



Direct glazed automotive glass replacement—Light vehicles



This Australian Standard® was prepared by Committee ME-055, Safety Glass for Land Transport. It was approved on behalf of the Council of Standards Australia on 18 October 2017.

This Standard was published on 1 December 2017.

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 - Australian Autoglass Industry Alliance
 - Australian Industry Group
 - Auto Glass Association
 - Department of Planning, Transport and Infrastructure, SA
 - Federal Chamber of Automotive Industries
 - Institute of Automotive Mechanical Engineers
 - Insurance Council of Australia
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-

This Standard was issued in draft form for comment as DR AS 4739:2017.

Standards Australia wishes to acknowledge the participation of the expert individuals that contributed to the development of this Standard through their representation on the Committee and through the public comment period.

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Australian Standard®

**Direct glazed automotive glass
replacement—Light vehicles**

Originated as AS 4739—2002.
Second edition AS 4739:2017.

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Published by SAI Global Limited under licence from Standards Australia Limited, GPO Box 476, Sydney, NSW 2001, Australia

ISBN 978 1 76035 960 7

PREFACE

This Standard was prepared by the Australian members of Joint Standards Australia/Standards New Zealand Committee ME-055, Safety Glass for Land Transport, to supersede AS 4739—2002.

After consultation with stakeholders in both countries, Standards Australia and Standards New Zealand decided to develop this Standard as an Australian Standard rather than an Australian/New Zealand Standard.

The objective of this Standard is to verify the suitability of direct glazed automotive glass replacement procedures and applicable direct glazed automotive glass replacement materials, to ensure satisfactory glass replacement in light vehicles.

The objective of this revision is to update the requirements on installation procedures to reflect current practice.

For windscreen repair procedures and repair systems, refer to AS/NZS 2366.1, *Windscreen repairs*, Part 1: *Repair procedures* and AS/NZS 2366.2, *Windscreen repairs*, Part 2: *Repair systems* respectively.

The term ‘informative’ has been used in this Standard to define the application of the appendix to which it applies. An ‘informative’ appendix is only for information and guidance.

CONTENTS

	<i>Page</i>
1 SCOPE.....	4
2 REFERENCED DOCUMENTS	4
3 DEFINITIONS.....	4
4 COMPONENTS.....	5
5 DIRECT GLAZING ADHESIVE SEALANT SYSTEMS	5
6 REPLACEMENT OF DIRECT GLAZED AUTOMOTIVE GLASS	6
APPENDIX A REINSTALLATION OF ANCILLIARY COMPONENTS AND MATERIALS OTHER THAN GLASS	12

STANDARDS AUSTRALIA

Australian Standard**Direct glazed automotive glass replacement—Light vehicles**

1 SCOPE

This Standard specifies the procedure for the replacement of direct glazed automotive glass. The Standard aims to ensure that when direct glazed automotive glass is replaced, the structural integrity, safety features, and the appearance of the vehicle are not compromised.

The vehicles referred to in this Standard are those defined in the Vehicle Standard (Australian Design Rule—Definitions and Vehicle Categories) 2005 as follows:

- (a) MA—Passenger car.
- (b) MB—Forward control passenger vehicle.
- (c) MC—Off-road passenger vehicle.
- (d) NA—Light goods vehicle.

2 REFERENCED DOCUMENTS

The following documents are referred to in this Standard:

AS/NZS

2080 Safety glazing for land vehicles

FMVSS (Federal Motor Vehicle Safety Standard)

212 Windshield Mounting

Thatchem Research

Code of Practice for the replacement and refitting of automotive glazing for vehicles fitted with screen mounted advanced driver assistance systems (ADAS)

Department of Infrastructure and Regional Development (Australian Government)

Vehicle Standard (Australian Design Rule—Definitions and Vehicle Categories) 2005

3 DEFINITIONS

For the purpose of this Standard, the definitions below apply.

3.1 Auto glazier

An individual, who removes, replaces and installs automotive window glass.

3.2 Curing

The progressive hardening of a material by chemical reaction.

3.3 Dam

Self-adhesive foam strip placed on the vehicle's aperture or glass to maintain the distance of the windscreen from the vehicle's body while the adhesive sealant cures and prevents ingress of adhesive sealant into the interior of the vehicle.

3.4 Direct glazing

The securing and sealing of glass in a prepared opening in a vehicle using an appropriate adhesive sealant system.

3.5 Direct glazing adhesive sealant system

Compounds that are specifically engineered for the fixing of direct glazed automotive safety glass. Applied in a liquid state and becomes a solid state after curing to bond and seal two or more substrates together.

3.6 Flash-off time

The time taken for a solvent to evaporate from a solution after application on a surface.

3.7 Opaque glass enamel

A surface coating applied to direct glazed automotive glass that provides protection from ultraviolet radiation. Commonly referred to as 'ceramic ink' or 'ceramic frit'.

3.8 Pinchweld

The flange formed by joining of two or more body panels.

3.9 Shall

Indicates that a statement is mandatory.

3.10 Should

Indicates a recommendation.

