S.E.A. PARAGLIDERS

SMART PROGRESS



Pilot manual
v.3, 10.07.2018

A warning
Paragliding, like any other aviation sport, is an activity associated with increased danger to life and health. It is strongly recommended that you take training in a proven paragliding school, as well as choose the equipment and flight conditions appropriate to your level of training.

Paraglider Smart Progress is designed for a wide range of paraglider pilots - ambitious graduates of flying schools, occasionally flying pilots, beginner XC pilots, who needs in his glider easy, precise handling and comfortable behavior in most situations. The Smart Progress is perfect glider for soaring in thermals and ridge lift, for beginning cross-country flights.

Smart Progress is paraglider EN B class, intended for suitable qualification pilots. These pilots must be competent enough. Smart Progress is not a training wing for unexpirienced pilots.
The Smart Progress is for solo pilot use only. It has no possibility to connect for more than one harness.
Paragliding is a particularly nature-friendly sport. This makes it all the more important that we as paraglider pilots behave in a responsible way towards both the environment and the people sharing it with us. Please also make sure to comply with legislation regarding protected areas, privately owned property or hunting arenas – this ensures the least possible friction in relation to other users of the great outdoors, to the benefit of both yourself and the sport as a whole.

1. Preflight preparation

Risers

Risers are designed to connect the lines system of the paraglider with the pilot harness.
Paraglider Smart Progress is equipped with risers with speed system and has no trimmers.
Lines are attached to the risers using soft links - strong connecting elements made of the dyneema, which are fixed in the ring by a knot-hammer.
It is necessary to regularly check the correctness of installing and securing soft links under protective covers on risers.



Speed system

Speed system are designed to increase the speed range of the paraglider by reducing the angle of the wing.
The maximum increase in speed is achieved with fully activated speed system.
It is recommended to work with it strictly symmetrically.
It is important that the speed system is connected correctly, and the length checked, to ensure smooth operation in flight.
The cords of speed system should be run up through the eyelets and pulleys on the harness to connect with the pulley system on the front of the risers. If in any doubt, please ask your school or the harness dealer/manufacturer.

Harnesses

The manufacturer recommends to use the harness with a height of the main carabiners of at least 42 cm and a distance between them of 42-45 cm.

Length of the brake

The wing is delivered with the optimum length of the brakes.
If you need to adjust the length of the brake in accordance with the settings of your suspension system or with your own equipment, we strongly recommend that you do this by changing the length of the brake no more than 2 cm at a time.
In free flight, with the brakes left, the trailing edge of the wing must not be deflected.
IMPORTANT! Loose or incorrect brake knots can cause serious accidents through loss of the steering of the glider!

Adjustments

As with all products S.E.A. Paragliders the Smart Progress is manufactured to the highest quality and precision. The line lengths of each glider are carefully checked before dispatch.
Any change to the configuration of the wing will invalidate certification!
The only change allowed is to the length of the lower brake line. This should only be done by an experienced person

2. Flying Smart Progress

Check before takeoff

Spread the wing of the "horseshoe" - the wing center should be further from the pilot than the tips.

Before each take-off, we recommend the following check:

- The lines are untied, there are no damages or knots;
- all surfaces of the wing do not have strong scuffing and damage;
- risers are untangled, soft links on them are fixed in working position;
- carabiners is OK, securely locked and stand in the correct position in the main loops of the harness;
- the harness are OK;
- the rescue parachute is connected, correctly fixed in the harness;
- the parachute lock pin is installed correctly;
- the helmet is locked;
- the buckles of the harness are fastened and tightened to a comfortable position;
- the air intakes of the wing are open, the arc of the wing is directed against the wind;
- brakes are taken correctly;
- wind strength and weather conditions are safe;
- the airspace ahead is free.

Takeoff

To take off the "alpine" start, you need to pull the straps of A-risers and put the wing in a position vertically above the pilot.

As soon as the wing reaches this position, make sure that the space before the start is free and begin an energetic take-off to the point of separation.

For the "reverse" start, turn your face to the wing and lift it in this position. To compensate for the draft of the wing during the ascent, it is necessary to deflect the hull backwards.

