

Certificate of testing

Crash Test according to ISO 7176-19 - 2008

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.

Assignment:	Crash testing of wheel chair and WTORS according to ISO 7176-19 annex A and B
Date of testing:	24 May 2018
Test object:	NHD LS 300 with 4 point WTORS
Mass of wheelchair:	168 kg
Serial no:	not informed – (proto type)
WTORS:	Dahl WTORS, meeting the requirements set out in clause 4.1 Wheelchair restraint – 4 point heavy duty WTORS Occupant restraint – Dahl 3p. occupant restraint #500984
Test dummy:	Hybrid II 50% dummy with mass of 77 Kg.
Measuring:	Accelerometers mounted on the crash test sled measured the deceleration.
Photografi:	The test was filmed with a high speed camera at 500 fps. Still pictures, pre and post-test.

Test results

Sled deceleration and speed:	See page with plotted graph and speed
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Test object: NHD LS 300 with 4 Point WTORS

Manufacturer: Norsk Helse Design AS, Gigstads vei 22, 3511 Hønefoss, Norway

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Test Results

Section	Details	X if correct
5.21	During the test	
(a)	Horisontal excursion limits	
	Wheelchair point P \leq 200 mm [Xwc]	134
	ATD knee \leq 375 mm[Xknee]	147
	ATD front of head \leq 650 mm [XheadF]	410
	ATD rear of head \leq - 450 [XheadR]	-203
(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
(j)	Wheelchair and components did not cause partial or complete failure of the webbing of any of the WTORS assemblies during the test	X

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

Test Laboratory:

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