

Australian/New Zealand Standard™

**Heavy road vehicles—Mechanical  
coupling between articulated vehicle  
combinations**

**Part 1: Design criteria and selection  
requirements for fifth wheel, kingpin and  
associated equipment**

## **AS/NZS 4968.1:2003**

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee ME-053, Heavy Road Vehicles. It was approved on behalf of the Council of Standards Australia on 21 May 2003 and on behalf of the Council of Standards New Zealand on 24 June 2003. It was published on 11 July 2003.

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The following are represented on Committee ME-053:

Australian Automotive Aftermarket Association  
Australian Road Transport Suppliers Association  
Australian Trucking Association  
AUSTROADS  
Commercial Vehicle Industry Association of Australia  
Commonwealth department of Transport and Regional Services (Australia)  
Department of Defence, Australia  
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New Zealand Heavy Transport Wheel Aligners Association  
New Zealand Truck and Trailer Manufacturers Federation  
Road Transport Forum, New Zealand  
Society of Automotive Engineers, Australasia  
Truck Industry Council  
W.A. Department for Planning and Infrastructure

Additional interests participating in the preparation of this Standard:

Fifth wheel manufacturers and suppliers  
Kingpin manufacturers and suppliers  
Vehicle suppliers & trailer manufacturers

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# Australian/New Zealand Standard™

## Heavy road vehicles—Mechanical coupling between articulated vehicle combinations

### Part 1: Design criteria and selection requirements for fifth wheel, kingpin and associated equipment

Originated as part of AS D14—1968, AS D15—1968, AS 1771—1975, AS 1772—1975, AS 1773—1975, and AS 4235—1994.  
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AS 1771—1996, AS 1773—1996, AS 2175—1995, and AS 4235—1994 jointly revised, amalgamated and redesignated in part as AS/NZS 4968.1:2003.

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## PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee ME-053, Heavy Road Vehicles, to supersede (in part) AS 1771—1996, *Installation of fifth wheel assemblies*, AS 1773—1996, *Articulated vehicles—Fifth wheel assemblies*, AS 2175—1995, *Articulated vehicles—Kingpins*, and AS 4235—1994, *Articulated vehicles—Design criteria for fifth wheel skid plates*.

The objective of this Standard is to provide design criteria and dimensions, loads that the installed components would have to withstand, and equations to determine the required D-rating value of components for various combinations.

This Standard is Part 1 of AS/NZS 4968, *Heavy road vehicles—Mechanical coupling between articulated vehicle combinations*, which is published in three parts as follows:

Part 1: Design criteria and selection requirements for fifth wheel, kingpin and associated equipment (this Standard)

Part 2: Testing and installation of fifth wheel and associated equipment

Part 3: Kingpins and associated equipment

This Standard correlates the dimensional requirements in International Standards for 50 mm kingpins (ISO 337:1981, *Road vehicles—50 semi-trailer fifth wheel coupling pin—Basic and mounting/interchangeability dimensions*), 90 mm kingpins (ISO 4086:2001, *Road vehicles—90 semi-trailer fifth wheel kingpin—Interchangeability*), and the rating and selection of kingpins is based on the ‘D-value’ method used in the United Nations ECE Regulation 55.

In the application of the D-value method, which is specified in kilonewtons, to avoid confusion with the towed-load capability of the coupling, a series of equations are used to determine the required rated strength of the fifth wheel assembly. The process of determining the required D-value ratings is provided in this Standard. In this Standard, these equations have been obtained from original experimental research conducted by the ARRB Transport Research Ltd. These equations differ from those used in the ISO and DIN standards in order to reflect Australian conditions. Whereas the equation for semi-trailers, i.e. for articulated vehicles with one trailer, is the same as in ISO and DIN documents, additional equations have been developed for multiple trailer combinations in accordance with Australian practice.

In this Standard, 75 mm kingpins have been included due to widespread use in certain parts of Australia and because of recent developments in standardizing their dimensions. These kingpins are not contained in the ISO or ECE Standard.

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## STANDARDS AUSTRALIA/STANDARDS NEW ZEALAND

**Australian/New Zealand Standard****Heavy road vehicles—Mechanical coupling between articulated vehicle combinations****Part 1: Design criteria and selection requirements for fifth wheel, kingpin and associated equipment****1 SCOPE**

This Standard sets out the attachment design forces for fifth wheel assembly and equations to determine the required D-value of components for various combinations. This Standard applies to fifth wheel assemblies used with 50 mm, 75 mm and 90 mm kingpins, and associated equipment for articulated vehicle combination, used in heavy road vehicles, B-doubles and road trains, in normal use on both sealed and unsealed roads.

**2 REFERENCED DOCUMENTS**

The following documents are referred to in this Standard:

AS

2706 Numerical values—Rounding and interpretation of limiting values

AS/NZS

4968 Heavy road vehicles—Mechanical coupling between articulated vehicle combinations

4968.2 Part 2: Testing and installation of fifth wheel and associated equipment

4968.3 Part 3: Kingpins and associated equipment

**3 DEFINITIONS**

For the purpose of this Standard, the definitions below apply.

**3.1 Axle**

One or more shafts, positioned in a line across a vehicle, on which one or more wheels are intended to support the vehicle to move.

**3.2 Axle group**

A single, tandem, twinsteer, tri, or quad axle group.

**3.3 B-double**

A combination consisting of a prime mover towing two semi-trailers.

**3.4 Combination**

A group of vehicles consisting of a motor vehicle connected to one or more vehicles.

**3.5 Converter dolly**

A trailer with one axle group or single axle, and a fifth wheel coupling, designed to convert a semi-trailer into a dog trailer.