

# DISCOVERY



## Body Repair Manual

Carrosserie  
reparatiehandboek

Manuel de réparation  
de carrosserie

Karosseriereparaturanleitung

Manuale delle operazioni di  
riparazione della carrozzeria

Manual de reparaciones  
de carrocería

Manual de reparações  
da carroçaria



# Body Repair Manual

## DISCOVERY



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This manual covers vehicles from  
1995 Model Year on



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## INTRODUCTION

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**This Body Repair Manual covers vehicles from 1995 model year onwards. Amendments and additional pages will be issued to ensure that the manual covers latest models. Amendments and additions will be identified by the addition of a dated footer at the bottom of the page.**

This Body Repair Manual is designed to assist skilled body repair technicians in the efficient repair and maintenance of Land Rover vehicles.

**Individuals who undertake their own repairs should have some skill and training, and limit repairs to components which could not affect the safety of the vehicle or its passengers. Any repairs required to safety critical items such as steering, brakes, suspension or supplementary restraint system should be carried out by a Land Rover Dealer. Repairs to such items should NEVER be attempted by untrained individuals.**

**WARNINGS, CAUTIONS** and **NOTES** are given throughout this Manual in the following form:



**WARNING:** Procedures which must be followed precisely to avoid the possibility of personal injury.



**CAUTION:** This calls attention to procedures which must be followed to avoid damage to components.



**NOTE:** This calls attention to methods which make a job easier or gives helpful information.

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## DIMENSIONS

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The dimensions quoted are to design engineering specification. Alternative unit equivalents, shown in brackets following the dimensions, have been converted from the original specification.

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## REFERENCES

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References to the left or right hand side in the manual are made when viewing the vehicle from the rear. With the engine and gearbox assembly removed, the water pump end of the engine is referred to as the front.

To reduce repetition, some operations covered in this Manual do not include reference to testing the vehicle after repair.

It is essential that work is inspected and tested after completion and if necessary a road test of the vehicle is carried out particularly where safety related items are concerned.

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## REPAIRS AND REPLACEMENTS

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When replacement parts are required it is essential that Land Rover parts are used. Attention is particularly drawn to the following points concerning repairs and the fitting of replacement parts and accessories: Safety features embodied in the vehicle may be impaired if other than Land Rover parts are fitted. In certain territories, legislation prohibits the fitting of parts not to the vehicle manufacturer's specification. Torque spanner values given in this Manual must be strictly adhered to. Locking devices, where specified, must be fitted. If the efficiency of a locking device is impaired during removal it must be replaced with a new one. Certain fasteners must not be re-used. These fasteners are specified in the Workshop Manual.

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## FUEL HANDLING PRECAUTIONS

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The following information provides basic precautions which must be observed if fuel is to be handled safely. It also outlines the other areas of risk which must not be ignored.

This information is issued for basic guidance only, and in any case of doubt, appropriate enquiries should be made of your local Fire Officer or Fire Department.

Fuel vapour is highly flammable and in confined spaces is also very explosive and toxic.

When fuel evaporates it produces 150 times its own volume in vapour, which when diluted with air becomes a readily ignitable mixture. The vapour is heavier than air and will always fall to the lowest level. It can readily be distributed throughout a workshop by air current, consequently, even a small spillage of fuel is very dangerous.

Always have a fire extinguisher containing **FOAM**, **CO<sub>2</sub> GAS** or **POWDER** close at hand when handling fuel, or when dismantling fuel systems and in areas where fuel containers are stored.

**WARNING:** It is imperative that the battery is not disconnected during fuel system repairs as arcing at the battery terminal could ignite fuel vapour in the atmosphere.  
Always disconnect the vehicle battery BEFORE carrying out work on the fuel system.

**Whenever fuel is being handled, transferred or stored, or when fuel systems are being dismantled all forms of ignition must be extinguished or removed, any leadlamps used must be flame proof and kept clear of spillage.**

**No one should be permitted to repair components associated with fuel without first having had fuel system training.**

#### Hot fuel handling precautions

**WARNING:** Before commencing any operation requiring fuel to be drained from the fuel tank, the following procedure must be adhered to:

1. Allow sufficient time for the fuel to cool, thus avoiding contact with hot fuels.
2. Vent the system by removing the fuel filler cap in a well ventilated area. Refit the filler cap until the commencement of fuel drainage.

#### Fuel transfer

**WARNING:** Fuel must not be extracted or drained from any vehicle while it is standing over a pit.

The transfer of fuel from the vehicle fuel tank must be carried out in a well ventilated area. An approved transfer tank must be used according to the transfer tank manufacturer's instructions and local regulations, including attention to grounding of tanks.

#### Fuel tank removal

A **FUEL VAPOUR** warning label must be attached to the fuel tank upon removal from the vehicle.

#### Fuel tank repair

Under no circumstances should a repair to any tank be attempted.

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## BODY REPAIRS

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Body shells are of welded construction and bolted to the chassis frame. Front and rear sections of the shell are designed as 'energy absorbing' zones. This means they are designed to deform progressively when subjected to impact in order to minimise the likelihood of injury to vehicle occupants.

It is essential that design dimensions and strength are restored in accident rectification. It is important that neither structural weakness nor excessive local stiffness are introduced into the vehicle during body or chassis repair.

Repairs usually involve a combination of operations ranging from straightening procedures to renewal of either individual panels or panel assemblies. The repairer will determine the repair method and this decision will take into account a balance of economics between labour and material costs and the availability of repair facilities in both equipment and skills. It may also involve considerations of vehicles down-time, replacement vehicle availability and repair turn-around time.



It is expected that a repairer will select the best and most economic repair method possible, making use of the facilities available. The instructions given are intended to assist a skilled body repairer by expanding approved procedures for panel replacement. The objective is to restore the vehicle to a safe running condition by carrying out a repair which is close as feasible to original standards. The result will not advertise to the experienced eye the fact that the vehicle has been damaged, although the repair will not necessarily be identical in all respects to original factory build. Commercial bodyshop repair facilities cannot always duplicate methods of construction used during production.

Operations covered in this Manual do not include reference to testing the vehicle after repair. It is essential that work is inspected and suspension geometry checked after completion and if necessary a road test of the vehicle is carried out, particularly where safety related items are concerned.

Where major units have been disconnected or removed, it is necessary to ensure that fluid levels are checked and topped up when necessary. It is also necessary to ensure that the repaired vehicle is in a roadworthy condition in respect of tyre pressures, lights, washer fluid etc.

Body repairs often involve the removal of mechanical and electrical units as well as associated wiring.

Taking into consideration the differences in body styles, steering and suspension systems as well as engine and suspension layouts, the location of the following components as applicable to a particular vehicle is critical:

- Front suspension upper damper mountings.
- Front suspension or sub frame mountings.
- Engine mounting on RH and LH chassis longitudinals.
- Rear suspension upper damper mountings.
- Rear suspension mountings or lower pivots.
- Steering rack mountings.

Additional points which can be used to check alignment and assembly are:

- Inner holes in crossmember - side - main floor.
- Holes in front longitudinals.
- Holes in extension - side member - front.
- Holes in rear longitudinals.
- Holes in rear lower panels or extension rear floor.
- Fuel tank mountings.

Apertures for windscreen, backlight, bonnet and doors can best be checked by offering up an undamaged component as a gauge.

## ACCESSORIES AND CONVERSIONS

**DO NOT FIT** unapproved accessories or conversions, as they could affect the safety of the vehicle. Land Rover will not accept liability for death, personal injury, or damage to property which may occur as a direct result of the fitting of non-approved conversions to the vehicle.

# 01 INTRODUCTION

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## SPECIFICATION

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The specification details and instructions set out in this Manual apply only to a range of vehicles and not to any one. For the specification of a particular vehicle purchasers should consult their Dealer.

The Manufacturer reserve the right to vary their specifications with or without notice, and at such times and in such manner as they think fit. Major as well as minor changes may be involved in accordance with the Manufacturer's policy of constant product improvement.

Whilst every effort is made to ensure the accuracy of the particulars contained in this Manual, neither the Manufacturer or Dealer, by whom this Manual is supplied, shall in any circumstances be held liable for any inaccuracy or the consequences thereof.

## SPECIAL SERVICE TOOLS

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The use of approved special service tools is important. They are essential if service operations are to be carried out efficiently, and safely. Where special tools are specified, **only these tools should be used to avoid the possibility of personal injury or damage to the components.** Also the amount of time which they save can be considerable.

Every special tool is designed with the close co-operation of Land Rover, and no tool is put into production which has not been tested and approved by us. New tools are only introduced where an operation cannot be satisfactorily carried out using existing tools or standard equipment. The user is therefore assured that the tool is necessary and that it will perform accurately, efficiently and safely.

Special tools bulletins will be issued periodically giving details of new tools as they are introduced.

All orders and enquiries from the United Kingdom should be sent direct to V. L. Churchill. Overseas orders should be placed with the local V. L. Churchill distributor, where one exists. Countries where there is no distributor may order direct from:  
V. L. Churchill Limited,  
PO Box 3,  
Daventry, Northants,  
England, NN11 4NF.

The tools recommended in this Workshop Manual are listed in a multi-language illustrated catalogue, obtainable from:  
Messers. V. L. Churchill at the above address, or from:  
Land Rover Merchandising Service,  
PO Box 534,  
Erdington,  
Birmingham, B24 0Q5,

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## JACKING

The following instructions must be carried out before raising the vehicle off the ground.

1. Use a solid level ground surface.
2. Apply parking brake.
3. Select 'P' or 1st gear in main gearbox.
4. Select Low range in transfer gearbox.

**CAUTION:** To avoid damage occurring to the under body components of the vehicle the following jacking procedures must be adhered to.

### DO NOT POSITION JACKS OR AXLE STANDS UNDER THE FOLLOWING COMPONENTS:

Body structure  
 Bumpers  
 Fuel lines  
 Brake lines  
 Front radius arms  
 Panhard rod  
 Steering linkage  
 Rear Trailing links  
 Fuel tank  
 Engine sump  
 Gearbox bell housing

### Jack or support vehicle by axles only.

Pay particular attention to the following points:

- Locate trolley jack pads properly before lifting and lower the jack fully before withdrawal.
- Use only the approved hoisting points when overhead hoisting is required.
- Locate the lifting heads of wheel-free lifts correctly, with rubber or similar material placed between lifting head and underbody.

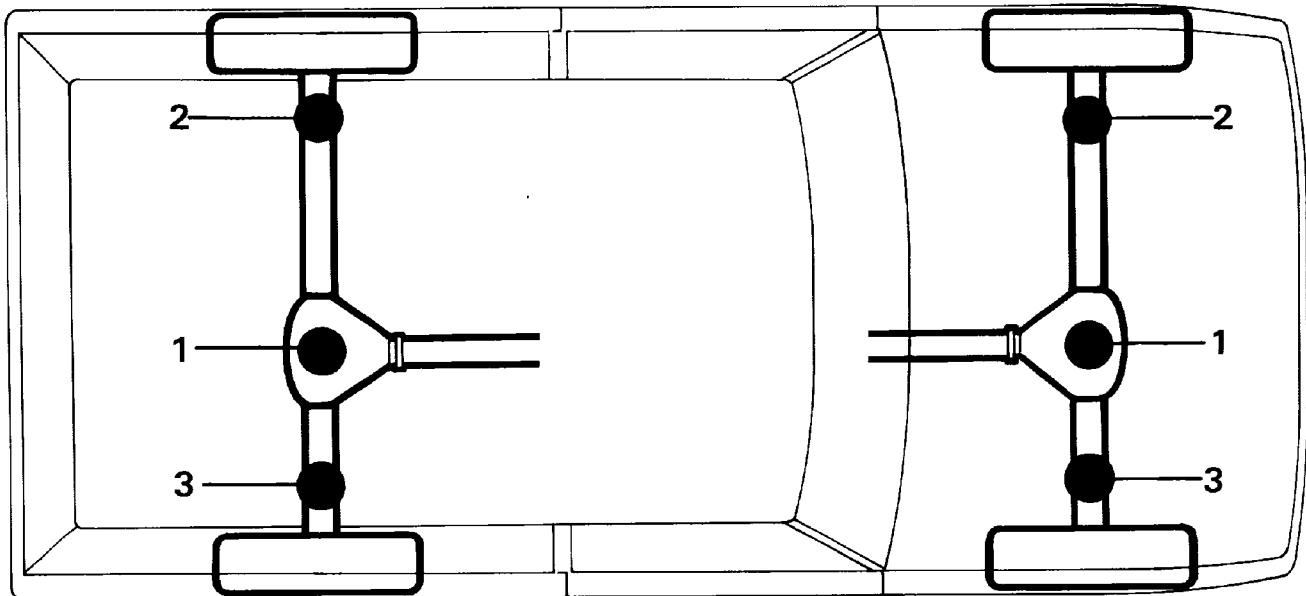
### Vehicle jack

The jack provided with the vehicle is only intended to be used in an emergency, for changing a tyre. Do **NOT** use the jack for any other purpose. Refer to Owner's Manual for vehicle jack location points and procedure. Never work under a vehicle supported by the vehicle jack.

### Hydraulic jack

A hydraulic jack with a minimum 1500 kg, 3,300 lbs load capacity must be used.

**CAUTION:** Do not commence work on the underside of the vehicle until suitable axle stands have been positioned under the axle.



RR1839E

**Raise front of vehicle**

1. Position cup of hydraulic arm under differential casing.



**NOTE: The differential casing is not central to the axle. Care should be taken when raising the front road wheels off the ground as the rear axle has less sway stiffness.**

2. Raise front road wheels to enable an axle stand to be installed under left hand axle tube.
3. Position an axle stand under right hand axle tube, carefully lower jack until axle sits securely on both axle stands, remove trolley jack.
4. Before commencing work on underside of vehicle re-check security of vehicle on stands.
5. Reverse procedure when removing vehicle from stands.

**Raise rear of vehicle**

1. Position cup of hydraulic arm under differential casing.
2. Raise vehicle to enable axle stands to be installed under left and right hand axle tubes.
3. Lower jack until axle sits securely on axle stands, remove trolley jack.
4. Before commencing work on underside of vehicle re-check security of vehicle on stands.
5. Reverse procedure when removing vehicle from stands.



## **HYDRAULIC VEHICLE RAMP (FOUR POST)**

Use only a 'drive on' type ramp which supports vehicle by its own road wheels. If a 'wheel-free' condition is required, use a 'drive on' ramp incorporating a 'wheel-free' system that supports under axle casings. Alternatively, place vehicle on a firm, flat floor and support on axle stands.

## **TWO POST VEHICLE RAMPS**

**The manufacturer of LAND ROVER VEHICLES DOES NOT recommend using 'Two Post' ramps that employ four adjustable support arms. These are NOT considered safe for Land Rover vehicles. If vehicle is installed on a Two Post ramp responsibility for safety of vehicle and personnel performing service operations is in the hands of the Service Provider.**

## **DYNAMOMETER TESTING - NON ANTI-LOCK BRAKE VEHICLES**

### **Viscous coupling**

The front and rear axles cannot be driven independently due to the viscous coupling. This eliminates the need for differential lock by progressively locking the centre differential automatically if slip occurs at any wheel.



**WARNING: DO NOT attempt to drive individual wheels with vehicle supported on floor jacks or stands.**

### **Four wheel dynamometers**

Provided that front and rear dynamometer rollers are rotating at identical speeds and that normal workshop safety standards are applied, there is no speed restriction during testing except any that may apply to the tyres.

### **Two wheel dynamometers**

**IMPORTANT: Use a four wheel dynamometer for brake testing if possible.**

If brake testing on a single axle rig is necessary it must be carried out with propeller shaft to rear axle removed, AND neutral selected in BOTH main gearbox and transfer gearbox. When checking brakes, run engine at idle speed to maintain servo vacuum. If checking engine performance, the transfer box must be in high range and propeller shaft to stationary axle must be removed.

## **DYNAMOMETER TESTING - VEHICLES WITH ANTI-LOCK BRAKES (ABS)**



**WARNING: Do not attempt to test ABS function on a dynamometer**

### **Four wheel dynamometers**

**NOTE: Before testing a vehicle on a four wheel dynamometer disconnect the valve relay. See *Electrical Trouble Shooting Manual*.**

**The ABS function will not work, the ABS warning light will illuminate. Normal braking will be available.**

Provided that front and rear rollers are rotating at identical speeds and that normal workshop safety standards are applied, there is no speed restriction during testing except any that may apply to the tyres.

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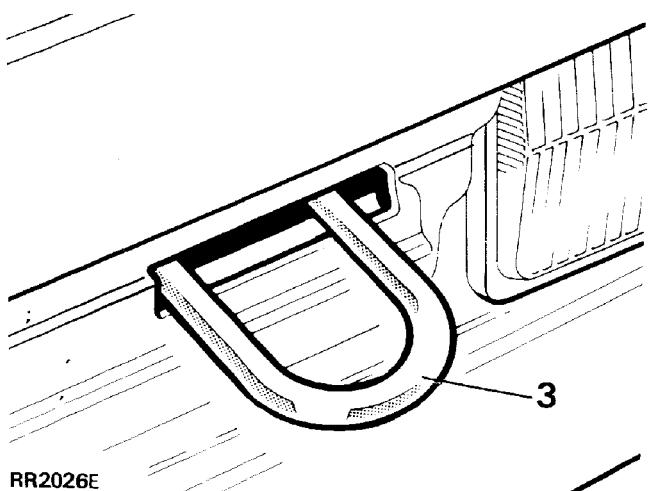
## Two wheel dynamometers

**IMPORTANT:** Use a four wheel dynamometer for brake testing if possible.

 **NOTE:** ABS will not function on a two wheel dynamometer. The ABS light will illuminate during testing. Normal braking will be available.

If brake testing on a single rig is necessary it must be carried out with propeller shaft to the rear axle removed, AND neutral selected in BOTH main and transfer boxes.

If checking engine performance, the transfer box must be in high range and drive shaft to stationary axle removed.



## TOWING



**CAUTION:** The vehicle has permanent four-wheel drive. The following towing instructions must be adhered to:

**Towing the vehicle on all four wheels with driver operating steering and brakes.**

1. Turn ignition key turn to position '1' to release steering lock.
2. Select neutral in main gearbox and transfer gearbox.

3. Secure tow rope, chain or cable to towing eye.
4. Release the parking brake.



**CAUTION:** The brake servo and power assisted steering system will not be functional without the engine running. Greater pedal pressure will be required to apply the brakes, the steering system will require greater effort to turn the front road wheels. The vehicle tow connection should be used only in normal road conditions, 'snatch' recovery should be avoided.

### Suspended tow by breakdown vehicle



**CAUTION:** To prevent vehicle damage, front or rear propeller shaft **MUST BE** removed, dependent upon which axle is being trailed.

1. Mark propeller shaft drive flanges at transfer gearbox and axles with identification lines to enable the propeller shaft to be refitted in its original position.
2. Remove the propeller shaft fixings, remove the shaft from the vehicle.
3. If the front axle is to be trailed turn ignition key to position '1' to release steering lock.



**CAUTION:** The steering wheel and/or linkage must be secured in a straight ahead position. DO NOT use the steering lock mechanism for this purpose.



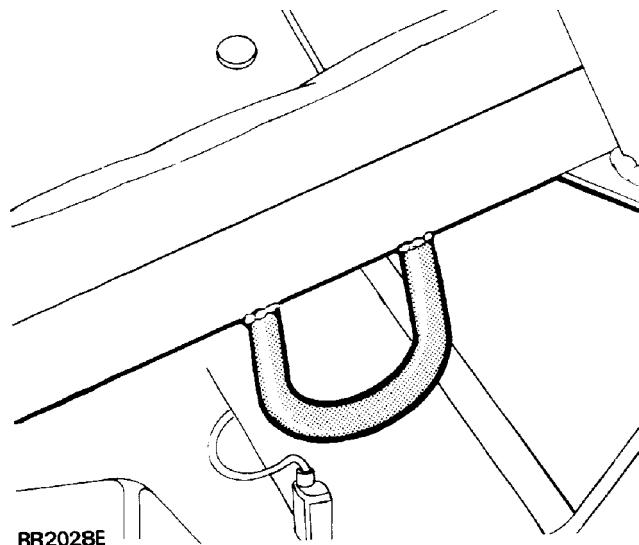
## TRANSPORTING THE VEHICLE BY TRAILER

Lashing eyes are provided on front and rear of the chassis side members, to facilitate the securing of the vehicle to a trailer or other means of transportation.

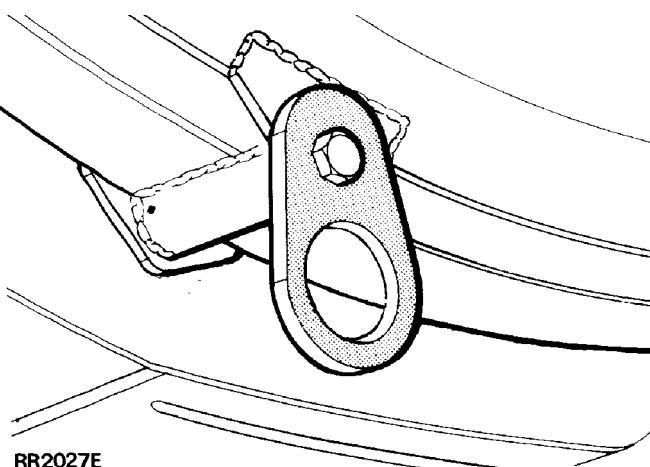
**CAUTION: Underbody components must not be used as lashing points.**

Install vehicle on trailer and apply park brake. Select neutral in main gearbox. Selecting 'N' will prevent damage to parking pawl of the automatic gearbox.

## FRONT OF CHASSIS



## REAR OF CHASSIS



## JUMP STARTING

**WARNING:** Hydrogen and oxygen gases are produced during normal battery operation. This gas mixture can explode if flames, sparks or lighted tobacco are brought near battery. When charging or using a battery in an enclosed space, always provide ventilation and shield your eyes.

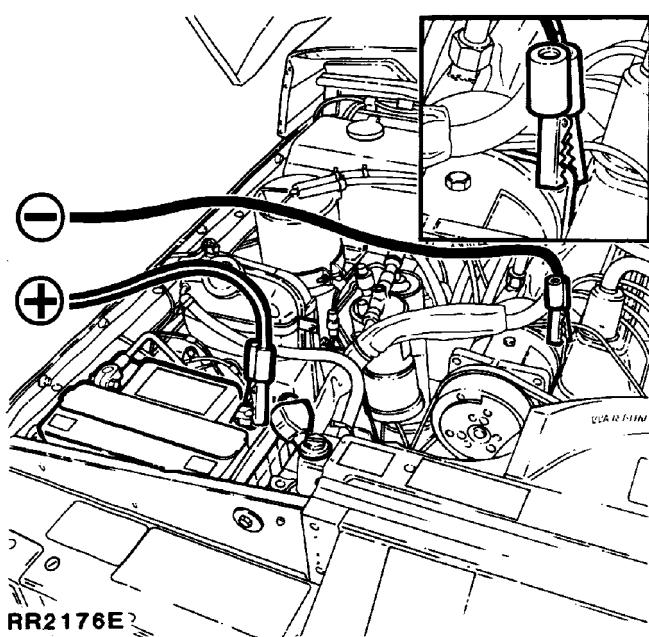
Keep out of reach of children. Batteries contain sulphuric acid. Avoid contact with skin, eyes, or clothing. Also, shield eyes when working near battery to protect against possible splashing of acid solution. In case of acid contact with skin, eyes, or clothing, flush immediately with water for a minimum of fifteen minutes. If acid is swallowed, drink large quantities of milk or water, followed by milk of magnesia, a beaten egg, or vegetable oil. **SEEK MEDICAL AID IMMEDIATELY.**

### To Jump Start - Negative Ground Battery

**WARNING:** To avoid any possibility of injury use particular care when connecting a booster battery to a discharged battery.

1. Position vehicles so that jump leads will reach, ensuring that vehicles **DO NOT TOUCH**, alternatively a fully charged slave battery may be positioned on floor adjacent to vehicle.
2. Ensuring that ignition and all electrical accessories are switched off, that parking brake is applied and neutral is selected on a manual gearbox, with an automatic gearbox select neutral (N) or park (P) and then connect the jump leads as follows;
  - A. Connect one end of first jumper cable to positive (+) terminal of booster battery.
  - B. Connect other end of first jumper cable to positive (+) terminal of discharged battery.
  - C. Connect one end of second jumper cable to negative terminal of booster battery.

# 01 INTRODUCTION



- D. Connect other end of second jumper cable to a good earth point on the engine, **NOT TO NEGATIVE TERMINAL OF DISCHARGED BATTERY**. Keep jumper lead away from moving parts, pulleys, drive belts and fan blade assembly.

**WARNING:** Making final cable connection could cause an electrical arc which if made near battery could cause an explosion.

3. If booster battery is installed in another vehicle, start engine and allow to idle.
4. Start engine of vehicle with discharged battery, following starting procedure in Owners' Manual.

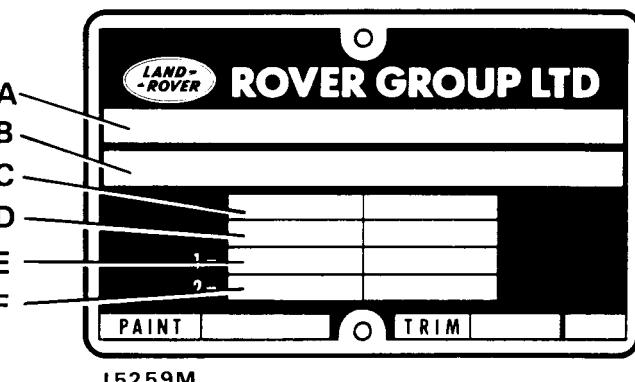
**CAUTION:** If vehicle fails to start within a maximum time of 12 seconds, switch ignition off and investigate cause. Failing to follow this instruction could result in irreparable damage to catalysts.

5. Remove negative (-) jumper cable from the engine and then terminal of booster battery.
6. Remove positive (+) jumper cable from positive terminals of booster battery and discharged battery.

## VEHICLE IDENTIFICATION NUMBER (VIN)

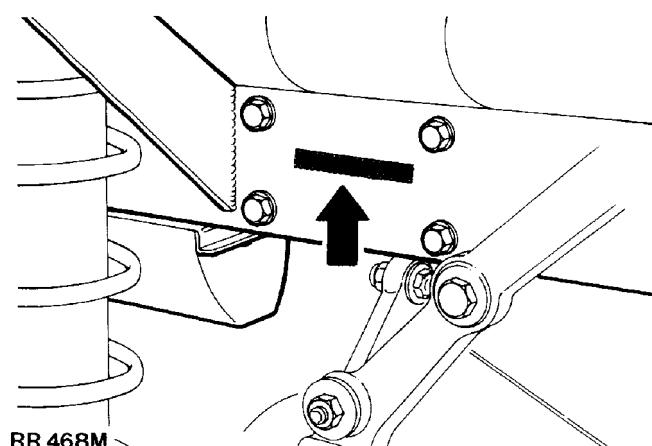
The Vehicle Identification Number and the recommended maximum vehicle weights are stamped on a plate located under the bonnet [hood] riveted to the front of the engine compartment.

**Vehicle Identification Number Plate (UK, Australia, R.O.W., Europe)**



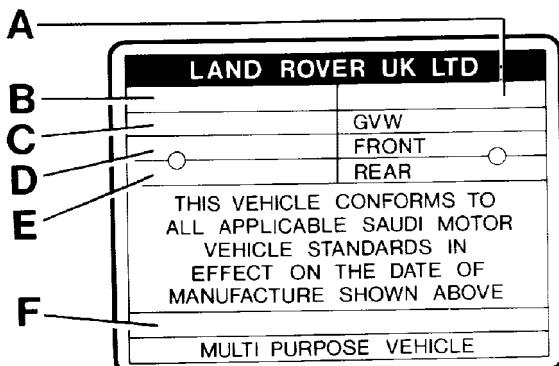
- A. Build date (Australia). Type approval
- B. VIN (17 digits)
- C. Maximum permitted laden weight for vehicle
- D. Maximum vehicle and trailer weight
- E. Maximum road weight-front axle
- F. Maximum road weight-rear axle

The number is also stamped on the right side of the chassis forward of the spring mounting turret.





### Vehicle Identification Number Plate (Saudi Arabia)



RR466M

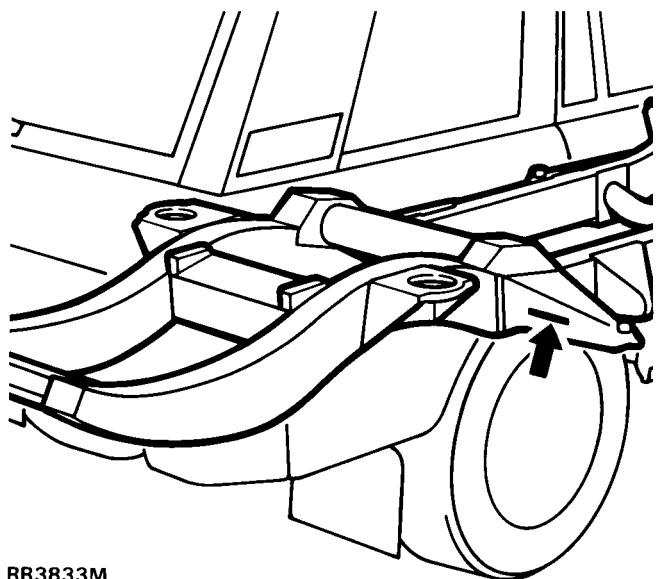
- A. Year of manufacture
- B. Month of manufacture
- C. Maximum vehicle weight
- D. Maximum road weight-front axle
- E. Maximum road weight-rear axle
- F. VIN (17 digits)

The vehicle identification number identifies the manufacturer, model range, wheel base, body type, engine, steering, transmission, model year and place of manufacture. The following example shows the coding process.

**SAL** World manufacturer identifier

- LH** Range Rover or
- LJ** Discovery
- G** Class 100 inch
- B** 2 door
- F** 300 Tdi or
- V** V8i Petrol
- 8** 5 speed LHD or
- 7** 5 speed RHD
- M** 1995 MY
- A** Solihull site

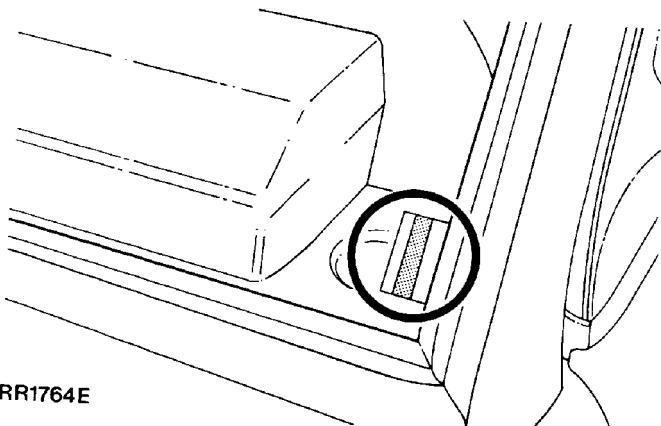
### European vehicle identification number (VIN)



RR3833M

Stamped on the right hand side chassis forward of rear wheel.

### Federal (USA) vehicle identification number



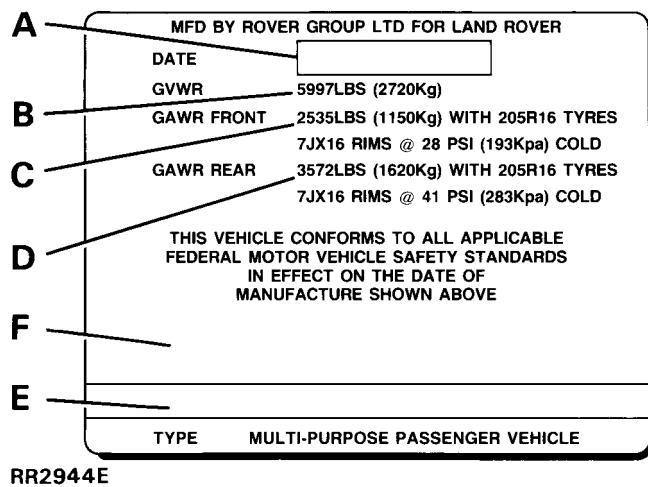
RR1764E

Stamped on a plate riveted to the upper left hand 'A' - post, visible through the front screen of the vehicle.

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## Vehicle identification number (VIN)

An adhesive label containing the Vehicle Identification Number, date of manufacture and gross axle weight ratings is fixed to the lock face of the front left hand door. The information includes wheel and tyre sizes and tyre pressures at gross axle weight ratings.



## Key to vehicle identification label

- A. Month and year of manufacture
- B. Gross vehicle weight rating
- C. Gross axle weight rating for front axle
- D. Gross axle weight rating for rear axle
- E. Vehicle identification number (17 digits)
- F. Vehicle identification number - bar code

## LOCATION OF IDENTIFICATION NUMBERS

### Engine serial number - 300Tdi Engine

The 300Tdi engine number is stamped on the cylinder block on the right hand side of the engine above the camshaft front cover plate.

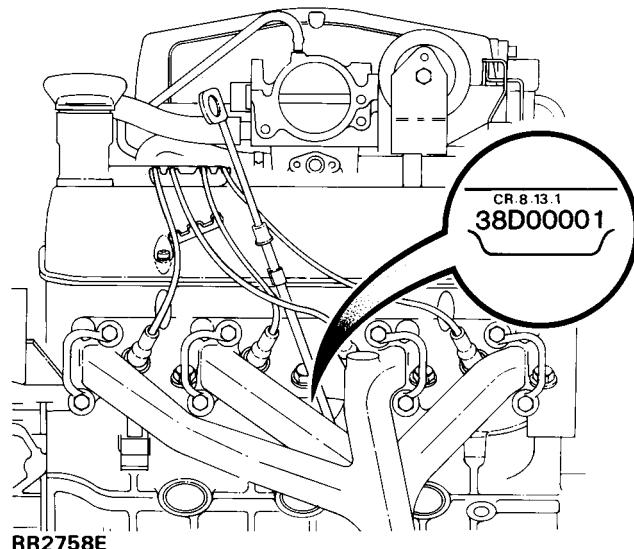
### Engine serial number - MpI engine

Stamped on the R.H. face of the cylinder block adjacent to the gearbox.

### Engine serial number - V8i engine

Stamped on a cast pad on the cylinder block, between numbers 3 and 5 cylinders.

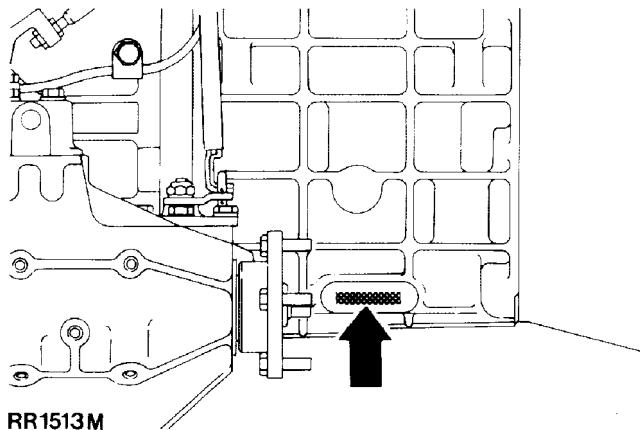
 **NOTE:** The appropriate engine compression ratio is stamped above the serial number.





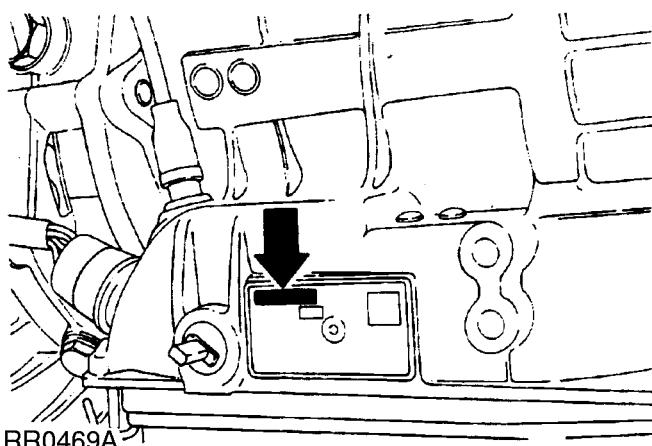
### Main gearbox R380

Stamped on a cast pad on the bottom right hand side of the gearbox.



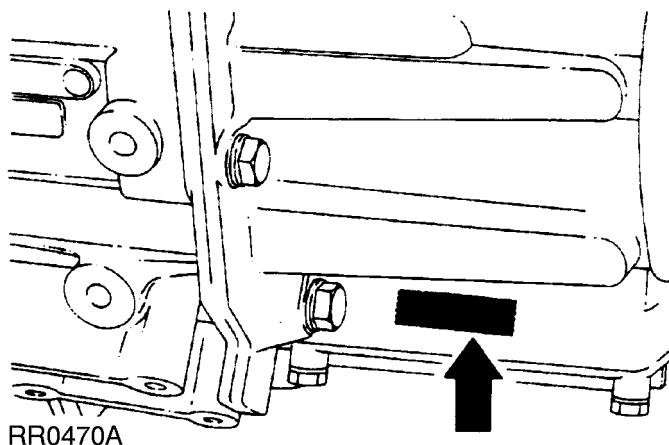
### Automatic gearbox

Stamped on a plate riveted to the bottom left hand side of the gearbox casing.



### Transfer gearbox LT230

The serial number is stamped on the left hand side of the gearbox casing below the mainshaft rear bearing housing adjacent to the bottom cover.



### Front and rear axles

Serial number is stamped on top of the left hand axle tube.

### READING THIS MANUAL

This manual is divided into sections shown on the contents page, alongside a range of icons, familiar to service technicians.

Sections are further divided into sub-sections, the titles of which appear at the foot of each page. Typical examples are given below:

**Information**

**Fault Diagnosis**

**Seaking and Corrosion Protection**

**Body Dimensions**

**Description and operation**

**Repair**

**Panels**

**Procedures**

To avoid repeating information through the sections, where part of the repair operation impacts on another section, a cross reference is given to direct the reader to where the information is sited.

### American terminology.

A few words used in this manual differ to words used in America. Where this occurs the American word is placed inside brackets. For example: bonnet [hood], wing [fender], ramp [hoist].



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**STEERING**

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**Power steering box**

Make/type ..... Adwest Varamatic - worm and roller box  
Ratio ..... Variable: straight ahead 19.3:1 on lock 14.3:1  
Steering wheel turns, lock-to-lock ..... 3.375

**Steering pump**

Make/type -V8i ..... ZF - Unicorn  
Make/type - Mpi & Tdi ..... Hobourn-Eaton series 500

**Steering geometry**

Steering wheel diameter ..... 405 mm, 16 in  
Steering wheel diameter airbag model ..... 400 mm, 15 3/4 in  
Toe-out measurement ..... 0 to 2 mm, 0 to 1/4 in toe out  
Toe-out included angle ..... 0° to 0° 16'  
Camber angle ..... 0° \*  
Castor angle ..... 3° \*  
Swivel pin inclination static ..... 7° \*

\* Check with vehicle in static unladen condition, that is,  
vehicle with water, oil and five gallons of fuel. Rock the  
vehicle up and down at the front to allow it to take up a  
position.

## 04 GENERAL SPECIFICATION DATA

### VEHICLE WEIGHTS AND PAYLOAD

When loading a vehicle to its maximum (Gross Vehicle Weight), consideration must be taken of the unladen vehicle weight and the distribution of the payload to ensure that axle loadings do not exceed the permitted maximum values.

It is the customer's responsibility to limit the vehicle's payload in an appropriate manner such that neither maximum axle loads nor Gross Vehicle Weight are exceeded.

#### Maximum EEC kerb weight and distribution - all optional equipment

##### VEHICLE WEIGHTS - Mpi

	<b>3 Door</b>	<b>5 Door</b>
Front axle .....	930 kg, 2050 lb	930 kg, 2050 lb
Rear axle .....	1010 kg, 2227 lb	1055 kg, 2326 lb
Total .....	1940 kg, 4278 lb	1985 kg, 4377 lb

##### Maximum axle weights

Front axle .....	1110 kg, 2446 lb
Rear axle .....	1650 kg, 3638 lb
Gross vehicle weight .....	2720 kg, 5998 lb

##### VEHICLE WEIGHTS - V8i

Front axle .....	970 kg, 2139 lb	970 kg, 2139 lb
Rear axle .....	1010 kg, 2227 lb	1055 kg, 2326 lb
Total .....	1980 kg, 4366 lb	2025 kg, 4465 lb

##### Maximum axle weights

Front axle .....	1100 kg, 2426 lb
Rear axle .....	1650 kg, 3638 lb
Gross vehicle weight .....	2720 kg, 5998 lb

##### VEHICLE WEIGHTS - 300 Tdi

Front axle .....	1040 kg, 2293 lb	1040 kg, 2293 lb
Rear axle .....	1015 kg, 2238 lb	1060 kg, 2337 lb
Total .....	2055 kg, 4531 lb	2100 kg, 4630 lb

##### Maximum axle weights

Front axle .....	1200 kg, 2646 lb
Rear axle .....	1650 kg, 3638 lb
Gross vehicle weight .....	2720 kg, 5998 lb

EEC kerb weight = Unladen weight + Full fuel tank + 75 kg (165 kg) driver.




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**VEHICLE DIMENSIONS**


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**Dimensions**

Overall length (including spare wheel) .....	4538 mm, 178 1/2 in
Overall length (including tow hitch) .....	4581 mm, 180 3/10 in
Overall width .....	2189 mm, 86 1/10 in
Overall height .....	1914 mm, 75 6/10 in
Wheelbase .....	2540 mm, 100 in
Track front/rear .....	1486 mm, 58 1/2 in
Width between wheel boxes .....	1080 mm, 43 in
Seating capacity .....	5 to 7

**Performance**

Tyre size fitted .....	205 R16 radial
Tyre size fitted .....	235/70 R16 radial
Max. gradient (EEC kerb weight) .....	45°
Approach angle (EEC kerb weight) .....	35°
Departure angle with tow hitch (EEC kerb weight) .....	20°
Departure angle without tow hitch (EEC kerb weight) .....	29°
Ramp break over angle .....	33°
Min. ground clearance (unladen) .....	204 mm, 8 in
Wading depth .....	500 mm, 19 11/16 in

**Towing weights**

	<b>On road</b>	<b>Off road</b>
Unbraked trailers .....	750 kg, 1654 lb	500 kg, 1103 lb
Trailers with overrun brakes - Mpi .....	2750 kg, 6064 lb	1000 kg, 2205 lb
Trailers with overrun brakes - V8i & Tdi .....	3500 kg, 7716 lb	1000 kg, 2205 lb
4 wheel trailers with coupled brakes (FULLY BRAKED)* .....	4000 kg, 8820 lb	1000 kg, 2205 lb

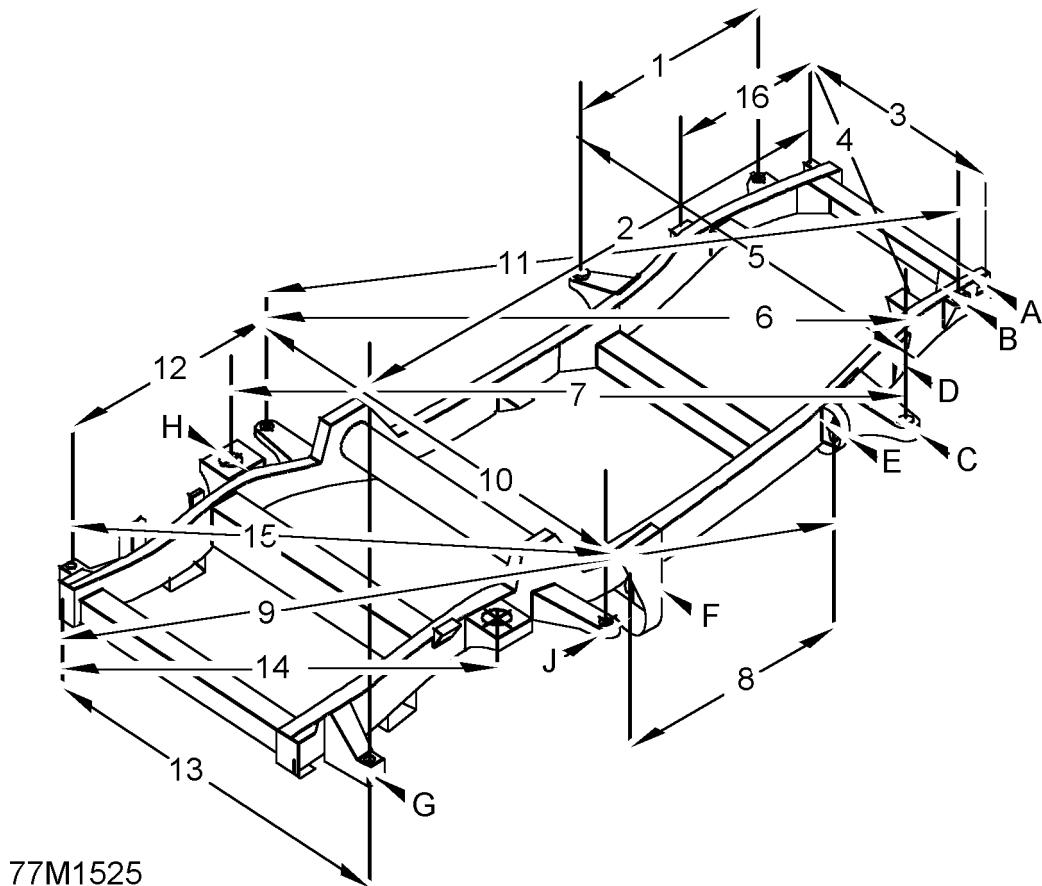
**NOTE: \* Only applies to vehicles modified to accept coupled brakes.**



**NOTE: All weight figures are subject to local restrictions.**



## ALIGNMENT JIG DIMENSIONS



1. 780mm (30 11/16 in)
2. 4100mm (161 9/16 in)
3. 838mm (33 in)
4. 1696mm (66 13/16 in)
5. 1321mm (52 in)
6. 1792mm (70 1/2 in)
7. 2099mm (82 11/16 in)
8. 953mm (37 1/2 in.)
9. 2803mm (110 7/16 in)
10. 1321mm (52 in)
11. 2281mm (88 5/8 in)
12. 1487mm (58 1/2 in)
13. 991mm (39 in)

14. 1356mm (53 13/16 in)
15. 1487mm (58 1/2 in)
16. 941mm (37 1/10 in)

- A = No. 1 body mount RH and LH
- B = Front spring seat RH and LH
- C = Front outrigger RH and LH
- D = No. 2 body mount RH and LH
- E = C-spanner bracket RH and LH
- F = Rear trailing link mounting bracket RH and LH
- G = No. 5 body mount RH and LH
- H = Rear spring seat RH and LH
- J = Rear outrigger RH and LH

All dimensions taken at centre line of set screw or set screw hole.

### Straightening

Whenever possible, structural members should be cold straightened under tension. Do not attempt to straighten with a single pull, but rework the damaged area using a series of pulls, releasing tension between each stage and using the opportunity to check alignment.

