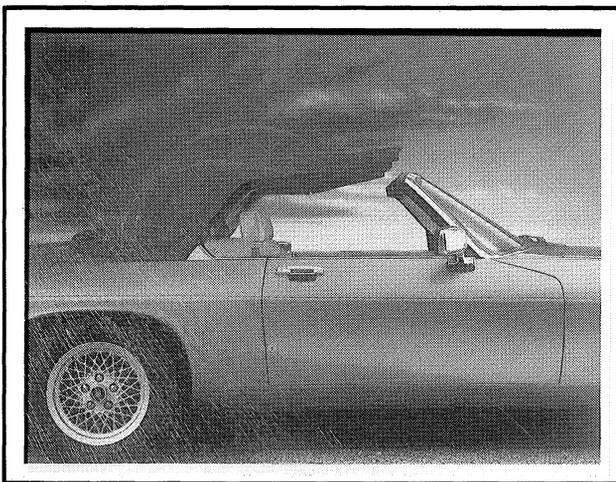


**Technical Guide**

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**XJS HOOD  
SEALING  
TECHNIQUES**

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# Technical Guide

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# XJS HOOD SEALING TECHNIQUES



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## Section 1 Introduction

This 'Technical Guide' has been produced in an attempt to bring together all known methods of dealing with leakage problems which have occurred with the XJS Convertible hood in the past.

There are a number of components which interact to seal the Convertible's hood, and because of this it is essential to complete corrective work in a systematic manner to ensure a leak-free car. To this end, the general principles behind any corrective work can be summed up as follows:

1. To avoid duplication of work by incorrect identification of leak paths.
2. To avoid the transference of a problem to a different location when correcting a leak.

The main problem areas that have been identified are covered section by section within this book, and a fault finding chart which addresses all of these areas individually is included in Section 3. Some of these problems have more than one cause and therefore the different solutions have been collated in the order that has been determined will have the most beneficial effect.

The vast majority of problems occur in the vicinity of the 'A' post/header rail and around the door glass. If a successful repair is completed in this area, it is unlikely that further problems will be encountered.

When carrying out this work, the following points should be borne in mind:

1. Seals function best when their abutment ends (facing edges) are fitted flush or exhibit a small gap. Seal ends must not be crushed together when the hood is closed – this creates leak paths. However, seal flaps may overlap in certain places – this is the designed condition and will have no detrimental effect.
2. Door curtains must be in their correct positions to be effective, and therefore must be correctly refitted following any work (see Sub-section 6.4).
3. Do not over-tension the hood as this may distort the 'A' post and header seals. Try loosening the latch block first, it is likely to prove more beneficial than tightening the hook.
4. Never use proprietary lubricants when fitting seals to their carriers, as this will permit movement of the seals when the hood is operated. Only use water or a mixture of screenwash fluid and water, as this will not leave a greasy residue.
5. Always maintain good hood shape.



## **Section 2 Water-testing procedures**

A critical part of the repair sequence is the water-testing of the car to establish where a leak originates, and the re-testing when a repair has been completed.

The test must be realistic, ie duplicate as far as possible the conditions that the car may be expected to encounter in normal use, without expecting seals to perform beyond their designed tolerances. For instance, if it is felt necessary, raise the car on a jack to duplicate the type of inclination that a customer's car may be parked at when exhibiting a leak. Do not, however, expect the seals to withstand the type of pressure that a hose can produce when pointed directly at a problem area.

The overall objective is to duplicate as far as possible a heavy downpour to test the car in what would be the normal conditions that it is likely to encounter.

It is worth remembering that most leaks are not evident when the car is in motion.

Do not put the car through a car-wash as this does not duplicate normal conditions, and the brushes may damage the hood fabric.



## Section 3 Fault finding chart

The fault finding chart which follows is designed to help simplify fault analysis when a water ingress problem is reported.

The left-hand column describes the reported fault, and leads to the centre column which indicates areas which may require corrective attention.

The third column lists the relevant Sub-sections within the body of the text that give instructions for the various corrective measures.

Reported problem	Attention required to--	See sub-section(s)
Drips at top of 'A' post	Hood tension	4.1
	Upper 'A' post seal	4.2
	Header rail	4.3
	Hood seals	4.4
Leak at hood seals	Hood tension	4.1
	Header rail	4.3
	Hood seals	5.1
Wet door casings	Upper 'A' post seal	4.2, 6.1, 6.2
	Hood seals	5.1
	Cheater plate	6.3
	Door curtain	6.4
Leaks through door handle	Cheater plate	6.3, 6.5
	Door curtain	6.4, 6.5
Wet footwell carpets	Header rail	4.3, 4.5
Water on seats	Hood tension	4.1
	Upper 'A' post seal	4.1, 4.2
	Hood seals	4.4
	Header rail	4.3
Water on rear quarter casing	Hood seals	5.1, 9.3
	Door glass adjustment	9.1, 9.5
	Rear quarter glass adjustment	9.2, 9.5
Runs on door glass	Door glass adjustment	9.1
	Rear quarter glass adjustment	9.5
Runs on 'D' glass	Door glass adjustment	9.1
	Rear quarter glass adjustment	9.2, 9.5



## Section 4 Leaks at top of 'A' post

Leaks in the vicinity of the 'A' post or the adjacent front hood seals are often caused by incorrect hood locking tension. Too much or too little tension can create leak paths.

### 4.1 Hood tension adjustment

Open the hood and check for obvious defects such as seal collapse or damage. If the seals are acceptable, close the hood and operate the locking handles to check the tension. If the lock is difficult to operate, the hood is probably over-tensioned. Release the retaining locknut (1 Fig 4.1) and unscrew the hook one full turn.

The reverse procedure is used if the hood is found to be slack. Increase tension by screwing in the hook one full turn at a time until optimum tension is achieved.

Test the car and repeat the operation as necessary.

