COMMONWEALTH OF AUSTRALIA

AUSTRALIAN DESIGN RULE 15
FOR
DEMISTING OF WINDSCREENS

As Endorsed by the
Australian Transport Advisory Council

The intention of this Australian Design Rule is to define standards for equipment to maintain windscreens clear of mist so that drivers' forward vision is not obscured.

The Australian Transport Advisory Council has recommended to Commonwealth, State and Territory Governments that all motor vehicles specified below shall comply with Australian Design Rule 15 - Demisting of Windscreens.

VEHICLE CATEGORY	RULE	AMENDMENT
	MANUFACTURED ON OR AFTER	
		15
Passenger Cars		
Forward Control Passenger Vehicles up to 8 seats	1 Jan 1985	
9 seats	1 Jan 1985#	1 Jan 1986
Other Passenger Cars	1 Jan 1971	
Passenger Car Derivatives	1 Jan 1973	
Multi-Purpose Passenger Cars	1 Jan 1973	
Omnibuses up to 3.5 tonnes GVM		
up to 12 seats	1 July 1983#	1 Jan 1987
over 12 seats	1 July 1983#	
up to 4.5 tonnes GVM	N/A	
over 4.5 tonnes GVM	N/A	
Motorcycles	N/A	
Mopeds	N/A	
Specially Constructed Vehicles	N/A	
Other Vehicles not listed above		
up to 4.5 tonnes GVM	1 July 1973	
over 4.5 tonnes GVM	1 July 1976	

Front seats only (including driver's seating position)
N/A - Not Applicable
GROSS VEHICLE MASS - Abbreviated to 'GVM'

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AUSTRALIAN DESIGN RULE NO. 15 - DEMINISTING OF WINDSCREENS

15.1 Definitions

15.1.1 Mist - A film of condensation on the inside surface of a glazed area of a vehicle.

15.1.2. Demist - The restoration of visibility following a mist condition, by the operation of demisting equipment and signified by a dry windscreen.

15.1.3 Eye Ellipses - The eye ellipses shall be the 95th percentile eye ellipses defined and positioned as in Recommended Practices SAE J941b (February 1969); SAE J941c (June 1972); SAE J941d (February 1975); SAE 941e (March 1977); SAE J941 (March 1981) - * Motor Vehicle Driver's Eye Range, or in ISO 4513 - 1978 (E) - Road Vehicles - Visibility - Method for establishment of eye ellipses for drivers' eye location suitably handed for right hand steering.

15.1.4 Measurements - All measurements shall be considered relative to the vehicle's design attitude at design load on level ground. Any vertical adjustment provided for the driver's seat in excess of the seat slide rise provided for in SAE J941b may be considered in determining compliance with this Rule.

15.1.5 Critical Area A

15.1.5.1 In the case of passenger cars, passenger derivatives and multi-purpose passenger cars, critical area A is the area of the windscreen bounded by a plane tangential to the bottom of the eye ellipse which includes a line at ground level transverse to the longitudinal axis of the vehicle 11m forward of the rear most eye ellipse point, and two diverging vertical planes tangential to and inclined 18° to the outboard and 56° to the inboard eye ellipses, and a plane tangential to the top of the eye ellipse inclined upwards at 10° to the horizontal.

15.1.5.2 In the case of other vehicles, critical area A is the area of the windscreen bounded by a plane tangential to the bottom of the eye ellipse which includes a line at ground level transverse to the longitudinal axis of the vehicle 11m forward of the rear most eye ellipse point, and two diverging vertical planes tangential to and inclined 18° to the outboard and 56° to the inboard eye ellipses, and a plane tangential to the top of the eye ellipse inclined upwards at 5° or $\arctan\left(\frac{3-H}{11}\right)$ (where H is the height in metres of the top of the eye ellipse above ground level) whichever is the greater.

15.1.6 Critical Area B - That part of critical area A within diverging vertical planes inclined 15° left and right and tangential to the inboard and outboard eye ellipses.