### Body jig

Unless damage is limited to cosmetic panels, all repair work to body members must be carried out on a body jig, to ensure that impact damage has not spread into more remote parts of the body structure. Mounting on a jig will also ensure that the straightening and panel replacement procedures do not cause further distortion. If original dimensions cannot be satisfactorily restored by these methods, damaged structural members should be replaced. Damaged areas should be cut away using a high speed saw, NOT an oxy-acetylene torch.

As a rule, body dimensions are symmetrical about the centre line. A good initial check for distortion is therefore to measure diagonally and to investigate apparent differences in dimensions.

### Inspection

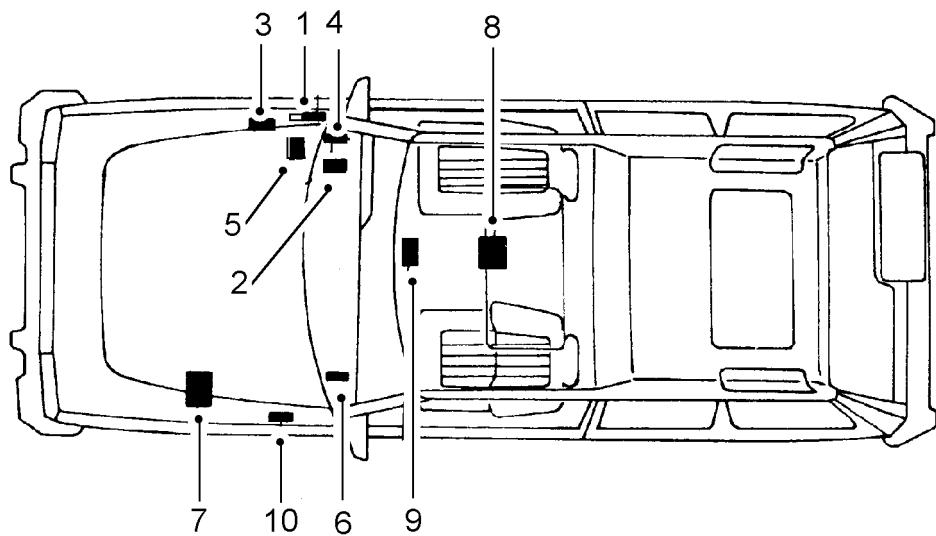
Every accident produces individual differences in damage. Each repair is influenced by the extent of the damage and by the facilities and equipment available for its rectification.

Most accident damage can be visually inspected and the approximate extent of the damage assessed. Sometimes deformation will extend beyond the area of direct damage, and the severity of this must be accurately established so that steps may be taken to restore critical body components to their original dimensions.

An initial check of critical dimensions can be carried out by means of drop checks or (preferably) trammels. Gauges are available which will check accurately for body twist. Where repairs necessitate renewal of a critical body component it is recommended that a body jig is used.



## ELECTRONIC CONTROL UNITS



77M1526

1. Engine control module (ECM) - MFi version (behind RH footwell panel)
2. Cruise control ECU (behind lower dash panel)
3. MEMS ECU - MPi version (on RH inner wing)
4. EGR EDC ECU - Diesel version (behind RH end of dashboard)
5. Glow plug ECU - Diesel version (on RH of bulkhead)
6. ABS ECU (behind LH of dashboard)
7. ABS modulator unit (on LH inner wing)
8. SRS diagnostic ECU (on centre tunnel beneath console)
9. Sunroof ECU (on screen rail above forward switches)
10. Anti-theft alarm ECU (inside LH footwell)

The electronic control units fitted to Land Rover vehicles make it advisable to follow suitable precautions prior to carrying out welding repair operations. Harsh conditions of heat and vibration may be generated during these operations which could cause damage to the units.

In particular, it is essential to follow the appropriate precautions when disconnecting or removing the SRS diagnostic unit. ***See SUPPLEMENTARY RESTRAINT SYSTEM, Description and operation***

**APPROVED MATERIALS**

MATERIAL	MANUFACTURER
SEALERS	<p>3M:          Bodygard (08158, 08159)          Weld Thru' Sealer (08625)          Drip-Chek Clear (08401)          Drip-Chek Heavy (08531)          Flexseal Polyurethane Seam Sealer (08684, 08689, 08694)          Polyurethane Sealer (sachet) (08703, 08783, 08788)          Super Seam Sealer (08537)          Sprayable Sealer (08800, 08823)          Bolted Panel Sealer (08572)          Body Caulking (08568)          Windscreen Sealer (08509)</p> <p>Gurit-Essex:          Betafill Clinch and Brushable Sealer (Black) (10215)          Betafill Clinch and Brushable Sealer (Grey) (10211)          Betafill Clinch and Brushable Sealer (White) (10220)          Clinch Joint and Underbody Coating (Grey) (10101)          Clinch Joint and Underbody Coating (Beige) (10707)</p> <p>Kent Industries:          Leak-Chek Clear Putty (10075)</p> <p>PPG:          Polyurethane Seam Sealer (6500)          Polyurethane Seam Sealer (92)          Terostat Preformed Strip (V11)          Terolan Light Seam Sealer</p> <p>Teroson:          Terolan Special Brushable Seam Sealer          Terostat 1K PU Seam Sealer (SE20)          Terostat Sprayable Seam Sealer (9320)</p> <p>Unipart:          Promatch Sealing Compound (UBS605, UBS606, UBS607)          Promatch Bolted Panel Sealer (UBS111)</p> <p>Wurth:          Sealing Compound (890100, 890101, 890102, 890103, 890104,          890105, 890106)          Astrolan Engine Bay Wax &amp; Cosmetic Wax (DA3241/DA3243)          Weld Thru' Coating (05913)</p>

**Approved materials (continued)**

MATERIAL	MANUFACTURER
ADHESIVES	3M: Automotive Structural Adhesive (08120) Aerosol Auto Adhesive (Trim) (08080) Spray 80 Adhesive (08090) Ciba-Geigy: Structural Two-Part Epoxy (XB5106/XB5107)
UNDERBODY COATINGS	3M: Spray Schutz (08877) Body Schutz (08861) Stone Chip Coating (Textured) (08868, 08878, 08879) Stone Chip Coating (Smooth) (08158, 08160, 08886) Croda: Crodapol Brushable Underbody Sealer (PV75) Underbody Wax (PW61) Dinol: Tectacote Underbody Wax (205) Teroson: Terotex Underseal CP02 (9320) Unipart: Promatch Underbody Schutz (UBS410) Promatch Underbody Wax (PW61)
WAX COATINGS	3M: Inner Cavity Wax (Transparent) (08909, 08919, 08929) Inner Cavity Wax (Amber) (08901, 08911, 08921) Dinol: Engine Bay & Cosmetic Wax/Lacquer (PW197) Cavity Wax (PW57) Engine Bay Cosmetic Wax/Lacquer (4010) Unipart: Promatch Cavity Wax (UBS508)

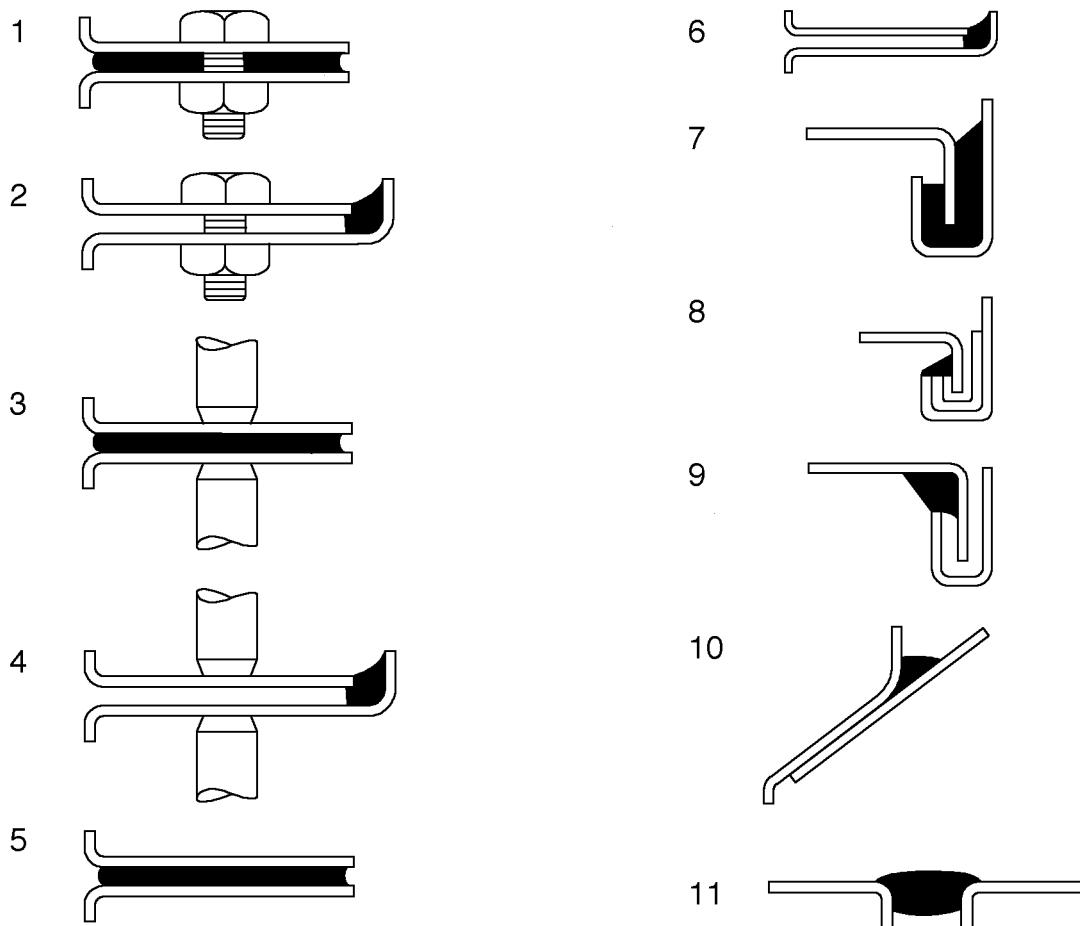
**Approved materials (continued)**

MATERIAL	MANUFACTURER
WELD-THROUGH PRIMERS	3M: Zinc Spray (09113) ICI: Zinc Rich Primer (P-565 634)
GENERAL MATERIALS	3M: Flexible Parts Repair Material (05900) Cleaner and Wax Remover (1 litre) (08984) Waterproof Cloth Tape (Y387/YS3998) Teroson: Sprayable Aerosol, Water Shedder Repair Unipart: Waterproof Tape (GWS121) Urethane Butyl Tape (BHM605)

# 04 GENERAL SPECIFICATION DATA

## MATERIALS APPLICATIONS

### Joint Types:



77M1356

1. Between bolted panels
2. Between bolted panel edges
3. Between spot welded panels
4. Between spot welded panel edges
5. Between bonded panels
6. Between bonded panel edges
7. Clinch joints (type a)
8. Clinch joints (type b)
9. Clinch joints (type c)
10. Gaps between panels (type a)
11. Gaps between panels (type b)


**Materials applications (continued)**

MANUFACTURER	MATERIAL/JOINT TYPE
ICI P565 634 3M 09113	Zinc rich primer. Between bolted and spot welded panels, clinch joints (type a). Brush or spray application.
Teroson Terostat V11	Preformed strip. Between bolted panels. Hand application.
Kent Industries 10075 3M 08401 3M 08572 3M 08684 3M 08689 3M 08694 3M 08703 3M 08783 3M 08788 PPG Polyurethane 6500 Teroson 92 Terolan Light Terostat 1K PU Terostat 9320 Unipart UBS 605/6/7 Wurth 890100/1/2/3/4/5/6	Seam sealer. Between bolted panel edges. Applicator gun/by hand.
Ciba-Geigy XBS106/7 3M 08120	Structural adhesive. Between spot welded and bonded panels, clinch joints (type a). Applicator gun, caulking gun.
3M 08625	Seam sealer. Between spot welded panels. Applicator gun.
Kent Industries 10075 3M 08401 3M 08684 PPG 6500 Teroson 92 Terolan Light Terostat 9320 Terostat 1K PU Unipart UBS605/6/7 Wurth 890100/1/2/3/4/5/6	Seam sealer light. Between spot welded panel edges. Hand applicator gun.

## 04 GENERAL SPECIFICATION DATA

### Materials applications (continued)

MANUFACTURER	MATERIAL/JOINT TYPE
Ciba-Geigy XBS106/7 3M 08120	Structural adhesive. Between bonded panels. Caulking gun.
PPG 6500 Teroson 92 Terostat 9320 Unipart UBS605/6/7 Wurth 890100/1/2/3/4/5/6	Semi-structural adhesive/anti-flutter material. Between bonded panels. Caulking gun.
Kent Industries 10075 3M 08401 3M 08694 PPG 6500 Teroson 92 Teroson Light Teroson 9320 Terostat 1K PU Unipart UBS605/6/7 Wurth 890100/1/2/3/4/5/6	Seam sealer light. Between bonded panel edges. Hand applicator gun.
Gurit-Essex 10211 Gurit-Essex 10215 Gurit-Essex 10220 3M 08531 3M 08537 3M 08703 3M 08783 3M 08788	Seam sealer. Clinch joints (type b). Caulking gun.


**Materials applications (continued)**

MANUFACTURER	MATERIAL/JOINT TYPE
Kent Industries 10075 3M 08401 3M 08531 Teroson Terolan Light	Seam sealer light. Clinch joints (type c). Caulking gun, hand applicator gun.
Kent Industries 10075 3M 08401 3M 08684 3M 08689 3M 08694 PPG 6500 Teroson 92 Terolan Light Terostat 1K PU Unipart UBS605/6/7 Wurth 890100/1/2/3/4/5/6	Seam sealer light. Gaps between panels (type a). Hand applicator gun.
Kent Industries 10075 Kent Industries Putty 3M 08401 3M 08531 3M 08568 3M 08684 3M 08689 3M 08694 PPG 6500 Teroson 92 Terolan Light Terostat 9320 Terostat 1K PU Unipart UBS605/6/7 Wurth 890100/1/2/3/4/5/6 Gurit-Essex 10101 Gurit-Essex 10707 3M 08537	Seam sealer heavy. Gaps between panels (type b). Hand applicator gun, applicator tube or caulking gun.
Gurit-Essex 10211 Gurit-Essex 10215 Gurit-Essex 10220 Teroson Brushable Sealer	Brushable sealer. Overlap joints (e.g. floor pans). Brush.
Corda PW57 3M Cavity Waxes Unipart UBS508	Cavity wax. Box members, sills. Injection equipment.

## 04 GENERAL SPECIFICATION DATA

### Materials applications (continued)

MANUFACTURER	MATERIAL/JOINT TYPE
Croda PV75 3M 08861 3M 08877 Teroson Terotex Underseal Unipart UBS410	Underbody sealing coat. Underbody. Schutz gun, aerosol.
Croda PW61 Dinol 205 Unipart PW61	Underbody wax coat. Underbody. Spray gun or brush.
Astors 3241/3 Croda PW197 Dinol 4010	Engine bay cosmetic wax/lacquer. Spray gun or brush.
3M Stone Chip Coatings	Anti-chip coating. Sill panels. Schutz gun.
3M 05900 Plastic Parts Repair Material	Two-pack material. Repair of plastic parts. Spreader or palette knife.
3M 08509	Dry glazed windscreen sealer. Applicator gun.
Unipart BHM605	Urethane butyl sealer for direct glazing. Caulking gun.
3M YS3998 3M Y387 Unipart GS121	Waterproof tape for sealing apertures. Hand application.
Evode Evo-Stik 3M 08030 3M 08034 3M 08080 3M 08090	Trim fixing adhesive. Brush or aerosol.
3M 08984	Adhesive cleaner/wax remover. Hand application with cloth.



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**APPLICATION EQUIPMENT**

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**SATA Schutz Gun Model UBE**

Specifications:

Air consumption ..... 200 litres/min. (7cu/ft min) at 45 lb/in<sup>2</sup> (15 bar)

Weight ..... 660grams (23.3 oz)

Manufactured and supplied by:

Sata Gmbh

Minden Industrial Ltd.

16 Greyfriars Road

Moreton Hall

Bury St. Edmunds

Suffolk IP32 7DX

Tel. (01284) 760791

The Sata Schutz Gun is approved for the re-treatment of vehicle underbody areas with protective coatings as supplied in 1-litre (1.76 pt), purpose-designed, 'one-way' containers. The screw thread fitting (female on the gun) will fit most Schutz-type packs.

Full operating details are supplied with the equipment.



**NOTE: Always clean gun with the appropriate solvent after use.**

**Sata HKD1 Wax Injection Equipment**

The Sata HKD1 is approved by Rover for use in all cavity wax re-treatment operations. The equipment comprises a high quality forged gun with 1-litre (1.7 pt) capacity pressure feed container, a flexible nylon lance, 1100mm (43 1/4in.) straight steel lance and hooked wand lance. A quick-change coupling is a standard fitting to enable lances to be easily interchanged. The lances each have their own spray pattern characteristics to suit the type of box section to be treated.

The Sata HKD1 is covered by a 12 month warranty. All replacement parts and service are obtainable from the suppliers.

**Cooper Pegler Falcon Junior Pneumatic (Airless)**

Manufacturer and supplier:  
Cooper Pegler & Co. Ltd.  
Burgess Hill  
Sussex RH15 9LA  
Tel. (01444) 642526

Intended primarily for applying transit wax, the Falcon Junior pneumatic sprayer has a 5-litre (1.1 gal) container with integral hand pump. This high quality unit provides a simple and effective means of wax spraying without the need for compressed air or additional services.

A selection of nozzles, lances and hoses together with a trigger valve assembly incorporating a filter enable the sprayer to be used in a variety of applications. These include general maintenance, wax injection and paint application. All parts are fully replaceable and include a wide range of nozzle configurations.

The Falcon Junior is fitted with Viton seals and is guaranteed for 12 months.

**3M Application Equipment**

Manufacturer:  
3M UK PLC  
Automotive Trades Group  
3M House  
PO Box 1  
Market Place  
Bracknell  
Berks. RG12 1JU  
Tel. (01344) 858611

All 3M equipment is available from local trade factors or 3M refinishing factors.

**3M Caulking Gun 08002**

A lightweight, robust metal skeleton gun designed to accommodate 325mm (12 3/4 in) cartridge for dispensing sealants etc. This gun facilitates rapid cartridge loading and features a quick-release lever for accurate material ejection and cut-off control.

**3M Pneumatic Cartridge Gun 08012**

An air line fed gun for application of 3M cartridge products. Excellent ease of application for a smooth sealant bead, and incorporates a regulator valve for additional control.

**3M Pneumatic Applicator Guns**

Air line fed gun for application of 3M sachet sealers (Part No. 08006 for 200ml [7 fl oz] and 310ml [10 fl oz] sachets, and Part No. 08007 for all size sachets including 600ml [20 fl oz]).

**3M Applicator Gun 08190**

For application of 3M Structural Adhesive 08120.

**3M Inner Cavity Wax Applicator Gun**

Features 750mm (29 1/2 in) flexible tube and using 1-litre (1.7 pt) canisters, this approved equipment is available from all 3M refinishing factors.

Other 3M applicator equipment available:  
**Heavy Duty Manual Gun.**



## MATERIALS GUIDE

### **3M Automotive Structural Adhesive 08120**

a two-part epoxy structural adhesive, with 'automix' twin-cartridge dispenser. For doorskin and for bonding panel stiffeners. Supplied as twin pack for use in small trigger gun (No. 08190).

### **3M Bolted Panel Sealer 08572**

Preformed strip 20mm (13/16 in) wide x 2mm (1/4 in) thick supplied in 4.6 metre (81 3/16 in) reels.

Permanently flexible with good adhesion, for sealing wing to body joints and other bolted or riveted panels.

### **3M Body Caulking 08568**

Thumb-applied sealing compound supplied in 60-packs of preformed strips 300mm (12 in) long x 6mm (1/4 in) wide. For sealing large openings and fissures. Non-hardening, does not dry out or crack, can be overpainted immediately.

### **3M Drip-Chek Sealer Heavy 08531**

For use on vertical fissures and seams up to 3mm (1/8 in) wide for a firm but flexible seal which will not harden or shrink. Self-levelling, will not sag on vertical surfaces. May be worked with a tool or smoothed with a wet finger.

Supplied in 128ml (4.5 fl oz) tubes.

### **3M Drip-Chek Sealer Clear 08401**

An easily flowing sealer similar to Drip-Chek Heavy but of clear consistency. Ideal for an almost invisible spot seal over finished paintwork. Can be overpainted or even mixed with paint colour to form a self-coloured sealant.

Supplied in 150ml (4.5 fl oz) tubes.

### **3M Super Seam Sealer 08537**

A brushable sealer designed to simulate original factory-applied sealer on all overlap joints such as floor pans, wheel arches, boot and load space seams and fuel filler cap surrounds. Resistant to oil, petrol and water. Should be brushed on in **ONE** direction only for best results.



**WARNING: Must be stored under conditions applicable to highly flammable materials.**

### **3M Flexseal 08684, 08689 AND 08694**

A high solid, non-shrinking, polyurethane body sealer for use in either a hand gun or pneumatic applicator gun. Excellent adhesion and sealing properties. Resistant to oil, petrol and water. Supplied in 310ml (9 fl oz) cartridges and in a choice of black, white or grey.

### **3M Polyurethane Sachet Sealer 08703, 08783, 08788**

Similar to Flexseal polyurethane but available in collapsible foil sachets in 310ml (9 fl oz) and 600ml (18 fl oz) sizes with a choice of three colours: black, grey or white.

### **3M Windscreen Sealer 08509**

Non-hardening sealant for dry-glazed, weatherstrip-type windscreens. Applied with applicator gun.

Supplied in 310ml (9 fl oz) cartridges.

### **3M Spray Schutz 08877, Body Schutz 08861**

Flexible, rubberised, fast-drying coating which dries to a black textured finish.

Spray Schutz supplied in 600ml (18 fl oz) aerosols. Spray Schutz and Body Schutz also supplied in 1-litre (1.7 pt) cartridges to fit Schutz Gun.

**3M Flexible Parts Repair Material 05900**

A fast-curing, two-part system for repairing minor damage to plastic bumpers, spoilers, valances etc.  
Dries in 30 mins.

Supplied as two-pack 320ml (11 fl oz) kit.

**3M Weld Thru' Sealer 08625**

For anti-corrosion protection between spot welded panels. Brush application.

Supplied in 1-litre (1.7 pt) canisters.

**3M Bodygard**

Rubber-based, stone chip protective coating for panels. Fast drying, low bake compatible and may be overpainted. Varying textures obtainable depending on type of finish required. Available in black (1-litre [1.7 pt] pack 08858, aerosol 08158) or grey (1-litre [1.7 pt] pack 08859, aerosol 08159).

**3M Inner Cavity Wax**

For protective coating on inner panels. Excellent anti-corrosion properties. Available in transparent or amber consistencies, and 1-litre (1.7 pt) canister or 500ml (0.8 pt) aerosol packs.

**3M Zinc Spray 09113**

Anti-corrosive coating for spot welding applications on joints and seams. Supplied in 500ml (0.8 pt) aerosol packs.

**3M Waterproof Cloth Tape YS3998**

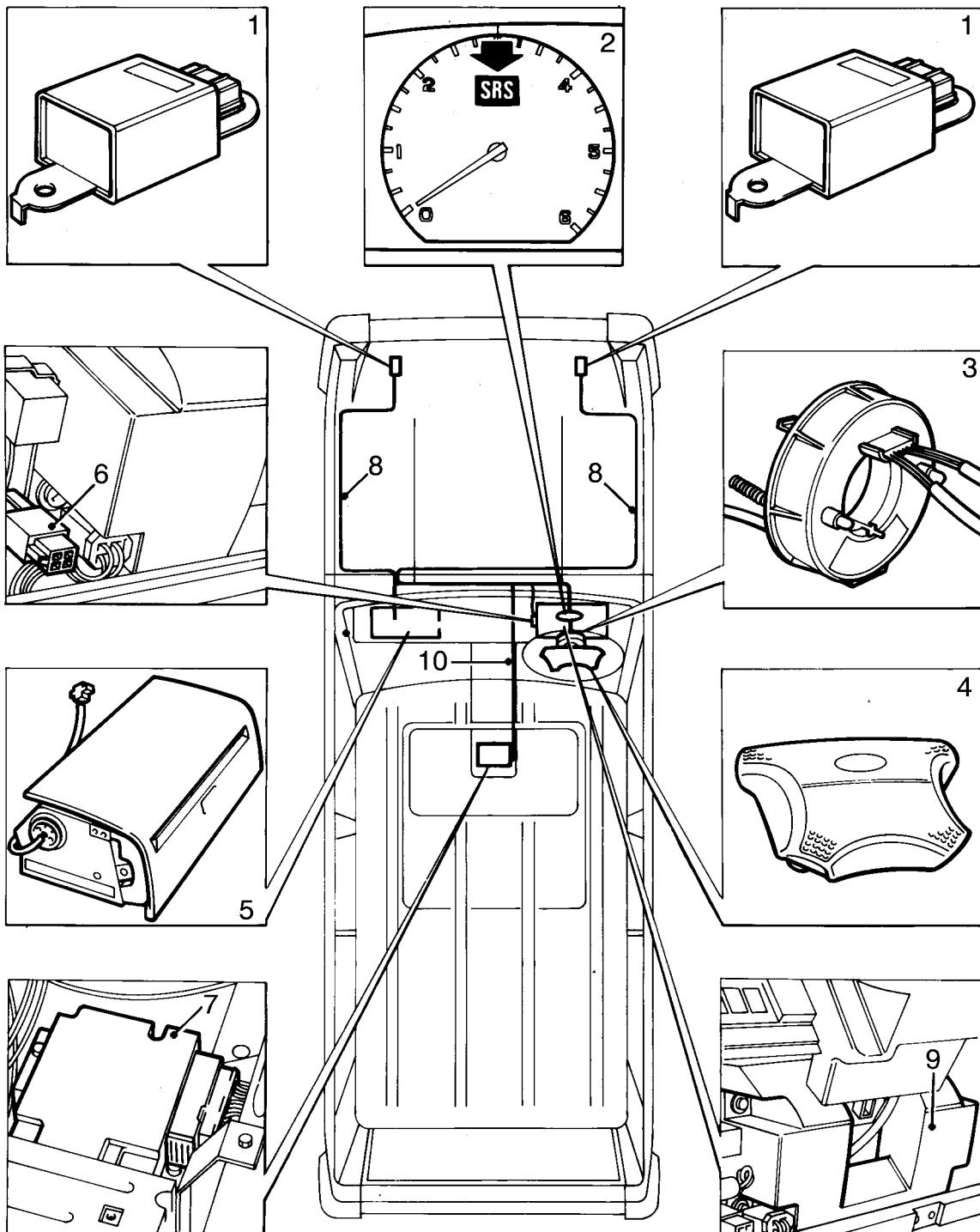
Black waterproof tape for sealing door apertures and body box section access holes. Long-lasting, moisture-resistant adhesive will withstand immersion in water.

Supplied in 50-metre (164 ft) rolls in a variety of widths.

**3M Adhesive Cleaner and Wax Remover 08984**

For surface preparation before application of most types of adhesive, coating and sealant, also for removal of tar, silicone polish, wax, grease and oil. Non-staining. May also be used for cleaning adhesive remnants from sander disc backing pads.

Supplied in 1-litre (1.7 pt) canisters.

**SYSTEM COMPONENTS**

RR4231A

1. Airbag crash sensors (distributed SRS)
2. SRS warning light (airbag)
3. Rotary coupler
4. Driver's airbag module
5. Passenger's airbag module
6. Airbag diagnostic socket
7. Airbag diagnostic control unit
8. Airbag harness (distributed SRS)
9. Knee bolsters (where fitted)
10. Airbag harness

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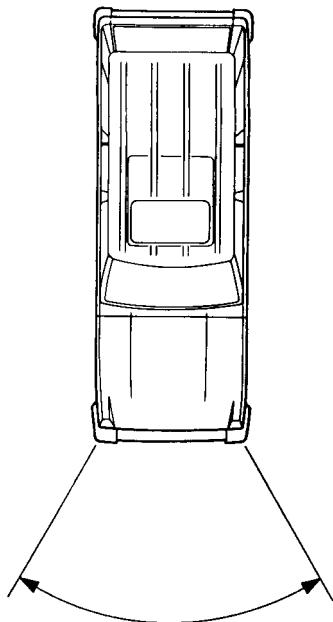
## OPERATION

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The airbag supplementary restraint system (SRS) is a safety device which, when used in conjunction with the seat belt, is designed to protect the driver and front passenger.

Two different SRS systems are fitted to Discovery. The Distributed SRS which has two crash sensors located in the engine compartment on the chassis longitudinals and the Single Point Sensing (SPS) SRS which has a single crash sensor located in the Airbag diagnostic control unit.

The change from distributed SRS to SPS SRS occurred at VINs **198222** and **528977**.



RR4232

### Distributed SRS

In the event of a frontal impact, when the airbag diagnostic control unit and one of the airbag crash sensors senses the impact, the diagnostic control unit fires igniters. This in turn ignites tablets of sodium azide which generate a large amount of Nitrogen gas leading to airbag inflation in approximately 30 milli-seconds.

### SPS SRS

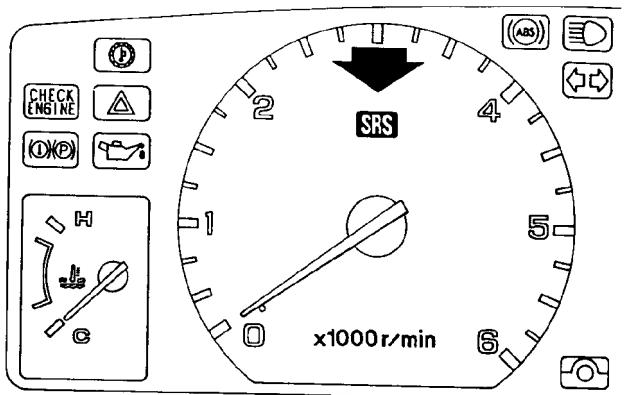
In the event of a frontal impact, when the airbag diagnostic control unit senses the impact, the diagnostic control unit fires igniters. This in turn ignites tablets of sodium azide which generate a large amount of Nitrogen gas leading to airbag inflation in approximately 30 milli-seconds.

### All Models

When fully deployed the airbag offers additional protection to the front seat occupant. As an occupant moves into the airbag it immediately discharges the gas to provide progressive occupant deceleration and reduce risk of injuries. The whole process is completed in approximately 0.3 seconds.



**WARNING:** All the airbag system components, including the wiring harness, **MUST** be renewed after the airbags have deployed.

**SRS warning light (airbag)**

RR4233

**Distributed SRS**

The warning light in the instrument pack illuminates after the electrical circuits are switched on whilst a system check is carried out. After about 8 seconds the warning light will go out. The system checks airbag diagnostic control unit, airbag crash sensors, airbag harness, driver and passenger modules.

**SPS SRS**

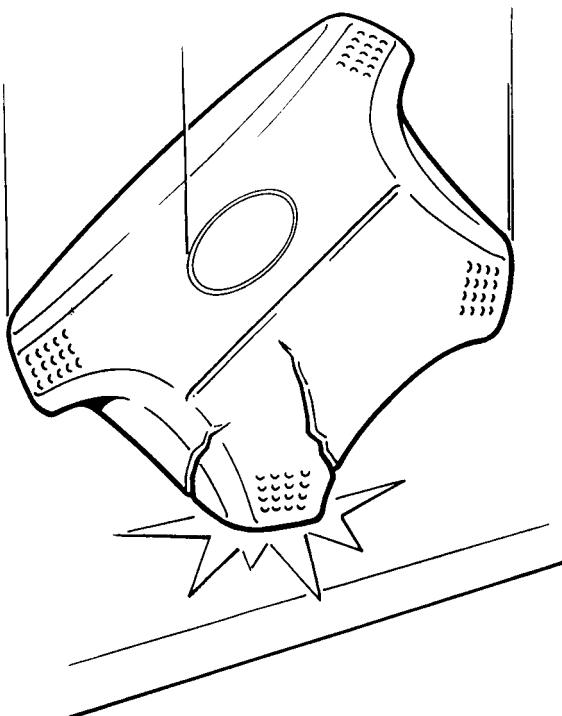
The warning light in the instrument pack illuminates after the electrical circuits are switched on whilst a system check is carried out. After about 5 seconds the warning light will go out. The system checks airbag diagnostic control unit, airbag harness, driver and passenger modules.

**All Models**

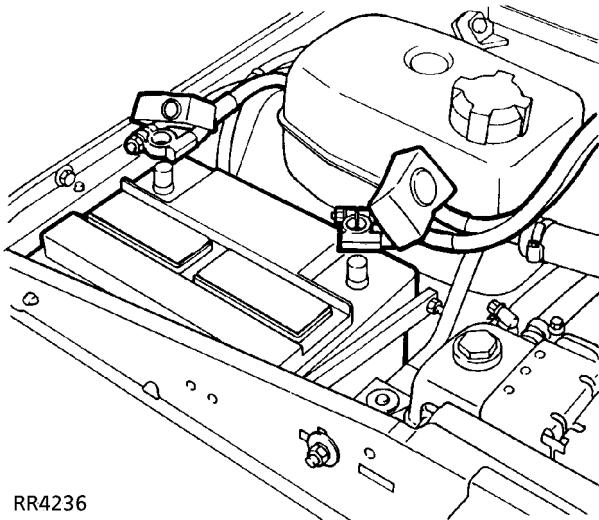
In the event of a fault in the system the warning light will illuminate. The airbag diagnostic control unit logs the fault which can only be accessed using TestBook.

**GENERAL PRECAUTIONS****Impacts which do not deploy airbags**

**CAUTION:** Check for structural damage in the area of the impact, paying particular attention to bumper armatures, longitudinals, crash cans and bracketry.



RR4234



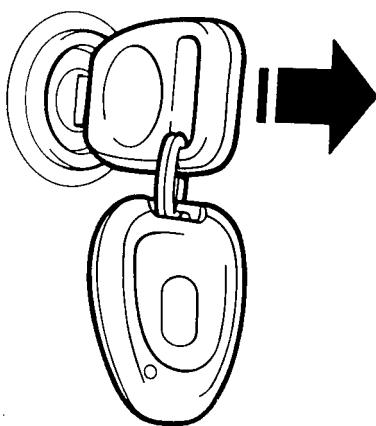
RR4236

3. Always disconnect both the negative '-' cable and positive '+' cable at the battery before removal of driver or passenger airbag modules. Disconnect the negative cable first.



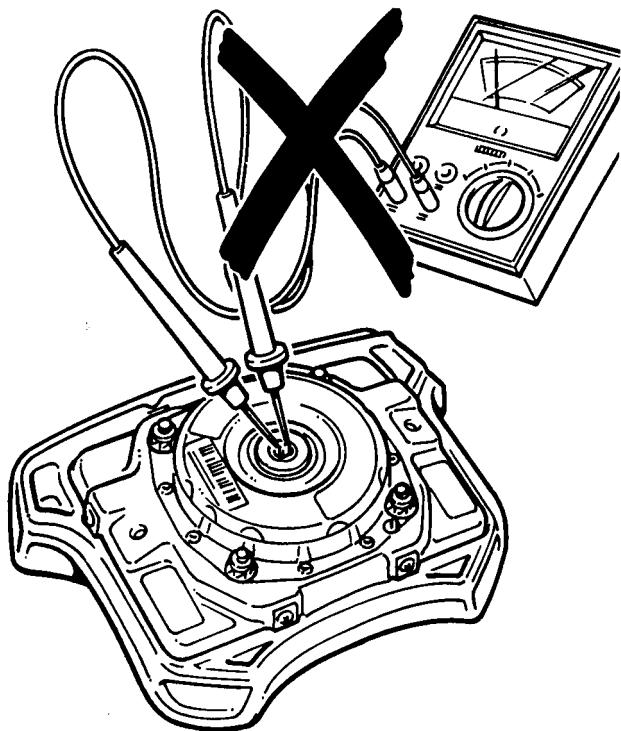
**CAUTION:** The airbag system has sufficient stored energy to deploy airbags for up to 20 minutes.

4. To continue work immediately, disconnect the driver's airbag and passenger's airbag (where fitted).
5. Do not try to dismantle the airbag module. There are NO separately serviceable parts. Once an airbag has been deployed, it cannot be repaired or reused.
6. Do not install used airbag parts from another vehicle. When repairing, use only new airbag parts.



RR4235

2. Always remove the key from the starter switch before beginning work.



RR4237

7. Do not use electrical test equipment on the airbag harness or connectors. Tampering with or disconnecting the harness could result in accidental firing of the airbag or make the system inoperative, which may result in serious injury.
8. **An airbag system fault can only be diagnosed using TestBook.**
9. The airbag module contains Sodium Azide which is poisonous and extremely flammable. Contact with water, acid or heavy metals may produce harmful or explosive compounds. Do not dismantle, incinerate or bring into contact with electricity.

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## VEHICLE RECOVERY

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### Towing - airbag not deployed

Normal towing procedures are unlikely to cause an airbag to deploy. However, as a precaution switch the ignition off and then disconnect both battery leads. Disconnect the negative '-' lead first.

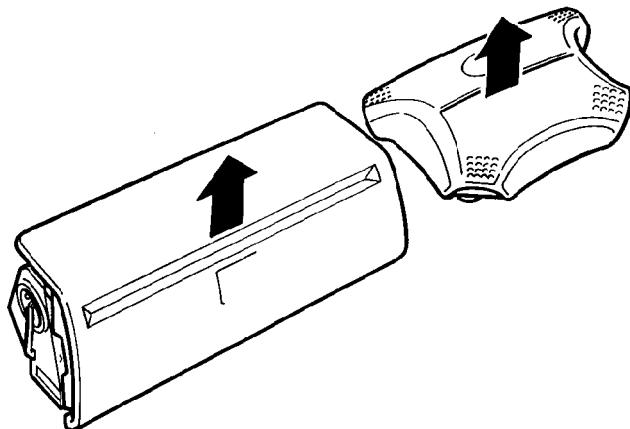
### Towing - airbag deployed

Once the driver's airbag has been deployed the vehicle must have a front suspended tow. However, as a precaution switch the ignition off and then disconnect both battery leads. Disconnect the negative '-' lead first.

## AIRBAG STORAGE

### Temporary storage

For temporary storage of the airbag module during service, observe the following precautions:



RR4017

Store the airbag module with the pad surface up.  
Place the airbag module in designated storage area.  
If no designated storage area is available, the module  
may be stored in the boot of the vehicle from which it  
was removed. Always lock the boot when module is  
stored in it and inform workshop supervisor.

**⚠ WARNING: If the airbag is improperly stored face down, accidental deployment could propel the unit with enough force to cause serious injury.**

Store the removed airbag module on a secure flat surface away from heat, oil, grease, detergent or water.

**⚠ CAUTION: Improper handling or storage can internally damage the airbag module, making it inoperative. If you suspect the airbag module has been damaged, install a new unit.**

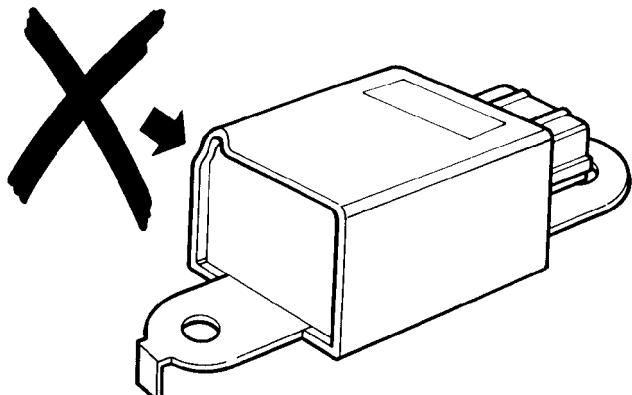
### Overnight storage

Airbag modules are classed as an explosive article and as such they must be stored in a secure steel cabinet which has been approved by the local authority.

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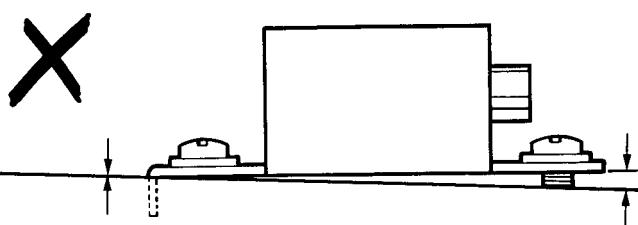
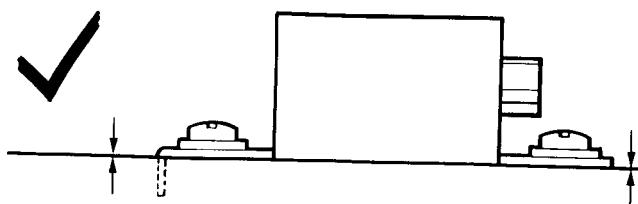
**CRASH SENSOR INSPECTION - DISTRIBUTED  
SRS**


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RR4018

- After any degree of front body damage, inspect both front crash sensors. Replace a sensor if there are any signs of dents, cracks or deformation.



RR4019

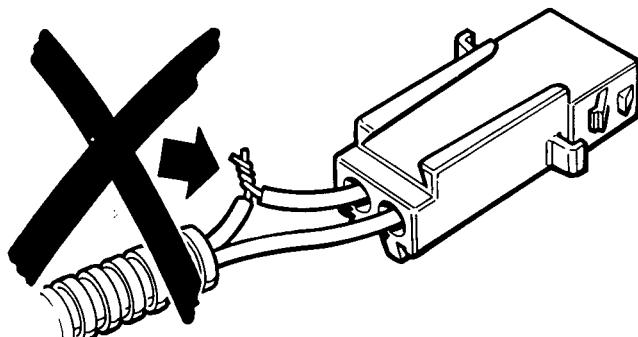
- Ensure the sensors are installed correctly. There must be no gap between the sensor and body of the vehicle. Use the fixing screws supplied with the sensor and tighten to the correct torque. Tighten front sensor fixing before rear sensor fixing.

**CAUTION:** Take extra care when painting or doing body work in the vicinity of the sensors. Avoid direct exposure of the sensors or harness to heat guns, welding or spraying equipment.

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**AIRBAG HARNESS**


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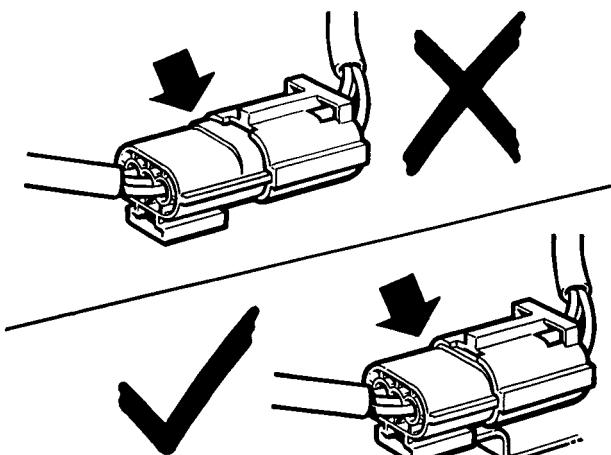


RR4020

- Never attempt to modify, splice or repair the airbag harness. Never install electronic equipment such as; a mobile telephone, two-way radio or in-car entertainment system in such a way that it interferes electrically with the airbag harness.

**NOTE:** The airbag harness can be identified by a special yellow outer protective covering.

- Make sure the airbag harness is installed correctly and not pinched or trapped.



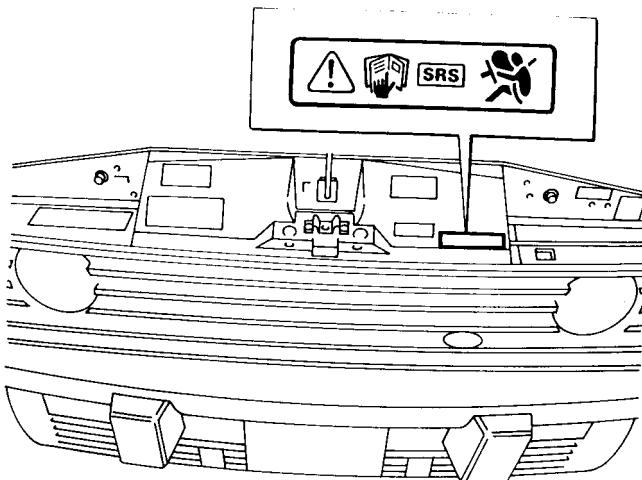
RR4022

- Ensure all airbag harness connectors are mated correctly and securely fastened. Do not leave the connectors hanging loose.

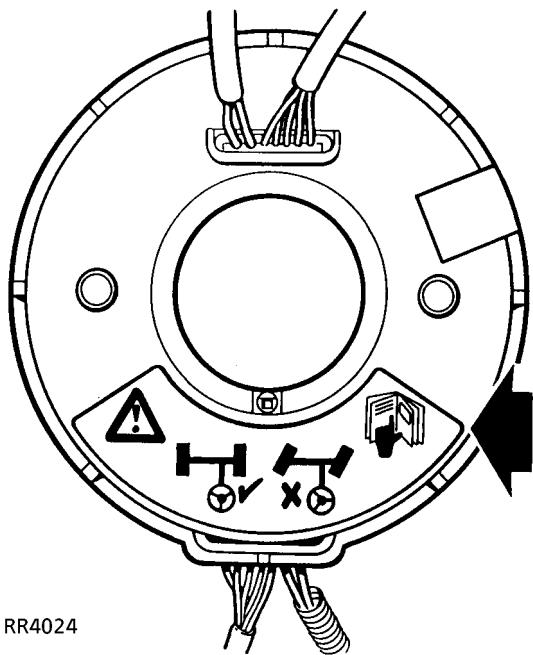
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WARNING LABELS

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RR4023



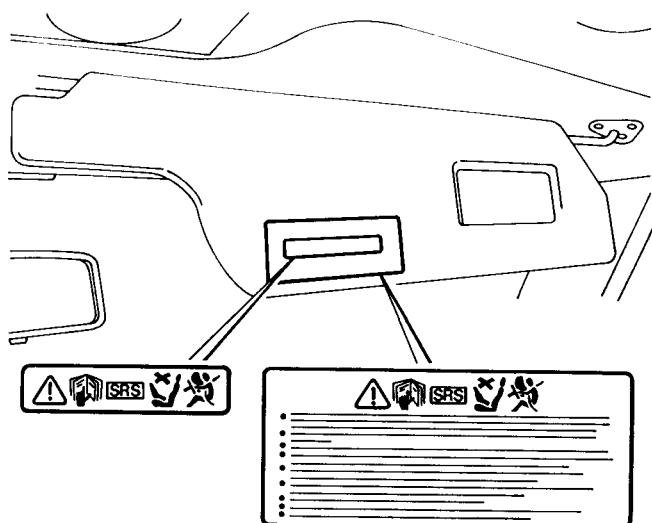
RR4024

**1. Bonnet locking platform**

Refer to the Owner's Handbook for information on the airbag system.

