

DAVINCI
GLIDERS

XCHORD

REV. 1

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Davinci Products Inc.
53 Sinchon-gil, Okcheon-myeon, Yangpyeong-gun, Gyeonggi-do, South Korea. (12505)
Tel. +82(0)10-9799-3472 Fax. +82(0)10-9799-3472
sales@dv-gliders.com , info@dv-gliders.com

Congratulations!

Thank you for choosing the XCHORD.

The Davinici Glider XCHORD is especially designed 2 liner EN-D glider for the expert pilots who are ready to achieve further, faster and higher than other pilots. Autonomously engineered shark nose profile offers remarkable pitch stability and efficiency on glide.

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

-DAVINCI GLIDERS TEAM-

WARNING!

THIS IS NOT 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	3		
2. Materials DATA	4		
3. Introduction and Pilot Target	5		
4. Harness			
5. Risers	6		
6. Lines			
7. Accelerator system			
8. Pre-flight check	7		
9. Take-Off			
9.1 Tow launch			
10. In flight characteristics	8		
11. Deflations			
11.1 Asymmetric collapse			
		11.2 Frontal collapse	9
		11.3 Full stall	
		11.4 Deep stall	
		11.5 Asymmetrical stall	
		11.6 B stall	10
		11.7 Cravat	
		12. Descent Techniques	
		12.1 Big ears	
		12.2 Spiral dive	11
		13. Landing	
		14. SIV and Collapse lines	
		15. Packing your XCHORD	12
		16. Maintenance and cleaning	
		17. Caring tips	
		18. Warrantee	13
		19. Respecting nature and environment	

1. Technical DATA

XCHORD			S	M	ML	L
<i>CELLS</i>	NUMBER		82	82	82	82
	CLOSED		14	14	14	14
<i>FLAT</i>	AREA	m ²	21.75	22.80	24.75	26.55
	SPAN	m	12.36	12.66	13.19	13.66
	ASPECT RATIO		6.95	6.95	6.95	6.95
<i>PROJECTED</i>	AREA	m ²	18.63	19.53	21.19	22.75
	SPAN	m	10.06	10.30	10.74	11.11
	ASPECT RATIO		5.44	5.44	5.44	5.44
<i>FLATTENING</i>		%	14.4	14.4	14.4	14.4
<i>CORD</i>	MAX	m	2.22	2.27	2.36	2.45
	MIN	m	0.30	0.31	0.32	0.33
	AVER	m	1.76	1.80	1.88	1.94
<i>LINES</i>	HEIGHT	m	7.42	7.60	7.85	8.20
	MAIN		3/3			
<i>RISERS</i>	NUMBER	3	A,A'/B			
	TRIMS		No	No	No	No
	ACCELERATOR		145	155	155	155
<i>WEIGHT RANGE</i>	MIN-MAX	KG	70 - 90	85 - 105	95 - 115	105 - 125
<i>CERTIFICATION</i>	EN-926-1/2 LTF	KG	EN-D	EN-D	EN-D	EN-D
<i>GLIDER WEIGHT</i>		KG	5.0	5.5	5.8	6.2

2. Materials DATA

CANOPY		FABRIC CODE	SUPPLIER
UPPER SURFACE		30D MF 7000 E71	DOMINICO TEXTILE CO PORCHER INDUSTRIES
BOTTOM SURFACE		7000 E71	PORCHER INDUSTRIES
PROFILES	Supported	7000 E91	PORCHER INDUSTRIES
	Unsupported	9000 E29	
DIAGONALS		7000 E71	PORCHER INDUSTRIES
LEADING EDGE REINFORCEMENT		2.5/1.8 Plastic pipe	

SUSPENSION LINES		FABRIC CODE	SUPPLIER
UPPER CASCADES		8000U-130/90/70/50	EDELRID
		9200-30	
MIDDLE CASCADES		8000U-190/130/90/70/50	EDELRID
		9200-30	
MAIN		8000U-360/190/130/50	EDELRID
		DSL 140	LIROS

RISERS		FABRIC CODE	SUPPLIER
MATERIAL		12MM Zero stretch polyester webbing	GUTH&WOLF GMBH
PULLEYS		Ronstan ball bearing	Ronstan

3. Introduction and Pilot Target

The XCHORD is the result of a dedicated effort of Davinci R&D team. A totally new and innovative design that has never been seen before, you can experience high stability, handling, and effective/maximum lift force in thermal, as well as glide ratio.

The XCHORD was born to realize the desire of the pilot to fly faster, higher and farther. Based on the 2liner system, XCHORD is the best glider with minimum air resistance and best glide ratio from CFD optimized analysis.

You can make a new records with your XCHORD.

