

PH PARAGLIDERS HARNESS

INSPECTION REPORT

Inspection report number: **PH 154.2015**

MANUFACTURER HARNESS DATA

Manufacturer name: **AirHeart Corporation**Contact person: **Jung Dong**Street: **450-5/F sinjang1-dong**Post code / place: **hanam-city Gyunggi-do 465-031 Seoul**Country: **Korea Republic**Name: **Butterfly**Size: **L**Type: **ABS**Weight [kg]: **7**Max load [kg] : **100**Serial number : **2015060001**Protector type: **Foam**

Volume reserve parachute container [cm3] :

Min: **n/a**Max: **10005**

TEST DATA

Reception date : **18.11.2015**Test place and date : **Villeneuve, 20/11/2015**Test responsible: **Alain Zoller**

TEST ATMOSPHERE AGL

[C°] **22,4**RH [%] **43**[hPa] **1014,3**Wind [m/s] **0**Place of declaration: **Villeneuve**Date of issue: **27.11.2015**Director management: **Alain Zoller**Signature: 

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 1999European Standard **EN12491** September 2001Airworthiness requirements for hang gliders and paragliders **LTF 2009** as published in NfL 91/09 chapter 4 and 6

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.

This inspection report contain the following test and is complet with the test report **PH ID 0 to 12, ST and RD**

Inspection report number: **PH 154.2015**

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

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Inspection report number: PH 154.2015

B. 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		Attach-	Dummy	Min.	Resistance measured [N]	
				ment points		Max.		
						[N]		
RRDT	✓	6.1.5	Default flying position	Test sample is attached to the dummy like a pilot in flight.		20	42.0	POSITIVE
				(no dummy required)		70		POSITIVE

C. 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.	Breaking resistance measured [N]	Result
		LTF	EN 12491			Test duration		
						[s]		
RRST	✓	6.1.8	5.3.2	Connection strap in tensile testing machine	700	10	224800.0	POSITIVE

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HARNESS STRUCTURAL STRENGTH TEST

TEST REPORT PH ID 0

PH PARAGLIDERS HARNESS

Inspection report number: **PH 154.2015**
Manufacturer name: **AirHeart Corporation**
Name: **Butterfly**
Max load [kg] : **100**
Serial number : **2015060001**
Test place & date: **Villeneuve, 20/11/2015**
Test responsible: **Alain Zoller**
Directives: EN 1651

Test standard §: **5.3.2.1 (EN)**

Test setup: **Default flying position**

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

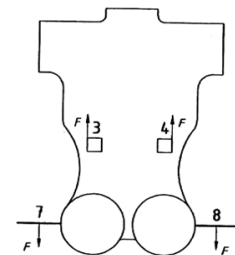
Dummy: **Default, hip fixed (7, 8)**

Required load in force [g] : **6**

Minimum load [N]: **6000**

Required test load in [N]: **612**

Min. duration [s]: **10**



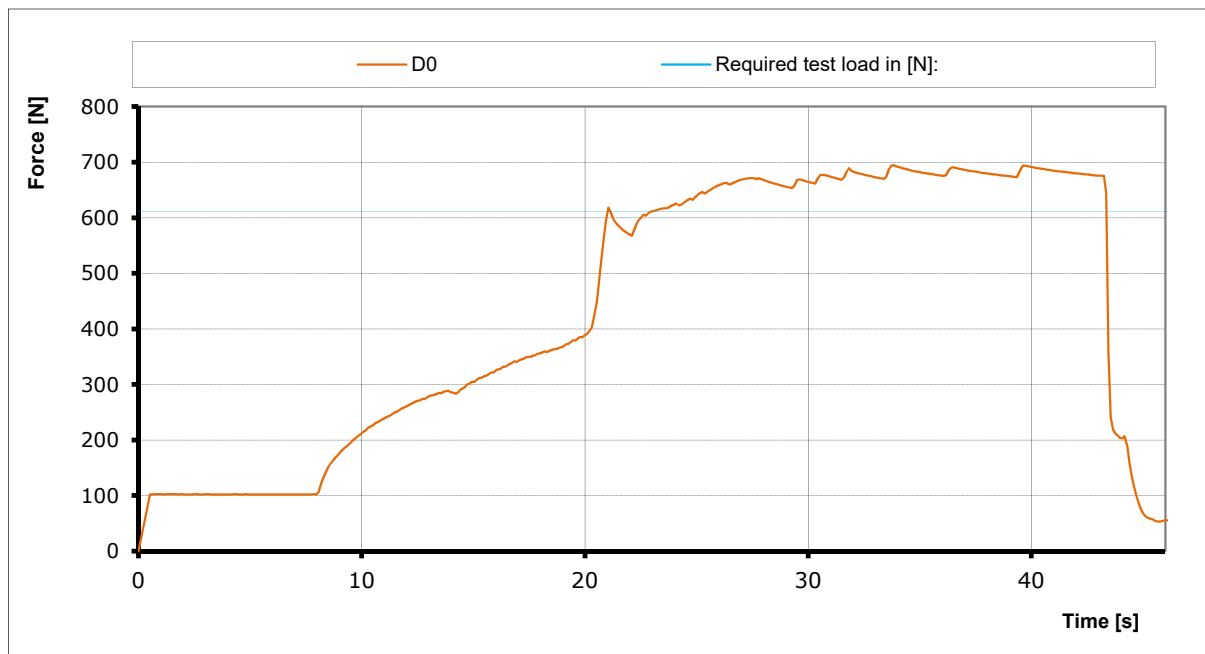
Results

Duration of maintained min. load [s]: **17.64**

Any signs of structural failure after this test: **no failure**

Test result: **POSITIVE**

Graph: **D0**



Instruments	Validity	Manufacturer	Type nr.	S/N
Load sensor	2017			
Geos n°11 Skywalker	07.04.2017	JDC electronics	Geos n° 11	0022

HARNESS STRUCTURAL STRENGTH TEST

TEST REPORT PH ID 2

PH PARAGLIDERS HARNESS

Inspection report number: **PH 154.2015**

Manufacturer name: **AirHeart Corporation**

Name: **Butterfly**

Max load [kg] : **100**

Serial number : **2015060001**

Test place & date: **Villeneuve, 20/11/2015**

Test responsible: **Alain Zoller**

Directives: EN 1651

Test standard §: **5.3.2.2**

Test setup: **Default flying position**

Anchoring:

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

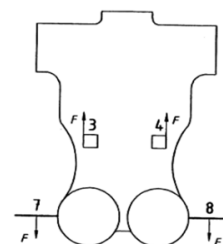
Dummy: **Default, hip fixed (7, 8)**

Required load in force [g] : **15**

Min load [N]: **15 000**

Required test load in [N]: **1529**

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



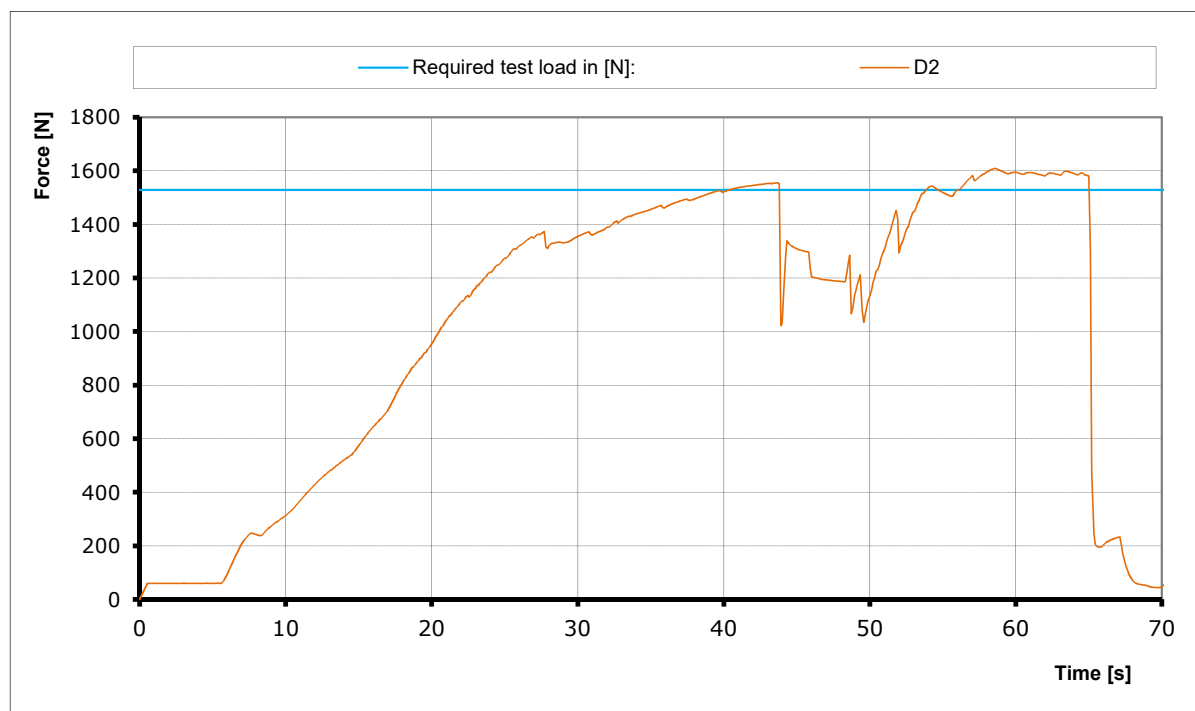
Results

Duration of maintained min. load [s]: **6.23**

Any signs of structural failure after this test: **no failure**

Test result: **POSITIVE**

Graph: **D2**



Instruments	Validity	Manufacturer	Type nr.	S/N
Load sensor	2017	0	0	0
Geos n°11 Skywatch	07.04.2017	JDC electronics	Geos n° 11	0022



HARNESS STRUCTURAL STRENGTH TEST

TEST REPORT PH **ID 4**

PH PARAGLIDERS HARNESS

Inspection report number: **PH 154.2015**

Manufacturer name: **AirHeart Corporation**

Name: **Butterfly**

Max load [kg] : **100**

Serial number : **2015060001**

Test place & date: **Villeneuve, 20/11/2015**

Test responsible: **Alain Zoller**

Directives: EN 1651

Test standard §: **EN 5.3.2.7**

Flying position before landing: seat

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

Anchoring:

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

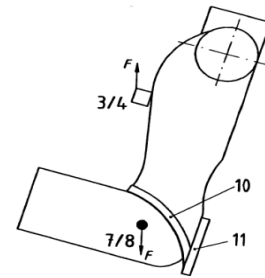
Dummy: **Default, hip fixed (7, 8)**

Required load in force [g] : **15**

Min load [N]: **15000**

Required test load in [N]: **1529**

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



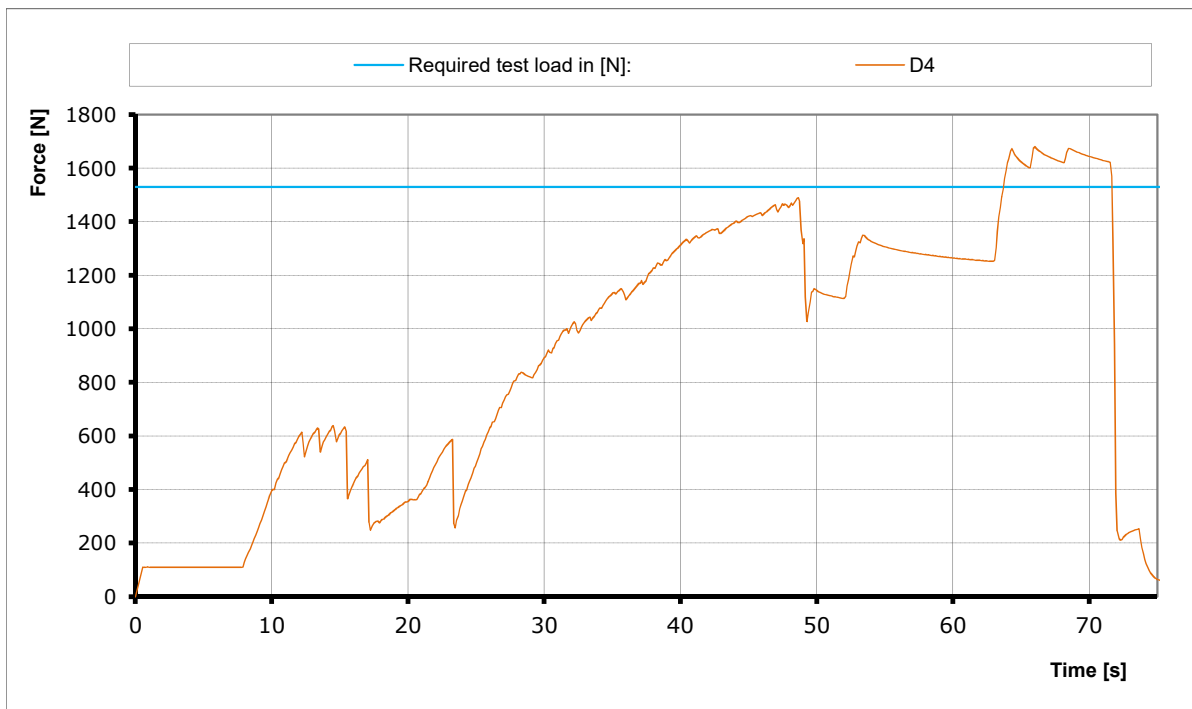
Results

Duration of maintained min. load [s]: **7.84**

Any signs of structural failure after this test: **no failure**

Test result: **POSITIVE**

Graph: **D4**



Load sensor	2017	0	0	0
Geos n°11 Skywatch	42832	JDC electronics	Geos n° 11	0022
0	00.01.1900	0	0	0



HARNESS STRUCTURAL STRENGTH TEST

TEST REPORT PH ID 6

PH PARAGLIDERS HARNESS

Inspection report number: **PH 154.2015**
Manufacturer name: **AirHeart Corporation**
Name: **Butterfly**
Max load [kg] : **100**
Serial number : **2015060001**
Test place & date: **Villeneuve, 20/11/2015**
Test responsible: **Alain Zoller**
Directives: EN 1651

Test standard §: **5.3.2.4**

Test setup: **Rescue attachments**

Anchoring:

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

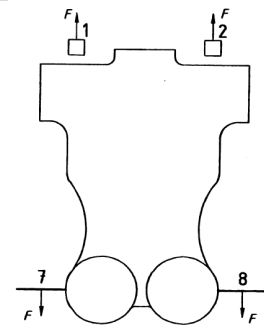
Dummy: **Hip fixed (7, 8)**

Required load in force [g] : **15**

Min load [N]: **15000**

Required test load in [N]: **1529**

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



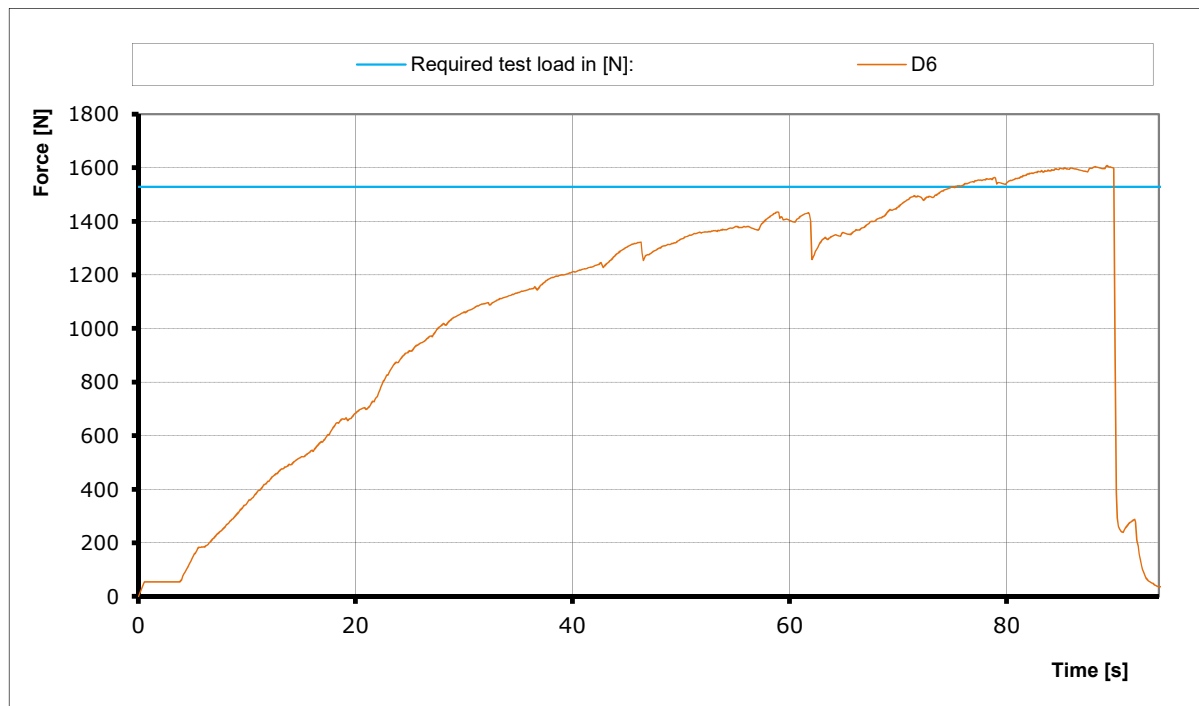
Results

Duration of maintained min. load [s]: **8.41**

Any signs of structural failure after this test: **no failure**

Test result: **POSITIVE**

Graph: **D6**



Load sensor	2017	0	0	0
Geos n°11 Skywatch 42832		JDC electronics	Geos n° 11	0022
0	00.01.1900	0	0	0



HARNESS STRUCTURAL STRENGTH TEST

TEST REPORT PH ID 8

PH PARAGLIDERS HARNESS

Inspection report number: **PH 154.2015**

Manufacturer name: **AirHeart Corporation**

Name: **Butterfly**

Max load [kg] : **100**

Serial number : **2015060001**

Test place & date: **Villeneuve, 20/11/2015**

Test responsible: **Alain Zoller**

Directives: EN 1651

Test standard §: **5.3.2.3**

Test setup: **Only one riser attached**

Anchoring:

Attachment points: **One main riser attachments (3)**

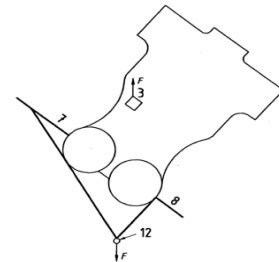
Dummy: **Hip fixed (7, 8 -> 12)**

Required load in force [g] : **6**

Min load [N]: **6000**

Required test load in [N]: **612**

Min. duration [s]: **10**



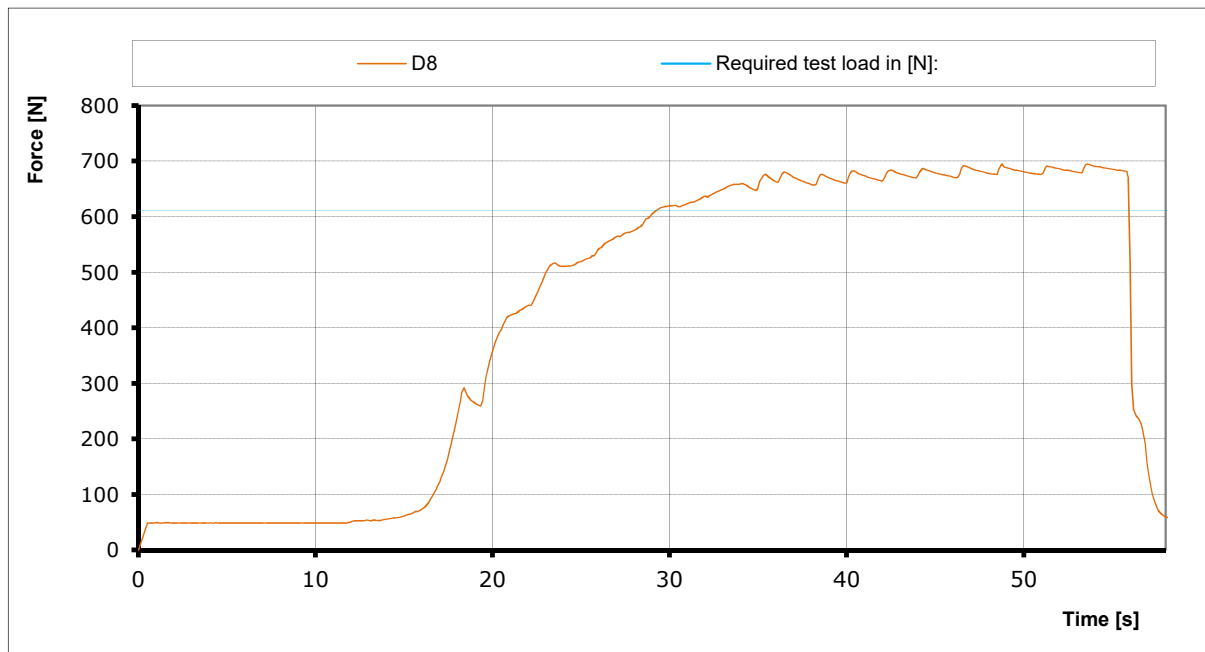
Results

Duration of maintained min. load [s]: **13.56**

Any signs of structural failure after this test: **no failure**

Test result: **POSITIVE**

Graph: **D8**



Load sensor	2017	0	0	0
Geos n°11 Skywatch	42832	JDC electronics	Geos n° 11	0022
0	00.01.1900	0	0	0



HARNESS STRUCTURAL STRENGTH TEST

TEST REPORT PH ID 10

PH PARAGLIDERS HARNESS

Inspection report number: **PH 154.2015**
Manufacturer name: **AirHeart Corporation**
Name: **Butterfly**
Max load [kg] : **100**
Serial number : **2015060001**
Test place & date: **Villeneuve, 20/11/2015**
Test responsible: **Alain Zoller**
Directives: 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);**

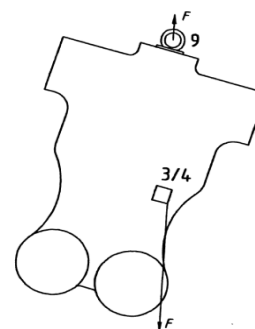
Dummy: **Dummy anchored at the head position (9)**

Required load in force [g] : **4.5**

Min load [N]: **4500**

Required test load in [N]: **459**

Min. duration [s]: **10**



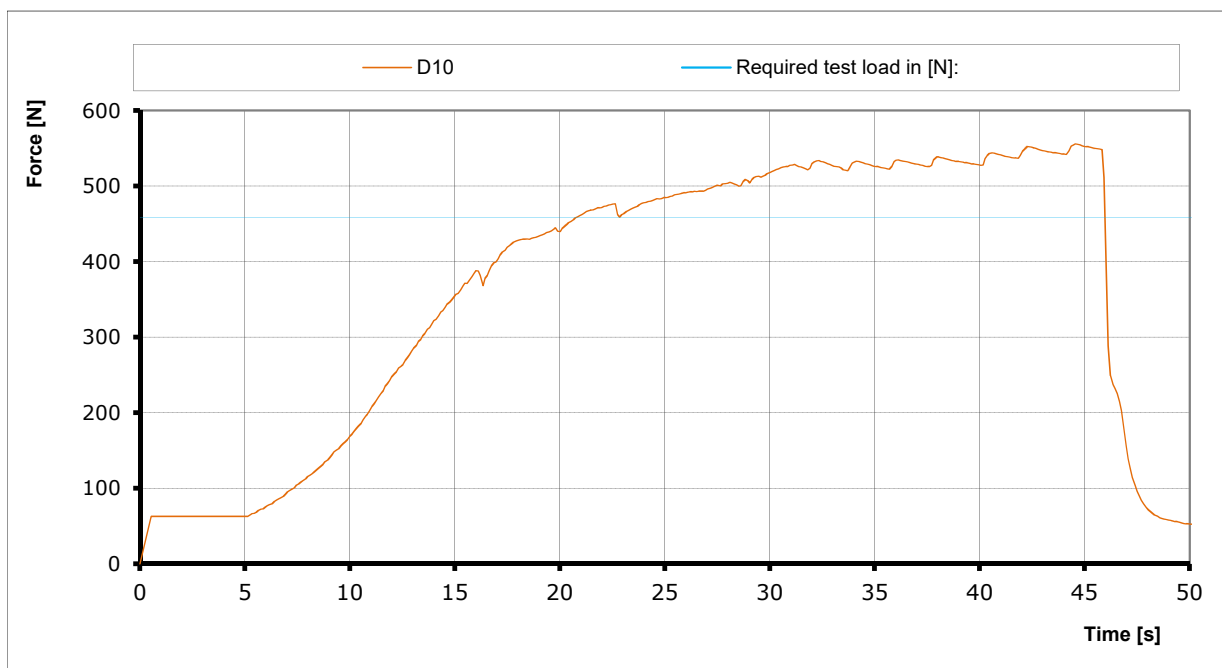
Results

Duration of maintained min. load [s]: **18.63**

Any signs of structural failure after this test: **no failure**

Test result: **POSITIVE**

Graph: **D10**



Instruments	Validity	Manufacturer	Type nr.	S/N
Load sensor	2017	0	0	0
Geos n°11 Skywatch	07.04.2017	JDC electronics	Geos n° 11	0022

