

## **Crash Test according to ISO 10542-3 & 7176-19**

### **Wheeled mobility devices for use in motor vehicles**

This report serves solely as documentation for the test results. The tested objects have been selected by the client with out the assistance of Dahl Engineering.

<b>Assignment:</b>	Crash testing of wheel chair and WTORS according to ISO 10542-3 for Docking-type tiedown systems
<b>Date of testing:</b>	27 th September 2007
<b>Test objects:</b>	Wheel chair - Minicrosser 1103 Ultra - Docking station - Dahl Docking Station
<b>Serial no:</b>	not informed – (proto type)
<b>WTORS:</b>	Dahl Docking station Occupant restraint – Dahl 3p. static shoulder and lap belts that had been made to measure for the 1103 Ultra.
<b>Test dummy:</b>	The test was carried out using a Hybrid II 50% dummy with mass of 76 Kg.
<b>Measuring:</b>	The deceleration was measured by accelerometers mounted on the crash test sled.
<b>Photografi:</b>	The test was filmed with a high speed camera at 500 fps. Still pictures, pre and post test, was also taken.

### **Test results**

**Sled deceleration  
and speed**

See annex page with plotted graph and speed

Test object: Minicrosser 1103 Ultra with Dahl Docking Station  
 Manufacturer: Minicrosser A/S, Enggårdsvej 7, Snejbjerg, 7400 Herning

Section	Details	X if correct
<b>5.21</b>	<b>During the test</b>	
(a)	Horizontal excursion limits	
	Wheelchair point P $\leq$ 200 mm [Xwc]	76
	ADT knee $\leq$ 375 mm [Xknee]	183
	ADT front of head $\leq$ 650 mm [XheadF]	357
	ADT rear of head $\leq$ 400 [XheadR]	338
(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
<b>5.2.2</b>	<b>After the test</b>	
(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

The presented samples meet the requirements set out in the ISO standard 7176-19 and ISO 10542-3.

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Thisted September 28th 2007

Claus Dahl Pedersen  
 Head of test laboratory



Test Report no: 28-09-2007

Test object: Minicrosser 1103 Ultra with Dahl Docking Station  
Manufacturer: Minicrosser A/S, Enggårdsvej 7, Snejbjerg, 7400 Herning

Pre- test photo's



Post test photo's



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**DAHL**

**SLED - TEST**

Project: Minicrosser 1103 Ultra

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Specification: Look at the comment  
Test type: Development Test  
Test structure: Minicrosser 1103 Ultra

Sensors: MWS 4301, S/N-Nr.:SA-0263  
Measurement: A/D Karte, DT 321  
Analysis Sequence: Standard

Test sample: Dahl Docking Station  
Comment to sample: with tailor made 3 point belt  
Occupant: Ballast Dummy

Sled velocity: 49.2 km/h

General comment: Test Norm- ISO 7176-19 & 10542-3

**SLED ACCELERATION**