**2. Rotary coupler**

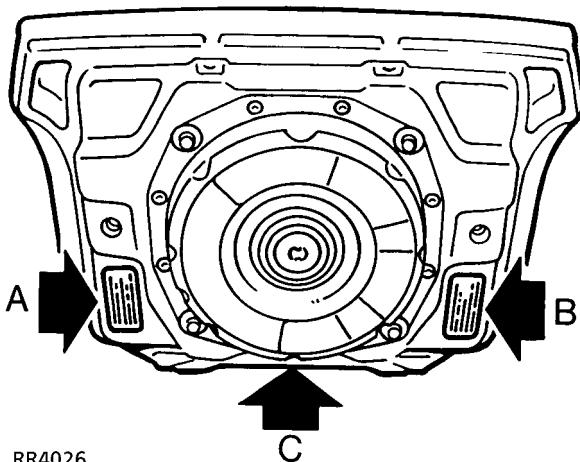
**CAUTION: Ensure wheels are straight ahead before removal and installation.**



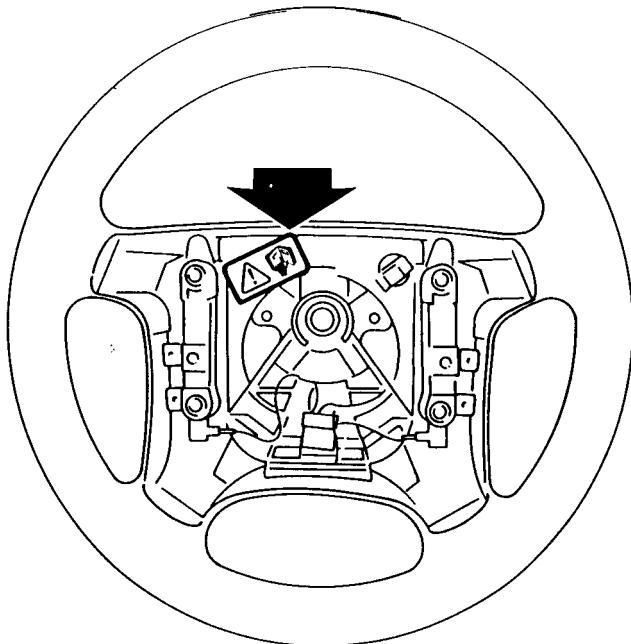
RR4025

**3. Driver's sun visor**

Refer to the Owner's Handbook for information on the airbag system.



RR4026



RR4027

#### 4. Airbag modules

**A** - If defective, replace and dispose of the entire unit as directed in the instructions. Under no circumstances should a diagnosis be performed using electrically powered test equipment or probing devices.

**B** - Tampering or mishandling can result in personal injury. For special handling instruction refer to the Workshop manual. This airbag module cannot be repaired. Use diagnostic instructions to determine if the unit is defective.

**C** - ROVER Bar code - The code number must be recorded if the airbag module is to be replaced.

#### 5. Steering wheel

Refer to the Owner's Handbook for information on the airbag system.

**SYSTEM PRECAUTIONS**

**CAUTION:** Before and during any removal operations within the SRS section, note routing and position of all harnesses to aid correct refitting and to avoid accidentally trapping cables.

**CAUTION:** During refitting of any item within the SRS section, always ensure connectors are fully engaged and latched before proceeding to the next stage of the operation.

**DRIVER'S AIRBAG MODULE**

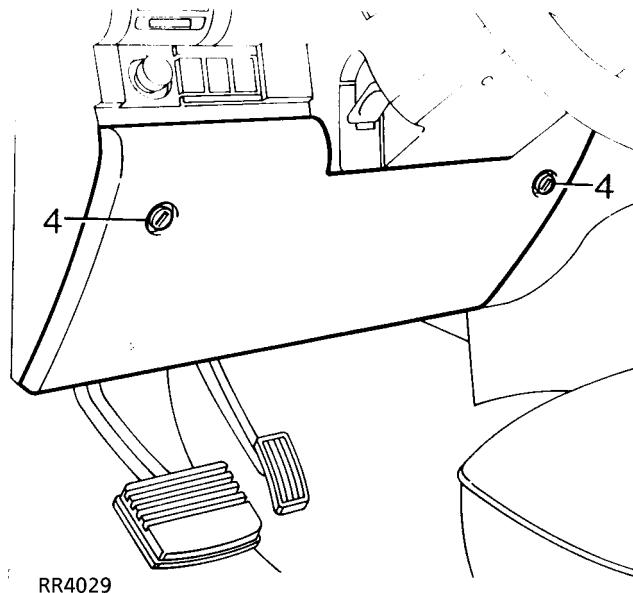
Service repair no - 76.74.01

**WARNING:** All the airbag system components, including the wiring harness, **MUST** be renewed after the airbags have deployed.

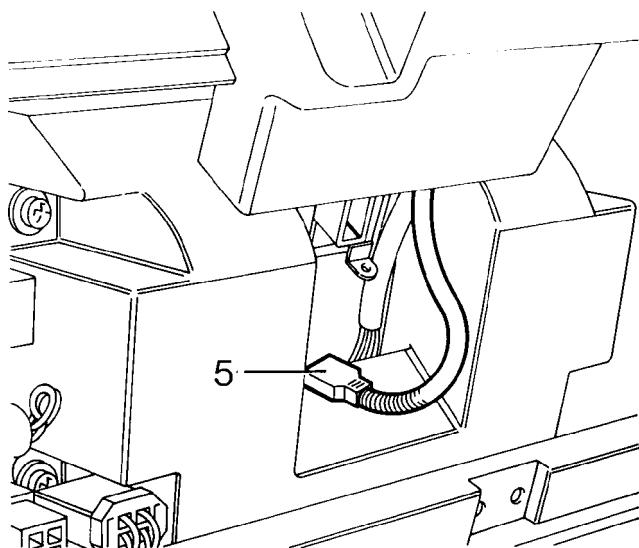
**Remove**

1. Turn steering wheel 90° from horizontal.
2. Switch off ignition.
3. Disconnect battery negative '-' and then the positive '+' lead.

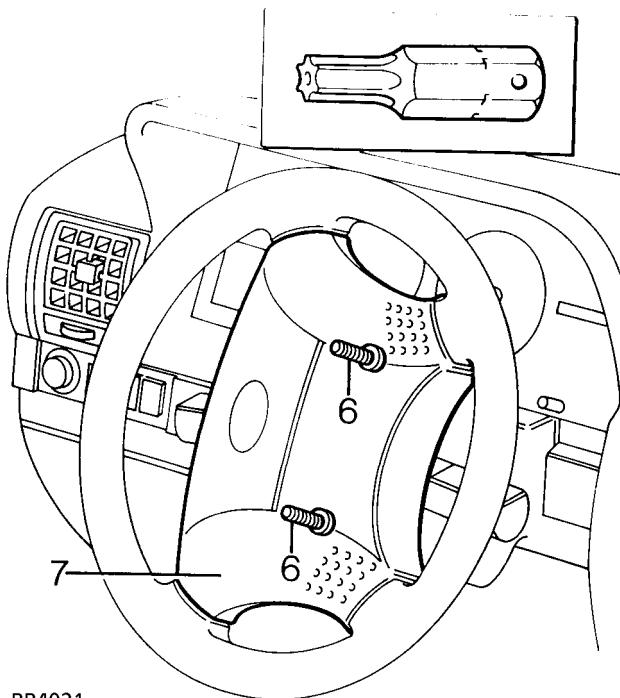
**CAUTION:** Always disconnect both leads.



4. Release 2 turnbuckles and remove dash lower panel.



RR4030



RR4031

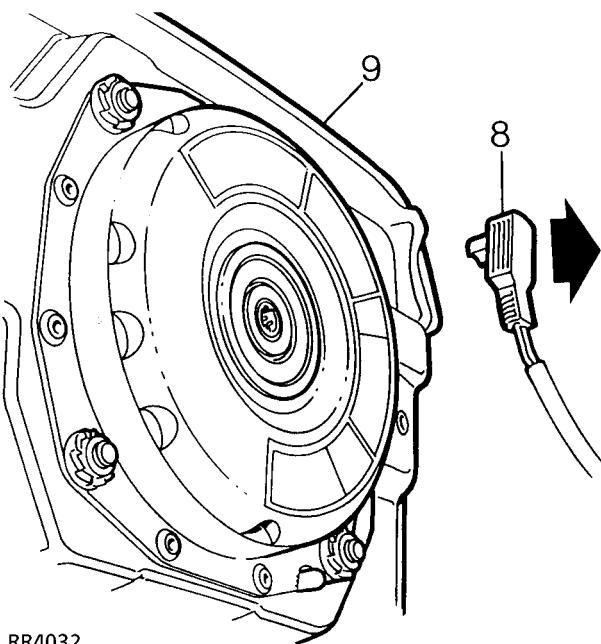
5. Disconnect airbag harness connector from yellow airbag column harness.

6. Use special socket, unscrew 2 tamper-proof Resistox screws securing airbag module to steering wheel.

7. Release airbag module from steering wheel.



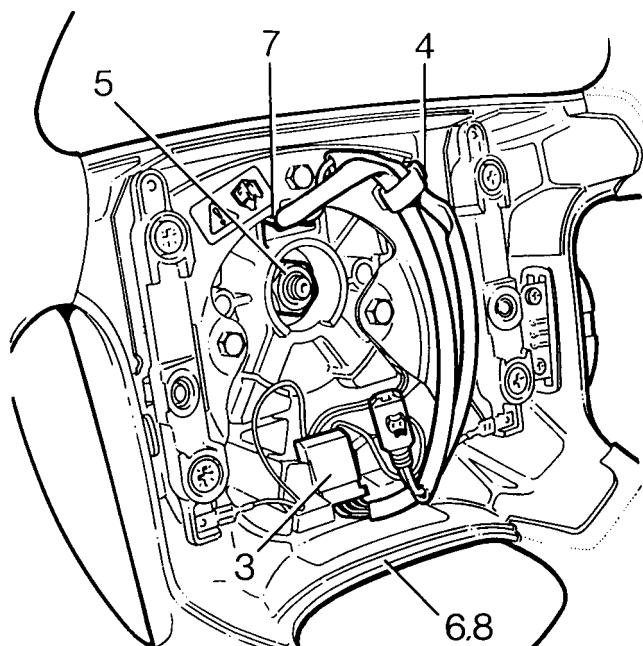
**CAUTION: Do not allow the airbag module to hang by the airbag harness.**

**STEERING WHEEL**

Service repair no - 57.60.01

**Remove**

1. Remove driver's airbag module. **See this section.**
2. Position steering wheel so the road wheels are in the straight ahead position.



8. Disconnect harness connector from airbag module.
9. Remove airbag module.



**CAUTION:** Store the airbag module in accordance with the storage procedures outlined in Description and Operation.



**NOTE:** If airbag module is to be replaced the serial numbers must be recorded in the vehicle service record.

**Refit**

10. Reverse removal procedure.
11. Connect harness connector to airbag module with harness downwards (as shown at 8).
12. Position airbag module on steering wheel and engage retained screws. Use special socket to tighten screws to **8Nm (6 lbf ft)**.



**CAUTION:** Take care not to cross thread screws.

13. Check Supplementary Restraint System using Testbook .

3. Disconnect cruise control switch connector (where fitted) from rotary coupler harness.
4. Release harnesses from clip on steering wheel.
5. Remove steering wheel nut.
6. Release steering wheel from column.
7. Feed harnesses through hole in steering wheel.
8. Remove steering wheel.



**CAUTION:** Prevent rotation of rotary coupler once steering wheel is removed. Secure in position with adhesive tape.

**Refit**

9. Reverse removal procedure.



**CAUTION:** Ensure road wheels are straight ahead before fitting steering wheel.

10. Fit steering wheel ensuring the rotary coupler lugs are correctly engaged.
11. Fit steering wheel nut. Tighten to **50 Nm (37 lbf ft)**.
12. Refit driver's airbag module. **See this section.**

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**ROTARY COUPLER**

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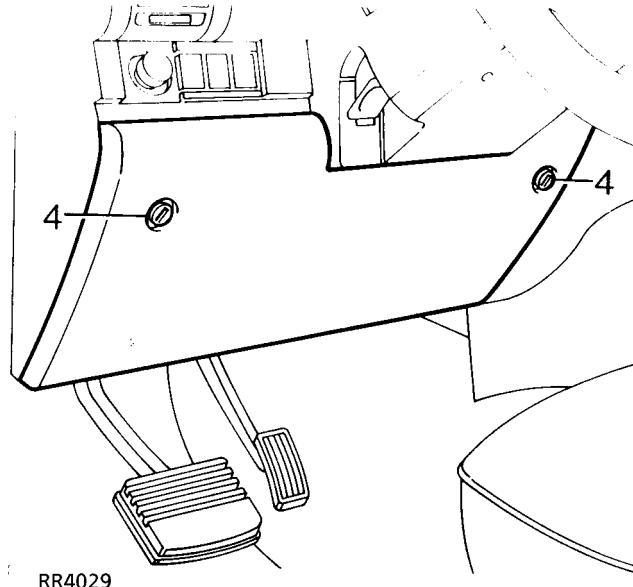
**Service repair no - 76.74.07**



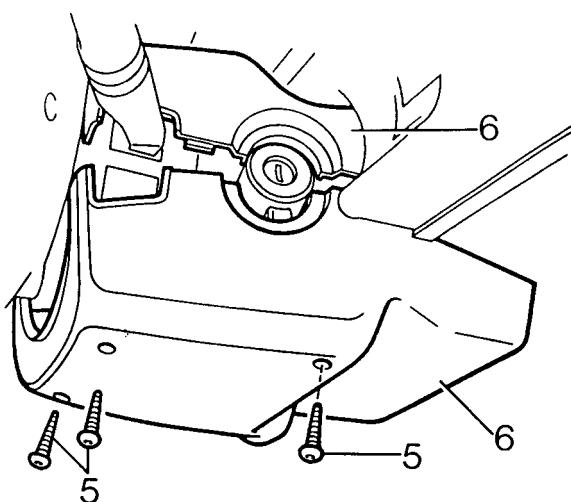
**CAUTION:** Ensure wheels are straight ahead before removal and refitting. Store in plastic bag. DO NOT rotate mechanism whilst removing.

**Remove**

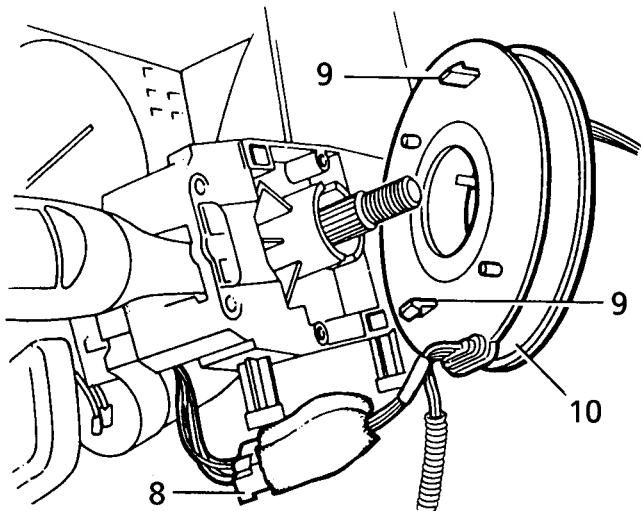
1. Remove driver's airbag module. **See this section.**
2. Remove steering wheel. **See this section.**
3. Release lever and lower steering column.



4. Release 2 turnbuckles and remove lower dash panel.



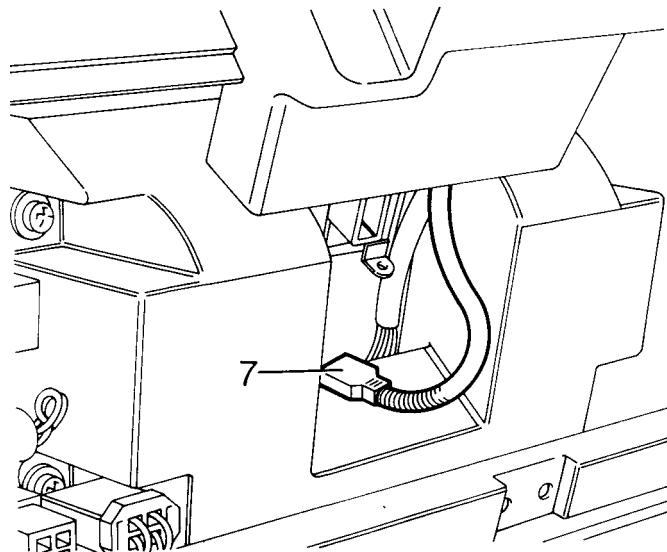
RR4034



RR4036A

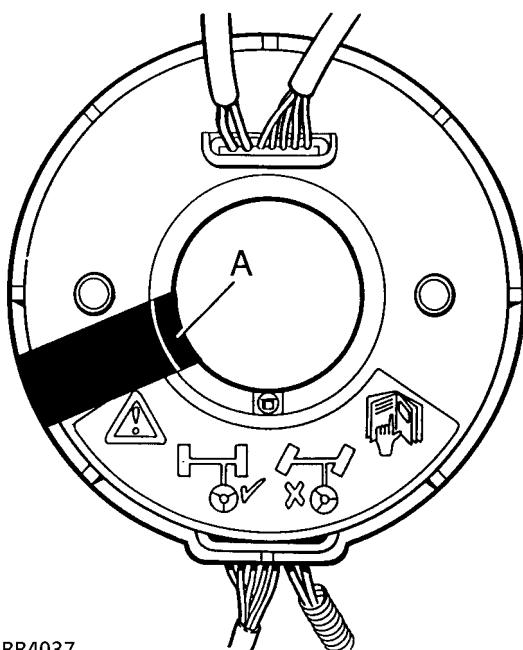
5. Remove 3 screws securing lower half of nacelle to steering column.
6. Separate the 2 halves of the nacelle and remove from steering column.

8. Disconnect rotary coupler connector from steering column harness.
9. Release 2 clips securing rotary coupler to column switch assembly.
10. Remove rotary coupler from column switch assembly.



RR4035

7. Release airbag harness connector from bracket and disconnect.



- If rotary coupler is being re-used, place a piece of adhesive tape around moulding in position **A** to prevent rotation.

#### Refit

- Reverse removal procedure.

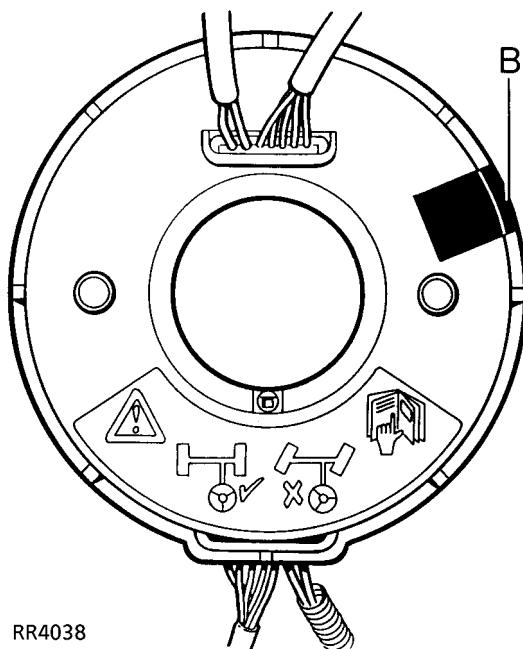


**CAUTION: Ensure indicator cancellation pegs correctly engage into back of steering wheel.**

- Align direction indicator cancellation bush. If original rotary coupler is being fitted remove adhesive tape and then fit rotary coupler to column switch assembly.



**NOTE: If original rotary coupler is to be fitted and there is evidence of tampering, it is imperative that the coupler is centralised. See this section.**



- If a new rotary coupler is being fitted and the sealing tape at position **B** is broken it MUST NOT be used.
- Refit steering wheel. *See this section.*
- Turn steering wheel to both LH and RH lock 5 times. If adverse noises can be heard, check alignment of indicator cancellation pegs.
- Refit driver's airbag module. *See this section.*

## **ROTARY COUPLER CENTRALISE**

Fitting a rotary coupler which has not been centralised could result in tape breakage. If the tape is broken, a new rotary coupler must be fitted.

Providing the removal procedure has been correctly followed this operation should not be necessary. If however there is evidence of tampering, it is imperative that the coupler is centralised.



**CAUTION: Ensure wheels are positioned straight ahead before fitting the rotary coupler.**

1. Correctly fit rotary coupler to column switch assembly but do not fit steering wheel or make any electrical connections. **See this section.**
2. Depress rotary coupler locking peg and without using undue force, rotate coupler anti-clockwise as far as inner tape will allow. Releasing peg will lock coupler in its current position.



**NOTE: Do not apply excessive force when limit is reached as this may result in tape breakage. If no limit can be found, tape has already broken and rotary coupler must be replaced.**

3. Having turned rotary coupler fully anti-clockwise to limit position, proceed to turn coupler 2.5 turns clockwise to obtain central position. (Coupler will normally rotate a full five turns from anti-clockwise limit to clockwise limit).
4. Make necessary electrical connections and refit steering wheel. **See this section.**
5. Refit driver's airbag module. **See this section.**

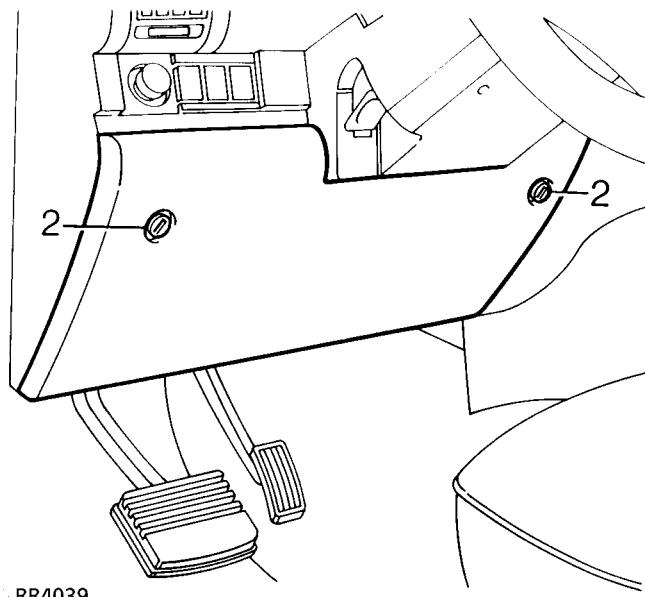
## **COLUMN SWITCH ASSEMBLY**

**Service repair no - Indicator/lighting - 86.65.55**

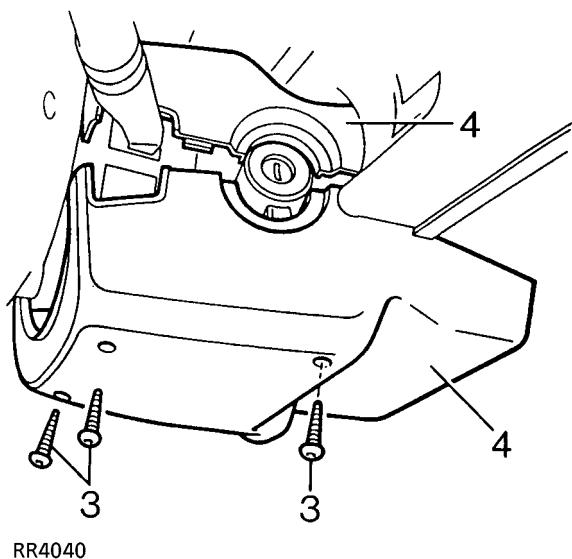
**Service repair no - Wash/wipe - 84.15.34**

### **Remove**

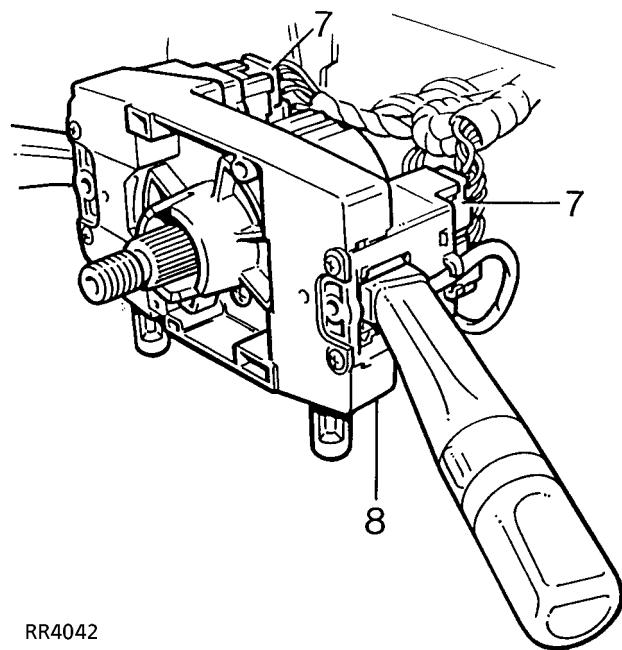
1. Remove steering wheel. **See this section.**



2. Release 2 turnbuckles and remove lower dash panel.

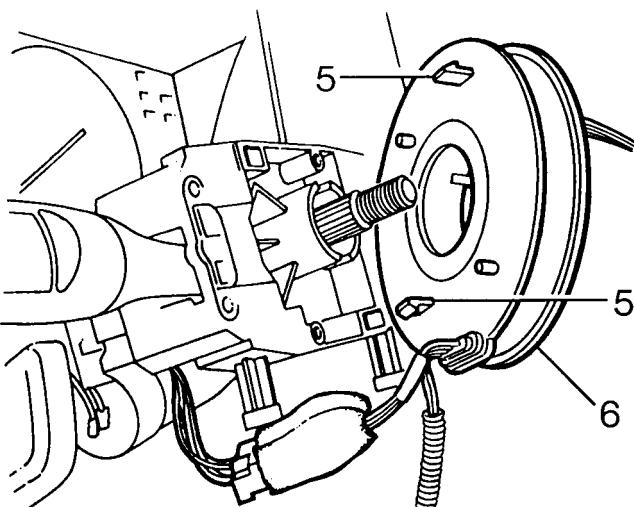


RR4040



RR4042

3. Remove 3 screws securing lower half of nacelle to steering column.
4. Separate the halves of the nacelle and remove from steering column.



RR4041

5. Release 2 clips securing rotary coupler to column switch assembly.
6. Release rotary coupler.



**CAUTION: Do not allow rotary coupler to hang on its harness.**

7. Disconnect 4 connectors from column switch assembly.
8. Remove column switch assembly from steering column.

#### Refit

9. Reverse removal procedure.

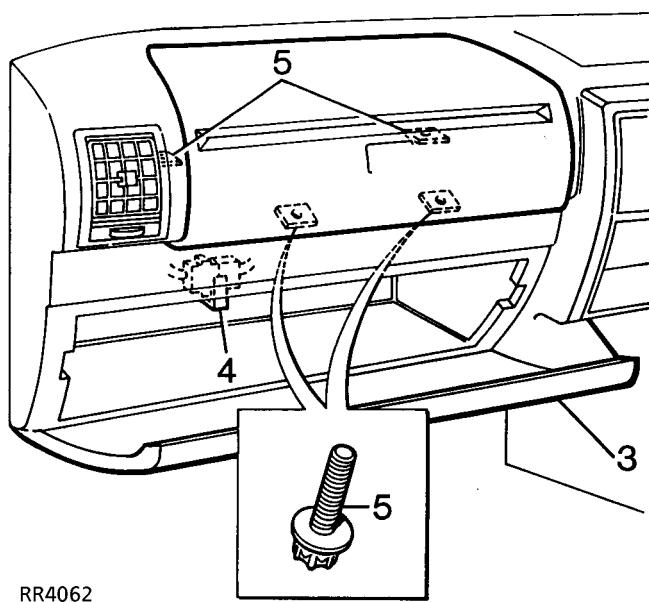
**PASSENGER'S AIRBAG MODULE**

Service repair no - 76.74.02

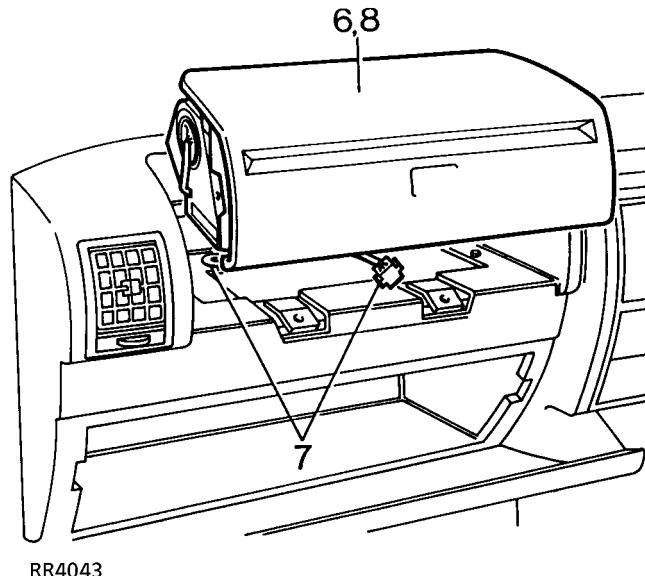
**WARNING:** All the airbag system components, including the wiring harness, **MUST** be renewed after the airbags have deployed.

**Remove**

1. Switch off ignition.
2. Disconnect battery negative lead and then positive lead.



3. Open glovebox and disconnect harness connector from airbag module.
4. Use special socket and long extension, remove 2 torx head screws securing front of airbag module to fascia panel.
5. Use special socket, remove 2 torx head screws securing rear of airbag module to fascia panel.



6. Release airbag module from fascia panel.

**CAUTION:** Do not allow the airbag module to hang by the airbag harness.

7. Carefully and without pulling on connector remove airbag module.

**CAUTION:** Store the airbag module in accordance with the storage procedures described in Description and Operation.

**NOTE:** If airbag module is to be replaced the serial number must be recorded in the vehicle service record.

**Refit**

8. Reverse removal procedure.
9. Tighten airbag module securing screws to **8 Nm (6 lbf ft)**.

**CAUTION:** Take care not to cross thread screws.

10. Check Supplementary Restraint System using **Testbook**.

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CRASH SENSOR - DISTRIBUTED SRS

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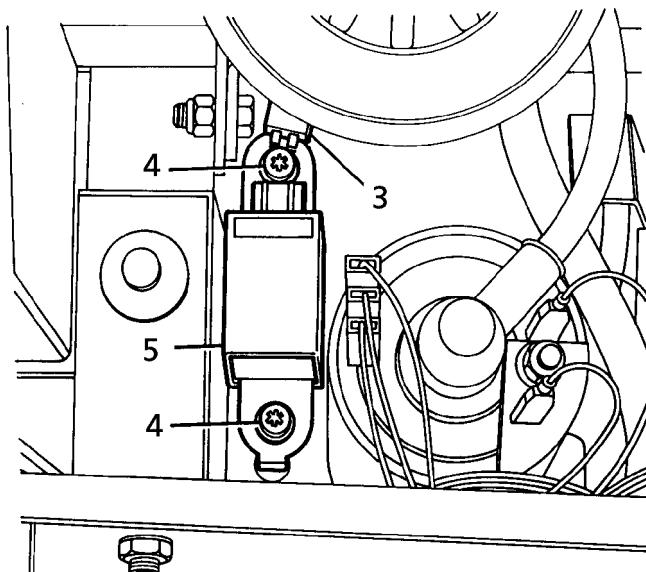
Service repair no - 76.74.04

**Remove**

1. Disconnect battery negative lead.
2. **LH sensor only:** Slacken power steering reservoir clamp and lift reservoir to provide access.  
**Diesel model only:** Remove jack and mounting bracket.

**Refit**

6. Reverse removal procedure.
7. Tighten crash sensor securing screws to **10 Nm (7 lbf ft)**. Ensure multiplug is fully engaged on sensor and retained by its latch.
8. Check Supplementary Restraint System using **Testbook**.



RR4044A

3. Disconnect multiplug from sensor



**CAUTION: Ensure airbag harness connector seal and anti-backout DO NOT come adrift when disconnecting sensor.**

4. Use special socket, remove 2 screws securing crash sensor to body.
5. Remove crash sensor.

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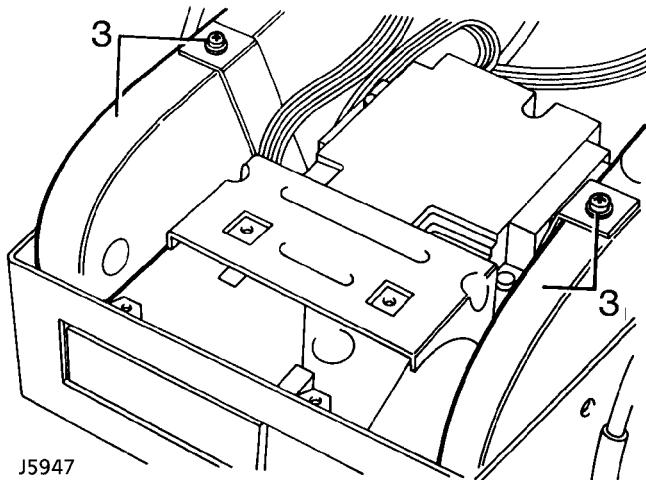
**AIRBAG DIAGNOSTIC CONTROL UNIT -  
DISTRIBUTED SRS**


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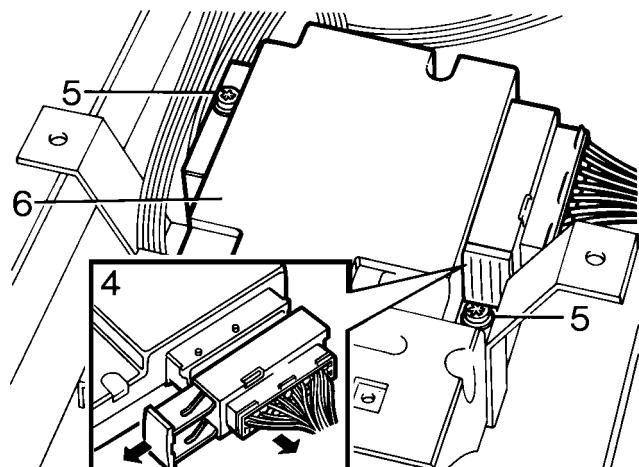
Service repair no - 76.74.03

**Remove**

1. Disconnect battery negative lead.
2. Remove centre console assembly. **See CHASSIS AND BODY, Repair.**



3. Remove 4 screws and release the 2 rear passenger air ducts from their fitted position and remove centre console mounting bracket.



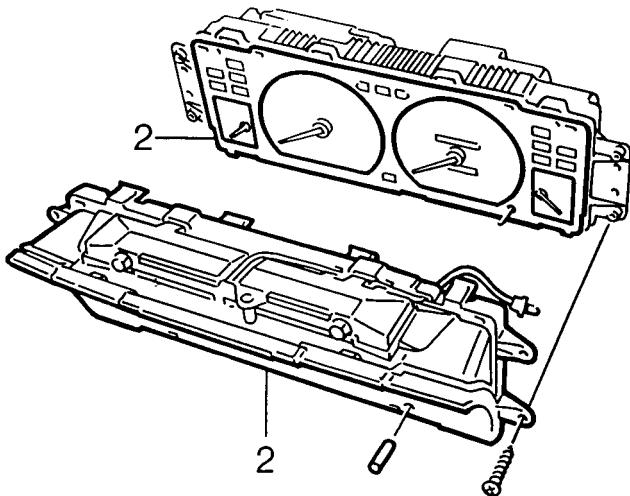
4. Use flat ended screwdriver and release YELLOW retainer, pull retainer 30mm (1 1/8 in) from multiplug and disconnect airbag harness multiplug from airbag control unit.
5. Use special socket, remove 2 screws securing airbag control unit to body bracket.
6. Remove airbag diagnostic control unit.

**Refit**

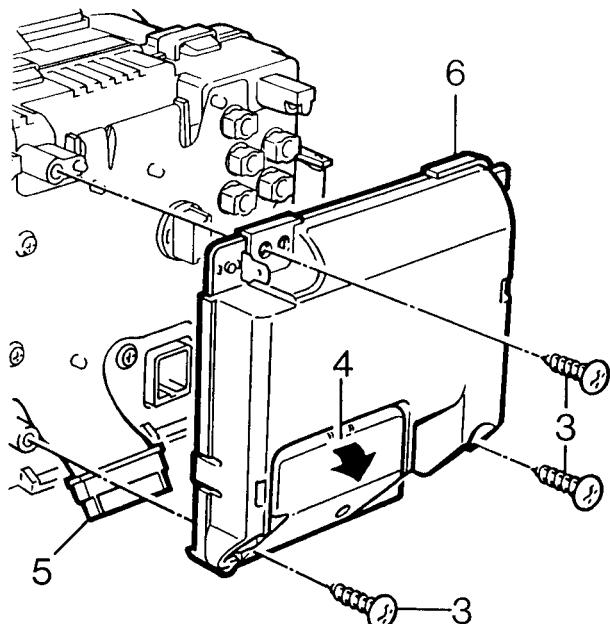
7. Reverse removal procedure.
8. Tighten control unit securing screws to **10Nm (7 lbf ft)**.
9. Check Supplementary Restraint System using **Testbook**.

**SRS WARNING LIGHT BULBS****Service repair no - 76.73.74****Remove**

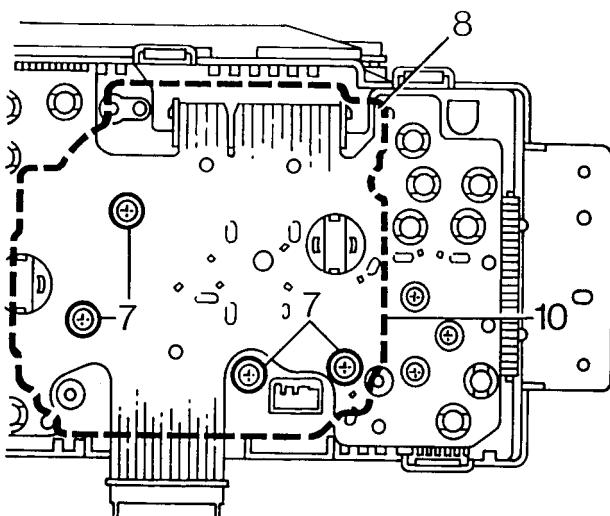
1. Remove instrument binnacle. **See ELECTRICAL, Repair.**



2. Remove window and face plate from instrument panel.



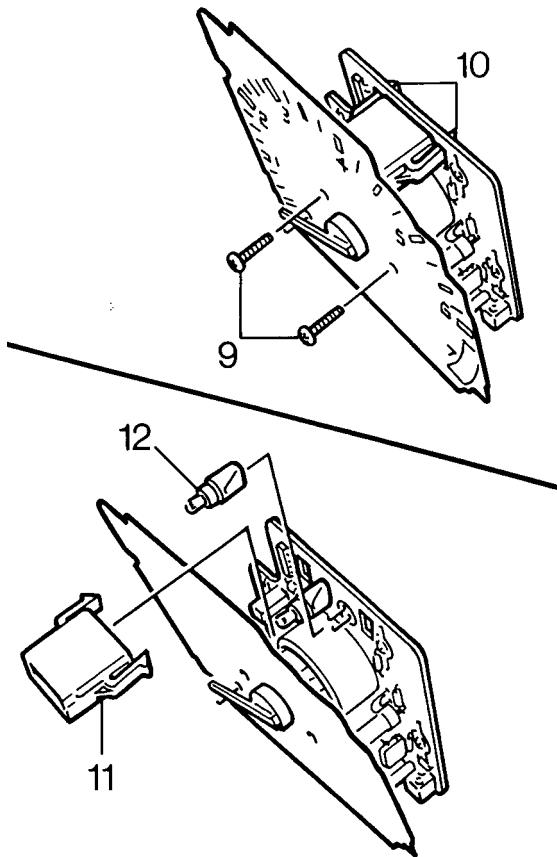
3. Remove 3 screws securing ECU to instrument panel.
4. Release and remove small cover from ECU.
5. Disconnect multiplug from ECU.
6. Remove ECU



7. Remove 4 screws securing tachometer.
8. Remove tachometer.

## Refit

13. Reverse removal procedure.
14. Fit new warning light bulbs.
15. Carefully fit warning light housing, ensuring that locating pegs engage correctly and that retaining clips lock housing into position.
16. Ensure that tachometer needle is on the correct side of its stop.
17. Fit instrument binnacle. **See ELECTRICAL, Repair.**



RR4050

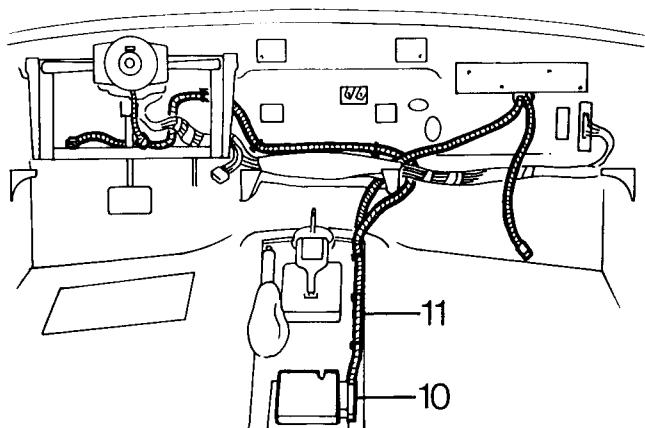
9. Carefully remove 2 screws securing face plate to tachometer.
10. Release warning light housing from tachometer circuit board.
11. Carefully (to avoid damage to tachometer needle and spindle), tilt and remove warning light housing.
12. Remove 2 warning light bulbs.

**AIRBAG HARNESS**

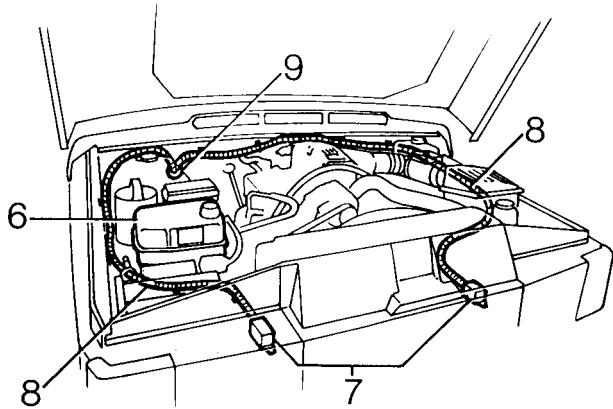
Service repair no - 86.70.63

**Remove**

1. Remove driver's airbag. *See this section.*
2. Remove passenger's airbag. *See this section.*
3. Remove dash panel assembly. *See CHASSIS AND BODY, Repair.*
4. Remove heater blower unit. *See HEATING AND VENTILATION, Repair.*
5. Remove heater and cooler unit. *See AIR CONDITIONING, Repair.*



RR4052



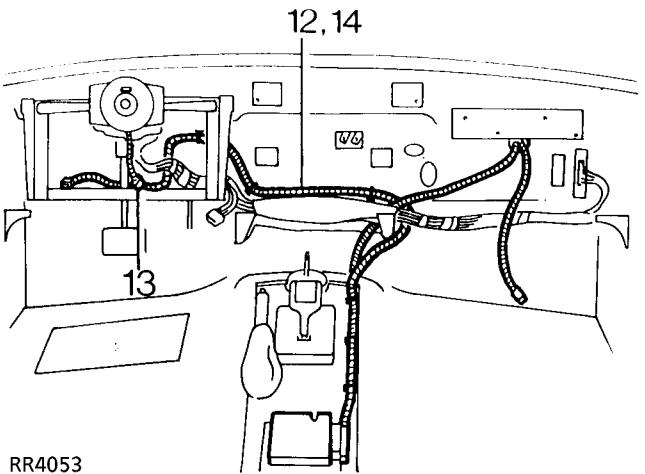
RR4051

**Pre 97 MY**

6. Remove 3 screws securing expansion tank and position expansion tank aside.
7. Disconnect multiplug from each crash sensor.
8. Release airbag harness from clips and ties along the bulkhead and each valance.
9. Displace airbag harness grommet to inside of bulkhead and feed harness through bulkhead.

**All Models**

10. Disconnect multiplug from airbag control unit.
11. Release airbag harness from under carpet.



RR4053

12. Release ties securing harness along toeboard.
13. Disconnect steering wheel airbag multiplug.
14. Release airbag harness from driver's side and remove.

**Refit**

15. Reverse removal procedure.



**CAUTION:** Ensure harness is correctly routed in harness protector and that all securing clips and ties are correctly engaged and harness is undamaged. Ensure all connections are fully engaged and retained by their latches.

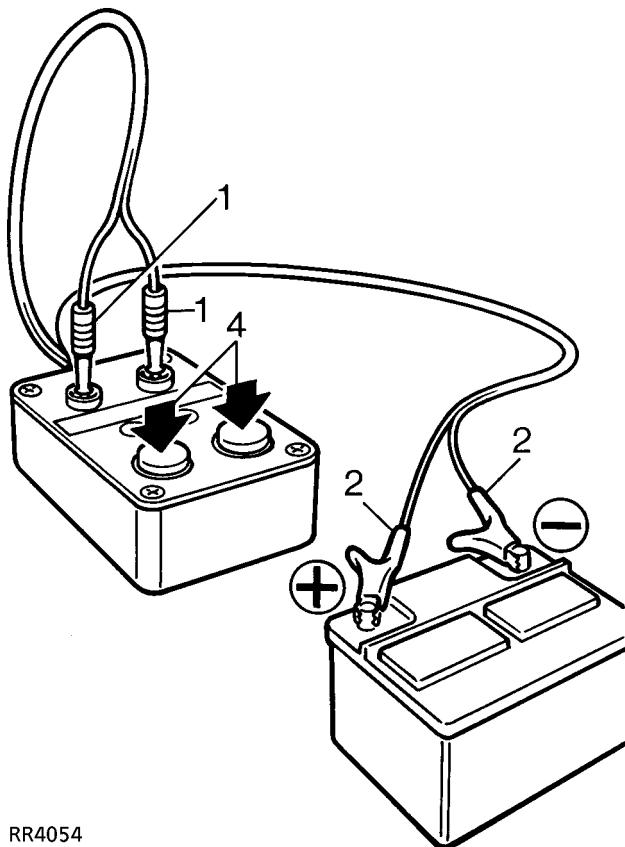
## AIRBAG MANUAL DEPLOYMENT

**CAUTION:** Deployment in the vehicle will damage the steering wheel; if the vehicle is not being scrapped deploy the module away from the vehicle in accordance with the separate procedure.

If a vehicle is to be scrapped and contains an undeployed airbag module, the module must be manually deployed. This operation should only be carried out using the following recommended manual deployment procedure.

Before deployment is started the deployment tool self test procedure should be carried out.

### Deployment tool SMD 4082/1 self test procedure



RR4054

1. Insert BLUE and YELLOW connectors of tool lead into corresponding sockets on face of tool.
2. Connect crocodile clips of second tool lead to battery, RED to positive and BLACK to negative.
3. RED "READY" light should illuminate.
4. Press and hold both operating buttons.

