Vehicle Standard (Australian Design Rule 62/00 – Mechanical Connections Between Vehicles) 2006

I, JAMES ERIC LLOYD, Minister for Local Government, Territories and Roads, determine this vehicle standard under subsection 7 (1) of the *Motor Vehicle Standards Act 1989*.

Dated 3 September 2006

[SIGNED]

James Eric Lloyd

Minister for Local Government, Territories and Roads

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1. LEGISLATIVE PROVISIONS

1.1. NAME OF STANDARD

1.1.1. This Standard is the Vehicle Standard (Australian Design Rule 62/00 – Mechanical Connections Between Vehicles) 2006.

1.1.2. This Standard may also be cited as Australian Design Rule 62/00 — Mechanical Connections Between Vehicles.

1.2. COMMENCEMENT

1.2.1. This Standard commences on the day after it is registered.

1.3. REPEAL

1.3.1. This Standard repeals each vehicle standard with the name Australian Design Rule 62/00 — Mechanical Connections Between Vehicles that is:

(a) made under section 7 of the Motor Vehicle Standards Act 1989; and

(b) in force at the commencement of this Standard.

1.3.2. This Standard also repeals each instrument made under section 7 of the Motor Vehicle Standards Act 1989 that creates a vehicle standard with the name Australian Design Rule 62/00 — Mechanical Connections Between Vehicles, if there are no other vehicle standards created by that instrument, or amendments to vehicle standards made by that instrument, that are still in force at the commencement of this Standard.

2. FUNCTION AND SCOPE

2.1. The function of this national standard is to specify requirements for devices for mechanical connections between vehicles and their fitment.

2.2. This national standard covers additional design and construction requirements for vehicles designed to be used in combination and does not exclude compliance with any other applicable national standard.

2.3. Mechanical connection devices for, and fitted to, all vehicles specified below are to be designed and constructed to comply with the relevant requirements of this national standard.

3. APPLICABILITY

3.1. Applicability Summary

3.1.1. This national standard applies to the design and construction of vehicles as set out in the table below.

3.2. Applicability Table

Vehicle Category	ADR Category Code *	UNECE Category Code *	Manufactured on or After	Acceptable Prior Rules
Moped 2 wheels	LA	L1	1 March 1992	Nil
Moped 3 wheels	LB	L2	1 March 1992	Nil
Motor cycle	LC	L3	1 March 1992	Nil
Motor cycle and sidecar	LD	L4	1 March 1992	Nil
Motor tricycle	LE	L5	1 March 1992	Nil
Passenger car	MA	M1	1 Jan 1992	Nil
Forward-control passenger vehicle	MB	M1	1 Jan 1992	Nil
Off-road passenger vehicle	MC	M1	1 Jan 1992	Nil
Light omnibus	MD	M2		
up to 3.5 tonnes *'GVM'* and up to 12 seats	MD1		1 July 1991	Nil
up to 3.5 tonnes *'GVM'* and more than 12 seats	MD2		1 July 1991	Nil
over 3.5 tonnes and up to 4.5 tonnes *'GVM'*	MD3		1 July 1991	Nil
over 4.5 tonnes and up to 5 tonnes *'GVM'*	MD4		1 July 1991	Nil
Heavy omnibus	ME	M3	1 July 1991	Nil
Light goods vehicle	NA	N1	1 July 1991	Nil
Medium goods vehicle	NB	N2		
over 3.5 tonnes up to 4.5 tonnes *'GVM'*	NB1		1 July 1991	Nil
over 4.5 tonnes up to 12 tonnes *'GVM'*	NB2		1 July 1991	Nil
Heavy goods vehicle	NC	N3	1 July 1991	Nil
Very light trailer	TA	O1	1 July 1991	Nil
Light trailer	TB	O2	1 July 1991	Nil
Medium trailer	TC	O3	1 July 1991	Nil
Heavy trailer	TD	O4	1 July 1991	Nil

4. DEFINITIONS

4.1. Refer to Vehicle Standard (Australian Design Rule Definitions and Vehicle Categories) 2005.

* The category code may also be in the format L_1, L_A etc.

5. COUPLING REQUIREMENTS

5.1. Locking Mechanisms

A *'Coupling'* must be a positive locking type with provision for a second independent device. It may have provision for automatic coupling and the locking must be readily verifiable by visual examination.

5.2. Location

5.2.1. Unless otherwise *'Approved'* only trailers designed for use in *'Road Train'* and *'B-Double'* combinations may be fitted with a rear mounted tow *'Coupling'*.