4 COMPONENTS

4.1 Glass components

The glass components shall comply with AS/NZS 2080, as referenced in the Australian Design Rules (ADR), and the following:

- (a) Where opaque glass enamel is applied to a component, the structural integrity shall be at least equivalent to that of the original equipment component.
- (b) Windscreen technology components, such as moisture sensing systems, light sensing systems, head-up displays and lane departure warning systems, shall be equivalent to those of the original equipment manufacturer's products.

4.2 Other components

Other components used in the installation of direct glazed automotive glass, including (but not limited to), moulds, mould clips, trim clips, and dams shall be designed for the purpose.

5 DIRECT GLAZING ADHESIVE SEALANT SYSTEMS

5.1 Direct glazing adhesive sealant systems attributes

The direct glazing adhesive sealant systems shall—

- (a) meet or exceed the vehicle manufacturer's performance strength specifications, or be a direct glazing adhesive sealant specifically engineered for the fixing of direct glazed automotive safety glass for light vehicles;

NOTES:

- 1 An example of a suitable direct glazing adhesive sealant would be one that is endorsed by the vehicle manufacturer.
 - 2 If unable to obtain a suitable direct glazing adhesive sealant that is endorsed by the vehicle manufacturer, consultation with the direct glazing adhesive sealant supplier is recommended.
- (b) meet or exceed the frontal impact test requirements of FMVSS 212 to establish safe drive away times;

- (c) be within its 'use by' or 'best before' dates at the time of use; and
- (d) all components of the direct glazing adhesive sealant system (glass cleaner/activator, glass primer, body primer, reactivator, adhesive sealant) shall be compatible. Components sourced from the same direct glazing adhesive sealant system manufacturer are deemed to satisfy this requirement.

5.2 Direct glazing adhesive sealant systems methods

Direct glazing adhesive sealant systems shall be used in accordance with the adhesive sealant manufacturer's instructions.

6 REPLACEMENT OF DIRECT GLAZED AUTOMOTIVE GLASS

6.1 Competence

Auto glaziers installing replacement automotive glass shall have a combination of training and experience, acquired knowledge and skills enabling that person to correctly perform the required task.

NOTE: An example of suitable training and experience would be a practitioner qualified at AUR32216 Cert III level, revisions thereof or similar.

6.2 Safety considerations

During the removal and replacement of the damaged glass, the following considerations shall be observed:

- (a) All personnel shall use personal protective equipment (PPE) and safe working practices.
- (b) The requirements set out in the manufacturer's safety data sheets for each chemical shall be adhered to.

Where vehicles have an advanced driver assistance system (ADAS) or related device that could require recalibration after any direct glazed automotive glass replacement, refer to Clause 6.5.

6.3 Procedure

6.3.1 Preparation of the vehicle

Prior to commencing the replacement of the glass the following precautions shall be observed:

- (a) Establish work practices that ensure protection of the vehicle.
- (b) Ensure that the correct replacement windscreen has been obtained, by matching it to the vehicle description.
- (c) Check that all electrical and mechanical functions are operating correctly.
NOTE: Consult with the customer for relevant functional history.
- (d) Prior to removal of glass, remove any dirt, dust or debris.
- (e) Remove mouldings, trims, windscreen wipers, cowl panel and any other components necessary to allow glass removal and fitting with clear access.
- (f) Remove any items affixed to the glass that are to be reused.
- (g) Disconnect any electrical connections.

6.3.2 Removal of the glass

The glass shall be removed as follows:

- (a) Cut through the original adhesive sealant bond using a cutting tool that minimizes damage to the vehicle paintwork and the auto glazier.
- (b) Use a dash protector when cutting close to the trim or dash pad (see Figure 1).
- (c) If necessary, apply protective tape to prevent damage to the paint work.
- (d) Remove the glass from the aperture.

