

NATIONAL CODE OF PRACTICE



VSB 6

HEAVY VEHICLE MODIFICATIONS

Part A

Administration

Table of Contents

1. INTRODUCTION 3

 1.1 Relationship with the Laws of Australian Jurisdictions 3

 1.2 Date of Applicability 3

 1.3 Administrative Requirements..... 3

2. BACKGROUND 4

 2.1 Vehicle Legislation 4

 2.2 Relationship with Second Stage of Manufacture (SSM) Approval Process 4

 2.3 Future Revisions 5

 2.4 Manual Format 5

 2.5 Acknowledgments 5

3. INTENT 5

 3.1 Administrators..... 5

 3.2 Industry Organisations..... 6

4. SCOPE 7

 4.1 Application..... 7

 4.2 Range of Modifications Covered 7

 4.3 Modifications or Practices Not Covered..... 7

 4.4 Precedence of ADRs and Manufacturer’s Guidelines..... 7

5. Definitions, Acronyms and Abbreviations 7

6. Referenced Documents 8

7. Options for proof of Compliance..... 8

8. Operating Limitations..... 8

9. Retention of Records..... 9

Appendix 1 - Definitions, Acronyms and Abbreviations..... 10

Appendix 2 - Referenced Documents..... 12

Appendix 3 – Definition of Wheelbase..... 16

1. INTRODUCTION

This document is titled, *National Code of Practice Heavy Vehicle Modifications*, Vehicle Standards Bulletin 6 (VSB-6) outlines minimum design, construction, installation and performance requirements for modifications to heavy road motor vehicles (including heavy trailers) and is published by the Australian Motor Vehicle Certification Board (AMVCB) which comprises of the Federal Government, National Heavy Vehicle Regulator (NHVR) and the state or territory government.

VSB-6 applies to:

- vehicles having a Gross Vehicle Mass of more than 4.5 tonne;
- a partially completed heavy vehicle as identified in the Administrator's Circular 0-4-11 – Certification of Chassis-Cab Vehicles, that have not yet been supplied to the Australian market and requires additional modification(s) to put the vehicle into service as a complete vehicle, and where the type of modification(s) is not in the scope of the Administrator's Circular 0-4-6 - Certification of Vehicles which have undergone a Second-Stage-of-Manufacture (SSM) ; and
- any heavy vehicle that is in-service and requires modification.

Part A is to be read in conjunction with Part B of this National Code of Practice - Sections and Modification Code - that cover requirements for individual vehicle systems.

1.1 Relationship with the Laws of Australian Jurisdictions

Subject to Federal Government laws, NHVR laws and the laws of the States and Territories of Australia, this document defines standards of practice in the design and manufacture of modifications to heavy vehicles. Other procedures may be accepted, subject to adequate technical justification.

Nothing in VSB-6 is to be regarded as in any way limiting the powers and duties of the Minister, Chief Executive Officer or Road Transport Authority of the jurisdiction in question, or any agent or employee of that Officer, under the appropriate legislation of that jurisdiction.

Where any Australian Design Rule (ADR), Heavy Vehicle National Law (HVNL) or any Australian Standard is referred to in VSB-6, the appropriate ADR, HVNL or Australian Standard should be read in full to avoid misinterpretation. Some jurisdiction may have different requirements and modifiers or builders should seek advice from the appropriate vehicle regulator if in doubt about any of the above issues.

1.2 Date of Applicability

This revision of VSB-6 is applicable to vehicles being supplied to market or modified after 9 February 2015.

1.3 Administrative Requirements

VSB-6 establishes uniform standards and provides technical guidance for modifying heavy vehicles and provision of evidence demonstrating compliance. The responsibility to administer the modifications, including type certification, inspection,

registration of vehicles and authorisation of engineering signatories remains with the relevant vehicle regulator.

It is intended vehicles modified in accordance with VSB-6 will continue to comply with the NHVL, in-service legislation and ADRs administered by the NHVR, the relevant state or territory government and the Federal Government Department of Infrastructure and Regional Development (DIRD) and the National Transport Commission.

2. BACKGROUND

2.1 Vehicle Legislation

The Federal Government administers the *Motor Vehicle Standards Act 1989* (MVSA), that requires all new road vehicles, whether they are newly manufactured in Australia or are imported as new or second hand vehicles, comply with the national vehicle standards known as the Australian Design Rules (ADRs), before they can be offered to the market for use in transport.

The MVSA came into effect on 2 August 1989. The MVSA's objectives are to achieve uniform vehicle standards to apply to new vehicles when they begin to be used in transport in Australia. Section 14 of the MVSA makes it an offence to modify a vehicle to be non-standard before it is supplied to the market for use in transport (i.e. a new road vehicle which no longer complies with the ADRs).

Once a heavy road vehicle is supplied to the market in Australia, regulation passes to the NHVR or relevant state or territory government that handle in-service requirements such as registration, road-worthiness and vehicle modifications. They generally require that a vehicle must continue to comply with the relevant ADRs at its date of manufacture or later with some exceptions to account for special use vehicles and vehicle wear and tear.

