



Section 10

Windscreens and Windows

Objective:

To ensure that the windscreen, windows and associated components are in such a condition that the driver has a clear field of vision at all times under the normal range of climatic conditions.

Australian Design Rules relevant to this section:

- ADR 8** Safety glazing material
- ADR 15** Demisting of windscreen
- ADR 16** Windscreen wipers and washers
- ADR 42** General safety requirements

10.1 Check windscreen and windows

Reasons for rejection

- a) The wiped area of the windscreen in front of and on the same side of the vehicle as the driver, (shown in Figure 10.1 as area A), has:
 - damage (such as scoring, sandblasting or severe discolouration) that interferes with the driver's view
 - any bulls-eye or star fracture that exceeds 16mm in diameter, or either of the following:
 - hairline crack exceeding 30mm long
 - a crack from the edge of the windscreen exceeding 75mm long.

Note: Grooves in windscreens that are designed specifically to clean the wiper blades are not regarded as damage unless they affect the driver's view. Approved grooving is usually identified by the installer.

The fitment of windscreen stone shields is permitted provided the driver's view of the road to the front and side of the vehicle is not reduced.

For further information on windscreens, refer to Additional Information – Replacing or Repairing Windscreens.

Figure 10.1 Driver's field of vision

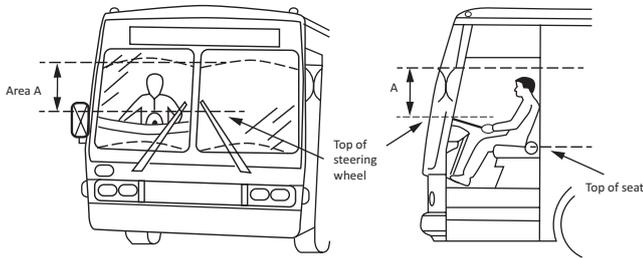
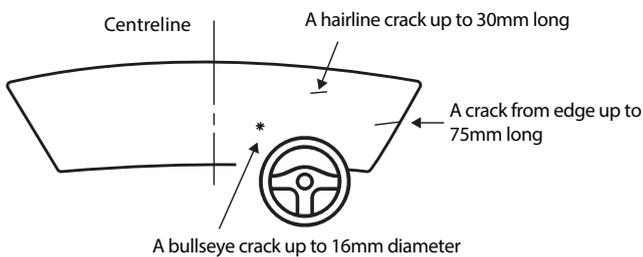


Figure 10.2 Cracks in field of vision



- b) Any cracks in a laminated windscreen penetrate more than one layer of glass or are more than 150mm long
- c) Any glazing used in any motor vehicle is not safety glass and where ADR 8 applies, the glass does not display an identification mark or symbol
- d) Glazing is loose in its frame or cracked to the extent that sharp edges are exposed
- e) Glazing, other than the windscreen, that is necessary for the driver to see the road is discoloured, obscured, badly scratched, sandblasted or fractured to the extent that it interferes with the driver's view
- f) Items that obscure the driver's view are placed in area A shown in Figure 10.1 or the corresponding area on the other side of the windscreen with the exception of a driver's aid

Note: A driver's aid is a visual display unit that assists the driver of the vehicle. Driver's aids include dispatch systems, navigational equipment (e.g. GPS), rear view screens, ticket-issuing machines and vehicle-monitoring devices.
- g) At least half the number of windows must be capable of being opened or the vehicle must be provided with an alternative method of ventilation
- h) Windscreens are removed and not replaced
- i) For a bus that is not adequately ventilated by means of a fan forced 'jet air' or fan forced air-conditioning system, moveable windows are not fitted with a suitable device for opening and closing

- j) If a bus does not have ventilation additional to that provided by its windows
- k) Ladder racks, external roll bars and cages, or similar accessories:
 - have uprights with a diameter of more than 50mm, or
 - are positioned in a way that can reflect the vehicle's lights into the drivers eyes and they do not have a matt, non-reflective black finish.

10.2 Test the light transmittance level of the windscreen, side and rear windows

This section should be read in conjunction with the light meter manufacturers' instructions.

The light meter may have up to a 5% measuring inaccuracy. A vehicle may be accepted if the readings are up to 5% lower than the minimum light transmittance.

In this section, the term tinting refers to both a film applied to glazing to reduce the luminous transmittance and 'tinted glass' where the glazing is manufactured with tinting material between the layers of glass.

Reasons for rejection

- a) Any windscreen glazing has any coating which reduces its light transmittance

Note: Coating that reduces light transmittance may be fitted to either the area above the highest point of the windscreen that is swept by a windscreen wiper or the upper 10% of the windscreen, whichever is greater.
- b) The visible light transmittance of any glazing (including any applied film) is less than that detailed in Table 10.1
- c) Tint films are not free of bubbles, scratches or other defects that significantly affect the driver's vision
- d) Tint films have a reflectance in excess of 10% (e.g. mirror tints)
- e) Not fitted with exterior rear view mirrors on both sides of the vehicle.