In a strong wind you need to be ready to take a few quick steps to the wing. When the wing is overhead, run vigorously to take-off.

Landing

For a safe landing, select a suitable spot of sufficient size without obstacles on or near it, and also assess the direction and strength of the wind.

When landing, it is necessary to withstand the direction of flight against the wind.

In advance, take the necessary position in the harness system.

On the final approach before touching it is recommended to keep the brakes released. If there is some turbulence, for safety reasons, you can keep a slight pull on the brakes for better control of the wing.

Avoid unnecessary retarding of the wing, as this can lead to excessive acceleration and landing with a dangerous vertical speed.

At an altitude of about 1 meter, progressively and smoothly tighten the brakes to make a flare.

When landing in a strong wind, it is necessary, after touching, to douse the dome as quickly as possible - by fast and large pulling of the brakes or straps of the B-Risers. Be ready to run in direction to the wing.

At the landing, do not allow the paraglider to overtake you and hit the ground with the leading edge. This leads to a sharp increase of air pressure in the canopy and may cause damage to it.

Normal flight

Brakes are released and speed sysem is not activated. In this mode, the Smart Progress has the best glide angle in the calm air.
To obtain a minimum sink rate pull the brakes in 10 – 15 cm.

Accelerated flight

When flying into strong wind and/or in a sinking air zone you can improve the glide angle of your glider by activating speed system.
For acceleration, if is necessary , you need to activate the speed system by pushing speed bar connected to the speed system on the risers.
The paraglider is less stable when flying accelerated. Consequently, the possibility of a collapse is higher.
It is important to always remember that possible collapses in this mode of flight can occur more dynamically than on trim speed flight.
Pilot should practice in this manouver gradually with enough hight over the ground, and be careful using the speed system in turbulence.
Smart Progress has no trimmer system.

Maneuvering

For turning smoothly, begin to pull one brake, while simultaneously shift the weight of the body in the suspension to the same side of the turn. The wing will smoothly enter the turn. When it reaches the required turning radius, you can control this radius and the rate of descent by changing the weight shifting and / or slight pulling of the external brake.
Maximum symmetric control travel at maximum weight in flight is about 70 cm.

Active piloting

For safe flights in turbulent air, it is strongly recommended to training actively in piloting.
The essence of this is the continuous maintenance of a constant load on the brakes and risers of the paraglider.
Under the influence of a sufficiently strong turbulence when the pilot is inactive, the paraglider swings in pitch and roll, which can lead to some collapses.
If the wing surges forward, brake it by pulling the brake until it returns from the position in front, almost over the pilot's head. Operate the brakes with sufficient speed, but smoothly, considering the inertia of the wing. Do not allow the oscillations to increase.
If the wing throws back on the pitch, start releasing the brakes. And when the wing returns to the vertical, you must restore the previous tension to the brakes to prevent a dive forward.
In this way, a sufficiently experienced pilot can avoid collapses even in very turbulent air.
Nevertheless, it is important to remember that there is the potential for turbulence, which the pilot can not deal with, so the most important safety is a wise assessment of his piloting skills and given weather conditions.

Non-standard flight situation

In very strong turbulence the collapses of the canopy of various sizes is possible.

Asymmetric collapses

Pilot should maintain direction of flight by weight shifting from a collapsed side and smooth pulling of the brake opposite to the deflation. This action should not be too big to cause a stall, otherwise it could lead to an uncontrolled sequence of dangerous regimes.
In case the deflation come not out, pump the collapsed side of the wing with smooth and deep enough pulling of brake.
Let the glider maintain its airspeed for the faster re-opening.

Symmetrical collapses

Symmetrical frontal collapse usually re-open by itself even without any pilot actions.
Pilot can accelerate the re-opening by one or two quick pumping the brakes. Be careful while doing this and do not allow excessive braking of the wing, which very quickly (in the event of a pilot error) can lead to a stall of the wing.

