

TEST REPORT FOR
HOISTS FOR THE TRANSFER OF DISABLED PERSONS
Allegro Alto Lift 200

TEST DOCUMENTS
AS ISO 10535-2002

LABORATORY REFERENCE
491157

20 February 2008

TEST REPORT

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JOB NO: 491157

PRODUCT

Name and Model No
Allegro Alto Lift 200

Serial no(s) of test sample
002

Maximum user mass
200kg

Documents used in testing
AS ISO 10535-2002

SUPPLIER

Name
Active Mobility
(Allegro Hoists)

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Order No.: 1404

Order Date: 2/1/08

TESTING AUTHORITY

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Checked: George Butler

Dates of testing period: November 2007 – February 2008
Date of issue of this report: 20 February 2008



4 GENERAL REQUIREMENTS & TEST METHODS

4.1 GENERAL REQUIREMENTS

Test	Result	Specification according to AS ISO10535-2002	Reference in clause of AS ISO10535-2002
Risk Analysis	Not assessed	EN 1441	4.1.1
Ergonomics Factors			
Ergonomics Factors		EN 614-1	4.1.2
Grips operating clearance	PASS	4.1.2	
Pedals operating clearance	PASS	>75mm	4.1.2
Operation handle diameters	PASS	>19mm, <43mm	4.1.2
Pedal height above floor	PASS	<300mm	4.1.2
Hand operated control height	PASS	>800mm, <1200mm	4.1.2
Pushing/pulling handles height	PASS	>900mm	4.1.2
Sound level			
Sound level	Not tested	<65Db (ISO 3744:1998)	4.1.3

4.3 GENERAL SAFETY REQUIREMENTS

Test	Result	Specification according to AS ISO10535-2002	Reference in clause of AS ISO10535-2002
Safe working load (SWL)	PASS	>120kg	4.3.1
Electrical safety	Not assessed	EN 60601-1	4.3.2
Load bearing fasteners	PASS	Shall be self-locking	4.3.3
Load bearing fasteners	PASS	Shall not be single use	4.3.4
Handgrip security	NA	Fixed to prevent inadvertent detachment	4.3.5
Smooth edges	PASS	No burrs, sharp edges	4.3.6
Hoist assembly	PASS	Not possible to assemble incorrectly	4.3.7
Trapping, shearing & pinch points	PASS	EN 292	4.3.8
Downward loading of patient	PASS	If the body support comes in contact with the patient the total downward load is not > than mass of contact part	4.3.9
Safety of mechanism used for 4.3.9	PASS	Hoist shall not become unsafe when the safety mechanism of 4.3.9 is activated	4.3.10
Accessibility of controls	PASS	Shall be easily accessible & operable	4.3.11
Emergency isolation device	PASS	Readily accessible & prevent electrically produced mechanical movement	4.3.12
Lifting cycle warning device	PASS	Shall be activated if there is not enough power to complete a full lifting cycle	4.3.13
Low battery warning device	PASS	Able to complete full lift cycle after device is activated	4.3.14
“Hold to run” controls	PASS	All controls shall be ‘hold to run’	4.3.15
Powered hoists overload	PASS	Not lift > 1.5 x max load	4.3.16
Free fall prevention	PASS	Single fault shall not allow person to fall	4.3.17
Function after static test	PASS	No sign of damage	4.3.18
Body support	PASS	Shall not become inadvertently detached	4.3.19
Protection of lifted person	PASS	Precautions to protect falling off/from body support unit	4.3.20
Electric operated hoists	Not assessed	EN 60601-1-2	4.3.21
Sling connection points	PASS	Smooth to prevent wear	4.3.22

4.5 REQUIREMENTS FOR PERFORMANCE

Test	Result	Specification according to AS ISO10535-2002	Reference in clause of AS ISO10535-2002
Operated by one person	PASS	Unless otherwise stated in instructions	4.5.1
Cavities in which liquid could accumulate	PASS	Must be self draining	4.5.2
Central suspension point	PASS	Stopping distance <50mm at maximum load	4.5.3

4.7 REQUIREMENTS FOR RATE (VELOCITY) OF LIFTING & LOWERING

Test	Result	Specification according to AS ISO10535-2002	Reference in clause of AS ISO10535-2002
Rate of raising or lowering	PASS	<0.15m/s (max load)	4.7.1
Rate of raising or lowering	PASS	<0.25m/s (unloaded)	4.7.2

4.9 REQUIREMENTS FOR OPERATING FORCE

Test	Result	Actual Force	Specification according to AS ISO10535-2002	Reference in clause of AS ISO10535-2002
Finger operation	PASS	3N	<5N	4.9 (a)
Hand operation	PASS	50N	<105N	4.9 (b)
Foot operation	PASS	150N	<300N	4.9 (c)
Operation by turning	PASS	0.05N/m	<1.9Nm	4.9 (d)

