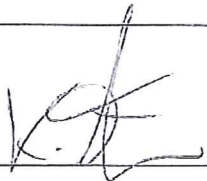



CLIENT CONFIDENTIAL

Client: **Levo**
Test: **ISO 7176/19 Wheelchair test**
Test Item: **Levo LCEV**
Occupant: **HII 50%ile**
Restraints: **(Wch) : Q'Straint 5001 -T2**
(Occ) : Q'Straint Vehicle Anch 3-Pt

Millbrook Report No.:	MBK 07/0231
Millbrook Project No.:	Project 9984- Job 48547
Millbrook Test No.:	S9804

Author :	 _____	K. Forinton Principal Engineer
Approved :	 _____	S. Robertson Engineer
Date :	20 March 2007	

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Distribution

Organisation	Recipient	Format	Qty
Levo AG Wohlen CH-5610 Schweiz	T. Raber	PDF	1
Millbrook Proving Ground Ltd	Contract file Author	PDF Paper	1 1

Report Revision History

Table 0-1

Rev.	Revision Description	Date	Author	Approver	Pages
1	Initial release	20 March 07	K. Forinton	S. Robertson	All

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Appendices

Graphical results	See Appendix A
Pre and post test photographs	See Appendix B
Film Analysis	See Appendix C
Test Results	See Appendix D

Test Facility and Date

The test, number S9804, was performed on 2 March 2007 at the HyGE Sled Test Facility at Millbrook Proving Ground Ltd.

Address: Millbrook Proving Ground Ltd
 Millbrook
 Bedford
 MK45 2JQ
 England

Contact: Mr. K.Forinton - Principal Engineer.
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Test Results
ISO/NP 7176/19
30th August 2001

Section 5.2 - Dynamic Performance Requirements

Wheelchair: Levo LCEV	Occupant: HII 50 %ile (75 kg)	RESULTS
5.2.1 During the Test		
a). Horizontal ATD and wheelchair excursion limits as per limits shown in Table 3:-		
Was the horizontal movement of the test wheelchair P- Point (X_{wc}) less than 200 mm (± 5 mm)		PASS 64 mm
Was the horizontal movement of the dummy knee (X_{knee}) less than 375 mm (± 5 mm)		PASS 222 mm
Was the horizontal movement of the dummy head (X_{head}) less than 650 mm (± 5 mm)		PASS 464 mm
b). Was the ratio $X_{knee}/X_{wc} > 1.1:1$		PASS 3.5:1
c). Not Measured		
Did the batteries of powered wheelchairs, or their surrogate parts:-		
i). move outside of the wheelchair footprint		N/A
ii). move into the wheelchair user's space		N/A
5.2.2 Post Test		
a). Did the wheelchair remain upright on the test platform Did the ATD remain in a seated posture in the test wheelchair with a torso angle less than 45°		PASS
b). Did the wheelchair securement points show visible signs of material failure		PASS
c). Did any components of a mass greater than 100g become detached from the wheelchair		PASS
d). Did any occupant contactable components fragment or separate with an edge of less than 2mm		PASS
e). Did any primary load carrying components of the wheelchair show any visible signs of failure		PASS
f). Did any 'tilt in space' locking mechanisms show signs of failure		PASS
g). Was the ATD released from the wheelchair without the use of tools		PASS
h). Was the wheelchair released from the restraint system without the use of tools		PASS
i). Was the average decrease of H-Point height relative to the wheelchair platform less than 20% of the pre-test height.		PASS 4%
Has the wheelchair satisfied the Dynamic Test requirements of ISO/FDIS 7176/19 of 30 August 2001		PASS

Test Results

**ANSI / RESNA WC/Vol.1 – Section 19
6/22/99 Draft**

Section 5.3- Frontal Impact Performance Requirements

Wheelchair: Occupant:	Levo LCEV HII 50 %ile (75 kg)	RESULTS
a)	Did the wheelchair securement points show any signs of material failure other than deformation or yielding	PASS
b)	Did any securement point deformation or distortion prevent manual removal of the wheelchair tie-down system	PASS
c)	Was the wheelchair in an upright position on the test platform	PASS
d)	Did the ATD remain in a seated posture ant the end of the test with a torso angle less than 45° to the vertical when viewed from any direction.	PASS
e)	Did any of the rigid components, parts, equipment or accessories in excess of 100g detach during the test.	PASS
f)	Did any occupant contactable componenets fragment or separate with an edge of less than 2 mm.	PASS
g)	Did any of the primary load carrying parts and components show visible signs of structural failure other than deformation or loading.	PASS
h)	Horizontal ATD wheelchair excursion limits as per limits shown in table 3 :-	
	Was the horizontal movement of the test wheelchair P- Point (X _{wc}) less than 200 mm (±5mm)	PASS 64 mm
	Was the horizontal movement of the dummy knee (X _{knee}) less than 375 mm (±5mm)	PASS 222 mm
	Was the horizontal movement of the dummy head (X _{head}) less than 650 mm (±5mm)	PASS 464 mm
i)	Was the ratio X _{knee} /X _{wc} > 1.1:1	PASS 3.5:1
j)	Was the average decrease of H-Point height relative to the wheelchair platform less than 20% of the pre-test height	PASS 3%
k)	Did the seating insert detach from the wheelchair during the test.	PASS
l)	Did the batteries of powered wheelchairs, or their surrogate parts:-	
	i). move outside of the wheelchair footprint.	N/A
	i). Remain attached or tethered to the battery compartment.	N/A
	iii). move into the wheelchair user's space.	N/A
Has the wheelchair satisfied the Dynamic Test requirements of ANSI/RESNA WC/Vol. 1-Section 19		PASS