Stall

Failure can occur when collapse are too large and sloppy when too sharp maneuvering, as well as some unfavorable factors - wetting the wing, a critical change in the geometry of the line system.
In a deep stall, the wing can be filled, but it does not have a horizontal speed and very quickly decreases.
To exit the stall immediately raise your hands with the brakes up to the released position of the control lines. If the paraglider continues to be in stall, take the straps of the A-risers and push them forward and slightly downwards.
Never try to fly on a wet paraglider! You can take off only on a completely dry wing!
If your paraglider is wet during flight (for example, when exiting from a powerful cloud), push the accelerator and try to avoid controlling the brakes until the wing completely dries out in the maximum possible straight flight.

Cravats

A tie can arise when a part of the wing is entangled in the slings of a paraglider. This happens with inaccurate prelaunch preparation or as a result of a strong collapse in turbulence.
When a tie occurs, the most important action is keeping the flight direction of the paraglider. Otherwise, autorotation can occur very quickly - a powerful spontaneous rotation of the paraglider with huge vertical and horizontal velocities.
To open the tie, pull the stabilizer line. It may take a lot of pulling this line.
Also for the disclosure of a tie, you can perform a full or asymmetrical collapse. This technique is very effective, but may require sufficient altitude over the terrain for exit and high skill of the pilot.

Control without brakes

In the event that normal paraglider control by means of brakes is not possible (for example, if one control line is broken) piloting by pulling the C-riser is possible.
It is necessary to remember that the required amount of apply is much less than when controlling the brakes, so you have to pull the C-Risers carefully, to avoid stalls or spins.

Methods for rapid descent

Try to avoid these maneuvers whenever possible. Carefully assess the weather conditions before take-off. If there is a probability of deterioration of weather conditions, choose a landing pad and approaches to it in advance.

"Big ears"

To accomplish this maneuver, take the most external lines of A-risers (which go to the outer edges of the wing) and pull them until the wing tips are folded.
To increase the horizontal and vertical speeds in this mode, you can activate a accelerator, but only AFTER folding the ears.
During this maneuver, it is strictly recommended not to make deep spirals, as this negatively affects the strength and geometry of the line system.
To exit, simply release the held lines and fill the wing yourself. It is possible to accelerate the opening with the help of a not very intensive pumping of the wing by the brakes.

Deep spiral

Before performing a deep spiral, make sure that there is sufficient margin of elevation above the ground. To enter the spiral, shift the weight in the harness to one side and gently tighten the brake on the same side until the wing starts to rotate.

When the wing increases the bank angle and accelerates to a certain reduction, hold the brake in this position. The rate of descent can be controlled by weight shifting in the harness and small action of the external (from the rotation) brake.
To exit from a deep spiral simply smoothly release the internal (working) brake and the paraglider will start its own exit. For a smoother exit, it may sometimes be necessary to apply a slight brake to the wing to compensate for small wing movements in the pitch before final exit into a normal straight flight. SMART PROGRESS in normal flight conditions has no tendency to remain in the spiral on its own.
It should always to remember that the greater the rate of descent in the spiral dive, the more time it can take to exit into a normal flight.
Never attempt an abrupt escape from a deep spiral - this can lead to very dangerous abnormal flight situations.
A WARNING. Prolonged overloads during a deep spiral dive can lead to deterioration of the pilot's well-being and even loss of consciousness. Constantly monitor your condition in this maneuver, and at the first signs of deterioration of well-being, begin to out of this maneuver. It is strongly recommended not to perform deep spirals for a long time at a speed of more than 11 m / s. Pilot should training to do spiral dive in a safe conditions - with a large margin of height above the water and under the supervision of an experienced instructor.
Too frequent execution of deep spirals with high rates of descent can cause premature violation of the geometry of the line system and the canopy of the wing with the subsequent deterioration of flight characteristics up to dangerous ones.

B-stall

To perform this maneuver, symmetrically tighten the B-risers before mechanically restricting the free ends.
The dome of the paraglider will be deformed along the span, lose the horizontal speed and increase the speed of descent. The decrease can reach values of 7-8 m / s.

Never do not release the risers until the moment when the wing does not stabilize vertically above the pilot! In the opposite case, a wing can be dive forward below the pilot with subsequent dangerous flight situations!
To exit the B-stall quickly and symmetrically release the straps of the B-riser. The wing will come out by itself to a normal flight with a slight pitch movement.