The HVNL and regulations commenced in the Australian Capital Territory, New South Wales, Queensland, South Australia, Tasmania and Victoria on 10 February 2014. The Northern Territory and Western Australia have not commenced the HVNL at this time.

As many heavy vehicles are modified following the placement of an identification plate (often referred to as a compliance plate) on the vehicle but before it is registered, the Registration Authorities have developed procedures to regulate such modifications through a single, national code of practice that serves the requirements of both Federal, NHVR and relevant state or territory government.

2.2 Relationship with Second Stage of Manufacture (SSM) Approval Process

VSB-6 code of practice should be used for modifications to in-service heavy vehicles. For Example: Re-powering with a different engine, brake modifications and axle and suspension changes. However, for new vehicles which are to be modified and have been fitted with an identification plate which has not been supplied to the Australian market.

DIRD administers the Second Stage of Manufacture (SSM) approval process which is outlined in Administrator Circular 0-4-6, "Certification of vehicles that have undergone second stage of manufacture". For Example: Conversion to motorhome, conversion to fire appliance and remounting a bus body on a new cab chassis. Alternatively, manufacturers may choose to meet the requirements of VSB-6 to satisfy the requirements of Administrator Circular 0-4-6.

VSB-6 code of practice should also be used to certify modifications to new heavy vehicles if they cannot be put into service without first carrying out such modifications and the proposed modification is certifiable using VSB 6 codes. For example: mounting of trailer couplings and fifth wheel assemblies or the mounting of tow truck appliances.

2.3 Future Revisions

It is recognised that a code of practice which covers all eventualities is not feasible. Nor has every common modification been addressed. Future revisions are the responsibility of the AMVCB. Revisions, other than those of a legal or editorial nature, will be processed in consultation with relevant user groups. The AMVCB may consider applications from individuals concerning recommended revisions to VSB-6. However, it is preferable that these are submitted after consideration by the appropriate user groups. In any event, the AMVCB will consult widely before making a final decision on any proposed amendments to VSB-6.

2.4 Manual Format

VSB-6 has been produced in electronic format only and is available on the DIRD website.

2.5 Acknowledgments

This manual has been reviewed and compiled jointly by the Queensland Department of Transport and Main Roads (TMR on behalf of AMVCB) and the Commercial Vehicle Industry Association of Queensland (CVIAQ on behalf of the Commercial Vehicle Industry Association of Australia CVIAA). The code has been developed in close consultation with a specially formed Working Group (VSB-6 WG) under the auspices of the Australian Motor Vehicle Certification Board (AMVCB) and the Technical Liaison Group (TLG).

3. INTENT

3.1 Administrators

The intent of this code is to specify uniform technical requirements that provide the Administrator of Vehicle Standards, NHVR and Vehicle Registering Authorities in the relevant state or territory government with an assurance that modifications to heavy vehicles, when carried out according to this code, result in:

- continued compliance with the ADR's applicable at the vehicle's date of manufacture; and
- compliance with other requirements of participating Registering

Authorities; and

- vehicles that meet certain basic level of design and construction of the modifications.

3.2 Industry Organisations

The intent of VSB-6 is to provide the heavy vehicle modification industry with standard procedures that, if followed, result in modified vehicles that are safe, continue to comply with the applicable ADRs and other registration requirements. Considering that VSB-6 does not claim to provide fully prescriptive instructions, the heavy vehicle modification industry must take the responsibility to make professional engineering judgements and employ sound work practices that reflect good engineering practices.

4. SCOPE

4.1 Application

VSB-6 applies to modifications to heavy vehicles both prior to their first supply to market in Australia (new vehicles) and after their first registration in Australia (in service vehicles).

For the purpose of VSB-6, a heavy vehicle is defined as:

- a motor vehicle with a GVM greater than 4.5 tonnes or,
- a trailer with an Aggregate Trailer Mass (ATM) greater than 4.5 tonnes.

VSB-6 neither prohibits nor endorses the use of these codes for modifications to vehicles other than the heavy vehicles as defined above. For details on which heavy vehicle modifications codes are prohibited, recommended or mandated for use on other categories of vehicles, please refer to the relevant code of practice, guideline or the regulatory instrument.

4.2 Range of Modifications Covered

VSB-6 provides detailed requirements and examples of acceptable practice for a range of common modifications. It supplements the recommendations of the original vehicle manufacturer in relation to vehicle modification techniques or standards. It provides guidelines where manufacturer's standards do not exist. It is not intended to cover every eventuality. In all situations, the vehicle manufacturer's recommendations, if available, override the recommendations in this code of practice. There is nothing in VSB-6 which seeks to limit applicability and enforcement of other legal and statutory requirements.

