



Test Report

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

All the tests were carried out by:

Air Turquoise – Para-test, 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:	Kortel Design
Harness model:	Karver
Size:	Medium
Harness Weight:	1.1 kg
Maximum certified pilot	100 kg
Impact protection type:	none
Harness type:	ABS
Test responsible:	B. Kempeneers
Test place:	Villeneuve
Test date:	May 14, 2010
Test room temp & humidity:	20,6° C; 35 %rel
Certification number EN:	PH 009.2010
Certification number LTF:	

page 1 of 4

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	5	OK
3			4.2.1.b	Default, landing position	2 main att. points	Hip fixated, landing conf.	6g	6000	10	n/t
4	✓	5.3.2.7					15g	15000	5	OK
5			4.2.1.a rescue	Rescue	2 rescue att. Pnts.	Hip fixated	9g	9000	10	n/t
6		5.3.2.4					15g	15000	5	n/t
7			4.2.1.b rescue	Rescue, landing		Hip fixated, landing conf.	6g	6000	10	n/t
8	✓	5.3.2.3		One riser	ONE main att.	1 central hip fixation	6g	6000	10	OK
9		5.3.2.5	4.2.1.d	Towing	2 main att. + 2 tow att.	None	3g	3000	10	n/t
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	OK
12			4.2.1.c rescue	Upside down rescue	2 rescue att. downw.		6g	6000	10	n/t

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 ?	Standard Ref.:	TEST setup	Anchoring		Impact			Result		
		LTF		Attachment 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:	
PROTECT 1		5.1.1	Default flying position	Test dummy is attached to the harness like a pilot in flight.			+50g	0	0	0	n/t

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.	TEST setup	Anchoring		Force for single hand deployment			Result	
		LTF		Attachment 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/t

D. RESCUE DEPLOYMENT STRAP STRENGTH 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 duration [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/t

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

**Kortel Design
Karver
Medium**

complies 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 14, 2010



Kempeneers B.

Place, Date

Test responsible

page 4 of 4



Annex: detailed test reports

Harness Test		Test ID 1
Item:	Karver	
Manufacturer	Kortel Design	
Test place & date:	Villeneuve	May 14, 2010
Test responsible:	B. Kempeneers	
Temp. [°C] & Humidity:	20,6° C; 35 %rel	
Maximum certified pilot weight [kg]:	100	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:	900	kg
Min. duration [s]:	10 s	

Results	
Duration of maintained min. load [s]:	11.3 s
Any signs of structural failure after this test:	No visible failure
Test result:	Passed

Graph:

Time (s)	Force (daN)
0	0
2	20
4	350
6	520
8	720
10	700
11.3	900
12	880
15	850
19	830
20	200
21	50
24	20





Harness Test **Test ID 2**

Item:	Karver		
Manufacturer	Kortel Design		
Test place & date:	Villeneuve	May 14, 2010	
Test responsible:	B. Kempeneers		
Temp. [°C] & Humidity:	20,6° C; 35 %rel		
Maximum certified pilot weight [kg]:	100	kg	

Standard EN 1651

Test standard §: 5.3.2.2

Test setup: Default flying position

Anchoring: Attachment points: Both main riser attachments (3, 4)

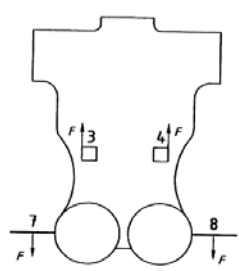
Dummy: Default, hip fixed (7, 8)