4.11 INFORMATION TO BE SUPPLIED BY THE MANUFACTURER

Test	Result	Specification according to AS ISO10535-2002	Reference in clause of AS ISO10535-2002
General	Not assessed	EN 980 & EN 1041	4.11.1
Marking	PASS	All operating controls marked for their intended function	4.11.2
Name, address of manufacturer/supplier/agent	PASS		4.11.2(a)
Model definition	PASS		4.11.2(b)
Lot or batch and/or serial number	PASS		4.11.2(c)
Year & month of manufacture	PASS		4.11.2(d)
Electrical details	Not assessed	EN 60601-1	4.11.2(e)
Details of any other energy source	NA	Eg water/ air pressure	4.11.2(f)
Maximum load	PASS		4.11.2(g)
Instructions for use	YES	Instruction leaflet provided	4.11.3
<i>Shall contain the following information:</i>			
Name, address & telephone number of manufacturer, supplier	YES		4.11.3
Full operating, installation and assembly instructions	YES		4.11.3
Intended use of the hoist	YES		4.11.3
Periodic inspection & servicing requirements	YES		4.11.3
Name, address & telephone number to contact for service	YES		4.11.3
Cleaning & maintenance information	YES		4.11.3
Details for troubleshooting/assistance	YES		4.11.3
<i>Technical specifications</i>			
Dimensions (overall, lift range & reach, clearance)	YES		4.11.3
Safe working load	YES		4.11.3
Safety precautions	YES		4.11.3
Total weight of unladen hoist	YES		4.11.3
Electrical approval details	YES		4.11.3

4.12 REQUIREMENTS FOR DURABILITY

Test	Result	Specification according to AS ISO10535-2002	Reference in clause of AS ISO10535-2002
Correct functioning after testing to 4.13	PASS	No permanent deformation or wear that affects function	4.12.1

4.13 TEST METHODS FOR DURABILITY

Test	Actual cycles	Specification according to AS ISO10535-2002	Reference in clause of AS ISO10535-2002
Lower 250mm or 25% (whichever is greater) of range	1000	1000 cycles, 100% SWL, bottom limit switch must be activated	4.13.8(a)
Upper 250mm or 25% (whichever is greater) of range	1000	1000 cycles, 80% SWL, top limit switch must be activated	4.13.8(b)
Middle 250mm or 25% (whichever is greater) of range	3000	3000 cycles, 80% SWL	4.13.8(c)
Middle 250mm or 25% (whichever is greater) of range	5000	5000 cycles, 60% SWL (but not < 90kg)	4.13.8(d)

5 MOBILE HOISTS – SPECIFIC REQUIREMENTS & TEST METHODS

5.1 REQUIREMENTS FOR STATIC STRENGTH

Test	Result	Specification according to AS ISO10535-2002	Reference in clause of AS ISO10535-2002
Correct functioning after testing to 5.2	PASS	No permanent deformation or wear that affects function	5.1

5.2 TEST METHODS FOR STATIC STRENGTH

Test	Result	Specification according to AS ISO10535-2002	Reference in clause of AS ISO10535-2002
Static loading		Lifting boom/actuator in most adverse position	5.2
Forwards	PASS	10°, 1.25 times max load, 5mins	5.2(a)
Backwards	PASS	10°, 1.25 times max load, 5mins	5.2(b)
Sideways	PASS	5°, 1.25 times max load, 5mins	5.2(c)
Horizontal	PASS	Horizontal, 1.5 times max load, 20mins	

5.3 REQUIREMENTS FOR STATIC STABILITY

Test	Result	Max angle(°)	Specification according to AS ISO10535-2002	Reference in clause of AS ISO10535-2002
Unloaded				
Forwards - intended travelling position	PASS	10°	10°, unloaded	5.3(a)
Backwards - intended travelling position	PASS	10°	10°, unloaded	5.3(a)
Forwards - most adverse condition	PASS	7°	7°, unloaded	5.3(b)
Backwards - most adverse condition	PASS	7°	7°, unloaded	5.3(b)
Any other direction	PASS	5°	5°, unloaded	5.3(c)
Maximum load				
Forwards - intended travelling position	PASS	10°	10°, maximum load	5.3(a)
Backwards - intended travelling position	PASS	10°	10°, maximum load	5.3(a)
Forwards - most adverse condition	PASS	7°	7°, maximum load	5.3(b)
Backwards - most adverse condition	PASS	7°	7°, maximum load	5.3(b)
Any other direction	PASS	5°Sideways	5°, maximum load	5.3(c)

5.5 REQUIREMENTS FOR IMMOBILISING DEVICE

Test	Result	Specification according to AS ISO10535-2002	Reference in clause of AS ISO10535-2002
An immobilising device shall be provided for mobile hoists	PASS	1° slope, max load, most adverse position, <10mm movement	5.5 & 5.6

