DAVINCI GLIDERS

HUA

REV. 1

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Congratulations!

Congratulations!
Thank you for choosing the DAVINCI GLIDERS HULA.

The HULA has been designed for mountain and Hike and fly for the paraglider.
The HULA is EN-A glider, it is also a progressive and innovative paraglider avaible of full range of pilot from beginer to advanced pilot.

This manual will help you to get all information about your glider. We strongly recommend that you read this manual carefully in order to be aware of any general limitations, performance characteristics, take- off and flight characteristics, landing procedures, dealing with emergency situations, and general maintenance.

This is information about the design of the HULA, advice on how to use it best and how to care for it to ensure it has a long life, We hope that the HULA will give you a lot of satisfactory flying times.

-DAVINCI GLIDERS TEAM-

WARNING!

THIS IS NOT A TRAINING MANUAL. ATTEMPTING TO FLY THIS OR ANY OTHER PARAGLIDER WITHOUT PROPER INSTRUCTION FROM A CERTIFIED PROFESSIONAL INSTRUCTOR IS EXTREMELY DANGEROUS TO YOURSELF AND BYSTANDERS.

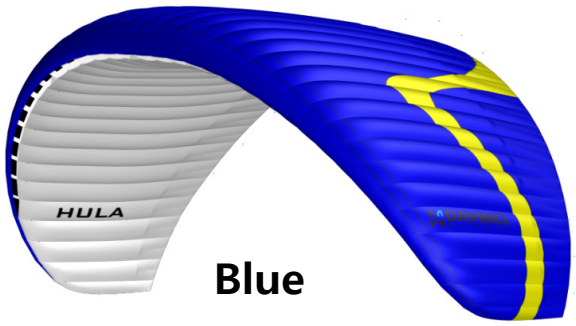
DAVINCI GLIDERS are carefully manufactured and inspected at the factory. Please use the glider only as described in this manual.

Do not make any modifications to the glider.
As with any sport – without taking the necessary safety precautions, paragliding can be dangerous.

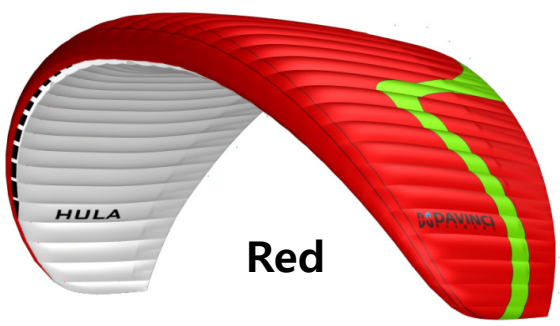
INDEX

1. Technical DATA

HULA			19	21	23	25	27	29
Zellen	NUMBER		38	38	38	38	38	38
	CLOSED		8	8	8	8	8	8
FLAT	AREA	m^2	19.4	21.2	23.0	25.0	27.0	29.5
	SPAN	m	9.7	10.1	10.5	11.0	11.4	11.9
	ASPECT RATIO		4.8	4.8	4.8	4.8	4.8	4.8
PROJECTED	AREA	m^2	16.8	18.3	19.8	21.6	23.3	25.4
	SPAN	m	7.8	8.1	8.5	8.9	9.2	9.6
	ASPECT RATIO		3.61	3.61	3.61	3.61	3.61	3.61
FLATTENING		%	13.8	13.8	13.8	13.8	13.8	13.8
CORD	MAX	m	2.48	25.8	2.69	2.81	2.92	3.05
	AVER	m	2.01	2.1	2.19	2.28	2.37	2.48
LINES	HEIGHT	m	5.99	6.25	6.51	6.78	7.05	7.37
	MAIN		3/4/3					
RISERS	NUMBER	3	A,A'/B/C					
	TRIMS		No	No	No	No	No	No
	ACCELERATOR		105	105	105	120	120	120
WEIGHT RANGE	MIN-MAX	KG	50-70	50-75	60-85	70-95	80-105	90-119
CERTIFICATION	EN-926-1/2 LTF	KG	EN-A	EN-A	EN-A	EN-A	EN-A	EN-A
GLIDER WEIGHT		KG	2.50	2.65	2.85	3.05	3.25	3.45



Blue



Red

2. Materials DATA

CANOPY	FABRIC CODE	SUPPLIER
UPPER SURFACE	MJ32 MF	MYUNGJIN TEXTILE
BOTTOM SURFACE	E3H 27g	PORCHER INC.
PROFILES	E91 27g	PORCHER INC.
DIAGONALS	E91 27g	PORCHER INC.
SMART NOSE PLUS	E91 27g	PORCHER INC.