4.3 Modifications or Practices Not Covered

It is recognised that some modifications may not be covered by VSB-6. Similarly, practices other than those described in this document may be quite acceptable and, in some cases, more suitable. In all such situations a relevant vehicle regulator should be contacted to seek approval. Normally a full engineering analysis by a suitably qualified person, supported by testing where appropriate, will be necessary before the modification is approved.

4.4 Precedence of ADRs and Manufacturer's Guidelines

Note that the requirements of the ADRs and the original vehicle manufacturer's guidelines take precedence over VSB-6. Persons modifying and/or certifying modifications to heavy vehicles must ensure that vehicle manufacturer's recommendations are complied with. Also modifications must not affect continued compliance with ADRs in any adverse way, even as an unintended result of complying with this Code of Practice.

5. Definitions, Acronyms and Abbreviations

Appendix 1 shows definitions, acronyms and abbreviations that cover terms used in the sections in Part B of VSB-6. Two types are presented:

- definitions, acronyms and abbreviations drawn from the *"Third Edition Australian Design Rules for Motor Vehicles and Trailers"* (ADRs) and which are included for convenience as

they may be referred to often in using the document; and

- definitions, acronyms and abbreviations which are not included in the ADRs Definitions section. Sources vary.

6. Referenced Documents

Appendix 2 shows a list of documents that are referred to in the sections in Part B of this document. Before using each of these sections, persons modifying or certifying vehicles must have access to, and take account of, the requirements called up in these referenced documents. At the time of modification and certification, the current versions of the standards must be used in the modification and certification process.

7. Options for proof of Compliance

In the case of most modification codes in VSB-6, the code requires that specified methods be used to provide proof of compliance with the requirements. However, for a few other codes, proof of compliance provided using optional/alternate methods is acceptable. Optional methods include:

- modification according to VSB-6;
- calculations and simulations carried out by a competent professional or an institution and supported by sufficient validation; and
- physical testing carried out by an accredited laboratory and resulting in an auditable test report;
- For each design, modification or construction certification code there is at least one checklist. This is to help ensure that the design and all the work are of a satisfactory standard and all relevant factors are considered. Some modifications may require more than one checklist – one for the design and another for the modification itself.

For each code in Part B, the acceptable alternate methods, if available, to provide proof of compliance are listed.

8. Operating Limitations

Heavy vehicle modifications should not result in the narrowing of the operating envelope (e.g. load, loading pattern, speed, stability, manoeuvrability and dynamic performance) of the vehicle as assured by the vehicle manufacturer. However, where a modification to a heavy vehicle results in a change to the permissible operating envelope of the vehicle, these limitations must be clearly identified in the modification documents. In addition, an insert for the operator's or driver's handbook must be prepared and provided to the vehicle owner. Examples of changes to the operating envelope are:

- change to GVM, Gross Combination Mass and/or axle loading;
- requirement for maximum height of centre of gravity due to stability concerns;
- crane operating limitations;
- vehicle body size limitations; and
- vehicle speed limitations.

9. Retention of Records

Complete records, including drawings, calculations, test results and copies of the appropriate issues of Australian Standards and ADR's, should be collated in the format specified in each section by the person responsible for the modification certification. These records should be retained by person certifying the modification for a minimum of seven years after commissioning of the modified vehicle. This is to be available for inspection by officers of the relevant Federal Government, NHVR, state or territory government authorities.

Appendix 1 - Definitions, Acronyms and Abbreviations

Aggregate Trailer Mass (ATM)- the total mass of the laden trailer when carrying the maximum load recommended by the *'Manufacturer'* This will include any mass imposed onto the drawing vehicle when the *'Combination Vehicle'* is resting on a horizontal supporting plane.

Articulated Vehicle - a combination of *'Prime Mover'* and *'Semi-trailer'*

Australian Design Rule (ADR) - a national standard for road vehicles or vehicle components under Section 7 of the Motor Vehicle Standards Act

Australian Motor Vehicle Standard - any standard approved under the Motor Vehicle Standards Act 1989 by the Federal Minister of Transport and Communications. At present these comprise the Australian Design Rules 2nd and 3rd editions.

Average Operating Pressure (AOP) – the arithmetic average of the *'Manufacturer's'* specified maximum and minimum pressures in the operating pressure range.

Axle - one or more shafts positioned in a line across a vehicle, on which one or more wheels intended to support the vehicle turn.

Axle Group - either a *'Single Axle'*, *'Tandem Axle Group'*, *'Tri-axle Group'*, or *'Close Coupled Axle Group'*.

Axle Load - total load transmitted to the road by all the tyres of all the wheels whose centres may be included between two transverse parallel vertical planes less than one metre apart.

Body - the structure added to a chassis or a *'chassis and cab'* for containing the load or other special purpose.

Certifying Officer - the person who is authorised by the relevant Federal, State or Territory Authority to conduct evaluations and certification of a particular type of modification and who certifies the subject modified vehicle continues to conform to the applicable Australian Design Rules and other requirements for registration.