5.7 REQUIREMENTS FOR OPERATING FORCES

Test	Result	Specification according to AS ISO10535-2002	Reference in clause of AS ISO10535-2002
Moving/turning	PASS	<160N, max load, 5 times	5.7(a)
Driving (pushing/pulling)	PASS	<85N, max load, 5 times	5.7(b)

5.9 INSTRUCTIONS FOR USE FOR MOBILE HOISTS

Test	Result	Specification according to AS ISO10535-2002	Reference in clause of AS ISO10535-2002
Daily check list	YES		5.9
<i>Functional dimensions</i>			
Height of base	YES	Figure 4	5.9(a)
Maximum/minimum external/internal width	YES	Figure 5 & 6	5.9(b)
Under base clearance	YES	Figure 4	5.9(c)
Max & min hoisting reach	YES	Figure 7	5.9(d)
Hoisting range relative to hoisting reach	YES	Figure 7	5.9(e)
Turning radius	YES		5.9(f)
Total mass minus body support unit	YES		5.9(g)
Number and identification of parts	YES		5.9(h)
Mass of heaviest part	YES		5.9(i)

6 STATIONARY HOISTS – SPECIFIC REQUIREMENTS & TEST METHODS

Not applicable.

7 NON-RIGID BODY SUPPORT UNITS (BSUs) – SPECIFIC REQUIREMENTS & TEST METHODS

Test	Result	Specification according to AS ISO10535-2002	Reference in clause of AS ISO10535-2002
7.1 General			
Compatibility of units and spreader bars	Not tested.	Manufacturer shall indicate	7.1
General	Not tested.	Adjustment or removal method shall be indicated	7.1
7.2 Requirements for the central suspension point			
Central suspension point (CSP) construction	PASS	No inadvertent detachment of spreader bar possible	7.3
7.4 Requirements for the spreader bar			
Safety lock on adjustable width spreader bars	NA	No inadvertent detachment of spreader bar or body support possible	7.4.1
Spreader bar strength	PASS	Able to support 1.5 times maximum load	7.4.2 & 7.5.2
Label showing type of sling that can be used.	PASS	May be given in instructions for use	7.4.3
Marking on detachable spreader bars	NA	Give maximum load of hoist	7.4.4
7.6 Requirements for the non-rigid body support unit			
Damage or loss of function after laundering	Not tested.	Cleaned & dried 10 times, then tested with 1.5 times max load for 20mins	7.6 & 7.8
7.7 Material & Seams of the non-rigid body support unit			
Ignition test	Not tested.	EN 1021-1:1993	7.7.1
Shrinkage	Not tested.	<5% when cleaned or disinfected	7.7.2
7.9 Marking			
<i>The following shall be on a label permanently fixed to the BSU</i>			
Size of the sling	Not tested.		7.9
Warning/attention mark	Not tested.	Refers to operating instructions of hoist	7.9
BSU designed for one dedicated spreader bar	Not tested.	Marking shall indicate this	7.9
Cleaning methods for BSU	Not tested.	Symbols shall comply with ISO 3758	7.9

<i>The following information may be given in the operating instructions</i>			
Field of application	Not tested.		7.9
Method of lifting	Not tested.	Particularly the attitude/position	7.9
Warning if BSU is unsuitable for a particular handicap	Not tested.		7.9
Warning on using damaged or worn BSU	Not tested.		7.9
7.10 Instructions for use			
Method of adjustment/removal of BSU	Not tested.	Included in instructions	7.10

8 RIGID BODY SUPPORT UNITS – SPECIFIC REQUIREMENTS & TEST METHODS

Not tested.

The sample submitted for this test satisfies the relevant requirements of AS ISO 10535-2002, Hoists for the Transfer of Disabled Persons (except the methods indicated in this report as “not tested” and/or tested with deviations).

Yes

NOTES

1U₉₅ Uncertainty of measurements where not specified: linear ±1mm, angular + - 30', force, mass ±1%, temperature ±1°C, cycles ±1 count. This means the true measurement is within the stated tolerances at least ninety five times in one hundred

2 All testing was carried out in a controlled environment laboratory using methods set out in the Standards documents, all deviations and additions to the Standards' methods are noted in remarks.

3 All instruments either carried valid calibration certificates throughout the test period or were checked against traceable Standards before and after use.

4 NOVITA TECH ENGINEERING HAS NO CONTROL OVER THE SELECTION OF TEST SAMPLES. ANY EXTENSION OF THE FINDINGS OF THIS REPORT TO COVER PRODUCTION ITEMS MUST BE BASED ON PRODUCTION BEING TRULY REPRESENTED BY THE SAMPLE(S).

5 Any non-conformances are indicated in red.

 END OF REPORT