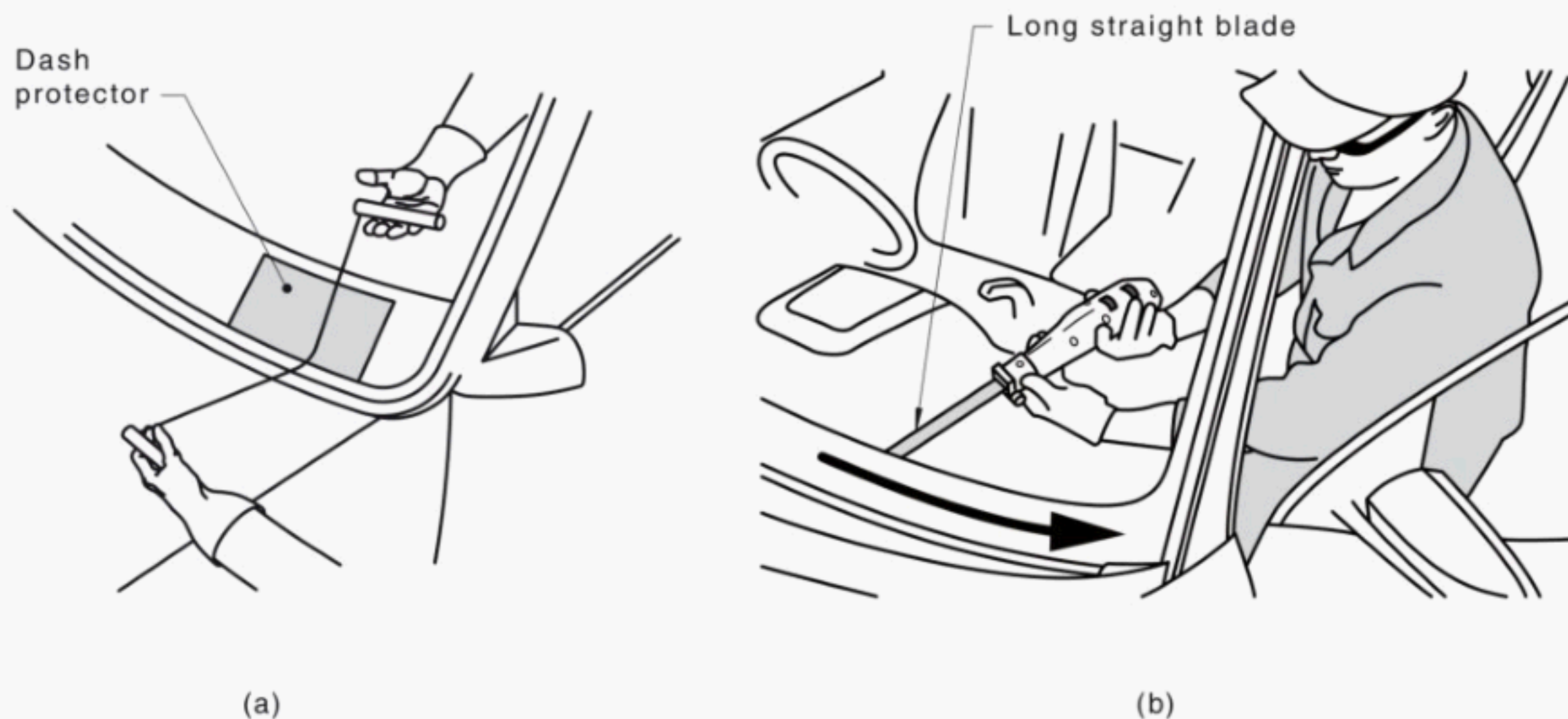


FIGURE 1 REMOVAL OF GLASS

6.3.3 Preparation of the aperture

6.3.3.1 Standard process

The aperture shall be prepared for receipt of the glass in the following manner:

NOTE: The method outlined in this Standard applies to all cases where the aperture is undamaged and the previously installed adhesive sealant is fully intact. If during the trimming of the existing adhesive sealant, there are any areas of the aperture where the existing adhesive sealant is not fully intact or where damage to the aperture results in removal of the full depth of the adhesive sealant bead (e.g. in the case of rust removal), the existing adhesive sealant bead should be removed from the entire perimeter of the aperture, and the pinchweld repainted, prior to installation of the glass.

- (a) Trim remaining adhesive sealant to a thickness to allow the glass to sit flush with the aperture so that it will fit and bond securely (see Figure 2).
- (b) Remove any loose sections of existing adhesive sealant from the aperture. Clean the aperture to remove any dirt and debris, taking care to not damage paint work.