Aerobatics

Paraglider SMART PROGRESS is intended primarily for recreational and training flights, so it is strongly advised not to perform acrobatic manoevers in order to avoid getting into dangerous flight situations.

Towing

SMART PROGRESS paraglider allows you to fly with the use of various types of winches. Before flying, make sure that your equipment meets the safety requirements for towing. Always remember that during towing paraglider can react differently to pilot control actions. When towing, it is necessary to control the wing with less brake effects than normal flight to avoid dangerous flight situations.

Motorized flight

SMART PROGRESS paraglider allows to fly with paramotor. It behaves beatifully with paramotors(low-S hang type) and single-seat paratrike. Be sure your take-off weight are inside of allowed limits for any size of the glider.

3. Care, storage and repair

General rules

- put the wing in a bag or backpack as carefully as possible;
- do not pack the wing with foreign objects and debris inside;
- gently fold up the nasal stiffnesses of the paraglider, avoiding their crease, use the method of "lathering" or cover-contraceptin when laying;
- do not leave the paraglider in the sun for a long time;
- do not leave equipment in a closed car in the sun;
- do not drag the wing on the surface of the earth;
- avoid contact of the paraglider with hot objects and open fire;
- avoid wetting the paraglider;
- do not walk in the shoes on the dome and the slings of the paraglider;
- do not start in a strong wind before the complete unleashing of possible nodes on the lines;
- do not put heavy objects on the packed wing and do not sit on it;
- in case of contamination - never wash the wing using chemicals, only wipe it with a slightly wet soft sponge;
- do not store the paraglider in a wet, not ventilated room;
- after getting soaked in sea water, immediately rinse the wing outside and inside in plenty of fresh water (for example, in a car wash), only then dry it in the shade in the wind;

Wing inspection and repair

The manufacturer strongly recommends to check the paraglider before each take-off - canopy, lines, installation of soft links, risers.

It is recommended to make a qualified check of the paraglider every 100 hours of flight or a year.

In case of glider damage small holes in surfaces and ribs(which are not bigger than 2 cm and not affect seam) can be repaired by sticky ripstop.

