AIR TURQUOISE SA | Route du PRE AU COMTE 8 | 1844 Villeneuve | Switzerland
Test laboratory for paragliders, paragliders harness and paragliders reserve parachutes

paragliding by air turquoise

DECLARATION of CONFIRMITY

PARAGLIDERS HARNESS — PH

Air Turquoise SA, having thoroughly assessed the sample mentioned hereunder, declare it was found :conform with :all requirements defined by the following norms

European Standard **EN1651** September 1999
European Standard **EN12491** September 2001
Airworthiness requirements for hang gliders and paragliders **LTF 2009** as published in NfL 91/09

Declaration conformity number: PH_117.2015

TEST SAMPLE DATA

Manufacturer name:	ADVANCE Thun SA
Contact person:	Zeltner Rolf
Street:	Uttigenstrasse 87
Post code / place:	3600 Thun
Country:	Switzerland
Harness manufacturer name:	Lightness 2 X-Alps 2105
Harness manufacturer size:	M
Serial number of the test sample:	1129439_M 02 a
Harness type:	ABS
Maximum certified pilot weight (kg):	100
Harness protector type:	n/a
Harness weight (kg) :	0.89
Volume reserve parachute container (cm3)	Min: n/a Max: n/a
Atmosphere [°C] [Hum] [hPa]:	21.8;40%;1018.9
Test responsible:	Alain Zoller
Inspection place:	Villeneuve
Sample reception date:	02.02.2015
Place of declaration:	Villeneuve
Date of issue:	20.05.2015
Director management:	Alain Zoller
Signature:	

Present declaration's scope only extends to the conformity of a given sample, on a given date and in a given place – as mentioned here above.

Declaration conformity number: **PH_117.2015**

A. STRUCTURAL STRENGHT TESTS

A test plan was set up in order to execute the different tests in an efficient order. The table below summarizes this test plan together with .the applicable standards and results

Test ID	TESTED ?	Standard Ref.		TEST setup	Anchoring		Forces		Min. Test duration [sec]	Result
		EN 1651	LTF		Attach -ment points	Dummy	Req. Load in g	Min. force [N]		
R0	✓	5.3.2.1		Default flying position	2 main attachment points	Hip fixated	6g	6000	10	POSITIV
R1			4.2.1.a				9g	9000		n/a
R2	✓	5.3.2.2					15g	15000	5	POSITIV
R3			4.2.1.b	Default, landing position	2 main att. points	Hip fixated,	6g	6000	10	n/a
R4	✓	5.3.2.7				landing conf.	15g	15000	5	POSITIV
R5			4.2.1.a rescue	Rescue	2 rescue att. Pnts.	Hip fixated	9g	9000	10	n/a
R6	✓	5.3.2.4					15g	15000	5	POSITIV
R7			4.2.1.b rescue	Rescue, landing		Hip fixated, landing conf.	6g	6000	10	n/a
R8	✓	5.3.2.3		One riser	ONE main att.	1 central hip fixation	6g	6000	10	POSITIV
R9			4.2.1.d	Towing	2 main att. + 2 tow att.	None	3g	3000	10	n/a
		5.3.2.5					5g	5000		
R10	✓	5.3.2.6		Default, Negatif	One main att.	Head fix.	4.5g	4500	10	POSITIV
R11			4.2.1.c	Upside down	2 main att. downw.	Head fix.	6g	6000	10	n/a
R12			4.2.1.c rescue	Upside down rescue	2 rescue att. downw.		6g	6000	10	n/a

Declaration conformity number: **PH_117.2015**

B. PARAGLIDER HARNESS BACK PROTECTORS

Shock impact tests have to be executed on these harnesses in order to prove the damping characteristics of it.Most paraglider harnesses .are equipped with a protection device that damps the shock on the pilot's spine during a hard landing

Test ID	TESTED ?	Standard Ref.: LTF	TEST setup	Anchoring		Impact				Result
				Attach-ment points	Dummy	Max. tolerated peak impact in g	Max Peak impact measured	Impact duration of +38 g (if any) recorded:	Impact duration of +20 g (if any) recorded:	
PRO TECT 1		5.1.1	**Default flying position**	Test dummy is attached to the harness like a pilot in flight. +20-25°		+50g				**n/a**
PRO TECT 1		5.1.1	**Default flying position**	Test dummy is attached to the harness like a pilot in flight. +20-25° with rescue		+50g				**n/a**
PRO TECT 1		5.1.1	**Default flying position**	Test dummy is attached to the harness like a pilot in flight. -5-10°		+50g				**n/a**
PRO TECT 1		5.1.1	**Default flying position**	Test dummy is attached to the harness like a pilot in flight. -5-10° with rescue		+50g				**n/a**

