

COPY NO

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COMMONWEALTH OF AUSTRALIA

AUSTRALIAN DESIGN RULES FOR MOTOR VEHICLE SAFETY

SECOND EDITION

VOLUME 1 RULES 1-

ISSUED BY

Department of Transport P.O. Box 594 CIVIC SQUARE. A.C.T. 2608.

AUSTRALIAN DESIGN RULES FOR MOTOR VEHICLE SAFETY

SECOND EDITION

SERVICING OF VOLUME 1: INFORMATION FOR HOLDERS

CONTENTS:

The contents of this manual are made up of individual Design Rules. Each Rule is made up as follows:

- (a) Cover Sheet (green paper) which sets out the application details recommended by the Australian Transport Advisory Council; and
- (b) Specification (white paper) which sets out the technical requirements of the Rule.

NEW RULES AND AMENDMENTS

Any new Rules endorsed by the Australian Transport Advisory Council will be published and mailed to holders of the Manual.

Amendments to existing Rules will be issued with additions or amendments since the last issue indicated by sidelining on the pages involved. If the page is subsequently amended again, only the most recent amendment will be indicated.

In each case the date of issue will be shown at the lower margin.

RECORD OF ISSUES

To assist in maintaining the volume, a record sheet of additions and deletions will accompany each issue. Holders of manuals should find some value in holding record sheets in the manual as a complete record of issues.

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^{*}The effective date shown is the earliest date that the Rule is applied to any category of vehicle; for further information regarding subsequent implementation dates reference should be made to the Green Sheet for each Rule.

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COMMONWEALTH OF AUSTRALIA

AUSTRALIAN DESIGN RULES

DEFINITIONS

As endorsed by the Australian Transport Advisory Council

The Australian Transport Advisory Council has endorsed Definitions Nos 1 to 20 to be read *in conjunction with Australian Design Rules for Motor Vehicle Safety.

Amended Feb 1984

Issued by: Department of Transport, P.O. Box 594, CIVIC SQUARE ACT 2608

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AUSTRAL IA

Feb 1984

- 'Australian Design Rule' means an Australian Design Rule for Motor Vehicle Safety as endorsed by the Australian Transport Advisory Council and issued by the Commonwealth Department of Transport.
- Forward-Control Passenger Vehicle means a passenger car having up to nine seating positions, including the driver's, and which has;
 - (a) the centre of the steering wheel in the forward quarter of the vehicles total length (including bumpers or over-riders if any),
 - (b) a gross vehicle mass not exceeding 3.5 tonnes, and
 - (c) a maximum number of seating positions times 68kg not less than 50 percent of the difference between GVM and the unladen mass
- 3. 'Gross Vehicle Mass' means the maximum mass as specified by the manufacturer for a loaded vehicle (excluding a passenger car, a motorcycle or a moped) for which compliance with current and appropriate Australian Design Rules has been or can be established.
- 4. 'H Point' means the point simulating the actual pivot centre of a human torso and thigh as determined by the Society of Automotive Engineers Standard SAE J826 'Manikins for Use in Defining Vehicle Seating Accommodation'.
- 5. Head Impact Area' means all non-glazed surfaces of the interior of a vehicle that are statically contactable by a 165mm diameter spherical head form of a measuring device having a pivot point to 'top of head' dimension infinitely adjustable from 740mm to 835mm in accordance with the following procedure, or its graphic equivalent.

At each designated seating position, place the pivot point of the measuring device:

- (a) For seats that are adjustable fore and aft, at the seating reference point and a point 127mm horizontally forward of the seating reference point and vertically above the seating reference point an amount equal to the rise which results from either a 127mm forward adjustment of the seat or 19mm; and,
- (b) For seats that are not adjustable fore and aft, at the seating reference point.

With the pivot point to 'top of head' dimension at each value allowed by the device and the interior dimensions of the vehicle, determine all contact points above the lower windscreen glass line and forward of the seating reference point.