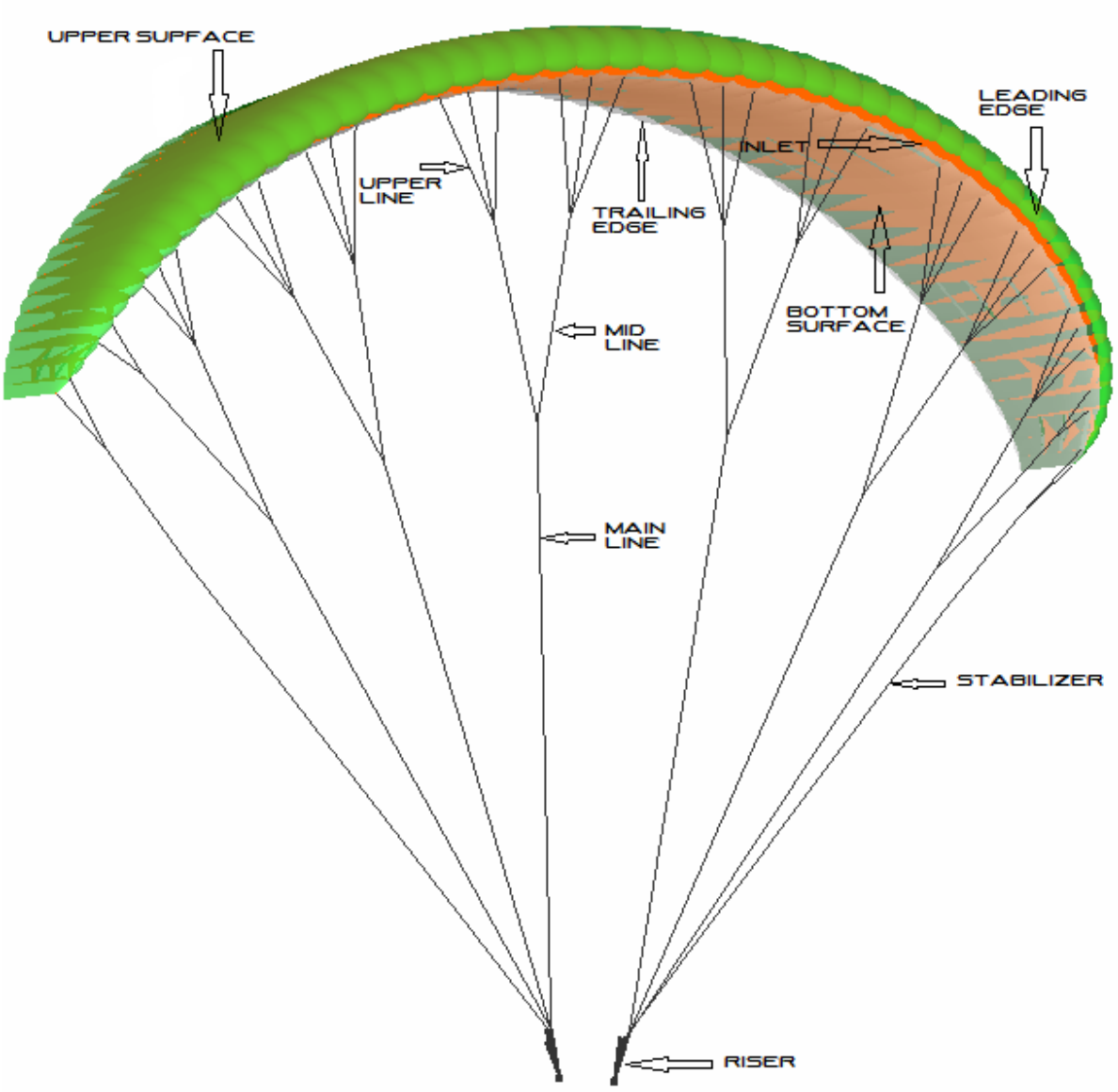
Damaged lines can be replaced by repair kit from manufacturer. Strongly recommended to do check inflation test after lines replacement.

For more complex repair recommend to ask manufacturer. Your glider consists of many high-quality long-life components. When replacing parts (fabric, lines, risers..), only original parts may be used.

Wing recycling

At the end of service life the paraglider must be disposed properly . Please, send it back to manufacturer for correct disposal.