5.2.2. For NC vehicles the *'Tow Coupling Overhang'* must not exceed 2.7 m.

5.2.3. Height of towing pivot:

5.2.3.1. For vehicles fitted with 50 mm pin-type *'Couplings'* or 127 mm *'Ball Couplings'* the height of the towing attachment and the *'Drawbar'* pivots determined in the unladen condition must be either 875 ± 75 mm or 600 ± 50 mm;

5.2.3.2. For MA and MB group vehicles fitted with a 50 mm *'Ball Coupling'* the height to centre of the ball determined in the laden condition must be between 350 and 420 mm.

5.2.4. Mounting of '*Fifth Wheel'* and '*Fifth Wheel'* Kingpins

5.2.4.1. Unless otherwise *'Approved'*, '*Fifth Wheel'* assemblies must be mounted in conformity with the requirements of:

5.2.4.1.1. Australian Standard 1771-1987 "Installation of Fifth Wheel and Turntable assemblies" and

5.2.4.1.2. Australian Standard 2174-1978 "Recommendations for positions and heights of Fifth Wheels for Articulated Vehicles" or AS 2174-1994 "Articulated vehicles - Mechanical coupling between prime movers and Semitrailers - Interchangeability requirements".

5.2.4.2. '*Fifth Wheel'* Kingpins must be attached to the '*Semi-Trailer'* skid plate in conformity with the requirements of Australian Standard 2175-1990 "Articulated Vehicles - Kingpins", Appendix D.

5.3. Marking and strength

Unless otherwise *'Approved'* all *'Couplings'* must conform with the marking and strength requirements as specified below:

5.3.1. *'Fifth Wheel'* assemblies must comply with the requirements of Australian Standard 1773-1990 "Articulated Vehicles - Fifth Wheel Assemblies"

5.3.2. '*Fifth Wheel'* kingpins must comply with the requirements of Australian Standard 2175-1990 "Articulated Vehicles - Kingpins".

5.3.3. Pin-type *'Couplings'* must comply with the requirements of Australian Standard 2213-1984 "50 mm Pin-type Couplings and Drawbar Eyes for Trailers".

5.3.4. 50 mm *'Ball Couplings'* must comply with the requirements of either:

5.3.4.1. AS D18-1968 "50 mm Ball Couplings (for Automotive Purposes)" including Amendment 1 or;

5.3.4.2. ISO Standard 3853 "Strength Tests" and ISO Standard 1103 "Dimensional Characteristics" or;

5.3.4.3. AS 4177.2-1994 "Caravan and light trailer towing components - 50 mm towballs" and Australian Standard 4177.3-1994 "Coupling Body for Ball Couplings".

5.3.5. 127 mm '*Ball Coupling'*

5.3.5.1. '*Ball Couplings'* of nominal diameter of 127 mm shall when installed in the design configuration withstand the following forces without incurring any residual deformation that would interfere or degrade the function of the assembly, nor shall there be any breaks, cracks or separation of components:

5.3.5.1.1. longitudinal tension and compression 1.6 × '*D-value'*; and

5.3.5.1.2. vertical tension and compression 0.5 × *'D-value'*; or

5.3.5.1.3. a dynamic oscillating force of ± 0.6 × '*D-value'* in the longitudinal direction and ± 0.2 × '*D-value'* in the vertical direction applied concurrently for 2 million cycles. The frequency of the longitudinal and vertical forces must differ by approximately 5% and not exceed 10 Hz, but must be chosen not to coincide with the natural frequency of the system.

5.3.5.2. 127 mm *'Ball Couplings'* must be marked in lettering not less than 6 mm in height with the manufacturer's name or trademark and the rated *'D-value'* so as to be readily visible when coupled.

5.3.6. Hook '*Couplings'*

5.3.6.1. Hook *'Couplings'* suitable for use with a 76.2 mm internal diameter × 41.27mm stock towing eye must comply with the dimensions shown in Figure 1.

5.3.6.2. Hook *'Couplings'* must when installed in the design configuration withstand the following forces without incurring loss of attachment, distortion or failure which would affect the safe towing of a trailer:

5.3.6.2.1. longitudinal tension and compression 1.6 *'D-value'*; or

5.3.6.2.2. a dynamic oscillating force of ± 0.6 × *'D-value'* for 2 million cycles. The frequency during testing not to exceed 10 Hz, but must be chosen not to coincide with the natural frequency of the system.

5.3.6.3. Hook 'Cou*plings'* and towing eyes must be marked with the manufacturer's name or trademark and the rated *'D-value'*

5.3.7. The installer of all *'Couplings'* fitted to ME, NC, TC and TD category vehicles must be identified by means of a plate. The information provided must contain the installer's name and address in the English language in block letters and numerals which must not be less than 2.5 mm in height.

