



Test Report

This test report describes the test results of the below mentioned paragliding harness.

All the tests were carried out by:

Air Turquoise SA, official test laboratory of Switzerland.

para-test.com



paragliding by air turquoise

Standards

Tests were carried out in conformity with the following standards:

- 2. DV LuftGerPV §1, Nr. 7 c (*note: in what follows this will be abbreviated by "LTF")
- European Standard EN1651 September 1999 (*note in what follows this will be abbreviated by "EN")
- European Standard EN12491 September 2001 (*note in what follows this will be abbreviated by "EN12491")

Harness details

Manufacturer:	Chrigelmaurer.ch / Flugsau
Harness model:	Borat
Size:	Medium
Harness Weight:	250 gr
Maximum certified pilot	120 kg
Impact protection type:	NA
Harness type:	ABS
Test responsible:	Alain Zoller
Test place:	Villeneuve
Test date:	May 31, 2013
Test room temp & humidity:	20.9° C; 40 %rel
Certification number EN:	PH 060.2013
Certification number LTF:	GZ 000.0000

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ISO 9001
BUREAU VERITAS
Certification



Air Turquoise S.A. - Certification of paraglider equipment
 Tested in accordance with EN 1651:1999 and 2.DV LuftGerPV§1, Nr.7c

Prepared by RE
 Rev.0, 25.01.2011
 No. 71.9.3



Test summary

A. STRUCTURAL STRENGTH 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	LTF		Attach - ment points	Dummy	Req. Load in g	Min. force [N]		
1	✓	5.3.2.1		Default flying position	2 main attachment points	Hip fixated	6g	6000	10	OK
2	✓	5.3.2.2	4.2.1.a				9g	9000		
3				Default, landing position	2 main att. points	Hip fixated, landing conf.	6g	6000	10	n/a
4	✓	5.3.2.7	4.2.1.b				15g	15000		
5			4.2.1.a rescue	Rescue	2 rescue att. Pnts.	Hip fixated	9g	9000	10	n/a
6		5.3.2.4					15g	15000		
7			4.2.1.b rescue	Rescue, landing		Hip fixated, landing conf.	6g	6000	10	n/a
8	✓	5.3.2.3		One riser	ONE main att.	1 central hip fixation	6g	6000	10	OK
9			4.2.1.d	Towing	2 main att. + 2 tow att.	None	3g	3000	10	n/a
		5.3.2.5					5g	5000		
10	✓	5.3.2.6		Default, Negatif	One main att.	Head fix.	4.5g	4500	10	OK
11			4.2.1.c	Upside down	2 main att. downw.	Head fix.	6g	6000	10	n/a
12			4.2.1.c rescue	Upside down rescue	2 rescue att. downw.		6g	6000	10	n/a

B. HARNESS PROTECTION SHOCK TEST

Most paraglider harnesses are equipped with a protection device that damps the shock on the pilot's spine during a hard landing.

Shock impact tests have to be executed on these harnesses in order to prove the damping characteristics of it.



Test ID	TESTED ?	Standar d Ref.:	TEST setup	Anchoring		Impact			Result		
		LTF		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.			+50g	0	0	0	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 ?	Standar d Ref.	TEST setup	Anchoring		Force for single hand deployment			Result	
		LTF		Attach- ment points	Dummy	Min. force [N]	max. force [N]	Resistance measured [daN]		
Resc depl		6.1.5	Default flying position	Test responsible is attached to the harness like a pilot in flight. (no dummy required)			20 N	70 N	n/t	n/a

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 durati on [s]	Breaking resistance measured	Result
		LTF	EN 12491					
Resc strap		6.1.8	5.3.2	Connection strap in tensile testing machine	700N	10	n/t	n/a

After careful examination as explained in above mentioned test reports (from page 2 to page 18), the undersigned persons declare that the harness:

**Chrigelmaurer.ch / Flugsau
Borat
Medium**

Complied with:

- **European Standard EN 1651 September 1999**

And / or (if tested)



- **European Standard EN 12491 March 2001**

And / or (if tested)

- **2. DV LuftGerPV §1, Nr. 7 c**

Villeneuve, May 31, 2013

Place, Date


EN & LTF Testing center
Alain Zoller

www.para-test.com
Test responsible

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Annex: detailed test reports