If hood tension is satisfactory and a leak is still evident, go to Section 4.2

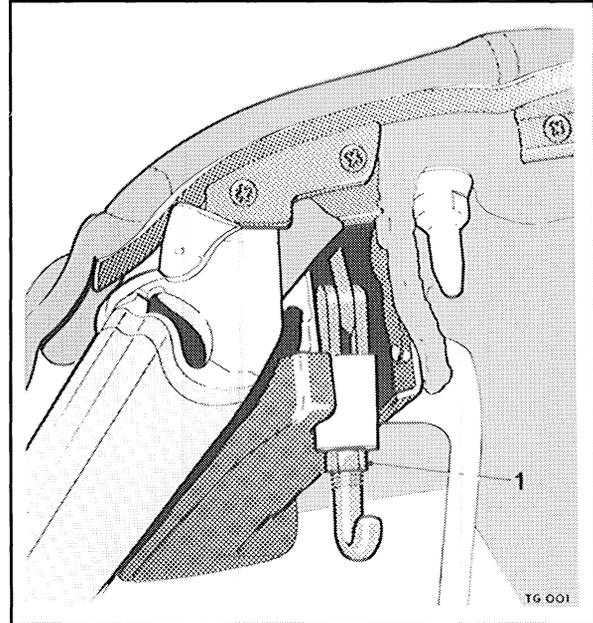


Fig 4.1

### 4.2 'A' post seal carrier

If a leak is evident between the 'A' post to hood front seal (1 Fig 4.2), the corrective action is as follows:

Separate the glued joint of the 'A' post seal to the door lower seal.

Remove the 'A' post seal (2 Fig 4.2) from its carrier.

Remove the seal carrier from the 'A' post and clean both the post and the carrier.

Apply strips of adhesive foam strip down both outer edges of the seal carrier ensuring that the screw holes are unobstructed.

Apply a second thickness of the foam to the top three inches (75 mm) of both sides of the carrier. This ensures that the carrier will pull up squarely and evenly when it is refitted

Refit the seal carrier ensuring that it is at its outermost position thereby exerting maximum pressure on the door glass, yet permitting adjustment if the glass is subject to too much pressure.

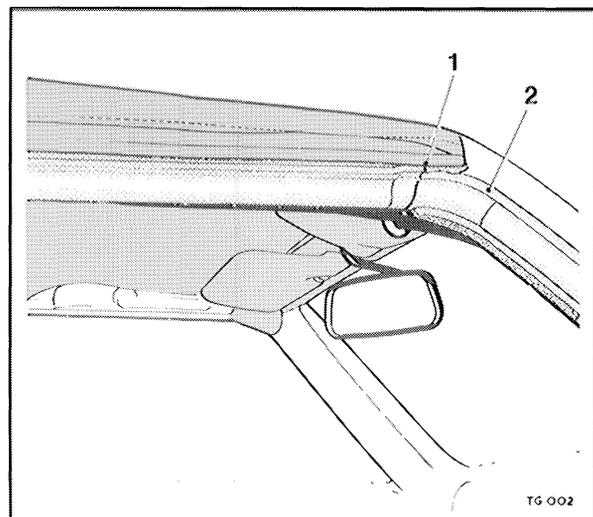


Fig.4.2



Discard the old 'A' post seal and replace it with the new type which is identified by its 'flock' sprayed finish.

Apply Permabond C2 adhesive to the joint between the 'A' post seal and the door lower seal.

Allow to dry and retest the car.

Note: Ensure that the abutment ends of the seals are mated correctly around the joint adjacent to the glass (see Fig 4.2).

### 4.3 Sealing the header rail channel

If a leak is evident between the door opening draught excluder and the 'A' post seal, it is likely that the header rail channel is the source of the leak. Proceed as follows:

Release the two latch block retaining screws, and remove the latch block.

Carefully drill out the rivet which secures the header seal, and remove the seal from its channel.

Remove the 'A' post seal from its retainer/carrier.

Remove all traces of sealant from the header seal retainer/carrier. This channel is designed for drainage and must not be obstructed.

Apply Butyl tape (1 Fig. 4.3) to the perimeter of the header rail. Note that it is essential that a small drainage gap (2 Fig. 4.3) is left at the end of the header rail channel. This ensures that any water in the channel will be directed to the outside of the car.

Refit the header rail seal, using a rivet.

Replace the latch blocks.

Retest the car.

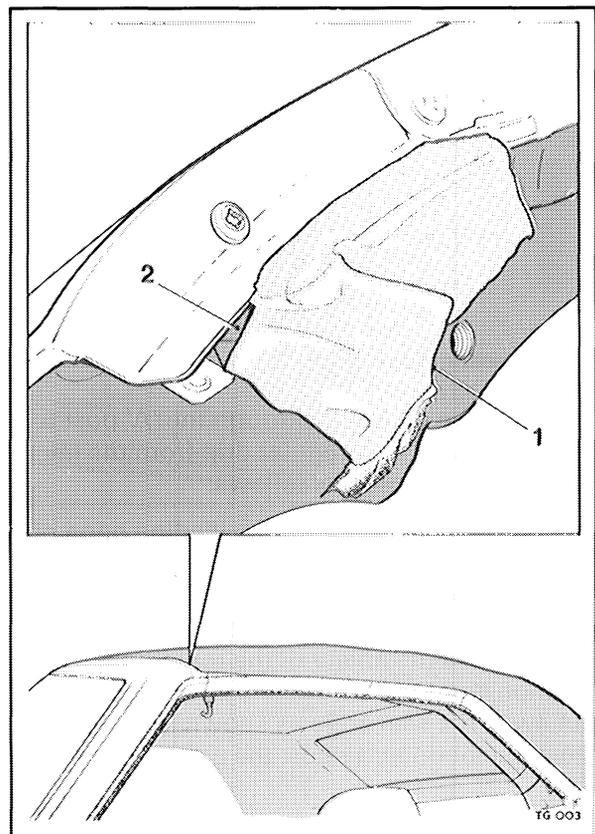


Fig.4.3



#### 4.4 Sealing the header rail skin

Under certain circumstances a leak may be found in the vicinity of the 'A' post lower trim pad. This will probably be emanating from a small hole between the inner and outer skins at the top of the header rail. In this case, proceed as follows:

Remove the header seal retaining rivet.  
Remove the seal from its carrier to permit access to the end of the channel.  
Add sealant to the notch area (1 Fig. 4.4) of the header rail to create a water-tight condition.  
Replace the header seal and secure with a rivet.  
Retest the car.