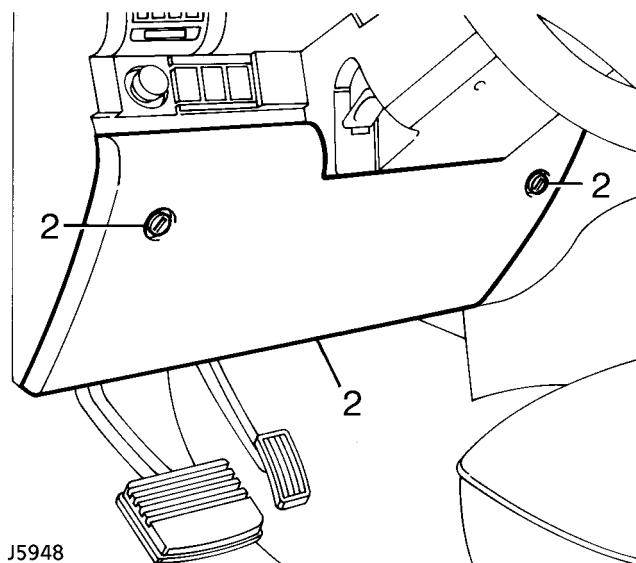
5. GREEN "DEFECTIVE" light should illuminate.
6. Release both operating buttons.
7. RED "READY" light should illuminate.
8. Disconnect tool from battery.
9. Disconnect blue and yellow connectors from tool face sockets.
10. Self test now complete.

### Deployment with module fitted to vehicle

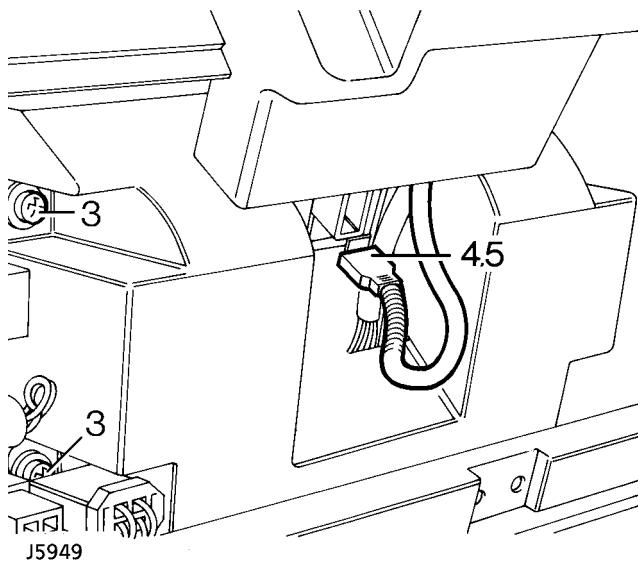
These guidelines are written to aid authorised personnel to carry out the safe disposal of the airbag module when fitted to the vehicle.

**WARNING:** Only use the LAND ROVER approved deployment equipment. Deploy airbag module in a well ventilated designated area. Ensure airbag module is not damaged or ruptured before deploying.

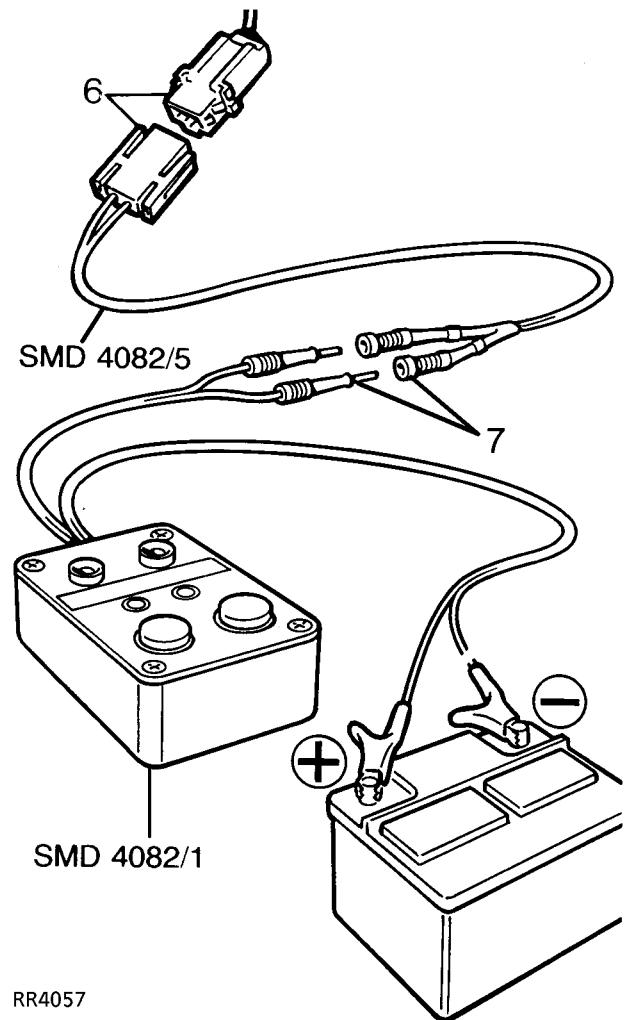
1. Carry out deployment tool self test.



2. Release 2 turnbuckles securing lower panel to dash, remove lower panel.



3. Knee bolster (where fitted); Remove 4 screws and withdraw kneebolster.
4. Release airbag harness to column harness connector from bracket.
5. Disconnect airbag harness connector from column harness.



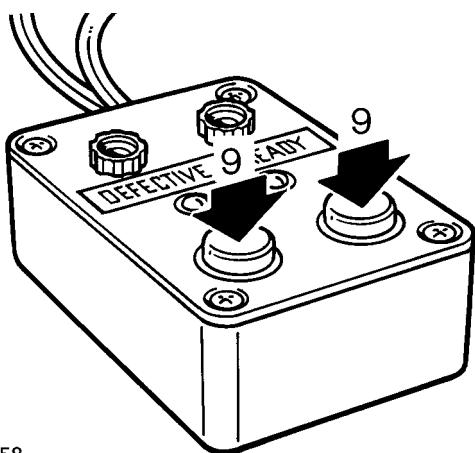
**⚠ WARNING:** Ensure tool is not connected to battery.

6. Connect flylead **SMD 4082/5** to column harness connector.
7. Connect flylead **SMD 4082/5** to tool **SMD 4082/1**.

**⚠ WARNING:** Ensure airbag module is secure within steering wheel.

8. Connect tool **SMD 4082/1** to battery.

**⚠ WARNING:** Ensure all personnel are standing at least 15 metres (50 ft) away from vehicle.



RR4058

### Deployment with module removed from vehicle.

#### Driver's Airbag Module

These guidelines are written to aid authorised personnel to carry out the safe disposal of airbag modules when removed from the vehicle.



**WARNING:** Only use the LAND ROVER approved deployment equipment.

Deploy airbag modules in a well ventilated designated area.

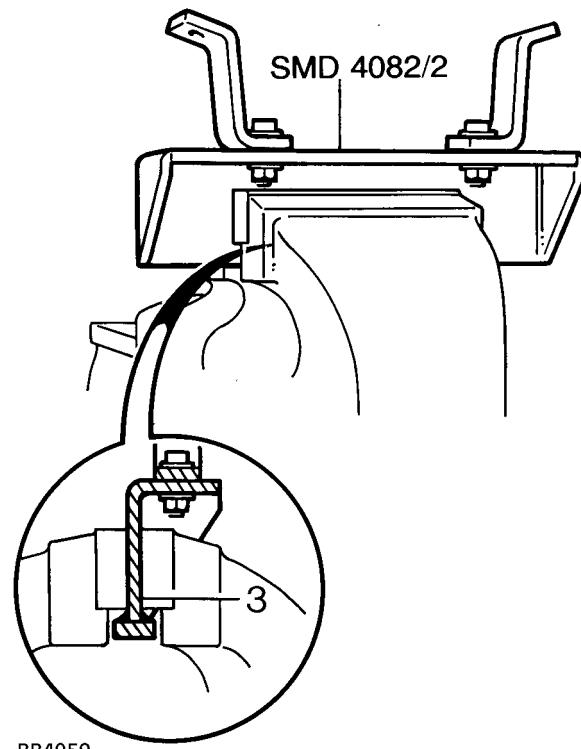
Ensure airbag module is not damaged or ruptured before deploying.

1. Carry out deployment tool self test.
2. Remove airbag module from steering wheel.  
*See this section.*



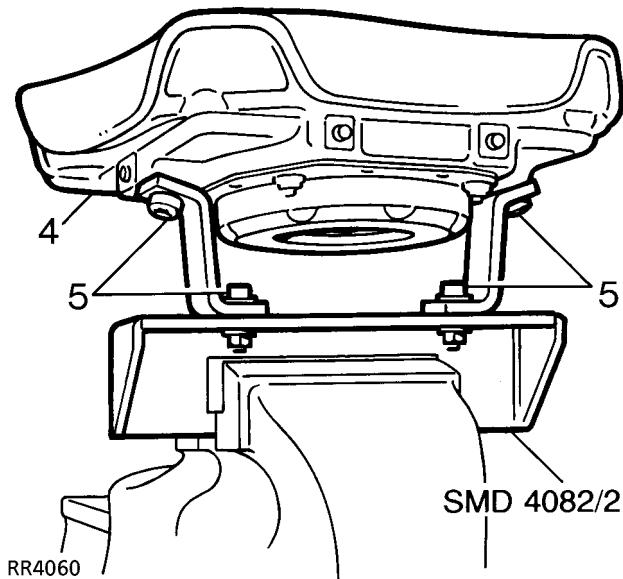
**NOTE:** DO NOT transport airbag module in the vehicle passenger compartment.

13. Scrap all remaining parts of airbag system. DO NOT re-use or salvage any parts of the airbag system including steering wheel.



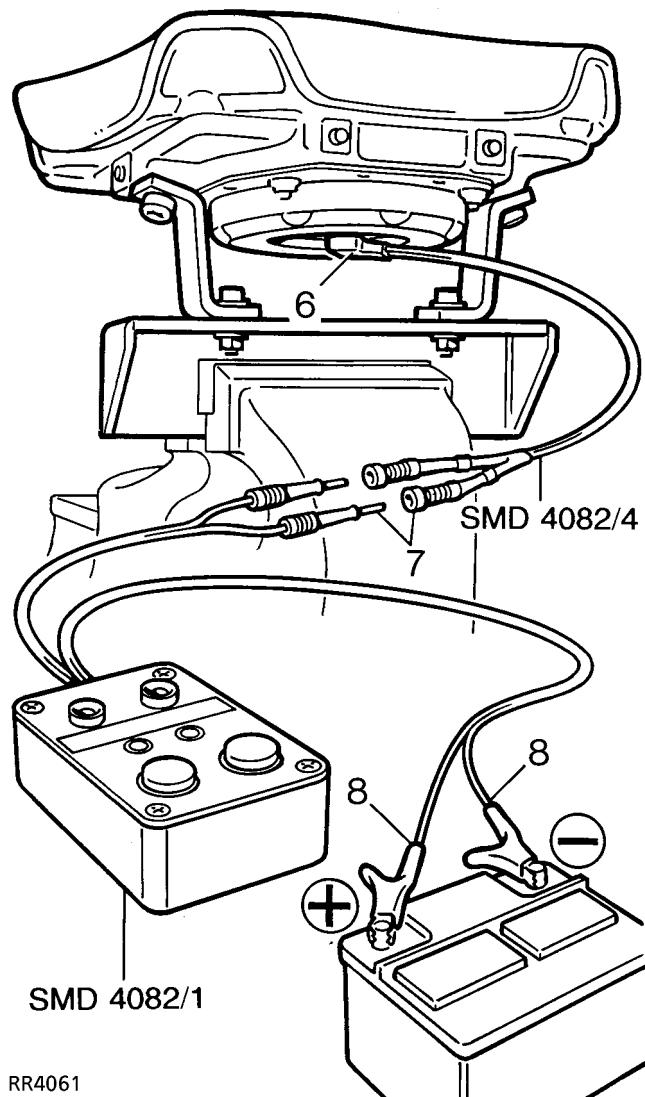
RR4059

3. Position tool **SMD 4082/2** in vice, ensuring that vice jaws grip tool above bottom flange to prevent possibility of tool being forced upwards from vice. Tighten vice.



**WARNING:** Ensure tool **SMD 4082/1** is not connected to battery.

4. Secure airbag module to tool **SMD 4082/2**. Ensure module is correctly secured using both fixings.
5. Ensure airbag module mounting brackets are secure.

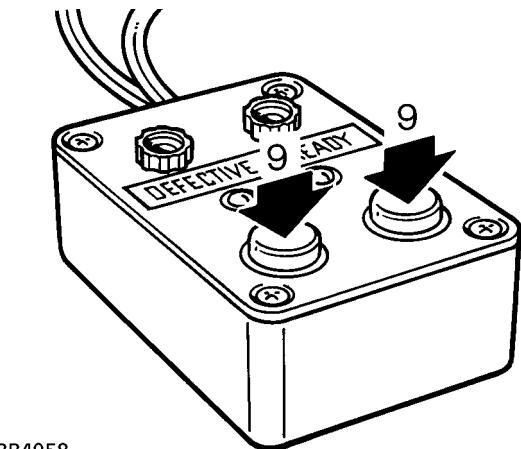


6. Connect flylead **SMD 4082/4** to airbag module.
7. Connect flylead **SMD 4082/4** to tool **SMD 4082/1**.

**WARNING:** Do not lean over module whilst connecting.

8. Connect tool **SMD 4082/1** to battery.

**WARNING:** Ensure all personnel are standing at least 15 metres (50 ft) away from module.



RR4058

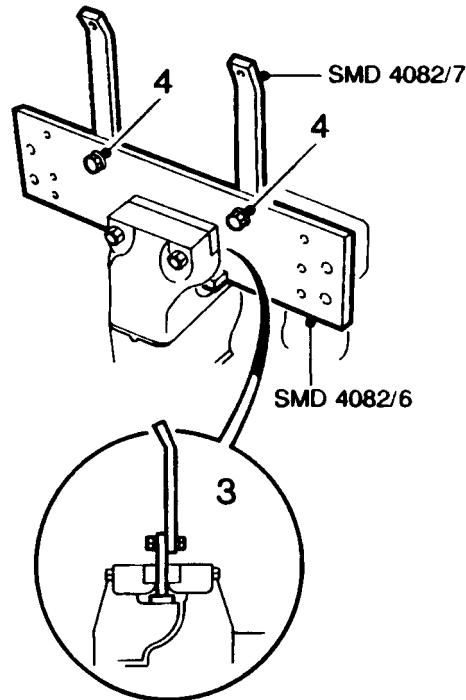
9. Press both operating buttons to deploy airbag module.
10. **DO NOT** return to airbag module for 30 minutes.
11. Using gloves and face mask, remove airbag module from tool, place airbag module in plastic bag and seal bag.
12. Wipe down tool with damp cloth.
13. Transport deployed airbag module to designated area for incineration.



**NOTE:** DO NOT transport airbag module in the vehicle passenger compartment. DO NOT re-use or salvage any parts of the airbag system including steering wheel or steering column.

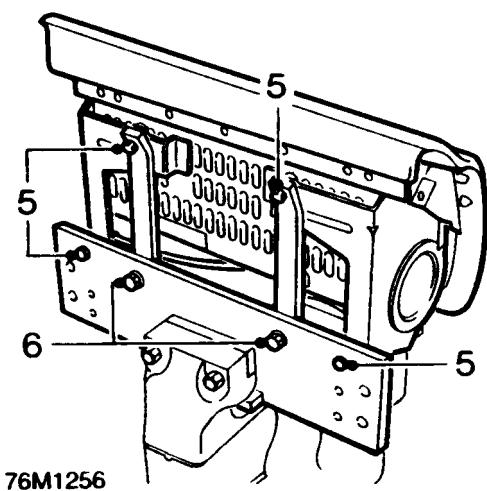
#### Passenger's Airbag Module

1. Carry out deployment tool self test.
2. Remove airbag module from fascia. **See this section.**

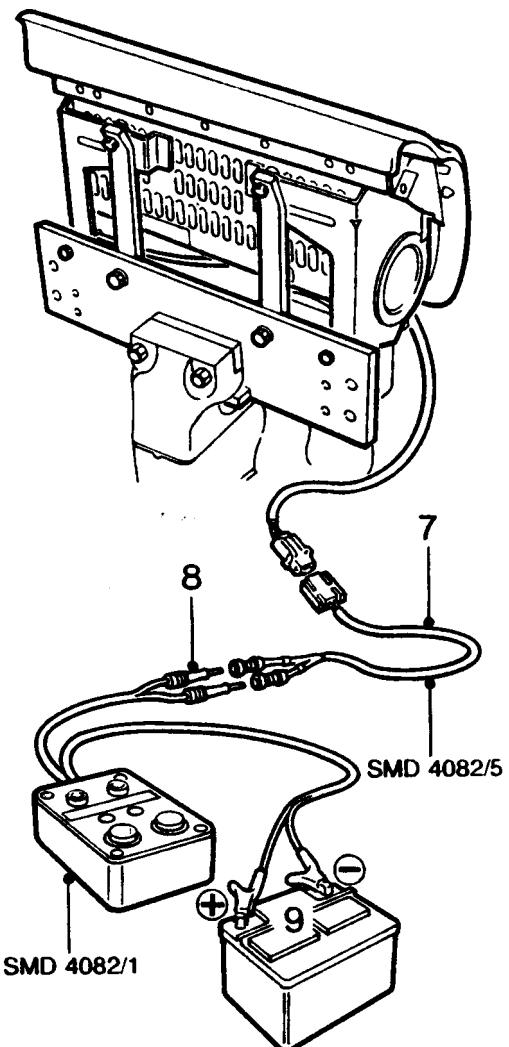


76M1255

3. Position tool **SMD 4082/6** in vice, ensuring that vice jaws grip tool above bottom flange to prevent possibility of tool being forced upwards from vice. Tighten vice.
4. Position brackets **SMD 4082/7** to tool; lightly tighten bolts.



5. Position airbag module to tool **SMD 4082/6**. Ensure module is correctly secured using all fixings.
6. Ensure airbag module mounting brackets are secure.



**WARNING:** Ensure tool **SMD 4082/1** is not connected to battery.

7. Connect flylead **SMD 4082/5** to airbag module.
8. Connect flylead **SMD 4082/5** to tool **SMD 4082/1**

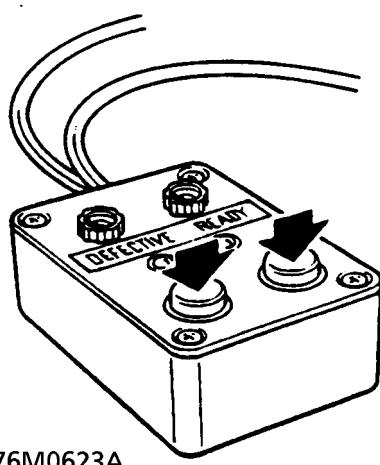


**WARNING:** Do not lean over module whilst connecting.

9. Connect tool **SMD 4082/1** to battery.



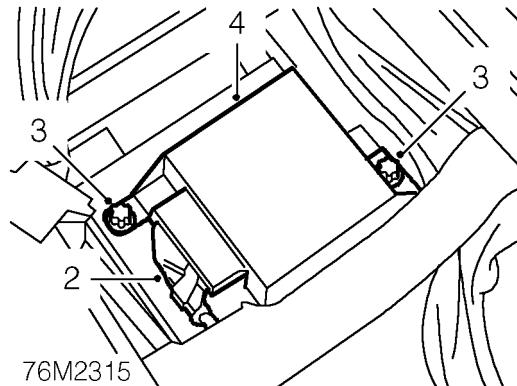
**WARNING:** Ensure all personnel are standing at least 15 metres (50 ft) away from module.



76M0623A

**AIRBAG DIAGNOSTIC CONTROL UNIT - SPS SRS****Service repair no - 76.74.03****Remove**

1. Remove centre console. **See CHASSIS AND BODY, Repair.**



2. Disconnect connector from control unit.
3. Remove 2 Torx bolts securing control unit to body.
4. Remove control unit.

**Refit**

5. Position control unit to body, fit Torx bolts and tighten to **10 Nm (7 lbf ft)**.
6. Connect control unit connector and secure.
7. Fit centre console. **See CHASSIS AND BODY, Repair.**
8. Check supplementary restraint system using **TestBook**.



**NOTE: DO NOT transport airbag module in the vehicle passenger compartment. DO NOT re-use or salvage any parts of the airbag system.**



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**TORQUE VALUES**

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**NOTE:** Torque wrenches should be regularly checked for accuracy to ensure that all fixings are tightened to the correct torque.

	<b>Nm (lbf ft)</b>
Airbag module screws .....	8 (6 lbf ft)
Steering wheel nut .....	50 (37 lbf ft)
Crash sensor screws (Distributed SRS) .....	10 (7 lbf ft)
Control unit.....	10 (7 lbf ft)

**FRONT DOOR****Service repair no - 76.28.01****Remove**

1. Disconnect battery negative lead.
2. Detach the door seal at the lower section of the 'A' post.
3. Carefully remove the two retaining buttons from the trim panel on the side of the footwell and ease out the panel.
4. Disconnect the three multiplugs connecting the door harness and speaker leads.
5. Detach the convoluted grommet from the 'A' post and withdraw the door harness and speaker leads.
6. Set the door in the open position without engaging the check stay; then remove the roll pin securing the check stay at the 'A' post.

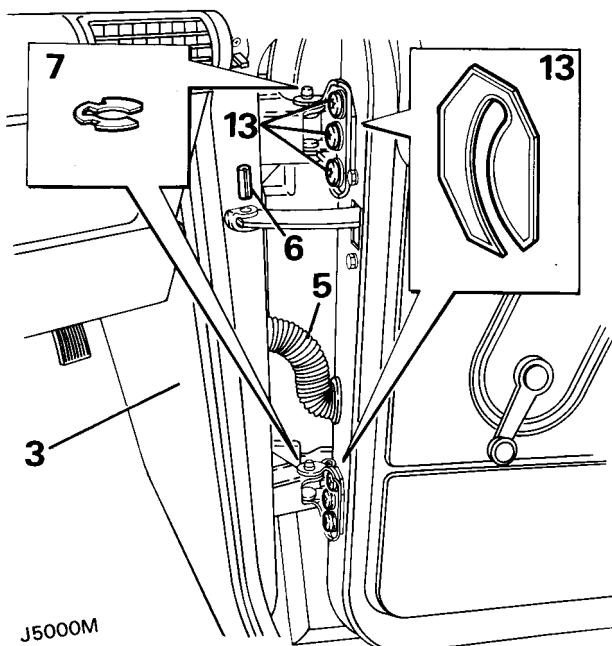


**WARNING: Instruction 7 MUST BE carried out with assistance.**

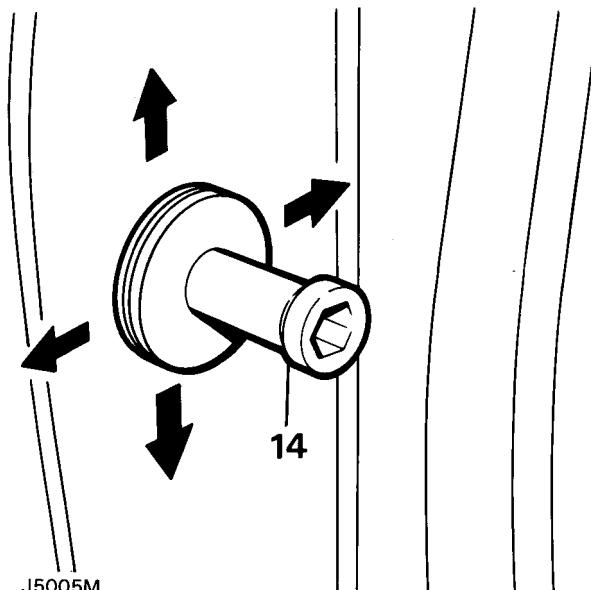
7. Remove the door hinge 'C' clips from the hinge posts and with assistance carefully lift the door from the vehicle.

**Refit**

8. Refit the door and secure the hinge posts with the 'C' clips.
9. Locate the check stay to the bracket on the 'A' post and secure with a new roll pin.



10. Feed the door harness and speaker leads through the aperture in the 'A' post, fully open the door and reconnect the multiplugs in the footwell, take up the slack and refit the convoluted grommet to the 'A' post.
11. Refit the footwell side panel.
12. Check the location of the door and the operation of the door lock. If necessary, adjust the door and striker.
13. The door can be adjusted up and down or in and out of the opening by loosening the six screws securing the hinges to the door, and by the addition or removal of shims between the hinge and door.
14. The door lock striker can be adjusted by loosening the striker and moving it in the appropriate direction or by adding and removing spacing washers between the striker and 'B' post.

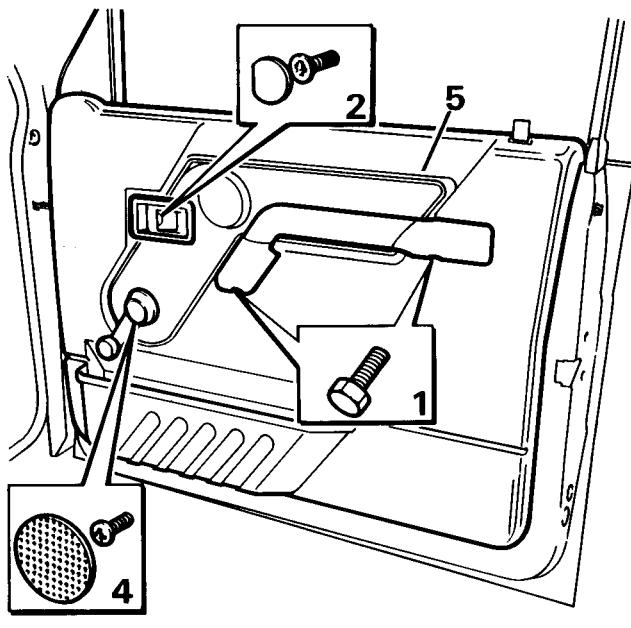


## FRONT DOOR TRIM PANEL

Service repair no - 76.34.01

### Remove

1. Remove the two securing screws and detach the door pull from its mounting brackets on the inner door panel.
2. Remove the interior door handle finisher button to reveal the screw retaining the handle surround.
3. Remove the screw and detach the handle surround from the trim panel.
4. Where applicable remove the window winder.
5. Detach the trim panel by inserting a trim panel removing tool between the trim panel and the inner door panel, gently prise out the fourteen plastic securing clips from their respective holes in the inner door panel.
6. Disconnect the two speaker connections from inside the door and remove the trim panel complete with speaker, and door bin.



J5001 A

7. If a new trim panel is to be fitted, remove the speaker, door bin and remote button finisher from the existing trim panel and fit them to the new panel.

### Refit

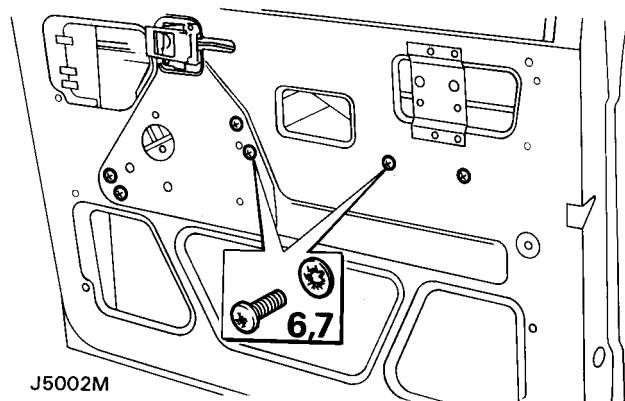
8. Reverse removal procedure.

## FRONT DOOR GLASS AND REGULATOR

Service repair no - 76.31.45

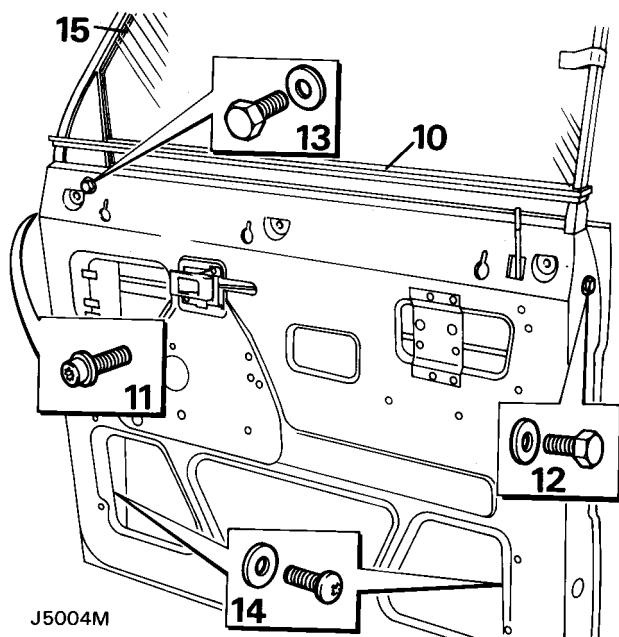
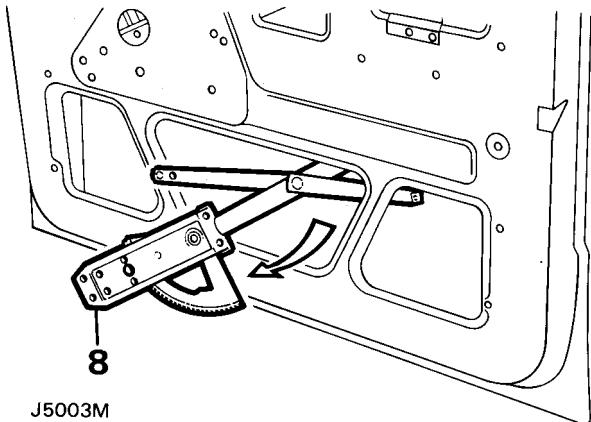
### Remove

1. Ensure the window is in the fully closed position and secure with adhesive tape to prevent the window from dropping down.
2. Disconnect battery negative lead.
3. Remove the door trim panel. *See this section.*
4. Remove the plastic vapour barrier.
5. Where applicable remove the window lift motor. *See ELECTRICAL, Repair.*



6. Remove the four window regulator retaining screws and shakeproof washers from the inner door panel.
7. Remove the two screws and shakeproof washers retaining the lower window lift channel, and slide the channel off the stud.

8. Disengage the lifting arm stud from the upper lifting channel, manoeuvre the window regulator and remove it from the lower centre opening in the inner door panel.



9. Remove the exterior driving mirror. See **ELECTRICAL, Repair**.
10. Remove the waist rail seal from the top of the door panel.
11. Remove the 'Torx' bolt from the hinge face of the door which secures the front of the door frame.
12. Remove the bolt and plain washer from the opening edge of the door which secures the rear of the door frame.
13. Remove the bolt and plain washer from the recessed hole in the front of the inner door panel under the exterior driving mirror mounting plate.

14. Remove the screws and plain washers, from inside the door, securing the bottom of the front and rear glass channels.
15. Lift the door glass frame complete with glass out of the door panel and remove to a suitable bench.
16. Remove the adhesive tape securing the glass to the door frame.
17. Slide the glass out of the door frame channel.

#### Refit

 **NOTE: When refitting the door glass frame, ensure it is repositioned to suit the door opening before fully tightening the door frame securing bolts.**

18. Reverse removal procedure.

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**FRONT DOOR LOCK, OUTSIDE AND INSIDE  
DOOR RELEASE HANDLES**

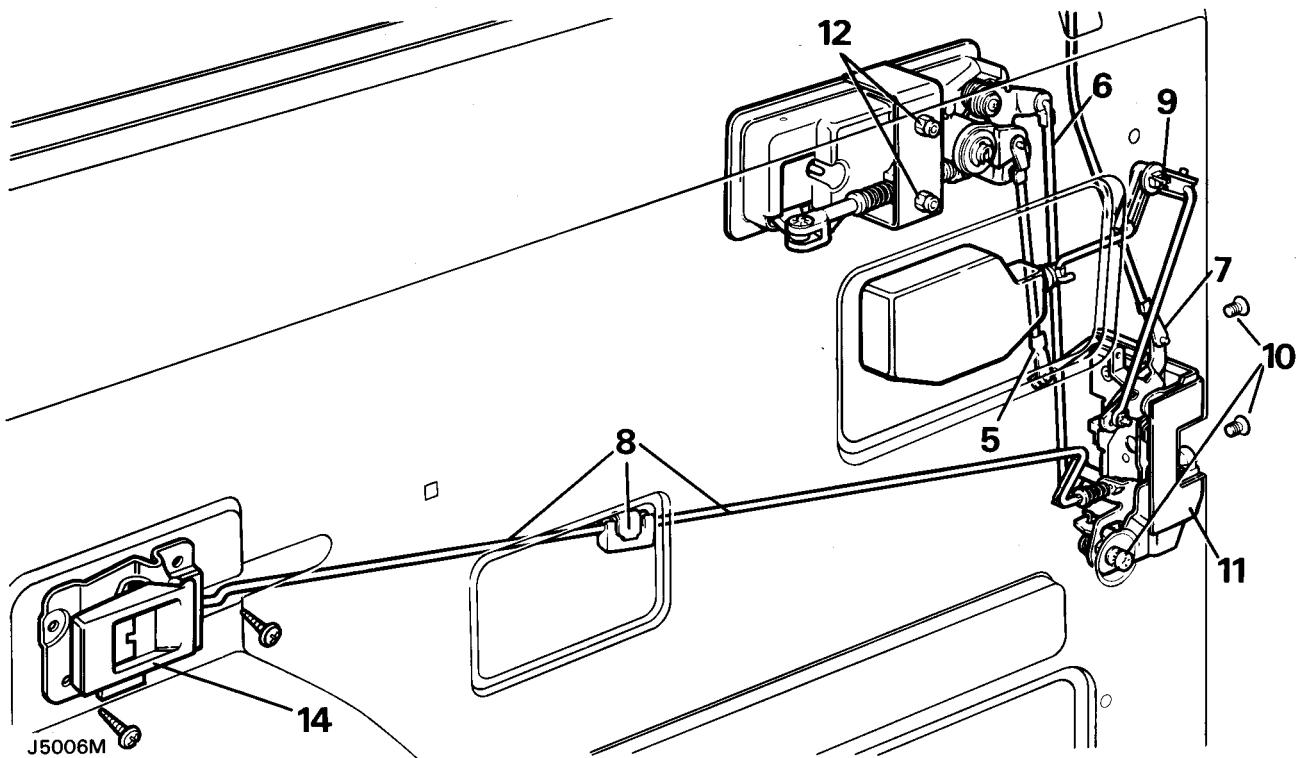

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Service repair no - 76.37.12/31

**Remove**

1. Disconnect battery negative lead.
2. Remove the door trim panel. *See this section.*
3. Remove the door glass and regulator. *See this section.*
4. Where applicable remove the door actuator unit. *See ELECTRICAL, Repair.*
5. Disconnect the lock barrel control rod from the lock by releasing the metal clip at the bottom of the rod.

6. Disconnect the control rod from the outside door release handle by pulling it out of the plastic ferrule.
7. Disconnect the remote button control rod from the lock by releasing the metal clip at the bottom of the rod and withdraw the rod from the door.
8. Disconnect the control rod connector between the inside door release handle and the door lock by releasing the metal clip and pulling one of the control rods out of the plastic connecting block. This is accessible through the small centre cut-out in the door panel. The control rod also passes through a guide bracket in the inside of the inner door panel.
9. From inside the door panel push out the small pin that secures the quadrant to the inner door panel. Push the quadrant out of the panel.
10. Release the door lock by removing the two counter-sunk screws from the door edge and the single screw and shakeproof washer on the inner door panel.





11. Withdraw the lock through the lower rear cut-out on the inner door panel.
12. Remove the two nuts, shakeproof washers and retaining bracket securing the outer door release handle to the outer door panel, accessible through the upper rear cut-out on the inner door panel.
13. Carefully detach the door release handle from the outer panel.
14. Remove the two screws securing the inside door release handle to the inner panel.
15. Withdraw the handle from its location with the connecting rod half still attached.
16. Unclip the end of the connecting rod from the handle.

**Refit**

17. Reverse removal procedure.

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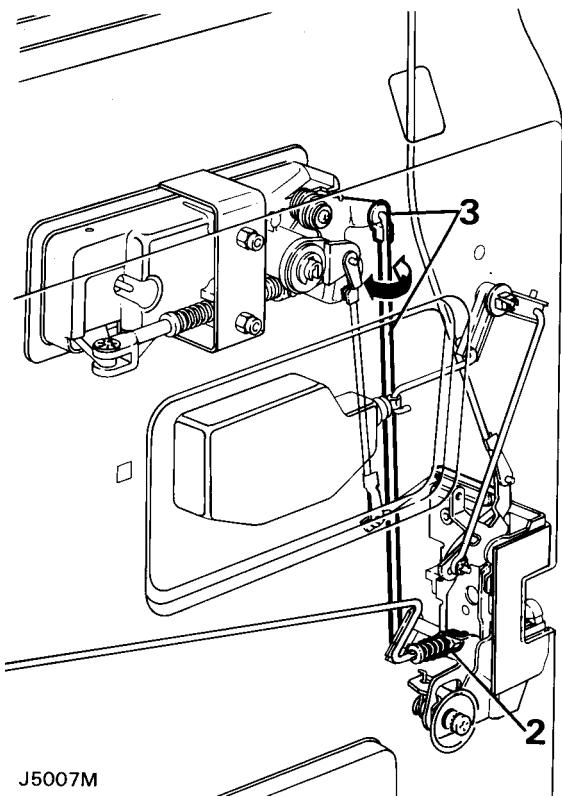
**ADJUSTMENT-FRONT DOOR LOCK AND HANDLE ASSEMBLY**

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Service repair no - 76.37.47

**Inside door release handle to lock**

1. Refit the inside door release handle surround before any adjustment is made, allowing the handle to be set from the correct operating position.



2. At the lock end of the interior handle connecting rod, rotate the spring tensioned nyloc nut clockwise or counter-clockwise, as necessary to shorten or extend the operating length of the rod.

**Outside door release handle to lock**

3. Disconnect the connecting rod from the plastic ferrule at the rear of the outer door release handle. Rotate the rod clockwise or counter-clockwise to shorten or extend the operating length as necessary.

 **NOTE: Door release should be effective before the total handle movement is exhausted to provide a small overthrow movement.**

**REAR SIDE DOORS****Service repair no - 76.28.02****Remove**

1. Disconnect battery negative lead.
2. Detach the convoluted grommet from the 'B' post.
3. Withdraw the door harness multiplugs from the 'B' post and disconnect them.
4. Remove the bolts and washers securing the check strap to the 'B' post.

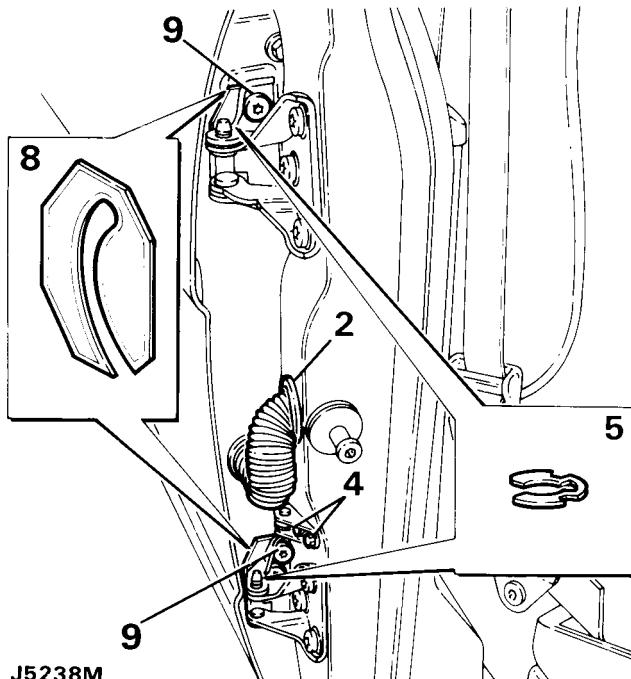


**WARNING: Instruction 5 MUST BE carried out with assistance.**

5. Remove the door hinge 'C' clips from the hinge posts and with assistance carefully lift the door from the vehicle.

**Refit**

6. Reverse removal procedure. Fitting new 'C' clips if the existing ones are worn or distorted.
7. Check the operation of the door and lock. If necessary, adjust the door and striker.



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**Adjust**

8. Adjust the door by adding or removing shims between the hinge and the door to move the door forward or rearward in the opening.
9. To adjust the door up, down or in and out of the opening, loosen the screws securing the hinges to the door, adjust as necessary and retighten the screws to the correct torque value.
10. Adjustment of the door striker is identical to the procedure for front doors.

**NOTE: If it is necessary to remove the hinges from the 'B' post they must be refitted in exactly the same position, using an equal thickness of shims to those removed.**

**REAR SIDE DOOR - TRIM PANEL****Service repair no - 76.34.04****Remove**

1. Disconnect battery negative lead.
2. Remove the two securing screws and detach the door pull from its mounting brackets.
3. Remove the securing screw and detach the interior door release handle surround.
4. Where applicable remove the window winder or release electric switch and disconnect.
5. Detach the trim panel by inserting a trim panel removing tool between the trim panel and the inner door panel, gently prise out the plastic securing clips from their respective holes in the inner panel.
6. Lift the trim panel over the remote button and clear of the door. Where applicable disconnect the electrical plug from the window lift switch and withdraw the panel.

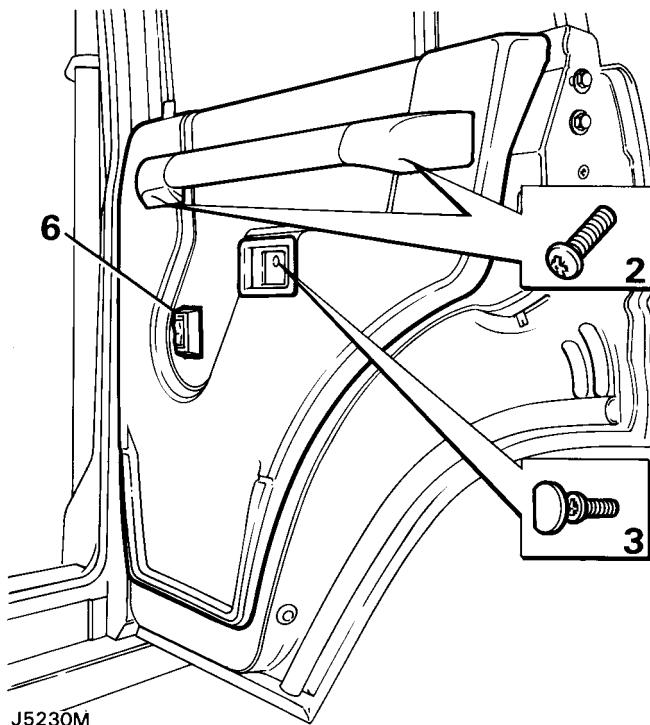


**NOTE: With the trim panel removed the remote button and rod will fall from its location in the bellcrank. Observe its correct location and withdraw from the door panel.**

7. If a new trim panel is to be fitted, remove the window lift switch, door bin and remote button finisher from the existing trim panel and fit them to the new panel.

**Refit**

8. Reverse removal procedure. Ensuring correct fitment of the sill button operating rod.





## REAR SIDE DOOR LOCK, INSIDE AND OUTSIDE RELEASE HANDLES

Service repair no - 76.37.13/32

### Remove

1. Ensure that the window is in the fully closed position.
2. Disconnect battery negative lead.
3. Remove the interior trim panel from the door. **See this section.**
4. Remove the plastic vapour barrier sheet.
5. Disconnect the inside release handle control rod by pulling it from its location in the door lock.
6. Disconnect the sill locking control rod from the lock by releasing the metal clip.
7. Disconnect the outside release handle control rod by pulling it out of the plastic ferrule.
8. Remove the two countersunk screws from the door edge and the single screw and shakeproof washer from the inner door panel. Retrieve any spacing washers which may be fitted between the inner door panel and lock.
9. Withdraw the lock through the upper rear opening in the inner door panel.

**NOTE: If necessary the following items can be removed.**

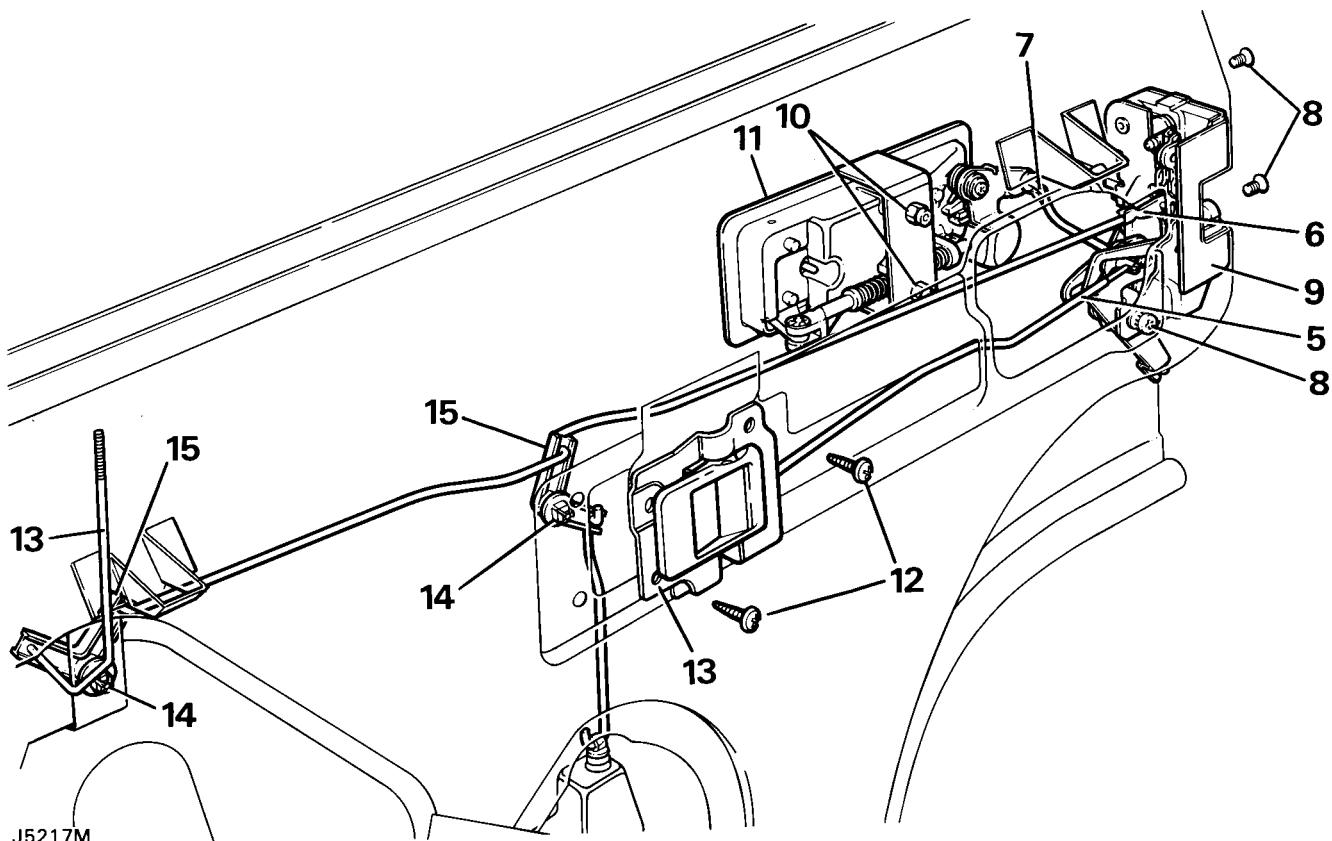


10. Remove the two nuts, shakeproof washers and retaining bracket securing the outer release handle which are accessible through the upper rear cut-out on the inner door panel.
11. Carefully detach the handle from the outer door panel.
12. Remove the two screws and plain washers securing the inside release handle to the inner door panel and withdraw the handle complete with connecting rod.
13. Disconnect the sill button connecting rod from the bellcrank and withdraw the rod complete with sill button.