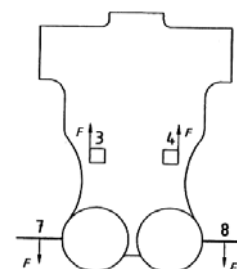
Harness Test **Test ID 1**

Item: Borat
Manufacturer: Chrigelmaurer.ch / Flugsau
Test place & date: Villeneuve May 31, 2013
Test responsible: Alain Zoller
Temp. [°C] & Humidity: 20.9° C; 40 %rel
Maximum certified pilot weight [kg]: 120 kg

Standard: EN 1651 & 2. DV LuftGerPV §1, Nr. 7 c
Test standard §: 5.3.2.1 (EN) & 4.2.1 a (LTF DV)

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

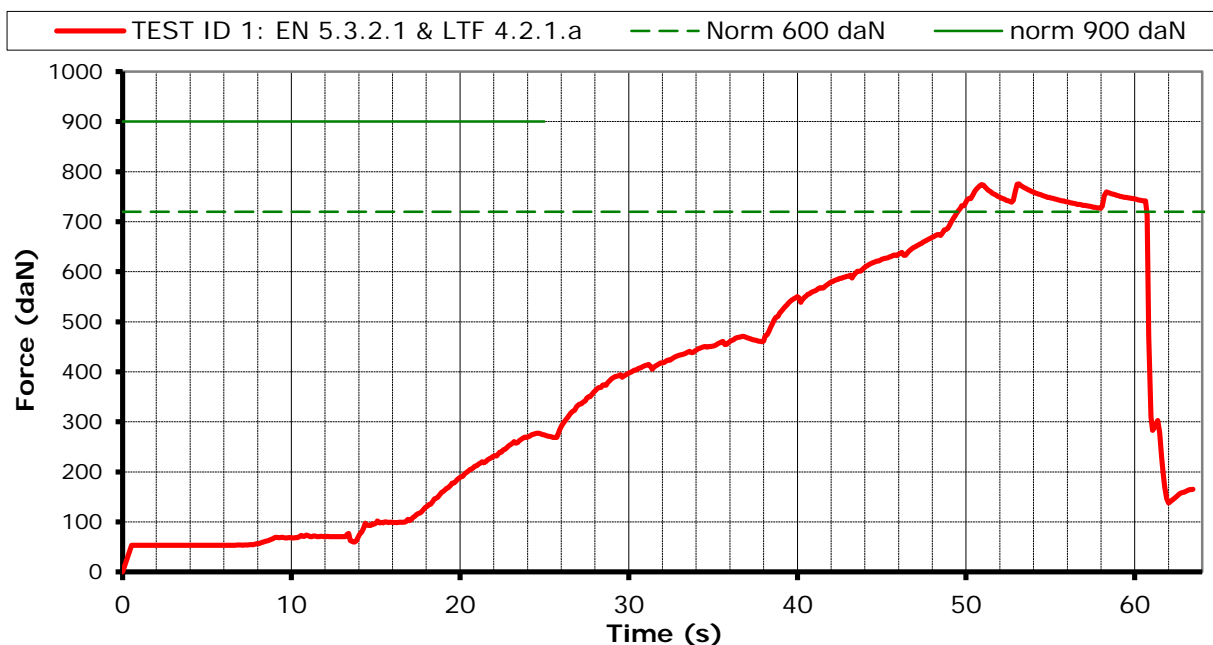
Required load in g : 9g (EN: 6g)
Minimum load [N]: 9000 N (EN: 6000 N)
Required test load in kg: **1080 kg**
Min. duration [s]: 10 s



Results

Duration of maintained min. load [s]: **10.8 s**
Any signs of structural failure after this test: **No visible failure**
Test result: **Passed**

Graph:



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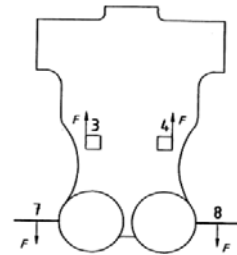


Harness Test

Test ID 2

Item:	Borat
Manufacturer	Chrigelmaurer.ch / Flugsau
Test place & date:	Villeneuve May 31, 2013
Test responsible:	Alain Zoller
Temp. [°C] & Humidity:	20.9° C; 40 %rel
Maximum certified pilot weight [kg]:	120 kg