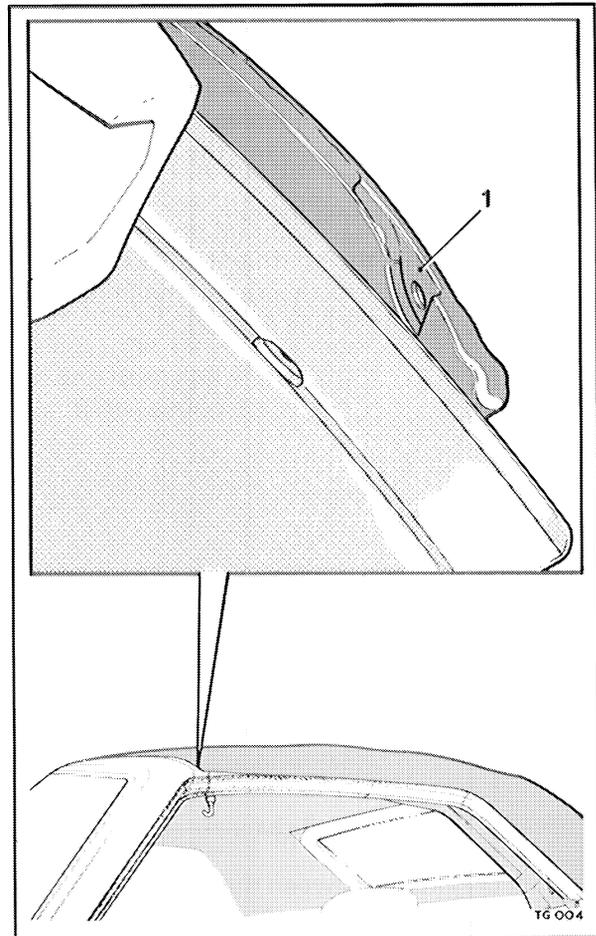


Fig 4.4

#### 4.5 Flip seal modification

Should there be a leak through the 'A' post side hood seal, or a regular drip from the latch block hook, proceed as follows:

The flip seal (1 Fig. 4.5) at the leading edge of the front hood seal has a tendency to become trapped, and thereby cause a leak path. Removal of this portion of seal will not compromise the ability of the remainder to function correctly.

Cut away the seal edge as shown in Fig 4.5.  
Close the hood and retest the car.

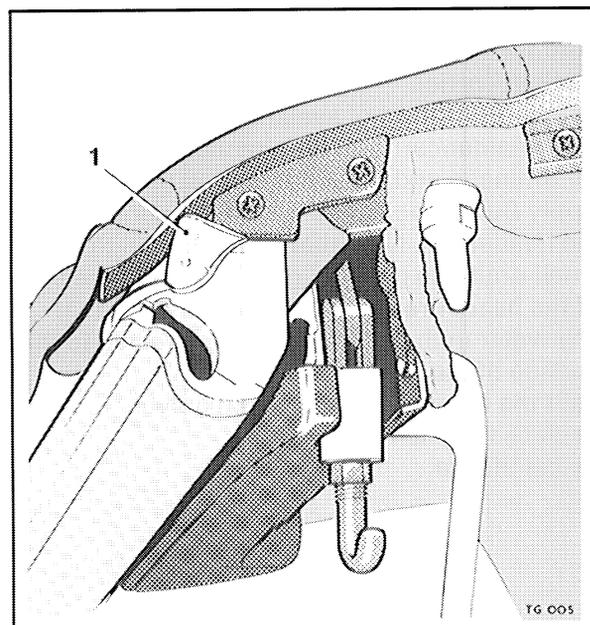


Fig 4.5



## Section 5 Leaks at hood seal joints

### 5.1 Adjusting hood seals

The hood seals above the door glass must seat correctly with a small gap (2 to 3 millimetres) at their abutment ends, or they will not seal properly. Any overlap will cause 'tracking' of water through the seal. It is preferable for the seal to have a visible gap, even to the extent that daylight can be seen through it from inside the car, than for the seal ends to touch.

Fig 5.1 shows incorrect and correct conditions.

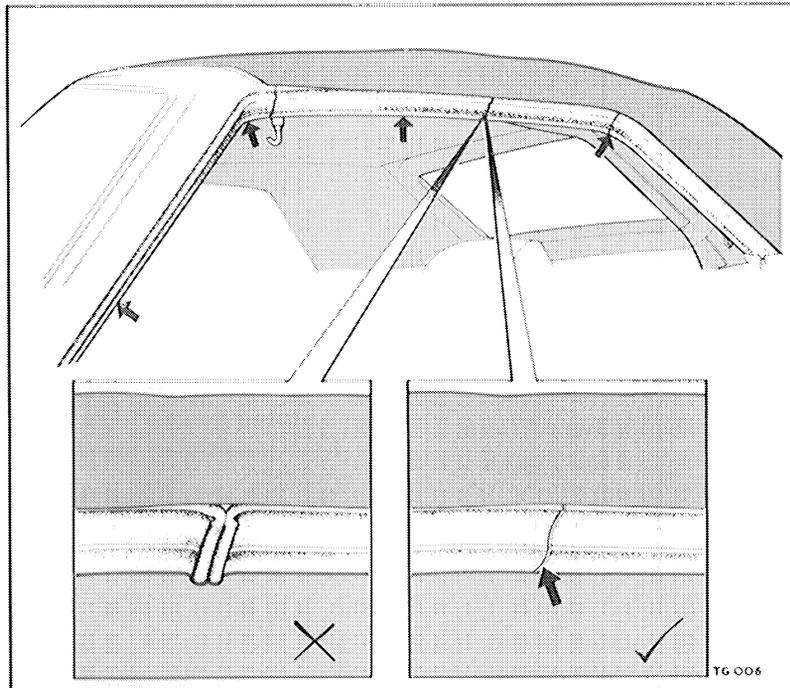


Fig. 5.1

If the seal-end conditions are incorrect, the positions of the seals will have to be adjusted to compensate. Push the centre seal and rear seal along their seal carriers so that the correct gap is achieved between them, but without affecting the small overlap that is required at the outer area of the 'A' post/front seal joint (Sub-section 4.2 and Fig 4.2 refer).

When the correct gaps are achieved, (ensuring that the seals are not crushed together in the area of the 'D' glass), retest the car and make any further adjustments as necessary.



## Section 6 Water in door casings

Wet door casings can be caused by several different problems, and these are dealt with in the following five Sub-sections. Complete the corrective actions in the order that they are described:

### 6.1 'A' Post seal to body

Check whether or not a leak is evident between the 'A' post/door post seal and the body sheet metal (see Fig. 6.1 where the potential leak path is indicated by arrow 'A'). If there is, proceed as follows:

Remove the 'A' post seal and clean the channel, to leave the area as shown in Fig. 6.2.

Apply three thicknesses of Butyl tape between the bottom of the 'A' post seal carrier and the door seal carrier, as shown in Fig 6.3. This is to form a bridge' between the two seal carriers and take any water between the two carriers and to the outside of the car.