-LTF and EN certification

The XCHORD is certified during official testing as LTF /EN-D.
The glider has been type-tested for "one-seated" use only.

-Suitability for expert pilots

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

-For the XCHORD it has minimum of 50cm 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 turbulences 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 behaviour.

4. Harness

The XCHORD is certified for harnesses in Group GH(without rigid cross-bracing). The suspensiion points of the chosen harness should ideally have a caraviner distance of approximately 43cm and a height of 44cm for S size, 46cm for M, ML, L sizes.

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.

5. Risers

The XCHORD has been designed with 2 risers system. The A1 riser is covered with RED webbing, to allow for easy identification. The A risers are split into two, the smaller riser - holding only the outermost A line - is A2 and has been designed this way to make applying big ears easily. They also feature ergonomic wooden handles for efficient B-riser control.

	Standard [mm]	Trim opened [mm]	Travel length [mm]
A1	515	360	155
A2	510	442	68
B	500	500	0

6. Lines

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

In 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 is cut you can use the B riser softly for directional control instead of brake line.

7. Accelerator system

XCHORD is equipped with a accelerator system.

The profile of XCHORD 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.

The use of the accerlerator 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. We therefore do not advise to use the speed bar near the ground.

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 help 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.

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 XCHORD 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.
- Check that the brake handles are correctly attached and that each line runs freely through the pulley.
- All harness buckles are closed.
- The Karabiners 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.
- Damage to the top and bottom panels and seams between panels.

9. Take-Off

To get the right wing shape for the take-off, pull the brake until the canopy shows at the perfect banana shape on the flat ground. While inflating the XCHORD, you should hold both of the A risers on your hands. Smoothly and gradually inflate the wing with stretched.

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.

9.1 Tow launch

The XCHORD was designed as a foot launchable solo paraglider only. The XCHORD may be tow-launched. It is the pilot's responsibility to use suitable harness attachments and release mechanisms and to ensure that they are correctly trained on the equipment and system employed.

10. In flight characteristics

XCHORD has the best stable glide performance in a normal position with no any brakes. 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.

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 manoeuvrable using the B riser(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 XCHORD has great stability of the flight, strong turbulence or piloting error may cause a portion of the wing suddenly to be a deflation. it is a EN-D glider therefore active piloting is recommended in case of an asymmetric or frontal collapse. Active piloting will reduce the loss of altitude and a change of direction.

11.1 Asymmetric collapse

Asymmetric collapse 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 XCHORD 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.

11.2 Frontal collapse

The profile of the XCHORD 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.

11.3 Full stall

Full stall can occur when you fully pull the both brakes enough long time. This means that the wing loses its forward momentum. Also 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.

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 manoeuvre and as such outside the scope of this manual. You should practice and learn this manoeuvre only on a SIV course under professional instructor.

11.4 Deep stall

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

When you meet this situation you should fully raise up the 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 negative spiral. This is one of the most dangerous flying situations. In order to get out of asymmetrical stall, just release the brakes. There may follow side thrust forward with a following wing collapse.

11.6 B stall

Traditional B-line stalls are not possible with 2 liners glider like XCHORD. Pulling the B lines firmly will result in a full stall. Do not do it.

11.7 Cravat

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.

12. Descent Techniques

12.1 Big ears

Sink rate can be decreased in a controlled way by folding both wing tips. While holding the brakes you should symmetrically pull the A-main-3. When you try big ears, 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.

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.

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.

12.2 Spiral dive

The XCHORD 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 length step by step. 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.

13. Landing

We recommend to land with trimmers to the normal slow position. Don't use the sharp turns or radical maneuvers. The XCHORD is a high speed glider, any action on the brakes may cause significant reactions.

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

The XCHORD was certified with the use of collapse lines, therefore if you wish to induce collapses during SIV training, collapse lines must first be installed correctly. Collapse lines are available as an optional extra and should be added to the wing before inducing collapses. The collapse lines will come with an added on instruction manual and an extra manual explaining how they should be installed properly. Be sure to attach to both sides of the canopy for symmetric deflations. Davinci Gliders would like to remind you that SIV manoeuvres should be learnt under the supervision of a qualified instructor and always used with caution. We strongly recommend expert tuition over water with all the necessary safety precautions in place. Only attempt SIV with this wing if you have previous SIV experience with a high aspect ratio wing. Ensure that you fully understand the correct and safe use of this equipment before attempting SIV.

15. Packing your XCHORD

Spread the XCHORD completely out on the ground. Separate the lines to the each side. The XCHORD 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 XCHORD 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).

We recommend when you don't use the XCHORD for a long time, store XCHORD lay on the flat table or bottom without any bending plastics.

Always use the protective bag to avoid direct contact with the harnesses and buckles of any friction between the blade and the rucksack.

16. 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.