### Sill locking bellcrank

14. Using a small screwdriver, or length of 3.175 mm (1/8 in) diameter rod, press the plastic locking pins through the respective square inserts in the inner door panel.
15. Release the bellcranks from the inner door panel and unhook the respective connecting rods.
16. Withdraw the bellcranks from inside the door panels.

**NOTE: When refitting the bellcranks the locking pins are entered into the square insert from outside and pressed in flush.**



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**ADJUSTMENT-REAR SIDE DOOR LOCK AND HANDLE**


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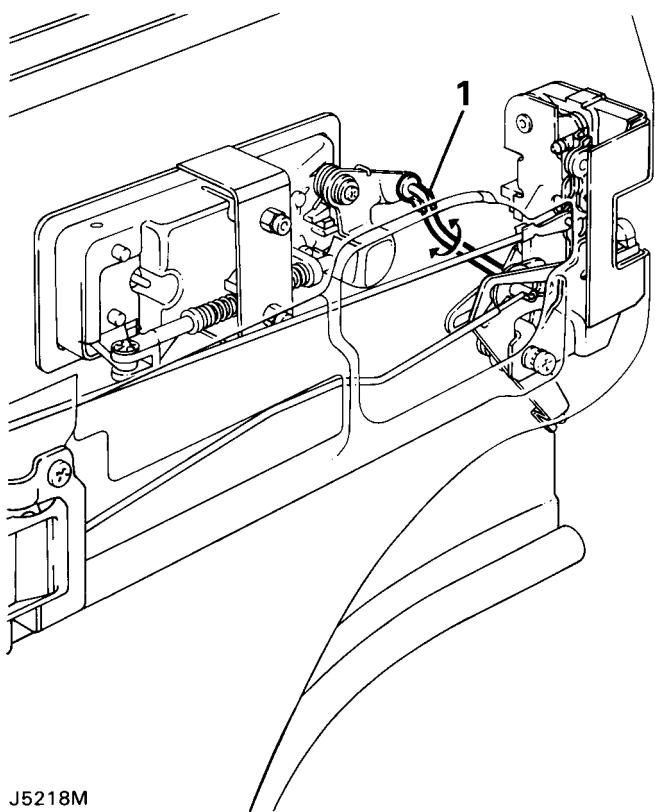
**Service repair no - 76.37.47**

**Outside door release handle to lock**

1. Disconnect the short off-set connecting rod at the rear of the outer release handle, rotate the rod clockwise or counter clockwise to shorten or extend the operating length of the rod as required.



**NOTE: Door release should occur before the total handle movement is achieved to provide a small overthrow movement.**




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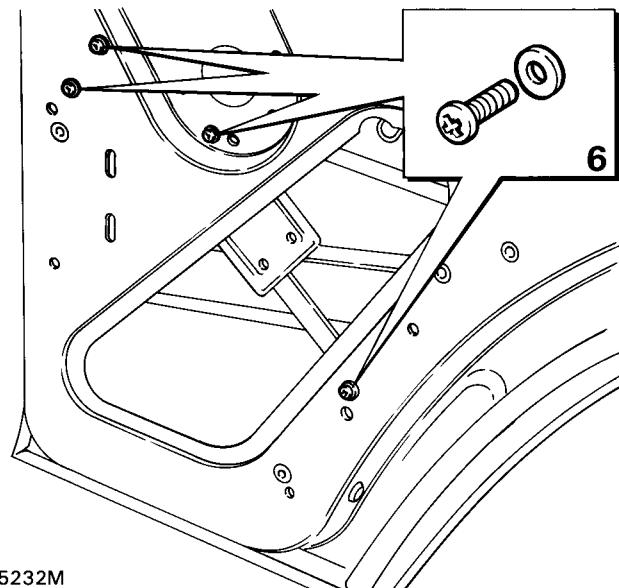
**REAR SIDE DOOR GLASS AND REGULATOR**


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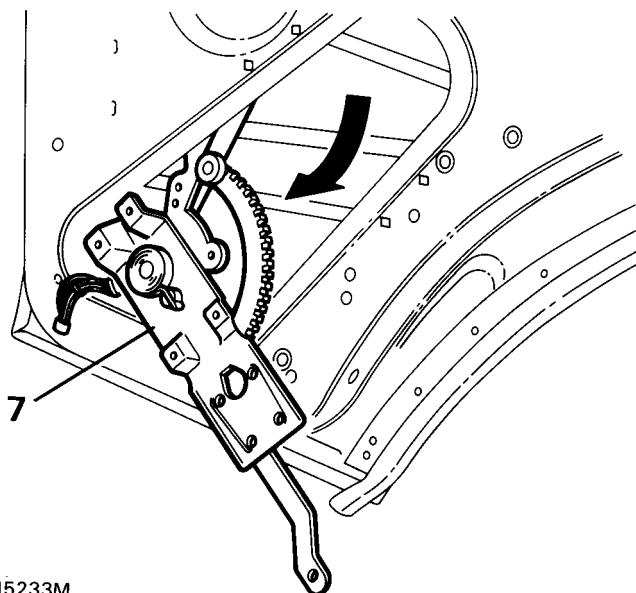
**Service repair no - 76.31.45**

**Remove**

1. Ensure that the window is in the fully closed position and secure it with adhesive tape over the top of the door to prevent the glass from dropping down.
2. Disconnect battery negative lead.
3. Remove the door trim panel. *See this section.*
4. Remove the plastic vapour barrier.
5. Where applicable remove the door actuator and window lift motor. *See ELECTRICAL, Repair.* *See ELECTRICAL, Repair.*
6. Remove the four window regulator securing screws and shakeproof washers from the inner door panel.



7. Carefully disengage the lifting arm stud from the glass lifting channel and remove the window regulator from the lower opening in the inner door panel.
8. Remove the waist rail seal from the top of the door panel.
9. Remove the single bolt, spring and plain washers from inside the door, securing the bottom of the short glass run channel.
10. Remove the two bolts, spring and plain washers from the hinge face of the door.



J5233M

11. Remove the two bolts, spring and plain washers securing the door frame to the edge of the door.
12. Lift out the door frame complete with glass and remove to a suitable workbench.
13. Remove the tape and slide the glass out of the door frame channel.

**Refit**

14. Reverse removal procedure.



**NOTE: When refitting the door glass frame ensure that it is adjusted to suit the door opening before fully tightening the securing bolts.**

**REAR DOOR****Service repair no - 76.28.19****Remove**

1. Remove the spare wheel from the exterior of the door.
2. Remove the trim panel from inside the rear door. **See this section.**
3. Release the convoluted grommet from the door post, expose the door harness connectors and multiplugs and disconnect.
4. Remove the circlip and washer from the check stay pivot on the body.



**WARNING: Instruction 5 MUST BE carried out with assistance.**

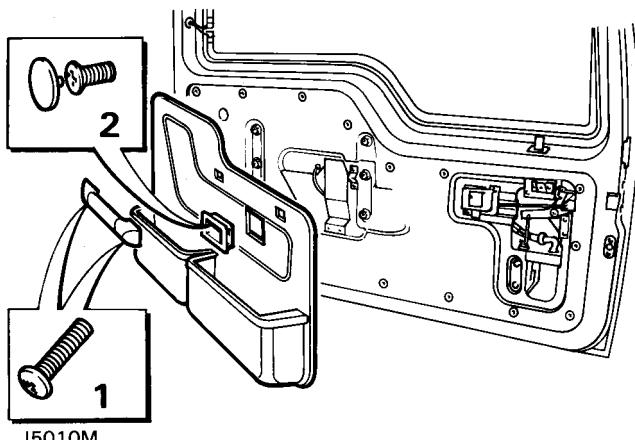
5. Suitably support the door, remove the four bolts securing the hinges to the door and with assistance slide the door off the hinges.

**Refit**

6. Reverse removal procedure.

**REAR DOOR TRIM PANEL****Service repair no - 76.34.09****Remove**

1. Remove the two screws securing the door pull and remove it from the door.
2. Remove the finisher from the inner door handle.
3. Using a trim panel removing tool release the seventeen trim panel fasteners and withdraw the panel from the door.



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4. If necessary remove the sixteen screws securing the stowage bins to the trim panel and detach the bins.

**Refit**

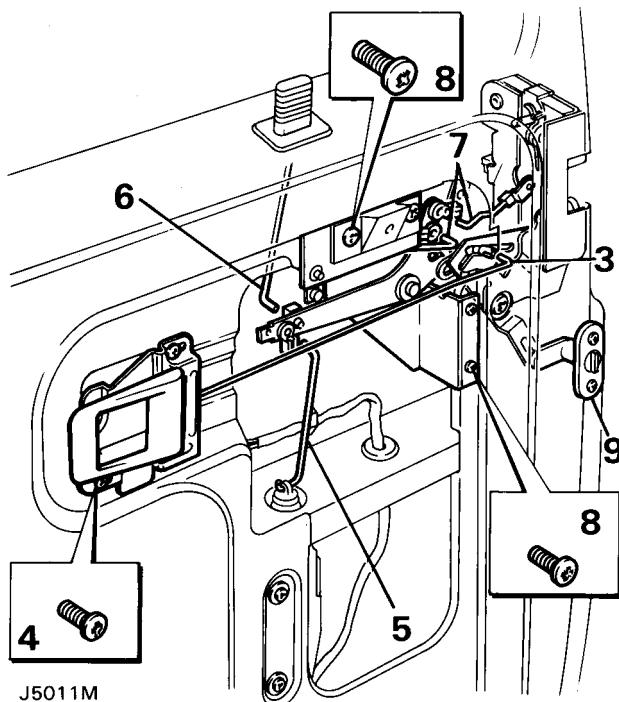
5. Reverse removal procedure.

**REAR DOOR LOCK AND INNER AND OUTER RELEASE HANDLES****Service repair no - 76.37.16/74/77/78****Remove**

1. Disconnect battery negative lead.
2. Remove the door pull, the trim panel and the vapour protective sheet, to allow access to the door handles and lock mechanisms.
3. Disconnect the inner release handle connecting rod at the lock.
4. Remove the two screws securing the inner handle and withdraw the handle complete with connecting rod.

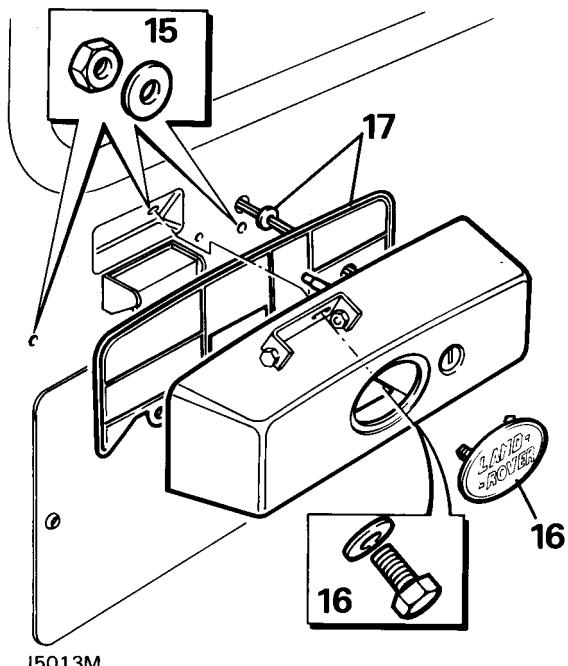
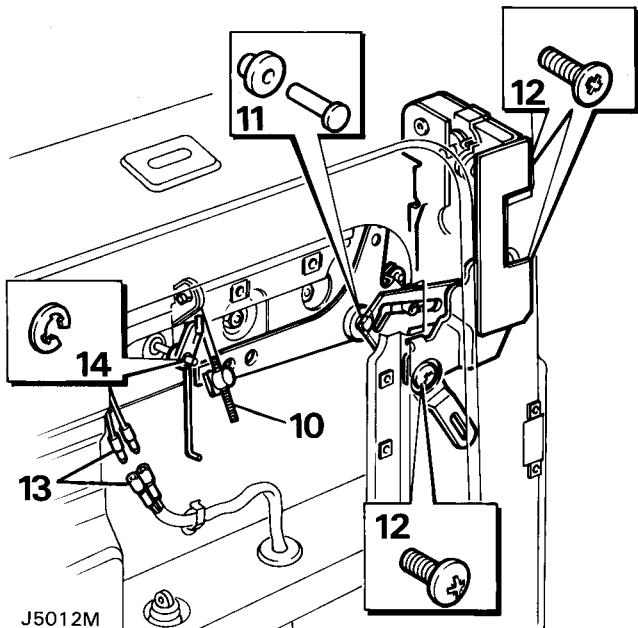
**NOTE:** Two identical 'Y' shaped levers (bellcranks) are fitted to the rear door lock mechanism and are referred to as inner and outer 'Y' levers; the inner one being the nearest to the inner door panel.

5. If fitted, remove the central locking actuator control rod link from the actuator and from the inner 'Y' lever.



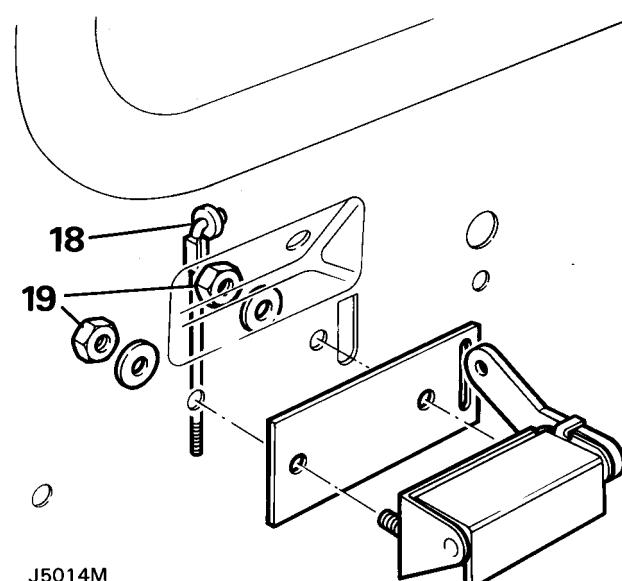
6. Detach the remote button connecting rod at the inner 'Y' lever and withdraw from inside the door.
7. Detach the lock and barrel connecting rods from the upper leg of the inner 'Y' lever.

8. Remove the screws securing the lock control mechanism pivot bracket and the door pull mounting bracket, ease the bracket from the lock barrel stem and remove from the door.
9. Remove the two screws and withdraw the childproof lock actuator.



10. Disconnect the adjustable lock rod from the outer 'Y' lever.
11. Remove the centre pin from the outer 'Y' lever pivot and release the pivot from the door.
12. Remove the three lock securing screws and manoeuvre the lock and 'Y' lever out of the door panels.
13. Disconnect the number plate light leads from the door harness.
14. Remove the 'E' clip securing the fulcrum to the barrel stem and withdraw the fulcrum and lock rod.
15. From inside the door panel remove the nuts and washers securing the lock barrel and number plate light housing.
16. Remove the logo from the housing and working through the logo aperture, remove the single bolt securing the housing.
17. Partially withdraw the housing and its rubber seal from the door, displace the rubber grommet from the door panel, withdraw the number plate light leads and complete the removal of the housing and seal from the door.

18. Remove the connecting rod from the outer door handle lever.
19. Remove the two nuts and washers securing the outer handle from inside the door panels and detach the handle and seal.

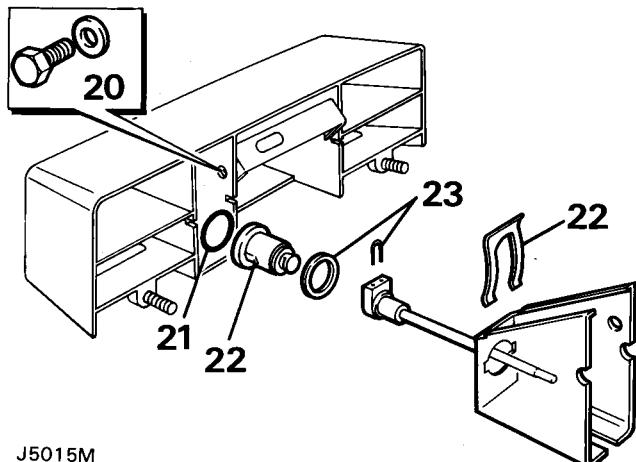


## Lock barrel and number plate light housing

### Disassemble

**NOTE:** The lock barrel can only be removed from its housing when the lock barrel and number plate light housing is removed from the door.

20. Remove the bolt securing the lock barrel mounting bracket to the housing and withdraw the assembled barrel and bracket.
21. Remove the 'O' ring seal from inside the housing.



J5015M

22. Remove the spring clip securing the barrel to the bracket and withdraw the barrel and stem assembly from the bracket complete with seal.
23. Remove the 'U' clip securing the stem to the barrel and detach the seal from the inner face of the barrel.
24. If the lock barrel and number plate light housing is being renewed, remove the number plate lights, harness and the housing mounting bracket, from the existing housing and fit them to the new housing.

### Reassemble

25. Fit the stem to the barrel and secure with the 'U' clip.
26. Position a new seal on the inner face of the barrel, insert the stem and barrel into the mounting bracket and secure with the spring clip.
27. Place a new 'O' ring seal on the inner face of the barrel aperture in the housing.
28. Insert the assembled bracket and barrel into its location in the housing, taking care not to disturb the seal, and secure with the bolt.

### Refit

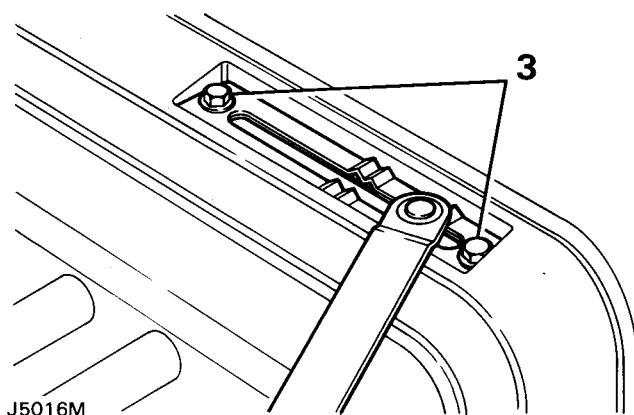
29. Fit the outer handle to the door and secure from the inside with the two nuts and washers.
30. Fit the lock barrel and number plate light housing by inserting the number plate light leads through the aperture in the door panel and locating the rubber grommet in the aperture. Insert the barrel stem through the door, locate the housing on the door panel, ensure that the seal seats correctly, and secure with the single bolt and washer through the logo aperture.
31. Connect the number plate light leads to the door harness.
32. Fit the logo to the aperture in the housing.
33. Fit the fulcrum and connecting rod to the barrel stem and secure with the 'E' clip.
34. Fit the lock and assembled outer 'Y' lever, secure the lock with the three screws, locate the 'Y' lever pivot and secure with the pin.
35. Fit the connecting rod from the outer handle lever to the outer 'Y' lever.
36. Fit the childproof lock actuator and check that it is functioning.
37. Insert the remote button and rod to the location in the door.
38. Offer up the assembled inner 'Y' lever and bracket, attach the barrel connecting rod to the top clip of the upper leg and the rod from the lock to the lower clip of the upper leg.
39. Locate the barrel stem in the insert on the bracket.
40. Secure the bracket with the four screws; fitting the door pull mounting bracket under the heads of the top two screws.
41. Attach the remote button and the actuator connecting rods to the 'Y' lever.
42. Fit the inner release handle and attach the connecting rod to the lock.
43. Refit the vapour protective sheet, door trim panel and door pull.

**REAR DOOR CHECK STAY**

Service repair no - 76.40.30

**Remove**

1. Remove the rear door from the vehicle. **See this section.**
2. Invert the door on a suitable protected area.
3. Remove the two securing bolts and withdraw the check stay assembly.

**Refit**

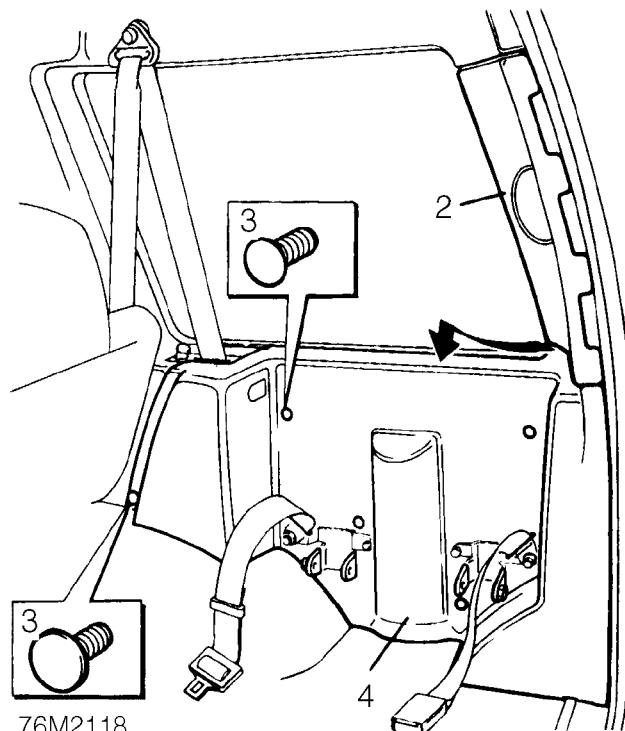
4. Reverse removal procedure.

**REAR COMPARTMENT LOWER TRIM PANELS**

Service repair no - 76.13.03

**Remove**

1. Remove the fold down seat or pocket side panel, whichever is applicable. **See this section.**
2. Remove speaker by releasing screws and disconnecting Lucas. Withdraw rear quarter trim panel.
3. Remove the five trim panel retainers.
4. Ease the trim panel from its location, feed the seat belts through the apertures and withdraw the panel.

**Refit**

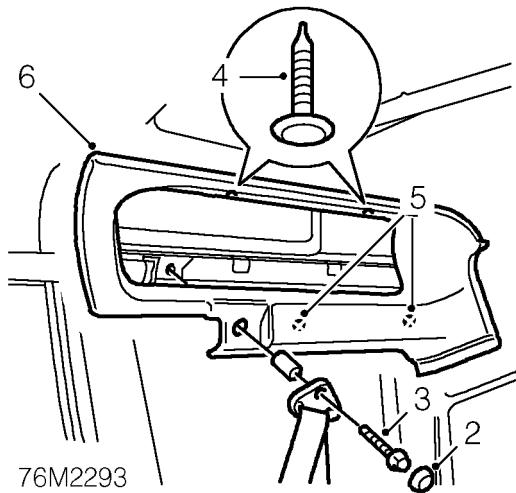
5. Reverse removal procedure.

## ALPINE LIGHT TRIM CASING

Service repair no - 76.13.20

### Remove

1. Remove RH 'E' post trim casing. *See this section.*



2. Remove rear seat belt anchorage retaining bolt cover.
3. Remove bolt securing rear seat belt anchorage.
4. Remove 2 trim studs securing trim casing.
5. Release trim casing from 2 retaining studs.
6. Remove trim casing.

### Refit

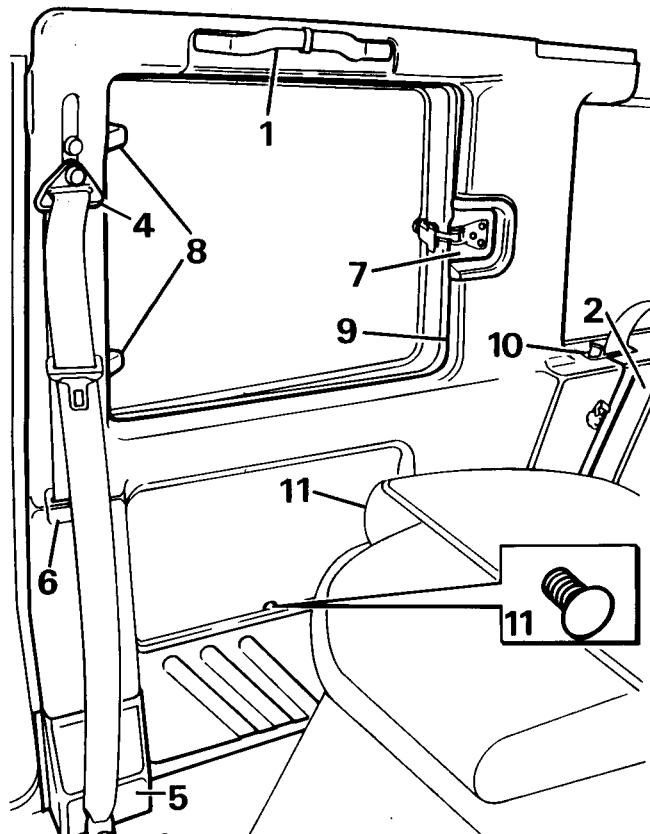
7. Fit and align trim casing and secure with studs.
8. Fit 2 trim studs securing trim casing.
9. Position seat belt anchorage, fit bolt and tighten to **32 Nm (24 lbf ft)**.
10. Fit cover to seat belt anchorage bolt.
11. Fit 'E' post trim casing. *See this section.*

**FRONT BODYSIDE TRIM CASING**

Service repair no - 76.13.01

**Remove**

1. Remove the grab handle.
2. Remove the rear compartment lower trim panel. ***See this section.***
3. Remove the alpine light trim casing. ***See this section.***
4. Remove the bolts securing the upper and lower seat belt mountings.
5. Remove the finisher from its location over the seat belt inertia reel.
6. Remove the front seat belt guide from the upper aperture in the casing.
7. Open the side window, remove the catch securing screws and withdraw the catch trim.
8. Remove the side window hinge finishers.
9. Release the casing from the window rubber.
10. Release the rear seat belt from the guide attached to the casing.
11. Fold down the rear seats and carefully ease the casing from the fastenings.
12. Pass the front seat belt through the upper aperture and withdraw the casing from the vehicle.



J5028 A

**Refit**

13. Reverse removal procedure.



**NOTE:** Ensure that the trim material glued to the door post is not wrinkled when the door seal is fitted.

14. Tighten upper and lower seat belt fixings to **32 Nm (24 lbf ft)**.

## HEADLINING

Service repair no - 76.64.01/14

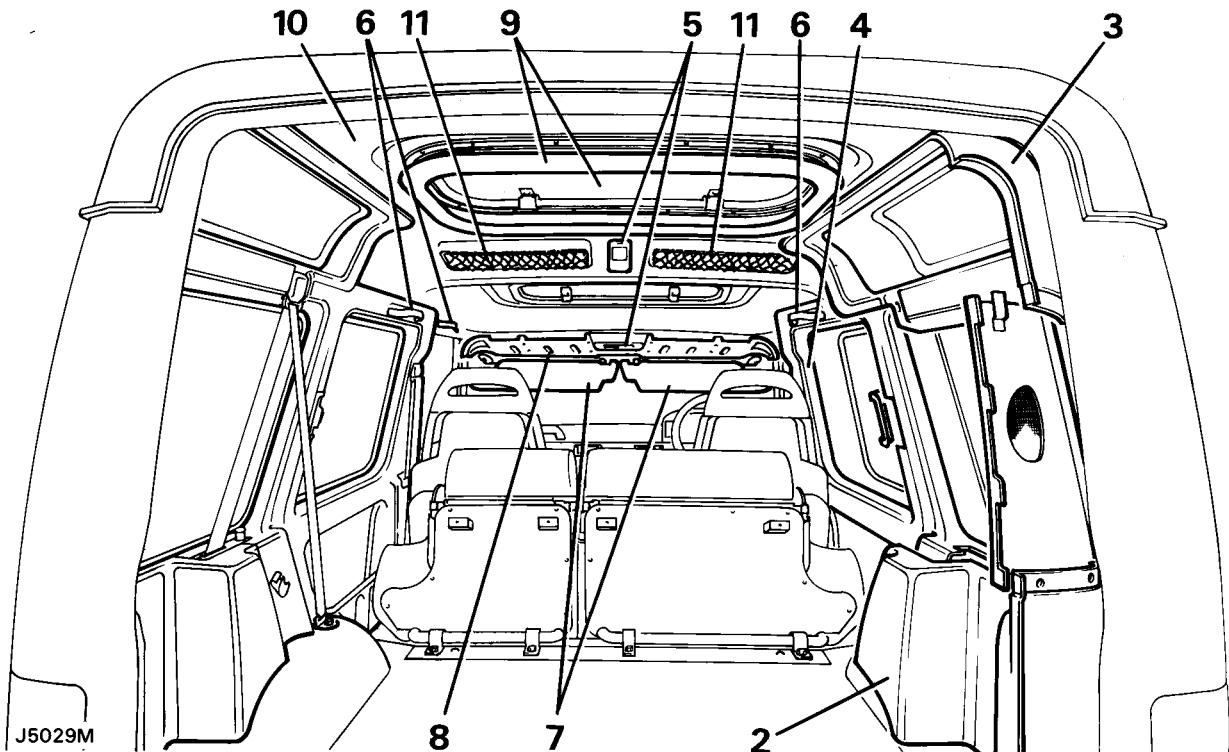
### Remove

1. Disconnect battery negative lead.
2. Remove the lower trim panels from the rear compartment. *See this section.*
3. Remove the alpine light trim casing. *See this section.*
4. Remove the front bodyside trim casing. *See this section.*
5. Remove the roof lights from the headlining pocket and from the headlining.
6. Remove the front grab handles.
7. Remove the sun visors and their retaining clips.
8. Remove the front headlining pocket.

9. Remove the finishers from the sun roof apertures.
10. Release the headlining from the channel above the rear door and manoeuvre it from the vehicle through the rear door.
11. If the existing headlining is being replaced, if fitted, remove the passenger net pockets and fit them to the new headlining.

### Refit

12. Reverse removal procedure.

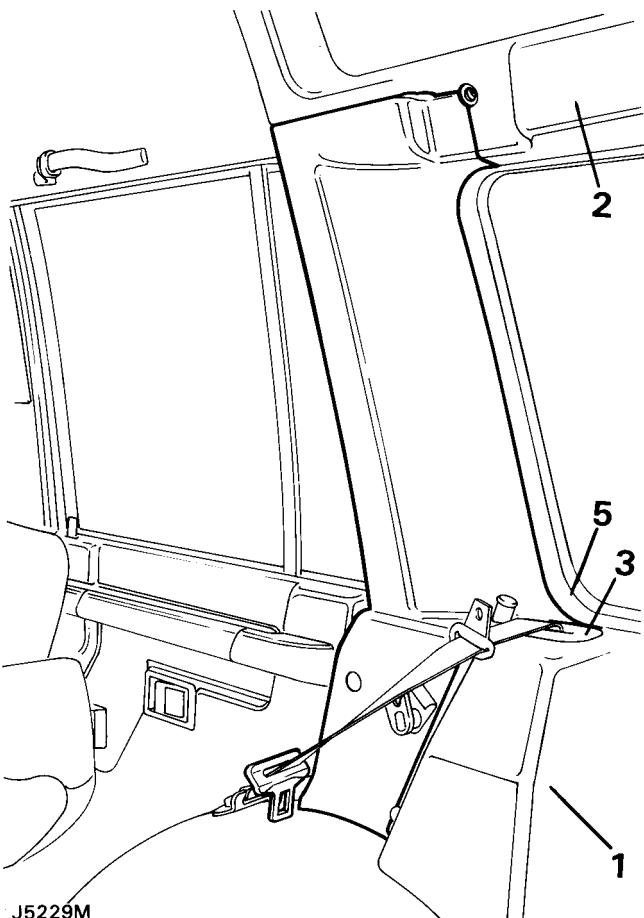


## 'D' POST TRIM CASING

Service repair no - 76.13.73

## Remove

1. Remove the rear compartment lower trim panel.  
*See this section.*



2. Remove the alpine light trim casing. *See this section.*
3. Release the rear seat belt from the guide attached to the casing.
4. Fold down the rear seats.
5. Release the D' post casing from the rear side window seal and carefully ease the casing from the fasteners.

## Refit

6. Reverse removal procedure.

## BODY SIDE OPENING WINDOWS

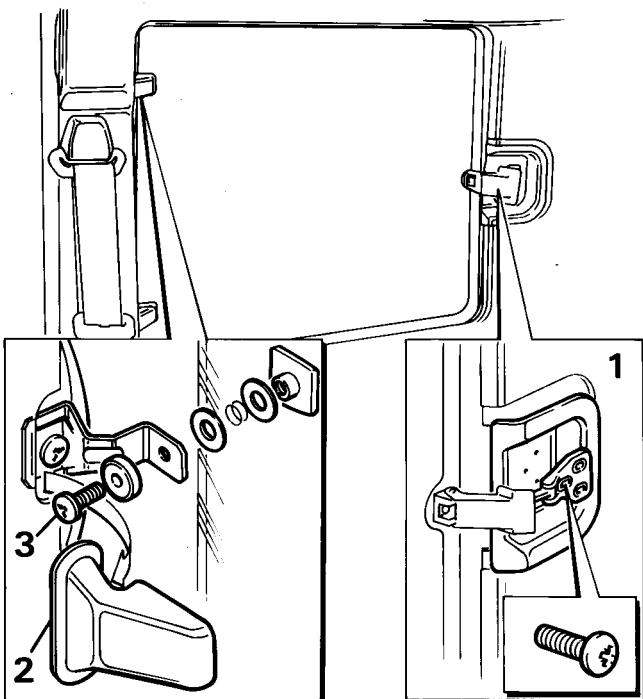
Service repair no - 76.81.18

## Remove

1. Remove the screws securing the catch to the body and detach the catch trim.
2. Remove the hinge finishers from the hinges.
3. Remove the screws securing the glass to the hinges, withdraw the glass and fixings taking care not to lose the joint washers.

## Refit

4. Reverse removal procedure.

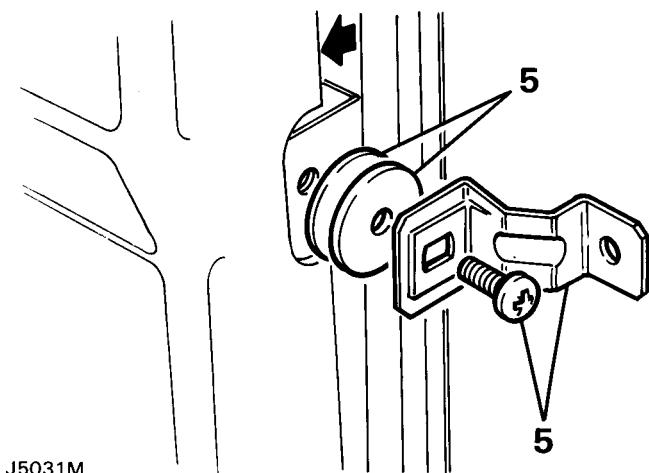


## BODY SIDE WINDOW HINGES

Service repair no - 76.81.47

### Remove

1. Remove the window. *See this section.*
2. Remove the passenger grab handle.
3. Detach the front seat belt top mounting from the door post.
4. Ease the trim panel away from the door post to gain access to the window hinges.



5. Remove the screws securing the window hinges, taking care not to lose the packing washers where fitted. Note the thickness and location of any packing washers fitted.

### Refit

6. Fit the hinges with packing washers fitted to the locations and thickness noted during removal. Do not fully tighten the screws at this stage.
7. Refit the glass to the hinges.
8. Locate the window catch trim and secure the catch to the body.
9. Close the window and secure with the catch.
10. Check the alignment and squareness of the glass, adjust as necessary by adding or deleting washers and using the elongated slots in the hinges for adjustment, finally tighten the screws.
11. Reposition the trim panel and refit the hinge finishers.
12. Refit the top seat belt bracket and the grab handle.

## REAR SIDE FIXED WINDOWS

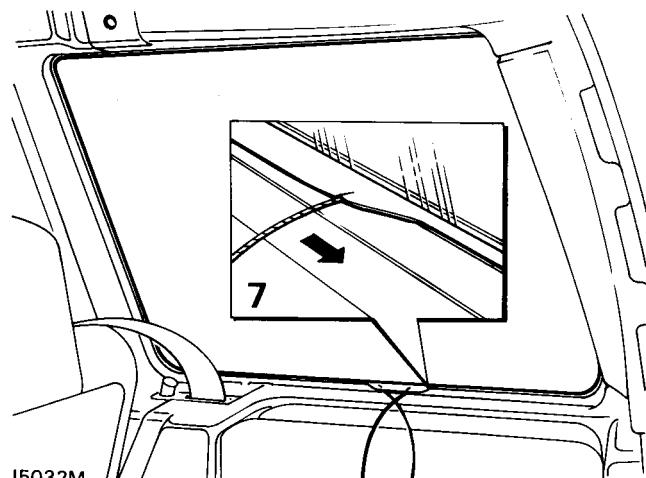
Service repair no - 76.81.18

### Remove

1. If fitted push out the glass and remove the mounting rubber.
2. Remove the rear seat belt top fixing.

### Refit

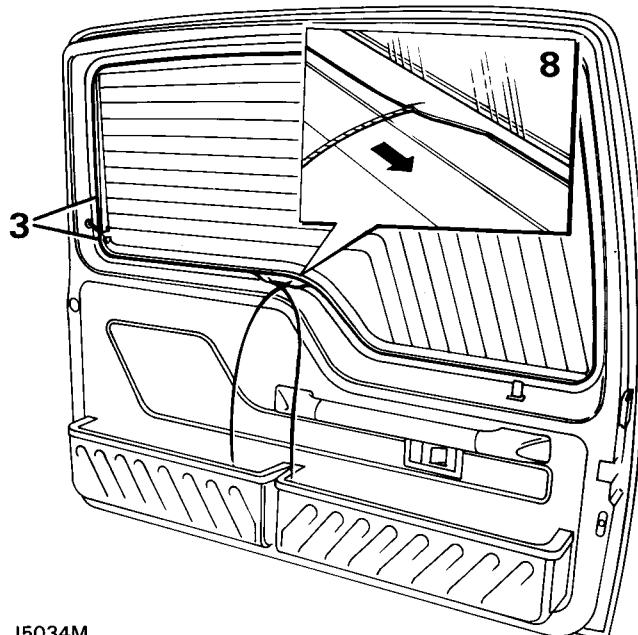
3. Thoroughly clean the opening to be glazed.
4. Clean the glass and fit the mounting rubber, ensuring that the glass sits correctly in the groove.
5. Fit a draw cord around the exterior of the mounting rubber.
6. To aid assembly, coat the flange in the bodyside with liquid soap.
7. Position the assembled glass and rubber mounting to the opening in the body, with the tails of the draw cord fed into the interior of the vehicle.



8. With assistance from a second operator, pushing the glass and mounting rubber into the opening, pull the draw cord from the mounting rubber enabling the seal to ride up over the retaining flange.
9. Ease the inner section of the mounting rubber over the interior trim panel.

**REAR DOOR GLASS****Service repair no - 76.31.21****Remove**

1. Remove the spare wheel from the rear door.
2. Remove the rear door wiper arm. *See WIPERS AND WASHERS, Repair.*



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3. If the glass is fitted, disconnect the heater leads from the terminals, push out the glass and remove the mounting rubber.

**Refit**

4. Thoroughly clean the opening to be glazed.
5. Clean the glass and fit the mounting rubber, ensuring that the glass sits correctly in the groove.
6. Fit a draw cord around the exterior of the mounting rubber with the tails of the cord situated on the top corner of the bend at the bottom of the glass.
7. To aid assembly, coat the glass opening in the door with liquid soap.
8. Position the assembled glass and rubber mounting to the opening, with the tails of the draw cord fed into the interior of the vehicle.
9. With assistance from a second operator, pushing the glass and mounting rubber into the opening, pull the draw cord from the mounting rubber enabling the seal to ride up over the retaining flange.
10. Connect the heater leads to the terminals on the glass.

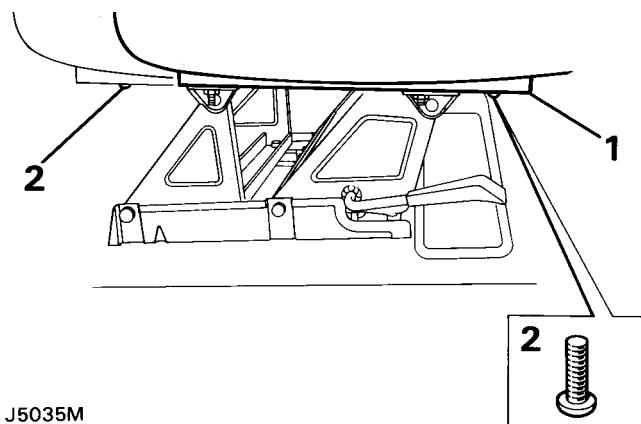
## FRONT FOLDING SEATS 3 DOOR VEHICLES

Service repair no - 76.70.01

**⚠ WARNING:** Care must be taken if the seat lifting mechanism is operated when the seat is removed from the base otherwise personal injury could occur.

### Remove

1. Slide the seat to the full extent rearwards and remove the rear seat to base securing bolts.
2. Slide the seat forward and remove the front seat to base securing bolts.
3. Lift the seat from the base and withdraw from the vehicle.



### Refit

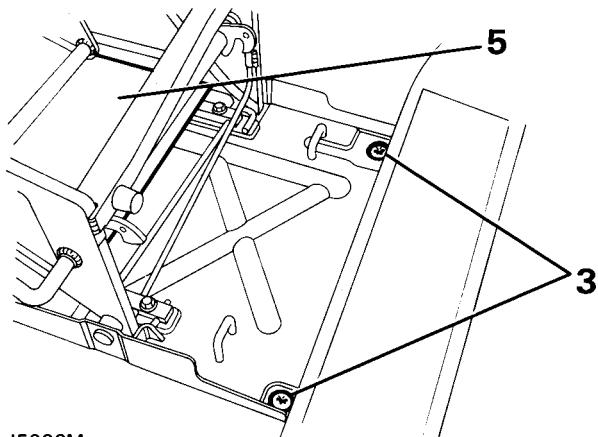
4. Reverse removal procedure.
5. Tighten all securing bolts to **22 Nm (16 lbf ft)**.

**SEAT BASE****Service repair no - 76.70.06/25**

**WARNING:** Care must be taken if the seat lifting mechanism is operated when the seat is removed from the base otherwise personal injury could occur.

**Remove**

1. Remove the seat from the base.
2. Carefully operate the seat mechanism to raise it to the tilt position.
3. Remove the two bolts securing the rear of the base to the floor.
4. Return the seat mechanism to the upright position.



J5036M

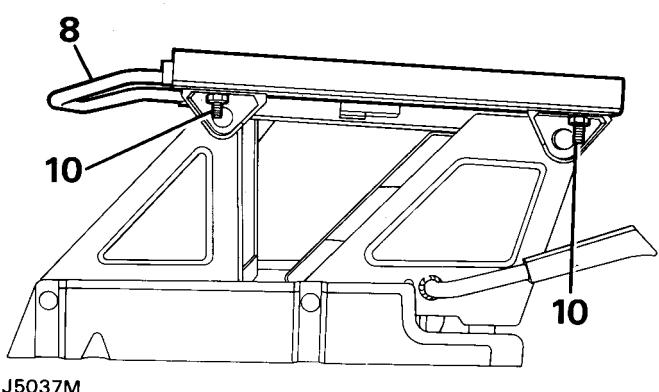
5. Pull the carpet flap forward to expose the front securing bolts, remove the bolts and lift out the seat base.

**Refit**

6. Reverse removal procedure.

**SEAT BASE RUNNERS****Remove**

7. Remove the seat from the base.
8. Spring the release handle off its locations on the runners.
9. Slide the runners forward sufficient to gain access to the rear securing bolts and rearward for the front bolts.
10. Remove the bolts and withdraw the runners.

**Refit**

11. Fit the runners and release handle.
12. Reverse removal procedure.
13. Refit the seat to the base.

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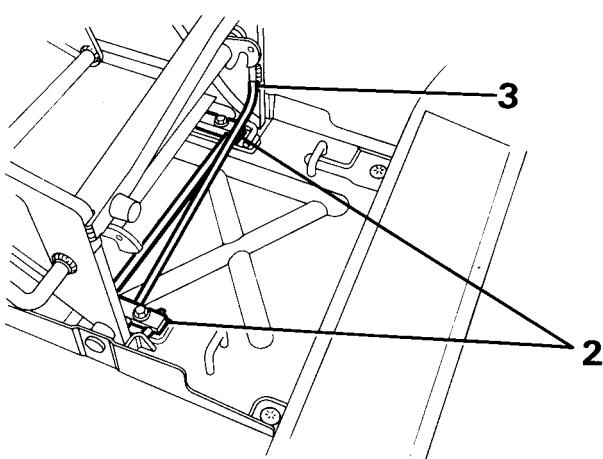
SEAT BASE TORSION BARS

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Service repair no - 76.71.34

## Remove

1. Tilt the seat assembly forward.
2. Remove the torsion bar clamps.
3. Extract the right angled ends of the torsion bars from the brackets on the seat base and withdraw.



## Refit

4. Reverse removal procedure.

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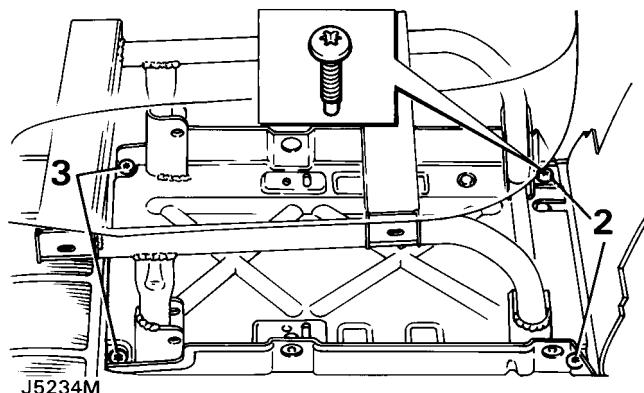
FRONT SEATS 5 DOOR VEHICLES

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Service repair no - 76.70.01

## Remove

1. Remove the finisher from the seat base.
2. Slide the seat to the full extent rearwards and remove the front base to floor securing screws.



3. Slide the seat forwards and remove the rear base to floor securing screw.
4. Lift the seat and base assembly and withdraw from the vehicle.

## Refit

5. Reverse removal procedure.
6. Tighten rear base to floor securing screws to **29 Nm (21 lbf ft)**.
7. Tighten front base to floor securing screws to **22 Nm (16 lbf ft)**.