Refit the two seals to their respective carriers but do not glue them together at this stage. Insert a rubber packer into the seal cavity before joining the seals together. This is for testing purposes only and will prevent seal collapse while leak testing, without forming a permanent bond.

Test the seal performance.

If sealing is satisfactory, bond the seals together using Permabond adhesive. Retest the car.

If this action is unsuccessful, proceed with Sub-section 6.2.

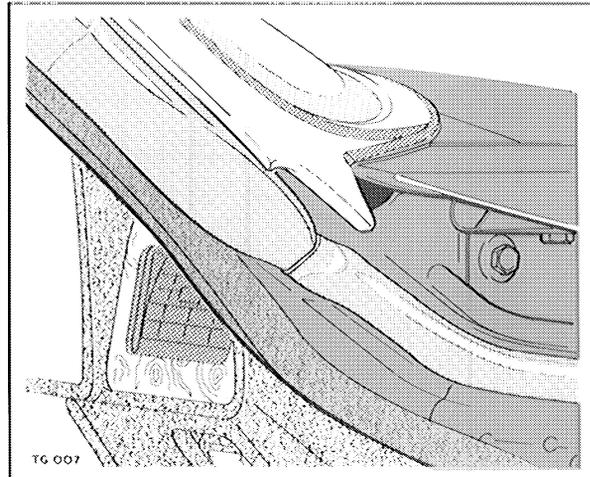


Fig 6.1

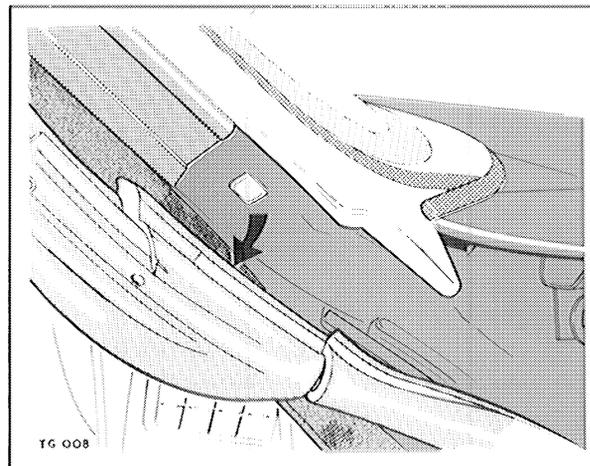


Fig 6.2

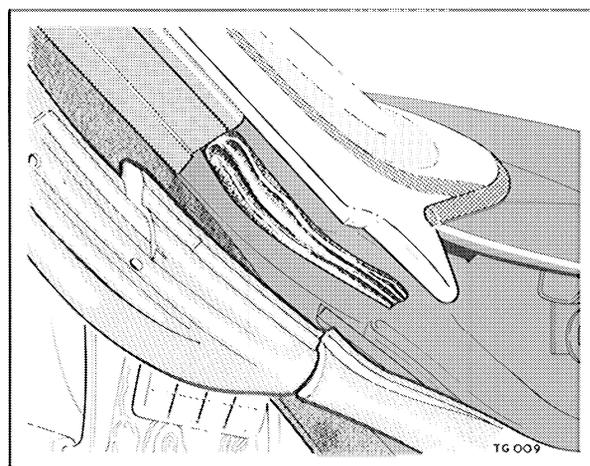


Fig 6.3



### 6.2 'A' Post seal to door seal

Examine the glued joint between the 'A' post seal and the door seal (1 Fig 6.1). This joint must be completely watertight. If unsatisfactory, proceed as follows:

Separate the joint. (Slight damage to the seal ends is acceptable as there should be sufficient length of seal left to permit them to be worked along their carriers to reconnect them).

Reconnect the seal ends using Permabond C2 or Loctite 424.

Allow the glue to set.

Retest the car.

If this action is unsuccessful, proceed with Sub-section 6.3.

### 6.3 Cheater plate base and front seal

It is possible that the leak is emanating from the cheater plate base or the cheater plate front seal. If a leak is suspected here, it is advisable to remove the door casing before commencing with the following actions:

Remove the screws which secure the cheater outer cover, and draw the cover outwards. Run a bead of sealant (1 Fig 6.4) between the chromium plated finisher and the cheater support brackets. Refit the outer cover. Run a bead of sealant between the chromium plated finisher and the top of the door and the cheater plate base.

Wipe any excess sealant from around joints.

Add a bead of sealant (2 Fig 6.4) to the junction of the chromium plated finisher and the rear of the cheater outer cover. This will prevent water tracking backwards behind the cheater and into the car through the 'A' post area.

(Continued overleaf)