Close Coupled Axle Group - two *'Axles'* with centres not more than one metre apart shall be regarded as equivalent to a *'Single Axle'*; three *'Axles'* with centres not more than two metres apart shall be regarded as equivalent to a *'Tandem Axle Group'*; four or more *'Axles'* with centres not more than 3.2 metres apart shall be regarded as equivalent to a *'Triaxle Group'*.

Combination Vehicle - both a combination of a rigid goods vehicle and one trailer (other than a *'Semi-trailer'*); or an *'Articulated Vehicle'*.

Converter Dolly - a *'Pig Trailer'* with a *'Fifth Wheel Coupling'*, designed to convert a *'Semi-trailer'* to a *'Dog Trailer'*

Coupling - a mechanical assembly which provides connection between a drawing vehicle and a trailer.

Coupling - Ball Type - a device which uses a spherically machined cantilevered ball to which is attached and locked a hemispherical receptacle, forming a coupling between the two. The ball is generally attached to the *'Towbar'* of the drawing vehicle whilst the hemispherical receptacle is attached to the *'Drawbar'* of the drawn vehicle. The

spherical shape allows unrestricted articulation in the horizontal plane and restricted articulation in the vertical plane.

Coupling - Hook Type - a device comprising an inverted hook, provided with a coupling lock mechanism, which is attached to the drawing vehicle. The hook accepts the bore of a towing eye that is attached to the 'Drawbar' on the towed vehicle. Generally, greater clearances are provided between these two coupling components, and the assembly allows for significant vertical angular oscillation between the vehicle and trailer.

Coupling - Pin Type - a device that uses the insertion of a vertical pin through the hole of a 'Drawbar' towing eye. The pin is located and retained above and below the towing eye by the coupling fork of the 'Towbar'.

Critical Speed of Propeller Shaft (self-destruct speed) - is the propeller shaft rotational speed at which the rotational speed is equal to the natural bending frequency of the shaft.

'D' Value - the theoretical horizontal reference force between towing vehicle and trailer.

Departure Angle - the smallest angle, in a side view of a vehicle formed by the level surface on which the vehicle is standing and a line tangent to the rear tyre arc and touching the underside of the vehicle rearward of the rear tyre

Dog Trailer - a trailer with two 'Axle Groups' of which the front 'Axle Group' is steered by connection to the drawing vehicle.

Drawbar - portion of a trailer that connects the trailer body to the 'Coupling' for towing purposes.

Dual Steer System - a steering system by means of which a vehicle may be steered from either one of two alternative driving positions.

ERC (Established Retardation Coefficient) - is the average braking deceleration calculated when the energy level in the least favoured 'Brakes' actuator reaches 65% of 'Average Operating Pressure' (AOP) to when the vehicle becomes stationary, expressed as a proportion of the acceleration due to gravity.

Fifth Wheel - a device used with either a 'Prime Mover' or a 'Converter Dolly' to permit quick coupling and uncoupling of a 'Semi-trailer' and provide for articulation.

Fifth Wheel - Fixed Base - a 'Fifth Wheel' assembly where the transverse pivot axis of the 'Fifth Wheel' is always fixed relative to the 'Prime Mover'.

Fifth Wheel Lead - the distance in side elevation of the articulation point of the 'Fifth Wheel' assembly ahead of the centre line of the drive 'Axle Group'.

Fifth Wheel - Sliding - a 'Fifth Wheel' that is readily adjustable in regard to fore and aft position on the vehicle chassis.

Fifth Wheel - Turntable Based ('Stabilised') - a 'Fifth Wheel' assembly where the transverse pivot axis is always fixed relative to the 'Semi-trailer'. All relative rotation between the 'Prime Mover' and the 'Semi-trailer' occurs in the slewing base (turntable).

Gross Combination Mass (GCM) - value specified for the vehicle by the 'Manufacturer' as being the maximum of the sum of the 'Gross Vehicle Mass' of the drawing vehicle plus the sum of the 'Axle Loads' of any vehicle capable of being drawn as a trailer.

Gross Trailer Mass (GTM) - the mass transmitted to the ground by the 'Axle' or 'Axles' of the trailer when coupled to a drawing vehicle and carrying its maximum load approximately

uniformly distributed over the load bearing area, and at which compliance with the appropriate Australian Design Rules has been or can be established.

Gross Vehicle Mass (GVM) - the maximum laden mass of a motor vehicle as specified by the 'Manufacturer'.

Guideline - a document that establishes a minimum standard for assessment of modified vehicles.

Heavy Vehicle - for the purposes of this National Code of Practice, a heavy vehicle is defined as:

- a road motor vehicle with a GVM greater than 4.5 tonnes; or
- a road trailer with an ATM greater than 4.5 tonnes

Heavy Vehicle National Law: a Law is to establish a national scheme for facilitating and regulating the use of heavy vehicles on roads in a way that—

- (a) promotes public safety; and
- (b) manages the impact of heavy vehicles on the environment, road infrastructure and public amenity; and
- (c) promotes industry productivity and efficiency in the road transport of goods and passengers by heavy vehicles; and
- (d) encourages and promotes productive, efficient, innovative and safe business practices.

