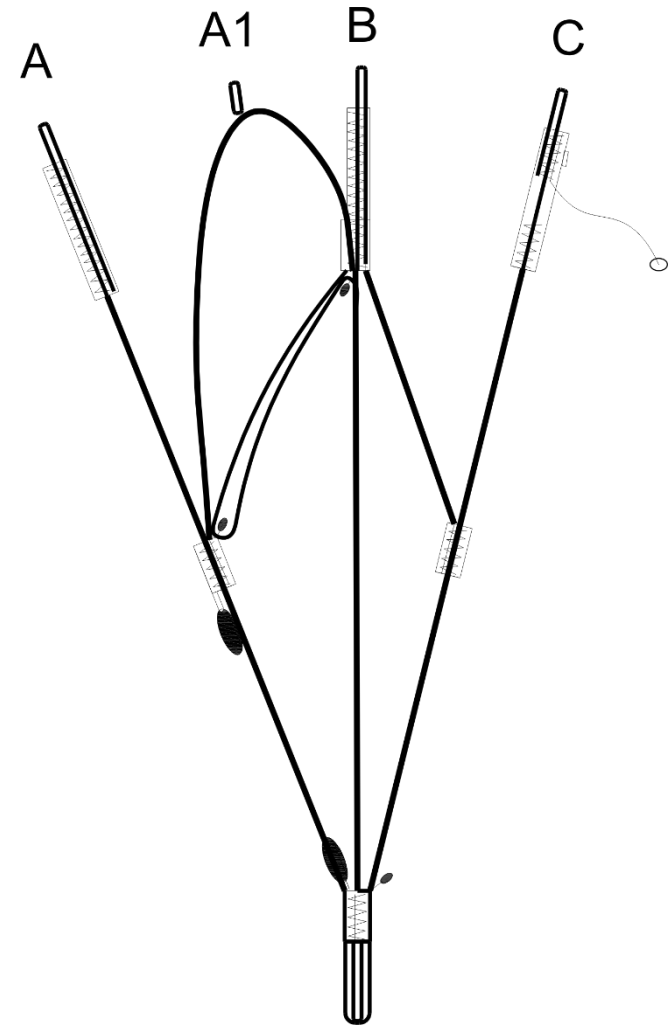


## RISER DIAGRAM

Sizes S,XS,M, L

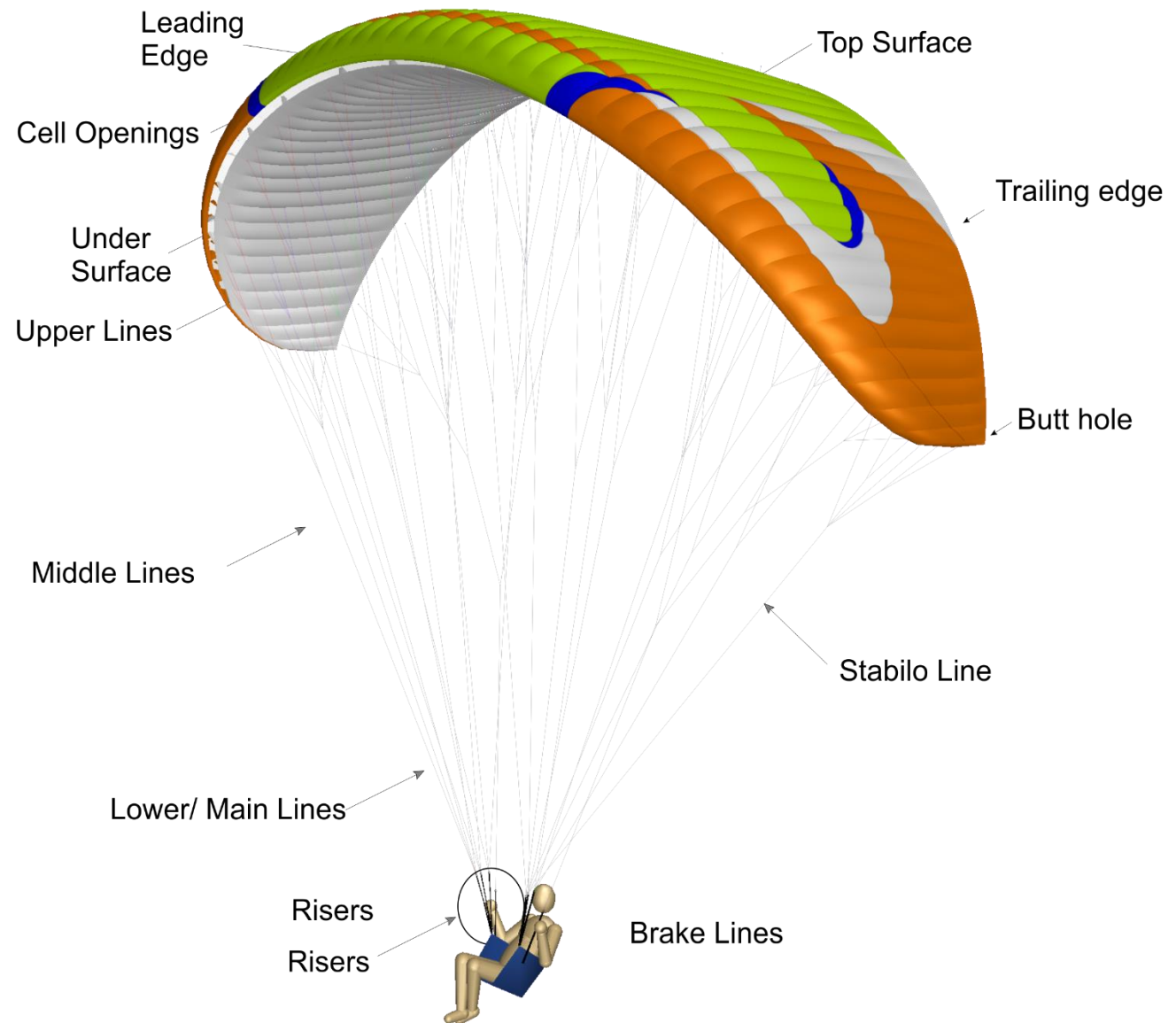
NON ACCELERATED		ACCELERATED	
A	470mm	A	310mm
B	470mm	B	345mm
C	470mm	C	470mm