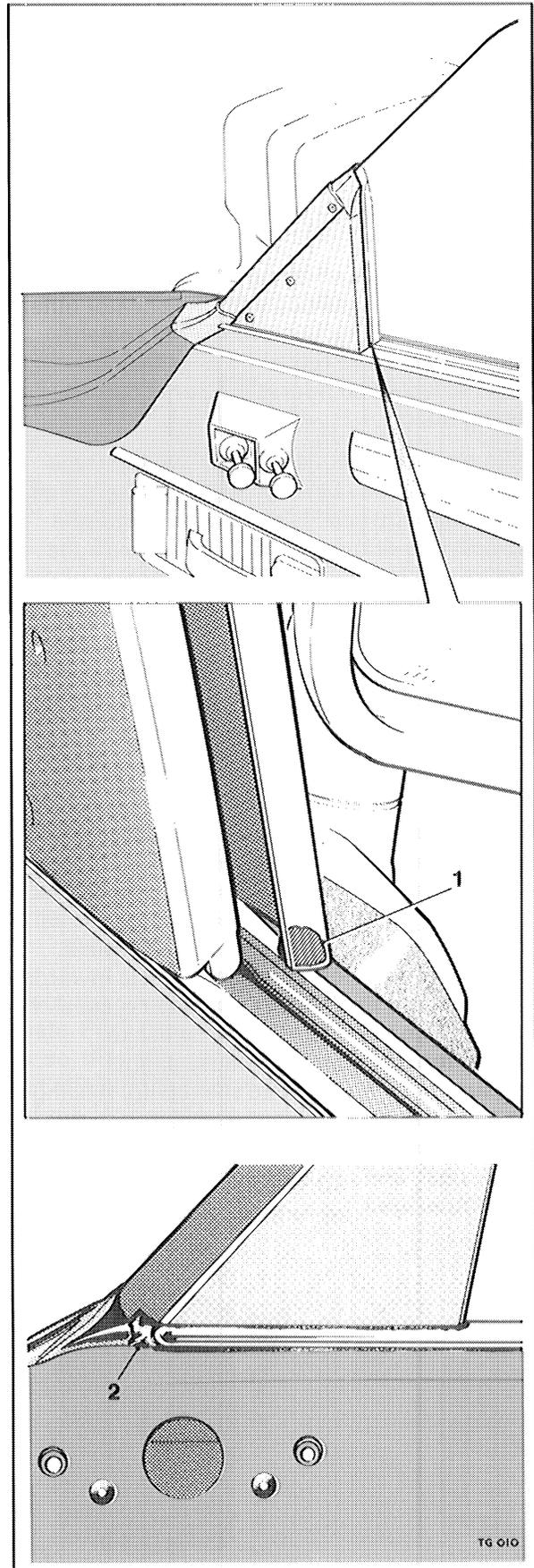


Fig 6.4



### 6.3 (Continued)

Check the condition of the sealant around the cheater front seal. If damaged, carefully remove it. Apply sealant to the underside of the seal and affix the seal correctly to the door joints (see Fig. 6.5). Wipe off excess sealant from around joints. Allow at least one hour curing time before closing the door.

Check the condition of the cheater top seal (1 Fig 6.6) at its junction with the cheater outer cover. If necessary, remove the old sealant from the joint and refill with new sealant. Allow at least one hour curing time before testing the car.

If the top seal is damaged, remove the three screws from the cheater cover and remove and discard the top seal. Insert a new seal down the aperture of the cheater plate, replace the screws and bond the joint at the cheater plate top using Permabond adhesive.

With the cheater plate exposed, it is advisable to take the opportunity to run a bead of sealant along the inner edge of the cheater base plate. Any water that tracks inside the car in this way will then be diverted to the water curtain.

In conclusion, the objective of Sub-section 6.3 is to seal the cheater plate, but this cannot be achieved in isolation. The overall line of the leading edge of the cheater plate and top seal must be regular and as smooth as possible. Any part of the cheater which projects inwards will press into the 'A' post seal and create a leak path. The aim for the door glass to cheater top seal joint is to cause slight pressure to be imparted to the top lip. Raising the glass too high may cause damage to the seal, prevent the cheater plate fitting flush to the 'A' post, and possibly spoil the seal flip in the cantrail area.



Fig 6.5

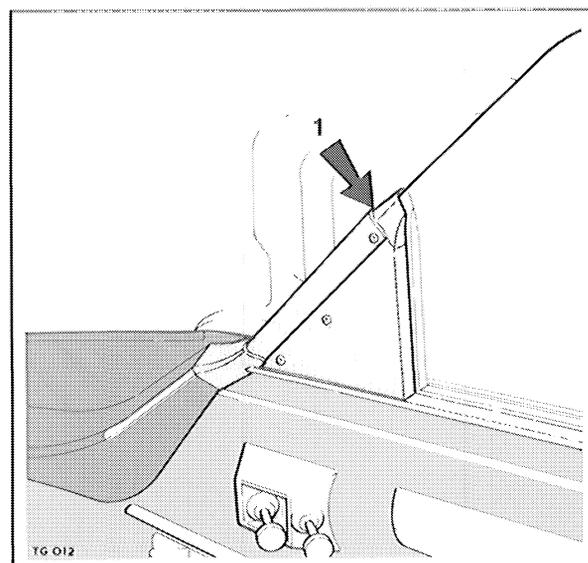


Fig 6.6



## 6.4 Door curtain adjustment

If any faults found so far have been rectified and water is still leaking on to the door casing, it is likely that the door curtain requires attention. The door is designed to carry water between its inner and outer skins so it follows that if the door curtain is damaged or incorrectly fitted, it will not fulfil its intended purpose.

Refer to Fig. 6.7 and carry out the following:

Remove the mirror control switch and the door inner casing to expose the two-piece door curtain.

Ensure that the curtain is pulled out of the aperture adjacent to the cheater plate and taped down to the door inner skin (1 Fig 6.7).

Spread the curtain out as much as possible whilst ensuring that the two pieces overlap in

the region of the door mechanism (2 Fig 6.7). Secure the second part of the curtain to the door-top inner skin using adhesive tape (3 Fig 6.7).

Spread the remainder of the curtain out to give as much coverage as possible. When satisfied that the door curtain is fitted correctly and will perform as designed, refit the door inner casing and test the car.

A correctly fitted curtain can still permit water ingress through the remote door handle, if the front cheater seal is leaking. Refer to Sub-section 6.3 for remedial actions. Water may also find its way through the door curtain via the mirror control cables. If so, run a bead of sealant along the outer edge of the door mirror baseplate. Wipe off excess sealant and retest the car.

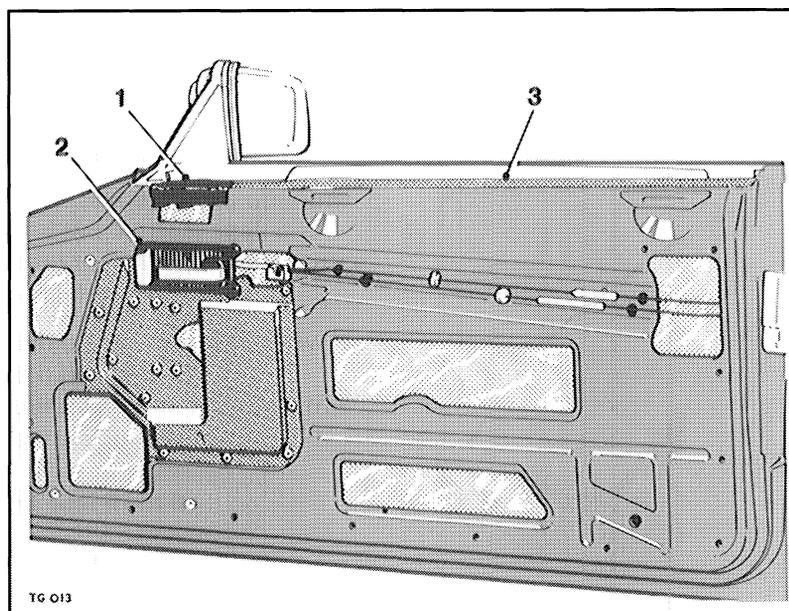


Fig 6.7



## **Section 7 Wet footwell carpets**

Wet footwell carpets may be caused by a faulty body sheet metal joint between the bulkhead lower and the toe board. This is beyond the scope of this guide, and corrective action is outlined in a Service Bulletin soon to be issued.