15.2 General Requirements

15.2.1 After 10 minutes from the start of the test 95% of critical area B shall be demisted.

*Amended February 1984

15.2.2 After 10 minutes from the start of the test 90% of critical area A shall be demisted and any remaining misted area within Critical area A which borders the upper boundary of critical area A shall not, encroach below a plane inclined at 5 degrees above the horizontal and tangential to the top surface of the 95th percentile eye ellipse.

15.2.3 After 10 minutes from the start of the test any remaining misted area between the upper and lower planes bounding critical area A which borders the right hand pillar shall be totally within 26mm of the pillar.

15.3 Test Equipment and Preparation

15.3.1 All necessary vehicle preparation such as cleaning and marking of the windscreen and instrumentation necessary to ensure a satisfactory test and for recording demist test conditions shall be carried out prior to the temperature stabilisation referred to in Clause 15.3.4.

15.3.2 The inside of the windscreen of the vehicle to be tested shall be thoroughly cleaned with a mixture of whiting and alcohol allowed to dry and then wiped off with a dry cotton cloth.

15.3.3 Lines representing the boundaries of the critical areas shall be marked on the windscreen.

15.3.4 The vehicle shall be placed in a cold chamber for sufficient time to ensure that engine coolant, lubricants and internal air temperatures are stabilised at a temperature not exceeding - 1.0°C.

15.4 Steam Generator Specification

15.4.1 The steam generator to be used in the test shall be similar to that specified in Society of Automotive Engineers Recommended Practice J953 - Passenger Car Backlight Defogging System, May 1966, provided that:

15.4.1.1 the capacity shall be at least 2 litres;

15.4.1.2 the heat losses at boiling point shall be less than 75W in ambient condition at - 1.0°C;

15.4.1.3 the fan shall have a capacity of 0.05-0.1m^3/min at 5mm of water static pressure;

15.4.1.4 six steam outlet holes of 6mm diameter shall be provided around the top of generator;

15.4.1.5 the generator shall be calibrated at -1.0°C give readings for each 65g per hour output from 65g to 390g per hour.

15.5 Demisting Test Conditions

15.5.1 The test chamber air temperature, measured with 300mm (12 inches) of the vehicle demister air intake, shall not exceed -1.0°C.

15.5.2 The air velocity within 300mm (12 inches) of the vehicle demister air intake shall be less than 2.5m/s.

15.5.3 Engine Hood, doors, windows and adjustable vents (except the demister air intake) shall be closed except that one window may be open 25mm (1 inch).

15.5.4 The steam generator containing at least 1.5 litres of water shall be brought to boiling point and stabilised to generate not less that 65g (1000 grains) per hour for each seating position. This may be performed inside the vehicle provided that any steam generated before the start is piped away from the vehicle and the pre-test period is not more than 20 minutes.

15.6 Test Procedure

15.6.1 The steam generator shall be located immediately behind the centre of the front seat with the outlets at the approximate height of breath level provided that the outlet height shall be at least 75mm (3 inches) above the top of the seat. In the case of a vehicle having no rear seat the steam generator shall be placed on the vehicle longitudinal centre-line, on the seat, or between the bucket seats, as applicable, with the outlets at approximate breath level.

15.6.2 After the generator has been operating for 5 minutes inside the vehicle, either one or two observers shall enter the vehicle and the output of the generator shall be reduced by 65g per hour for each occupant.

15.6.3 After 1 minute from the time of entry the test shall commence.

15.6.4 Notwithstanding the times specified in Clauses 15.6.2 and 15.6.3 the test shall commence if water run-off commences.

15.6.5 Throughout the test, the engine speed shall not exceed 1500 rpm in neutral gear, except that if this requirement cannot be met, the engine shall be operated at the lowest practicable level.

15.6.6 After a period of 10 minutes from the start of the demist test the demist pattern shall be recorded.

15.6.7 At the completion of the test a scale drawing of the windscreen showing the critical areas and demist patterns shall be prepared and the percentage demist areas computed.