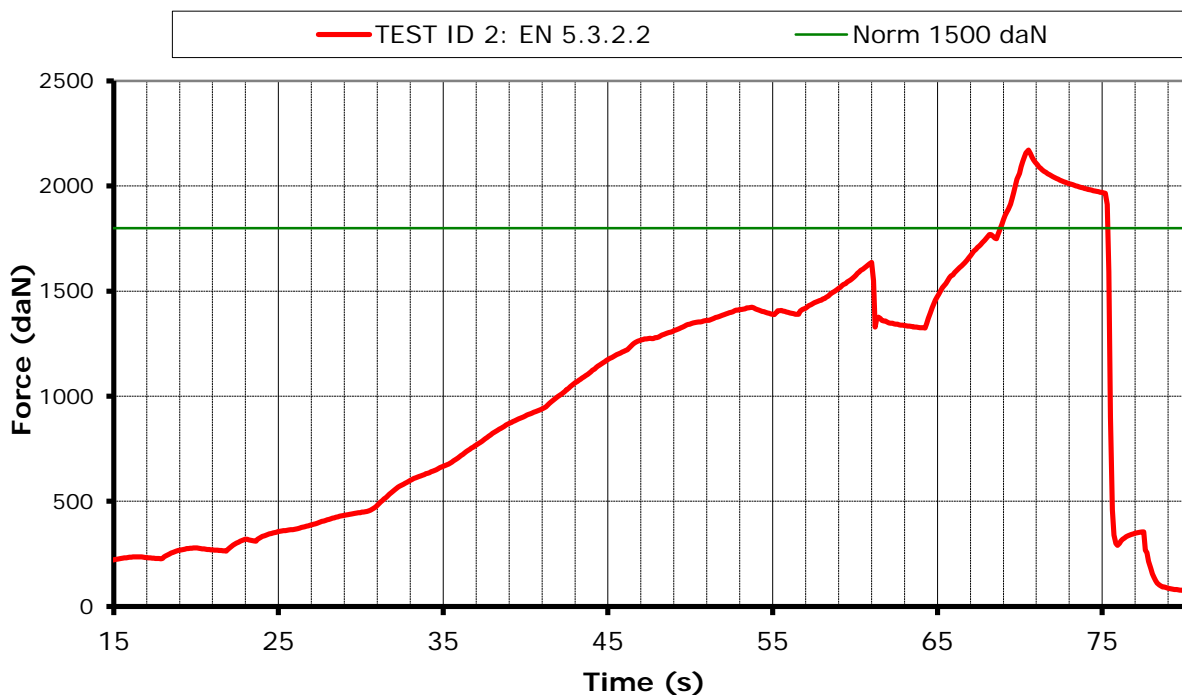
Standard	EN 1651
Test standard §:	5.3.2.2
Test setup:	Default flying position
Anchoring: Attachment points:	Both main riser attachments (3, 4)
Dummy:	Default, hip fixed (7, 8)
Required load in g:	15 g
Min load [N]:	15 000 N
Required test load in kg:	1800 kg
Min. duration [s]:	5s



Results

Duration of maintained min. load [s]:	6.1 s
Any signs of structural failure after this test:	No visible failure
Test result:	Passed

Graph:



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Harness Test

Test ID 4

Item:	Borat
Manufacturer	Chrigelmaurer.ch / Flugsau
Test place & date:	Villeneuve May 31, 2013
Test responsible:	Alain Zoller
Temp. [°C] & Humidity:	20.9° C; 40 %rel
Maximum certified pilot weight [kg]:	120 kg

Standard EN 1651

Test standard §: EN 5.3.2.7

Test setup: Flying position before landing: seat board (11) in landing position, leg straps (10) closed.

Anchoring: Attachment points: Both of the main riser attachments attached (3 and 4);

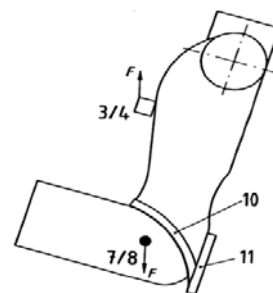
Dummy: Default, hip fixed (7, 8)