A further possible cause of the problem is water running through the door opening finisher and its seal, and only becoming apparent when it reaches the footwell. Corrective action for this is described in Sub-section 4.3.

A more likely cause, however, is a leak from inside the 'A' post lower trim pad. Water can run between the inner and outer header rail body panels and show as a drip from the 'A' post trim. The corrective procedure is outlined in Sub-section 4.5.

## **Section 8 Water on seats**

There are three possible causes associated with this problem, all of which are associated with the 'A' post top and the hood seal joints.

Corrective actions for these problems are covered in Sub-sections 4.1, 4.2, 4.3 and 4.4.



## Section 9 Other problems

This section covers other areas which are known to give problems on occasion, resulting in water on the rear quarter casing, runs on the door glass and on the 'D' light glass.

Whilst undertaking the work, the objectives to be borne in mind are:

Aim for a condition where the tops of both the door glass and the 'D' light glass are at exactly the same height (as shown at arrow 'A' on Fig. 9.1).

Aim also, to finish with sufficient pressure exerted on the front, centre and rear hood seals, the 'A' post seal and the seal which runs between the rear edge of the door glass and the 'D' light. The 'flock' sprayed section of this seal (1 Fig. 9.2) must be lightly and evenly compressed along its full length. The seal must not be compressed so far that it touches the rubber inner lip (2 Fig. 9.2). The lip is not a seal, and if fouled will permit water to track across and cause a leak.

When water-testing the car following corrective work, always test the whole of the hood as correcting one leak in this critical area may possibly introduce a new leak path elsewhere.

If water is seen on the door glass from between the glass and the hood seal, first check that the door glass and the 'D' light glass are at the same height. If not, proceed with Sub-section 9.1. If they are at the same height, commence at Sub-section 9.2.

### 9.1 Door glass height adjustment

The door glass height should be set so that at its lowest position it runs level with or slightly lower than the outer waist seal rubber. At its upper level it should pass and make contact with the cantrail seals. If the glass cannot be moved higher without over-tensioning the cheater top seal, the cantrail seal carriers will need to be lowered to meet the door glass and create the necessary 'flip'.

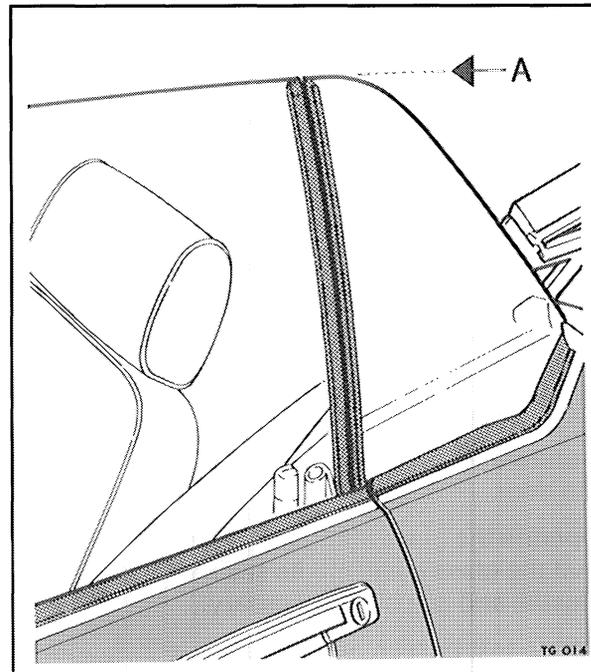


Fig 9.1

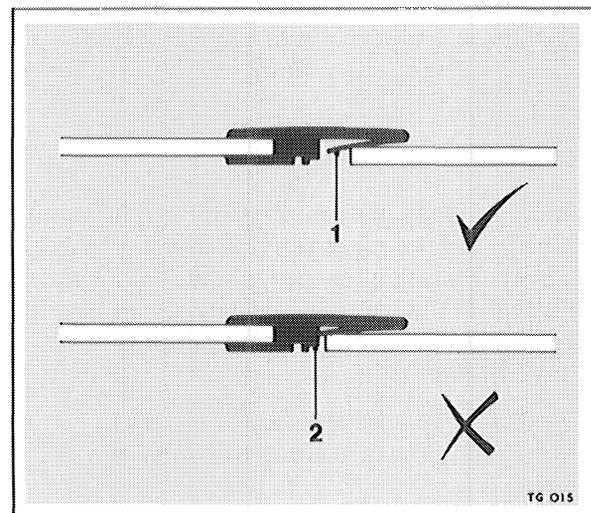


Fig 9.2



To set the door glass to its optimum position proceed as follows (refer to Fig. 9.3):

Remove the mirror control switch and the door casing, then with the door just open, raise the door glass.

Slacken the glass fixings (items 1,2,3 and 4 Fig 9.3)

Align the front corner of the glass as closely as possible to the edge of the seal 'flip'. The glass should just clear the flip.

Align the top rear corner of the glass to just clear the hood fabric. Ensure that the glass is fully forward and aligns with the cheater plate.

Secure the regulator 'up' stop (1 Fig. 9.3) and the four profile fixing screws (3 Fig 9.3). Close the door and check that the seal flip hinges correctly over the door glass.

Secure the 'in-out' fixing (4 Fig 9.3) and the 'down' stop (2 Fig 9.3).

Secure the guide rail fixings in the bottom of the door.

Operate the glass lifting mechanism to ensure that the glass rises into its seals with the door closed, and adjust as necessary.

Water-test the car, and if sealing is satisfactory, replace the door casing etc.