C. RESCUE DEPLOYMENT RESISTANCE TEST

The deployment of the rescue system has to be ensured in all circumstances of flight. This test is to verify whether the force needed to deploy is in between reasonable limits

Test ID	TESTED ?	Standard Ref. LTF	TEST setup	Anchoring		Force for single hand deployment			Result
				Attach-ment points	Dummy	Min. force [N]	Max. force [N]	Resistance measured [N]	
RRDT	✓	6.1.5	**Default flying position**	Test responisble is attached to the harness like a pilot in flight. (no dummy required)		20 N	70 N	57.0	POSITIV

D. RESCUE DEPLOYMENT STRAP STRENGHT TEST

The connection between handgrip and inner container has to have sufficient load capacity/structural strength in any situation that may arise .during normal use. During this test is verified, whether this connection fulfill the requirements

Test ID	TESTED ?	Standard Ref.		TEST setup	Minimum force [N]	Min. Test duratio [s]	Breaking resistance measured [N]	Result
		LTF	EN 12491					
RRST	✓	6.1.8	5.3.2	**Connection strap in tensile testing machine**	700N	10	123300.0	POSITIV

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HARNESS STRUCTURAL STRENGHT TEST

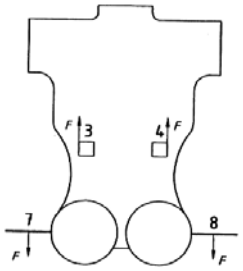
Test ID 0

Manufacturer name: ADVANCE Thun SA
Harness manufacturer name: Lightness 2 X-Alps 2105
Test place & date: Villeneuve
Test responsible: Alain Zoller
Atmosphere [°C] [Hum] [hPa]: 21.8;40%;1018.9
Maximum certified pilot weight [kg]: 100

Standard EN 1651

Test standard §: 5.3.2.1 (EN)
Test setup: Default flying position

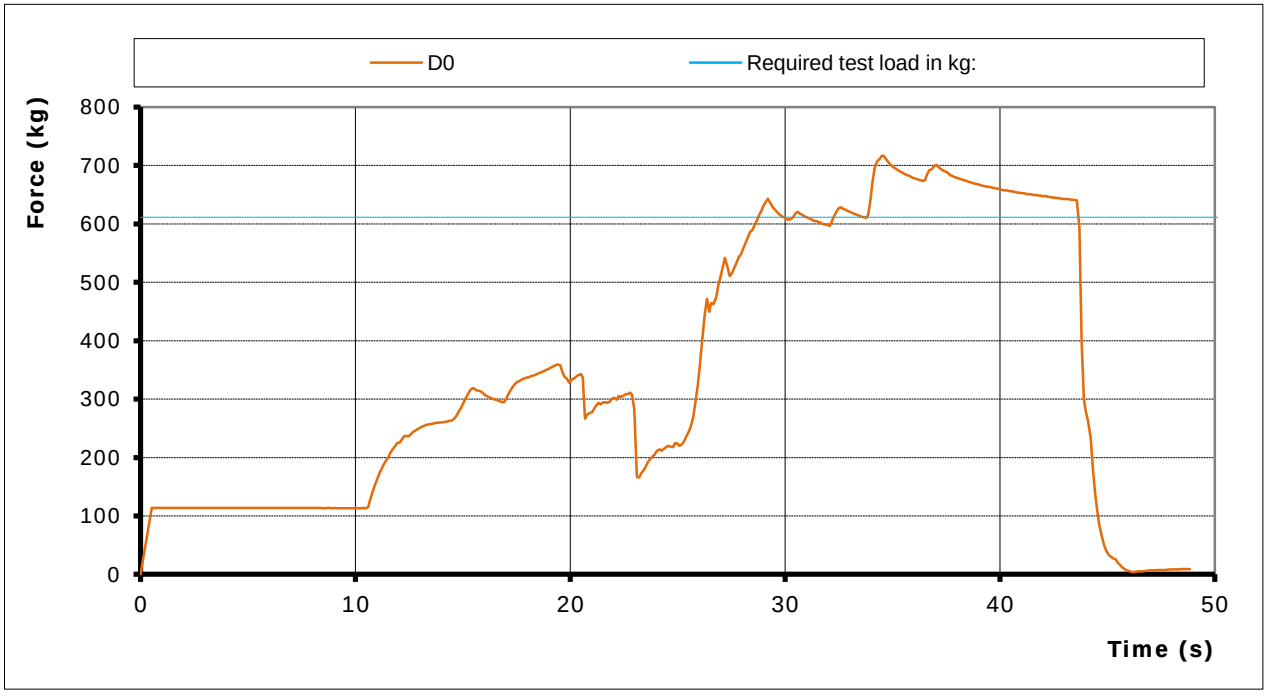
Anchoring:
Attachment points: Both main riser attachments (3, 4)
Dummy: Default, hip fixed (7, 8)