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FRONT SEAT COVERS

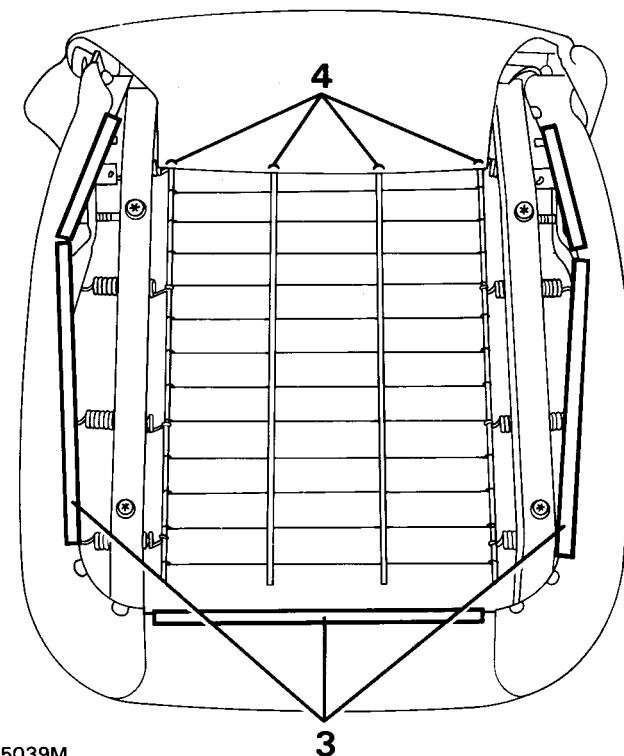
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Service repair no - 76.70.14

## Cushion

## Remove

1. Remove the seat from the base.
2. Invert the seat on a suitable clean bench.
3. Detach the seat cover retaining clips from the frame.
4. Release the four wire hooks securing the squab cover to the lower spring frame.
5. Release the cushion rear clip from the frame and detach the cushion complete with cover.
6. Remove the cover from the cushion.



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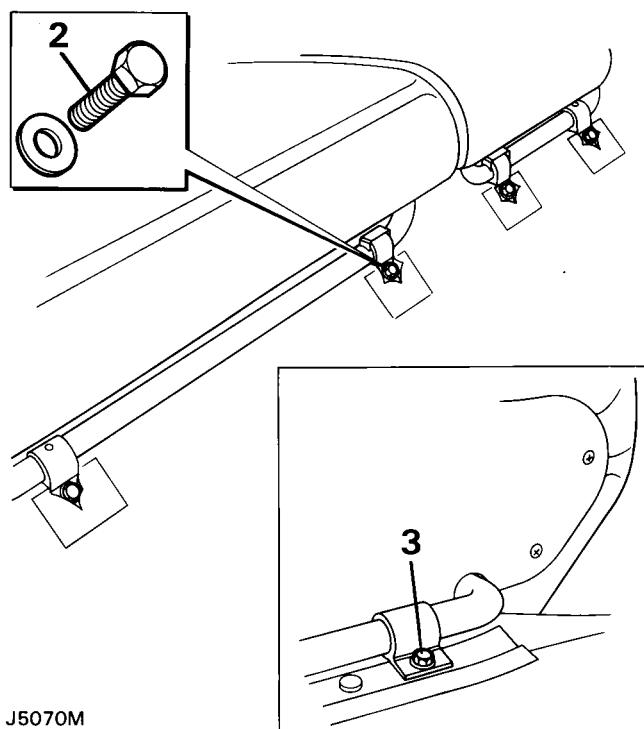
REAR PASSENGER SEAT

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Service repair no - 76.70.37

## Remove

1. Feed the seat belts through the seats into the rear compartment.
2. With the seats in the upright position, remove the bolts from the front of the hinges.
3. Fold the seats forward, remove the bolts from the rear of the hinges and withdraw the seats from the vehicle.



## Refit

4. Reverse removal procedure.
5. Tighten fixing bolts to **8 Nm (6 lbf ft)**.

## Refit

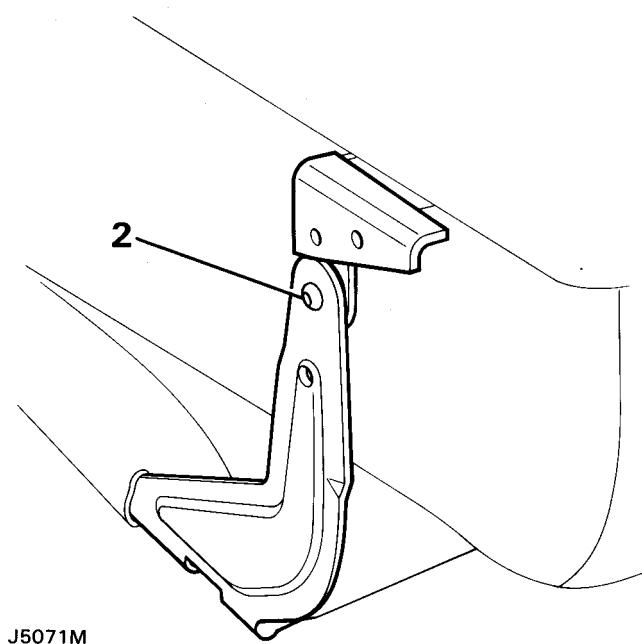
7. Reverse removal procedure.

**REAR SEAT SQUAB**

Service repair no - 76.70.38

**Remove**

1. Fold the rear seat down.
2. Remove the two seat squab securing bolts.



3. Withdraw the seat squab from the seat assembly.

**Refit**

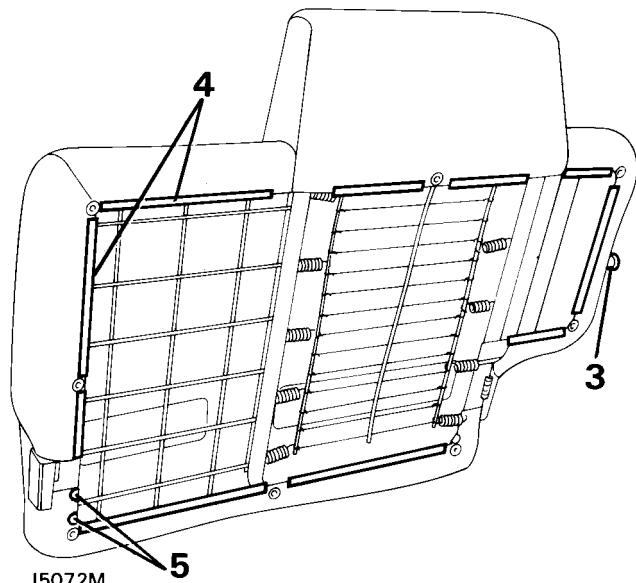
4. Reverse removal procedure.

**REAR SEAT SQUAB COVER**

Service repair no - 76.70.79/80

**Remove**

1. Remove the rear seat squab from the seat assembly and withdraw it from the vehicle. **See this section.**
2. Remove the rear seat back finisher from the squab.
3. Remove the squab striker plate.
4. Release the squab cover from the frame.
5. Remove the securing clips and remove the cover from the squab.

**Refit**

6. Reverse removal procedure.

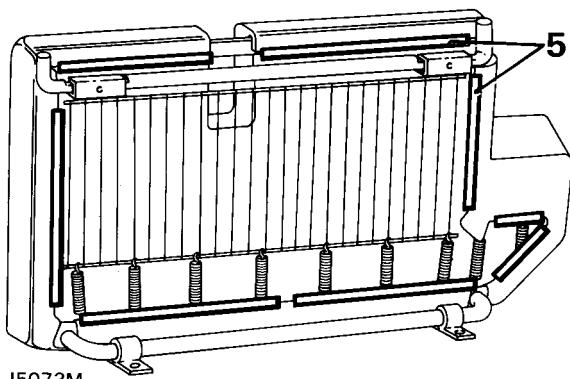
**REAR SEAT CUSHION COVER**

Service repair no - 76.70.88/89

**Remove**

**NOTE:** The procedure for removing both left and right hand seat cushions is the same.

1. Remove the rear seat assembly from the vehicle. **See this section.**
2. Remove the seat squab.
3. Remove the seat cushion.
4. Remove the cushion base cover retaining screws and withdraw the cover.
5. Release the seat cover securing clips at the frame and at the seat belt aperture.
6. Remove the cover from the cushion.



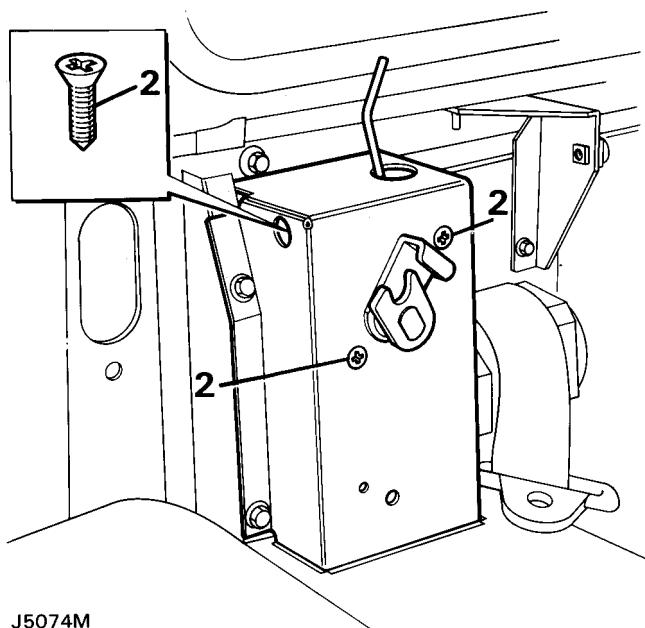
J5073M

**SPLIT REAR SEAT LOCKING MECHANISM**

Service repair no - 76.70.51

**Remove**

1. Remove the front body side trim casing. **See this section.**
2. Remove the three screws securing the latch to the tower, noting that access to the single screw is gained through the hole in the front of the tower.
3. Retrieve the latch from the opening at the rear of the tower. If necessary retrieve the single screw.



J5074M

**Refit**

7. Reverse removal procedure.

4. The operating rod can be removed from the latch by releasing it at the plastic clip.

**Refit**

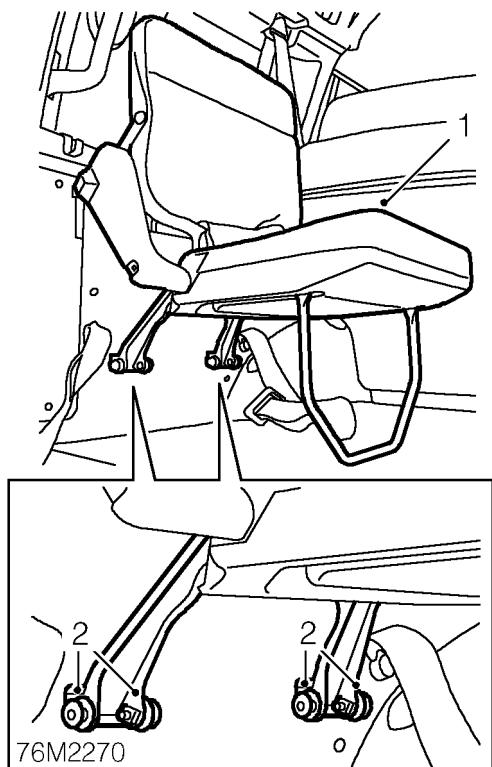
5. Reverse removal procedure. Setting the release button to achieve a gap of 5 - 8 mm (3/16 - 5/16 in).

## REAR FOLD DOWN SEATS

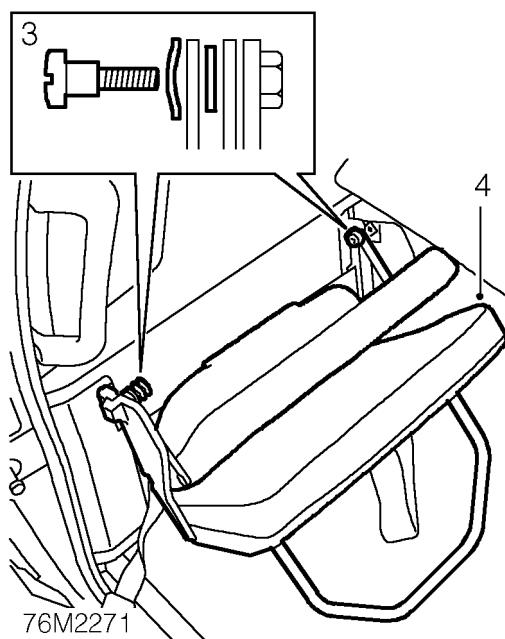
Service repair no - 76.71.23

### Seat and squab

#### Remove



1. Locate the seat in the down position, release the seat belt strap and buckle from their stowed positions.
2. Remove 4 Torx screws from the lower brackets.



3. Fold the seat up and remove the 2 Torx screws from the upper brackets. Collect 4 washers.
4. Remove seat assembly.

#### Refit

5. Position seat assembly, align upper brackets, and secure with Torx screws tightened to **13 Nm (10 lbf ft)**.

 **NOTE: Ensure washers are fitted in their correct positions.**

6. Align lower brackets, fit Torx screws and tighten to **13 Nm (10 lbf ft)**.
7. Secure the seat belt strap and buckle to their stowed positions.

### Seat squab

#### Remove

8. Remove the seat assembly from the vehicle.
9. Remove the pivot bolts and washers securing the seat squab to the frame.

 **NOTE: The pivot bolts, securing the seat squab and cushion, are fitted with a wavy washer under the head and a plain washer between the link or bracket. Ensure that these washers are fitted in the correct locations when reassembling the seat.**

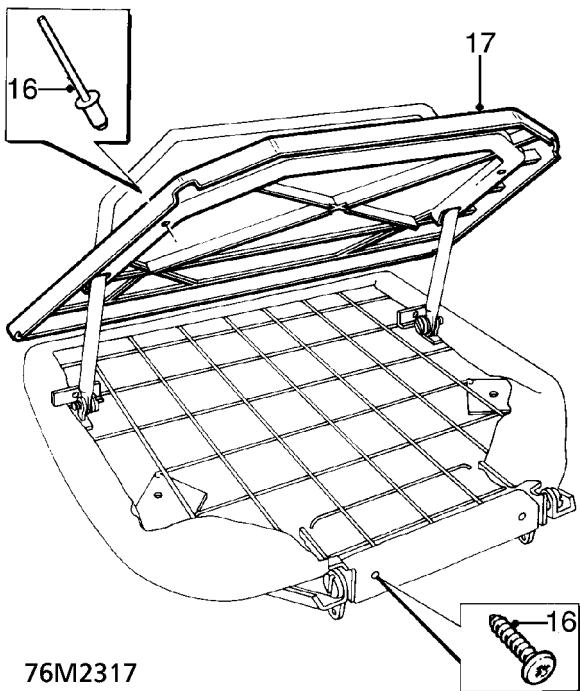
10. Remove the pivot bolts and washers securing the hinge links to the seat squab.
11. If necessary remove the clips securing the cover and detach the cover.

**Refit**

12. Reverse removal procedure.

**Seat cushion****Remove**

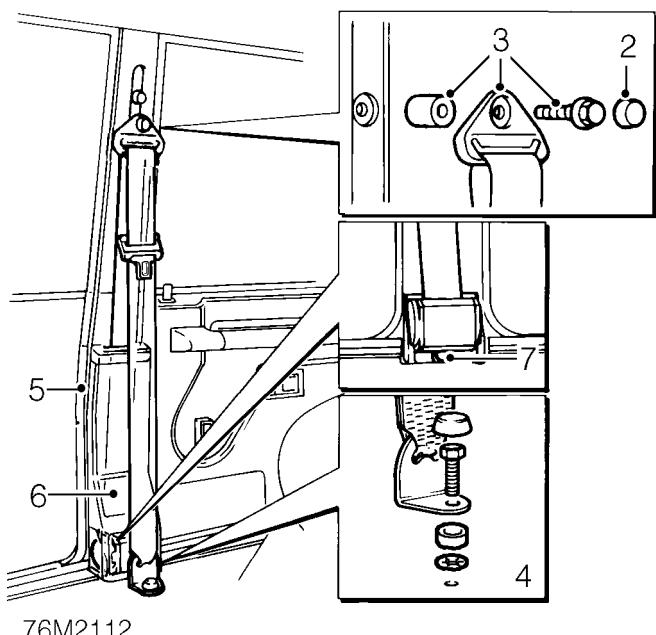
13. Remove the seat from the vehicle.
14. Remove the seat squab.
15. Remove the pivot bolts and washers securing the hinge bracket and detach the bracket.
16. Invert the seat base and remove the screws and rivets securing the base cover to the base.
17. Raise the seat base cover, to gain access to the stay pivot bolts, remove the bolts and washers and withdraw the stay and seat base cover.
18. If necessary remove the clips and detach the cushion cover.

**FRONT SEAT BELTS****Service repair no - 76.73.10****Remove**

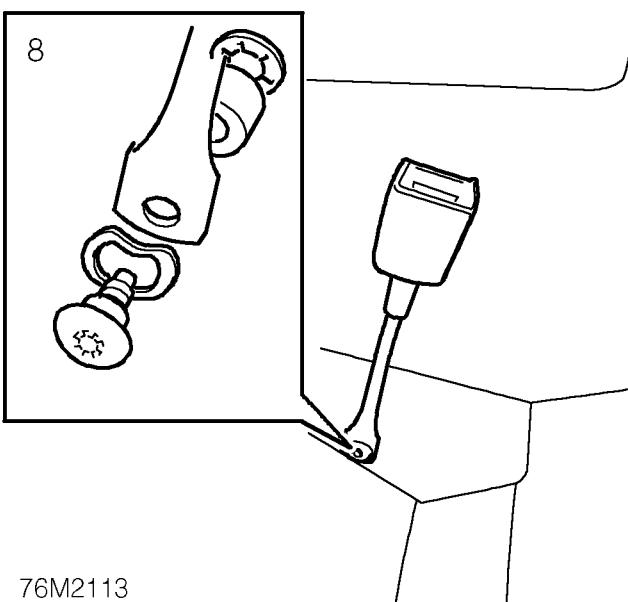
1. Move the front seat to the fully forward position or tilt the seat forward (3 door vehicles).
2. Remove cover to gain access to the seat belt upper mounting bolt.

 **NOTE: 3 door models have a non-adjustable, upper mounting.**

3. Remove the flanged securing bolt to release the upper mounting and spacer.
4. Remove the cover and bolt securing the lower mounting to the floor.
5. Detach the door seals from the 'B' post sufficiently to allow removal of the lower trim panel from the post.
6. Release the seat belt from the split section at the top of the trim panel and withdraw the panel.
7. Remove the securing bolt and detach the inertia reel from the bottom of the 'B' post.

**5 door model illustrated****Refit**

19. Reverse removal procedure.



### REAR OUTER SEATS BELT

Service repair no - 76.73.18

#### Remove

1. Remove the rear fold down seat (if applicable). **See this section.**
2. Remove the speaker by releasing the screws and disconnecting the Lucars. Withdraw the rear quarter trim panel.
3. Remove the rear bodyside lower trim panel. **See this section.**
4. Remove the bolts securing the brackets to the wheel arch and upper bodyside.
5. Remove the bolt securing the inertia reel to the bodyside and withdraw the seat belt.
6. Remove the seat belt buckle strap from the floor mounted bracket. **See this section.**

8. Release the Torx bolt to allow removal of the seat belt stalk assembly.

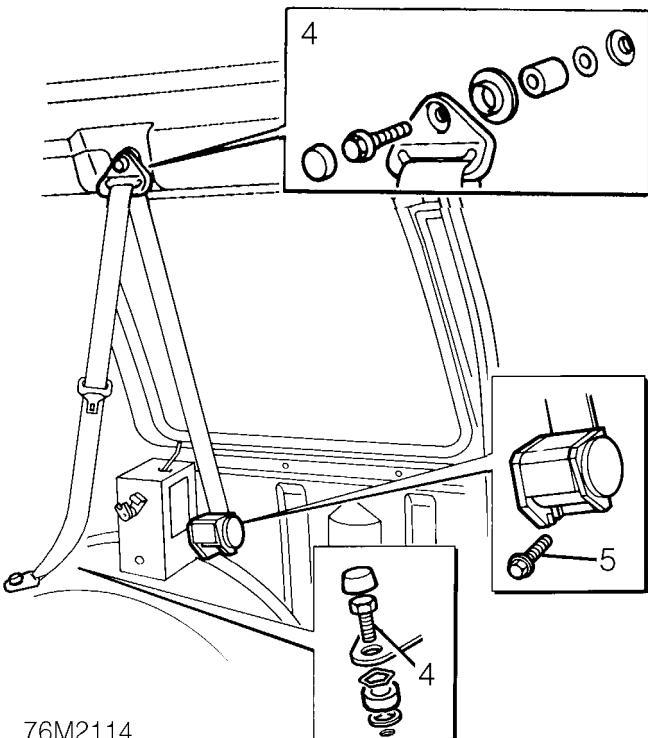
#### Refit

9. Reverse removal procedure.

**NOTE: Ensure the seat belt is not twisted.**



10. Finally, tighten the seat belt bolts to **32 Nm (24 lbf ft)**.



#### Refit

7. Reverse removal procedure.
8. Finally, tighten the seat belt bolts to **32 Nm (24 lbf ft)**.

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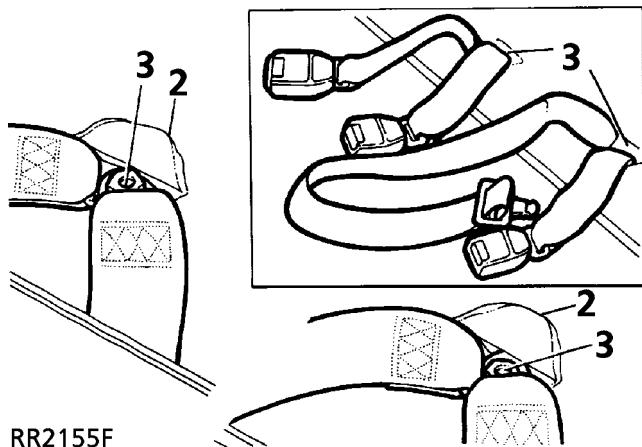
REAR CENTRE SEAT BELT

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Service repair no - 76.73.20

## Remove

- Pull both halves of the seat belt through to the rear of the seat.



- Pull back the load space carpet to reveal the Torx bolt heads.
- Remove the Torx bolt and plain washer securing the belt bracket to load space floor.
- Remove belt complete with bracket.
- Repeat steps 2 to 4 for other half of belt.

## Refit

- Reverse removal procedure.
- Finally, tighten the seat belt bolts to **32 Nm (24 lbf ft)**.

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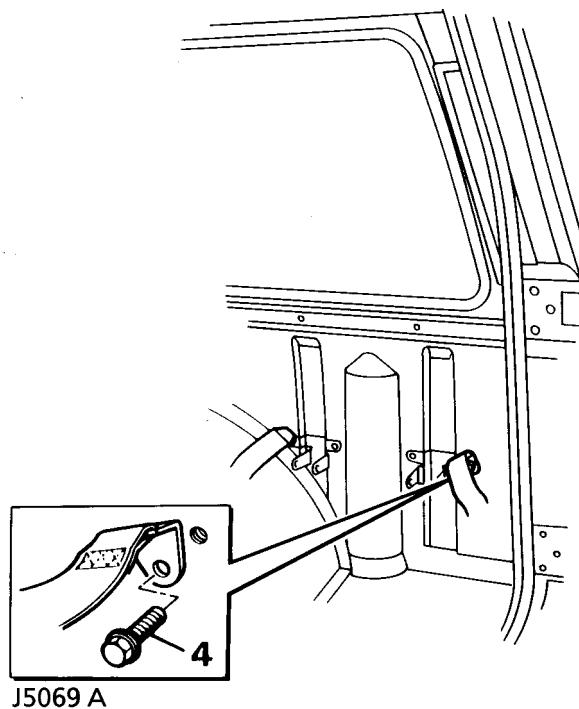
REAR FOLD DOWN SEAT BELTS

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Service repair no - 76.73.28

## Remove

- Remove the fold down seat or pocket side panel, whichever is applicable. **See this section.**
- Remove speaker by releasing screws and disconnecting Lucars. Withdraw rear quarter trim panel.
- Remove the rear bodyside lower trim panel. **See this section.**
- Remove the bolts securing the seat belt halves to the body side.



## Refit

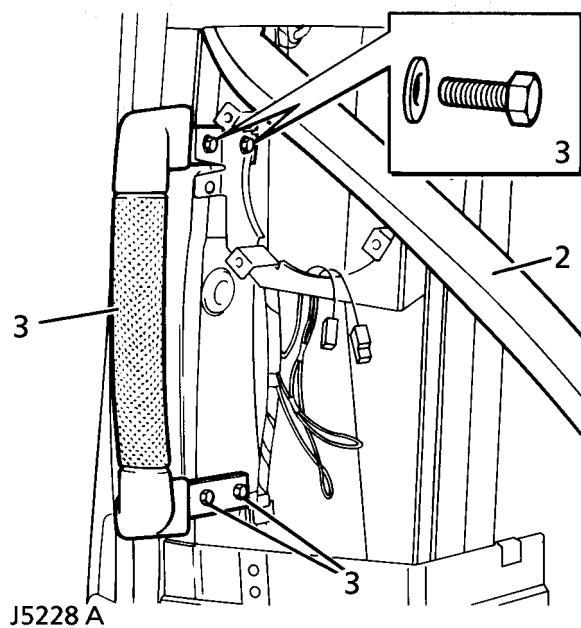
- Reverse removal procedure.
- Finally, tighten the seat belt bolts to **32 Nm (24 lbf ft)**.

## REAR GRAB HANDLE

Service repair no - 76.58.35

### Remove

1. Remove speaker and rear quarter trim panel.
2. Detach the foam strip.
3. Remove the four securing bolts and detach the handle.

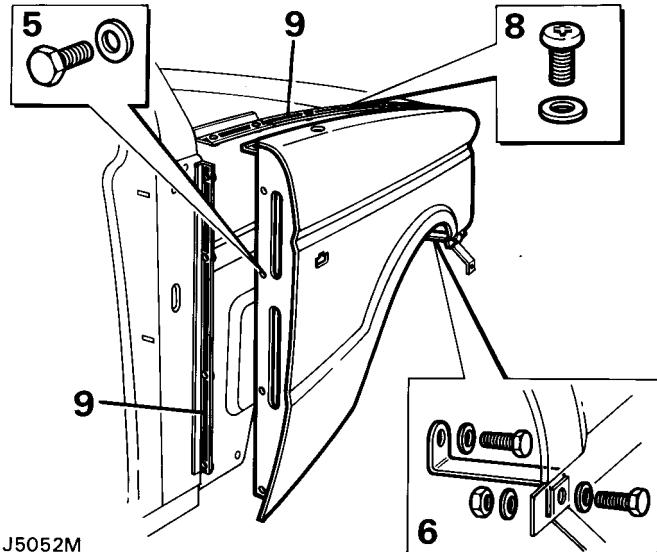


### Refit

4. Reverse removal procedure.

**WINGS [FENDERS]****Service repair no - 76.10.24****Remove**

1. Disconnect battery negative lead.
2. Remove the headlamp surround.
3. Remove the front bumper assembly.
4. Remove the indicator repeater light.
5. Remove the four screws securing the wing [fender] at the 'A' post.
6. Remove the bolts securing the bottom of the wing [fender] at the bumper retaining bracket and at the sill finisher.
7. If removing the RH wing [fender] loosen the radio aerial securing nut.



8. Remove the seven bolts from the drain channel in the top of the wing [fender].
9. Break the sealed joints at the valance and 'A' post; then complete the removal of the wing [fender]. If removing a RH wing withdraw the wing [fender] sufficiently to allow removal of the aerial before completing the removal.

**Cleaning/painting**

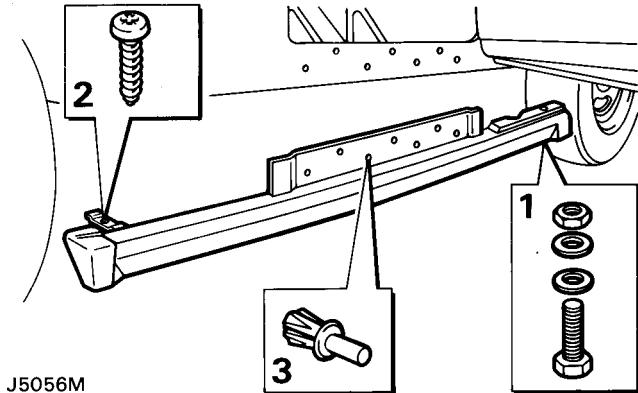
10. Thoroughly clean all traces of existing sealant from the sealing faces of the valance and 'A' post.
11. Paint the cleaned surfaces with etch primer.
12. If the existing wing [fender] is to be refitted repeat the cleaning and painting procedure on the wing [fender] sealing surfaces.

**Refit**

13. Apply 3M 8572 Bolted Panel Sealer to the joint faces on the valance and 'A' post and to the bracket face.
14. Refit the wing [fender], on RH wings [fenders] fit the radio aerial, and secure with the bolts and screws ensuring that the wing [fender] correctly aligns with the bonnet [hood].

**SILL FINISHER****Service repair no - 76.76.05****Remove**

1. Remove the nut, bolt and washer securing the front of the sill finisher to the wing [fender] support bracket.
2. Remove the screw securing the bracket at the rear end of the finisher to the sill.
3. Using a suitable punch, remove the inserts from the seven plastic retainers and withdraw the finisher from the sill.

**Refit**

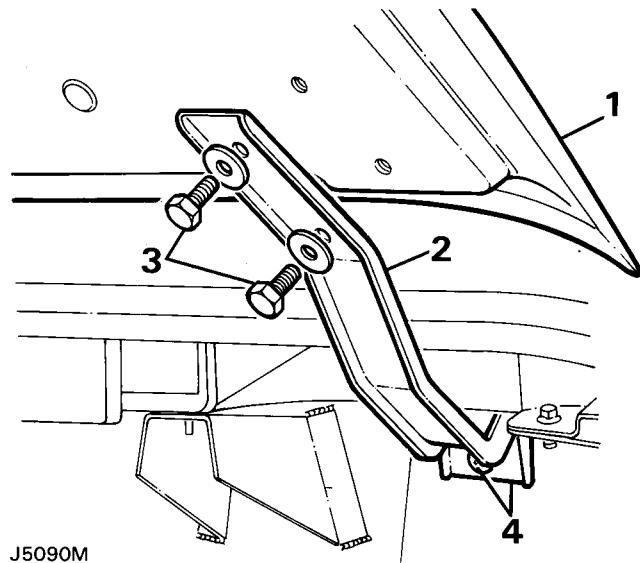
4. Reverse removal procedure. Using new plastic retainers.

**BONNET [HOOD]****Service repair no - 76.16.01****Remove**

1. Open the bonnet [hood] and support with the stay.
2. Mark the position of the hinges to the bonnet [hood].
3. With the assistance of a second operator, remove the hinge to bonnet [hood] securing screws, remove the support stay and lift bonnet [hood] from the vehicle. Note the quantity of shims fitted between the hinge and bonnet [hood].

**Refit**

4. Reverse removal procedure. Ensuring that it aligns with the wings [fenders], cowl panel and front grille before fully tightening the securing bolts.



**AIR INTAKE PLENUM COWL**

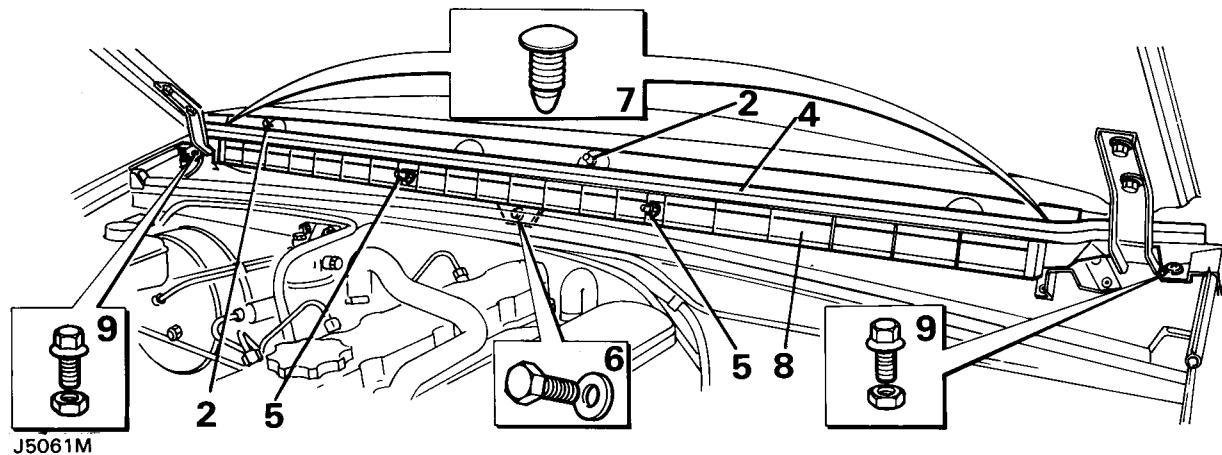
Service repair no - 76.11.08

**Remove**

1. Remove the windscreen wiper arms.
2. Remove the securing nuts and the steel and rubber washers from the wiper spindles.
3. Open the vehicle bonnet [hood].
4. Remove the rubber seal from the cowl flange.
5. Release the screen washer tubes from the washer jets on the cowl.
6. Remove the centre bolt securing the cowl centre section.
7. Remove the retainers securing the centre section to the outer section.
8. Detach the centre section from the bulkhead.
9. Remove the nuts and bolts and detach the outer sections of the cowl.

**Refit**

10. Reverse removal procedure.



## SUNROOF ELECTRIC/MANUAL

### Introduction

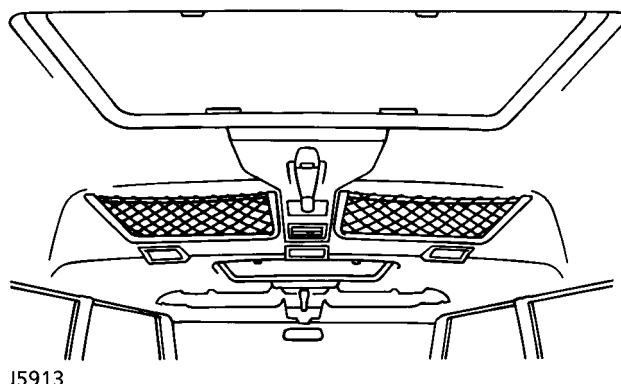
Twin sunroofs are fitted to the vehicle, the open/close sequence for both electric and manual versions sharing the same operation:-

- A Closed position,
- B Tilt position,
- C Fully open position. When fully open the sunroof slides back in a tilt position over the vehicle roof.

The electric front and rear sunroofs, operated by roof mounted switches are controlled by an electronic control unit. A roof mounted isolation switch is also fitted to cut off power to the rear sunroof.

On manual sunroofs a pull down handle is used, incorporating a depress button that locks the handle after each sequence.

Twin sun blinds are installed in the clamping frame of the sunroof and can be drawn forwards independently.



**SUNROOF GLASS FRONT AND REAR**

Service repair no - 76.82.64

**Remove**

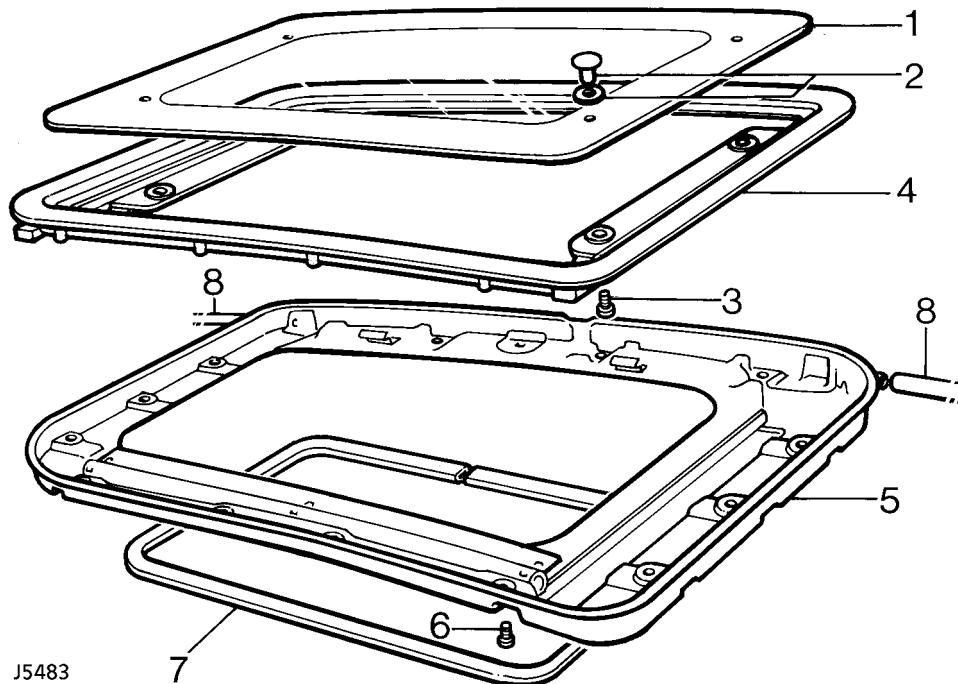
1. Open sunroof to tilt position.
2. Using a right angled screwdriver remove four retaining screws and detach sunroof glass from upper frame. Retain capnuts and washers.

**Refit**

3. Locate sunroof glass in upper frame complete with capnuts and loosely fit retaining screws.
4. Close sunroof and move glass centrally in upper frame.
5. Open to tilt position and tighten retaining screws.



**CAUTION: Ensure washers under capnuts do not twist or spread out when tightening retaining screws.**

**Sunroof components**

- |                         |                            |
|-------------------------|----------------------------|
| 1. Glass panel          | 5. Clamping frame assembly |
| 2. Capnut and washer    | 6. Screw                   |
| 3. Screw                | 7. Edging trim             |
| 4. Upper frame assembly | 8. Drain tube              |

---

## SUNROOF ASSEMBLY - ELECTRICAL, FRONT AND REAR

---

Service repair no - 76.82.59

### Remove

Refer to sunroof components illustration J5483

1. Ensure sunroof is in normally closed position.
2. Disconnect battery negative lead.
3. Remove headlining. **See this section.**
4. Disconnect electric motor wiring plug. **See this section.**
5. Remove screws and detach electric motor from clamping frame.
6. Disconnect drain tubes from each side of clamping frame.
7. Remove 13 fixings and remove clamping frame from upper frame.
8. Remove upper frame assembly.

### Refit

9. Position upper frame assembly into roof aperture.
10. Locate clamping frame and reconnect drain tubes.
11. Loosely fit screws, centralise upper frame and clamping frame assemblies and then tighten screws.
12. Reverse removal procedure.

**SUNROOF ELECTRIC MOTORS**

Service repair no - 76.82.84/85

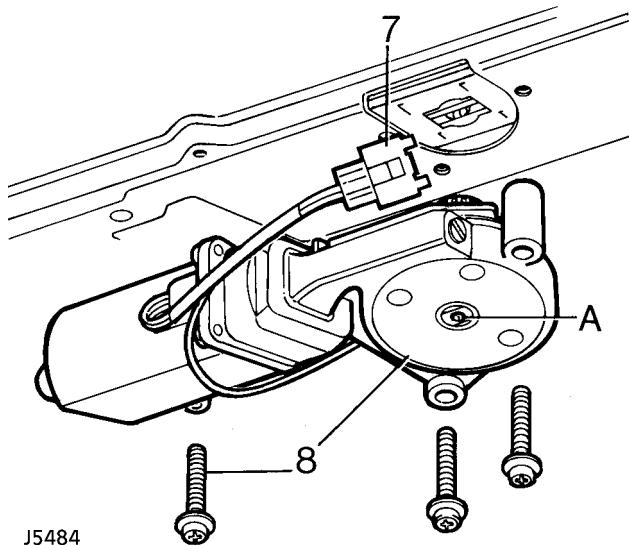
**FRONT MOTOR****Remove**

1. Disconnect battery negative lead.
2. Ensure sunroof is in normally closed position



**NOTE: If the electric motor has failed the sunroof can be closed manually using an allen key to turn motor spindle A.**

3. Remove switch panel from stowage pocket panel
4. Remove interior lamp from stowage pocket panel
5. Remove alarm ultrasonic unit.
6. Unscrew ten fixings and remove stowage pocket from headlining.
7. Disconnect motor wiring multiplug.
8. Remove three screws and motor.

**REAR MOTOR****Remove**

1. Disconnect battery negative lead.
2. Ensure sunroof is in normally closed position



**NOTE: If the electric motor has failed the sunroof can be closed manually using an allen key to turn motor spindle.**

3. Remove headlining. *See this section.*
4. Disconnect motor wiring multiplug.
5. Remove three screws and motor.

**Refit**

6. Reverse removal procedure.

**CAUTION: Ensure the motor is aligned with fixing holes and the sunroof is in the normally closed position. DO NOT rotate the motor drive spindle in the rack - this may result in incorrect operation of the sunroof.**

**Refit**

9. Reverse removal procedure.



**CAUTION: Ensure the motor is aligned with fixing holes and the sunroof is in the normally closed position. DO NOT rotate the motor drive spindle in the rack - this may result in incorrect operation of the sunroof.**

## SUNROOF ELECTRIC CONTROL UNIT

### Service repair no - 76.82.73

The control unit serves both front and rear sunroofs and is sited above the front switches behind headlining.

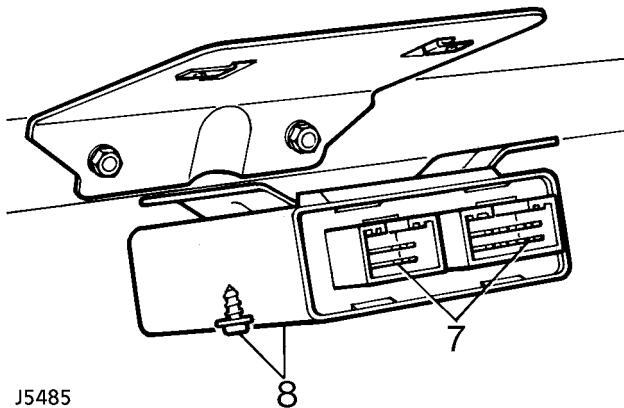
#### Remove

1. Disconnect battery negative lead.
2. Ensure sunroof is in normally closed position.



**NOTE: If the electric motor has failed the sunroof can be closed manually using an allen key to turn motor spindle.**

3. Remove switch panel from stowage pocket panel
4. Remove interior lamp from stowage pocket panel
5. Remove alarm ultrasonic unit.
6. Unscrew ten fixings and remove stowage pocket from headlining.
7. Disconnect electric plugs from control unit.
8. Remove two retaining screws and control unit.



#### Refit

9. Reverse removal procedure.

---

**SUNROOF ASSEMBLY - MANUAL, FRONT AND REAR**

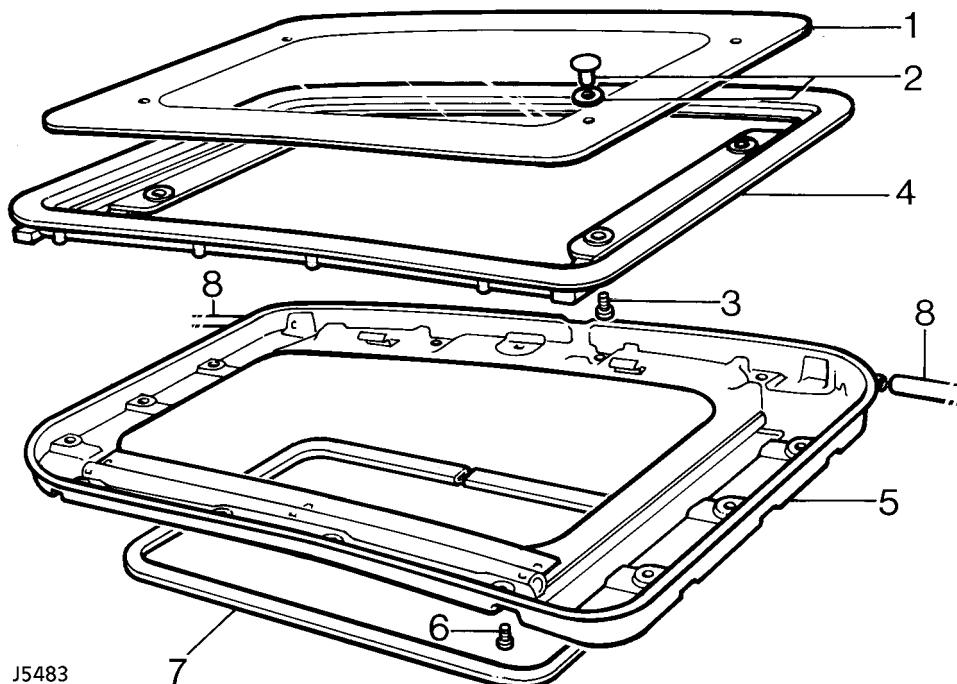

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**Service repair no - 76.83.01**
**Remove**

1. Close sunroof.
2. Remove headlining. **See this section.**
3. Remove screws and manual regulator from clamping frame. **See this section.**
4. Disconnect drain tubes from each side of clamping frame.
5. Remove 13 screws and clamping frame from upper frame.
6. Remove upper frame assembly from roof aperture.

**Refit**

7. Position upper frame assembly into roof aperture.
8. Locate clamping frame and reconnect drain tubes.
9. Loosely fit screws, centralise upper frame and clamping frame assemblies and then tighten screws.
10. Reverse removal procedure.

**Sunroof components**

- |   |   |
|---|---|
| 1. Glass panel<br>2. Capnut and washer<br>3. Screw<br>4. Upper frame assembly | 5. Clamping frame assembly<br>6. Screw<br>7. Edging trim<br>8. Drain tube |
|---|---|

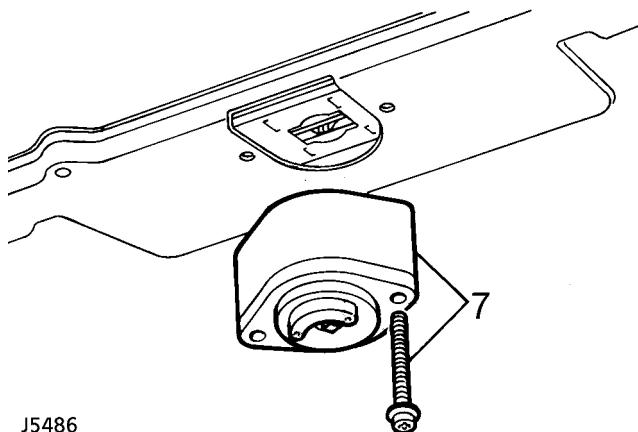
## SUNROOF REGULATOR MANUAL

Service repair no - 76.83.03/04

### FRONT

#### Remove

1. Ensure sunroof is in normally closed position.
2. Remove retaining screw and regulator handle.
3. Remove switch panel from stowage pocket panel
4. Remove interior lamp from stowage pocket panel
5. Remove alarm ultra sonic unit.
6. Unscrew ten fixings and remove stowage pocket from headlining.
7. Remove two retaining screws and regulator from clamping frame.