SUSPENSION LINES	FABRIC CODE	SUPPLIER
UPPER CASCADES	8000U-70	EDELRID
MIDDLE CASCADES	8000U-160/120	EDELRID
MAIN	PPSL 275/200/160	LIROS
UPPER STABLE	8000U-70	EDELRID
MAIN STABLE	PPSL 160	LIROS
UPPER BRAKE	8000U-70	EDELRID
MIDDLE BRAKE	8000U-120	EDELRID
MAIN BREAK	10N-200	EDELRID

RISERS	FABRIC CODE	SUPPLIER
MATERIAL	12 MM POLYESTER	GUTH&WOLF GMBH
	DYNEEMA	LIROS
PULLEYS	RIELY	RONSTAN

3. Introduction and Pilot Target

The HULA is an ultralight glider and suitable for a full range of pilots from beginner and advanced pilots.

The HULA is a Hike and Fly wing. Light and compact take-off complete the hike in any terrain and situation, and the smooth handling and thermaling make for a pleasant mountain flight. The application of SN+ provides a longer stall point and a sense of stability even in rough flight conditions. With the application of SBS, you can have more relaxed during take-off than during the flight.

Whether you're a hiking fan, and a student pilot looking for light wings, the HULA will provide you with the satisfaction and happiness of the critical moments of your adventure.

-LTF and EN certification

The HULA is certified during official testing as LTF /EN-A.

The glider has been type-tested for "one-seated" use only.

-For the HULA has a maximum of 65cm symmetrical travel length at maximum total-load.

It would be dangerous to use the brake travel according to those numbers, because it is not practicable to measure the brake travel during flight, and in turbulence, the stall might occur with less brake travel. If you want to use the whole brake travel of your glider safely, it is necessary to do many intended spins and full stalls to get a feeling for the stall behavior.

-Smart Nose Plus gives you a more relaxed response time in important moments

-Smart Ballance System offers a more automatic safe posture during take-off and flight

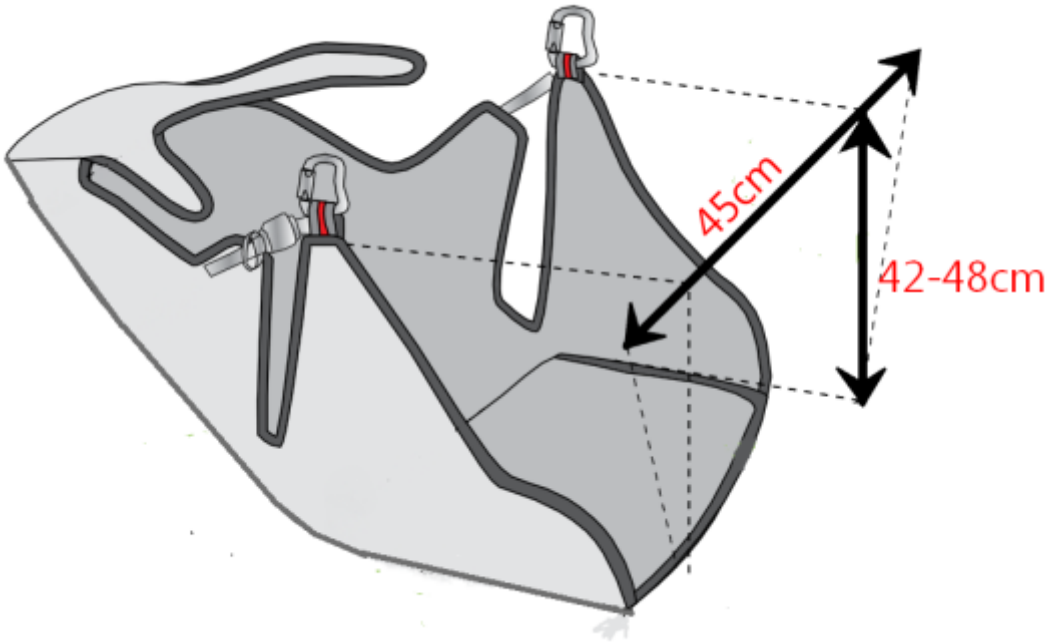
-Combination of Lighter and durable fabric