Required load in g : 6
Minimum load [N]: 6000
Required test load in kg: 612
Min. duration [s]: 10

Results

Duration of maintained min. load [s]: 10.20
Any signs of structural failure after this test: No visible failure
Test result: POSITIV
Graph: D0



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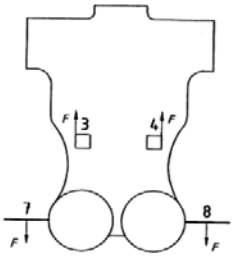
HARNESS STRUCTURAL STRENGHT TEST — Test ID 2

Manufacturer name: ADVANCE Thun SA
Harness manufacturer name: Lightness 2 X-Alps 2105
Test place & date: Villeneuve
Test responsible: Alain Zoller
Atmosphere [°C] [Hum] [hPa]: 21.8;40%;1018.9
Maximum certified pilot weight [kg]: 100

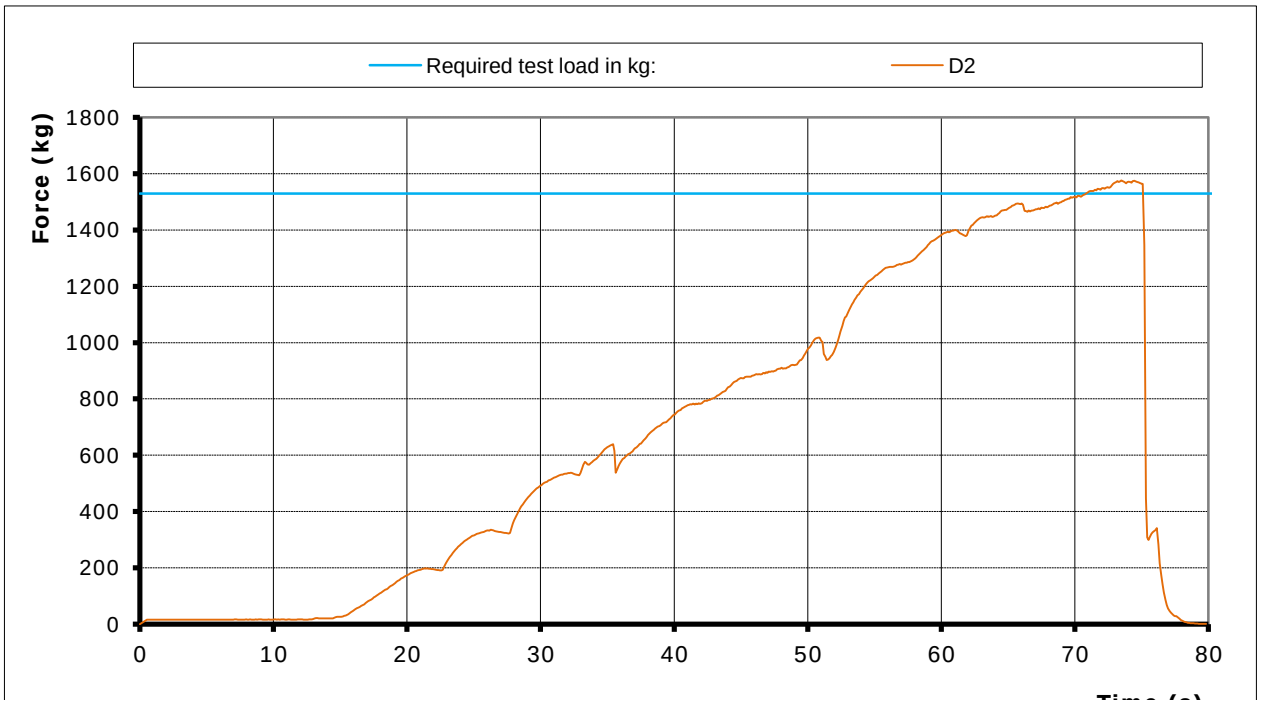
Standard EN 1651

Test standard §: 5.3.2.2
Test setup: Default flying position
Anchoring: **Attachment points:** Both main riser attachments (3, 4)
Dummy: Default, hip fixed (7, 8)
Required load in g: 15
Min load [N]: 15 000
Required test load in kg: 1529
Min. duration [s]: 5