### REAR

#### Remove

1. Ensure sunroof is in normally closed position.
2. Remove retaining screw and regulator handle.
3. Remove headlining. **See this section.**
4. Remove two retaining screws and regulator from clamping frame.

#### Refit

5. Reverse removal procedure.

**CAUTION:** Ensure the regulator is aligned with fixing holes and the sunroof is in the normally closed position. DO NOT rotate the regulator spindle in the rack - this may result in incorrect operation of the sunroof.

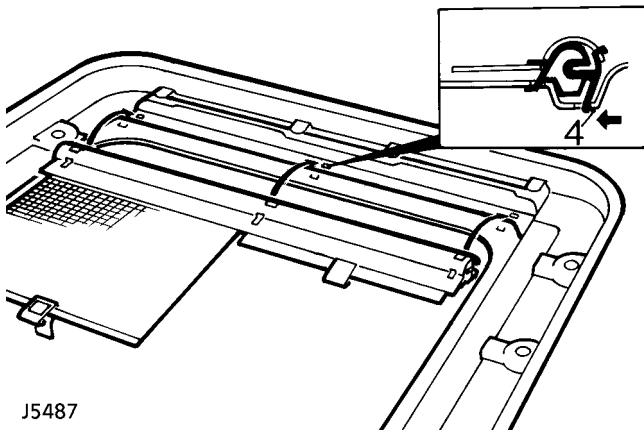
#### Refit

8. Reverse removal procedure.

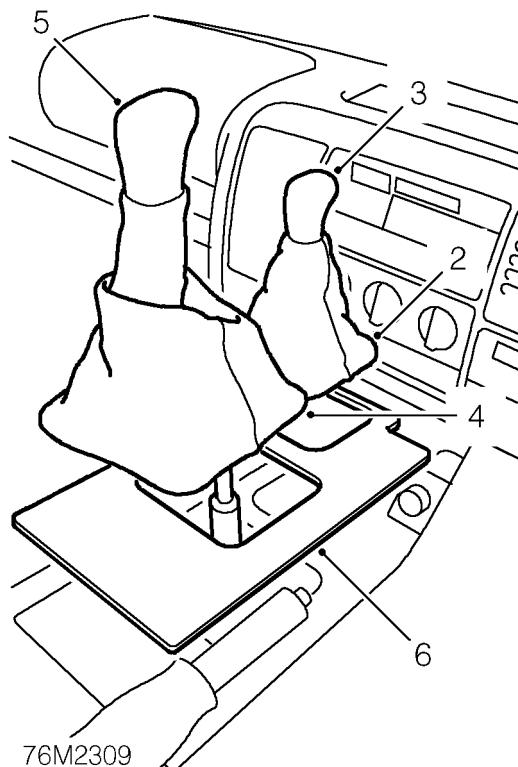
**CAUTION:** Ensure the regulator is aligned with fixing holes and the sunroof is in the normally closed position. DO NOT rotate the regulator spindle in the rack - this may result in incorrect operation of the sunroof.

**SUN BLIND ASSEMBLY****Service repair no - 76.82.78****Remove**

1. Open sunroof to the tilt position.
2. Remove the trim finisher from the sunroof surround.
3. Release the headlining locally to access under clamping frame of the sunroof.
4. Lever forward and upward the rear leg of 3 retaining clips to release sun blind roll assembly.

**CENTRE CONSOLE****Service repair no - 76.52.02****Remove**

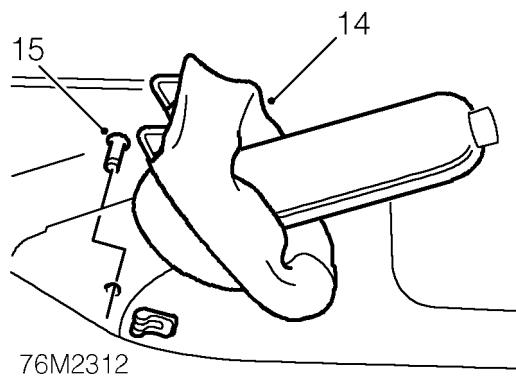
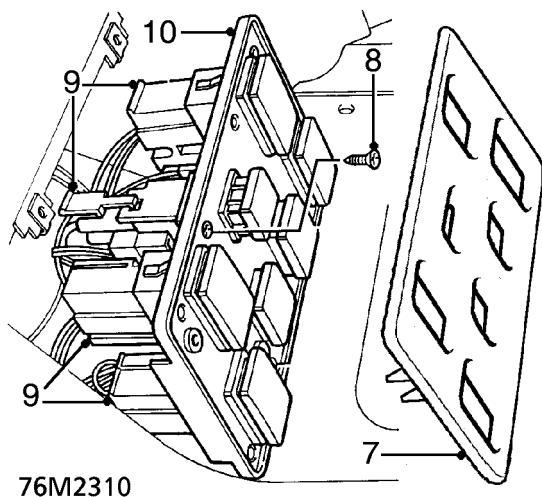
1. Disconnect battery earth lead.

**Refit**

5. Ensure front leg of retaining clips are located.
6. Push in rear leg of retaining clip.
7. Reverse removal procedure.

2. Release transfer gear lever gaiter from console.
3. Remove transfer gear lever gaiter and knob assembly.
4. Release gear selector lever gaiter from centre console.
5. Remove gear selector lever gaiter and knob assembly.
6. Remove centre console rubber mat.

## All models



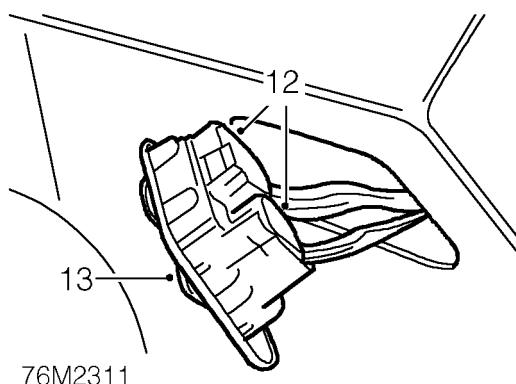
7. Remove centre console switch pack cover.
8. Remove 4 screws securing switch pack to console.
9. Release switch pack from console and disconnect 7 multiplugs.



**NOTE:** If the 'Cold Pack' option is not fitted there will only be 5 switches in pack.

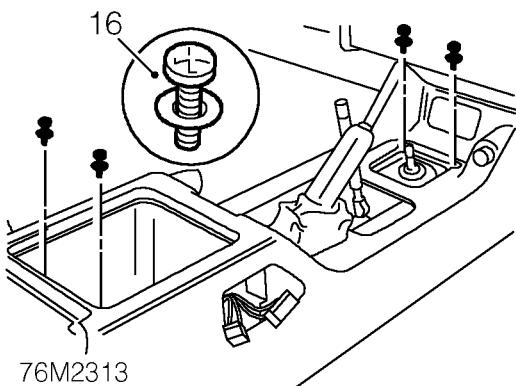
10. Remove switch pack.

### Models fitted with electric front seats

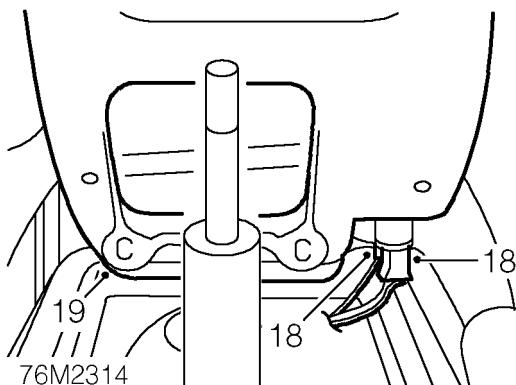


11. Release electric front seat switches from centre console.
12. Disconnect 2 multiplugs from each switch.
13. Remove switches.

14. Release hand brake lever gaiter from centre console.
15. Remove clip and clevis pin securing cable to hand brake lever.



16. Remove 4 screws securing centre console to body.
17. Raise hand brake lever, pull centre console rearwards to gain access to cigar lighter multiplug and illumination bulb Lucar.



18. Disconnect cigar lighter multiplug and illumination bulb Lucar.
19. Remove centre console assembly.

**Refit**

20. Position centre console assembly, ensuring harnesses and connectors are not trapped and are routed to their correct locations.
21. Connect cigar lighter multiplug and illumination bulb Lucar.
22. Align centre console to body fixings and fascia.
23. Fit and tighten screws securing centre console to body.
24. Lubricate hand brake lever to cable clevis pin.
25. Align hand brake cable to lever, fit clevis pin and secure with clip.
26. Secure hand brake lever garter to centre console.

**Models fitted with electric front seats**

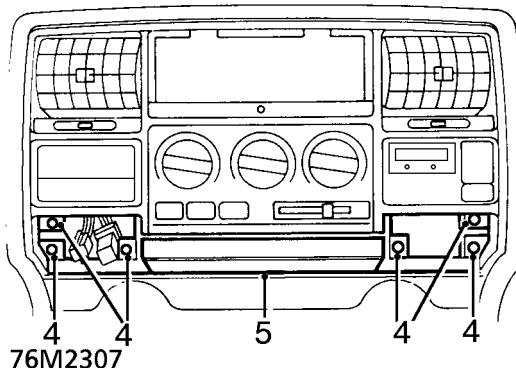
27. Position electric front seat switches, connect multiplugs and secure to centre console.

**All models**

28. Position centre console switch pack and connect multiplugs to switches.
29. Align switch pack to centre console and secure with screws.
30. Fit centre console switch pack cover.
31. Fit centre console rubber mat.
32. Fit gear selector lever knob and secure garter.
33. Fit transfer gear lever knob and secure garter.
34. Reconnect battery earth lead.

**DRINKS TRAY****Service repair no - 76.46.41****Remove**

1. Disconnect battery negative lead.
2. Remove ash tray. *See this section.*
3. Remove switch pack. *See this section.*



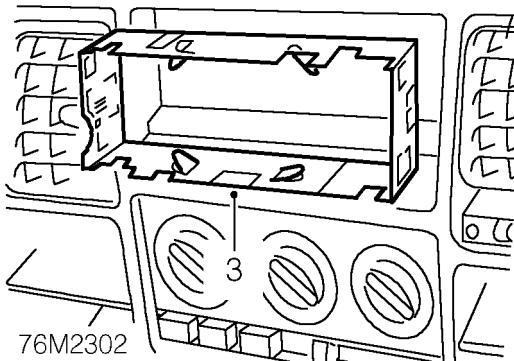
4. Remove 6 screws securing drinks tray to dash panel central louvre panel.
5. Remove drinks tray.

**Refit**

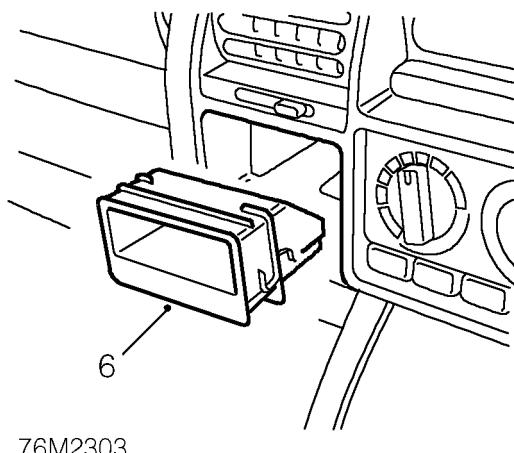
6. Position drinks tray to dash panel central louvre panel and secure with screws.
7. Fit switch pack. *See this section.*
8. Fit ash tray. *See this section.*
9. Connect battery negative lead.

**DASH PANEL CENTRAL LOUVRE PANEL****Service repair no - 76.46.42****Remove**

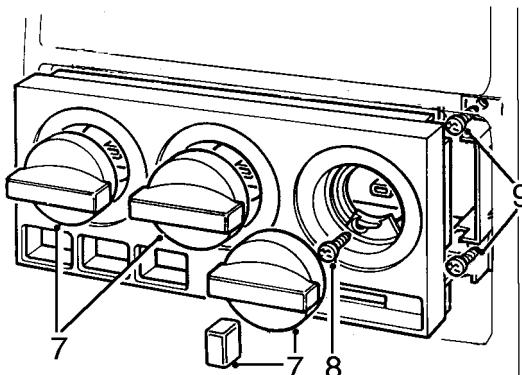
1. Disconnect battery negative lead.
2. Remove radio. **See ELECTRICAL, Repair.**



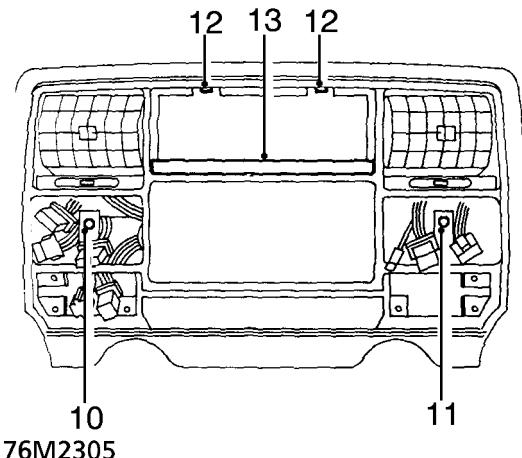
3. Release tags securing radio cage to louvre panel and remove cage.
4. Remove clock. **See ELECTRICAL, Repair.**
5. Release 4 coin tray securing tags.



6. Remove coin tray.



7. Remove 3 heater control and blower switch knob.
8. Remove 2 screws securing heater graphic display panel and remove panel.
9. Remove 4 screws securing heater control unit to panel.

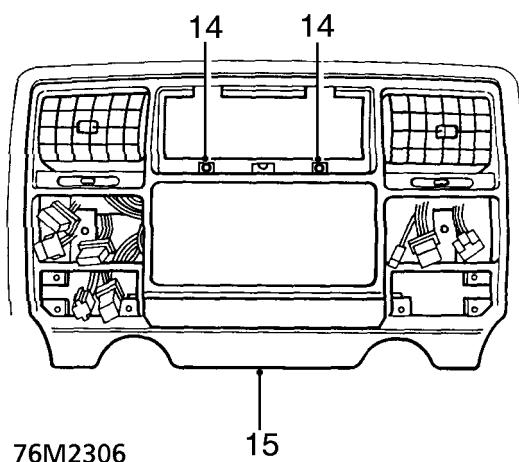


10. Working through coin tray aperture, remove screw securing panel.
11. Working through clock aperture, remove screw securing panel.
12. Loosen 2 uppermost panel retaining screws.



**NOTE:** On some models the panel is fitted with an LED. In this case, manoeuvre LED from panel and disconnect.

13. Remove panel retaining screw cover.



14. Remove 2 screws securing louvre panel.
15. Remove louvre panel from dash panel.

#### Refit

16. Position louvre panel, feed harness connectors through their correct apertures, and align to dash panel.



**CAUTION: When refitting avoid trapping of electrical wiring.**

17. Fit and tighten screws securing louvre panel.
18. Fit panel retaining screw cover.
19. Position heater control unit to panel and secure with screws.
20. Fit heater graphic display panel and secure with screws.
21. Fit heater control and blower switch knobs.
22. Fit clock. **See ELECTRICAL, Repair.**
23. Position coin tray and secure to tags.
24. Position radio cage, feed electrical connectors and aerial through cage, and position to panel.
25. Bend back radio cage retaining tags.
26. Fit radio. **See ELECTRICAL, Repair.**
27. Connect battery negative lead.

## DASH PANEL ASSEMBLY

Service repair no - 76.46.23

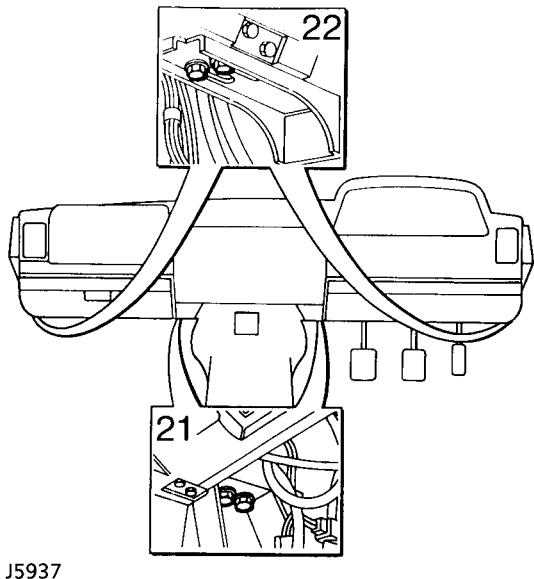
#### Remove

1. Move front seats to rearmost position.
2. Disconnect battery negative lead.
3. Disconnect air bag multiplugs under dash panel.

 **CAUTION: When air bags are fitted, reference must be made to the Airbag Supplementary Restraint System section.**

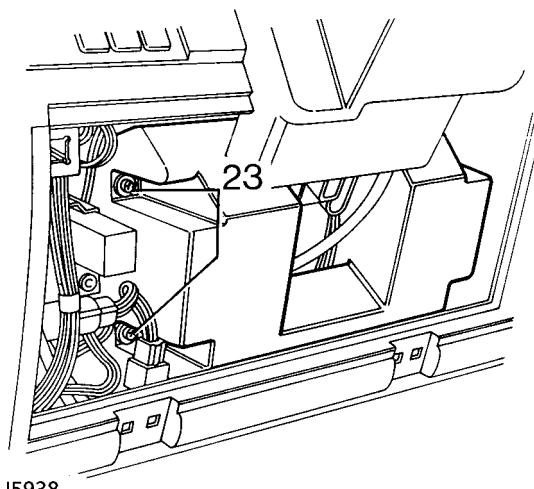
4. Remove passenger glove box.
5. Remove driver's side access panel.
6. Remove centre console assembly. **See this section.**
7. Remove airbag from steering wheel. **See SUPPLEMENTARY RESTRAINT SYSTEM, Repair.**
8. Remove passenger's airbag from dash panel. **See SUPPLEMENTARY RESTRAINT SYSTEM, Repair.**
9. Release clamp and lower steering column.
10. Remove steering wheel. **See STEERING, Repair.**
11. Remove column switch. **See SUPPLEMENTARY RESTRAINT SYSTEM, Repair.**
12. Remove instrument binnacle. **See ELECTRICAL, Repair.**
13. Remove radio. **See ELECTRICAL, Repair.**
14. Remove exterior mirrors switch panel.
15. Remove coin tray.
16. Remove switch panel.
17. Remove clock.
18. Undo screw securing mounting bracket and position passenger's side relay assembly aside.
19. Set heater controls fully clockwise.

- 20.** Note position of levers, disconnect heater control cables from levers and outer cable from retaining clips.



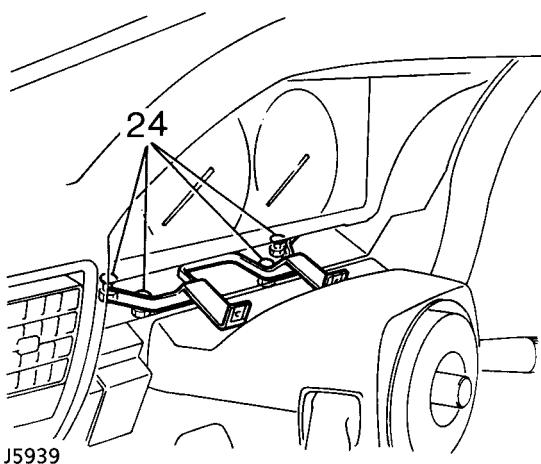
J5937

- 21.** Remove 4 bolts securing dash panel to centre lower mounting brackets.  
**22.** Remove 4 bolts securing dash panel to side lower mounting brackets.

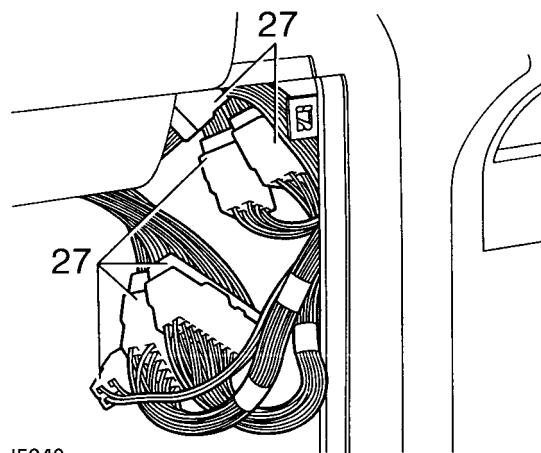


J5938

- 23.** Undo 4 screws and remove 2 driver's knee bolster pads from below steering column.



- 24.** Remove 4 nuts securing instrument mounting bracket to dash panel.



- 25.** **With assistance:** Manoeuvre dash panel partially rearward.  
**26.** Driver's side: Disconnect 6 multiplugs connecting dash harness to main harness.  
**27.** Disconnect 3 multiplugs connecting dash harness to fusebox.  
**28.** **With assistance:** Lift dash panel rearward to clear fixings and remove from vehicle.



## Refit



**CAUTION:** When refitting avoid trapping electrical wiring.

29. Reverse removal procedure.
30. With assistance: Position dash panel and connect dash harness multiplugs to fusebox and main harness.
31. Reverse removal procedure. Ensure dash panel upper bracket studs are located before the 4 lower brackets.
32. Reverse removal procedure. Disconnect glovebox switch Lucars to ease fitting of relay bracket.

## WINDSCREEN GLASS

Service repair no - 76.81.01

## Information

The following equipment is required:

- Cutting wire and handles
- Windscreen repair kit (see Technical Bulletin). See *Electrical Trouble Shooting Manual*. *Windscreen Glass Replacement*.
- Sealant applicator gun.
- Suction cup lifters.

The following materials are included in the windscreen repair kit:

- Glass cleaning solvent - 'Betawipe' Glass activator (yellow cap).
- Cotton buds.
- Glass primer - 'Betaprime'(green cap).
- Body primer - 'Betaprime' paint/plastic primer (red cap).
- Betaseal Adhesive sealant.



**NOTE:** The adhesive sealant cures in 6 to 8 hours



**CAUTION:** Once existing sealant is cut, the exposed surfaces oxidises in approximately 90 minutes. The refit procedure must be completed within this time span to prevent the sealant oxidising, to effect a satisfactory joint.

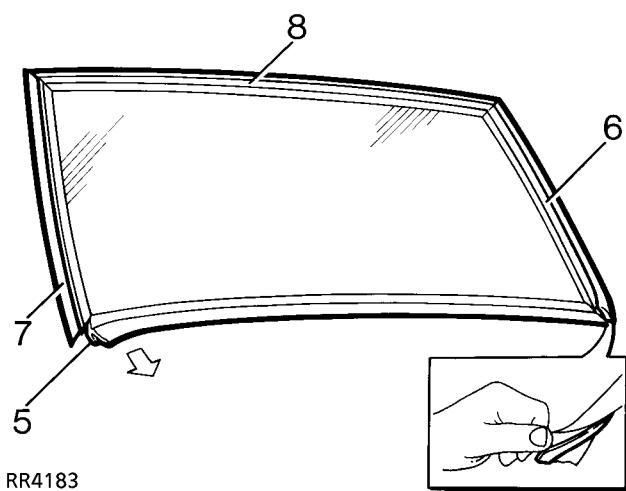


**CAUTION:** If the windscreen aperture body flange shows signs of corrosion it must be treated with anti corrosion primer and repainted. Newly painted areas must then be left for 8 hours or more before applying adhesive sealant.

**NOTE:** If heated front screen: 2 electrical multiplug connectors are located under the decker [cowl] panel. To access release decker panel.

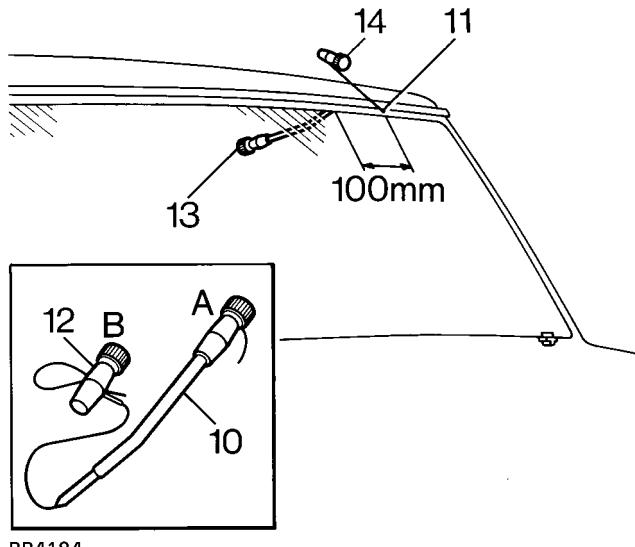
### Remove

1. Remove windscreen wiper arms. **See WIPERS AND WASHERS, Repair.**
2. Remove rear view mirror and stickers from glass.
3. Remove 'A' post finishers.
4. Fit protective cover over dash panel and apply masking tape to protect 'A' posts.



5. Ease one end of bottom finisher away from glass, pull to disengage finisher flange and remove.
6. Lift lip of LH 'A' post finisher and release sealing strip along its length, pull to disengage finisher flange from glass and remove.

7. Remove RH 'A' post finisher.
8. Remove header finisher.
9. Apply masking tape to protect paint finish around glass.



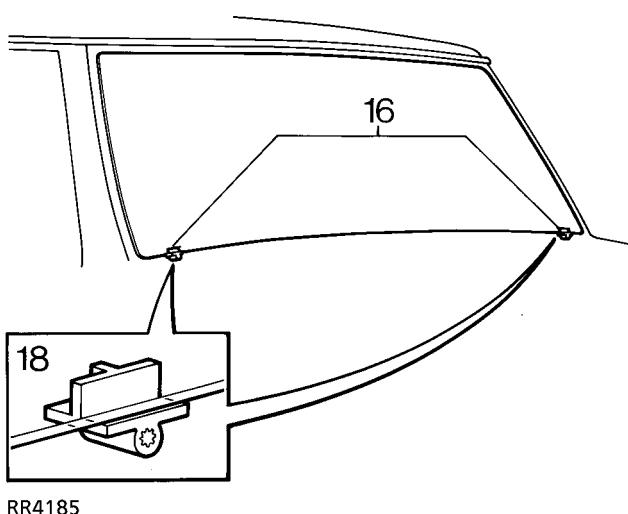
10. Prepare cutting wire in handle 'A'. Bend end of wire to handle and tape over end.
11. Force cutting wire through sealer from inside and 100mm (3 7/8 in) from a top corner. Use a needle if necessary to make a pilot hole.
12. Attach handle 'B'. Allow 200mm (7 7/8 in) of wire between handles, tape over end of wire.
13. **With an assistant on the inside:** Wedge the tube of the handle 'A' between glass and body flange 100mm (3 7/8 in) ahead of hole in sealer.
14. **From the outside:** Carefully cut sealer from flange using a straight pull away from the glass. Continue in 100mm (3 7/8 in) steps around the glass, use a sawing action at the corners.



**CAUTION:** Along the bottom edge, great care must be taken to cut up to the 2 supports, positions indicated on the obscuration band (See item 18).

15. Remove handle 'B', withdraw the cutting wire and insert it through the sealer between the supports. Refit handle 'B'.

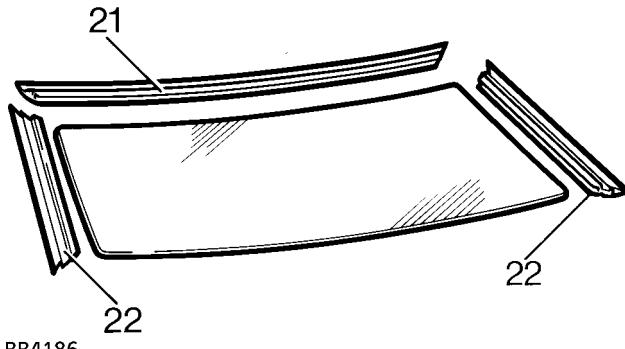
- 16.** Cut through sealer between the supports.  
If heated front screen: Cut through the 2 wires each side of the supports. Tape cut wires and panels to prevent damage to bodywork when screen is removed.



RR4185



**CAUTION:** Lay glass on felt covered supports, do not stand on edge. Any chipping of glass edge may develop into cracks.



RR4186

- 17.** Attach suction cups to glass and lift glass from body flange, cut sealer free around supports as necessary.



**WARNING:** If glass has splintered: Protect eyes and operate demister blower at maximum speed to remove any glass from ducts. Use a vacuum cleaner to remove glass particles from inside the vehicle.

#### Refit

- 18.** Check condition of supports, renew if necessary. Locating studs must be at right angle to flange.

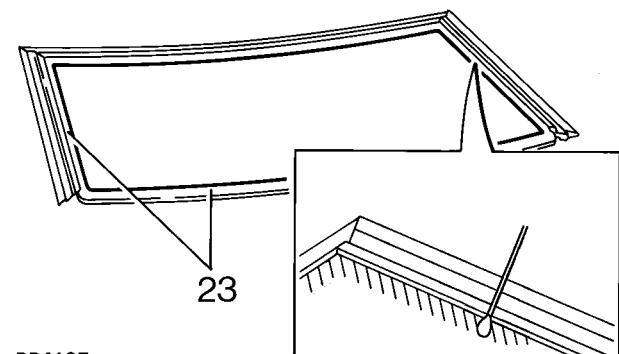


**NOTE:** The supports were fitted to early vehicles and now replaced with nylon sheaths.

- 19.** Carefully cut back old sealant around body flange to obtain a smooth surface 2mm (1/10in) thick. **DO NOT cut down to flange.**
- 20.** **If refitting original glass:** It must be free from chips or cracks. Cut back old sealant around glass to obtain a smooth surface 2mm (1/10 in) thick. **DO NOT cut down to glass surface.**

- 21.** Align header finisher on top edge of glass, push flange fully onto glass and use a wooden block and mallet to ensure fit.

- 22.** Carefully align each side finisher on edge of glass, push flange fully onto glass and use a wooden block and mallet to ensure fit.



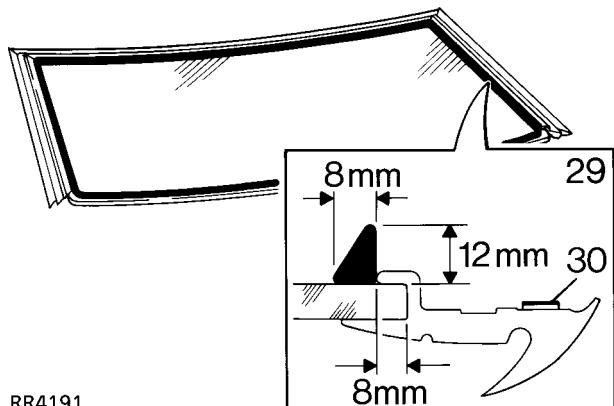
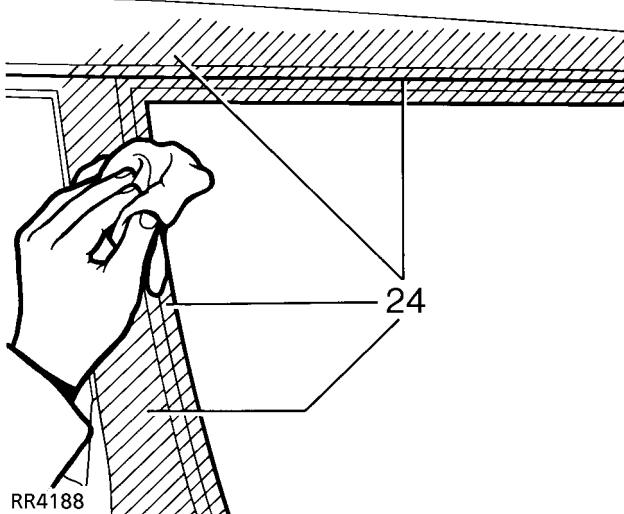
RR4187

- 23.** Using a cotton bud, apply glass cleaning solvent (yellow cap) to inside face of glass, 20mm (13/16 in) strip around inside of finishers and 30mm (1 1/8 in) wide along bottom edge. Immediately wipe off solvent with a clean cloth.



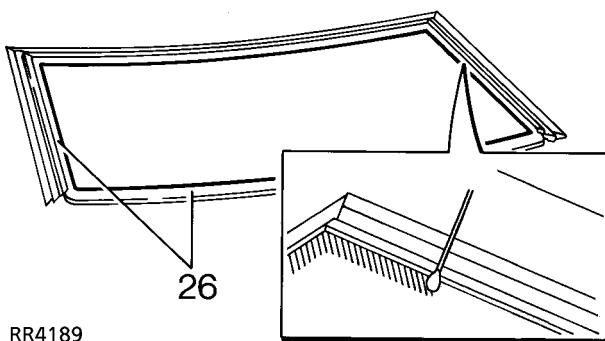
**CAUTION:** Do not touch cleaned or primed surfaces with fingers.

- 27.** Remove protective coverings and tape.

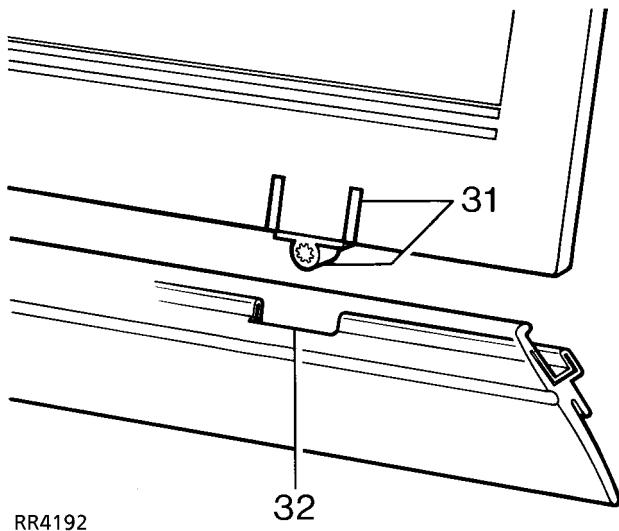
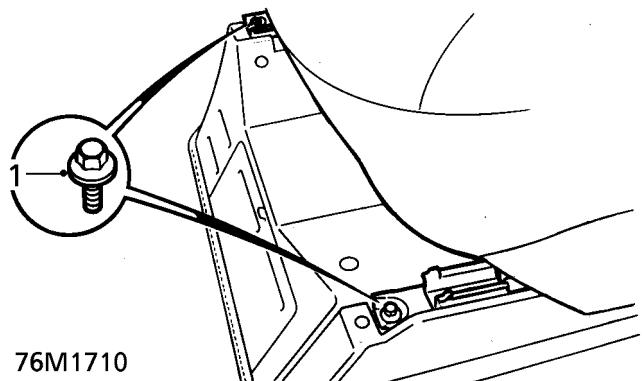


- 24.** Ensure body flanges and surfaces covered by the finishers are clean.

- 28.** Pierce top and pre-cut nozzle to sealer cartridge, remove lid and shake out crystals and install cartridge in applicator gun.  
**29.** Apply a continuous bead of adhesive sealant around the glass as shown. Vertical edge of sealer to abut finishers and to be 8mm (5/16 in) from bottom edge of glass.  
**30.** Remove protective covering (RED) from side finisher sealing strip.



- 25.** Shake the primer container for at least 30 seconds.  
**26.** Using a cotton bud, apply Glass Primer (green cap) to inside face of glass, 20mm (13/16 in) strip around inside of finishers and 30mm (1 1/8 in) wide along bottom edge. This must be touch dry before applying adhesive.

**FRONT SEAT - ELECTRIC****Service repair no - 76.77.01****Remove**

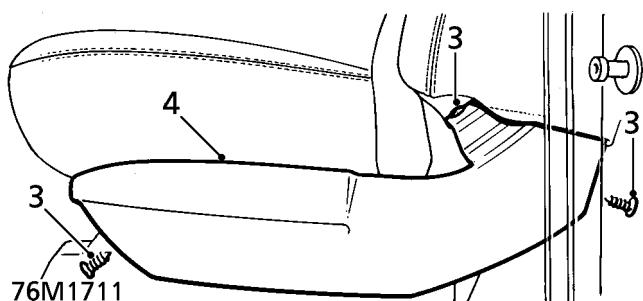
- 31. With assistance:** Attach suction cups to glass and lift into position, carefully align the indicators on the obscuration band with the supports. Lower screen onto body flange, check alignment and firmly press to seat glass in the aperture.



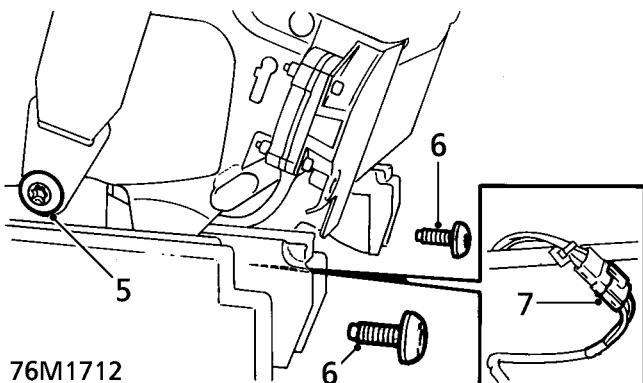
**NOTE: The finisher on later vehicles will not have cutouts, or supports fitted, as shown.**

32. Align cut outs with the supports and push finisher fully onto the glass. Use a wooden block to ensure fit.  
 33. Refit 'A' post finishers and interior mirror.  
 34. Refit wiper arms.

1. Operate controls to adjust seat fully backwards and remove 2 bolts securing seat slides.
2. Operate controls to adjust seat fully forwards.



3. Remove 3 studs securing seat side valance.
4. Remove side valance.



5. Remove Torx screw securing seat belt.
6. Remove 2 Torx screws securing seat.
7. Disconnect multiplug.
8. Remove seat.

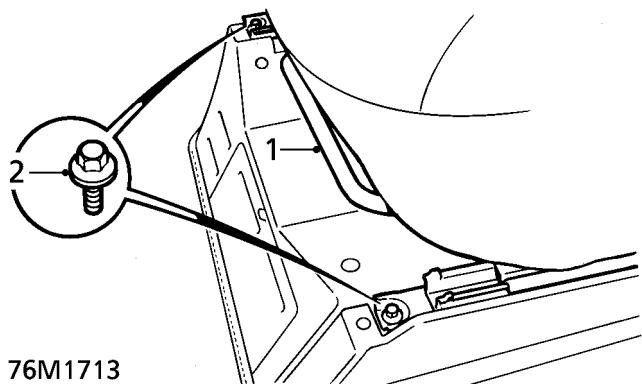
#### Refit

9. Reverse removal procedure.
10. Tighten Torx screws securing seat to **29 Nm (21 lbf ft)**.
11. Tighten bolts securing seat slides to **22 Nm (16 lbf ft)**.
12. Tighten Torx screw securing seat belt to **32 Nm (24 lbf ft)**.

#### FRONT SEAT - MANUAL - 5 DOOR (96 MODELS)

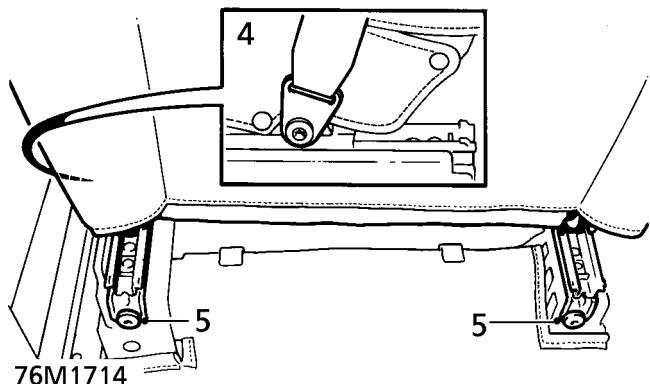
Service repair no - 76.70.01

#### Remove



76M1713

1. Raise adjusting bar and slide seat fully backwards.
2. Remove 2 bolts securing seat slides.
3. Raise adjusting bar and slide seat fully forwards.



4. Remove Torx screw securing seat belt.
5. Remove 2 Torx screws securing seat.
6. Remove seat.

## Refit

7. Reverse removal procedure.
8. Tighten Torx screws securing seat to **29 Nm (21 lbf ft)**.
9. Tighten bolts securing seat slides to **22 Nm (16 lbf ft)**.
10. Tighten Torx screw securing seat belt to **32 Nm (24 lbf ft)**.

## INTERIOR MIRROR (96 MODELS)

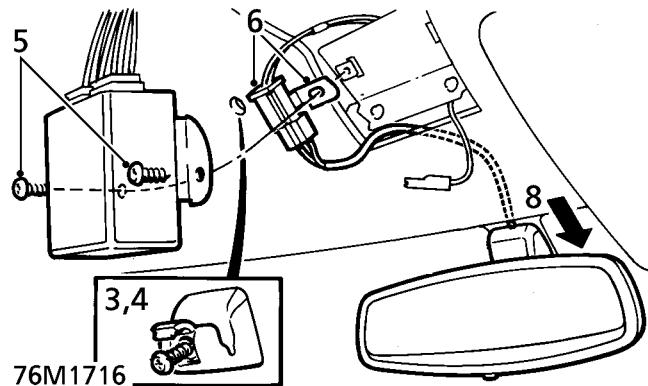
**Service repair no - 76.10.51 - Manual**  
**Service repair no - 76.10.54 - Auto dimming**

## Remove



**NOTE: To remove manual mirror, follow step 8 only.**

1. Remove headlining front pocket.
2. Release left hand sun visor from clip and move aside.

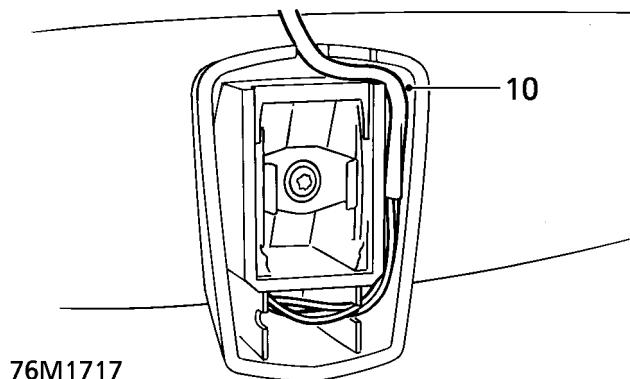


3. Release sun visor clip screw cover.
4. Remove clip securing screw and remove clip.
5. Remove 2 screws securing sunroof ECU and move ECU aside.
6. Locate mirror multiplug, remove clip and disconnect multiplug.
7. Remove tape securing harness (behind headlining).
8. Release mirror from screen by applying sharp downward pressure to the base.



**CAUTION: Do not use tools to assist removal. Mirror base should be moved in direction of arrow, parallel to windscreen.**

9. Release harness from behind headlining and remove mirror.

**Refit**

- 10.** Reverse removal procedure. Ensure harness is correctly routed in mirror base so it does not become trapped.

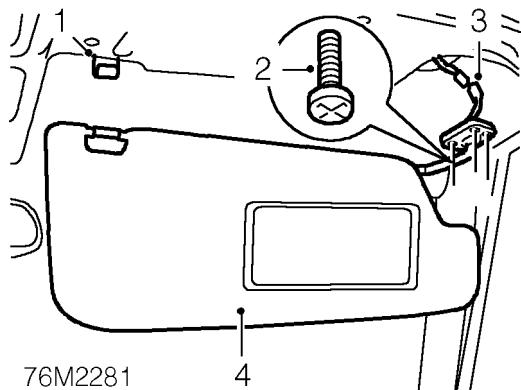
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SUN VISOR

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Service repair no - 76.10.47

## Remove



1. Release sun visor from headlining retaining clip.
2. Remove 3 screws securing sun visor to body.
3. Release sun visor and disconnect multiplug.
4. Remove sun visor.

## Refit

5. Position sun visor and connect muliplug.
6. Position sun visor to headlining and secure with screws.
7. Secure sun visor to headlining clip.

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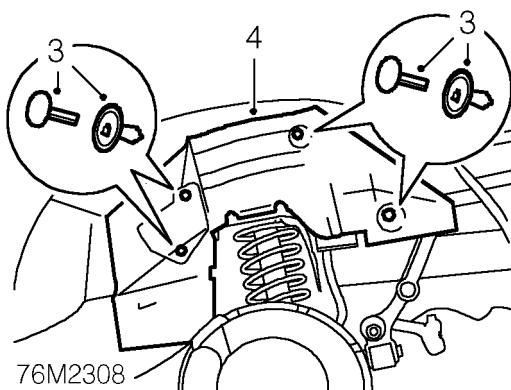
WHEEL ARCH LINER - FRONT

---

Service repair no - 76.10.48

## Remove

1. Raise front of vehicle and support on safety stand.
2. Remove front road wheel.



3. Remove 4 wheel arch liner retainers.
4. Remove wheel arch liner.

## Refit

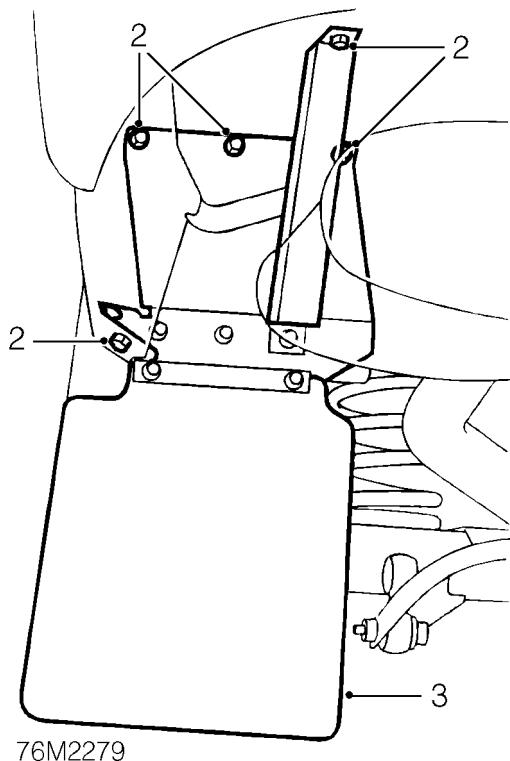
5. Fit wheel arch liner and secure with retainers.
6. Fit front road wheel and tighten nuts to **126 Nm (93 lbf ft)**.
7. Remove stand and lower vehicle.