* Amended Feb 1984

With the head form at each contact point, and with the device in a vertical position if no contact point exists for a particular adjusted length, pivot the measuring device forward and downward through all arcs in the vertical planes to 90 degrees each side of the vertical longitudinal plane through the seating reference point, until the head form contacts an interior surface or until it is tangent to a horizontal plane 26mm above the seating reference point whichever occurs first.

- 6. 'Industrial or Agricultural Equipment' means a self-propelled vehicle constructed principally for use in industry, primary production, civil construction or maintenance, and which is not intended for continuous use on the road although it may be so used intermittently; and includes vehicles of the kind known as tractors, fork-lifts, road construction equipment harvesters and any mobile crane the engine of which is used for both lifting of loads and the propulsion of the vehicle.
- 7. 'Laden Moped Mass' means the mass of the unladen moped with a full capacity of lubricating oil, coolant and fuel, plus 90 kg (including driver and instrumentation) distributed in the saddle or carrier if so equipped.
- 8. 'Maximum Moped Speed' means the speed attainable, established by calculation or on the basis of a test, under maximum acceleration from a standing start for 1.6 km, at the laden moped mass.
- 9. 'Moped' means a motor vehicle with two wheels and an engine displacement not exceeding 50 ml, with a maximum moped speed of no more than 50 km/h, and no provision for the manual selection of gears. The mass of a moped with a full capacity of lubricating oil, coolant and fuel, but without goods, occupants or options, shall be not more than 65 kg.
- 10. 'Motor Cycle' means any motor vehicle (other than a moped) which have two wheels, or where a side-car is attached thereto, has three wheels
- 11. 'Motor Vehicle' means any self-propelled vehicle used on a road, but does not mean or include any vehicle used on a railway or tramway.
- 12. 'Multi-Purpose Passenger Car' means a motor vehicle, not being a forward control passenger vehicle, designed specifically for the conveyance of not more than eight persons and which is constructed either on a truck chassis or with special features for off-road operation.
- 13. 'Omnibus' means a motor vehicle, not being a forward control passenger vehicle, constructed primarily for the carriage of passengers, equipped to seat more than eight adult passengers (including the driver).

AUSTRALIAN DESIGN RULES - DEFINITIONS

- 14. 'Passenger Car' means a motor vehicle, (other than a motorcycle, a moped, an omnibus or a multi-purpose passenger car) constructed principally for the conveyance of persons, and excludes a goods vehicle.
- 15. 'Passenger Car Derivative' means a motor vehicle of the kind known as a coupe utility, or panel van of the same make as a factory produced passenger car, and in which the forward part of the body form and the greater part of the mechanical equipment are the same as those in the said passenger car.
- 16. 'Reference Axis' means the horizontal line which passes through the centre of the light source and is parallel to any longitudinal vertical plane through the vehicle.
- 17. 'SAE' means the Society of Automotive Engineers, Inc.
- 18. 'Seating Reference Point' means the manufacturer's design reference point which -
 - (a) establishes the rearmost normal design driving or riding position for each designated seating position in a vehicle;
 - (b) has co-ordinates established relative to the design vehicle structure;
 - (c) simulates the position of the pivot centre of human torso and thigh; and
 - (d) is the reference point employed to position the two dimensional templates described in Society of Automotive Engineers Standard J826, 'Manikins for Use in Defining Vehicle Seating Accommodation', November 1962.
- 19. 'Truck Tractor' means a motor vehicle constructed to provide the motive power of an articulated vehicle.
- 20. 'Unladen Mass' means the mass of a vehicle with a full capacity of lubricating oil, coolant and fuel but without goods, occupants or options except those options which are essential to the test for which unladen mass is specified.



COMMONWEALTH OF AUSTRALIA

AUSTRALIAN DESIGN RULES

METRICATION

As Endorsed by the Australian Transport Advisory Council

The Australian Transport Advisory Council has agreed that if an equivalent metric or imperial unit is required for any of the parameters expressed in the Design Rules, then the equivalent should be selected from the attached table.