-Easy inflation and smoother take-off

-6 sizes covering 50 to 120KG in 2 colors

-Basically offered with 12mm Kevlar riser, Dyneema riser can be chosen for lighter weight

The HULA is certified for harnesses in Group GH(without rigid cross-bracing). The suspension points of the chosen harness should ideally have a carabiner distance of approximately 45cm and a height of 40 to 48cm.

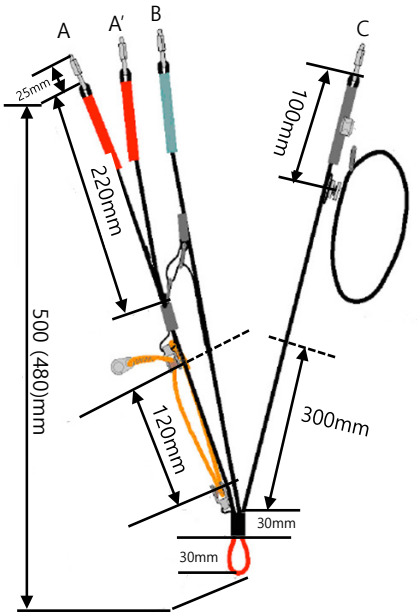


5. Risers

HULA has 3 risers. The A riser has a red cover to easy identification. There is another line with red mailon. There is A' and is for the big ears.

25, 27, 29	Standard (With biner) [mm]	Accelerated (With biner) [mm]	Travel length [mm]
A	500 (525)	500 (525)	0
B	500 (525)	440 (465)	60
C	500 (525)	380 (405)	120

19, 21, 23	Standard (With biner) [mm]	Accelerated (With biner) [mm]	Travel length [mm]
A	480 (505)	480 (505)	0
B	480 (505)	427 (452)	53
C	480 (505)	375 (400)	105



6. Lines

They come in different diameters of Kevlar and Dyneema with sheathed cover. They must be inspected every 100 hours or 12months maximum.

In the case of Brake lines, it was cut a little longer, so every pilot can adjust it according to his personal taste.

But you must always leave 10cm before the brakes line starts acting in order to avoid trailing edge deformation when the wing is fully accelerated. In case the brake handle comes loose during flight or any brake lines are cut you can use the C riser softly for directional control instead of the brake line.

7. Accelerator system

The accelerator has been limited in travel up to a safety point, however, you can gain 8-12 km of extra speed. The speed system length is 12cm (S to L) and 10cm (XXS and XS).

You have to adjust the harness to the speed system so you can use all the speed travel.

To do so you have to be seated in the ground meanwhile you are in your harness and adjust the lines by pulling up the risers with tension. Another person's helps to do this is recommended. Make sure also that the speed bar is not pulling down the risers when you are not using it.

Once all the gear is rigged you have to test the whole speed travel in calm air. The use of the speed system reduces the angle of attack and the canopy may be more sensitive to collapses therefore do not use near the ground or in turbulent air and in case you are hit by turbulence remove your feet off the speed bar as quickly as possible. Always far away from the ground when using the speed bar.

8. Pre-flight check

To know yourself with the glider it is a good idea to perform practice inflations and ground handling in advance. You should have no difficulties flying the HULA for the first time in suitable conditions, but as with all new equipment.

When you have the new glider, the below points should be inspected.

- Check the lines are clear and not twisted.
- Connection points between the glider and harness.
- All harness buckles are closed.
- The Karabianers are fully closed and not damaged.
- The sewing, condition of the lines, and connection of the lines are right
- Internal damage to ribs and diagonal ribs.
- Demage to the top and bottom panels and seams between panels

9. Take-0ff

HULA has easy inflation behavior at the forward/reverse launch because of its profile system. To get the right-wing shape for the take-off, pull the brake until the canopy shows the perfect banana shape on the flat ground. While inflating the HULA, you should hold both of the A risers in your hands. Smoothly and gradually inflate the wing. It does not need excessive energy and you feel the lift force very fast. It does not tend to over-shooting characteristics and provides a

9.1 Tow launch

The HULA is easy to launch using a winch and it has no special skills. To practice this launching technique special training is needed and you have to know the procedures and dangers, which are specific to winching. We do not recommend using any special towing device which accelerates the glider during the winch launch.

