

Test object: TA IQ FWD
Manufacturer: TA Service TA Service A/S Orupgade 32 B
4640 Faxe . Denmark

Certificate of testing

Crash Test according to ISO 10542-5 & ISO 7176-19 - 2012

**Wheelchair tiedown and occupant-restraint systems.
Systems for specific wheelchairs**

This report serves solely as documentation for the test results. The tested objects have been selected by the client without the assistance of Dahl Engineering.

Assignment: Crash testing of wheel chair and WTORS according to above mentioned standard

Date of testing: 4 April 2013

**Test object/
Wheelchair:** TA Service IQ FWD
Mass of wheelchair: 157 kg

Serial no: Not informed

WTORS: Dahl WTORS that meet requirements set out in ISO 10542
Wheelchair restraint system – Dahl Docking Station
Occupant restraint – Dahl 3p. static shoulder and lap belts

Test dummy/ATD: The test was carried out using a Hybrid II 50% male dummy with a mass of 77 Kg

Measuring: The deceleration was measured by accelerometers mounted on the crash test sled.

Photography: The test was filmed with a high speed camera at 500 fps. Still pictures, pre and post test, was also taken.

Test results: Page 2

Sled deceleration and speed: See page with plotted graph and speed

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Section	Details	X if correct
5.21	During the test	
(a)	Horizontal excursion limits	
	Wheelchair point P \leq 200 mm [Xwc]	47
	ADT knee \leq 375 mm [Xknee]	182
	ADT front of head \leq 650 mm [XheadF]	231
	ADT rear of head \leq 450 [XheadR]	-345
(b)	The knee excursion exceeded the wheelchair P point excursion	X
(c)	(Batteries on powered wheelchairs) did not move completely outside the wheelchair footprint or move into the wheelchair user's space or contact with ADT legs	X
5.2.2	After the test	
(a)	The wheelchair remained in an upright position on the platform	X
	The ADT remained in the wheelchair with its torso at an angle of not more than 45° to the vertical, when viewed from any direction	X
(b)	There were no visible signs of material failure on the wheelchair securing points	X
(c)	There were no components, fragments or accessories of the wheelchair with a mass of more than 100g that completely separated from the wheelchair	X
(d)	There were no fragmented or separated component, that may contact the occupant, produced with sharp edges less than radius 2 mm	X
(e)	There were no visible signs of failure on the wheelchairs primary load carrying components	X
(f)	There were no visible signs of failure on the wheelchairs seat adjusters	X
(g)	The ADT was removed from the wheelchair without the use of tools	X
(h)	The wheelchair was released from the tie-down system without the use of tools	X
(i)	The post test decrease of the mean H-point height is not more than 20%	X

During the very final stage of the rebound phase, the side of the test dummy's head contacted slightly with the test rig's plate for the upper shoulder belt anchorage and thereby limiting the rear of head excursion slightly. However - comparing the test dummy's horizontal rear of head excursion with a test carried out on a rear wheel drive version of the same chassis and seat package (2013-040), where the head did not contact, it is assessed that the horizontal excursion limits of rear head is complied with.

The presented samples meet the requirements set out in the above mentioned standard.

Test Laboratory: Dahl Engineering - Research and Testing Laboratory
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Thisted 11 April 2013