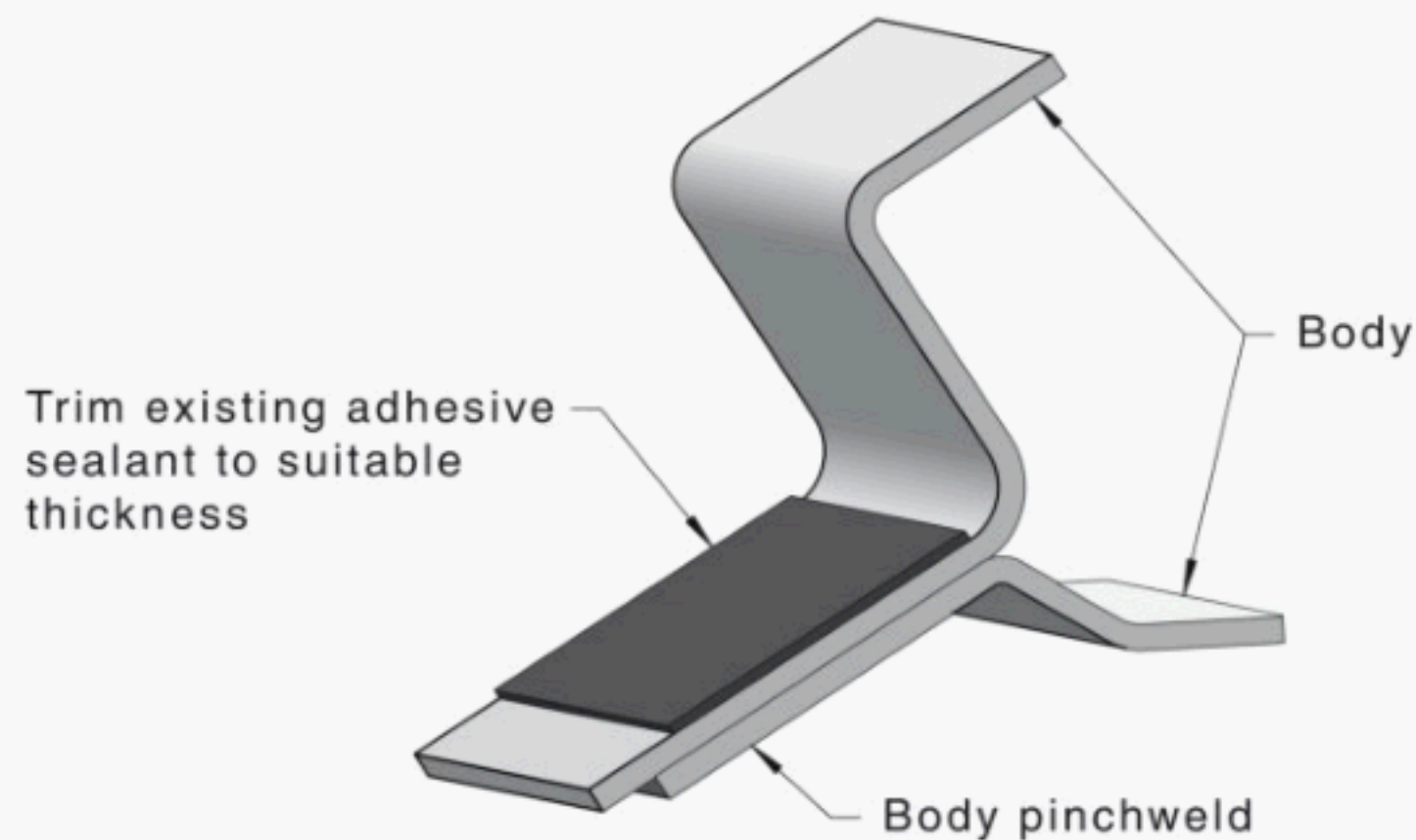


FIGURE 2 TRIM EXISTING ADHESIVE SEALANT

- (c) If required, activate the aperture according to the adhesive sealant manufacturer's instructions.
- (d) If required, ensure the body primer is ready for application in accordance with the adhesive sealant manufacturer's instructions.
- (e) If required, use a dauber or other applicator to apply an even, uniform coat of body primer to any scratches in the paint on the aperture to reduce the likelihood of corrosion occurring. (See Figure 3.)

NOTES:

- 1 Be careful not to drop any primer onto the dash, paint work or trim. Use extra covers to prevent the possibility of damage.
- 2 Ensure that the previous old adhesive sealant is fully cured and if not cured completely remove all residue to ensure an effective bond is formed and there are no compatibility issues.