10. In flight characteristics

HULA has the best stable glide performance in a normal position with no any brakes. In strong thermals and turbulence, we recommend gently pull both brakes without acceleration to increase stability. The brakes provide feedback about the surrounding air, which is needed for active flying.

To familiarize yourself with the HULA your first turns should be gradual and progressive. To make efficient and coordinated turns with the HULA first look in the direction you want to go and check that the airspace is clear. Your first input for directional change should be weight-shift, followed by the smooth application of the brake until the desired bank angle is achieved. To regulate the speed and radius of the turn, coordinate your weight shift and use the outer brake.

In the unlikely event that a brake line releases from the brake handle or breaks, the glider is maneuverable using the C-risers. By pulling gently on the C-risers it is possible to steer the glider and land safely.

Alternative Steering:
In the unlikely event, that a brake line releases from the brake handle, or breaks, or the brake-lines are tangled up, the glider is maneuverable using the rear-risers. By pulling gently on the rear-risers, it is possible to steer the glider and land safely. Don't pull the rear-risers too much, to avoid a deep stall!

11. Deflations

In spite of the HULA has great stability of the flight, strong turbulence or piloting error may cause a portion of the wing suddenly to be deflation.

11.1 Asymmetric collapse

The asymmetric collapse usually happens when the pilot has not foreseen this possible reaction of the wing.

Asymmetric collapses should be controlled by weight shifting away from the collapse and applying enough brake to control your direction. And you should use the brake to re-inflate the glider.

11.2 Frontal collapse

HULA does not come out asymmetrical front collapse by itself. It has high internal pressure with its well-designed profile. However asymmetric collapse may occur in strong turbulent conditions, but It could be fast recovered if you apply the brake down to 15 to 20cm. Release the brake lines, you may recover to the normal flight.

11.3 Full stall

The full stall can occur when you fully pull both brakes enough a long time. This means that the wing loses its forward momentum. To recover to the normal flight you must release both brakes. After this usually comes a front dive with a possible front deflation. An asymmetric recovery (one control released faster than the other) from a full-stall can cause a big dynamic collapse. The full-stall is a hazardous maneuver and as such outside the scope of this manual. You should practice and learn this maneuver only on an SIV course under a professional instructor.

11.4 Deep stall

It is possible for gliders to enter a state of the deep stall. This can be caused by several situations including; a very slow release from a B-line stall; flying the glider when wet; a very old glider; or after a front/symmetric deflation.

When you meet this situation you should fully raise up both brakes and push the A-risers forwards or use the speed bar symmetrically to regain normal flight.

11.5 Asymmetrical stall

It can take place when you pull one of the brakes too hard, or while spiraling at a small speed in turbulence you increase the angle of attack. Rotation in the asymmetrical stall is called a negative spiral. This is one of the most dangerous flying situations. In order to get out of the asymmetrical stall, just release the brakes. There may follow side thrust forward with the following wing collapse.

11.6 B stall

The HULA has a very clean stable B stall. To enter the B stall, the pilot has to pull the first 20cm slowly until the glider loses forward speed and starts to descend at around 6 m/s vertically. Do not release the brake handles during B stall. If you pull too much B-line the glider may horseshoe and move around a lot. If this happens, release the B risers.

To exit the B-stall the B-risers should be released symmetrically and in one smooth, progressive motion. The glider will resume normal forward flight without further input. Check you have a forward flight again before using the brakes.

11.7 Cravat

In case a cravat should occur from an asymmetric collapse or other maneuvers, it is important to keep your flying direction by applying some brake on the opposite side and weight shift.

You can also use strong deep pumps on the brake to the cravated side. If a pull of the brake line is unsuccessful, pulling the stable line which is the outermost line on the B-riser may work.

If you can not do it and the rotation is increasing, you must use the parachute.