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





## OVERALL ILLUSTRATION



## MATERIALS

CANOPY	FABRIC CODE	SUPPLIER
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	SUPPLIER
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	SUPPLIER
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

### 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.

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

### COSMOS M

Name	length	Line type	
a1	824	DSL70	
a2	779	DSL70	
a3	794	DSL70	
a4	806	DSL70	
a5	719	DSL70	
a6	703	DSL70	
a7	764	DSL70	
a8	775	DSL70	
a9	780	DSL70	
a10	747	DSL70	
a11	1005	DSL70	
a12	951	DSL70	

a13	940	DSL70	
a14	1583	DSL70	
a15	939	DSL70	
A1	2125	PPSL160	
A2	2087	PPSL160	
A3	2336	PPSL160	
A4	2261	PPSL160	
A5	2320	PPSL160	
A6	1990	PPSL160	
A7	700	DSL70	
AI	4174	PPSL275	
AII	3988	PPSL275	
AIII	3871	PPSL200	
AIV	4842	PPSL160	
b1	699	DSL70	
b2	657	DSL70	
b3	673	DSL70	
b4	683	DSL70	
b5	704	DSL70	
b6	692	DSL70	
b7	710	DSL70	
b8	725	DSL70	
b9	762	DSL70	
b10	732	DSL70	
b11	978	DSL70	

b12	934	DSL70	
b13	933	DSL70	
b14	1035	DSL70	
b15	947	DSL70	
B1	2332	PPSL160	
B2	2300	PPSL160	
B3	2303	PPSL160	
B4	2282	PPSL160	
B5	2290	PPSL160	
B6	1985	PPSL160	
B7	700	DSL70	
BI	3972	PPSL200	
BII	3936	PPSL200	
BIII	3841	PPSL160	
c1	689	DSL70	
c2	647	DSL70	
c3	662	DSL70	
c4	674	DSL70	
c5	693	DSL70	
c6	679	DSL70	
c7	704	DSL70	
c8	717	DSL70	
c9	757	DSL70	
c10	719	DSL70	
c11	969	DSL70	

c12	922	DSL70	
c13	920	DSL70	
c14	1086	DSL70	
c15	1004		
C1	2334	PPSL160	
C2	2304	PPSL160	
C3	2314	PPSL160	
C4	2282	PPSL160	
C5	2322	PPSL160	
C6	1999	PPSL160	
C7	700	DSL70	
CI	4047	PPSL200	
CII	4013	PPSL200	
CIII	3887	PPSL160	
d1	710	DSL70	
d2	669	DSL70	
d3	682	DSL70	
d4	692	DSL70	
d5	713	DSL70	
d6	695	DSL70	
d7	730	DSL70	
d8	728	DSL70	
d9	1061	DSL70	
D1	2437	PPSL160	



D2	2407	PPSL160	
D3	2414	PPSL160	
D4	2369	PPSL160	
br1	1948	DSL70	
br2	1760	DSL70	
br3	1834	DSL70	
br4	1717	DSL70	
br5	1738	DSL70	
br6	1803	DSL70	
br7	1666	DSL70	
br8	1637	DSL70	
br9	1622	DSL70	
br10	1598	DSL70	
br11	1636	DSL70	
BR1	1742	DSL70	
BR2	1553	DSL70	
BR3	1511	DSL70	
BR4	1457	DSL70	
BRI	1705	DSL70	
BRII	1552	DSL70	
brmain	2818	10-200-040	

