

Suspension line calculation

Inspection certification number: **PG_2196.2023** [kg] [daN]
 Manufacturer name: **Niviuk Gliders** Maximum weight: **210** **205.8**
 Model name and size: **Bi-Roller 2 34**
 Report valid for the other sizes of model: **30**

Line specification and line breaking strength after bending in [daN] (strongest to weakest value) ⁽¹⁾

	Manufacturer	Type no.	Breaking strength [daN]
1	Liros	PPSL120	89.7
2	Edelrid	MATRIX80	58.2
3	Teijin	TNL400	179.2
4	Teijin	TNL140	76.6
5	Liros	PPSL200	134.3
6	Teijin	TNL280	148.5
7	Teijin	TNL80	39.8
8			
9			
10			
11			
12			

Line number	Manufacturer	Type no.	Breaking strength [daN]
Handle knot ⁽²⁾	Edelrid	Tarax240	130

Line breaking strength, theoretical calculation (see details on the following pages) ⁽³⁾

		[daN]	[g]
Sum A+B+C+D+ Stabilo lines	Level 1	3317.40	16.12
	Level 2	5750.40	27.94
	Level 3	8039.00	39.06
	Level 4	n/a	n/a
	Level 5	n/a	n/a

The breaking strength sum of each level must be at least 1400 [daN] and equal or greater than 14 [g]

Result **POSITIVE**

		[daN]
Sum each level of brake lines	Level 1	260.00
	Level 2	306.40
	Level 3	612.80
	Level 4	716.40
	Level 5	n/a
	Level 6	n/a

The break lines strength sum of each level must be equal or exceed 150 [daN] and the handle knot shall have a minimum breaking strength of 75 [daN]

Result **POSITIVE**

Place of inspection:
 Date of issue:
 Inspector:

Villeneuve
25.05.2023
Olivier Zoller

The validation of this test report is given by the signature of the test manager on the inspection certificate 91.20

Air Turquoise SA has thoroughly tested the suspension line samples of the paraglider mentioned above, and calculated the overall strength. It certifies its conformity with the standards EN 926-1:2015 | NFL 2-565-20

Detailed line strength calculation by level

	Level 1			Level 2					
	Name	Type no.	Breaking strength [daN]	Name	Type no.	Breaking strength [daN]	Name	Type no.	Breaking strength [daN]
1	3A1	TNL400	179.2	2A1	PPSL200	134.3			
2	3A2	TNL400	179.2	2A2	PPSL200	134.3			
3	3A3	TNL400	179.2	2A3	PPSL200	134.3			
4	3B1	TNL400	179.2	2A4	PPSL200	134.3			
5	3B2	TNL400	179.2	2A5	PPSL200	134.3			
6	3B3	TNL400	179.2	2A6	PPSL200	134.3			
7	3C1	TNL400	179.2	2B1	PPSL200	134.3			
8	3C2	TNL400	179.2	2B2	PPSL200	134.3			
9	3C3	TNL280	148.5	2B3	PPSL200	134.3			
10	stab	TNL140	76.6	2B4	PPSL200	134.3			
11				2B5	PPSL200	134.3			
12				2B6	PPSL200	134.3			
13				c1	PPSL200	134.3			
14				c2	PPSL120	89.7			
15				c3	PPSL120	89.7			
16				c5	PPSL200	134.3			
17				c6	PPSL120	89.7			
18				c7	PPSL120	89.7			
19				d1	MATRIX80	58.2			
20				d3	MATRIX80	58.2			
21				d5	MATRIX80	58.2			
22				d7	MATRIX80	58.2			
23				2C1	PPSL200	134.3			
24				2C2	PPSL120	89.7			
25				2st1	PPSL120	89.7			
26				2st2	PPSL120	89.7			
27									
28									
29									
30									
31									
32									
	Total Level 1		3317.4				Total Level 2		5750.4



Level 3									
	Name	Type no.	Breaking strength [daN]	Name	Type no.	Breaking strength [daN]	Name	Type no.	Breaking strength [daN]
1	a1	PPSL120	89.7	c1	PPSL200	134.3			
2	a2	PPSL120	89.7	c2	PPSL120	89.7			
3	a3	PPSL120	89.7	c3	PPSL120	89.7			
4	a4	PPSL120	89.7	c5	PPSL200	134.3			
5	a5	PPSL120	89.7	c6	PPSL120	89.7			
6	a6	PPSL120	89.7	c7	PPSL120	89.7			
7	a7	PPSL120	89.7	c9	PPSL120	89.7			
8	a8	PPSL120	89.7	c10	MATRIX80	58.2			
9	a9	PPSL120	89.7	c11	MATRIX80	58.2			
10	a10	MATRIX80	58.2	c12	MATRIX80	58.2			
11	a11	MATRIX80	58.2	c13	MATRIX80	58.2			
12	a12	MATRIX80	58.2	c14	MATRIX80	58.2			
13	a13	MATRIX80	58.2	c15	MATRIX80	58.2			
14	a14	MATRIX80	58.2	c16	MATRIX80	58.2			
15	a15	MATRIX80	58.2	d1	MATRIX80	58.2			
16	a16	MATRIX80	58.2	d3	MATRIX80	58.2			
17	b1	PPSL120	89.7	d5	MATRIX80	58.2			
18	b2	PPSL120	89.7	d7	MATRIX80	58.2			
19	b3	PPSL120	89.7	d9	MATRIX80	58.2			
20	b4	PPSL120	89.7	d11	MATRIX80	58.2			
21	b5	PPSL120	89.7	d12	MATRIX80	58.2			
22	b6	PPSL120	89.7	d14	MATRIX80	58.2			
23	b7	PPSL120	89.7						
24	b8	PPSL120	89.7						
25	b9	PPSL120	89.7						
26	b10	MATRIX80	58.2						
27	b11	MATRIX80	58.2						
28	b12	MATRIX80	58.2						
29	b13	MATRIX80	58.2						
30	b14	MATRIX80	58.2						
31	b15	MATRIX80	58.2						
32	b16	MATRIX80	58.2						
								Total Level 3	8039