12. Descent Techniques

12.1 Big ears

The sink rate can be decreased in a controlled way by folding both wingtips. While holding the brakes you should symmetrically pull the outermost A-risers.

In order to return to the normal flight, you should release the A-risers and pull the brake short times until wing tips regain pressure.

Spiraling is not permitted with big ears, because of the increased load on the remaining lines so that they can be physically deformed.

12.2 Spiral dive

The spiral dive is the most demanding descent technique and should be learned at enough height, preferably during an SIV course.

When you hold one- sided brake down for a long time, the glider goes into a fast sharp turn and loses a lot of height. The sink rate could be more than 15 m/sec. To get out of the spiral dive you must release the inner brake and use the outside brake to manage your sink rate. Mind that HULA may take one more turn after releasing the brake.

13. Landing

We recommend landing with trimmers to the normal slow position. Don't use sharp turns or radical maneuvers.

When you are 1-2m over the ground, you should face into the wind and standing upright and ready to run. Finally, you may pull the brakes smoothly for minimizing vertical speed.

Don't hit the ground by your overtake the glider. If you in windy condition, as soon as you touch the ground you have to turn around to face the glider and move towards it during full pulling break symmetrically.

14. Packing your HULA

Spread the HULA completely out on the ground. Separate the lines to each side. The HULA must be folded cell to cell to keep the plastic reinforcement at the leading edge lie flat on each other and don't get bent. Try to pack your HULA as loosely as the rucksack allows because every fold weakens the fabric.

Avoid packing the glider where it is wet or abrasive conditions(sand, asphalt pavement, concrete)

15. Maintenance and cleaning

Cleaning should be carried out with only pure water. If the glider comes in contact with salt water, clean thoroughly with fresh water. Do not use solvents of any kind, as this may remove the protective coatings and destroy the fabric.

16. Caring tips

- Do not expose your glider to the sun any longer than necessary
- Keep it away from water and other liquids
- Do not let the front edge hit the ground
- Keep your glider away from fire
- Do not put anything heavy on your glider, do not pack it in a rucksack too tightly.
- Regularly inspect the canopy, lines, risers and harness. If you find any defects, contact your dealer or the manufacturer. Do not attempt to repair the paraglider by yourselves.
- If you detect a damaged line, inform the dealer or manufacturer about the line number according to the line plan
- Keep your HULA in a bag in a dry well-ventilated place under neutral temperature and humidity conditions
- If you do not use the glider, then once a month you should unpack it, ventilate it well, and then pack it back in the bag

17. Warrantee

The producer guarantees the correctness of the declared characteristics and the paraglider's normal performance for two years after the purchase date. The producer conducts special, and after warranty repairs and maintenance at the owners' request for an extra price.

We recommend inspecting your paraglider (including checking suspension line strength, line geometry, riser geometry, and permeability of the canopy material) one time , or every 100 hours of flying time (whichever comes first); that inspection must be made by the manufacturer, importer, distributor, dealer or other authorized persons.
The checking must be proven by a stamp on the certification sticker on the glider as well in the manual book.

There are not necessary spare items except the rubber ring to fix the main lines on the riser triangle carabiner. The rubber rings will be offered by us in the repair kit offering with the glider. You can exchange it by yourself when it has been disappeared or wears off. After you exchange the lubber ring, you must check again the triangle carabiner on the riser has been locked well before you fly.

18. Respecting nature and environment

Finally, we would ask each pilot to take care of nature and our environment. Respect nature and the environment at all times but most particularly at take-off and landing places. Respect others and paraglider in harmony with nature.

Do not leave marked tracks and do not leave rubbish behind. Do not make unnecessary noise and respect sensitive biological areas.

The materials used on a paraglider should be recycled. Please send old Davinci gliders back to us Davinci Gliders offices. We will undertake to recycle the glider.

Checked line sheet(with riser)

The measured values at the lower surface of the tailing edge, cll depth and spacing of the articulation points were determined under tensile load of 50N. The length difference is not more than ±10 mm.