COSMOS M  
BRIDLE CHECK LENGHTS:

a1	7123
a2	7076
a3	7050
a4	7051
a5	7059
a6	7023
a7	6964
a8	6959
a9	6747
a10	6690
a11	6582
a12	6498
a13	6493
a14	6272
b1	6985
b2	6938
b3	6929
b4	6929
b5	6949
b6	6920
b7	6874
b8	6863

b9	6690
b10	6639
b11	6530
b12	6458
b13	6456
b14	6232
c1	7033
c2	6987
c3	6977
c4	6981
c5	7027
c6	6994
c7	6944
c8	6934
c9	6796
c10	6736
c11	6629
c12	6560
c13	6546
c14	6308
d1	7144
d2	7095
d3	7092
d4	7096

d5	7150
d6	7116
d7	7060
d8	7027
Stabio1	6156
Stabio2	6168
Stabio3	6295
br1	7426
br2	7233
br3	7074
br4	6941
br5	6966
br6	6796
br7	6649
br8	6618
br9	6488
br10	6444
br11	6484

## COSMOS S

Name	Length	Line type
a1	626	DSL70
a2	580	DSL70
a3	592	DSL70
a4	599	DSL70
a5	502	DSL70
a6	483	DSL70
a7	541	DSL70
a8	551	DSL70
a9	535	DSL70
a10	495	DSL70
a11	741	DSL70
a12	680	DSL70
a13	670	DSL70
a14	1312	DSL70
a15	670	DSL70
A1	1925	PPSL 160
A2	1887	PPSL 160
A3	2136	PPSL 160
A4	2061	PPSL 160
A5	2120	PPSL 160
A6	1790	PPSL 160
A7	500	PPSL 160
AI	3974	PPSL275

All	3788	PPSL275
AIII	3671	PPSL200
AIV	4642	PPSL 160
b1	497	DSL70
b2	455	DSL70
b3	468	DSL70
b4	476	DSL70
b5	489	DSL70
b6	474	DSL70
b7	484	DSL70
b8	495	DSL70
b9	516	DSL70
b10	482	DSL70
b11	719	DSL70
b12	670	DSL70
b13	669	DSL70
b14	765	DSL70
b15	678	DSL70
B1	2132	PPSL 160
B2	2100	PPSL 160
B3	2103	PPSL 160
B4	2082	PPSL 160
B5	2090	PPSL 160
B6	1785	PPSL 160
B7	500	DSL70
BI	3772	PPSL275

BII	3736	PPSL200
BIII	3641	PPSL200
c1	483	DSL70
c2	440	DSL70
c3	455	DSL70
c4	467	DSL70
c5	481	DSL70
c6	462	DSL70
c7	473	DSL70
c8	478	DSL70
c9	510	DSL70
c10	471	DSL70
c11	717	DSL70
c12	664	DSL70
c13	663	DSL70
c14	821	DSL70
c15	736	
C1	2134	PPSL 160
C2	2104	PPSL 160
C3	2114	PPSL 160
C4	2082	PPSL 160
C5	2122	PPSL 160
C6	1799	PPSL 160
C7	500	DSL70
CI	3847	PPSL200
CII	3813	PPSL160

CIII	3687	PPSL 160
d1	500	DSL70
d2	459	DSL70
d3	473	DSL70
d4	485	DSL70
d5	501	DSL70
d6	479	DSL70
d7	498	DSL70
d8	484	DSL70
d9	795	
D1	2237	PPSL 160
D2	2207	PPSL 160
D3	2214	PPSL 160
D4	2169	PPSL 160
br1	1790	DSL70
br2	1551	DSL70
br3	1588	DSL70
br4	1429	DSL70
br5	1444	DSL70
br6	1508	DSL70
br7	1379	DSL70
br8	1363	DSL70
br9	1349	DSL70
br10	1326	DSL70
br11	1361	DSL70

BR1	1542	DSL70
BR2	1353	DSL70
BR3	1311	DSL70
BR4	1257	DSL70
BRI	1505	DSL70
BRII	1352	DSL70
brmain	2618	10-200-040

COSMOS S  
BRIDLE CHECK LENGHT

a1	6971
a2	6928
a3	6900
a4	6910
a5	6896
a6	6880
a7	6855
a8	6866
a9	6790
a10	6750
a11	6660
a12	6597
a13	6586
a14	6385

b1	6856
b2	6816
b3	6795
b4	6802
b5	6795
b6	6778
b7	6763
b8	6769
b9	6696
b10	6657
b11	6593
b12	6549
b13	6548
b14	6345
c1	6910
c2	6870
c3	6857
c4	6866
c5	6856
c6	6835
c7	6825
c8	6827
c9	6765
c10	6734
c11	6659
c12	6609
c13	6609
c14	6416



d1	7029
d2	6990
d3	6978
d4	6949
d5	6972
d6	6955
d7	6931
d8	6915
Stabio1	6269
Stabio1	6270
Stabio1	6340
br1	7378
br2	7135
br3	6977
br4	6834
br5	6854
br6	6744
br7	6612
br8	6593
br9	6518
br10	6489
br11	6521