6. TOWBAR REQUIREMENTS

6.0. The requirements of this Section do not apply to connection devices mounted at the front of a motor vehicle or devices not intended for towing trailers.

6.1. Strength Requirements

The vehicle structure including the *'Towbar'* must either:

6.1.1. be able to withstand the following forces applied at the intended *'Coupling'* centreline without any residual deformation that would interfere with or degrade the function of the assembly, nor must there be any breaks, cracks, or separation of components:

6.1.1.1. In the case of ME, NB and NC category vehicles:

6.1.1.1.1. longitudinal tension and compression 1.6 × *'Coupling' 'D-value'* required for use with the *'Aggregate Trailer Mass'* marked on the *'Towbar'* according to clause 6.3.1.3; or

6.1.1.1.2. a dynamic oscillating force of ± 0.6 × *'Coupling' 'D-value'* required for use with the *'Aggregate Trailer Mass'* marked on the *'Towbar'* according to clause 6.3.1.3 for 2 million cycles. The frequency not to exceed 10 Hz but must be chosen not to coincide with the natural frequency of the system.

6.1.1.2. In the case of L group, MA, MB, MC, MD and NA category vehicles:

6.1.1.2.1. longitudinal tension and compression l.5 × the *'Towbar's'* rated capacity;

6.1.1.2.2. transverse thrust 0.5 × the *'Towbar's'* rated capacity; and

6.1.1.2.3. vertical tension and compression 0.5 × the *'Towbar's'* rated capacity; or

6.1.2. comply with AS 4177.1-1994 for vehicles equipped with *'Towbars'* designed for towing TA and TB category trailers.

6.2. Safety Chain Attachments

The *'Towbar'* must be fitted with safety chain attachments to withstand the loads imposed. Vehicles having a towing capacity (i.e. the *'Aggregate Trailer Mass'* for which the towing vehicle is designed) of 2.5 tonnes or more must be fitted with 2 safety chain attachments mounted one on either side of, and adjacent to, the tow *'Coupling'*.

6.2.1. To establish the strength of the attachments provided on the *'Towbar'* for the safety chain(s), each attachment including the safety chain(s) must withstand the following forces without any residual deformation that must interfere with or degrade the function of the assembly, nor shall there be any breaks, cracks, or separation of components:

6.2.1.1. longitudinal tension - the *'Towbar's'* rated capacity; and

6.2.1.2. vertical load - 0.5 × the *'Towbar's'* rated capacity.

6.3. Marking

6.3.1. Except where the *'Towbar'* is an integral part of the vehicle the *'Towbar'* must clearly and permanently display the following information:

6.3.1.1. the *'Towbar' manufacturer'*s name or trade mark;

6.3.1.2. the "make and model" shown on the *'Compliance Plate'* fitted to the vehicle for which it is designed or the manufacturer's part number; and

6.3.1.3. its maximum rated capacity expressed in kilograms in numerals not less than 2.5 mm high. The maximum rated capacity must be the *'Aggregate Trailer Mass'* for which the *'Towbar'* is designed and must not exceed the motor vehicle manufacturer's recommendation.

6.3.2. Where the information required in clause 6.3.1 is not visible when the *'Towbar'* is fitted to the vehicle a plate must be affixed to the vehicle adjacent to the *'Towbar'* showing the maximum rated capacity of the *'Towbar'*.

7. DRAWBAR REQUIREMENTS

7.1. The *'Drawbar'* must withstand the following forces applied at the centreline of the intended *'Coupling'* without incurring loss of attachment or any distortion or failure which will affect the safe drawing of the towed trailer:

7.1.1. longitudinal tension and compression - 1.5 × the *'Aggregate Trailer Mass'*;

7.1.2. transverse thrust - 0.5 × the *'Aggregate Trailer Mass'*; and

7.1.3. vertical tension and compression - for rigid *'Drawbar'* trailers 0.5 × the *'Aggregate Trailer Mass'*.

7.2. The *'Drawbar'* must be securely attached to a substantial portion of the towed trailer.

7.3. When a safety chain(s) is fitted, each attachment must be of sufficient strength to withstand the forces imposed.

7.3.1. To establish the strength of the attachments provided on the *'Drawbar'*, the attachments including the safety chain(s) must withstand the following forces without failure:

7.3.1.1. longitudinal tension - the *'Aggregate Trailer Mass'*; and

7.3.1.2. vertical load - 0.5 × the *'Aggregate Trailer Mass'*.