19 size

	A	B	C	D	Brake
1	5969	5892	5853	5973	6263
2	5914	5828	5854	5968	6040
3	5965	5881	5837	5948	5914
4	5924	5832	5837	5943	5866
5	5935	5841	5803	5867	5762
6	5909	5812	5784	5844	5619
7	5890	5796	5773	5837	5622
8	5879	5788	5778	5829	5786
9	5880	5795	5742		5610
10	5827	5741	5705		5629
11	5774	5700	5647		5669
12	5681	5630	5609		
13	5633	5588	5484		
14	5468	5445	5469		
15		5433			

21 size

	A	B	C	D	Brake
1	6230	6151	6112	6236	6549
2	6174	6085	6113	6232	6318
3	6227	6141	6095	6211	6188
4	6186	6091	6096	6206	6138
5	6197	6101	6061	6129	6030
6	6172	6070	6042	6106	5881
7	6153	6054	6031	6098	5886
8	6140	6046	6036	6090	6058
9	6142	6052	6000		5878
10	6086	5998	5961		5898
11	6031	5954	5901		5940
12	5934	5881	5860		
13	5883	5837	5737		
14	5709	5686	5722		
15		5673			

Checked line sheet(with riser)

The measured values at the lower surface of the tailing edge, cll depth and spacing of the articulation points were determined under tensile load of 50N. The length difference is not more than ±10 mm.

23 size

	A	B	C	D	Brake
1	6490	6408	6368	6497	6842
2	6432	6339	6369	6494	6602
3	6488	6398	6351	6472	6468
4	6446	6348	6352	6467	6417
5	6458	6359	6318	6389	6304
6	6433	6326	6298	6365	6151
7	6413	6310	6288	6357	6156
8	6400	6302	6293	6348	6337
9	6402	6309	6256		6153
10	6343	6254	6215		6173
11	6286	6209	6151		6216
12	6184	6131	6109		
13	6131	6085	5977		
14	5948	5925	5961		
15		5911			

25 size

	A	B	C	D	Brake
1	6786	6700	6660	6795	7128
2	6727	6629	6662	6792	6879
3	6786	6691	6644	6769	6740
4	6742	6640	6645	6765	6688
5	6765	6651	6612	6685	6571
6	6730	6620	6592	6660	6411
7	6709	6604	6581	6653	6417
8	6697	6596	6586	6644	6607
9	6699	6603	6547		6419
10	6637	6544	6505		6441
11	6577	6497	6439		6485
12	6472	6417	6394		
13	6416	6369	6255		
14	6223	6200	6238		
15		6185			

Checked line sheet(with riser)

The measured values at the lower surface of the tailing edge, cll depth and spacing of the articulation points were determined under tensile load of 50N. The length difference is not more than ±10 mm.

