



COMMONWEALTH OF AUSTRALIA

AUSTRALIAN DESIGN RULE 7
FOR
HYDRAULIC BRAKE HOSES

As Endorsed by the
 Australian Transport Advisory Council

The intention of this Australian Design Rule is to specify the performance requirements of hydraulic brake hoses in motor vehicles so that the risk of failure in service will be minimised.

The Australian Transport Advisory Council has recommended to Commonwealth, State and Territory Governments that all motor vehicles specified below if fitted with a hydraulic braking system, shall be equipped with Hydraulic Brake Hoses complying with Australian Design Rule 7 - Hydraulic Brake Hoses.

VEHICLE CATEGORY	RULE		AMENDMENT	
	MANUFACTURED ON OR AFTER			
	7			
Passenger Cars				
Forward Control Passenger Vehicles up to 8 seats	1 Jan 1985			
9 seats	1 Jan 1985			
Other Passenger Cars	1 Jan 1970			
Passenger Car Derivatives	1 Jan 1970			
Multi-Purpose Passenger Cars	1 Jan 1970			
Omnibuses up to 3.5 tonnes GVM				
up to 12 seats	1 Jan 1970			
over 12 seats	1 Jan 1970			
up to 4.5 tonnes GVM	1 Jan 1970			
over 4.5 tonnes GVM	1 Jan 1970			
Motorcycles	1 July 1975			
Mopeds	1 July 1975			
Specially Constructed Vehicles	1 Jan 1970			
Other Vehicles not listed above				
up to 4.5 tonnes GVM	1 Jan 1970			
over 4.5 tonnes GVM	1 Jan 1970			

N/A - Not Applicable
 GROSS VEHICLE MASS - Abbreviated to 'GVM'

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 PO Box 594
 CIVIC SQUARE ACT 2608
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6A.2.5 Colour of Emitted Light from Prescribed and Optional Side Turn Signal Lamps

6A.2.5.1 The colour of emitted light measured by using a source of light with a colour temperature of $2856^{\circ}\text{K} \pm 50^{\circ}\text{K}$ shall be within the following limits expressed in trichromatic co-ordinates of the International Commission of Illumination.

Limit towards yellow $y \leq 0.429$

Limit towards red $y \geq 0.398$

Limit towards white $z \leq 0.007$

6A.3 Test Procedure

6A.3.1 All measurements shall be carried out with colourless standard bulbs of the types recommended for the device adjusted to produce the normal luminous flux prescribed for those types of bulbs.

6A.3.2 The photometric intensities measured at the various test points shall be those that would be obtained when the lamp is mounted in the vehicle.

6A.3.3 During photometric measurements stray reflections shall be avoided by appropriate masking.

6A.3.4 The distance of measurement shall be such that the law of the inverse of the square of the distance is applicable.

6A.3.5 The measuring equipment shall be such that the aperture of the receiver shall subtend an angle between 10 minutes and 1 degree at the origin on the reference axis defined in clause 6A.1.2.

6A.3.6 The intensity requirement of a particular direction of observation shall be deemed to be satisfactory if that requirement is met in a direction deviating not more than one quarter of a degree from the direction of observation.

6A.3.7 Further testing may be required to ensure that for a minimum specification no measurement taken between two test points is below 50 per cent of the lower of the minimum intensities required at the adjoining test points and that for a maximum specification no measurement taken between two test points shall be greater than that calculated from a linear function based on the intensities allowed at the adjoining test points.

AUSTRALIAN DESIGN RULE NO. 7 - HYDRAULIC BRAKE HOSES

7.1 Scope

7.1.1 This Design Rule covers the performance requirements for a grade of hose assembled with end fittings for use on automotive hydraulic brake equipment as flexible connections.

7.2 Materials

7.2.1 The outer material shall be durable and not subject to cracking after long exposure to weather ageing. The inner material shall effectively resist deterioration by non-mineral oil brake fluids.

7.3 End Connections

7.3.1 Exposed metal end connections shall be protected against rust and corrosion.

7.4 Manufacturer's Identification

7.4.1 Each hose assembly shall bear a distinctive designation prominently and permanently indicating the name or trade mark of its manufacturer.

7.5 Test Procedures

7.5.1 All tests shall be made in accordance with the American Society for Testing and Materials D571 - Testing Automotive Hydraulic Brake Hose - 55 (1965).