Results

Duration of maintained min. load [s]: 5.10
Any signs of structural failure after this test: No visible failure
Test result: POSITIV
Graph: D2



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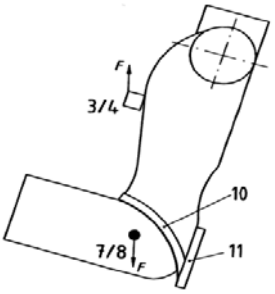
HARNESS STRUCTURAL STRENGHT TEST — Test ID 4

Manufacturer name: ADVANCE Thun SA
Harness manufacturer name: Lightness 2 X-Alps 2105
Test place & date: Villeneuve
Test responsible: Alain Zoller
Atmosphere [°C] [Hum] [hPa]: 21.8;40%;1018.9
Maximum certified pilot weight [kg]: 100

Standard EN 1651

Test standard §: EN 5.3.2.7

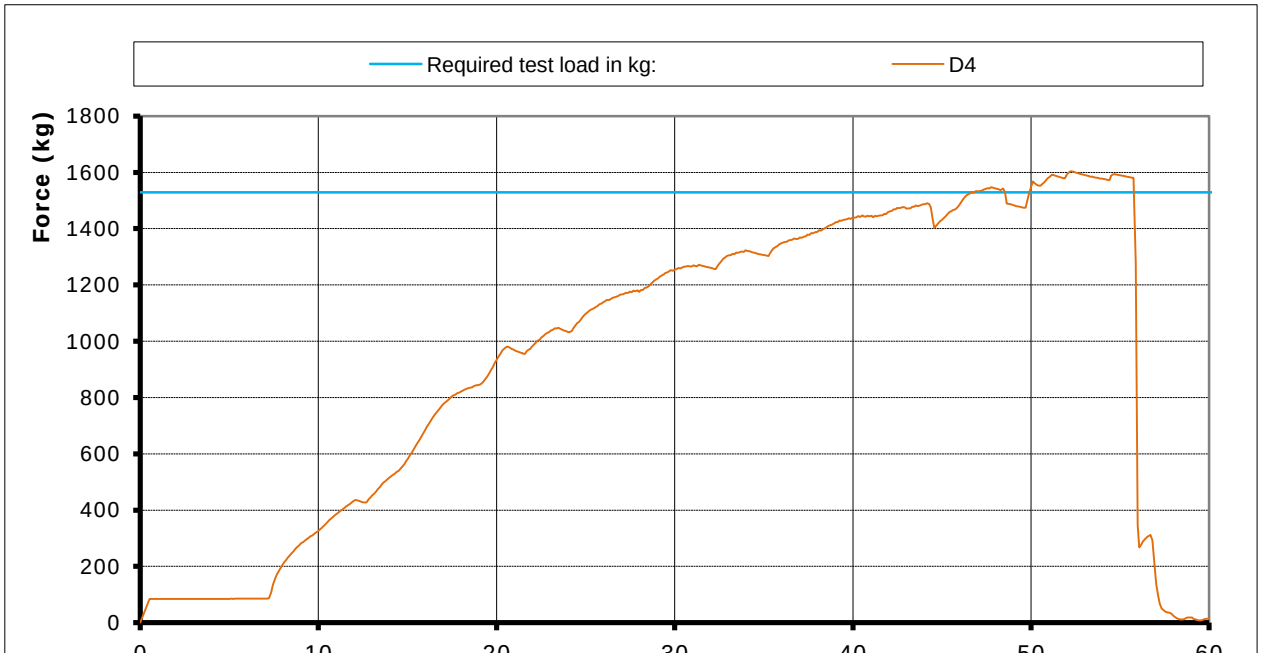
Anchoring:
Test setup: Flying position before landing: seat board (11) in landing position, leg straps (10) closed.
Attachment points: Both of the main riser attachments attached (3 and 4);