Issued by: Department of Transport P.O.Box 594
Canberra City ACT 2601

July 1980

| | | Imperial | Metric |
|----------|-----------------------|-------------------|----------------------|
| Rule No. | Description | Figure | Figure |
| 2 | Implementation Sineet | 10,000 lbs | 4.5 tonne |
| | 2.2.1.1.1 | 2500 lbs | 11.1 kN |
| | | 1000 lbs | 4.4 kN |
| | 2.2.1.1.2 | 2000 lbs | 8.8 kN |
| | | 1000 lbs ' | 4.4 kN |
| | 2.2.1.1.3 | 30 g | 30 times accelera |
| | | | due to gravity |
| | 2.2.1.2 | 2500 lbs | 11.1 kN |
| | | 2000 lbs | 8.8 kN |
| | 2.2.2.1.1 | 2500 lbs | 11.1 kN |
| | 2.2.2.1.2 | 2000 lbs | 8.8 kN |
| | 2.2.2.2 | 2500 lbs | 11.1 kN |
| | | 2000 lbs | 8.8 kN |
| | 2.2.3 | 4000 lbs . | 17.8 kN 8.89 kN |
| | 2.3.3 | 2000 lbs | 17.8 kN |
| | | 4000 lbs | T1.0 VII |
| 5A | 5.2.1 | 16 ins | 410 mm |
| JA | 5.5.1.2 | 10 ins | 300 mm |
| | 3.3.1.2 | 6.5 ins | 165 mm |
| | | 12.0 ins | 300 mm |
| | 5.5.2.1 | 4 ins | 100 mm |
| | | 15.75 ins | 400 r.ma |
| | | 28 ins ' | 710 mm |
| | | 21.75 | 555 mm |
| | | 4.75 | 120 mm |
| | 5.9.1 | 5000 lbs | 22.3 kN |
| | 5.9.2 | 4000 lbs | 17.7 kN |
| 7 | Brake Hoses | _ | 0 |
| | 7.5.2 | 70°F | 20 ⁰ C |
| | | 90 ⁰ F | 35°C |
| | 7.6.1 | .08 in . | 2 mm |
| | | 1/8 in | 3 mm |
| | | .12 in | 3 mm |
| | | 3/16 in | 5 tata |
| | | .165 in | 4 mm 6 mm |
| | | ¼ in 3 in | 75 ma |
| | 7.6.2 | Cubic Centi- | millilitres per |
| | / a U a & | netres | metre |
| | | per foot | |
| | Table I | 1000 psi · | 7 MPa |
| | | 1500 psi | 10 HPa |
| | | 1/8 in | 3 mm |
| | | 3/16 in | 5 mm |
| | | 4 in | 6 run |
| | | 0.66 cc/ft | 2.2 ml/m |
| | | o.86 " | 2.9 ml/m |
| | | 1.04 " | 3.5 ml/m |
| | | 0.33 " | 1.1 ml/m |
| | | 0.55 " | 1.9 ml/m |
| | | U.79 " | 2.5 ml/m |
| | | 1.02 " | 3.3 ml/m |
| | | 1.30 " | 4.2 ml/m 1.4 ml/m |
| | | U.42 " | |