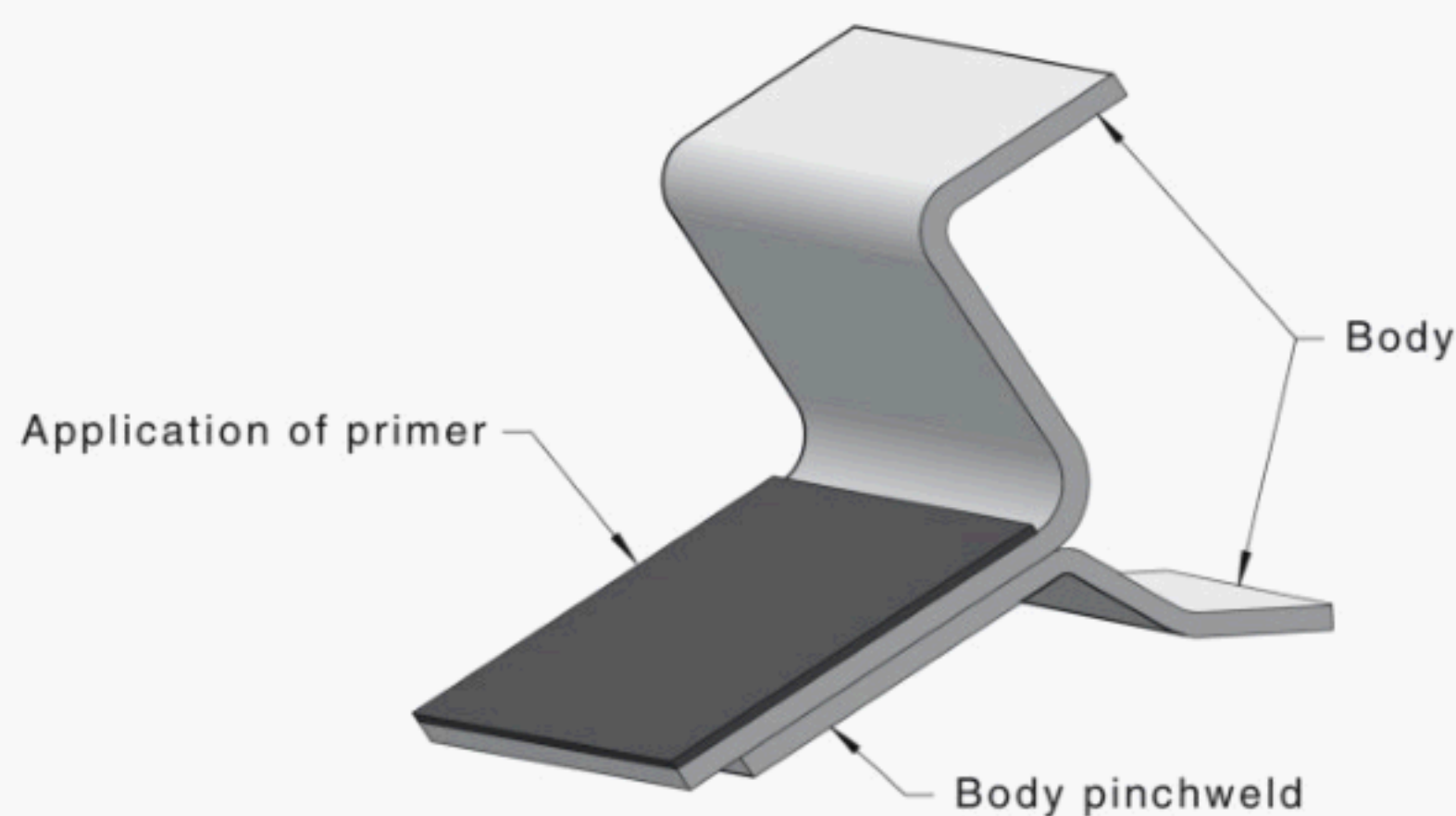


FIGURE 3 PINCHWELD

- (f) Allow the primer to dry in accordance with the manufacturer's instructions.
- (g) If necessary, apply a foam dam to the inside edge of the pinchweld or glass.
- (h) Refit clips to the aperture. Clips damaged during removal shall be replaced.

6.3.3.2 *Rusted and freshly painted aperture*

The following is required for a rusted aperture:

- (a) New adhesive sealant shall not be applied to a rusted aperture. The installation shall only be completed when surface rust has been removed and the aperture is back to a bright metal finish and primed with a blackout primer and/or painted.
- (b) If the rust is extensive and there are holes in the aperture the glass shall not be installed until the aperture has been repaired and re-painted.
- (c) In the case of repainted apertures (after rust repairs or panel work), ensure the paint has sufficient time to dry (as per manufacturer's instructions).
- (d) When rust has been removed, continue replacement of the glass from Clause 6.3.3.1(c).

6.3.4 *Preparation of the glass*

The following procedure shall be used to prepare the glass:

- (a) If the removed glass is to be refitted, the existing adhesive sealant shall be removed.
- (b) Use a glass cleaner to clean the inner surface of the glass and allow to dry thoroughly.
NOTE: The cleaning product should not leave any residue.
- (c) Using a new or clean lint-free cloth and glass cleaner or glass wipe, clean the bonding surface of the glass in accordance with the adhesive sealant manufacturer's instructions.
- (d) If required, ensure the glass primer is ready for application as per the adhesive sealant manufacturer's instructions.

NOTE: Some adhesive sealant manufacturer's processes do not require the use of a glass primer if the windscreen has an opaque glass enamel.

- (e) If required, use a dauber or glass primer applicator to apply an even coat of glass primer to the glass bonding surface (see Figure 4).
- (f) Ensure that the glass primer is applied in a single direction. Painting the primer back and forth can affect the bond between the primer and the adhesive sealant.
- (g) Allow the glass primer to dry or flash off in accordance with the manufacturer's instructions.