Claus Dahl Pedersen
 Head of test laboratory



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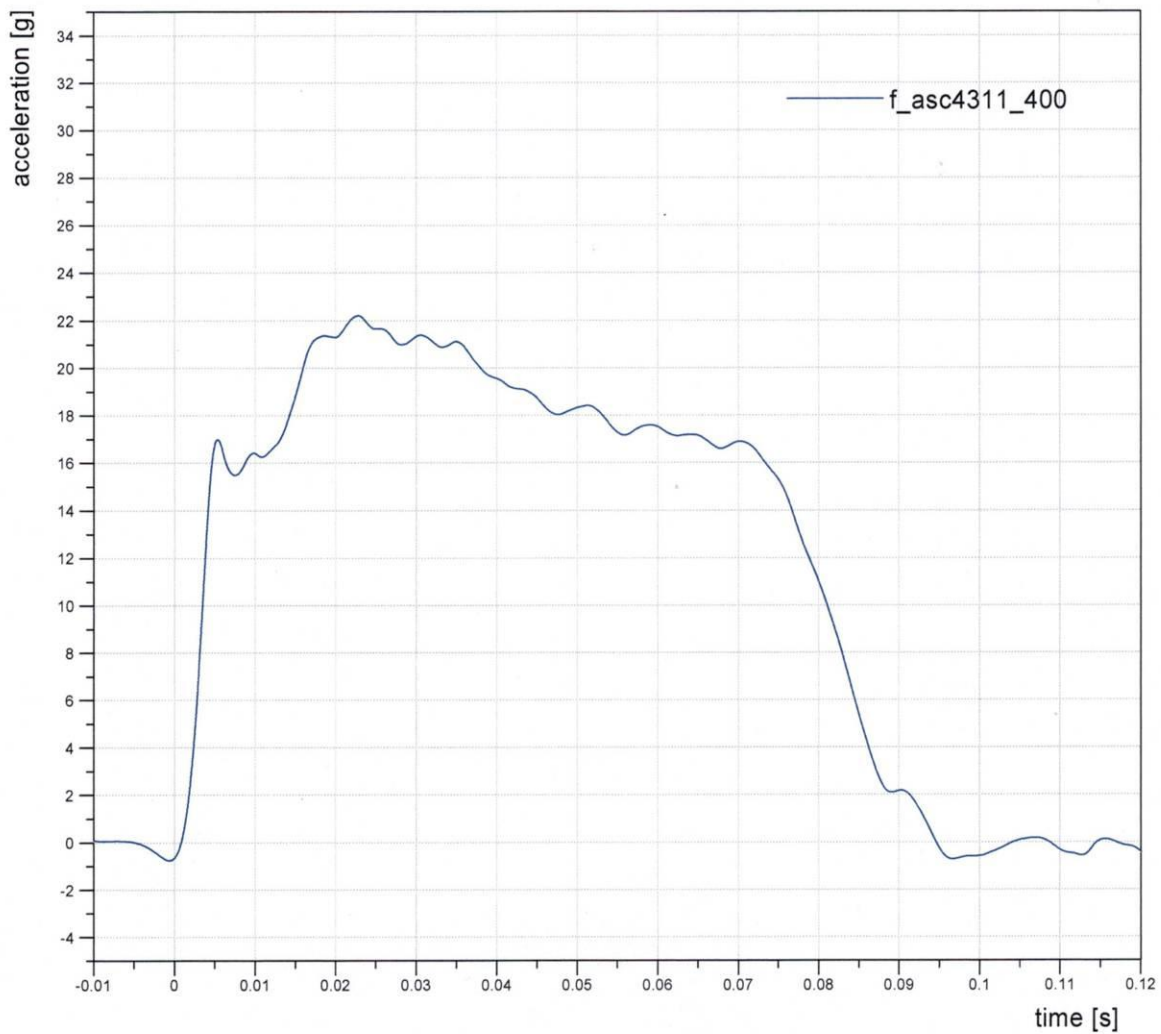
Plotted graph and speed