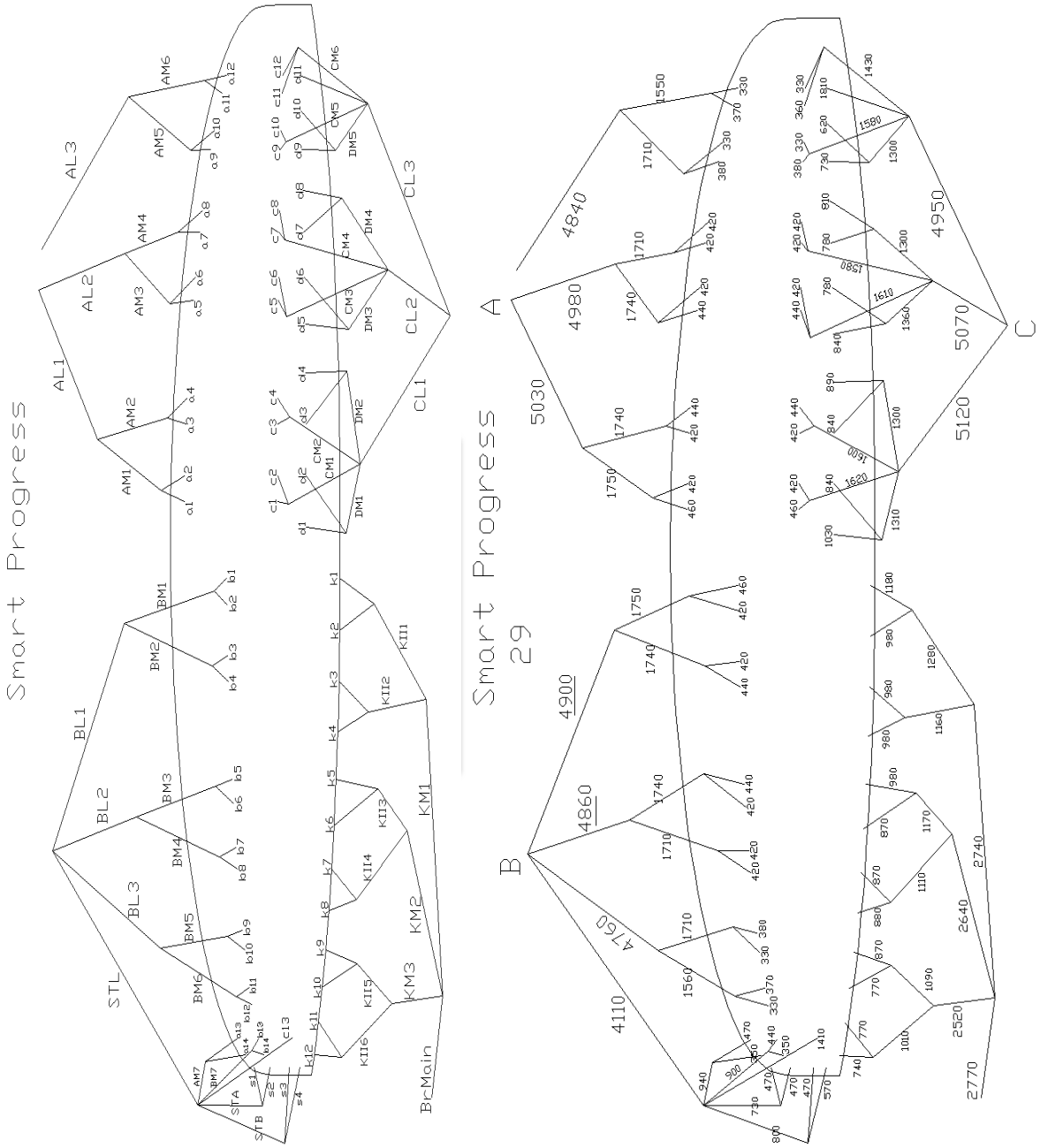
4. General view of the paraglider



5. Technical data

Smart Progress					
Class	Intermediate paraglider				
Size	XS	S	M	L	XL
Cell number	51				
Flat AR	5,65				
Projected AR	4,15				
Flat area, m2	23	25	27	29	32
Projected area, m2	19,25	20,92	22,59	24,27	26,78
Flat span, m	11,4	11,89	12,35	12,8	13,45
Projected span, m	8,9	9,3	9,67	10,02	10,53
Root chord, m	2,42	2,53	2,63	2,7	2,86
Tip chord, m	0,75	0,777	0,807	0,837	0,879
Number of lines	232				
Line consumption, m	260	274	285	295	311
Risers number	A/a'/B/C				
Number of main lines	2/1/4/3				
Accelerator, mm	150				
Trims	NO				
Glider weight, kg	4,2	4,4*	4,70	4,9	5,7
Take-off weight, kg	60 - 80	70 - 90	80 - 105	90 - 115	110 - 140

6. Lines diagram



7. Lines check table

Smart Progress L

	A		B		C		D		S		K	
1	7770		7640		7730		7990		6840		8070	
2	7730		7600		7690		7800		6840		7870	
3	7720		7590		7670		7790		6910		7750	
4	7740		7610		7690		7840		7010		7750	
5	7690		7570		7650		7800				7660	
6	7670		7550		7630		7740				7550	
7	7640		7520		7590		7680				7460	
8	7640		7520		7600		7710				7500	
9	7450		7370		7430		7510				7350	
10	7400		7320		7380		7400				7250	
11	7280		7210		7260		7290				7170	
12	7240		7170		7230						7140	
13	7040		6980		7050							
14	6920		6890									

Compliance of the test samples' suspension lines, control lines and risers with the dimensions given in the user's manual has been checked by the testing laboratory after the test flights.
Line lengths shall be specified when measured under a tension of 50 N, this tension being slowly and gradually applied before taking the measurement.
Overall line lengths can differ not more than 5 mm from theoretical noted values.