Dummy: Default, hip fixed (7, 8)
Required load in g: 15
Min load [N]: 15000
Required test load in kg: 1529
Min. duration [s]: 5

Results

Duration of maintained min. load [s]: 5.23
Any signs of structural failure after this test: No visible failure
Test result: POSITIV
Graph: D4



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HARNESS STRUCTURAL STRENGHT TEST

Test ID 6

Manufacturer name: ADVANCE Thun SA
Harness manufacturer name: Lightness 2 X-Alps 2105
Test place & date: Villeneuve
Test responsible: Alain Zoller
Atmosphere [°C] [Hum] [hPa]: 21.8;40%;1018.9
Maximum certified pilot weight [kg]: 100

Standard

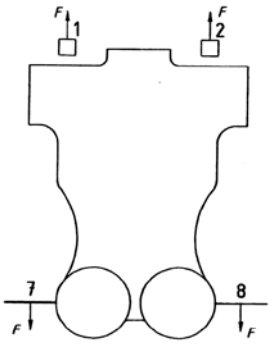
EN 1651

Test standard §: 5.3.2.4

Test setup: Rescue attachments

Anchoring:
Attachment points: Rescue riser attachments (1,2)

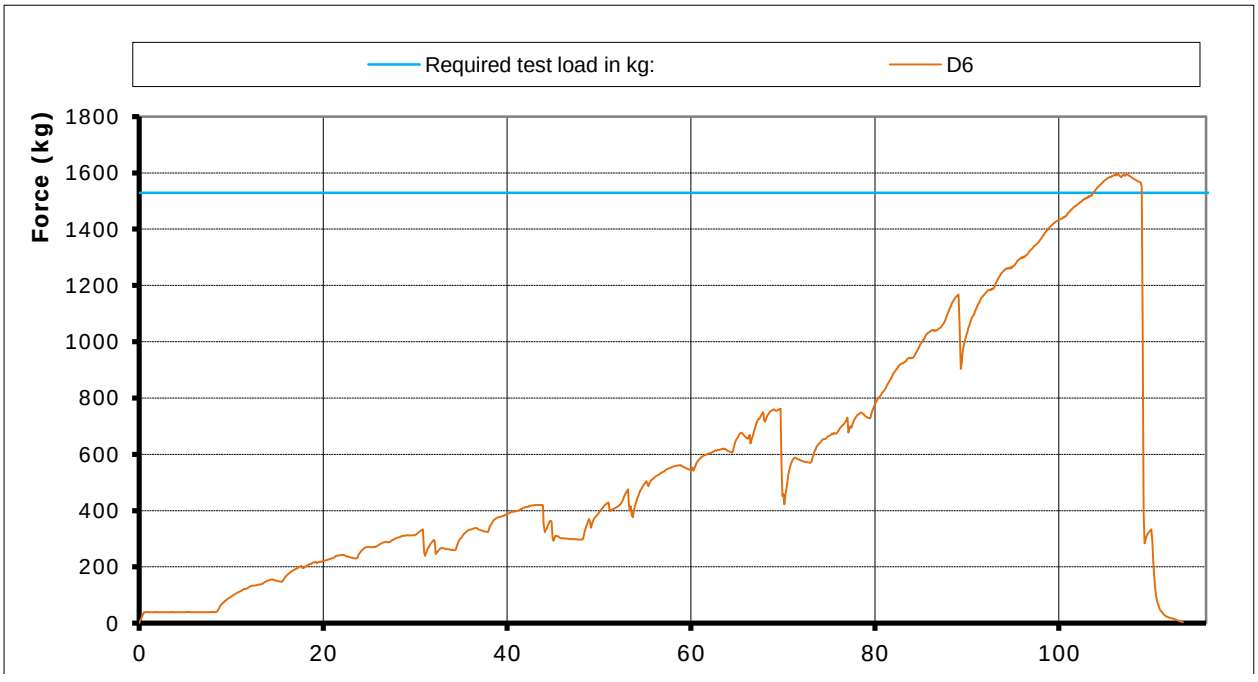
Dummy: Hip fixed (7, 8)



Required load in g: 15
Min load [N]: 15000
Required test load in kg: 1529
Min. duration [s]: 5

Results

Duration of maintained min. load [s]: 5.31
Any signs of structural failure after this test:
Test result: POSITIV
Graph: D6



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HARNESS STRUCTURAL STRENGHT TEST

