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Australian/New Zealand Standard™

Wheelchairs

Part 28: Requirements and test methods for stair-climbing devices

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee ME-067, Assistive Technology Products for Persons with Disability. It was approved on behalf of the Council of Standards Australia on 23 July 2013 and on behalf of the Council of Standards New Zealand on 5 August 2013.
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The following are represented on Committee ME-067:

Assistive Technology Suppliers Australia
Association of Consultants in Access Australia
Australian Rehabilitation on Assistive Technology
Bus and Coach Association of New Zealand
Consumer Federation Australia
Department of Family and Communities (SA)
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Australian/New Zealand Standard™

Wheelchairs

Part 28: Requirements and test methods for stair-climbing devices

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PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee ME-067, Assistive Technology Products for Persons with Disability.

The objective of this Standard is to specify requirements and test methods for electrically powered stair-climbing devices. It is applicable to stair-climbing chairs and stair-climbing wheelchair carriers where the stair-climbing device climbs backwards up the stairs, with the occupant facing downstairs, and climbs forwards down the stairs with the occupant also facing downstairs. It is also applicable to stair-climbing devices which are intended for the transport of adults and those intended for the transport of children. It is not applicable to stair-climbing devices that are intended to be operated by children as operating occupants or assistants, or to manually powered stair-climbing devices.

This Standard is identical with, and has been reproduced from ISO 7176-28:2012, *Wheelchairs*, Part 28: *Requirements and test methods for stair-climbing devices*.

As this Standard is reproduced from an International Standard, the following applies:

(a) In the source text 'this part of ISO 7176' should read 'this Australian/New Zealand Standard'.

(b) A full point substitutes for a comma when referring to a decimal marker.

References to International Standards should be replaced by references to Australian or Australian/New Zealand Standards, as follows:

Reference to International Standard		*Australian/New Zealand Standard*	
ISO		AS/NZS	
7176	Wheelchairs	3696	Wheelchairs
7176-1	Part 1: Determination of static stability	3696.1	Part 1: Determination of static stability
7176-2	Part 2: Determination of dynamic stability of electric wheelchairs	3696.2	Part 2: Determination of dynamic stability of electric wheelchairs
7176-3	Part 3: Determination of effectiveness of brakes	3696.3	Part 3: Determination of effectiveness of brakes
7176-8	Part 8: Requirements and test methods for static, impact and fatigue strengths	3696.8	Part 8: Requirements and test methods for static, impact and fatigue strengths
		AS	
7176-13	Part 13: Determination of coefficient of friction of test surfaces	3696.13	Part 13: Determination of coefficient of friction of test surfaces
ISO		AS/NZS ISO	
7176-9	Part 9: Climatic tests for electric wheelchairs	7176.9	Part 9: Climatic tests for electric wheelchairs
7176-11	Part 11: Test dummies	7176.11	Part 11: Test dummies
7176-14	Part 14: Power and control systems for electrically powered wheelchairs and scooters—Requirements and test methods	7176.14	Part 14: Power and control systems for electric wheelchairs and scooters—Requirements and test methods
7176-26	Part 26: Vocabulary	7176.26	Part 26: Vocabulary
		AS/NZS	
7176-19	Part 19: Wheeled mobility devices for use as seats in motor vehicles	3696.19	Part 19: Mobility devices for use as seats in motor vehicles (ISO 7176-19:2008, MOD)
7176-22	Part 22: Set-up procedures	3696.22	Part 22: Set-up procedures

Only international references that have been adopted as Australian or Australian/New Zealand Standards have been listed.

The terms ‘normative’ and ‘informative’ have been used in this Standard to define the application of the annex to which they apply. A ‘normative’ annex is an integral part of a Standard, whereas an ‘informative’ annex is only for information and guidance.

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INTRODUCTION

This part of ISO 7176 was written in response to the need for common terminology in the field of stair-climbing devices, to give a means of evaluating important safety features, and to establish a means of qualifying and quantifying the performance of stair-climbing devices under the various conditions and environments encountered in their operation. It allows occupants and manufacturers to compare the pertinent safety and utility issues of all functions and features of a given stair-climbing device.

The tests specified in this part of ISO 7176 are used to gather comparative information about factors relating to the safety and performance of a stair-climbing device while in climbing mode on stairs and in climbing mode or crawling mode on landings, as well as in driving mode. They include identification of suitable operating environments for each stair-climbing device and indications of various performance criteria in climbing mode for operations on stairs and on driving surfaces.

This part of ISO 7176 specifies tests for the “reference configuration” of the stair-climbing device. Since some stair-climbing devices have adjustable components and/or alternative parts, testing in different configurations may be needed to determine whether a given variation conforms to this part of ISO 7176.

Other parts of ISO 7176 might be applicable to stair-climbing devices that can also be used as wheelchairs. All technical aspects which are relevant for wheelchairs and covered in ISO 7176 are adapted, modified and/or extended for the various needs of the different operational modes of a stair-climbing device.

AUSTRALIAN/NEW ZEALAND STANDARD

Wheelchairs

Part 28:
Requirements and test methods for stair-climbing devices

1 Scope

This part of ISO 7176 is applicable to stair-climbing chairs and stair-climbing wheelchair carriers where the stair-climbing device climbs backwards up the stairs, with the occupant facing downstairs, and climbs forwards down the stairs with the occupant also facing downstairs.

This part of ISO 7176 is applicable to stair-climbing devices which are intended for the transport of adults and those intended for the transport of children. It is not applicable to stair-climbing devices which are intended to be operated by children as operating occupants or assistants.

This part of ISO 7176 specifies requirements and test methods for electrically powered stair-climbing devices. It is not applicable to manually powered stair-climbing devices.

NOTE 1 Some clauses in this part of ISO 7176 might be useful for testing manually powered stair-climbing devices.

This part of ISO 7176 specifies tests to demonstrate the stair-climbing device's ability to perform safely on stairs with a pitch of 35°, or higher if declared by the manufacturer. It also includes ergonomic, labelling and disclosure requirements.

NOTE 2 When the stair-climbing device is tested in driving mode as specified this part of ISO 7176, the device need not be tested a second time for the same aspects as a wheelchair.

NOTE 3 Some requirements apply only for a specified range of rated loads.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 3880-1, *Building construction — Stairs — Vocabulary*

ISO 7176-1, *Wheelchairs — Part 1: Determination of static stability*

ISO 7176-2, *Wheelchairs — Part 2: Determination of dynamic stability of electric wheelchairs*

ISO 7176-3, *Wheelchairs — Part 3: Determination of effectiveness of brakes*

ISO 7176-4, *Wheelchairs — Part 4: Energy consumption of electric wheelchairs and scooters for determination of theoretical distance range*

ISO 7176-5, *Wheelchairs — Part 5: Determination of dimensions, mass and manoeuvring space*

ISO 7176-6, *Wheelchairs — Part 6: Determination of maximum speed, acceleration and deceleration of electric wheelchairs*

ISO 7176-7, *Wheelchairs — Part 7: Measurement of seating and wheel dimensions*

ISO 7176-8, *Wheelchairs — Part 8: Requirements and test methods for static, impact and fatigue strengths*

ISO 7176-9, *Wheelchairs — Part 9: Climatic tests for electric wheelchairs*