17. 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 XCHORD 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

18. Warrantee

The producer guarantees the correctness of the declared characteristics and the paraglider's normal performance for two years or 250 hours flying time after the purchase date. The producer conducts special, and after warranty repairs and maintenance at the owners' request for an extra price.

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

19. Respecting nature and environment

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.

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.

S size

	A	B	C	D	Brake
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					

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.

S size

<i>Name</i>	<i>Line lenght</i>	<i>Name</i>	<i>Line lenght</i>	<i>Name</i>	<i>Line lenght</i>	<i>Name</i>	<i>Line lenght</i>	<i>Name</i>	<i>Line lenght</i>
a1		b1		c1		d1		br1	
a2		b2		c2		d2		br2	
a3		b3		c3		d3		br3	
a4		b4		c4		d4		br4	
a5		b5		c5		d5		br5	
a6		b6		c6		d6		br6	
a7		b7		c7		d7		br7	
a8		b8		c8		d8		br8	
a9				c9				br9	
a10				c10				br10	
a11				c11				br11	
a12				c12				br12	
a13				c13					
								BR1	
A1				C1				BR2	
A2				C2				BR3	
A3				C3				BR4	
A4				C4				BR5	
A5				C5				BR6	
A6				C6					
A7				C7				BRI	
A8				C8				BRII	
A9				C9				BRIII	
A10									
A11				CI				bmain	
				CII				br5.1	
AI				CIII					
AII				CIV					
AIII				CV					
AIV				stabilo					
AV									
AVI				cmain					
				cmain2					
amain									
amain2									
amain3									

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.

M size

	A	B	C	D	Brake
1	7638	7613	7578	7655	8010
2	7534	7501	7484	7565	7783
3	7499	7464	7451	7533	7620
4	7550	7523	7486	7561	7594
5	7479	7458	7443	7529	7337
6	7349	7325	7313	7387	7157
7	7295	7272	7262	7329	7088
8	7324	7304	7305	7359	7220
9	7102		7092		7056
10	6991		6996		6986
11	6937		6953		7023
12	6882		6877		7204
13	6853		6888		

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.

M size

<i>Name</i>	<i>Line lenght</i>	<i>Name</i>	<i>Line lenght</i>	<i>Name</i>	<i>Line lenght</i>	<i>Name</i>	<i>Line lenght</i>	<i>Name</i>	<i>Line lenght</i>
a1		b1		c1		d1		br1	
a2		b2		c2		d2		br2	
a3		b3		c3		d3		br3	
a4		b4		c4		d4		br4	
a5		b5		c5		d5		br5	
a6		b6		c6		d6		br6	
a7		b7		c7		d7		br7	
a8		b8		c8		d8		br8	
a9				c9				br9	
a10				c10				br10	
a11				c11				br11	
a12				c12				br12	
a13				c13					
								BR1	
A1				C1				BR2	
A2				C2				BR3	
A3				C3				BR4	
A4				C4				BR5	
A5				C5				BR6	
A6				C6					
A7				C7				BRI	
A8				C8				BRII	
A9				C9				BRIII	
A10									
A11				CI				bmain	
				CII				br5.1	
AI				CIII					
AII				CIV					
AIII				CV					
AIV				stabilo					
AV									
AVI				cmain					
				cmain2					
amain									
amain2									
amain3									

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.

ML size

	A	B	C	D	Brake
1	7881	7851	7813	7883	8352
2	7771	7736	7724	7798	8081
3	7743	7708	7692	7776	7869
4	7793	7761	7728	7804	7829
5	7722	7694	7673	7758	7576
6	7582	7554	7543	7622	7390
7	7527	7502	7491	7565	7312
8	7570	7545	7522	7573	7452
9	7341		7314		7291
10	7221		7222		7229
11	7170		7182		7257
12	7098		7102		7452
13	7082		7112		

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.

ML size

<i>Name</i>	<i>Line lenght</i>	<i>Name</i>	<i>Line lenght</i>	<i>Name</i>	<i>Line lenght</i>	<i>Name</i>	<i>Line lenght</i>	<i>Name</i>	<i>Line lenght</i>
a1	291	b1	256	c1	725	d1	798	br1	744
a2	279	b2	243	c2	628	d2	707	br2	400
a3	268	b3	233	c3	548	d3	630	br3	501
a4	273	b4	240	c4	531	d4	606	br4	432
a5	279	b5	251	c5	418	d5	503	br5	585
a6	260	b6	230	c6	379	d6	458	br6	380
a7	256	b7	228	c7	389	d7	458	br7	388
a8	261	b8	233	c8	394	d8	445	br8	523
a9	1363			c9	1384			br9	451
a10	1248			c10	1292			br10	383
a11	1838			c11	1923			br11	354
a12	513			c12	516			br12	519
a13	418			c13	448				
								BR1	1426
A1	1319			C1	886			BR2	1104
A2	1214			C2	885			BR3	945
A3	1194			C3	934			BR4	853
A4	1244			C4	987			BR5	643
A5	1103			C5	830			BR6	706
A6	983			C6	736				
A7	1033			C7	723			BRI	2805
A8	1068			C8	748			BRII	2538
A9	648			C9	671			BRIII	2653
A10	250								
A11	330			CI	1119			bmain	2464
				CII	1119			br5.1	1114
AI	803			CIII	909				
AII	803			CIV	863				
AIII	713			CV	4124				
AIV	617			stabilo	615				
AV	1885								
AVI	2887			cmain	4573				
				cmain2	5003				
amain	4951								
amain2	5106								
amain3	2924								