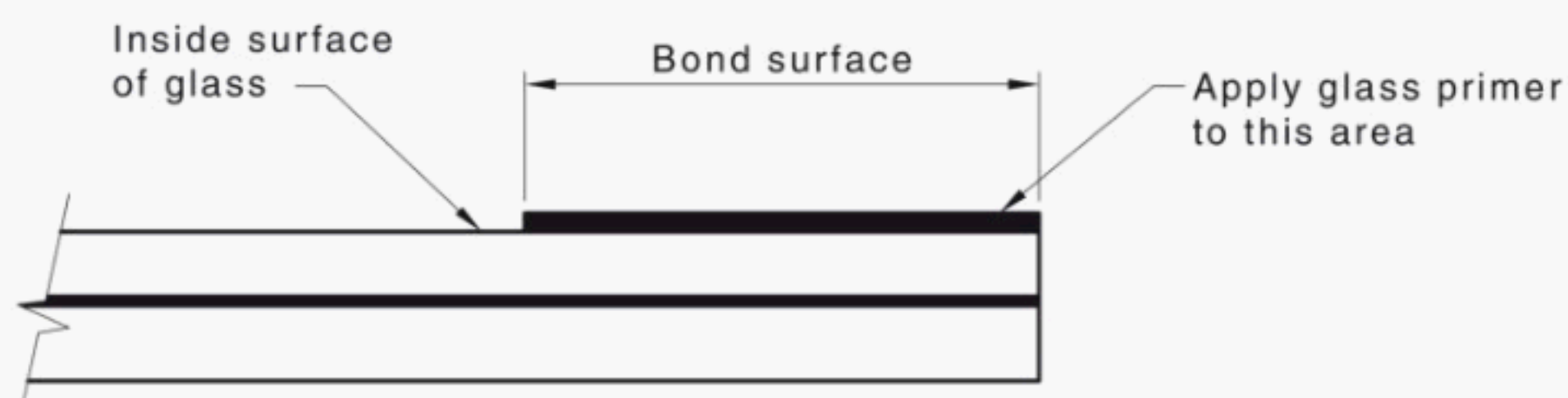
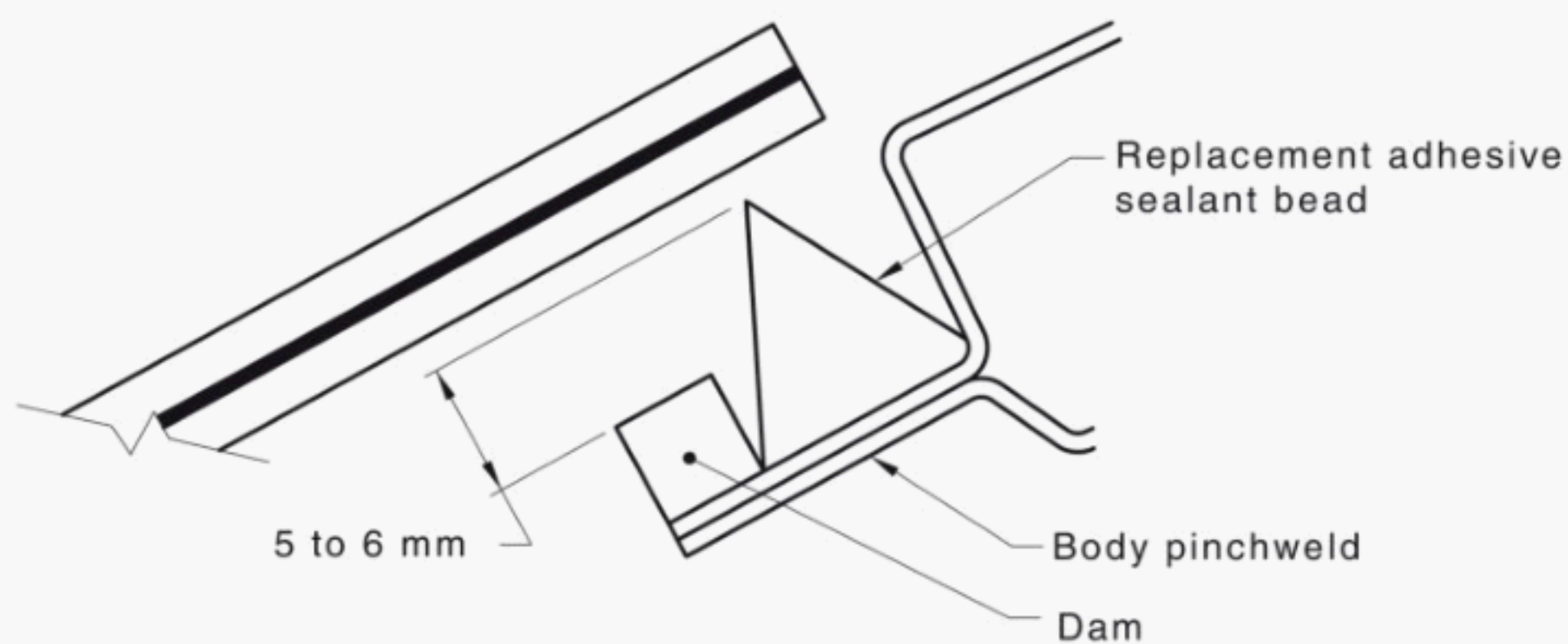