Required load in g: 15 g

Min load [N]: 15 000 N

Required test load in kg: **1800 kg**

Min. duration [s]: 5 s



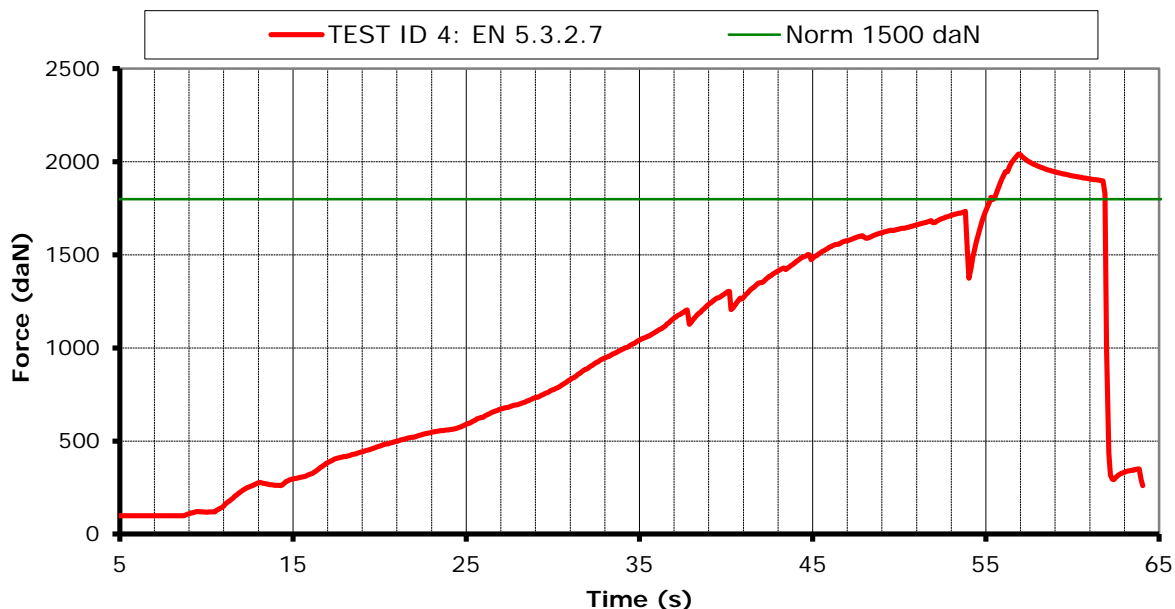
Results

Duration of maintained min. load [s]: **6.3 s**

Any signs of structural failure after this test: **No visible failure**

Test result: **Passed**

Graph:



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Harness Test

Test ID 8

Item:	Borat
Manufacturer	Chrigelmaurer.ch / Flugsau
Test place & date:	Villeneuve May 31, 2013
Test responsible:	Alain Zoller
Temp. [°C] & Humidity:	20.9° C; 40 %rel
Maximum certified pilot weight [kg]:	120 kg

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)

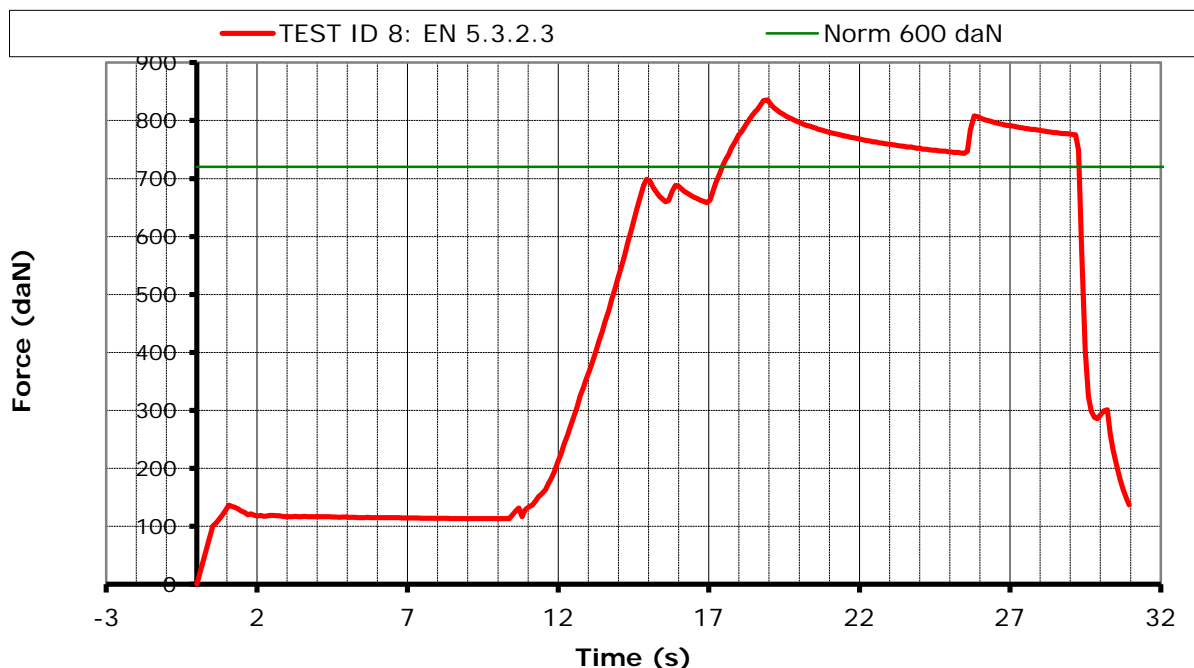
Required load in g:	6 g
Min load [N]:	6 000 N
Required test load in kg:	720 kg
Min. duration [s]:	10 s