Lightly Loaded Test Mass - The mass of the unladen vehicle with a full capacity of lubricating oil and coolant not less than 75% of full fuel capacity, but without goods, occupants or options except those options which are essential for the test procedure specified, plus additional loading distributed in the seating position adjacent to the driver's seating position so that the mass of such loading plus the mass of the driver and instrumentation mounted in the vehicle is 155 +/- 30kg. In the case of a 'cab and chassis' condition, an additional loading not exceeding 7.5% of the GVM shall be located with its centre of mass within 200mm of the designated load centre measured in a horizontal plane.

Load Sharing Suspension – an 'Axle Group' suspension system that utilises hydraulic, pneumatic or other means to effect substantially equal sharing, by all the ground contact surfaces of the 'Axle Group', of the total load carried by the 'Axle Group' and has effective damping characteristics on all axles of the 'Axle Group'. Acceptable Load Sharing Suspensions are described in publications prepared by the Commonwealth Department of Infrastructure and Regional Development.

Manufacturer - the name of the person or company who accepts responsibility for compliance with the 'Australian Design Rules' and to whom the Compliance Plate Approval certificate is issued.

Modification Code - a particular type, style or class of modification within a vehicle system for which a separate set of detail requirements and check list have been devised and included in the National Code of Practice.

Motor Vehicle Standards Act 1989 (MVSA) the objects of this Act are:

- (a) to achieve uniform vehicle standards to apply to new vehicles when they begin to be used in transport in Australia; and
- (b) to regulate the first supply to the market of used imported vehicles.

National Code of Practice - the name given to this complete document, comprising Part A –

Administrative Aspects and Part B - Technical Aspects.

Pig Trailer - a trailer having one 'Axle Group' near the middle of the length of the goods-carrying surface.

Platform Loader - a platform type of goods lift 'permanently' fixed to the vehicle to assist loading and unloading of the vehicle and which is either hydraulically and/or mechanically operated. Typical types include:

- underbody stow;
- folding tailgate; or
- folding post

Power Steering - Integral - a power steering system in which a force generated by a secondary power source is applied to the active parts within the steering gear housing.

Power Steering - Ram Type - a power steering system in which a force generated by a secondary power source is applied to the steering linkage between the steering gear and the road wheels.

Pre-ADR - a vehicle built prior to the date on which an ADR, subsequently applicable to vehicles of that category, came into force.

Prime Mover - a rigid motor vehicle designed to tow a 'Semi-trailer'.

Retractable Axle - an 'Axle' which has means of adjustment to enable it to be raised or lowered relative to the vehicle's horizontal datum to substantially vary the 'Axle Load' distribution between the 'Axles' of any 'Axle Group'.

Roadworthy Componentry - roadworthy in accordance with manufacturer's specifications, the Australian Vehicle Standards Rules or the Roadworthiness Guidelines.

Safe Working Load (SWL) - the maximum mass which may be i.e. is permitted to be, safely handled.

Safety Chain - a chain fitted to a substantial portion on a trailer that will hold the trailer in tow in the event of failure of, or accidental detachment of the coupling.

Safety Lock - a mechanical device for securely locking a component or assembly

Section of Code - individual section of the National Code of Practice for Heavy Vehicle Modifications dealing with a particular administrative or technical (vehicle) system

Semi-trailer - a trailer having one axle or 'Axle Group' towards the rear and having means of attachment to a 'Prime Mover' whereby some of the load is imposed on the 'Prime Mover'.

Single Axle - either one 'Axle', or two 'Axles' with centres between transverse, parallel, vertical planes spaced less than one metre apart.

Steering Linkage Components - nomenclature for the links and arms of the steering linkage is illustrated in Appendix 1 of Section E - Front Axle and Steering.

Startability Gradient - the minimum road gradient on which the vehicle, loaded to its GVM or GCM, whichever is the greater, can be set in motion and accelerated up the gradient.

Tailshaft - any drive shaft connection between the power/transmission unit and a drive 'Axle(s)'.

Tandem Axle Group - a combination of two 'Axles' whose centres are not less than one metre and not more than two metres apart.

Towbar - a device attached to the drawing vehicle provided for connection of the drawing vehicle to the trailer '*Coupling*' for the towing of the trailer.

Tractor Protected Air Supply - a system of supply of breakaway protected power and signal air from a tractor mounted source to the brakes of both the tractor and trailer.

Tri-axle Group - a combination of three '*Axles*' in which the centre of the front and rear '*Axles*' are not less than 2 metres and not more than 3.2 metres apart.

Twin Steer Axle Group - A combination of two '*Axles*', with single tyres, which are fitted to a motor vehicle connected to the same steering mechanism and are not less than one metre and nor more than two metres apart.

Unladen Mass - the mass of the vehicle in running order unoccupied and unladen with all fluid reservoirs filled to nominal capacity, including fuel, and with all standard equipment.