8. SAFETY CHAIN(S)

8.1. There must be affixed to a substantial portion on every trailer which is not fitted with an *'Emergency Brake System'* in accordance with the Australian Design Rule 38/... "Trailer Brake Systems", and on every rigid *'Drawbar' 'Pig Trailer'* except a *'Converter Dolly'*, a safety chain(s) which will hold in tow the trailer in the event of failure or accidental detachment of the *'Coupling'*.

8.2. A rigid *'Drawbar'* *'Pig Trailer'* which has a *'Aggregate Trailer Mass'* of 2.5 tonnes or more must be fitted with 2 safety chains for connection to the towing vehicle.

8.3. Safety chains must be permanently attached to the trailer. Shackles are not permitted. The point(s) of attachment to the trailer must be as near as

practicable to the *'Coupling'* and where 2 points are required they must be mounted one on either side of the *'Drawbar'*.

8.4. The specification for the safety chain:

8.4.1. for a trailer of less than 2.5 tonnes *'Aggregate Trailer Mass'* must comply with clause 8.4.4 or 8.4.5.

8.4.2. for a trailer of 2.5 tonnes or more but not exceeding 3.5 tonnes *'Aggregate Trailer Mass'* must comply with clause 8.4.5 or 8.4.6.

8.4.3. for a trailer of more than 3.5 tonnes *'Aggregate Trailer Mass'* must comply with clause 8.4.6.

8.4.4. the provisions of Australian Standard 1872-1976 "Safety Chains for Trailers and Caravans" . Where attachment is by welding, the weld must extend around 50% of the circumference of the link and the adjoining link must have free movement.

8.4.5. the provisions of Australian Standard AS 4177.4 1994 "Safety Chains up to 3500 kg capacity".

8.4.6. be made from 800 MPa breaking stress and conform to the mechanical properties of Grade T chain as specified in Australian Standard 2321-1979 "Short Link Chain for Lifting Purposes (non calibrated)"; and must be of a size corresponding with the *'Aggregate Trailer Mass'* of the trailer shown in Table 1. Attachment must not involve welding or deformation.

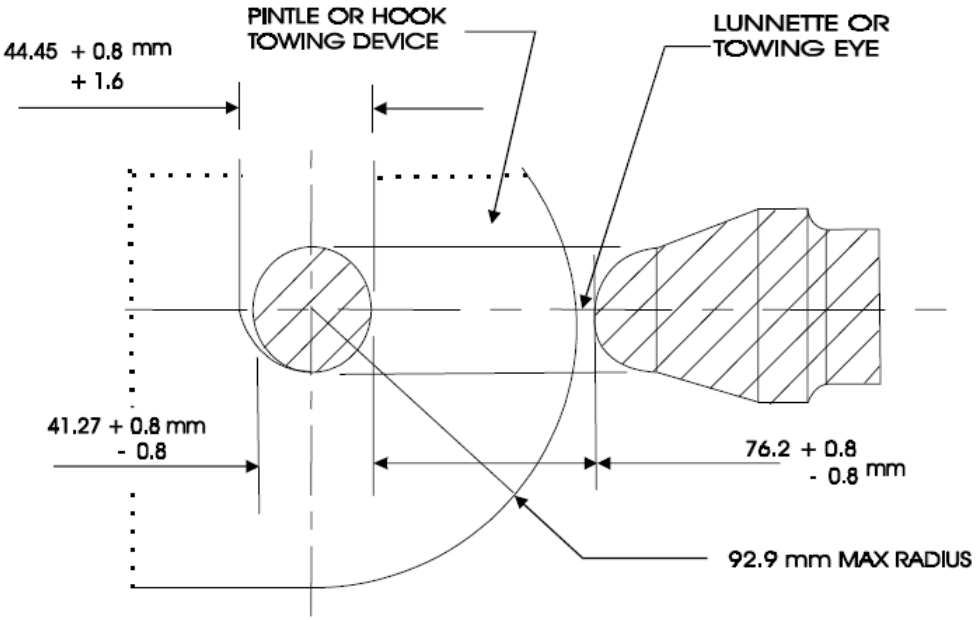

Figure 1

'*Aggregate Trailer Mass*' (tonnes)	Chain Size (millimetres)	Minimum Chain Breaking Load (tonnes)
2.5 – 4.3	7.1	6.4
4.3 – 7.5	9.5	11.6
7.5 – 13.5	12.7	20.4
13.5– 21.5	15.9	32.0
21.5 – 30.0	19.0	46.4
> 30.0	22.0	63.2