7.5.2 Except in the case of the Cold Test, the temperature of the testing room shall be between 70° F and 90°F. The hose assemblies for test shall be stabilised at room temperature prior to testing.

7.6 Requirements

7.6.1 Constriction Test - The constriction of the hose assembly shall be measured with a gauge plug whose 'A' dimensions shall be 0.080 inch minimum in diameter for 1/8 inch inside diameter hose, 0.120 inch minimum in diameter for the 3/16 inch inside diameter hose, and 0.165 inch minimum in diameter for the 1/4 inch inside diameter hose. The time required for the gauge plug to drop of its own weight a distance of 3 inches into the hose assembly shall not exceed 5 seconds.

7.6.2 Expansion Test - The maximum expansion, in cubic centimetres per foot, of the hose assembly so tested shall not exceed the values in Table 1.

AUSTRALIAN DESIGN RULE NO. 6A - DIRECTION TURN SIGNAL LAMPS

6A.1 Definitions

6A.1.1 Direction Turn Signal Lamps - Lamps located at the front and rear to indicate the intention of performing a turning manoeuvre.

6A.1.2 Test Points - Specific points indicated on the diagram in Clause 6A.4 by percentage luminous intensity values and from which photometric measurements are taken. These points are located by angular displacement from the reference axis with an origin selected at a point on the reference axis between the geometric centre of the light sources and the outer surface of the lens.

6A.2 Requirements6A.2.1 Front Lamps

6A.2.1.1 The luminous intensity measured on the reference axis shall be not less than 175 cd.

6A.2.1.2 The luminous intensity in any direction shall not exceed 700 cd.

6A.2.1.3 The luminous intensity at any test point when expressed as a percentage of 175 cd shall be not less than the values indicated in Clause 6A.4.

6A.2.1.4 The luminous intensity at any test point located more than 5 degrees inboard or more than 5 degrees outboard of the reference axis shall not exceed 400 cd.

6A.2.1.5 The luminous intensity at any point in a horizontal plane through the reference axis from 45 degrees inboard to 80 degrees outboard shall be not less than 0.3 cd.

6A.2.1.6 In addition to the requirements of Clause 6A.2.1 motor vehicles having a length in excess of 7.5 m and truck tractors shall have lamps located forward of the transverse centre line of the vehicle, which give a signal to the rear. When fitted to the vehicle the luminous intensity of the signal at any point in a transverse vertical plane containing the rear end of the vehicle from a point 1.5 m outboard to a point 8 m outboard from the sides of the vehicle shall be not less than 0.3 cd. This requirement may be met using optional turn signal lamps in accordance with the requirements of Clause 6A.2.4.

6A.2.2 Rear Lamps with Single Levels of Intensity

6A.2.2.1 The luminous intensity measured on the reference axis shall be not less than 150 cd.

6A.2.2.2 The luminous intensity in any direction shall not exceed 400 cd.

7.6.5 Tensile Test - All hose assemblies shall withstand a minimum pull of 325 pounds force without the end fittings pulling off or rupture of the hose when fixed in the testing machine and pulled at a speed of approximately 1 inch per minute.

7.6.6 Cold Test - The hose assembly shall be conditioned in a cold box in a straight position at -65° F to -70° F for 72 hours. Then without removal from the cold box, the hose shall be bent around a mandrel of 3 inch diameter for 1/8 inch hose and 3.5 inch diameter for 3/16 and 1/4 inch hose. The hose shall not crack or break.

7.6.7 Ozone Test - The outer cover of the hose shall show no cracking when tested in accordance with American Society for Testing and Materials - D622 (1965) - Testing Automotive Air Brake and Vacuum Brake Hose.

7.6.8 Salt-Spray Test - The hose assembly end connections shall withstand 24 hour exposure to salt spray when tested in accordance with American Society for Testing and Materials - Standard B117 - Salt Spray (Fog) Testing, 1964.

7.6.9 100% Pressure Test - Each complete hose assembly shall be given a pressure test, using air or water as the pressure medium. The test pressure shall be 1,500 psi minimum for air or gas and 3,000 psi minimum for liquid. The pressure shall be held for not less than 10 seconds. Hose assemblies shall not leak under this test.