

Australian Standard<sup>®</sup>

**Amusement rides and devices**

**Part 1: Design and construction**



This Australian Standard® was prepared by Committee ME-051, Amusement Rides and Devices. It was approved on behalf of the Council of Standards Australia on 9 July 2009. This Standard was published on 31 July 2009.

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The following are represented on Committee ME-051:

- Australian Amusement Association
  - Australian Amusement Leisure and Recreation Association
  - Australian Chamber of Commerce and Industry
  - Consumers' Federation of Australia
  - Department of Commerce, Worksafe Division, WA
  - Department of Justice and Attorney General, Qld
  - Department of the Premier and Cabinet, SA
  - Engineers Australia
  - Insurance Council of Australia
  - Kidsafe
  - Safety Institute of Australia
  - Showmen's Guild of Australasia
  - Workcover New South Wales
  - Worksafe Victoria
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This Standard was issued in draft form for comment as DR 08135.

Standards Australia wishes to acknowledge the participation of the expert individuals that contributed to the development of this Standard through their representation on the Committee and through the public comment period.

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Australian Standard<sup>®</sup>

## Amusement rides and devices

### Part 1: Design and construction

Originated as part of AS 3533—1988.  
Previous edition in part as AS 3533.1—1997 and AS 3533.1 Supp1—2003.  
Revised, amalgamated and designated as AS 3533.1—2009.  
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## PREFACE

This Standard was prepared by Joint Standards Australia/Standards New Zealand Committee ME-051, Amusement Rides and Devices, to supersede AS 3533.1—1997 and AS 3533.1 Suppl—2003.

*This Standard incorporates Amendment No. 1 (December 2011). The changes required by the Amendment are indicated in the text by a marginal bar and amendment number against the clause, note, table, figure or part thereof affected.*

This Standard was prepared by the Australian members of the Joint Standards Australia/Standards New Zealand Committee, ME-051. After consultation with stakeholders in both countries, Standards Australia and Standards New Zealand decided to develop this Standard as an Australian Standard rather than an Australian/New Zealand Standard.

The objective of this Standard is to provide regulators, designers and manufacturers with requirements for the design and construction of amusement rides and devices to promote uniformity with regards to design principles, manufacture and registration of these devices.

Originally developed from technical literature, existing regulations and guidelines, this Standard has been developed through the combined experience of the Committee and the organizations represented on it, along with contributions from several individuals and organizations having expert knowledge in those areas covered by this Standard.

The Committee acknowledges the contributions made by those individuals and organizations and by the Royal Australian Air Force on the subject of the influence of acceleration on the human body (Appendix D), and wishes to record its appreciation of their permission to include this material.

Major changes to the previous edition are as follows:

- (a) Clarification of requirements for calculating the acceleration factor in Clause 2.1.4.
- (b) Clarification of when to assess a ride for intrinsic safety and inclusion of the text from AS 3533.1 Suppl 1—2003 as Appendix E, providing guidance on determining if a ride's intrinsic safety is secured or not secured.
- (c) Revision of requirements relating to loads and the basis of design to address both permissible stress design and ultimate limit state design methodologies.
- (d) Expansion of requirements for passenger restraints to include a risk assessment process.
- (e) Revision of requirements for land-based toboggans with respect to automatic speed controls and safety zones around the channel.
- (f) Relocation of specific requirements for inflatable structures and roller coasters to separate Standards.
- (g) Removal of passenger ropeways and passenger conveyors from the scope of AS 3533.1.

The Committee also intends to refer to a new Standard for flying foxes that is under preparation by Committee SF-047, Artificial Climbing Structures, to replace the requirements in Clause 5.12. When the new Standard is published, this Standard will be amended accordingly.

Attention is drawn to AS 3533.2, which is written specifically for owners and operators involved in the day-to-day running of amusement rides and devices.

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

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# STANDARDS AUSTRALIA

## Australian Standard Amusement rides and devices

### Part 1: Design and construction

#### SECTION 1 SCOPE AND GENERAL

##### 1.1 SCOPE

This Standard specifies requirements for the design, manufacture and construction of fixed and portable amusement rides and devices, excluding—

- (a) miniature trains and railway systems owned and operated by model railway societies, clubs or associations;
- (b) rides or devices when operated under the control of public transport legislation;
- (c) plant specifically designed and used for sporting, professional stunt, theatrical or acrobatic activities; and
- (d) passenger ropeways and passenger conveyors (see AS 4722).

##### NOTES:

- 1 The exclusion in Item (c) does not prevent such plant being used as an amusement device provided it complies with the relevant requirements in this Standard.
- 2 Specific requirements for particular types of amusement rides and devices are specified in Section 5 of this Standard, other Parts of AS 3533 and other Standards; the specific requirements take precedence over corresponding general requirements in this Standard where any difference exists. Clause 5.1 lists the other Parts of AS 3533 and the other Standards that will need to be consulted for certain types of amusement rides and devices.
- 3 The operation and maintenance of amusement rides and devices are covered by AS 3533.2. AS 3533.3 provides requirements for in-service inspections of amusement rides and devices.
- 4 Compliance with the requirements and conditions set down by associations such as The Australian Association of Live Steamers is generally required for the miniature trains and railway systems mentioned in Item (a) above.

##### 1.2 REFERENCED DOCUMENTS

The following documents are referred to in this Standard:

##### AS

1056	Storage water heaters
1056.1	Part 1: General requirements
1056.2	Part 2: Specific requirements for water heaters with single shells
1056.3	Part 3: Specific requirements for water heaters with composite shells
1170	Structural design actions
1170.4	Part 4: Earthquake actions in Australia
1210	Pressure vessels
1210 Suppl1	Unfired Pressure Vessels—Advanced design and construction (Supplement to AS 1210—1997)
1228	Pressure equipment—Boilers