Test ID 8

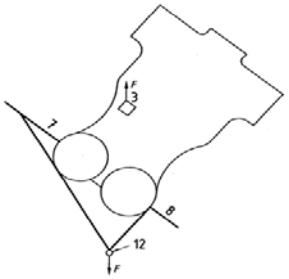
Manufacturer name: ADVANCE Thun SA
Harness manufacturer name: Lightness 2 X-Alps 2105
Test place & date: Villeneuve
Test responsible: Alain Zoller
Atmosphere [°C] [Hum] [hPa]: 21.8;40%;1018.9
Maximum certified pilot weight [kg]: 100

Standard

EN 1651

Test standard §: 5.3.2.3
Test setup: Only one riser attached

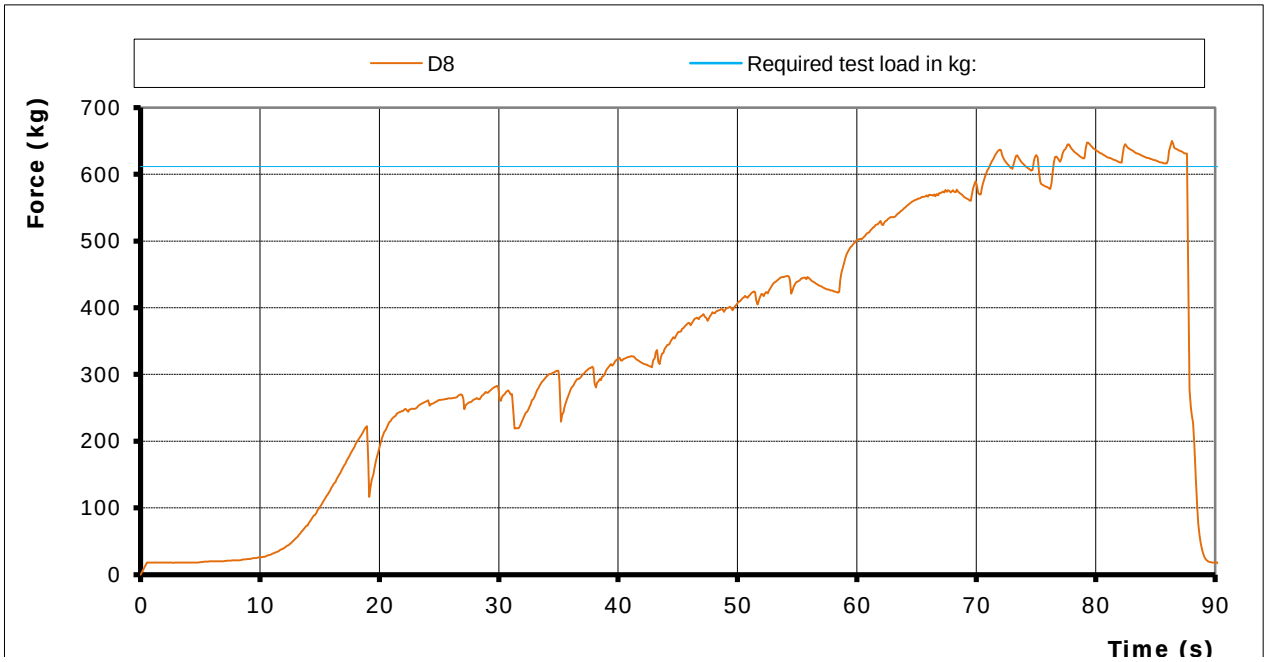
Anchoring:
Attachment points: One main riser attachments (3)
Dummy: Hip fixed (7, 8 -> 12)



Required load in g: 6
Min load [N]: 6000
Required test load in kg: 612
Min. duration [s]: 10

Results

Duration of maintained min. load [s]: 10.64
Any signs of structural failure after this test: No visible failure
Test result: POSITIV
Graph: D8



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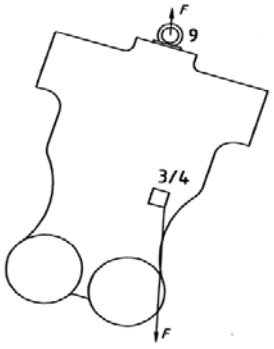
HARNESS STRUCTURAL STRENGHT TEST — Test ID 10