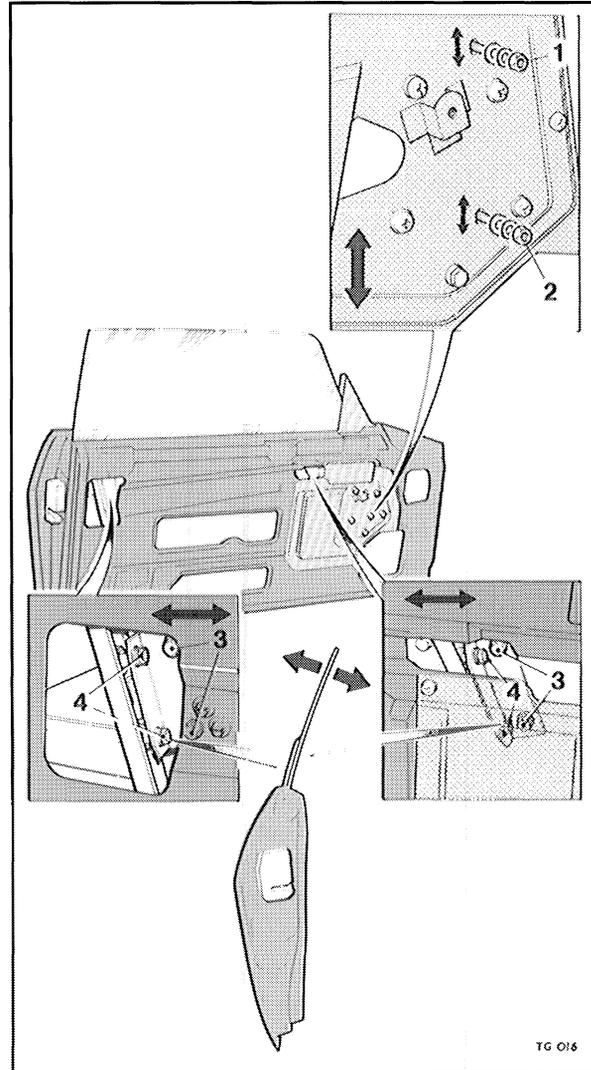


Fig 9.3

## 9.2 Hood seal lateral adjustment

If the door glass is pushed gently inwards, the seals around the glass top and the 'A' post should simultaneously move inwards. If not, it is likely that the cantrail seal carriers are not sufficiently outboard or that the door glass is not sufficiently inboard.

It is possible to adjust the seal carriers to ensure even pressure along the hood seal, as follows:

Refer to Fig 9.4.

Slacken the screws that retain the seal carriers and move them inwards or outwards as necessary.

Tighten the screws.

Water-test the car. if sealing is satisfactory, proceed to Sub-section 9.3.

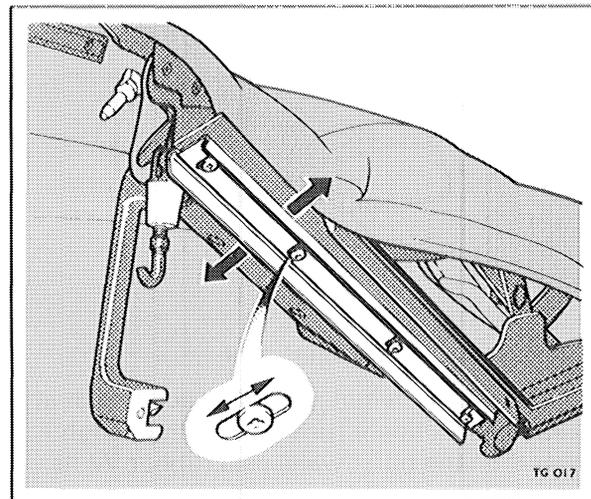


Fig 9.4



### 9.3 Hood seal height adjustment

If the seal is too high (above the glass) with the glass raised to its fullest extent, it becomes necessary to pack the seal carriers downwards to bring the seals into correct contact with the glass as follows:

Refer to Fig 9.5

Slacken the screws which retain the hood seal carriers and insert a packing strip between the carrier and the seal. This will reduce the gap between the hood seal and the glass. Ensure that the carriers remain level with each other as this is critical to achieving a sealed hood whilst maintaining good hood shape.

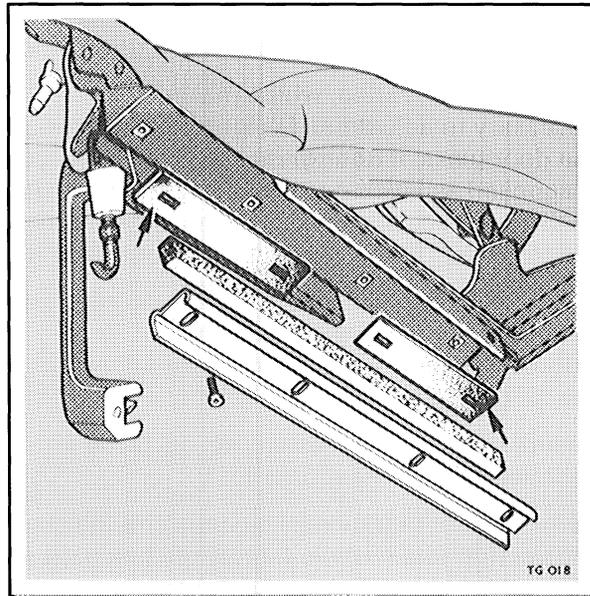


Fig 9.5

### 9.4 Hood mechanism cam adjustment

On later cars, a further hood adjustment is possible, and brings the joint of the front hood seal and the centre hood seal closer to the glass top edges. It also permits better adjustment when attempting to keep the hood seal carriers level.

This adjustment is made by means of a 'cam', built into the hood mechanism, which can be used to increase or decrease the gap between the hood seals and the glass. It is possible to fit the cam to earlier cars if desired, and instructions for this procedure will be found in a Service Bulletin soon to be issued.

The cam is adjusted as follows:

Open the hood to position shown in Fig 9.6.

Undo the 8mm securing bolt (1 Fig 9.6).

Reaching inside the hood, adjust the cam (using a 12mm open-ended spanner on the flats (2 Fig 9.6) of the cam adjuster) to obtain optimum hood seal height.

Tighten the securing bolt.

Fully close the hood. Check the seal to glass position and re-adjust if not satisfactory.