Results

Duration of maintained min. load [s]:	11.9 s
Any signs of structural failure after this test:	No visible failure
Test result:	Passed

Graph:



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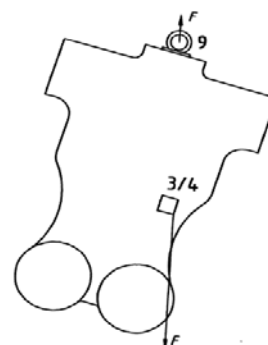


Harness Test

Test ID 10

Item:	Borat
Manufacturer	Chrigelmaurer.ch / Flugsau
Test place & date:	Villeneuve May 31, 2013
Test responsible:	Alain Zoller
Temp. [°C] & Humidity:	20.9° C; 40 %rel
Maximum certified pilot weight [kg]:	120 kg

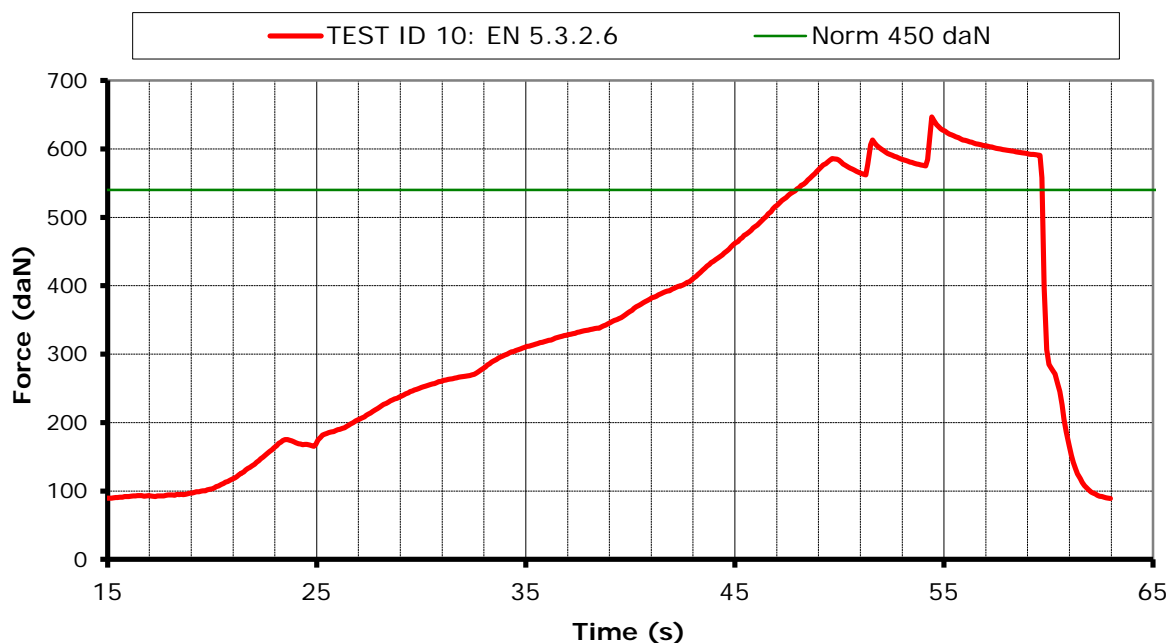
Standard	EN 1651
Test standard §:	5.3.2.6
Test setup:	Normal flying position in NEGATIF
Anchoring: Attachment points:	ONE of the main riser attachments attached downwards(3 or 4);
Dummy:	Dummy anchored at the head position (9)
Required load in g:	4.5 g
Min load [N]:	4500 N
Required test load in kg:	540 kg
Min. duration [s]:	10 s



Results

Duration of maintained min. load [s]:	10.9 s
Any signs of structural failure after this test:	No visible failure
Test result:	Passed

Graph:



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