

Australian/New Zealand Standard™

## Wheelchairs

**Part 23: Requirements and test  
methods for attendant-operated stair-  
climbing devices**

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## **AS/NZS 3696.23:2008**

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee ME-067, Mobility Appliances for People with Disabilities. It was approved on behalf of the Council of Standards Australia on 26 February 2008 and on behalf of the Council of Standards New Zealand on 17 March 2008. This Standard was published on 30 May 2008.

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# Australian/New Zealand Standard<sup>TM</sup>

## Wheelchairs

### Part 23: Requirements and test methods for attendant-operated stair-climbing devices

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## PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee ME-067, Mobility Appliances for People with Disabilities.

This Standard is identical with, and has been reproduced from ISO 7176-23:2002, *Wheelchairs—Part 23: Requirements and test methods for attendant-operated stair-climbing devices*.

The objective of this Standard is to provide a requirement for stair-climbing devices and stair-climbing wheelchair carriers operated by an attendant.

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

- (a) Its number appears on the cover and title page while the international standard number appears only on the cover.
- (b) In the source text ‘this part of ISO 7176’ should read ‘this Australian/New Zealand Standard’.
- (c) A full point substitutes for a comma when referring to a decimal marker.

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

<i>Reference to International Standard</i>		<i>Australian/New Zealand Standard</i>	
ISO		AS/NZS	
3880	Building construction	—	
3880-1	Part 1: Stairs—Vocabulary	—	
6440	Wheelchairs—Nomenclature, terms and definitions	—	
7176	Wheelchairs	3696	Wheelchairs
7176-1	Part 1: Determination of static stability	3696.1	Part 1: Determination of static stability
7176-3	Part 3: Determination of efficiency of brakes	3696.3	Part 3: Determination of efficiency of brakes
7176-4	Part 4: Energy consumption of electric wheelchairs and scooters for determination of theoretical distance range	3696.4	Part 4: Energy consumption of electric wheelchairs and scooters for determination of theoretical distance range
7176-6	Part 6: Determination of maximum speed, acceleration and deceleration of electric wheelchairs	3696.6	Part 6: Determination of maximum speed, acceleration and deceleration of electric wheelchairs
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
7176-9	Part 9: Climatic tests for electric wheelchairs	3696.9	Part 9: Climatic tests for electric wheelchairs
7176-11	Part 11: Test dummies	3696.11	Part 11: Test dummies
7176-13	Part 13: Determination of coefficient of friction of test surfaces	3696.13	Part 13: Determination of coefficient of friction of test surfaces
7176-14	Part 14: Power and control systems for electric wheelchairs—Requirements and test methods	3696.14	Part 14: Power and control systems for electric wheelchairs—Requirements and test methods

ISO		AS/NZS	
7176-15	Part 15: Requirements for information disclosure documentation and labelling	—	
7176-16	Part 16: Resistance to ignition of upholstered parts—Requirements and test methods	—	
7176-19	Part 19: Wheeled mobility appliance for vehicles	—	
7176-21	Part 21: Electromagnetic compatibility of electrically powered wheelchairs and motorized scooters—Requirements and test methods	3696.21	Part 21: Electromagnetic compatibility of electrically powered wheelchairs and motorized scooters—Requirements and test methods
7176-22	Part 22: Set-up procedures	3696.22	Part 22: Set-up procedure.

The term ‘informative’ has been used in this Standard to define the application of the annex to which it applies. An ‘informative’ annex is only for information and guidance.

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## INTRODUCTION

The goal of this part of ISO 7176 is to create a common understanding, and to develop a means of qualifying and quantifying the various conditions and environments encountered in stair-climbing operations, and stair-climbing device performance. If the stair-climbing device can be used as a wheelchair, it shall also meet all ISO requirements for wheelchairs. This will allow the users and manufacturers to evaluate and communicate the pertinent safety and utility issues.

These tests are used to gather comparison information about factors relating to the performance of the stair-climbing device whilst in stair-climbing mode on stairs and on level ground. They include identification of suitable operating environments for each device and indications of various performance criteria in stair-climbing mode on on-stair operations and on level ground.

NOTE 1 When ascending stairs, present known attendant-operated stair-climbing devices are driven backwards, which means that the attendant goes backwards up the stairs with the occupant facing downstairs. Descending stairs is performed forwards with the occupant facing downstairs.

NOTE 2 Elements of this part of ISO 7176 may be used as a basis for developing requirements and test methods for stair-climbing devices not covered by this part of ISO 7176.

This part of ISO 7176 calls for the use of procedures that may be injurious to health if adequate precautions are not taken. It refers only to technical suitability and does not absolve the manufacturer or test house from legal obligations relating to health and safety at any stage.

NOTE 3 The attendant should be familiar with the operation of the stair-climbing device and not apply forces other than those minimally necessary to operate the device.

Some stair-climbing devices may have adjustable components and/or alternative parts. Where there is an obligation to ensure that all variations conform to this part of ISO 7176, it is for those commissioning the tests to decide, which configurations should be tested.

It is anticipated that this part of ISO 7176 will continue to be developed and future revisions may include the results of ongoing work in the following areas:

- fatigue-strength test for joystick;
- determination of static stability on winding stairs;
- development of the fatigue-strength test for stair-climbing devices in informative annex B to a normative test method;
- development of the edge force test in annex C to a normative test method;
- development of the configuration and position of the stair-climbing device for stability tests in annex D to a normative test method.

## AUSTRALIAN/NEW ZEALAND STANDARD

**Wheelchairs**

## Part 23:

## Requirements and test methods for attendant-operated stair-climbing devices

**1 Scope**

This part of ISO 7176 specifies requirements and test methods for electrically propelled stair-climbing devices and stair-climbing wheelchair carriers operated by an attendant. It also includes ergonomic, safety labeling and disclosure requirements.

This part of ISO 7176 is applicable to stair-climbing devices for which the attendant walks directly behind the device and where the device is driven backwards when ascending stairs.

NOTE This means that when ascending stairs the attendant walks backwards up the stairs, with the occupant facing downstairs. Descending stairs is performed forwards with the occupant facing downstairs.

**2 Normative references**

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of ISO 7176. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of ISO 7176 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 3880-1, *Building construction — Stairs — Part 1: Vocabulary.*

ISO 6440, *Wheelchairs — Nomenclature, terms and definitions.*

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

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

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

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

ISO 7176-8:1993, *Wheelchairs — Part 8: Requirements and test methods for static, impact and fatigue strengths.*

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

ISO 7176-11, *Wheelchairs — Part 11: Test dummies.*

ISO 7176-13, *Wheelchairs — Part 13: Determination of coefficient of friction of test surfaces.*