Manufacturer name: ADVANCE Thun SA
Harness manufacturer name: Lightness 2 X-Alps 2105
Test place & date: Villeneuve
Test responsible: Alain Zoller
Atmosphere [°C] [Hum] [hPa]: 21.8;40%;1018.9
Maximum certified pilot weight [kg]: 100

Standard — EN 1651

Test standard §: 5.3.2.6

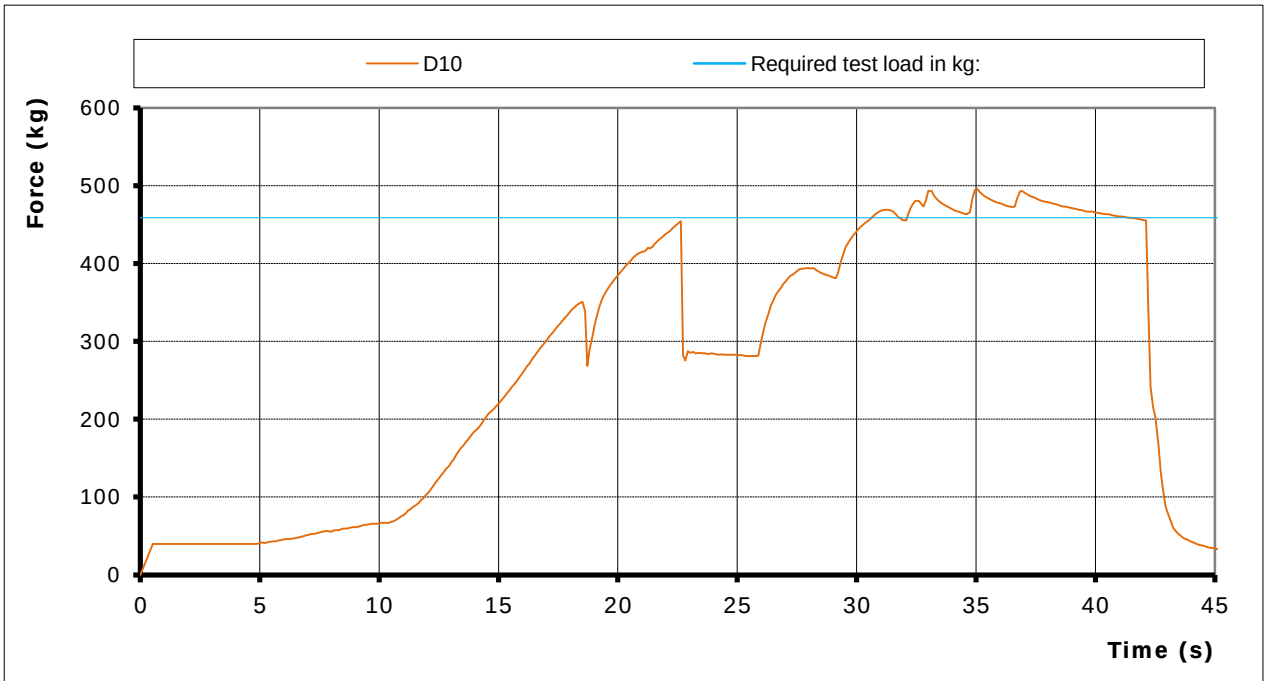
Anchoring:
Test setup: Normal flying position in NEGATIF
Attachment points: ONE of the main riser attachments attached downwards(3 or 4);
Dummy: Dummy anchored at the head position (9)



Required load in g: 4.5
Min load [N]: 4500
Required test load in kg: 459
Min. duration [s]: 10

Results

Duration of maintained min. load [s]: 10.38
Any signs of structural failure after this test: No visible failure
Test result: POSITIV
Graph: D10



INSPECTION REPORT

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Rescue deployment resistance test

Test ID resc depl

Manufacturer name: ADVANCE Thun SA

Harness manufacturer name: Lightness 2 X-Alps 2105

Test place & date: Villeneuve

Test responsible: Alain Zoller

Atmosphere [°C] [Hum] [hPa]: 21.8;40%;1018.9

Maximum certified pilot weight [kg]: 100

Standard Nfl II 91 / 09

Test standard §: 6.1.5

The deployment of the rescue system has to be ensured in all circumstances, especially with a damaged glider.

The pilot has to be able to deploy the rescue chute with a single pull out of the outer container, single handed and in an anatomical favorable direction.

In order to simulate this, the test responsible deploys the rescue seated in the harness. In a similar way as in real flight. The deployment resistance is approximately measured by the load cell, which is placed between the hand of the test responsible and the rescue hand grip.