Required load in g: 15 g

Min load [N]: 15 000 N

Required test load in kg: **1500** kg

Min. duration [s]: 5s



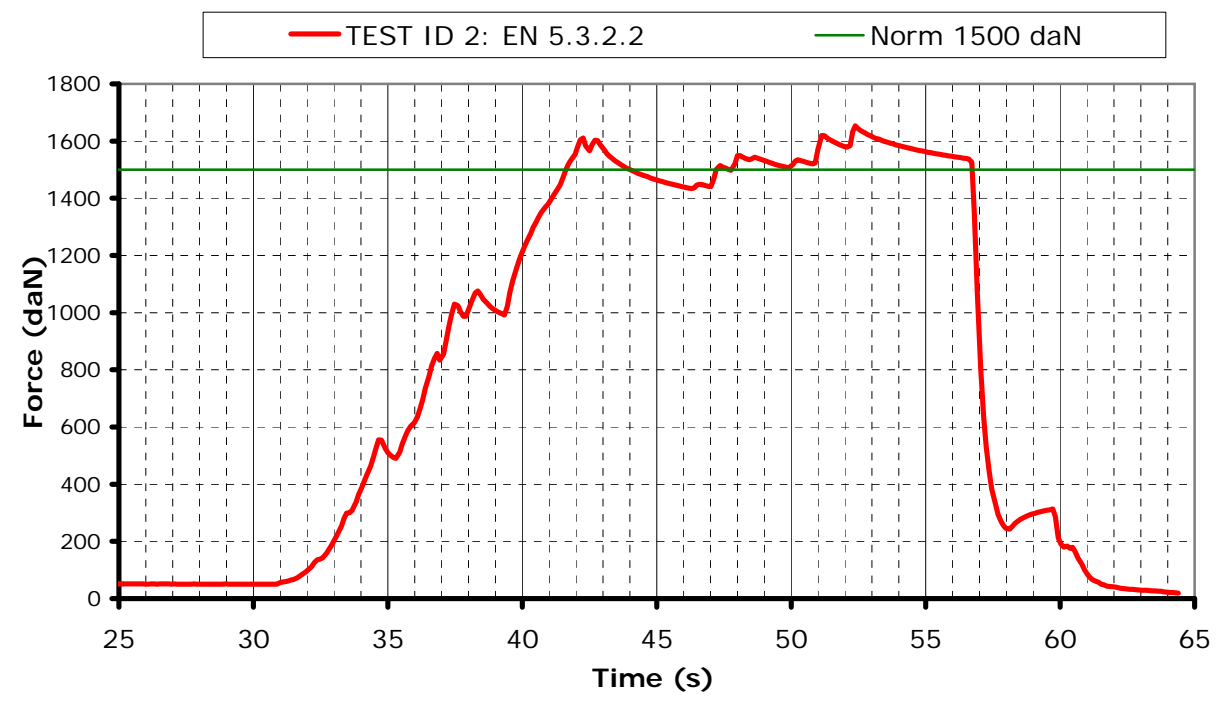
Results

Duration of maintained min. load [s]: **9.5 s**

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

Test result: **Passed**

Graph:



The management system governing the provision of this test service is ISO 9001 certified:



Harness Test

Test ID 4

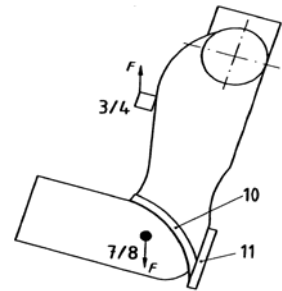
Item: Karver
 Manufacturer: Kortel Design
 Test place & date: Villeneuve May 14, 2010
 Test responsible: B. Kempeneers
 Temp. [°C] & Humidity: 20,6° C; 35 %rel
 Maximum certified pilot weight [kg]: 100 kg

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: **1500 kg**
 Min. duration [s]: 5 s