SLED - TEST
Project: TA Service

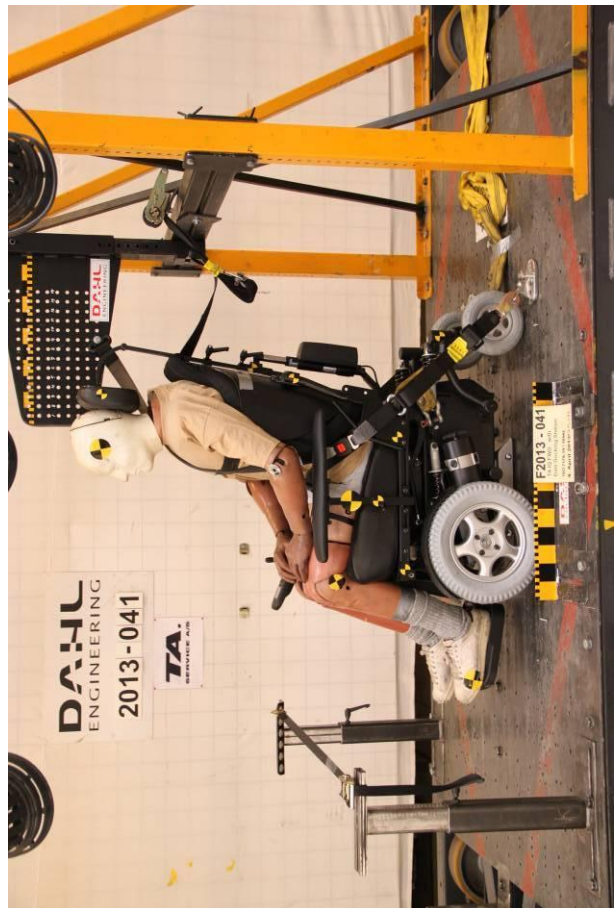
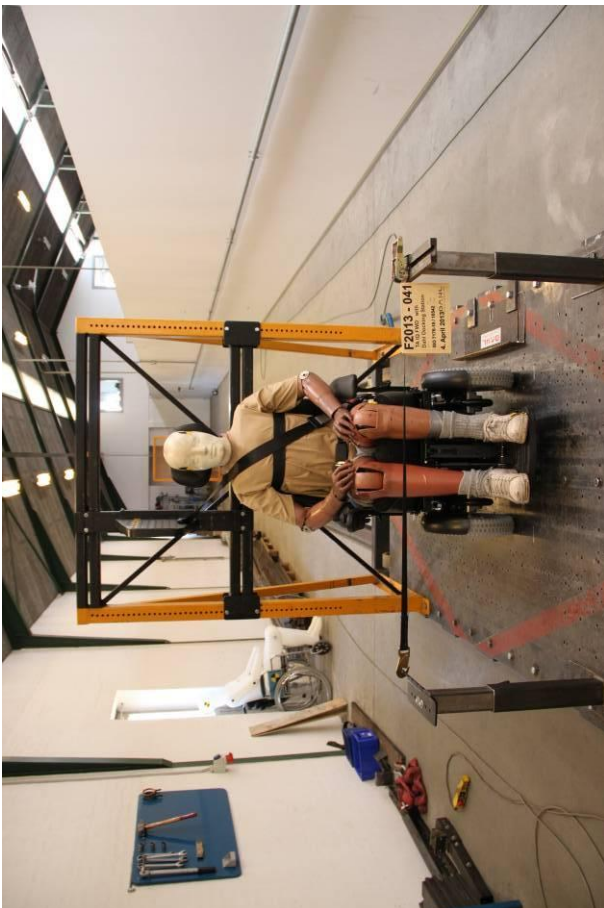
Editor: NG	Specification: ISO10542-5 / ISO7176-19
Date: 04/04/2013	Test type: Homologation Test
File: Ta Service2013-041	Test structure: Sled
Sensors: ASC 4311 400 g, S/N-Nr.:G 81289	Test sample: TA IQ FWD on Dahl Docking Station
Measurement: A/D Karte, DT 321	Comment to sample:
Analysis Sequence: Standard	Occupant: HybridII 50% Male
Sled velocity: 48.6 km/h	General comment:

SLED ACCELERATION

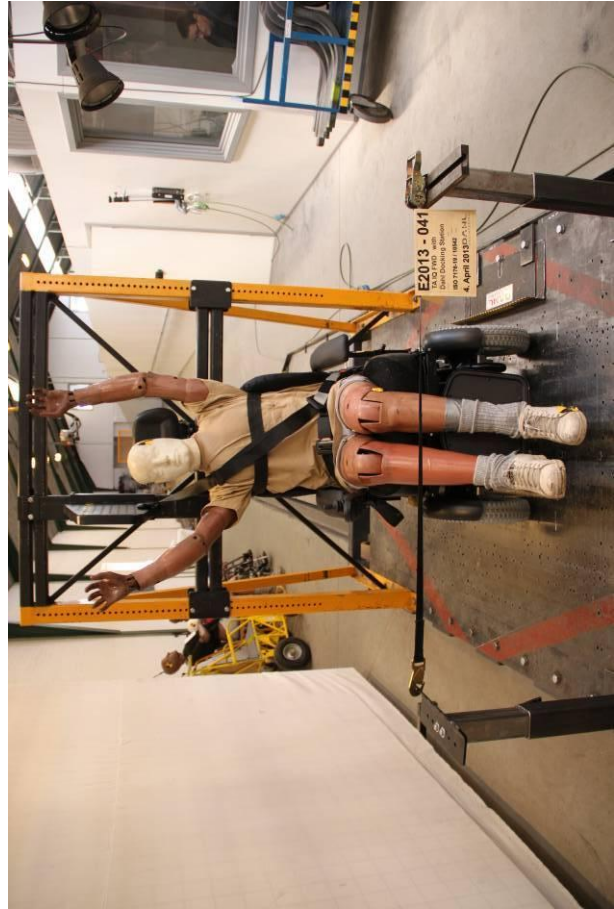


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Pre- test photos



Post- test photos



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Post test photos