On the other hand inadvertent deployment has to be fairly remote. Therefore a shear link has to withstand a minimum load.

Requirements [kN]: 0.07

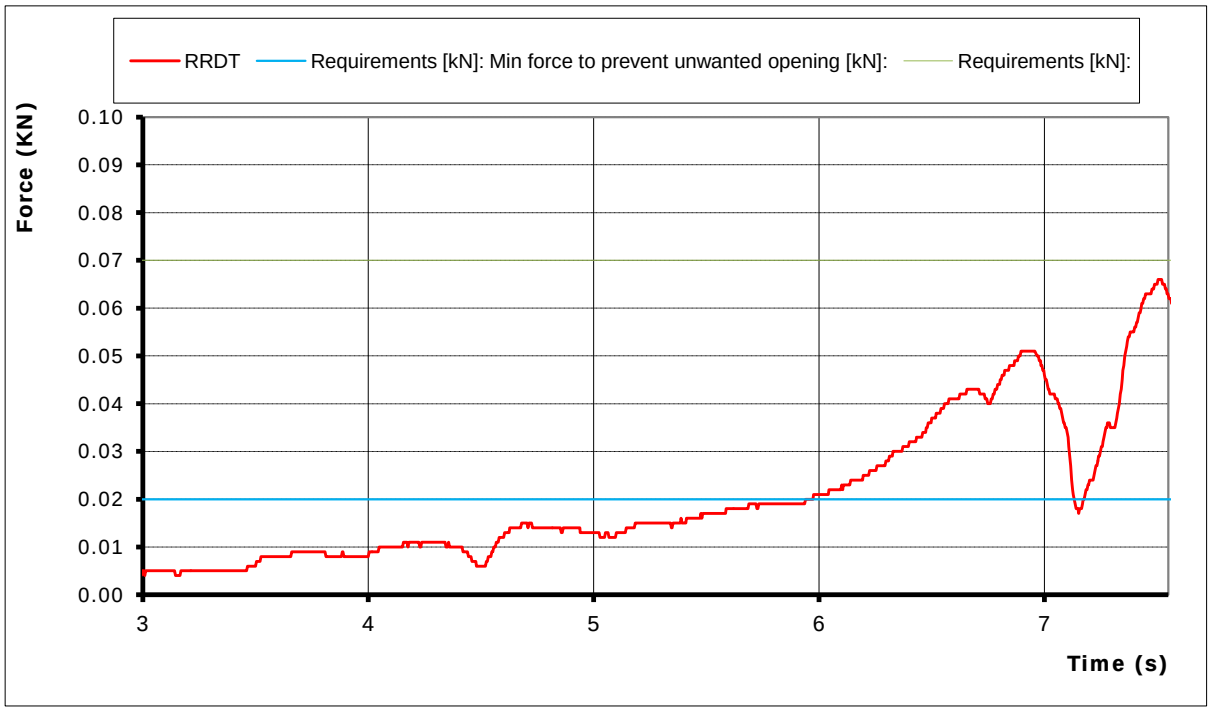
Min force to prevent unwanted opening [kN]: 0.02

Measured peak to peak required force for deployment [kN]:

Test result 20 N: POSITIV

Test result 70 N: POSITIV

Graph: RRDT



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Rescue deployment strap strength test

Test ID resc strap

Manufacturer name: ADVANCE Thun SA

Harness manufacturer name: Lightness 2 X-Alps 2105

Test place & date: Villeneuve

Test responsible: Alain Zoller

Atmosphere [°C] [Hum] [hPa]: 21.8;40%;1018.9

Maximum certified pilot weight [kg]: 100

Standard EN 12491 & Nfl II 91 / 09

Test standard §: 5.3.2 (EN 12491) & 6.1.8 (LTF)

Test setup: The handgrip of the outer container has to be connected to the inner container with a removable loop in a way that it is possible to use the inner container with different types of outer containers.

The connection between handgrip and inner container has to have sufficient load capacity/structural strength in any situation that may arise during normal operation.

In order to verify this, the connection is tested on its tensile strength by a default tensile testing setup.

In addition to this the breaking resistance will also be measured.

Requirements[kN]: 0.7

Requirements[s]: 10

Results

Duration of maintained load [s]: 15.30

Breaking resistance [KN]: 123.30

Test result: POSITIV

Graph: RRST