Level 4								
Name	Type no.	Breaking strength [daN]	Name	Type no.	Breaking strength [daN]	Name	Type no.	Breaking strength [daN]
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
32								
Total Level 4								0

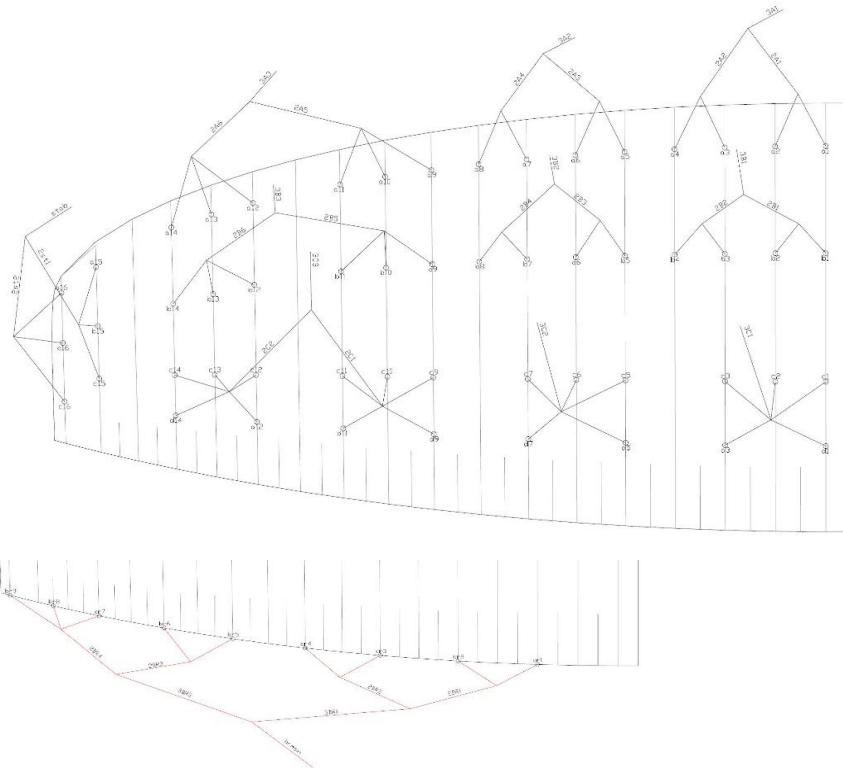


Level 5									
Name	Type no.	Breaking strength [daN]	Name	Type no.	Breaking strength [daN]	Name	Type no.	Breaking strength [daN]	
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
23									
24									
25									
26									
27									
28									
29									
30									
31									
32									
							Total Level 5		0

Break detailed line strength calculation by level

Level 1			Level 4			Level 5			Level 6			
Name	Type no.	Breaking strength [daN]	Name	Type no.	Breaking strength [daN]	Name	Type no.	Breaking strength [daN]	Name	Type no.	Breaking strength [daN]	
1	brmain	Tarax240	130	br1	TNL80	39.8						1
		Total Level 1	260	br2	TNL80	39.8						2
				br3	TNL80	39.8						3
				br4	TNL80	39.8						4
				br5	TNL80	39.8						5
				br6	TNL80	39.8						6
				br7	TNL80	39.8						7
1	3BR1	TNL140	76.6	br8	TNL80	39.8						8
2	3BR2	TNL140	76.6	br9	TNL80	39.8						9
3												10
4												11
		Total Level 2	306.4									12
												13
												14
Level 3												15
Name	Type no.	Breaking strength [daN]										16
1	2BR1	TNL140	76.6									17
2	2BR2	TNL140	76.6									18
3	2BR3	TNL140	76.6									19
4	2BR4	TNL140	76.6									20
5												
6												
7												
8												
9												
10												
11												
12												
		Total Level 3	612.8									
				Total Level 4	716.4		Total Level 5	0		Total Level 6	0	

Line plan



- (1) Suspension lines have been tested according to EN 926-1:2015, and for the calculation the lowest value out of 3 test specimen is used. The minimum breaking strength of any lines shall be greater than 200 N.
- (2) Handle knot. The connection between the control (main handle) and the first level of line shall have a minimum breaking strength of 750 N
- (3) Sum of each level for A, B, C, stabilo and brake suspension lines and value for the entire paragliding (part left and right (2X)). Subsequent levels are defined by each further line junction. First level is defined as the line attached to riser or main control handle.