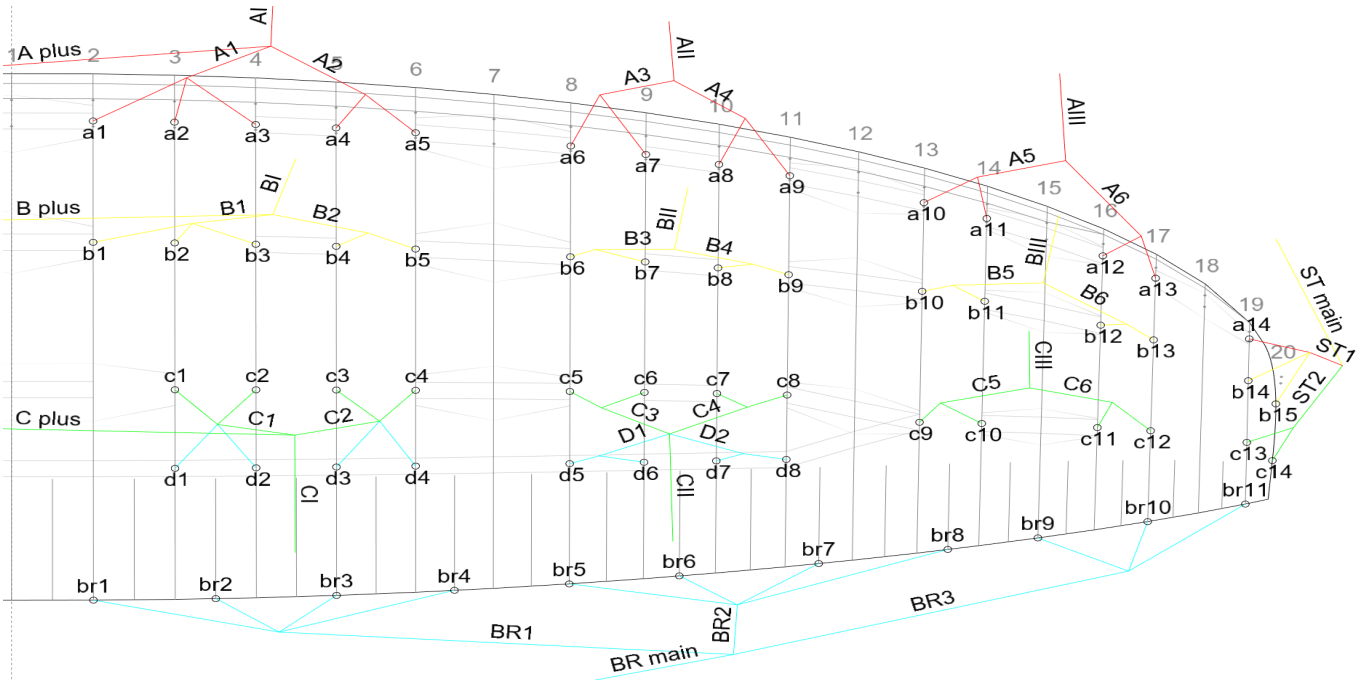
27 size

	A	B	C	D	Brake
1	7052	6963	6923	7063	7414
2	6991	6891	6926	7060	7156
3	7053	6956	6907	7037	7013
4	7008	6903	6909	7033	6959
5	7022	6915	6874	6951	6839
6	6996	6883	6854	6925	6674
7	6975	6866	6843	6917	6680
8	6962	6857	6848	6909	6879
9	6964	6865	6809		6686
10	6901	6806	6765		6709
11	6839	6757	6696		6755
12	6729	6673	6649		
13	6671	6623	6501		
14	6468	6445	6483		
15		6429			