Table 10.1 Light transmittance requirements

Glazing	Minimum light transmittance	Vehicles NOT TO BE REJECTED until meter readings are LESS than
Windscreen	70%	65%
All other windows (no tinting)	70%	65%
All other windows level with or forward of the drivers seated position (with tinting)	35%	30%
All other windows (with tinting)	0%	0%

Figure 10.3 Window tinting requirements

Trucks



Buses - 10 or more seating positions



- ★ **Windscreen**
 - No film at all allowed on the lower part of the windscreen
 - Minimum 70% VLT
 - Tinted or opaque band allowed at the top of the windscreen. It is not to extend below the portion swept by the wipers or 10% of the depth of the windscreen
- **Windows**
 - Minimum 35% VLT
 - Must be no more than 10% reflective
 - Film must not be damaged, bubbled or discoloured
- **Windows rearward of driver**
 - No minimum VLT specified for rear windows
 - Must be no more than 10% reflective

10.3 Check windscreen wipers, demisters and washers

Reasons for rejection

- The windscreen wipers are not operational at all speeds and do not return to their normal parked position
- Wiper blade rubbers are cracked, hardened, frayed, curled, torn or missing
- Windscreen washers are inoperative or incorrectly aimed (where applicable)
- Windscreen demister is inoperative or does not blow air onto the windscreen (where applicable)
- The windscreen washer and wipers are not able to be operated from a normal driving position.

Additional Information – Replacing or Repairing Windscreens

Introduction

Windscreen damage or defects may impair a driver's forward vision, create a potential safety hazard and affect road safety. However, windscreens will be subject to some damage such as sandblasting, cracks, and stone chips during normal operation, therefore some deterioration from new condition is allowable.

A windscreen should be clean and free of damage that might impair the driver's view to the front of the vehicle.

Is a damaged windscreen safe?

When a damaged windscreen is examined the following factors should be considered:

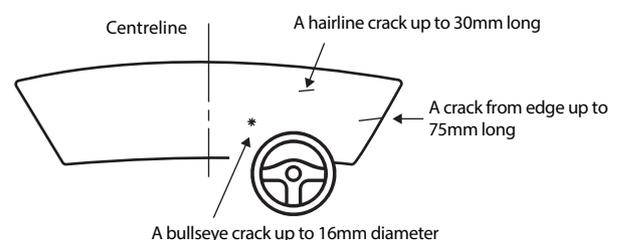
- the location of the damage
- the size of the damage
- effect on the mechanical strength of the windscreen.

To determine if a windscreen should be replaced or repaired, the area of windscreen swept by the wipers may have bullseyes and star fractures up to 16mm in diameter and cracks up to 150mm long which do not penetrate more than one layer of the glass in a laminated windscreen, provided they do not interfere with the driver's vision.

In addition, the 'primary vision area' (the area of the windscreen which is swept by the windscreen wipers) must not be cracked, scored, chipped, sandblasted or otherwise damaged to the extent that it impairs the driver's vision or damages the wiper blades.

It is recommended that all defects be repaired as soon as possible.

Figure 10.4 Cracks in field of vision



Repairing windscreen damage

Repairing a damaged windscreen, if undertaken correctly, is an acceptable means of reinstating a windscreen to a safe condition.

Repaired windscreens must comply with the following requirements:

- when inspected from the inside of the vehicle, the repair should not exhibit any significant optical defects which would distort or distract the vision of the driver and should restore clarity to the damaged area. (Acceptable limits of repairs are outlined in Note 1)
- any repair to the windscreen should not reduce the effectiveness of the windscreen wipers
- windscreen repair material must be used in accordance with the manufacturer's instructions.

If a repair has been unsuccessful or is unlikely to be effective, the vehicle owner is responsible for replacing the windscreen in order to meet the necessary safety requirements.

Note: In a repaired windscreen, a faint outline of the repair, or in some cases, a slight dull spot may be visible where the repair has been performed. A repaired crack may also be detectable by a fine hairline surface mark. These are acceptable and should not cause a vehicle to fail an inspection provided the damaged windscreen has been repaired to a standard which complies with the requirements outlined in this document.

To date, the extent of windscreen damage considered to be repairable has not been defined. Improved technology has increased the scope of repairable damage and acceptability can only be determined (in accord with the above standards) after the repair has been completed.

It is recommended that repairs of cracks longer than 350mm be avoided.

The Australian Standard AS 2366 Repair of laminated glass windscreens fitted to road vehicles is a voluntary code of practice for the repair of automotive windscreens that gives recommended practices regarding the repair of laminated windscreens. The use of the Australian Standard is not mandatory.

Replacement windscreens

To ensure the safety of all motor vehicle occupants, replacement windscreens must be of an approved safety glass.

The glass must always bear an identification mark indicating the standard to which the glass has been manufactured (e.g. AS 2080, BSAU178, JISR3211, UNECE R43, ANSI-Z26.1) and have a standards mark etched or indelibly printed on the glass.

Windscreens which do not comply with these recognised standards may shatter easily and unexpectedly, creating areas of distorted vision.

Windscreens that do not have a standards mark are illegal.

Windscreens fitted (either new or as a replacement) to motor vehicles manufactured on or after 1 July 1971, are required by law to be made from glass which has a light transmittance of no less 75%. Aftermarket tint film may be applied to the upper portion of the windscreen. The tinting must not extend lower than a horizontal line contacting the uppermost point of the arcs swept by the vehicle manufacturer's original wiper blades. The tinting may be of any shade but must not have a reflectance of more than 10%.

Types of windscreens available



There are two types of replacement windscreens available for motor vehicles, laminated or tempered.

Laminated glass windscreens are manufactured like a sandwich with glass on the outside and inside surfaces and a clear plastic film between. A laminated screen is more resistant to breakage than tempered glass and even when fractured it remains almost transparent.

Tempered glass is specially treated so that, when broken, it shatters into tiny fragments instead of jagged splinters. Unfortunately, when the windscreen shatters, it is difficult to see through.

Motor vehicles manufactured on or after 1 January 1994 must be fitted with laminated glass windscreens. Whilst motor vehicles built before 1 January 1994 do not have to meet this requirement, it is strongly recommended that when a replacement windscreen is needed, laminated glass be used.

Remember

Windscreen damage or defects could seriously impair a driver's ability to see clearly, thereby presenting a safety hazard.