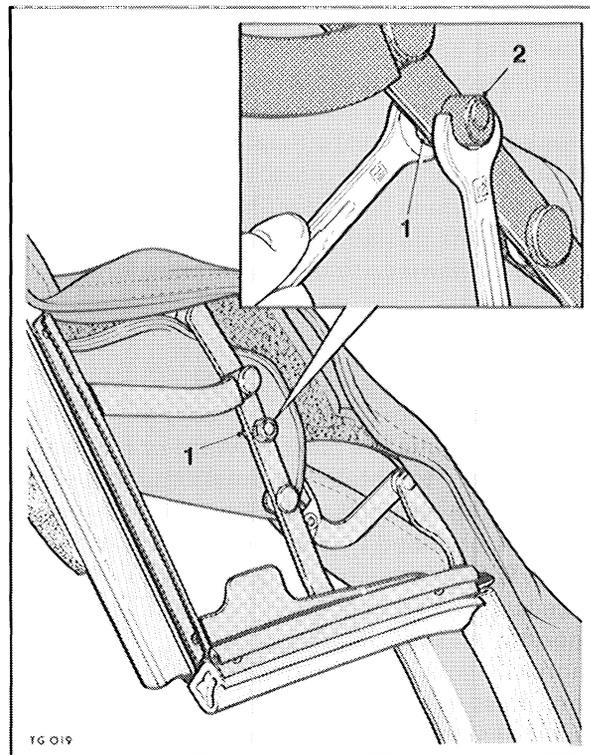


Fig 9.6



### 9.5 'D' Light glass adjustment

It is possible for the door glass and the 'D' light glass to overlap, which makes it necessary to adjust the 'D' light glass and/or the door glass. If door glass adjustment is diagnosed as being necessary, try to restrict it to the rear securing screws, as adjustment of the front may compromise the performance of the 'A' post and header rail seals.

Door glass adjustment is covered in Sub-section 9.1. The procedure for adjusting the 'D' light glass is as follows:

Ensure that the door glass is set correctly as described in Sub-section 9.1.

Remove both rear quarter casings and the six screws that retain the rear stowage box, and remove the stowage box. Remove the two speaker wires and the Velcro-secured mat which is found inside the box.

Lower the 'D' light glass to approximately its halfway position, and slacken the 10mm nuts that secure the adjustment screws (1 Fig. 9.7). These screws adjust both lateral and fore and aft positioning of the glass. Remove the locking washers (this must be done to eliminate the possibility of adjustment screw or washer damage whilst attempting adjustment).

Use a 5 mm box spanner to adjust the lateral positioning of the glass, clockwise to adjust inwards and anti-clockwise to adjust outwards. Move the glass forward or rearward as necessary to obtain the optimum position and refit the washers and nuts. Optimum height is obtained by slackening the lock screw (2 Fig. 9.7) and raising or lowering the glass as necessary. Adjust the glass so that it both operates and seals correctly, and aligns correctly with the door glass and the door glass-to-'D' glass seal. Water-test the car and make any further adjustments necessary.

Refit the stowage box, wires and mat.

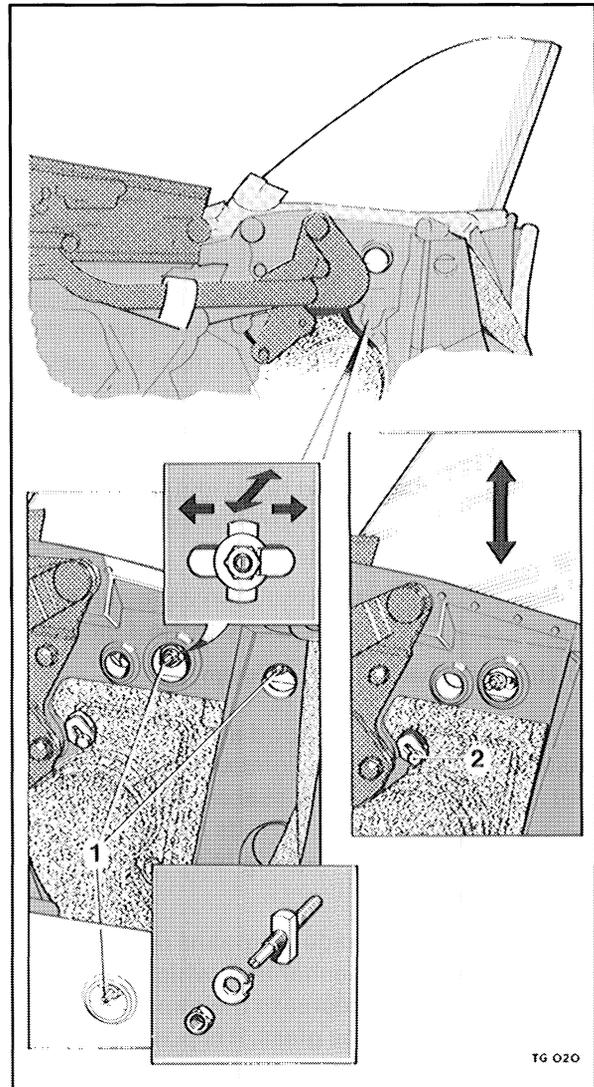


Fig 9.5



## Section 10 Parts list

The following is a list, for reference, of parts which may be required whilst carrying out the corrective procedures outlined in this Guide.

<b>Description</b>	<b>Part No. (R/H)</b>	<b>Part No. (L/H)</b>
Adhesive (Permabond C2)	N/A	N/A
'A' Post Seal	BEC 8322 (new) BEC 6366 (old)	BEC 8323 (new) BEC 6367 (old)
'A' Post Seal Carrier	BDC 8498	BDC 8499
Butyl Tape (Semstrip)	BDC 6148	BDC 6148
Centre Hood Seal Carrier	BBC 8180	BBC 8181
Cheater Plate	BDC 3556	BDC 3557
Cheater Plate Front Seal	BDC 5566	BDC 5567
Cheater Plate Inner Cover	BDC 8928	BDC 8929
Cheater Plate Outer Cover	BEC 6618 (new) BCC 2816 (old)	BEC 6619 (new) BCC 2817 (old)
Cheater Top Seal (glass run channel)	BCC 2844	BCC 2845
'D' Light Glass	BDC 9444	BDC 9445
Door Glass	BEC 7274 (old)	BEC 7275 (old)
Door Inner Casing (Colour coded)	BDC 6786 (R/H drive) BDC 6788 (L/H drive)	BDC 6789 (R/H drive) BDC 6787 (L/H drive)
Door Seal Lower	BDC 8502	BDC 8503
Front Hood Seal Carrier	BBC 8188	BBC 8189
Header Rail Seal	BBC 8194	(Full width)
Hood Seals (car set)	JLM 2102	JLM 2103
Latch Block	BDC 5092	BDC 5093
Latch Block Rubber	BCC 5578	BCC 5579
PVC Tape	BEC 4981	BEC 4981
Pop Rivets (5/32 in x 1/4 in)	N/A	N/A
Rear Quarter Casings (Colour coded)	JLM 1480	JLM 1481
Rear Seal Carrier	BBC 8192	BBC 8193
Screw Retainers (Black)	C31973/11	C31973/11
Screw Retainers (White)	BBC 8184	BBC 8184