*Amended July 1980

July 1980

| Description | Figure 15,000 psi/min 35,000 psi/min 1/8 in 3/16 in 4 in 4000 psi 3000 " 5000 " 4500 " 8 in 24 in 1/8 15.5 in 3/16 in 4 in 325 lbf 1 inch | Figure 100 MPa/min 250 MPa/min 3 mm 5 mm 6 mm 27 MPa 20 MPa 34 MPa 31 MPa 200 mm 600 mm 3 mm 400 mm | |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| | psi/min 35,000 psi/min 1/8 in 3/16 in 4 in 4000 psi 3000 " 5000 " 4500 " 8 in 24 in 1/8 15.5 in 3/16 in 4 in 325 lbf | 250 MPa/min 3 mm 5 mm 6 mm 27 MPa 20 MPa 34 MPa 31 MPa 200 mm 600 mm 3 mm 400 mm | |
| | psi/min 35,000 psi/min 1/8 in 3/16 in 4 in 4000 psi 3000 " 5000 " 4500 " 8 in 24 in 1/8 15.5 in 3/16 in 4 in 325 lbf | 250 MPa/min 3 mm 5 mm 6 mm 27 MPa 20 MPa 34 MPa 31 MPa 200 mm 600 mm 3 mm 400 mm | |
| | 35,000 psi/min 1/8 in 3/16 in 4 in 4000 psi 3000 " 5000 " 4500 " 8 in 24 in 1/8 15.5 in 3/16 in 4 in 325 lbf | 3 mm 5 mm 6 mm 27 MPa 20 MPa 34 MPa 31 MPa 200 mm 600 mm 3 mm 400 mm | |
| | psi/min 1/8 in 3/16 in 4 in 4000 psi 3000 " 5000 " 4500 " 8 in 24 in 1/8 15.5 in 3/16 in 4 in 325 lbf | 3 mm 5 mm 6 mm 27 MPa 20 MPa 34 MPa 31 MPa 200 mm 600 mm 3 mm 400 mm | |
| | 1/8 in 3/16 in 4 in 4000 psi 3000 " 5000 " 4500 " 8 in 24 in 1/8 15.5 in 3/16 in 4 in 325 lbf | 5 mm 6 mm 27 MPa 20 MPa 34 MPa 31 MPa 200 mm 600 mm 3 mm 400 mm | |
| | 3/16 in 4 in 4000 psi 3000 " 5000 " 4500 " 8 in 24 in 1/8 15.5 in 3/16 in 4 in 325 lbf | 5 mm 6 mm 27 MPa 20 MPa 34 MPa 31 MPa 200 mm 600 mm 3 mm 400 mm | |
| | 4 in 4000 psi 3000 " 5000 " 4500 " 8 in 24 in 1/8 15.5 in 3/16 in 4 in 325 lbf | 6 mm 27 MPa 20 MPa 34 MPa 31 MPa 200 mm 600 mm 3 mm 400 mm | |
| | 4000 psi 3000 " 5000 " 4500 " 8 in 24 in 1/8 15.5 in 3/16 in 4 in 325 lbf | 27 MPa 20 MPa 34 MPa 31 MPa 200 mm 600 mm 3 mm 400 mm | |
| | 3000 " 5000 " 4500 " 8 in 24 in 1/8 15.5 in 3/16 in 4 in 325 lbf | 20 MPa 34 MPa 31 MPa 200 mm 600 mm 3 mm 400 mm 5 mm | |
| | 5000 " 4500 " 8 in 24 in 1/8 15.5 in 3/16 in 4 in 325 lbf | 34 MPa 31 MPa 200 mm 600 mm 3 mm 400 mm 5 mm | |
| | 4500 " 8 in 24 in 1/8 15.5 in 3/16 in 4 in 325 lbf | 31 MPa 200 mm 600 mm 3 mm 400 mm 5 mm | |
| | 8 in 24 in 1/8 15.5 in 3/16 in 4 in 325 lbf | 200 mm 600 mm 3 mm 400 mm 5 mm | |
| | 24 in 1/8 15.5 in 3/16 in 4 in 325 1bf | 600 mm 3 mm 400 mm 5 mm | |
| | 24 in 1/8 15.5 in 3/16 in 4 in 325 1bf | 3 mm 400 mm 5 mm | |
| | 1/8 15.5 in 3/16 in 4 in 325 lbf | 3 mm 400 mm 5 mm | |
| | 15.5 in 3/16 in 4 in 325 lbf | 400 mm 5 mm | |
| | 3/16 in 4 in 325 lbf | 5 mm | |
| | 4 in 325 lbf | | |
| | 325 lbf | 6 mm | |
| | | 1.44 kii | |
| | T TUCH | 25 mm per min | |
| | | 20 mm per man | |
| | per minute | −5ນ ^ວ ເ | |
| | -65 ^O F | | |
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| | | | |
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| | ½ in | | |
| | 150 0 psi | | |
| | 3000 psi | | |
| | 25 mph | 40 km/h | |
| | 75 1be | 34 kg | |
| | | | |
| | | | |
| | | | |
| | 2500 IDS | II.I KK | |
| | 25 in | 635 mm | |
| | | 26 mm | |
| | 175 F | 80 ິ C | |
| | 200F | −5 [©] C | |
| | gop | 5 ⁰ C | |
| , | 75 ^ი ნ | 25 ⁰ C | |
| | 1500F | 65 C | |
| | | =58c | |
| | 750, | | |
| | /) [| 43 0 | |
| | ου in | 1.53 m | • |
| | | 1.63 m | |
| | | 1.73 m | |
| | 68 in | 1.73 m | |
| | | 0.5 4 | |
| | | | |
| | 150 lbs | ს8 kg ₂ | |
| | 0.2 g | 2 m/s~ | |
| | 6 5 in 1 | 165 mm * | |
| | | | |
| | | | |
| | 22 TII | | |
| | *Amended | -70oF 3 in 1/8 in 3.5 in 3/16 in ½ in 1500 psi 3000 psi 25 mph 75 lbs 80 lbs 22 ft/sec 2500 lbs 25 in one inch 175 F 20 F 5 F 150 F 75 F 150 F 20 F 75 F 150 D 68 in 68 in 68 in 60 mph 150 lbs | -70oF |

| | Imperial | Metric |
|------------------------------|----------------------|------------------------|
| Rule No. Description | Figure | Figure |
| Rule No. Description | | |
| 21.1.1.1(a) | 5 in | 127 mm |
| 21.1.1.1(4) | 5 in | 127 rm |
| | 0.75 in | 19 mm |
| 21.1.1.3 | 1 in | 26 mm |
| 21.2.1 | 15 lb | 6.8 kg |
| 21.2.1 | 6.5 in | 165 mm |
| | 15 mph | 24.1 km/h |
| 21.2.2.2 | 5 in | 127 mm |
| 21.2.2.4 | 6.5 in | 165 mm |
| 21.2.3.1(a) | 5 in | 127 men |
| # 7 6 T 6 Q 8 T (M) | 5 in | 127 mm |
| 21.2.3.1 | 0.75 in | 19 mm |
| 21.3.2.1 | 10 g | 10 times acceleration |
| 22,000 | _ | due to gravity |
| | 10 g | 10 times acceleration |
| | - | due to gravity |
| 21.3.2.2 | 30 mph | 48 km/h |
| 21.3.2.3 | 30 g | 30 times acceleration |
| 21,01210 | _ | due to gravity |
| 22 22.2.2 | 23 in | 5 85 mm |
| | 27.5 in | 700 ma |
| 22.2.3 | 10 in | 250 mm |
| | 6.75 in | 170 ma |
| | 23 in | 585 mm |
| | 25 in | 635 mm |
| 22.3.2 | 8 g | 8 times acceleration |
| , | | due to gravity |
| 22.3.3 | 4 in | 102 mm |
| | 200 lb | 890 N |
| 22.4.3 | 8 g | 8 times acceleration |
| , | | due to gravity |
| | 9.6 g | 9.6 times acceleration |
| | | due to gravity |
| 22.5.2 | 3300 in 1b | 370 lim |
| 22.5.3 | 6.5 in | 165 Lm |
| | θ in | 150 mm |
| | 25 in | 635 mm |
| | 3300 in 1b | 370 Nta |
| 22.5.4 | م1 200 | 890 11 |
| | | |
| 23) To be considered after | | |
| 24) discussion with industry | | |
| | | For ADRs 26 and |
| | | 27 the figures |
| | | in this column |
| | | are the same as |
| | | for ECE Reg. 15 |
| | 2000 | 3000 km |
| 26 26.6.1 | 2000 miles | 3000 km 60 ± 4 kPa |
| 26.7.2 | 0.6±0.04 | 00 Mu |
| | bars | Delete |
| | 8.82±0.59 | Detere |
| | psi | |
| | 2.587 ± | Delete |
| | 0.136g/IG | |
| 26.8.2.7 | cm ⁷ /in3 | 1 |
| | | 1 |
| 26.8.2.10 | cm3/in ³ | _ |

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