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.

L size

	A	B	C	D	Brake
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					

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.

L size

<i>Name</i>	<i>Line lenght</i>	<i>Name</i>	<i>Line lenght</i>	<i>Name</i>	<i>Line lenght</i>	<i>Name</i>	<i>Line lenght</i>	<i>Name</i>	<i>Line lenght</i>
a1		b1		c1		d1		br1	
a2		b2		c2		d2		br2	
a3		b3		c3		d3		br3	
a4		b4		c4		d4		br4	
a5		b5		c5		d5		br5	
a6		b6		c6		d6		br6	
a7		b7		c7		d7		br7	
a8		b8		c8		d8		br8	
a9				c9				br9	
a10				c10				br10	
a11				c11				br11	
a12				c12				br12	
a13				c13					
								BR1	
A1				C1				BR2	
A2				C2				BR3	
A3				C3				BR4	
A4				C4				BR5	
A5				C5				BR6	
A6				C6					
A7				C7				BRI	
A8				C8				BRII	
A9				C9				BRIII	
A10									
A11				CI				bmain	
				CII				br5.1	
AI				CIII					
AII				CIV					
AIII				CV					
AIV				stabilo					
AV									
AVI				cmain					
				cmain2					
amain									
amain2									
amain3									

Name	Line type	Name	Line type	Name	Line type	Name	Line type	Name	Line type
a1	8000U-90	b1	8000U-90	c1	8000U-50	d1	8000U-50	br1	9200-30
a2	8000U-90	b2	8000U-90	c2	8000U-50	d2	8000U-50	br2	9200-30
a3	8000U-90	b3	8000U-90	c3	8000U-50	d3	8000U-50	br3	9200-30
a4	8000U-90	b4	8000U-90	c4	8000U-50	d4	8000U-50	br4	9200-30
a5	8000U-90	b5	8000U-90	c5	8000U-50	d5	8000U-50	br5	9200-30
a6	8000U-70	b6	8000U-70	c6	8000U-50	d6	8000U-50	br6	9200-30
a7	8000U-70	b7	8000U-70	c7	8000U-50	d7	8000U-50	br7	9200-30
a8	8000U-70	b8	8000U-70	c8	8000U-50	d8	8000U-50	br8	9200-30
a9	8000U-50			c9	8000U-50			br9	9200-30
a10	8000U-50			c10	8000U-50			br10	9200-30
a11	8000U-50			c11	8000U-50			br11	9200-30
a12	9200-30			c12	9200-30			br12	9200-30
a13	9200-30			c13	9200-30				
								BR1	9200-30
A1	8000U-130R			C1	8000U-70R			BR2	9200-30
A2	8000U-90R			C2	8000U-50R			BR3	9200-30
A3	8000U-90R			C3	8000U-50R			BR4	9200-30
A4	8000U-130R			C4	8000U-50R			BR5	9200-30
A5	8000U-90R			C5	8000U-50R			BR6	9200-30
A6	8000U-90R			C6	8000U-50R				
A7	8000U-90R			C7	8000U-50R			BRI	8000U-50R
A8	8000U-90R			C8	8000U-50R			BRII	8000U-50R
A9	8000U-130R			C9	8000U-50R			BRIII	8000U-50R
A10	9200-30								
A11	9200-30			CI	8000U-130R			bmain	8000U-190
				CII	8000U-130R			br5.1	10-200
AI	8000U-190R			CIII	8000U-130R				
AII	8000U-190R			CIV	8000U-130R				
AIII	8000U-190R			CV	8000U-130R				
AIV	8000U-190R			stabilo	PPSL160				
AV	8000U-190R								
AVI	8000U-90R			cmain	8000U-360R + REDCOVER				
				cmain2	8000U-190R + REDCOVER				
amain	8000U-360R + REDCOVER								
amain2	8000U-360R + REDCOVER								
amain3	8000U-190R + REDCOVER								