Wheelbase - Refer to Appendix 3

Appendix 2 - Referenced Documents

Third Edition Australian Design Rules:

NOTE: Reference to Australian Design Rule ADR xx/... means the latest rule is being specified of the relevant 3rd Edition Australian Design Rule at the date of modification.

- Vehicle Standard (Australian Design Rule – Definitions and Vehicle Categories)
- Vehicle Standard (Australian Design Rule 1/... – Reversing Lamps)
- Vehicle Standard (Australian Design Rule 2/... – Side Door Latches and Hinges)
- Vehicle Standard (Australian Design Rule 3/... – Seats and Seat Anchorages)
- Vehicle Standard (Australian Design Rule 4/... – Seatbelts)
- Vehicle Standard (Australian Design Rule 5/... – Anchorages for Seatbelts)
- Vehicle Standard (Australian Design Rule 6/... – Direction Indicators)
- Vehicle Standard (Australian Design Rule 8/... – Safety Glazing Material)
- Vehicle Standard (Australian Design Rule 10/... – Steering Column)
- Vehicle Standard (Australian Design Rule 11/... – Internal Sun Visors)
- Vehicle Standard (Australian Design Rule 13/... – Installation of Lighting and Light Signalling Devices on other than L-Group Vehicles)
- Vehicle Standard (Australian Design Rule 14/... – Rear Vision Mirrors)
- Vehicle Standard (Australian Design Rule 18/... – Instrumentation)
- Vehicle Standard (Australian Design Rule 21/... – Instrument Panel)
- Vehicle Standard (Australian Design Rule 22/... – Head Restraints)
- Vehicle Standard (Australian Design Rule 28/... – External Noise of Motor Vehicles)
- Vehicle Standard (Australian Design Rule 30/... – Smoke Emission Control for Diesel Vehicles)
- Vehicle Standard (Australian Design Rule 35/... – Commercial Vehicle Brake Systems)
- Vehicle Standard (Australian Design Rule 42/... – General Safety Requirements)
- Vehicle Standard (Australian Design Rule 43/... – Vehicle Configuration and Dimensions)
- Vehicle Standard (Australian Design Rule 44/... – Specific Purpose Vehicle Requirements)
- Vehicle Standard (Australian Design Rule 45/... – Lighting and Light Signalling Devices not Covered by ECE Regulations)
- Vehicle Standard (Australian Design Rule 46/... – Headlamps)
- Vehicle Standard (Australian Design Rule 47/... – Retro reflectors)
- Vehicle Standard (Australian Design Rule 48/... – Devices for Illumination of Rear Registration Plates)
- Vehicle Standard (Australian Design Rule 49/... – Front and Rear Position (Side) Lamps, Stop Lamps and End Outline Marker Lamps)
- Vehicle Standard (Australian Design Rule 58/... – Requirements for Omnibuses Designed for Hire and Reward)
- Vehicle Standard (Australian Design Rule 59/... – Standards for Omnibus Rollover Strength)
- Vehicle Standard (Australian Design Rule 61/... – Vehicle Markings)
- Vehicle Standard (Australian Design Rule 62/... – Mechanical Connections Between Vehicles)
- Vehicle Standard (Australian Design Rule 63/... – Trailers Designed for Use in Road Trains)
- Vehicle Standard (Australian Design Rule 64/... – Heavy Goods Vehicles Designed for Use in Road Trains and B-Doubles)
- Vehicle Standard (Australian Design Rule 65/... – Maximum Road Speed Limiting for Heavy Goods Vehicles and Heavy Omnibuses)
- Vehicle Standard (Australian Design Rule 66/... – Seat Strength, Seat Anchorage Strength and Padding in Omnibuses)

Vehicle Standard (Australian Design Rule 68/... – Occupant Protection in Buses)
Vehicle Standard (Australian Design Rule 74/... – Side Marker Lamps)
Vehicle Standard (Australian Design Rule 76/... – Daytime Running Lamps)
Vehicle Standard (Australian Design Rule 80/... – Emission Control for Heavy Vehicles) (*Applicable 1 January 2002*).
Vehicle Standard (Australian Design Rule 83/... – External Noise)
Vehicle Standard (Australian Design Rule 84/... – Front Underrun Impact Protection)

Repealed Australian Design Rules:

Note: The following Australian Design Rules have been repealed.

Australian Design Rule 7/00 Hydraulic Brake Hose [Repealed date 9 December 2003]
Australian Design Rule 12/00 Glare Reduction in Field of View [Repealed date 9 December 2003]
Australian Design Rule 15/01 Demisting of Windscreen [Repealed date 9 December 2003]
Australian Design Rule 16/01 Windscreen Wipers and Washers [Repealed date 9 December 2003]
Australian Design Rule 17/00 Fuel System [Repealed date 21 July 2005]
Australian Design Rule 24/02 Tyre and Rim Selection [Repealed date 9 December 2003]
Australian Design Rule 36/00 Exhaust Emission Control for Heavy Duty Vehicles [Repealed date 1 October 2006]
Australian Design Rule 70/00 Exhaust Emission Control for Diesel Engined Vehicles [Repealed date 1 October 2006]

Second Edition Australian Design Rules:

Note: Reference to Australian Design Rule ADR xx, is to be interpreted to mean all individual versions of the relevant 2nd Edition Australian Design Rule at the date of modification. For example, ADR 4 refers to ADR's 4, 4A, 4B, 4C and 4D.

Australian Design Rule 1 for Reversing Signal Lamps
Australian Design Rule 2 for Door latches and Hinges
Australian Design Rule 3 for Seat Anchorages for Motor Vehicles
Australian Design Rule 3A for Seat Anchorages for Motor Vehicles
Australian Design Rule 4, 4A, 4B, 4C and 4D for Seat Belts
Australian Design Rule 5A and 5B for Seat Belt Anchorage Points
Australian Design Rule 6 and 6A for Direction Turn Signal Lamps
Australian Design Rule 7 for Hydraulic Brake Hoses
Australian Design Rule 8 for Safety Glass
Australian Design Rule 9 for Standard Controls for Automatic Transmissions
Australian Design Rule 10A and 10B for Steering Columns
Australian Design Rule 11 for Internal Sun Visors
Australian Design Rule 12 for Glare Reduction in Field of View
Australian Design Rule 14 for Rear Vision Mirrors
Australian Design Rule 15 for Demisting of Windscreens
Australian Design Rule 16 for Windscreen Wipers and Washers
Australian Design Rule 17 for Fuel Systems for Goods Vehicles
Australian Design Rule 18 and 18A for Location and Visibility of Instruments
Australian Design Rule 20 for Safety Rims
Australian Design Rule 21 for Instrument Panels
Australian Design Rule 22 and 22A for Head Restraints

Australian Design Rule 23 and 23A for New Pneumatic Passenger Car Tyres
 Australian Design Rule 24 and 24A for Tyre Selection
 Australian Design Rule 25 and 25A for Anti-Theft Locks
 Australian Design Rule 26 for Vehicle Engine Emission Control
 Australian Design Rule 27, 27A, 27B and 27C for Vehicle Engine Emission Control
 Australian Design Rule 28 and 28A for Motor Vehicle Noise
 Australian Design Rule 29 for Side Door Strength
 Australian Design Rule 30 for Diesel Engine Exhaust Smoke Emissions
 Australian Design Rule 32 and 32A for Seat Belts for Heavy Vehicles
 Australian Design Rule 35 and 35A for Commercial Vehicle Braking Systems
 Australian Design Rule 36 and 36A for Exhaust Emission Control for Heavy Duty Vehicles
 Australian Design Rule 38 for Heavy Trailer Braking Systems

Other Referenced Standards:

Note: At the time of modification, the current Australian Standards must be utilized. The vehicle must also continue to meet the Australian Design Rules applicable at the date of manufacture. However, vehicles undergoing brake system modifications must comply with the requirements of Part B, Section G (Clause 2) of this National Code of Practice.

Australian Standard AS D8–1971 Hose Couplings for use with Vacuum and Air Pressure Braking Systems on Prime Movers, Trailers and Semi-trailers.

Australian Standard AS 1110 - 2000 *ISO Metric Hexagon Precision Bolts and Screws*.

Australian Standard AS 1418 - *Cranes (Including Hoists and Winches)*

- Part 1 (1994 and Amendment 1997) - General Requirements;
- Part 2 (1997) - Serial Hoists and Winches;
- Part 5 (1995) - Mobile and Vehicle Loading Cranes; and
- Part 20 (2015) – Cranes Hoists and Winches (when released)

Australian Standard AS 1554.1- 2011 *Welding of Steel Structures*.

Australian Standard AS 4968.2:2003 Mechanical coupling between articulated vehicle combinations – Testing and installation of fifth wheel and associated equipment

Australian Standard AS 2174 - *Articulated Vehicles— Mechanical coupling between prime movers and semi-trailers – Interchangeability requirements*.

- Part 1 - 2006 Non dedicated vehicle combinations; and
- Part 2 – 2006 Dedicated vehicle combinations.

Australian Standard AS 2177 2006 & Amdt 1 2014 *Non-destructive testing - Radiography of Welded Butt Joints in Metal*.

Australian Standard AS 2213.2 -2008 *50 mm Pin-type Couplings and Drawbar Eyes for Trailers*.

Australian Standard AS 2739:2009 *Natural gas (NG) fuel systems for vehicle engines*.

Australian Standard AS 2809 - *Road Tank Vehicles for Dangerous Goods*

- Part 1- 2008,
- Part 2 - 2008,
- Part 3 - 2008,
- Part 4 – 2001; and

Part 5 - 2001.