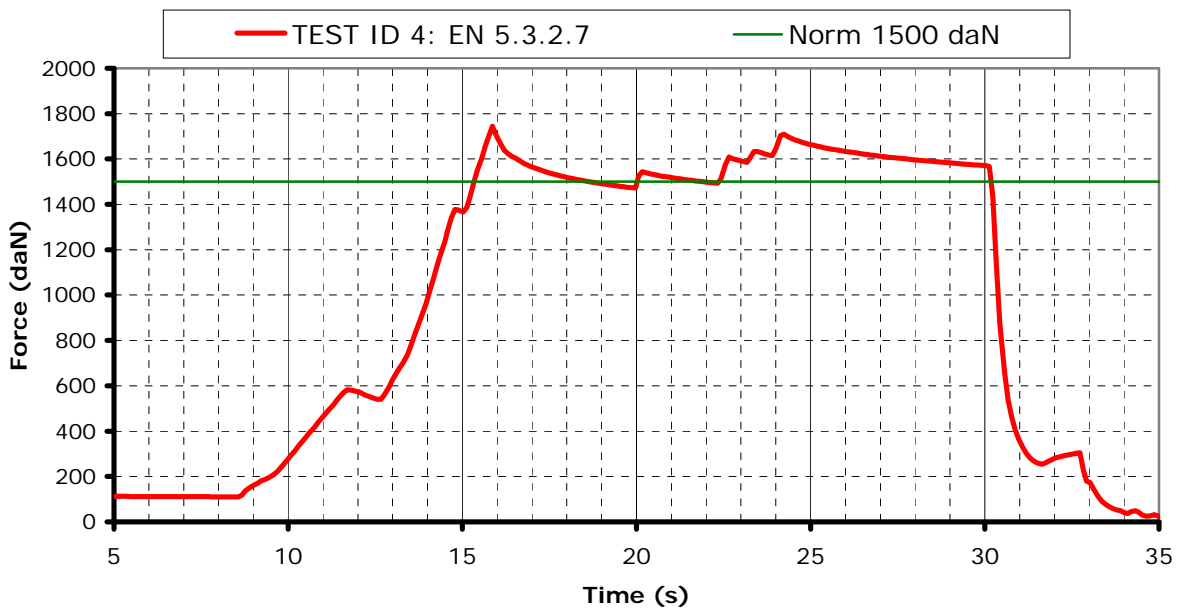
Results

Duration of maintained min. load [s]: **7.7 s**

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

Test result: **Passed**

Graph:





Harness Test

Test ID 8

Item: Karver
 Manufacturer: Kortel Design
 Test place & date: Villeneuve May 14, 2010
 Test responsible: B. Kempeneers
 Temp. [°C] & Humidity: 20,6° C; 35 %rel
 Maximum certified pilot weight [kg]: 100 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: **600 kg**
 Min. duration [s]: 10 s



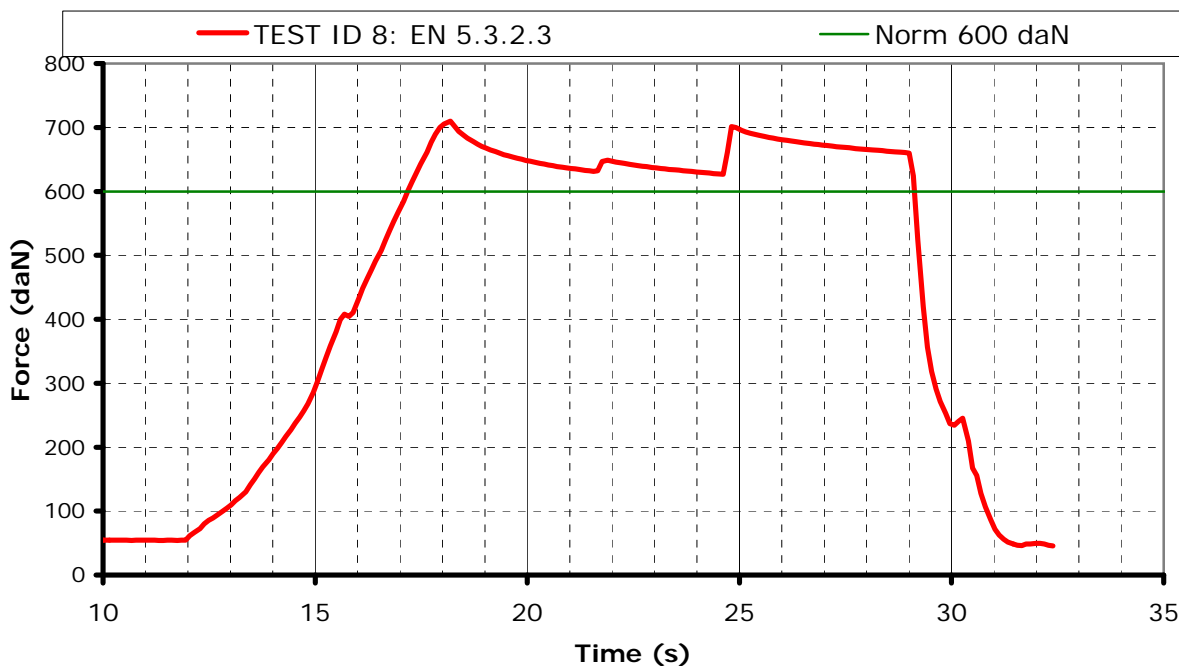
Results

Duration of maintained min. load [s]: **12.0 s**

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

Test result: **Passed**

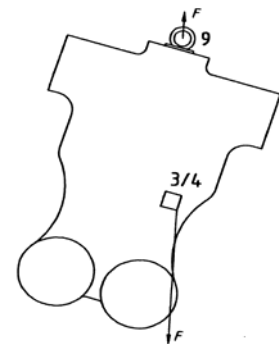
Graph:



Harness Test **Test ID 10**

Item: Karver
 Manufacturer: Kortel Design
 Test place & date: Villeneuve May 14, 2010
 Test responsible: B. Kempeneers
 Temp. [°C] & Humidity: 20,6° C; 35 %rel
 Maximum certified pilot weight [kg]: 100 kg

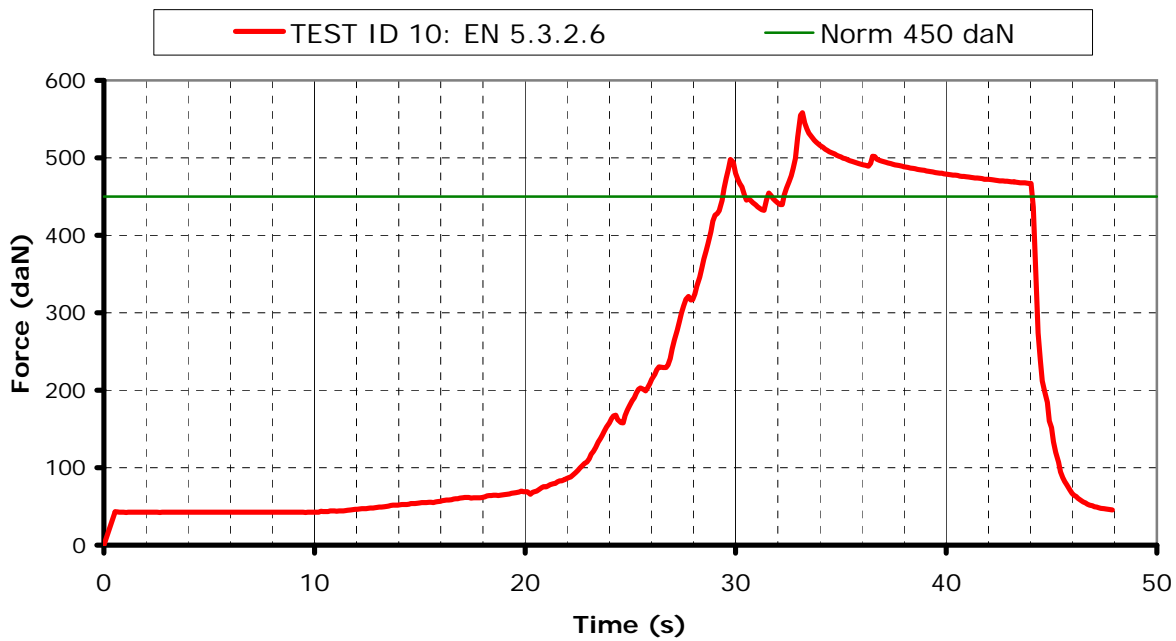
Standard: EN 1651
 Test standard §: 5.3.2.6
 Test setup: Normal flying position in NEGATIF
 Anchoring: Attachment points: ONE of the main riser attachments attached downwards(3 or 4);
 Dummy: Dummy anchored at the head position (9)
 Required load in g: 4.5 g
 Min load [N]: 4500 N
 Required test load in kg: **450 kg**
 Min. duration [s]: 10 s



Results

Duration of maintained min. load [s]: **11.7 s**
 Any signs of structural failure after this test: **No visible failure**
 Test result: **Passed**

Graph:



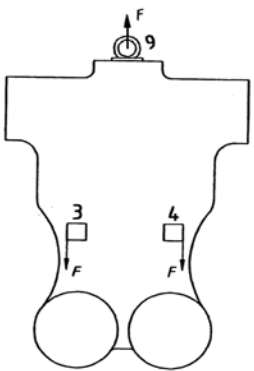
The management system governing the provision of this test service is ISO 9001 certified:



Harness Test **Test ID 11**

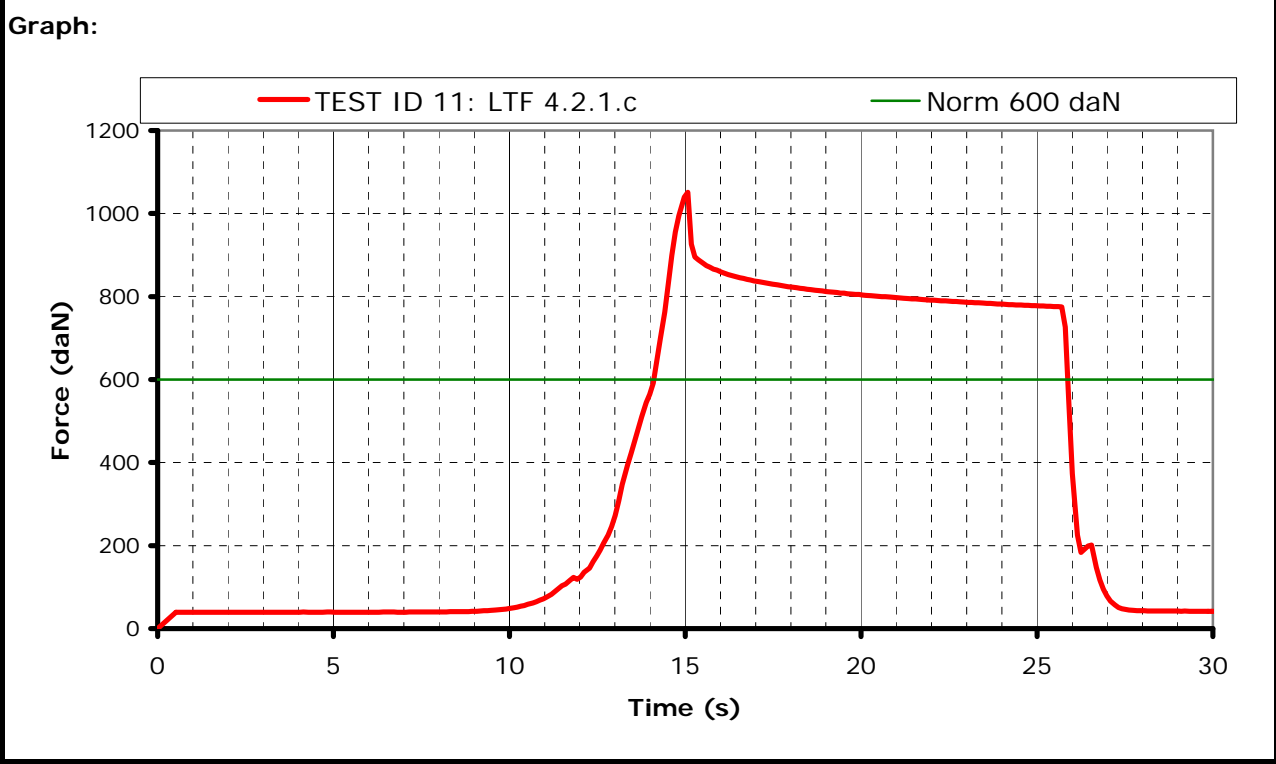
Item: Karver
 Manufacturer: Kortel Design
 Test place & date: Villeneuve May 14, 2010
 Test responsible: B. Kempeneers
 Temp. [°C] & Humidity: 20,6° C; 35 %rel
 Maximum certified pilot weight [kg]: 100 kg

Standard: 2. DV LuftGerPV §1, Nr. 7 c
 Test standard §: 4.2.1.c
 Test setup: Pilot upside down flying position
 Anchoring: Attachment points: Both of the main riser attachments attached downwards (3 and 4);
 Dummy: Dummy anchored at the head position (9)
 Required load in g: 6 g
 Min load [N]: 6 000 N
 Required test load in kg: **600 kg**
 Min. duration [s]: 10 s



Results

Duration of maintained min. load [s]: **11.8 s**
 Any signs of structural failure after this test: **No visible failure**
 Test result: **Passed (LTF TEST)**



The management system governing the provision of this test service is ISO 9001 certified:

