

# PH PARAGLIDER HARNESSSES

## INSPECTION CERTIFICATE

Inspection certificate number: **PH\_185.2017**

### MANUFACTURER DATA

Manufacturer name: **Advance Thun AG**  
Contact person: **Rolf Zeltner**  
Street: **Uttigenstrasse 87**  
Post code / place: **3600 Thun**  
Country: **Switzerland**

### SAMPLE DATA

Name: **BiPro 3** Size: **M**  
Type: **ABS** Pilot max load [kg]: **120**  
Impact pad type: **Foam** Weight [kg]: **2.6**  
Serial number: **1139418** Reception date: **23.12.2016**  
Volume reserve parachute container [cm3] Min: **5000**  
Max: **9000**


### TEST DATA

### ATMOSPHERE AGL

Date of test: **23.12.2016** [C°] **21.4**  
Place of test: **Villeneuve** RH [%] **33**  
Test responsible: **Alain Zoller** [hPa] **1036.1**

### ISSUE DATA

Place of declaration: **Villeneuve**  
Date of issue: **23.06.2017**  
Managing Director: **Alain Zoller**

Signature: 

This signature approve the validity of the test reports no: R0,R2,R4,R6,R8,R9,R10

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 | Test no: R0,R2,R4,R6,R8,R9,R10  
Test recognized for the standard: Airworthiness Requirements LTF NFL 2009 in 91/09 chapter 4.2.1

European Standard **EN12491** September 2001 | Test no: RRD,RRST  
Test recognized for the standard: Airworthiness Requirements LTF NFL 2009 in 91/09 chapter 6.1.5 and 6.1.8

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:  
71.9.1 | PH ID **R0,R2,R4,R6,R8,R9,R10, RRD,RRST**



Inspection certificate number: **PH\_185.2017**

**A. STRUCTURAL STRENGTH TESTS SUMMARY**

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 1651:1999		Attach -ment 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
R2	✓	5.3.2.2				15	15000	5	POSITIVE
R4	✓	5.3.2.7	Flying position before landing	Main risers attachments	landing conf.	15	15000	5	POSITIVE
R6		5.3.2.4	Rescue attachments	Rescue riser attachments	Hip fixed	15	15000	5	n/a
R8	✓	5.3.2.3	One riser	ONE main att.	1 central hip fixation	6	6000	10	POSITIVE
R9		5.3.2.5	Towing	2 main att. + 2 tow att.	None	3	3000	10	n/a
						5	5000		
R10	✓	5.3.2.6	Default, Negatif	One main att.	Head fix.	4.5	4500	10	POSITIVE

**B. RESCUE DEPLOYMENT RESISTANCE TEST SUMMARY**

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
		EN 12491:2001		Attachment points	Dummy	Min.	Resistance measured [N]	
		[N]						
RRDT	✓	6.1.5	Default flying position	Test sample is attached to the dummy like a pilot in flight.		20	37.0	POSITIVE
				(no dummy required)		70		POSITIVE

**C. RESCUE DEPLOYMENT STRAP STRENGTH TEST SUMMARY**

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
		EN 12491:2001			Test duration [s]		
RRST	✓	5.3.2	Connection strap in tensile testing machine	700	10	1069.0	POSITIVE

Calculated value in tests reports include the value minus the uncertainty (on safe side) / The uncertainty stated is the expanded uncertainty obtained by multiplying the standard uncertainty by the coverage factor k = 2. The value of the measurand lies within the assigned range of values with a probability of 95%.

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**HARNES STRUCTURAL STRENGHT TEST**

TEST REPORT PH ID 0

**PH PARAGLIDER HARNESSES**

Inspection certificate number: **PH\_185.2017**  
 Manufacturer name: **Advance Thun AG**  
 Name: **BiPro 3**  
 Max load [kg] : **120**  
 Serial number : **1139418**  
 Date of test : **23.12.2016**  
 Test responsible: **Alain Zoller**  
 Directives: **EN 1651:1999**

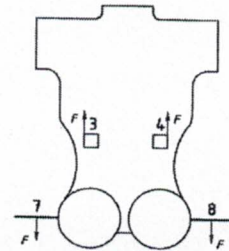
Test standard §: **5.3.2.1**

Test setup: **Default flying position**

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

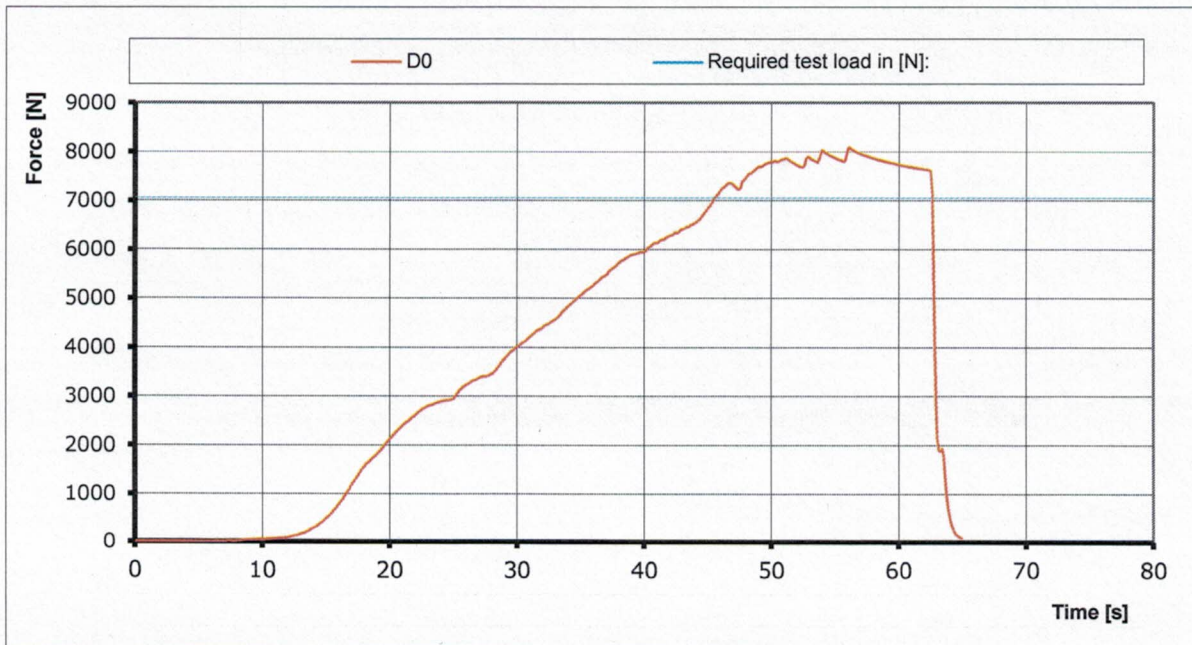
Dummy: **Default, hip fixed (7, 8)**

Required load in force [g] : **6**  
 Model max load [kg]: **120**  
 Required test load in [N]: **7063**  
 Min. duration test load [s]: **10**



**Results**

Duration of maintained min. load [s]: **16.98** [C°] **21.4**  
 Any signs of structural failure after this test: **no failure** RH [%] **33**  
 Test result: **POSITIVE** [hPa] **1036.1**  
 Graph: **D0**



Instruments	Validity calibration	Manufacturer	Type nr.	S/N
Load sensor	14.10.2017	HBM	1-S9M/50KN-1	31314652
Geos n°11 Skywatch	07.04.2017	JDC	Geos n° 11	0022

The validation of this test report is given by the signature of the test manager on the Inspection Certificate no 71.9.1



**HARNES STRUCTURAL STRENGHT TEST**

TEST REPORT PH ID 2

**PH PARAGLIDER HARNESSSES**

Inspection certificate number: **PH\_185.2017**  
 Manufacturer name: **Advance Thun AG**  
 Name: **BiPro 3**  
 Max load [kg] : **120**  
 Serial number : **1139418**  
 Date of test : **23.12.2016**  
 Test responsible: **Alain Zoller**

Directives: **EN 1651:1999**

Test standard §: **5.3.2.2**

Test setup: **Default flying position**

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

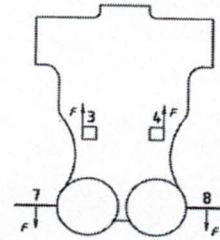
Dummy: **Default, hip fixed (7, 8)**

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

Model max load [kg]: **120**

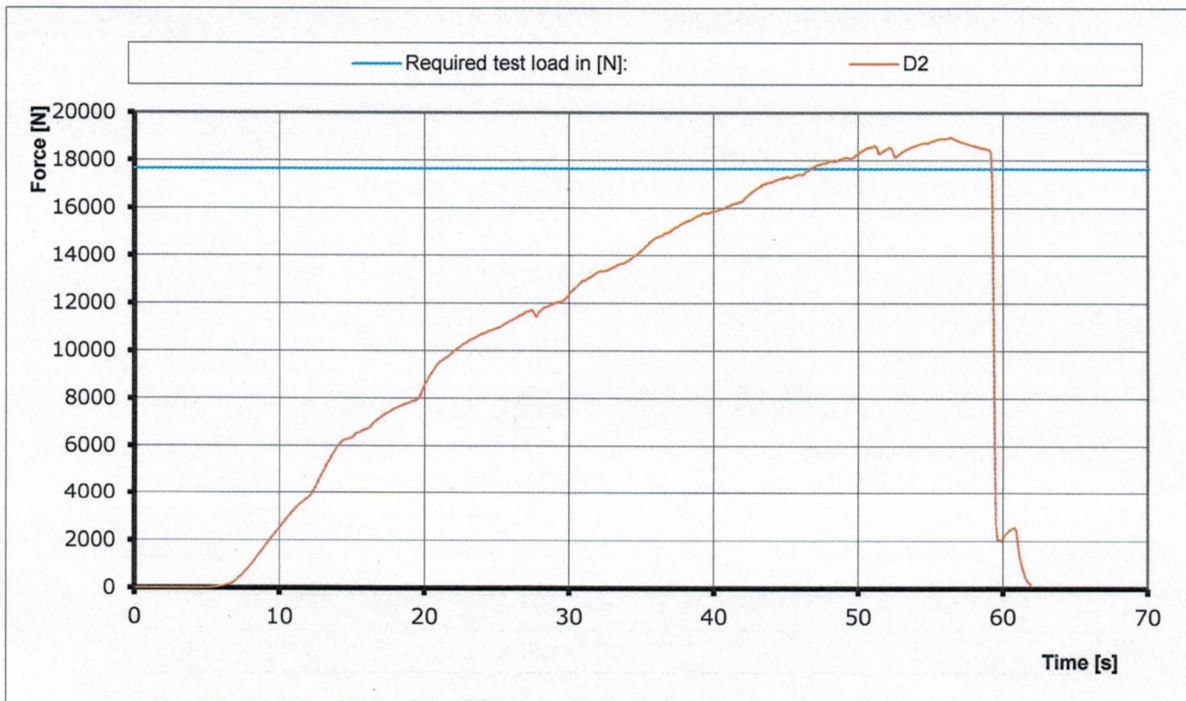
Required test load in [N]: **17658**

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



**Results**

Duration of maintained min. load [s]: **12.20** [C°] **21.4**  
 Any signs of structural failure after this test: **no failure** RH [%] **33**  
 Test result: **POSITIVE** [hPa] **1036.1**  
 Graph: **D2**



Instruments	Validity calibration	Manufacturer	Type nr.	S/N
Load sensor	14.10.2017	HBM	1-S9M/50KN-1	31314652
Geos n°11 Skywatc	07.04.2017	JDC	Geos n° 11	0022

The validation of this test report is given by the signature of the test manager on the Inspection Certificate no 71.9.1



**HARNES STRUCTURAL STRENGHT TEST**

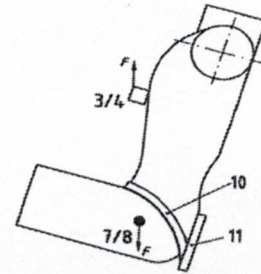
TEST REPORT PH ID 4

**PH PARAGLIDER HARNESSES**

Inspection certificate number: **PH\_185.2017**  
 Manufacturer name: **Advance Thun AG**  
 Name: **BiPro 3**  
 Max load [kg] : **120**  
 Serial number : **1139418**  
 Date of test : **23.12.2016**  
 Test responsible: **Alain Zoller**  
 Directives: **EN 1651:1999**

Test standard §: **EN 5.3.2.7**

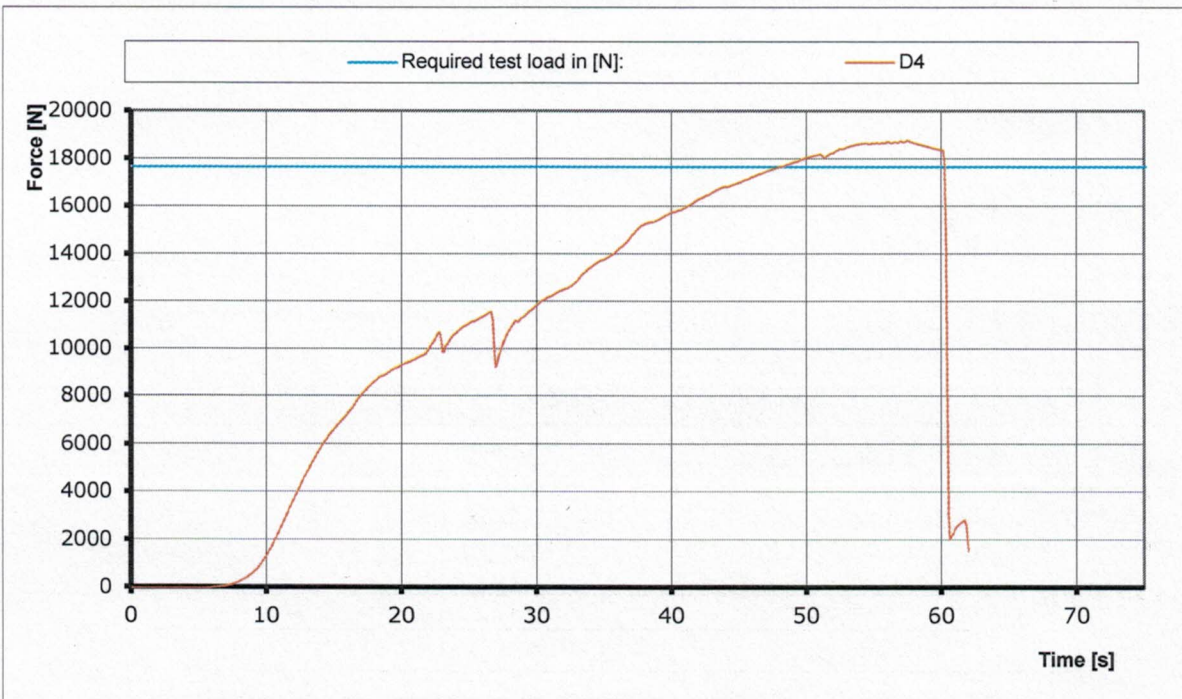
Flying position before landing: **seat**  
 Test setup: **board (11) in landing position, leg straps (10) closed.**  
 Attachment points: **Both of the main riser attachments attached (3 and 4);**  
 Dummy: **Default, hip fixed (7, 8)**



Required load in force [g] : **15**  
 Model max load [kg]: **120**  
 Required test load in [N]: **17658**  
 Min. duration [s]: **5**

**Results**

Duration of maintained min. load [s]: **11.72** [C°] **21.4**  
 Any signs of structural failure after this test: **no failure** RH [%] **33**  
 Test result: **POSITIVE** [hPa] **1036.1**  
 Graph: **D4**



Instruments	Validity calibration	Manufacturer	Type nr.	S/N
Load sensor	14.10.2017	HBM	1-S9M/50KN-1	31314652
Geos n°11 Skywatch	07.04.2017	JDC	Geos n° 11	0022

The validation of this test report is given by the signature of the test manager on the Inspection Certificate no 71.9.1



**HARNESSES STRUCTURAL STRENGTH TEST**

TEST REPORT PH ID 8

**PH PARAGLIDER HARNESSSES**

Inspection certificate number: **PH\_185.2017**  
 Manufacturer name: **Advance Thun AG**  
 Name: **BiPro 3**  
 Max load [kg] : **120**  
 Serial number : **1139418**  
 Date of test : **23.12.2016**  
 Test responsible: **Alain Zoller**  
 Directives: **EN 1651:1999**

Test standard §: **5.3.2.3**

Test setup: **Only one riser attached**

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

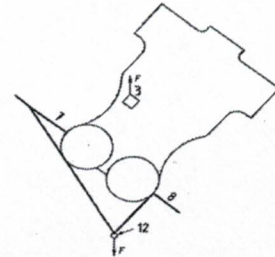
Dummy: **Hip fixed (7, 8 -> 12)**

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

Model max load [kg]: **120**

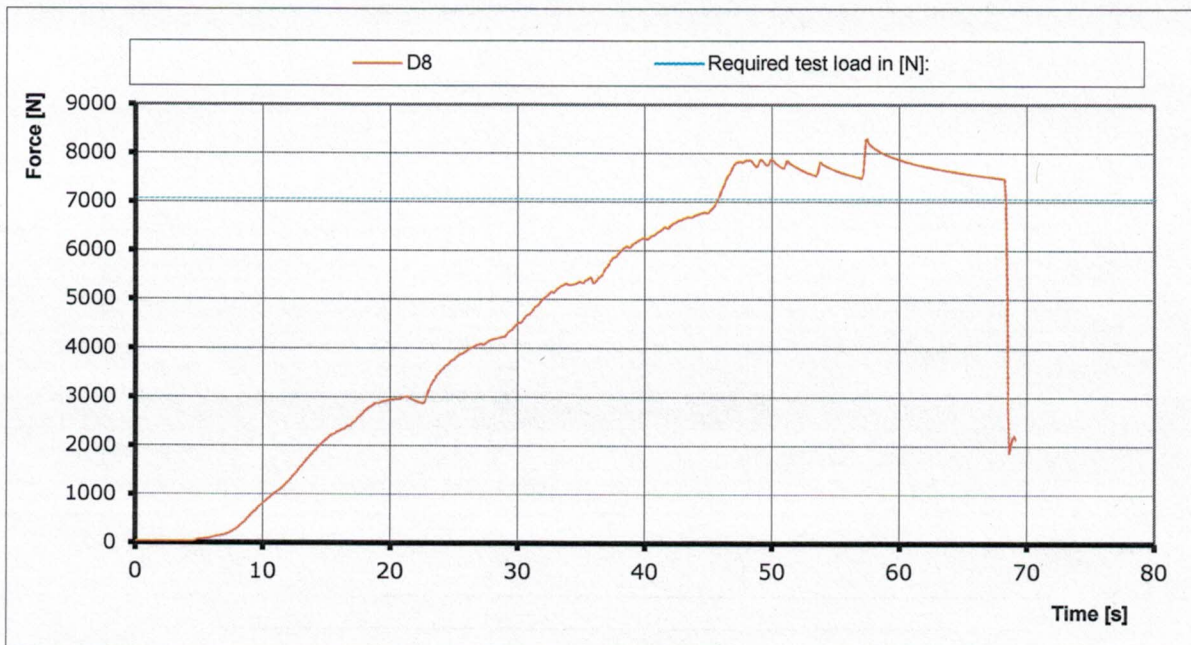
Required test load in [N]: **7063**

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



**Results**

Duration of maintained min. load [s]: **22.50** [C°] **21.4**  
 Any signs of structural failure after this test: **no failure** RH [%] **33**  
 Test result: **POSITIVE** [hPa] **1036.1**  
 Graph: **D8**



Instruments	Validity calibration	Manufacturer	Type nr.	S/N
Load sensor	14.10.2017	HBM	1-S9M/50KN-1	31314652
Geos n°11 Skywatc	07.04.2017	JDC	Geos n° 11	0022

The validation of this test report is given by the signature of the test manager on the Inspection Certificate no 71.9.1



**HARNES STRUCTURAL STRENGHT TEST**

TEST REPORT PH ID 10

**PH PARAGLIDER HARNESSES**

Inspection certificate number: **PH\_185.2017**  
 Manufacturer name: **Advance Thun AG**  
 Name: **BiPro 3**  
 Max load [kg] : **120**  
 Serial number : **1139418**  
 Date of test : **23.12.2016**  
 Test responsible: **Alain Zoller**  
 Directives: **EN 1651:1999**

Test standard §: **5.3.2.6**

Test setup: **Normal flying position in NEGATIF**

Attachment points: **ONE of the main riser attachments attached downwards(3 or 4);**

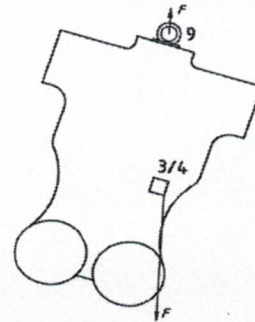
Dummy: **Dummy anchored at the head position (9)**

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

Model max load [kg]: **120**

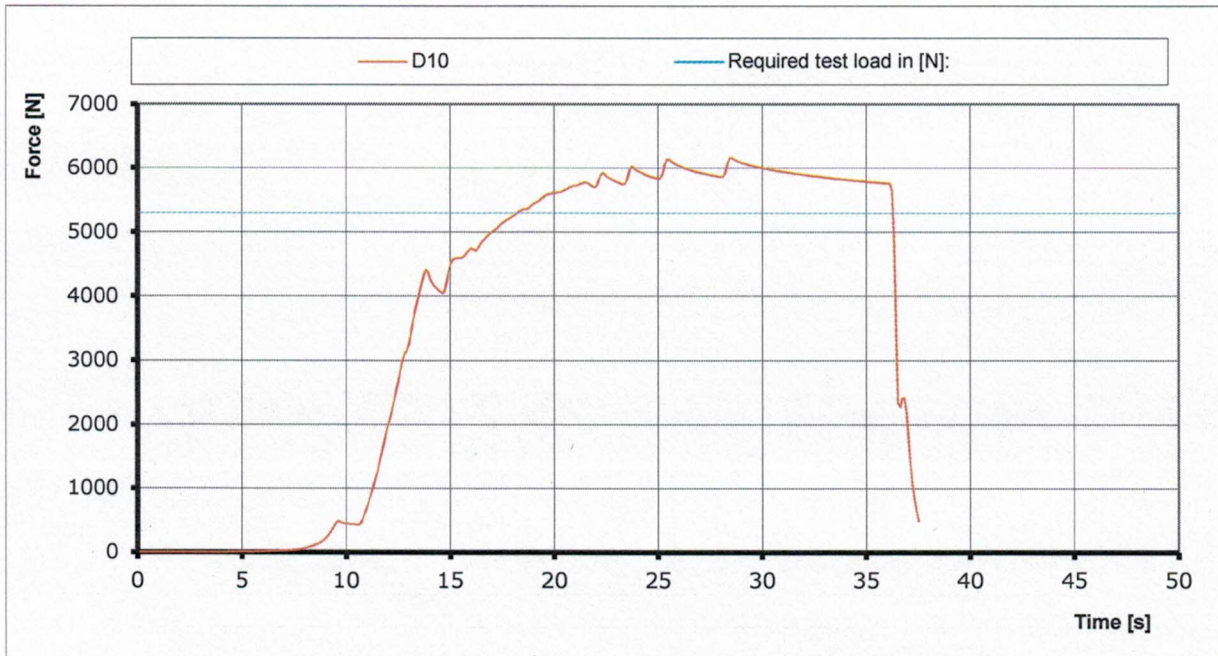
Required test load in [N]: **5297**

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



**Results**

Duration of maintained min. load [s]: **17.95** [C°] **21.4**  
 Any signs of structural failure after this test: **no failure** RH [%] **33**  
 Test result: **POSITIVE** [hPa] **1036.1**  
 Graph: **D10**



Instruments	Validity calibration	Manufacturer	Type nr.	S/N
Load sensor	14.10.2017	HBM	1-S9M/50KN-1	31314652
Geos n°11 Skywatc	07.04.2017	JDC	Geos n° 11	0022

The validation of this test report is given by the signature of the test manager on the Inspection Certificate no 71.9.1



**HARNES STRUCTURAL STRENGHT TEST**

TEST REPORT PH **RRDT**

**PH PARAGLIDER HARNESSES**

Inspection certificate number: **PH\_185.2017**  
 Manufacturer name: **Advance Thun AG**  
 Name: **BiPro 3**  
 Max load [kg] : **120**  
 Serial number : **1139418**  
 Date of test : **23.12.2016**  
 Test responsible: **Alain Zoller**  
**Directives:** 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.

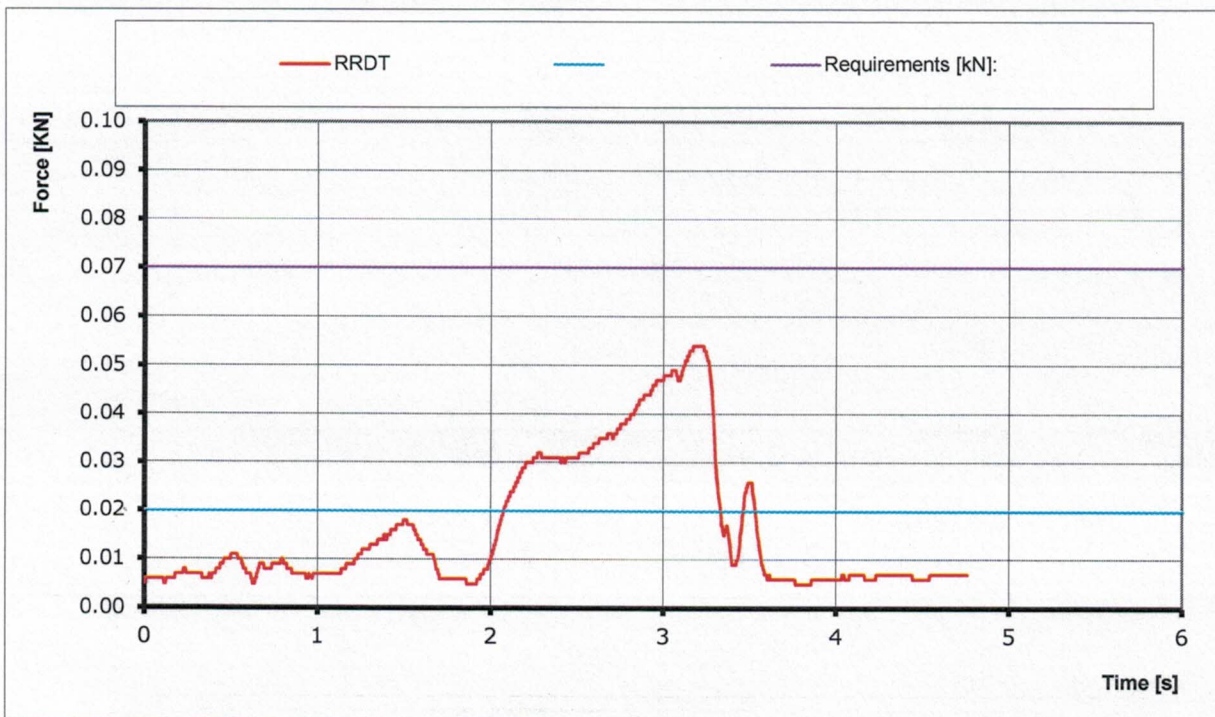
On the other hand inadvertent deployment has to be fairly remote. Therefore a shear link has to withstand a minimum load.

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]: **POSITIVE** [C°] **21.4**  
 Test result 70 [N]: **POSITIVE** RH [%] **33**  
 Graph: **RRDT** [hPa] **1036.1**



Instruments	Validity calibration	Manufacturer	Type nr.	S/N
Load Cell (axial)	11.06.2016	Burster / MTS	1-S9M/50KN-1	8431-10000
Geos n°11 Skywatch	07.04.2017	JDC	Geos n° 11	0022

The validation of this test report is given by the signature of the test manager on the Inspection Certificate no 71.9.1



**HARNES STRUCTURAL STRENGTH TEST**

TEST REPORT PH **RRST**

**PH PARAGLIDER HARNESSSES**

Inspection certificate number: **PH\_185.2017**  
 Manufacturer name: **Advance Thun AG**  
 Name: **BiPro 3**  
 Max load [kg]: **120**  
 Serial number : **1139418**  
 Date of test : **23.12.2016**  
 Test responsible: **Alain Zoller**

**Directives:** EN 12491:2001 & Nfl II 91 / 09

Test standard §: 5.3.2 (EN) & 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.

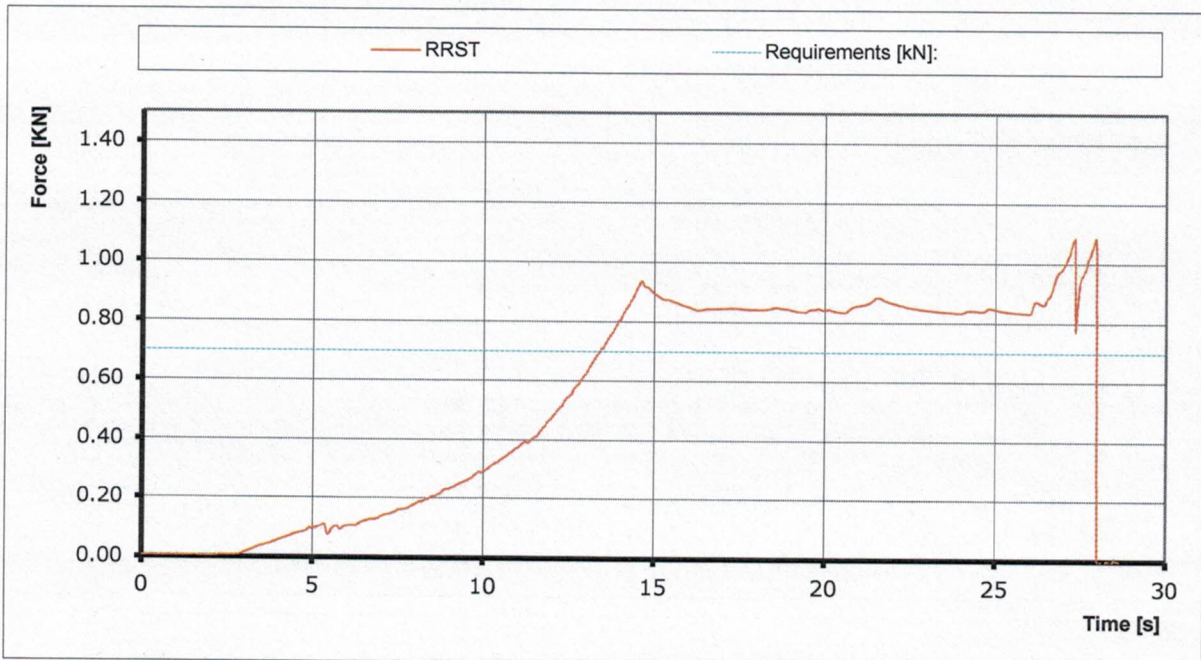
In order to verify this, the connection is tested on its tensile strength by a default tensile testing setup.

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

Requirements[kN]: **0.7**  
 Requirements[s]: **10**

**Results**

Duration of maintained load [s]: **14.44** [C°] **21.4**  
 Calculated max value of breaking resistance [kN]: **1.07** RH [%] **33**  
 Test result: **POSITIVE** [hPa] **1036.1**  
 Graph: **RRST**



Instruments	Validity calibration	Manufacturer	Type nr.	S/N
Load Cell (axial)	11.06.2016	Burster / MTS	1-S9M/50KN-1	8431-10000
Geos n°11 Skywatch	07.04.2017	JDC	Geos n° 11	0022

The validation of this test report is given by the signature of the test manager on the Inspection Certificate no 71.9.1



# PH PARAGLIDER HARNESSSES | IP IMPACT PAD

## INSPECTION CERTIFICATE

Inspection certificate number: **PH\_IP\_185.2017**

### MANUFACTURER DATA

Manufacturer name: **Advance Thun AG**

Contact person: **Rolf Zeltner**

Street: **Uttigenstrasse 87**

Post code / place: **3600 Thun**

Country: **Switzerland**

### SAMPLE DATA

Name: **BiPro 3**

Size: **M**

Impact pad type: **Inflatable**

Pilot max load [kg] : **120**

Harness type: **ABS**

Serial number: **1139418**

Weight [kg] : **2.6**

Sample reception date: **23.12.2016**

Test date:

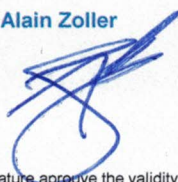
### ISSUE DATA

Place of declaration: **Villeneuve**

Date of issue: **23.12.2016**

Director Management: **Alain Zoller**

Signature:



This signature approve the validity of the test reports PH BP

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

Airworthiness requirements for hang gliders and paragliders LTF 2009 as published in NFL 91/09 chapter 5 Paraglider harness protectors

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 BP**

### TESTS RESULTS SUMMARY

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

Test ID	TESTED ?	Standard	TEST setup	Test configuration	Impact at 165 cm (Seat plate)			Results
		LTF			Max Peak impact [g] force	Impact duration at 38 [g] (if any) recorded: [ms]	Impact duration at 20 [g] (if any) recorded: [ms]	
P	✓	5.1.1	Default flying position	Test sample is attached to the dummy like a pilot in flight. Sample temperature +20+25°C without rescue	40.13	4.56	19.31	POSITIVE
PR	✓	5.1.1	Default flying position	Test sample is attached to the dummy like a pilot in flight. Sample temperature +20+25°C with rescue	38.28	1.59	19.43	POSITIVE

Calculated value include the value minus the uncertainty (on safe side) / The uncertainty stated is the expanded uncertainty obtained by multiplying the standard uncertainty by the coverage factor k = 2. The value of the measurand lies within the assigned range of values with a probability of 95%.

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# IMPACT PAD SHOCK TEST

# TEST REPORT PH IP

BP PARAGLIDER HARNESSES / BACK PROTECTORS

Inspection certificate ref. number: PH\_IP\_185.2017

### MANUFACTURER DATA

Manufacturer name: Advance Thun AG  
 Contact person: Rolf Zeltner  
 Street: Uttigenstrasse 87  
 Post code / place: 3600 Thun  
 Country: Switzerland

### SAMPLE DATA

Name: BiPro 3  
 Size: M  
 Max load [kg]: 120  
 Serial number: 1139418  
 Date of reception: 23.12.2016

### ISSUE DATA

Place of inspection: Villeneuve  
 Date of inspection: 23.12.2016  
 Inspector: Alain Zoller

Directive: LTF NFL II-91/09 chapter 5 Paraglider harness protectors

The following limits may not be exceeded during back protector test: Maximum peak 50g, Maximum 38g for a period of 7 milliseconds, Maximum 20g for a period of 25 milliseconds: All three criteria must be fulfilled.

### TEST ATMOSPHERE AGL

[C°] 21.4  
 RH [%] 33  
 [hPa] 1036.1

### TEST RESULTS

Impact in at a height of min 165 [cm] drop:

BP test without rescue system	P1 (first test)	P2 (second test)	Max value
Absolute maximum impact [g]	39.0	40.1	40.13
Impact duration at +38 [g] (if any): [ms]	2.78	4.56	4.56
Impact duration at +20 [g] (if any): [ms]	18.83	19.31	19.31
Uncertainty k=2 [%]	7.00	7.00	
Uncertainty k=2 [g]	2.73	2.81	
Repeat testing / max peak comparison [%]	100	103	
<b>Test Result:</b>	<b>POSITIVE</b>	<b>POSITIVE</b>	
BP with rescue system (if applicable)	PR1 (first test)	PR2 (second test)	Max value
Absolute maximum impact [g]	38.3	37.9	38.28
Impact duration at +38 [g] (if any): [ms]	1.59	0.00	1.59
Impact duration at +20 [g] (if any): [ms]	19.43	19.31	19.43
Uncertainty k=2 [%]	7.00	7.00	
Uncertainty k=2 [g]	2.68	2.65	
Repeat testing / max peak comparison [%]	100	99	
<b>Test Result:</b>	<b>POSITIVE</b>	<b>POSITIVE</b>	

Calculated value include the value minus the uncertainty (on safe side) / The uncertainty stated is the expanded uncertainty obtained by multiplying the standard uncertainty by the coverage factor k = 2. The value of the measurand lies within the assigned range of values with a probability of 95%.

Instruments	Validity	Manufacturer	Type nr.	S/N
Accelerometer sensor 100 G	10.07.2016	Burster / MTS	89010-100	1263567
Geos n° 11 Skywatch	07.04.2017	JDC electronics	Geos n° 11	0022

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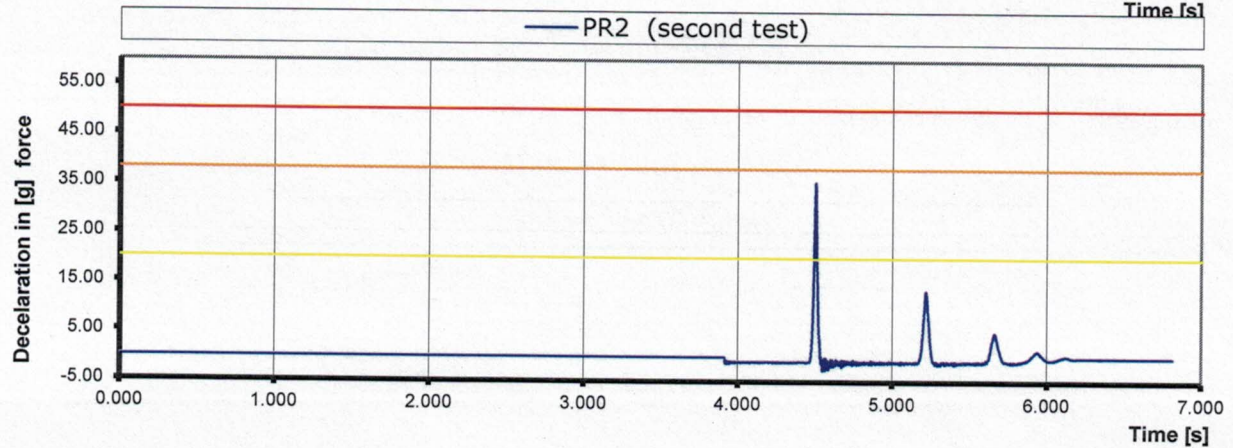
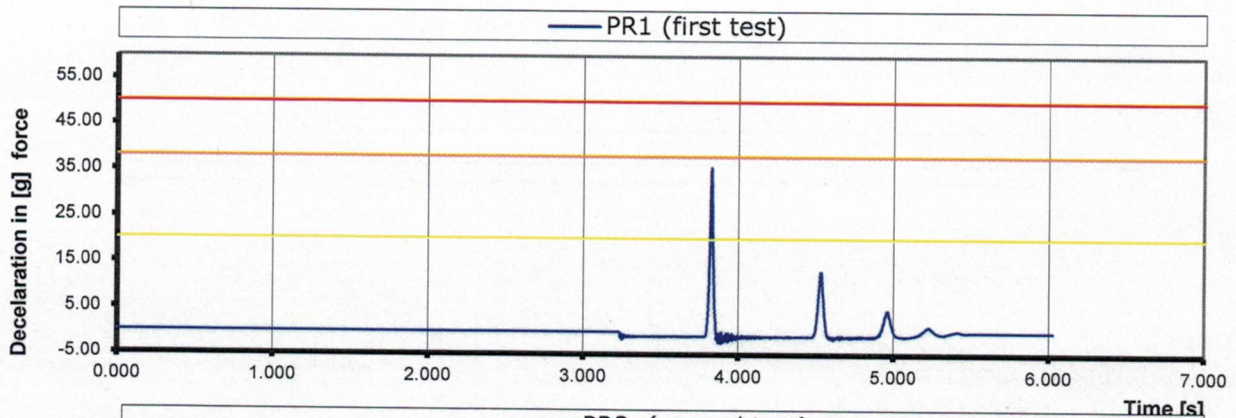
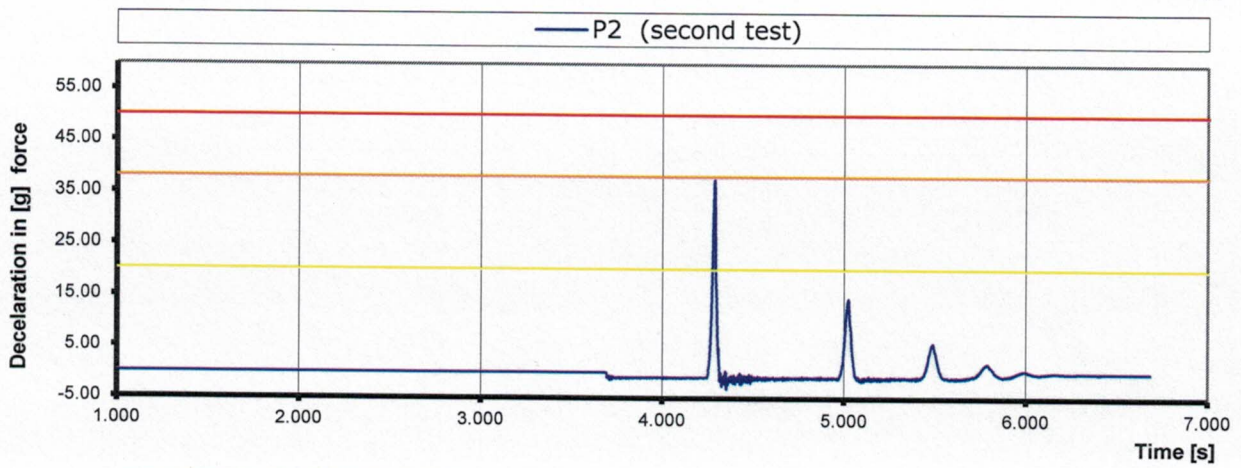
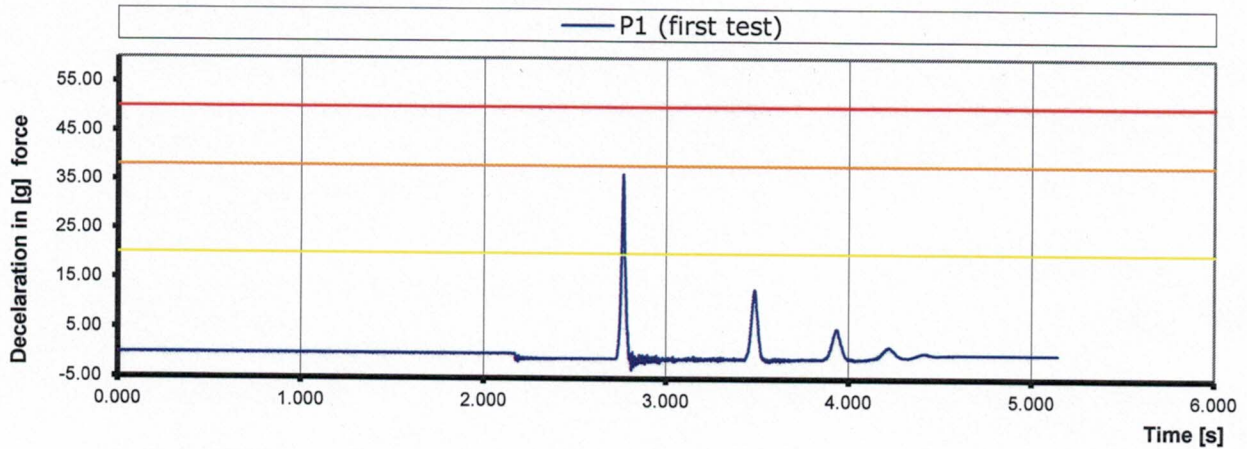


# IMPACT PAD SHOCK TEST

# TEST REPORT PH IP

BP PARAGLIDERS HARNESS BACK PROTECTORS

Inspection report number: PH\_IP\_185.2017



The validation of this test report is given by the signature of the test manager on Inspection Certificate 71.9.2