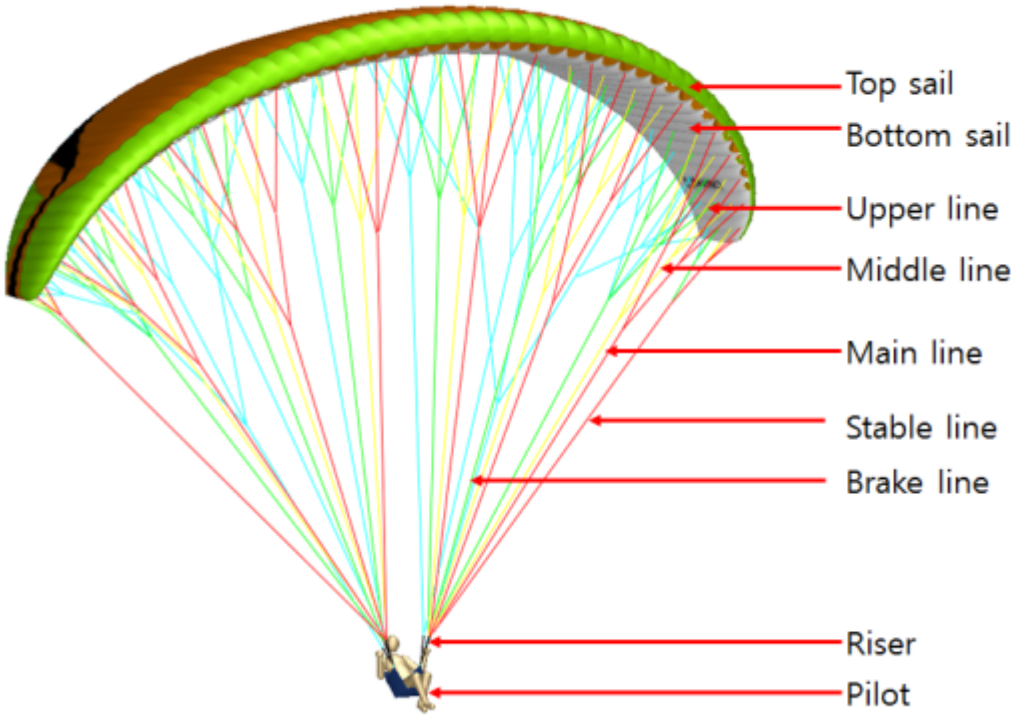
29 size

	A	B	C	D	Brake
1	7386	7284	7237	7384	7773
2	7314	7209	7241	7381	7505
3	7378	7277	7222	7358	7357
4	7332	7222	7225	7354	7302
5	7347	7236	7190	7270	7177
6	7321	7203	7169	7244	7005
7	7299	7186	7158	7235	7012
8	7285	7177	7164	7226	7222
9	7287	7185	7123		7024
10	7221	7124	7077		7048
11	7157	7073	7005		7095
12	7041	6985	6956		
13	6980	6932	6797		
14	6767	6743	6778		
15		6727			

Name	Manufacturer	Name	Manufacturer	Name	Manufacturer	Name	Manufacturer	Name	Manufacturer
a1	8000U-70	b1	8000U-70	c1	8000U-70	d1	8000U-70	br1	8000U-70
a2	8000U-70	b2	8000U-70	c2	8000U-70	d2	8000U-70	br2	8000U-70
a3	8000U-70	b3	8000U-70	c3	8000U-70	d3	8000U-70	br3	8000U-70
a4	8000U-70	b4	8000U-70	c4	8000U-70	d4	8000U-70	br4	8000U-70
a5	8000U-70	b5	8000U-70	c5	8000U-70	d5	8000U-70	br5	8000U-70
a6	8000U-70	b6	8000U-70	c6	8000U-70	d6	8000U-70	br6	8000U-70
a7	8000U-70	b7	8000U-70	c7	8000U-70	d7	8000U-70	br7	8000U-70
a8	8000U-70	b8	8000U-70	c8	8000U-70	d8	8000U-70	br8	8000U-70
a9	8000U-70	b9	8000U-70	c9	8000U-70			br9	8000U-70
a10	8000U-70	b10	8000U-70	c10	8000U-70			br10	8000U-70
a11	8000U-70	b11	8000U-70	c11	8000U-70			br11	8000U-70
a12	8000U-70	b12	8000U-70	c12	8000U-70				
a13	8000U-70	b13	8000U-70	c13	8000U-70				
a14	8000U-70	b14	8000U-70	c14	8000U-70				
				c15	8000U-70				
								BR1	8000U-130
A1	8000U-190	B1	8000U-190	C1	8000U-130	D1	8000U-130	BR2	8000U-130
A2	8000U-190	B2	8000U-190	C2	8000U-130	D2	8000U-130	BR3	8000U-130
A3	8000U-130	B3	8000U-130	C3	8000U-130				
A4	8000U-130	B4	8000U-130	C4	8000U-130	ST1	8000U-130	BRI	10-200-040
A5	8000U-130	B5	8000U-130	C5	8000U-130	ST2	8000U-130		
A6	8000U-130	B6	8000U-130	C6	8000U-130				
						ST main	PPSL 160		
AI	PPSL 275	BI	PPSL 275	CI	PPSL 200	A Plus	8000U-130		
AII	PPSL 275	BII	PPSL 275	CII	PPSL 200	B Plus	8000U-130		
AIII	PPSL 200	BIII	PPSL 200	CIII	PPSL 160	C Plus	8000U-130		


A plus
B plus
C plus
AI
AII
AIII
A1
A2
A3
A4
A5
A6
BI
BII
BIII
B1
B2
B3
B4
B5
B6
CI
CII
CIII
C1
C2
C3
C4
C5
C6
D1
D2
ST main
ST1
ST2
a1
a2
a3
a4
a5
a6
a7
a8
a9
a10
a11
a12
a13
a14
b1
b2
b3
b4
b5
b6
b7
b8
b9
b10
b11
b12
b13
b14
b15
c1
c2
c3
c4
c5
c6
c7
c8
c9
c10
c11
c12
c13
c14
d1
d2
d3
d4
d5
d6
d7
d8
br1
br2
br3
br4
br5
br6
br7
br8
br9
br10
br11
BR1
BR2
BR3
BR main

Overview


Top sail
Bottom sail
Upper line
Middle line
Main line
Stable line
Brake line
Riser
Pilot

Serial Number	
Date of Production	
Dealer	
Date of sales	
Check and repair information	