Australian Standard AS 3856 – 1998 *Hoists and Ramps for People with Disabilities - Vehicle Mounted –Parts 1 and 2.*

Australian Standard AS 4945-2000 *Commercial road vehicles - Interchangeable quick connect/release couplings for use with air-pressure braking systems*

British Standard BS AU 217: Part 1 1987 *Maximum Road Speed Limiters for Motor Vehicles.*

Society of Automotive Engineers Standard J726 - 2002 *Air Cleaner Test Code.*

Society of Automotive Engineers Standard J844 2012 *Non-Metallic Air Brake System Tubing.*

Society of Automotive Engineers Standard J1402 2010 *Automotive Air Brake Hose and Hose Assemblies.*

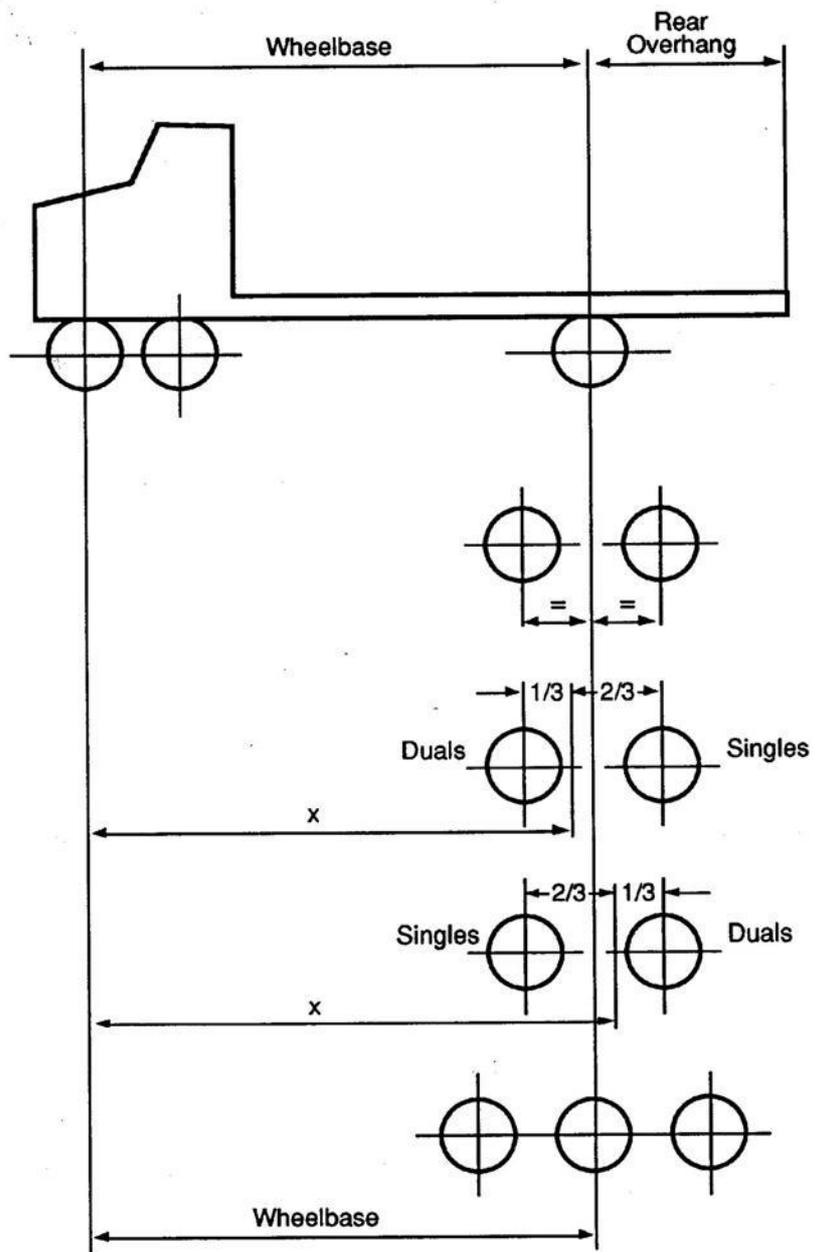
Society of Automotive Engineers Standard J1403A 2005 *Vacuum Brake Hose.*

Tyre and Rim Association of Australia Standards Manual (Current Edition).

Appendix 3 – Definition of Wheelbase

WHEELBASE

The dimension measured horizontally and parallel to the longitudinal axis of the vehicle between the front and the rear wheel centrelines at 'Unladen Mass'. In the case of multiple 'Axles' in the rear 'Axle Group', the dimension shall be midpoint of the centrelines of the extreme 'Axles' of the 'Axle Group'. If the configuration includes a steerable or rear 'Retractable Axle', the measurement of the wheelbase shall be without regard to the presence of the steerable 'Axle' or the 'Retractable Axle'. For a steerable front 'Axle' or 'Axle Group' the dimension shall be to the centreline of the foremost 'Axle' (see illustration following).



x = Distance from front "Axle" to the line from which the "Rear Overhang" is measured