FIGURE 4 BOND SURFACE

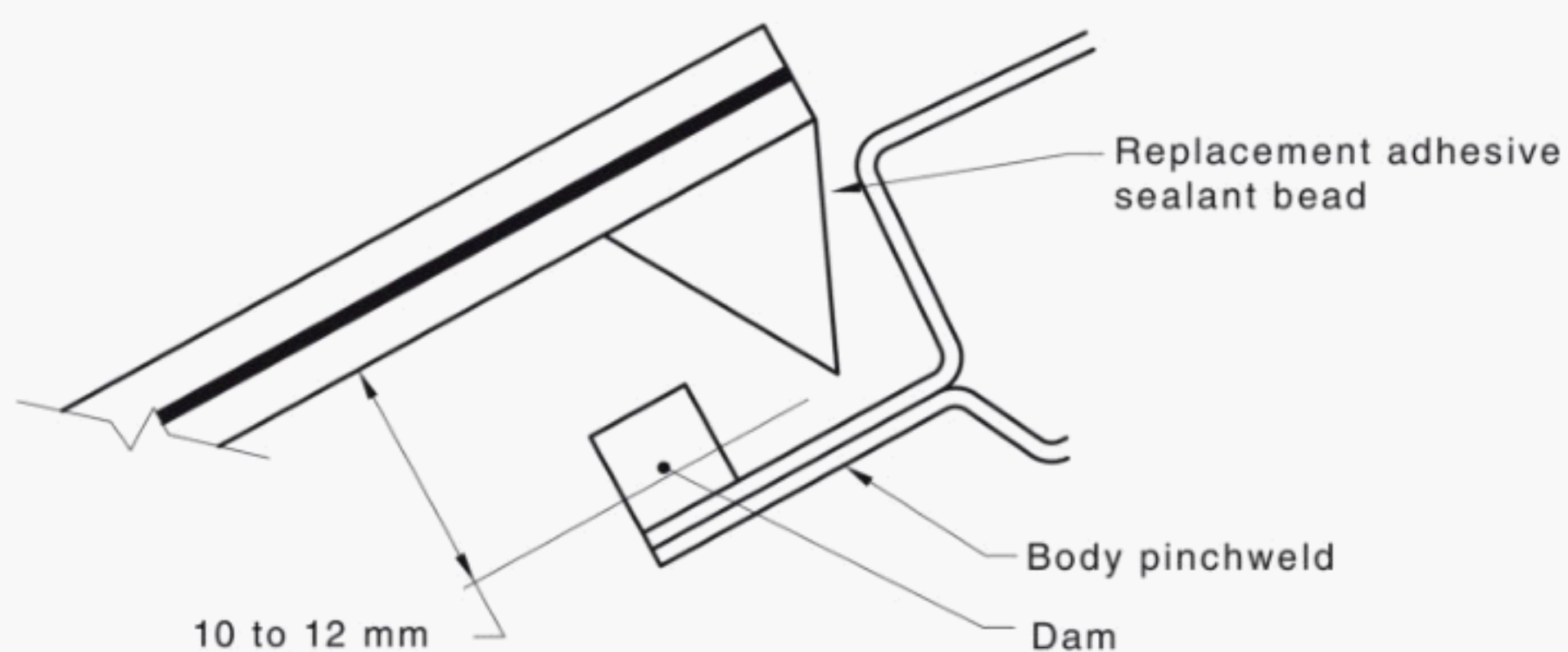
6.3.5 *Application of the adhesive sealant bead*

The following procedure shall be used to apply the direct glazing adhesive sealant bead to the glass or pinchweld:

- (a) Check the direct glazing adhesive use by date to ensure the product has not exceeded its shelf life or has expired.
- (b) Using an extrusion gun, apply a continuous bead of direct glazing adhesive sealant to the glass or pinchweld so the new bead is approximately 10 mm to 12 mm in height (see Figure 5).



(a) Adhesive sealant bead on body pinchweld



(b) Adhesive sealant bead on glass

FIGURE 5 APPLICATION OF ADHESIVE SEALANT

6.3.6 Installation of the glass

The glass shall be installed in the aperture as follows:

- (a) Install the glass within the time specified by the adhesive sealant manufacturer.
- (b) Position the glass squarely in the aperture, insert the spacer blocks, (if applicable) and bed the glass into place (see Figure 6).