HARNESS STRUCTURAL STRENGTH TEST

TEST REPORT PH ID ST

PH PARAGLIDERS HARNESS

Inspection report number: **PH 154.2015**

Manufacturer name: **AirHeart Corporation**

Name: **Butterfly**

Max load [kg] : **100**

Serial number : **2015060001**

Test place & date: **Villeneuve, 20/11/2015**

Test responsible: **Alain Zoller**

Directives: Nfi 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**

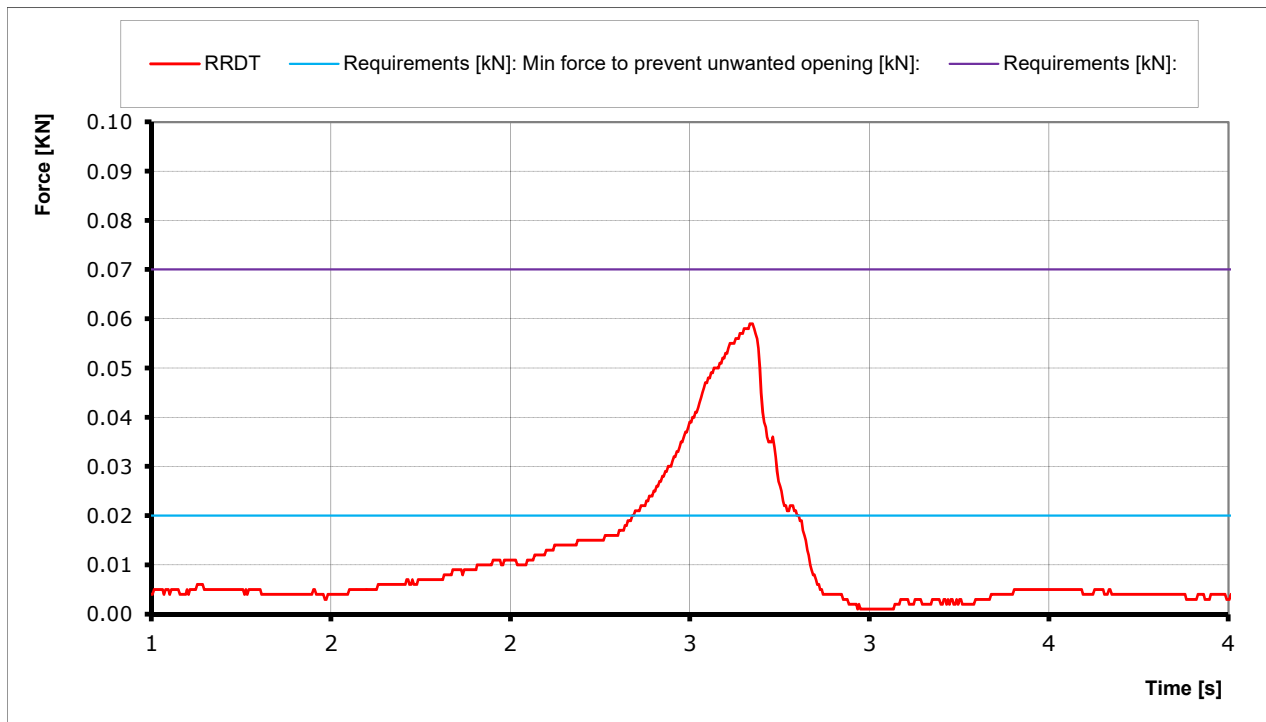
Min force to prevent unwanted opening [kN]: **0.02**

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

Test result 20 [N]: **POSITIVE**

Test result 70 [N]: **POSITIVE**

Graph: **RRDT**





HARNESS STRUCTURAL STRENGTH TEST

TEST REPORT PH ID RD

PH PARAGLIDERS HARNESS

Inspection report number: **PH 154.2015**

Manufacturer name: **AirHeart Corporation**

Name: **Butterfly**

Max load [kg] : **100**

Serial number : **2015060001**

Test place & date: **Villeneuve, 20/11/2015**

Test responsible: **Alain Zoller**

Directives: EN 12491 & Nfi 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]: **18.00**

Breaking resistance [kN]: **224.80**

Test result: **POSITIVE**

Graph: **RRST**