8. List of materials

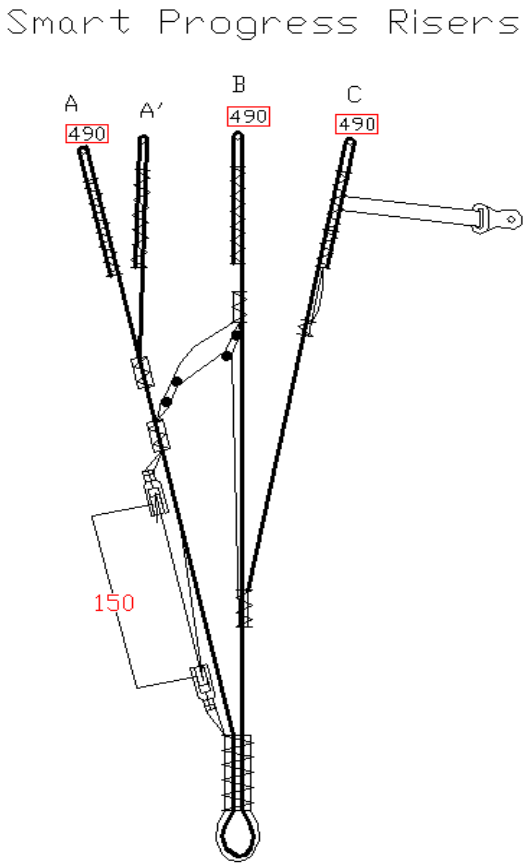
CANOPY	FABRIC CODE	SUPPLIER
UPPER SURFACE	30DMF (WR)	DOMINICO TEX. (KOREA)
BOTTOM SURFACE	30DMF (WR)	DOMINICO TEX. (KOREA)
RIBS	30DFM (NON-WR)	DOMINICO TEX. (KOREA)
DIAGONALS	30DFM (NON-WR)	DOMINICO TEX. (KOREA)
LOOPS	LTKP-15-185	LENTACHEB (RUSSIA)
REINFORCEMENT LOOPS	SR-170	PORCHER IND (FRANCE)
REINFORCEMENT RIBS	NYLON STICK	R.P.CHINA
THREAD	SERAFIL 60	AMAN (GERMANY)

SUSPENSION LINES	FABRIC CODE	SUPPLIER
UPPER CASCADES	DSL35	LIROS GMBH (GERMANY)
UPPER CASCADES	DSL70	LIROS GMBH (GERMANY)
MIDDLE CASCADES	DSL35	LIROS GMBH (GERMANY)
MIDDLE CASCADES	DSL70	LIROS GMBH (GERMANY)
MIDDLE CASCADES	DSL140	LIROS GMBH (GERMANY)
MAIN LINES	TSL90	LIROS GMBH (GERMANY)
MAIN LINES	TSL190	LIROS GMBH (GERMANY)
MAIN LINES	TSL220	LIROS GMBH (GERMANY)
MAIN LINES	TSL280	LIROS GMBH (GERMANY)
MAIN BRAKES	DFLS-200	LIROS GMBH (GERMANY)
THREAD	SERAFIL 60	AMAN (GERMANY)

RISERS		
WEBBING	366-044-015-962/01	MOUKA(CZECH REPUBLIC)
THREAD	SERAFIL 20	AMAN (GERMANY)
THREAD	SERAFIL 30	AMAN (GERMANY)
LINKS	DC500	LIROS GMBH (GERMANY)
PULLEYS	43A	CHINA

To obtain spare parts(in case of not complex repair or needed replacement) please contact to manufacturer or local dealer.
sea-wings.pro

9. Riser diagram



Number of risers – 4 (A, A`, B,C)

Riser	A	A`	B	C
Neutral length, mm	490	490	490	490
Length accelerated, mm	340	340	390	490

The difference are not more than 5mm from the noted lengths.

10. Glider data

SIZE	COLOR	Date of manufacturing
Serial number		

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