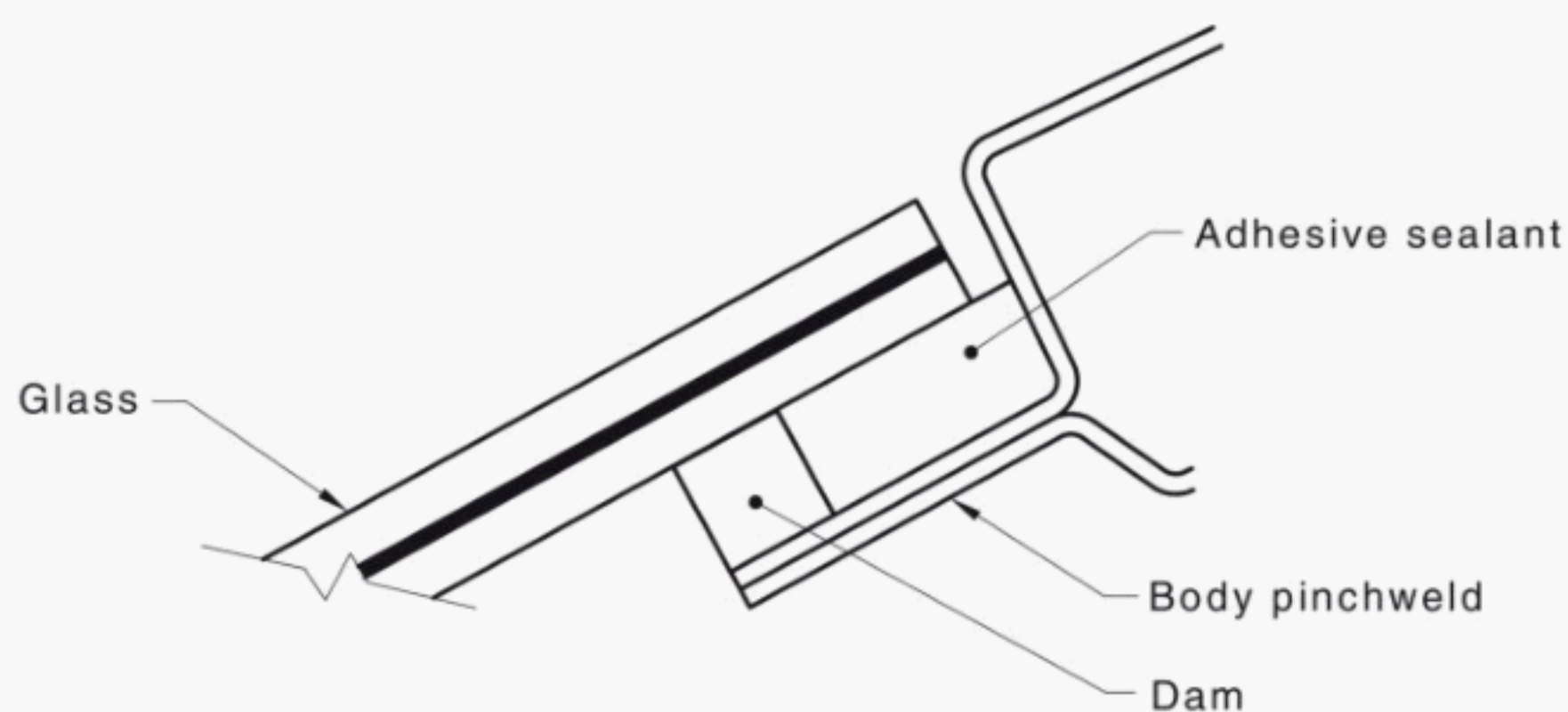


FIGURE 6 FINAL ASSEMBLIES

6.3.7 Re-fitting components

All components which were removed earlier [see Clause 6.3.1(e) and Clause 6.3.1(f)] shall be refitted and checked to ensure that they are correctly fitted.

NOTES:

- 1 Additional guidelines are given in Appendix A.
- 2 It may be necessary to tape moulds in place while the adhesive sealant is curing. In such cases use tape that will not affect the vehicle's paint work.
- 3 Inform the customer of safe removal time for any adhesive tape used.

6.3.8 Cleaning-up

The following procedure shall be carried out:

- (a) Use only solvent specified by the direct glazing adhesive sealant system manufacturer to remove any excess direct glazing adhesive sealant from the glass, moulds, trim and paint work.
- (b) Clean the glass with a glass cleaner.
- (c) Remove the protective covers and carry out the final inspection.
- (d) Test all electrical and mechanical functions to ensure they are working correctly [see Clause 6.3.1(c)].

6.4 Drive-away time

The customer shall be informed of the direct glazing adhesive fixture time as per the adhesive manufacturer's instructions, and advised under no circumstances to drive the vehicle for at least the time specified by the adhesive sealant system manufacturer's instructions.

This advice is to ensure that the correct cure level and subsequent strength have been reached prior to the vehicle being driven. Climatic conditions, including ambient weather, and installation methods shall be taken into consideration by the autoglazier in making drive-away time recommendations to the end customer.

NOTES:

- 1 Windscreens fitted to vehicles with passenger airbags require a longer drive-away time than those vehicles with only driver's side airbags. This is due to the fact that the passenger's airbag relies on the windscreen to control how it inflates. The direct glazing adhesive sealant manufacturer issues advice on drive-away times.
- 2 Where direct-glazed rear lights are replaced, an extended drive-away time should be recommended. If not followed damage could occur if side windows are wound down whilst the vehicle is in motion.

6.5 Vehicles fitted with advanced driver assistance systems (ADAS)

The auto glazier should refer to the Thatchem Research, *Code of Practice for the replacement and refitting of automotive glazing for vehicles fitted with screen mounted ADAS*, for current best practice guidance.

APPENDIX A
REINSTALLATION OF ANCILLARY COMPONENTS AND MATERIALS
OTHER THAN GLASS

(Informative)

A1 GENERAL

This Appendix sets out additional activities to ensure the correct installation of items other than automotive glass that could affect the general quality of the installation.

A2 MISCELLANEOUS MATERIALS

Miscellaneous materials, e.g. trim and moulds, should be checked for security and correct fit.

A3 ANCILLARY COMPONENTS AND SYSTEMS

Systems should be checked for proper operation as follows:

- (a) Windscreen washer nozzles should be checked for fluid delivery and aim.
- (b) Windscreen wipers should be checked for proper operation in relation to:
 - (i) Angular position of wiper arm on spindle to give correct swept area and parking position.
 - (ii) Condition of the wiper blade, which should be replaced (with the vehicle owner's approval) if necessary.

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ISBN 978 1 76035 960 7

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