**MUD FLAP - REAR - LH**

Service repair no - 76.10.85

**Remove**

1. Remove rear compartment lower trim panel. *See this section.*



2. Remove 5 nuts and bolts securing mud flap to body and bumper valance.
3. Remove mud flap.

**Refit**

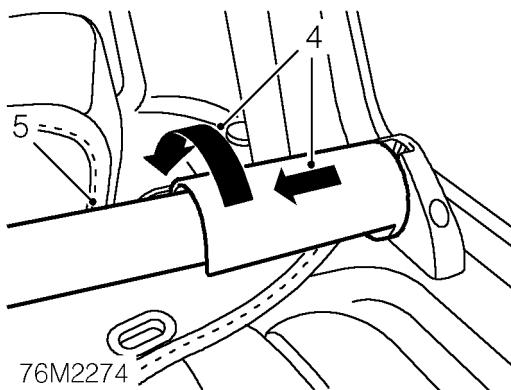
4. Position mud flap to body, fit bolts and tighten nuts to **10 Nm (7 lbf ft)**.
5. Fit rear compartment lower trim panel. *See this section.*

**REAR COMPARTMENT LOWER TRIM PANEL - LH - WITH REAR AIR CONDITIONING FITTED**

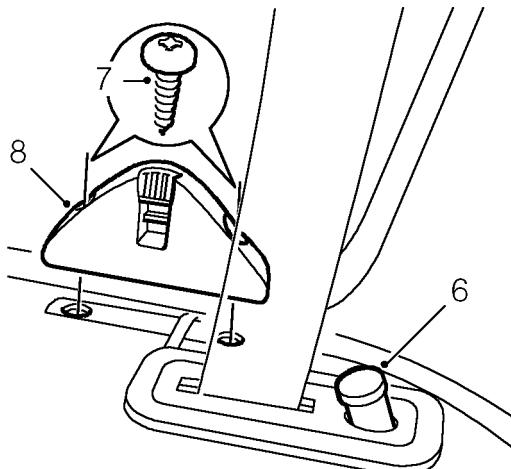
Service repair no - 76.13.03/20

**Remove**

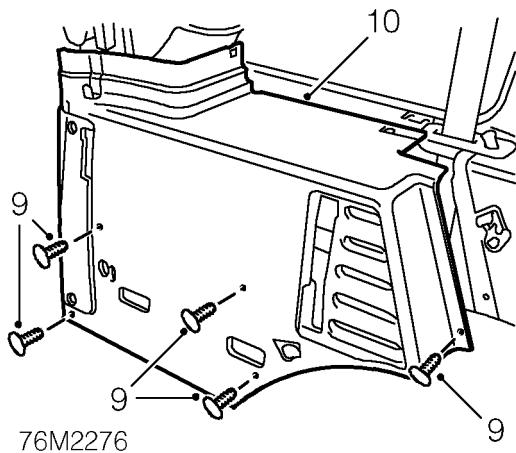
1. Remove rear fold down seat. *See this section.*
2. Remove fold down rear seat belts. *See this section.*
3. Remove 'E' post trim casing. *See this section.*



4. Release load space cover end sleeve from mounting bracket.
5. Remove load space cover.



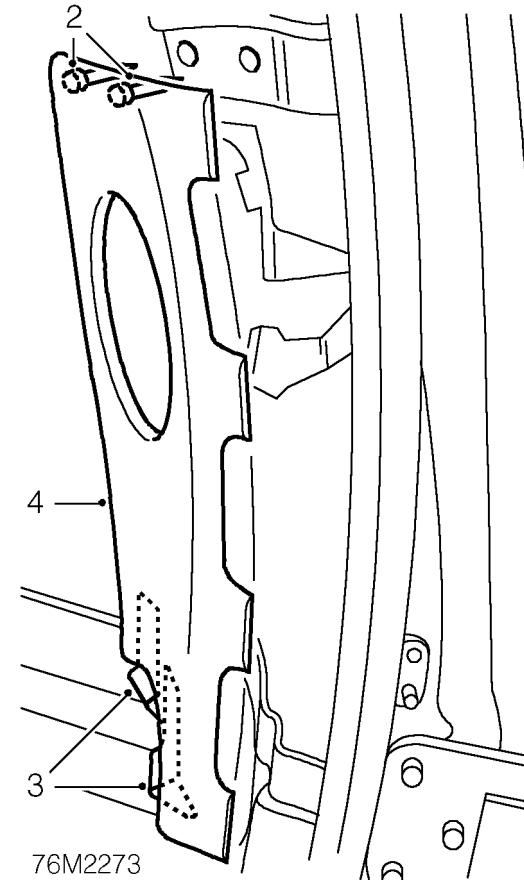
6. Press rear seat squab release button and fold squab forward.
7. Remove 2 screws securing load space cover mounting bracket.
8. Remove mounting bracket.



9. Remove 5 trim studs securing trim panel.
10. Remove trim panel.

#### Refit

11. Fit and align trim panel.
12. Fit trim panel retaining studs.
13. Position load space cover mounting bracket and secure with screws.
14. Fold rear seat squab back and secure to latch.
15. Position load space cover to mounting brackets and secure.
16. Fit 'E' post trim casing. **See this section.**
17. Fit fold down rear seat belts. **See this section.**
18. Fit rear fold down seat. **See this section.**



2. Release 2 'E' post finisher retaining studs from alpine light trim.
3. Release 2 'E' post finisher retaining clips from lower trim panel.
4. Remove 'E' post finisher.

#### Refit

5. Position 'E' post finisher clips to lower trim panel.
6. Secure 'E' post finisher studs to alpine light trim.
7. Fit rear speaker. **See ELECTRICAL, Repair.**

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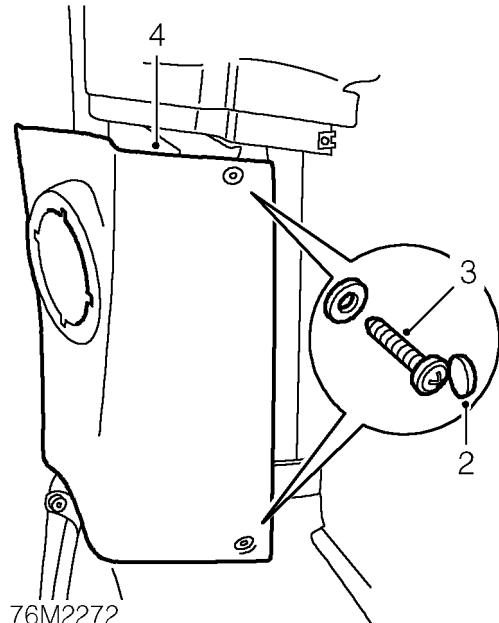
**'E' POST TRIM CASING - LH - WITH REAR AIR CONDITIONING FITTED**


---

Service repair no - 76.13.13/20

**Remove**

1. Remove rear speaker. *See ELECTRICAL, Repair.*



2. Release 2 trim casing retaining screw covers.
3. Remove 2 screws securing trim casing.
4. Remove trim casing.

**Refit**

5. Fit and align trim casing.
6. Fit and tighten screws securing trim casing and fit covers.
7. Fit rear speaker. *See ELECTRICAL, Repair.*

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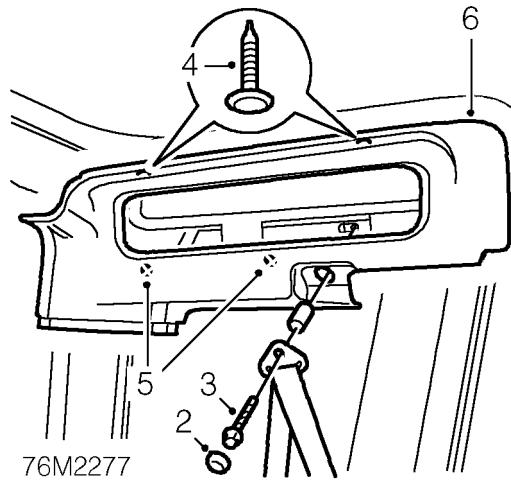
**ALPINE LIGHT TRIM CASING - LH - WITH REAR AIR CONDITIONING FITTED**


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Service repair no - 76.13.20/20

**Remove**

1. Remove 'E' post trim casing. *See this section.*



2. Remove rear seat belt anchorage retaining bolt cover.
3. Remove bolt securing rear seat belt anchorage.
4. Remove 2 trim studs securing trim casing.
5. Release trim casing from 2 retaining studs.
6. Remove trim casing.

**Refit**

7. Fit and align trim casing and secure with studs.
8. Fit 2 trim studs securing trim casing.
9. Position seat belt anchorage, fit bolt and tighten to **20 Nm (15 lbf ft)**.
10. Fit cover to seat belt anchorage bolt.
11. Fit 'E' post trim casing. *See this section.*

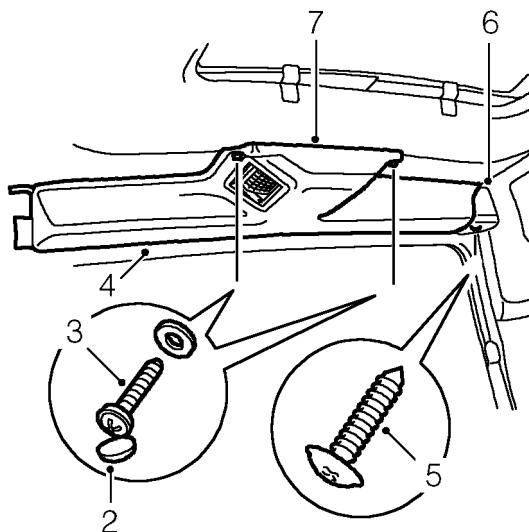
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**REAR DOOR UPPER TRIM PANEL - WITH REAR AIR CONDITIONING FITTED**


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**Service repair no - 76.13.72/20**
**Remove**

1. Remove alpine light trim casing. ***See this section.***



76M2278

2. Release 2 trim panel retaining screw covers.
3. Remove 2 trim panel retaining screws.
4. Release rear edge of trim panel from body.
5. Remove screw securing rear header duct to alpine light duct.
6. Release rear header duct from alpine light duct.
7. Remove trim panel assembly.

**Dismantle**

8. Remove 2 vents from trim panel.
9. Remove screw securing rear header duct to trim panel.
10. Remove rear header duct.

**Rebuild**

11. Fit rear header duct to new trim panel and secure with screw.
12. Fit vents to trim panel.

**Refit**

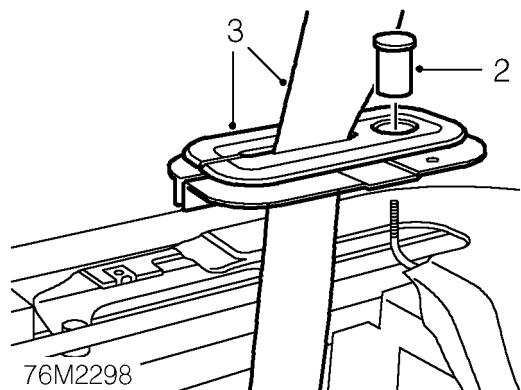
13. Position trim panel and connect rear header duct to alpine light duct.
14. Fit and tighten screw securing rear header duct to alpine light duct.
15. Secure rear edge of trim panel to body.
16. Fit and tighten screws securing trim panel.
17. Secure trim panel retaining screw covers.
18. Fit alpine light trim casing. ***See this section.***

**'D' POST TRIM CASING - LH - WITH REAR AIR CONDITIONING FITTED - 5 DOOR**

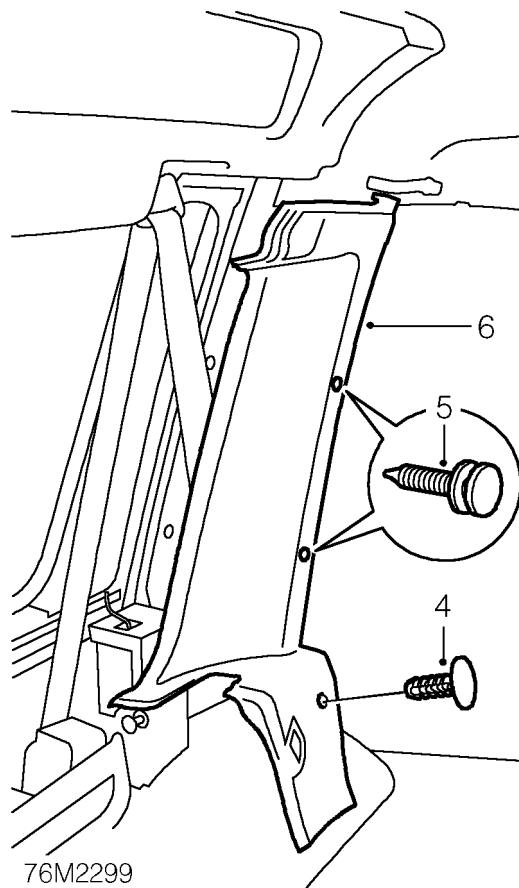
Service repair no - 76.13.73/20

**Remove**

1. Remove rear compartment lower trim panel.  
*See this section.*



2. Remove the squab release button from control rod.
3. Release rear seat belt from guide and remove guide.



4. Remove the trim casing retaining stud.
5. Release trim casing from 2 retaining studs.
6. Remove trim casing.

**Refit**

7. Fit trim casing under alpine light trim, align and secure retaining studs.
8. Fit trim casing retaining stud.
9. Position trim casing rear edge beneath sixth light seal flange.
10. Fit seat belt to guide, align squab release control rod and position guide to trim casing.
11. Fit squab release button to control rod.
12. Fit rear compartment lower trim panel. *See this section.*

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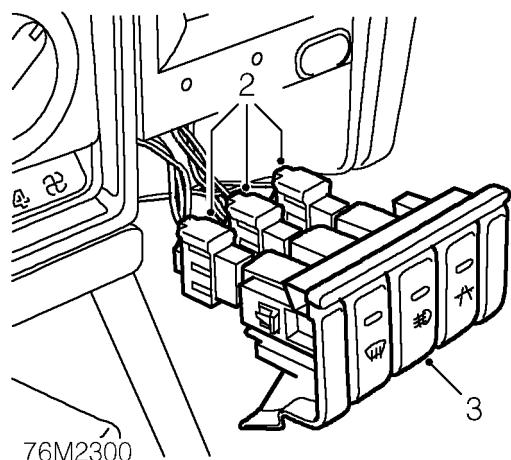
**SWITCH PACK - DASH PANEL CENTRAL LOUVRE PANEL**


---

**Service repair no - 76.46.38**

**Remove**

1. Release switch pack from louvre panel.



2. Disconnect 3 multiplugs from switch pack.
3. Remove switch pack.

**Refit**

4. Position switch pack.
5. Connect multiplugs to switch pack.
6. Secure switch pack to louvre panel.

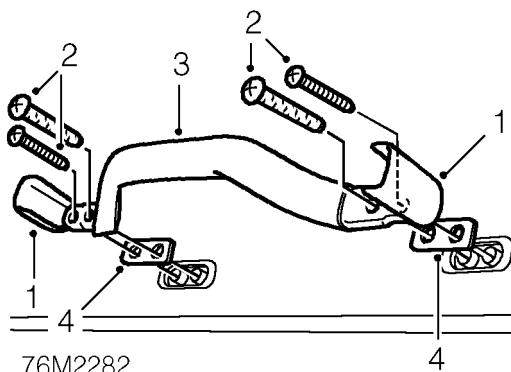
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**GRAB HANDLE**


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**Service repair no - 76.58.30**

**Remove**



1. Release 2 grab handle retaining screw covers.
2. Remove 4 screws securing grab handle to body.
3. Remove grab handle.
4. Collect 2 washers.

**Refit**

5. Position grab handle and washers.
6. Fit and tighten screws securing grab handle to body.
7. Secure grab handle retaining screw covers.

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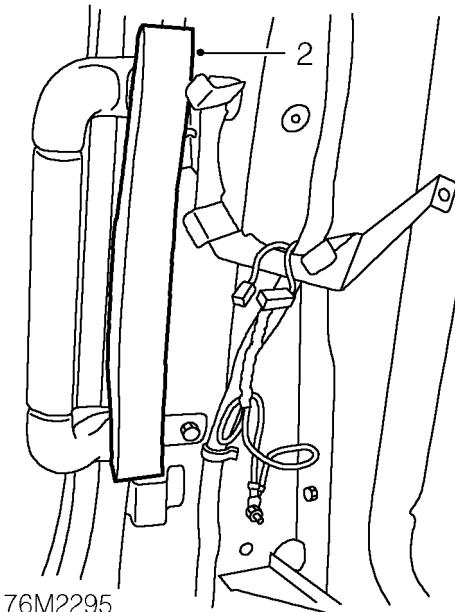
**GRAB HANDLE - TAIL DOOR - WITH REAR AIR CONDITIONING FITTED**


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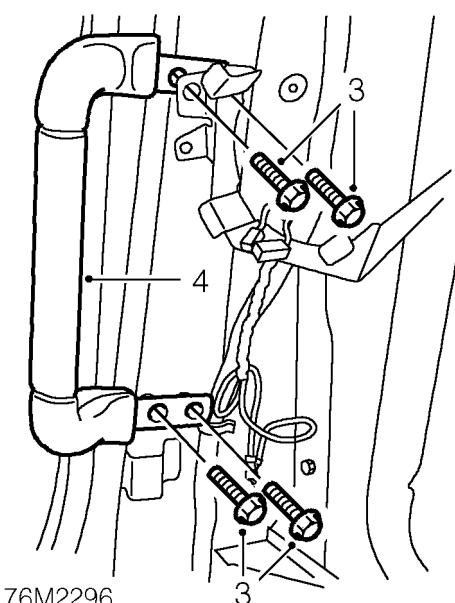
Service repair no - 76.58.35/20

**Remove**

1. Remove 'E' post trim casing. *See this section.*



2. Release foam strip from around grab handle retaining bolts.



3. Remove 4 bolts securing grab handle to body.
4. Remove grab handle.

**Refit**

5. Position grab handle, fit bolts and tighten to **10 Nm (7 lbf ft)**.
6. Secure foam strip to body.
7. Fit 'E' post trim casing. *See this section.*

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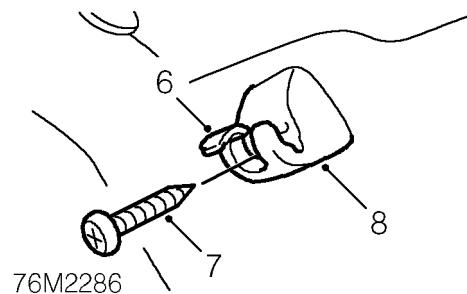
**HEADLINING - WITH SUN ROOF AND REAR AIR CONDITIONING FITTED - 5 DOOR**


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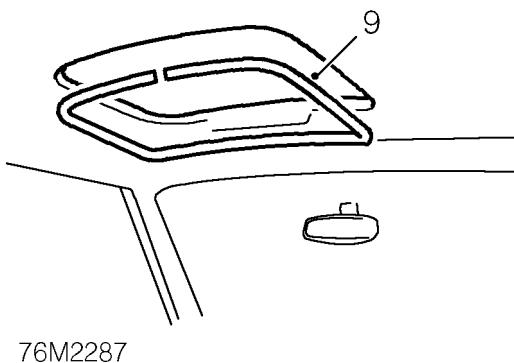
Service repair no - 76.64.14/20

**Remove**

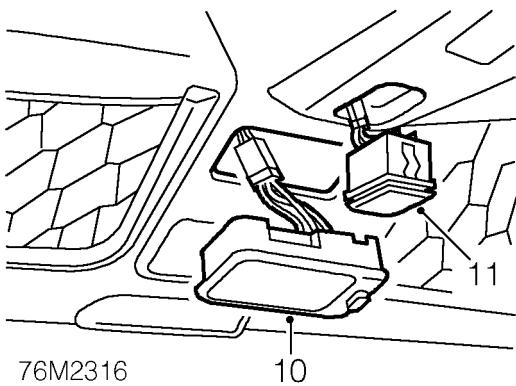
1. Remove both sun visors. *See this section.*
2. Remove 4 grab handles. *See this section.*
3. Remove front headlining stowage panel. *See this section.*
4. Remove LH alpine light trim casing. *See this section.*
5. Remove RH alpine light trim casing. *See this section.*



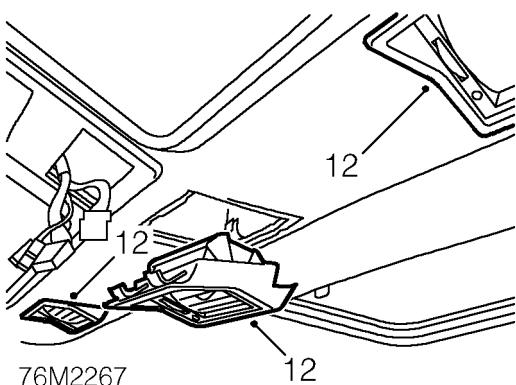
6. Release LH and RH sun visor clip retaining screw covers.
7. Remove LH and RH sun visor clip retaining screws.
8. Remove LH and RH clips.



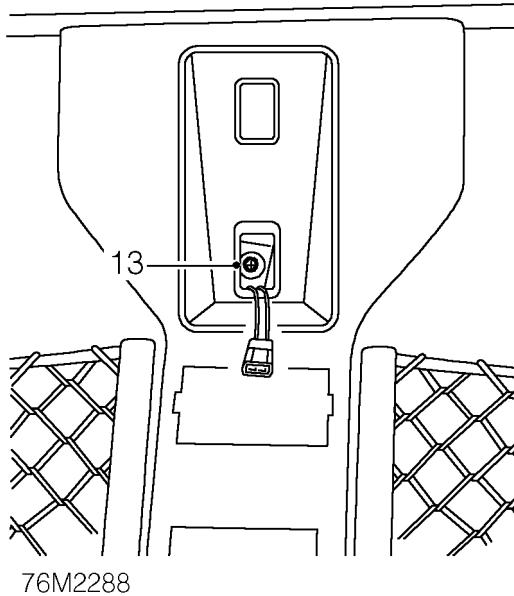
9. Remove front sun roof aperture seal.



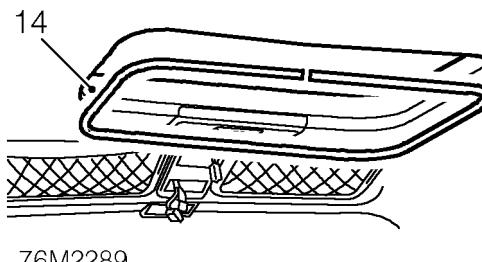
10. Release rear passenger interior lamp assembly from headlining panel, disconnect multiplug and remove lamp.
11. Release rear sun roof switch from headlining panel, disconnect multiplug and remove switch.



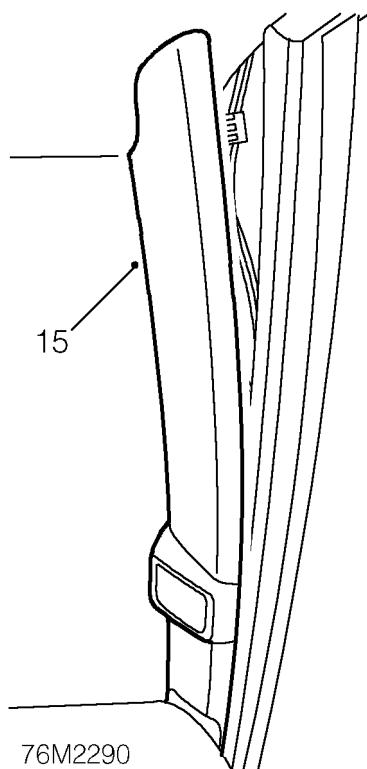
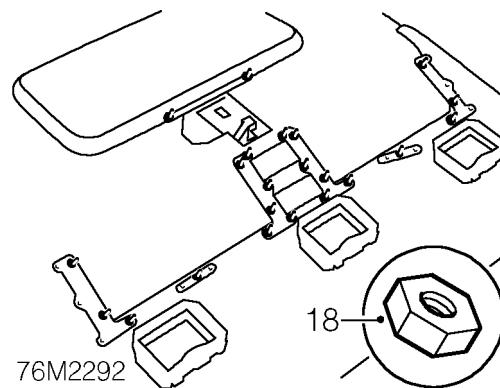
12. Remove 3 vents from headlining.



13. Working through sun roof switch housing, remove screw securing headlining panel to body.



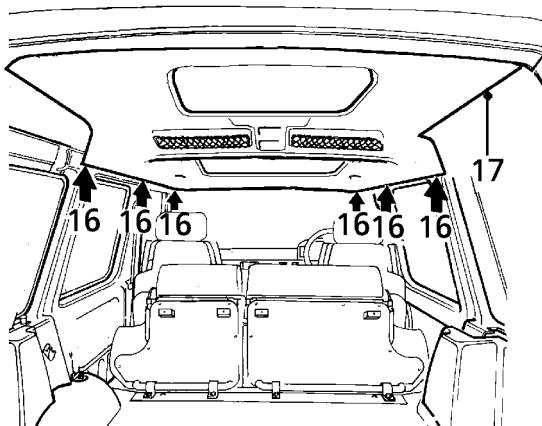
14. Remove rear sun roof aperture seal.

**Dismantle**

18. Remove 22 nuts securing headlining stowage nets and rear headlining panel.
19. Remove stowage nets and headlining panel.
20. Collect 7 mounting plates.

**Rebuild**

21. Position stowage nets and headlining panel, fit mounting plates to studs and secure with nuts.

**Refit**

76M2291

16. With assistance, release headlining from LH and RH, 'A', 'B' and 'D' post finishers.
17. Remove headlining assembly.

22. With assistance, fit headlining and position to LH and RH, 'A', 'B' and 'D' post finishers.
23. Secure LH and RH, 'A' post trim finisher retaining clips.
24. Fit rear sun roof aperture seal.
25. Fit and tighten screw securing rear headlining panel to body.
26. Position vents to headlining, attach clips to vents and secure to headlining.
27. Position rear sun roof switch, connect multiplug and secure to headlining panel.
28. Position rear passenger interior lamp, connect multiplug and secure to headlining panel.
29. Fit front sun roof aperture seal.
30. Fit LH and RH sun visor retaining clips to body.
31. Fit and tighten screws securing sun visor retaining clips and secure screw covers.
32. Fit RH alpine light trim casing. **See this section.**
33. Fit LH alpine light trim casing. **See this section.**
34. Fit front headlining stowage panel. **See this section.**
35. Fit grab handles. **See this section.**
36. Fit sun visors. **See this section.**

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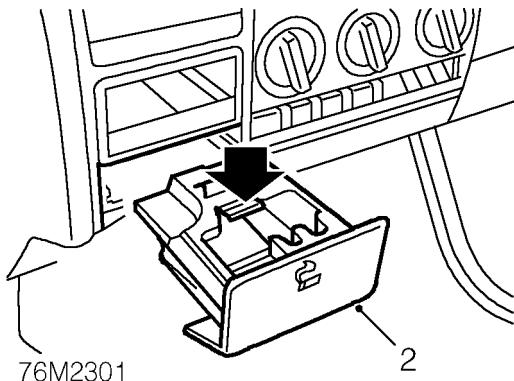
**ASH TRAY - DASH PANEL CENTRAL LOUVRE  
PANEL**


---

**Service repair no - 76.67.26**

**Remove**

1. Open ash tray.



2. Press release catch and remove ash tray.

**Refit**

3. Fit ash tray.

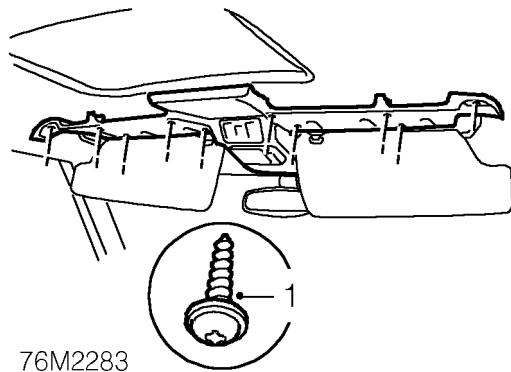
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**HEADLINING STOWAGE PANEL - FRONT - WITH  
SUN ROOF FITTED**

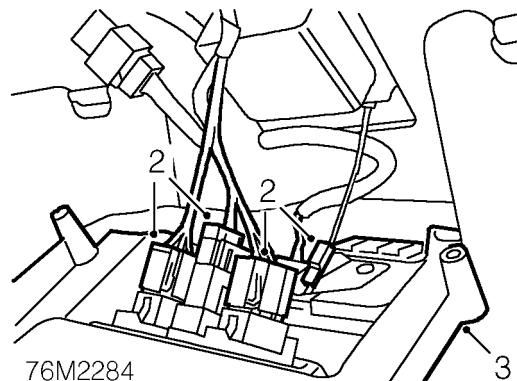

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**Service repair no - 76.67.27**

**Remove**

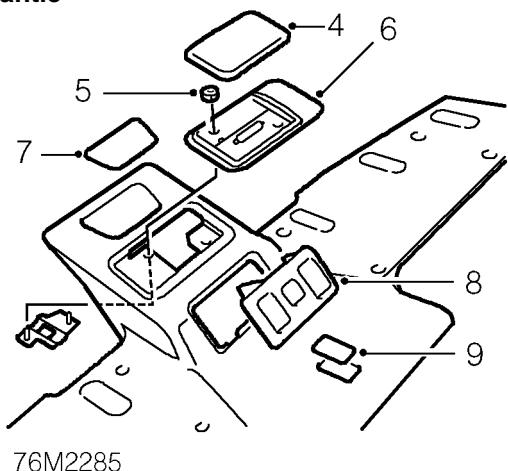


1. Remove 10 screws securing stowage panel to body.



2. Release panel and disconnect Lucar and 4 multiplugs.
3. Remove stowage panel assembly.

## Dismantle



4. Remove interior lamp lens.
5. Remove 2 nuts securing lamp to stowage panel.
6. Remove lamp.
7. Remove alarm volumetric sensor/blanking plate.
8. Remove electric sun roof switch pack.
9. Remove electric sun roof manual opening plug.

## Rebuild

10. Fit electric sun roof manual opening plug to panel.
11. Fit alarm volumetric sensor.
12. Fit electric sun roof switch pack to panel.
13. Fit interior lamp to panel and secure with nuts.
14. Fit interior lamp lens.

## Refit

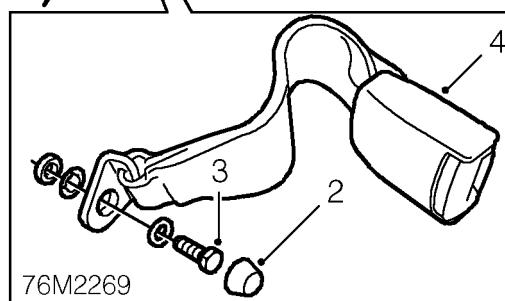
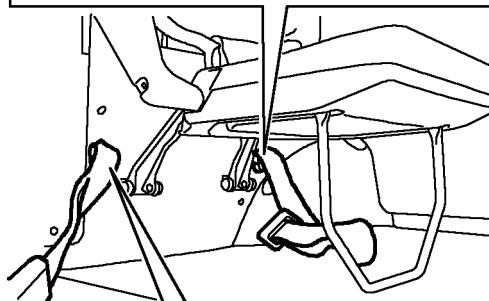
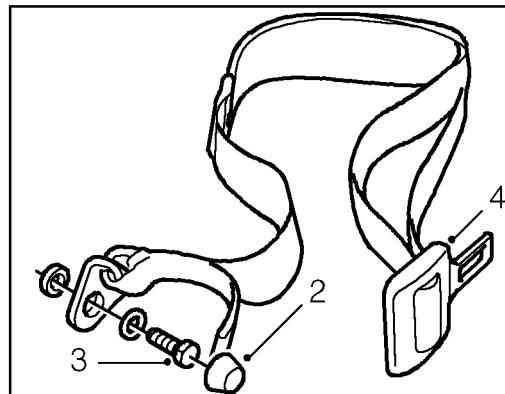
15. Position stowage panel assembly and connect Lucar and multiplugs.
16. Align panel to headlining and secure with screws.

## REAR FOLD DOWN SEAT BELTS - LH WITH REAR AIR CONDITIONING FITTED

Service repair no - 76.73.28/20

### Remove

1. Locate the seat in the down position, remove the seat belt strap and buckle from their stowed positions.



2. Remove seat belt strap and buckle retaining bolt covers.
3. Remove bolts securing strap and buckle.
4. Remove seat belts and collect spacers.

## Refit

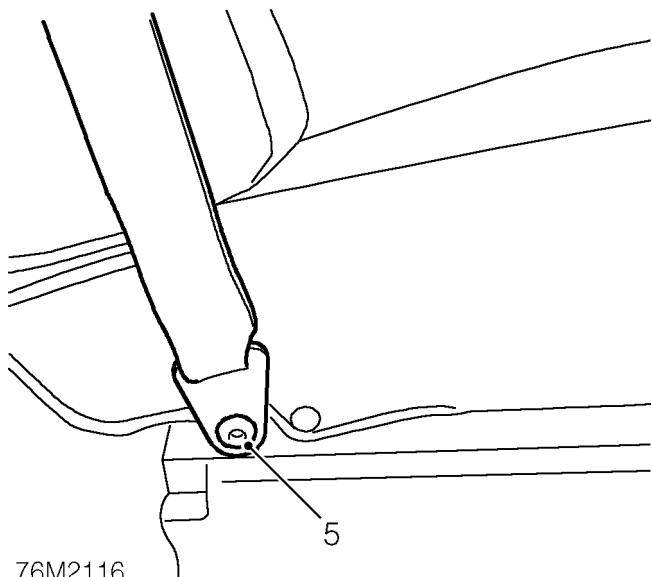
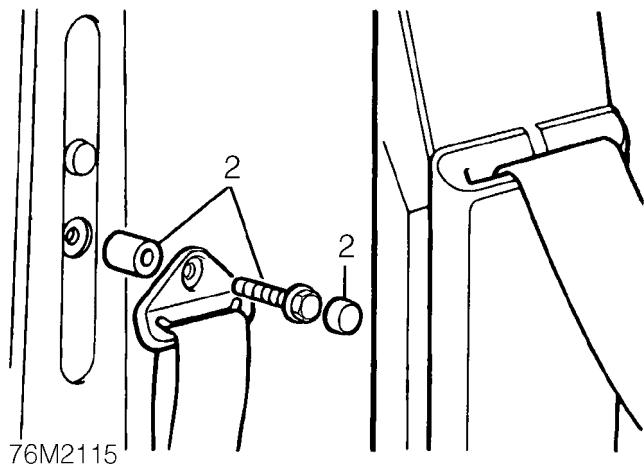
5. Fit spacers to seat belt retaining bolts, position to fixings and tighten to ***32 Nm (24 lbf ft)***.
6. Fit seat belt retaining bolt covers.
7. Secure seat belt strap and buckle to their stowed positions and position seat in the up position.

**FRONT SEAT BELTS - 5 DOOR (96 MODELS)**

Service repair no - 76.73.10

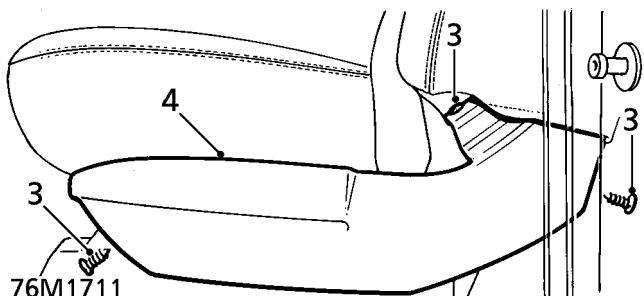
**Remove**

1. Move the seat to gain access to the seat belt mountings.

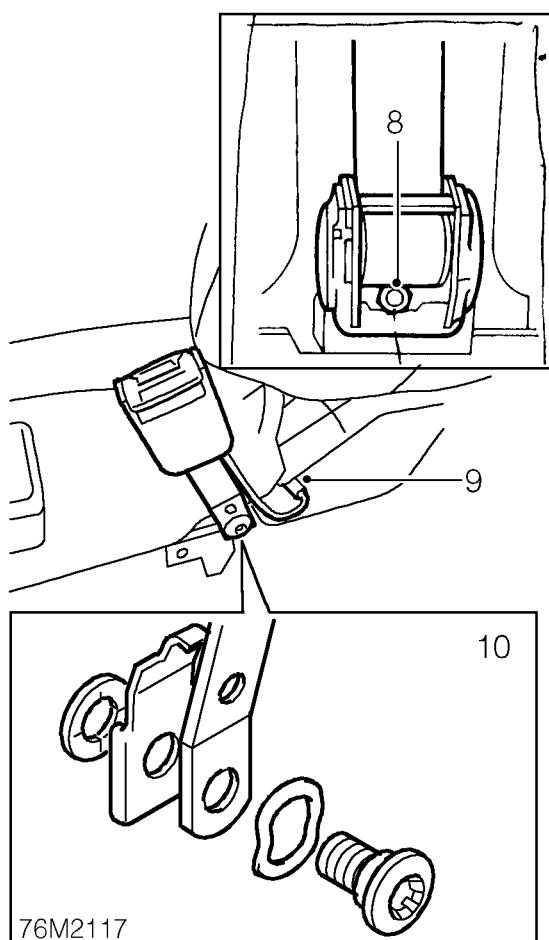


5. Remove the Torx bolt securing the lower mounting to the seat.
6. Detach the door seals from the 'B' post sufficiently to allow removal of the lower trim panel from the post.
7. Release the seat belt from the split section at the top of the trim panel and withdraw the panel.

2. Remove the cover and securing bolt to release the upper mounting and spacer from the 'B' post adjustable mounting.



3. **Electric seats only:** Release fixings securing the seat side valance.
4. Remove the side valance.



8. Remove the securing bolt and detach the inertia reel from the bottom of the 'B' post.

9. Release the seat belt sensor connector (if fitted).
10. Release Torx bolt to allow removal of the seat belt stalk assembly.

#### Refit

11. Reverse removal procedure.

**NOTE: Ensure the seat belt is not twisted.**



12. Re-connect the seat belt sensor connector (if fitted).
13. Finally, tighten the seat belt fixings to **32 Nm (24 lbf ft)**.



## CORROSION PROTECTION

### Factory Treatments

The Land Rover Discovery is treated with the following anti-corrosion materials in production:

- A PVC-based underbody sealer material which is sprayed onto the underfloor, wheel arches and undersill areas.
- An application of cavity wax which is sprayed into enclosed cavities, box sections and lower inner door panels.
- A final coating of underbody wax to cover the complete underfloor including components but excluding brake discs.
- A coat of protective lacquer or wax applied to the engine bay area.

In addition to the above measures, all steel parts are zinc-coated both sides, and front wings, door and tailgate skins are manufactured from aluminium.

The information given on the following pages is intended as a guide and shows the areas to be treated with cavity wax, as well as the access holes used during manufacture. *See GENERAL SPECIFICATION DATA, Sealing and corrosion protection.*

### Underbody Wax

A coat of underbody wax is applied to the entire underbody inboard of the sill vertical flanges, and covers all moving and flexible components EXCEPT for wheels and tyres, brakes and exhaust. The wax is applied over paints and underbody sealers.

The underbody wax must be reinstated following all repairs affecting floor panels.

 **NOTE: Old underbody wax must be completely removed from a zone extending at least 200 mm (7 7/8 in) beyond the area where new underbody sealer is to be applied.**

### Underbody Sealer

Underfloor areas and outer sill panels are treated with a Plastisol PVC underbody sealer. This material is not suitable for re-treatment.

When repairing areas of underbody sealer, strip the factory-applied material back to a suitable break point, ensuring that a clean metal surface is exposed and that the edge of the existing material adheres soundly to the panel.

Blanking plugs and grommets in the floor pan (except those used for wax injection) MUST be fitted before underbody sealer application. Heat-fusible plugs which have been disturbed should either be refitted with the aid of a hot air blower or replaced with rubber grommets.

 **NOTE: Application of new underbody sealer must be carried out between primer and surfacer paint operations. Areas where seam sealer is used should be re-treated as necessary before application of underbody sealer.**

 **CAUTION: Ensure that suspension units, wheels, tyres, power unit, driveshafts, exhaust and brakes (including all mounting points) are shielded prior to application of fresh underbody sealer.**

### Engine Bay Wax

Reinstate protective engine bay wax disturbed during repairs using the approved material.

**Stone Chip Resistant Paint/Primer**

Re-treat all areas protected with factory-applied anti-chip primer with suitable approved material in repair.

**Inspections during Maintenance Servicing**

It is a requirement of the Land Rover Corrosion Warranty that the vehicle body is checked for corrosion by an authorised Land Rover dealer at least once a year, to ensure that the factory-applied protection remains effective.

Service Job Sheets include the following operations to check bodywork for corrosion:

- With the vehicle on a lift, carry out visual check of underbody sealer for damage.
- With the vehicle lowered, inspect exterior paintwork for damage and body panels for corrosion.

 **NOTE: Wash the vehicle and ensure that it is free from deposits prior to inspection. It is part of the owner's responsibility to ensure that the vehicle is kept free of accumulations of mud which could accelerate the onset of corrosion. The Dealer MUST wash the vehicle prior to inspection of bodywork if the customer has offered it in a dirty condition, and pay special attention to areas where access is difficult.**

 **NOTE: The checks described above are intended to be visual only. It is not intended that the operator should remove trim panels, finishers, rubbing strips or sound deadening materials when checking the vehicle for corrosion and paint damage.**

With the vehicle on a lift, and using an inspection or spot lamp, visually check for the following:

- Corrosion damage and damaged paintwork, condition of underbody sealer on front and rear lower panels, sills and wheel arches.
- Damage to underbody sealer on main floor and chassis members. Corrosion in areas adjacent to suspension mountings and fuel tank fixings.



**NOTE: The presence of small blisters in PVC underbody sealer is acceptable, providing they do not expose bare metal.**

Special attention must be paid to signs of damage caused to panels or corrosion material by incorrect jack positioning.

It is essential to follow the correct jacking and lifting procedures. **See INTRODUCTION, Information**

With the vehicle lowered, visually check for evidence of damage and corrosion on all painted areas, in particular the following:

- Front edge of bonnet.
- Visible flanges in engine compartment and boot.
- Lower body and door panels.

Where bodywork damage or evidence of corrosion is found during inspection, rectify this as soon as is practicable, both to minimise the extent of the damage and to ensure the long term effectiveness of the factory-applied corrosion protection treatment. Where the cost of rectification work is the owner's responsibility, the Dealer must advise the owner and endorse the relevant documentation accordingly.

Where corrosion has become evident and is emanating from beneath a removable component (e.g. trim panel, window glass, seat etc.), remove the component as required to permit effective rectification.



### **Underbody Protection Repairs**

When body repairs are carried out, always ensure that full sealing and corrosion protection treatments are restored. This applies both to the damaged area, and also to areas where protection has been indirectly impaired as a result of accident damage or repair operations.

Prior to straightening out or panel beating, remove all corrosion protection material in the damaged area. This applies in particular to panels coated with wax, PVC underbody sealer, sound deadening pads etc.



**WARNING: DO NOT use oxy-acetylene gas equipment to remove corrosion prevention materials. Large amounts of fumes and gases are liberated by these materials when they burn.**

Equipment for the removal of tough anti-corrosion sealers offers varying degrees of speed and effectiveness. The compressed air-operated scraper (NOT an air chisel) offers a relatively quiet mechanical method of removal using an extremely rapid reciprocating action. During use, direct the operating end of the tool along the work surface.

The most common method is by the use of a hot air blower with integral scraper.



**CAUTION: High temperatures can be generated with this equipment which may cause fumes. Always exercise care in its use.**

Another tool, and one of the most efficient methods, is the rapid-cutting 'hot knife'. This tool uses a wide blade and is quick and versatile, able to be used easily in profiled sections where access is otherwise awkward.

Use the following procedure when repairing underbody coatings:

1. Remove existing underbody coatings.

2. After panel repair, clean the affected area with a solvent wipe, and treat bare metal with an etch phosphate material.
3. Re-prime the affected area. **DO NOT under any circumstances apply underbody sealer directly to bare metal surfaces.**
4. Replace all heat-fusible plugs which have been disturbed. Use rubber grommets of equivalent size if plugs are not available, but ensure that they are embedded in sealer.
5. Mask off all mounting faces from which mechanical components, hoses and pipe clips, have been removed. Underbody sealer must be applied **before** such components are refitted.
6. Brush sealer into all exposed seams.
7. Spray the affected area with an approved service underbody sealer.
8. Remove masking from component mounting faces, and touch-in where necessary. Allow adequate drying time before applying underbody wax.

### **Underbody Wax**

After refitting mechanical components, including hoses, pipes and small fixtures, mask off the brake discs and apply a coat of approved underbody wax.



**NOTE: Where repairs include the application of finish paint coats in the areas requiring underbody wax, paint operations must be carried out BEFORE wax application.**

### **Underbonnet Wax**

Where repairs have involved replacement of engine bay panels, treat the entire engine compartment including all components, clips and small fixtures with an approved underbonnet lacquer or wax.

### **Proprietary Anti-Corrosion Treatments**

The application of proprietary anti-corrosion treatments in addition to the factory-applied treatment could invalidate the Corrosion Warranty and should be discouraged. This does not apply to approved, compatible, preservative waxes which may be applied on top of existing coatings.

### Fitting Approved Accessories

When fitting accessories it is important that the vehicle's corrosion protection is not affected, either by breaking the protective coating or by introducing a moisture trap.

DO NOT screw self-tapping screws directly into the body panel but fit plastic inserts first. Protect the edges of holes drilled into panels, chassis members and other body parts with a suitable zinc rich or acid etch primer, followed by a protective wax coating brushed onto the surrounding area.

DO NOT affix unpainted metal surfaces of any accessory directly to the vehicle bodywork unless they are suitably protected. Where metal faces are bolted together always interpose a suitable interface material such as weldable zinc rich primer, extruded strip or zinc tape.

### Cavity Wax Injection

Box sections treated with cavity wax are shown in this section. Repairs affecting these areas must include re-treatment with an approved cavity wax, using the access points illustrated. In addition, all interior surfaces which have been disturbed during repairs must be wax injected whether they have been treated in production or not. This includes all box members, cavities, door interiors etc. It is permissible to drill extra holes for access where necessary, provided these are not positioned in load-bearing members. Ensure that such holes are treated with a suitable zinc rich primer, brushed with wax and then sealed with a rubber grommet.

Prior to wax injection, ensure that the cavity to be treated is free from any contamination or foreign matter. Where necessary, clear out any debris using a compressed air supply.

Carry out wax injection after final paint operations. During application, ensure that the wax covers all flange and seam areas and that it is applied to all repaired areas of both new and existing panels.



**NOTE: Apply cavity wax AFTER the final paint process and BEFORE refitting of any trim components.**

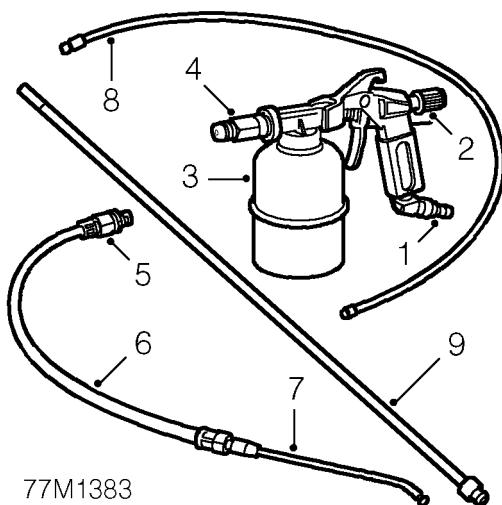
It should also be noted that new panel assemblies and body shells are supplied without wax injection treatment which must be carried out after repairs.

Effective cavity wax protection is vital. Always observe the following points:

- Complete all finish paint operations before wax application.
- Clean body panel areas and blow-clean cavities if necessary, before treatment.
- Maintain a temperature of 18° C during application and drying.
- Check the spray pattern of injection equipment.
- Mask off all areas not to be wax coated and which could be contaminated by wax overspray.
- Remove body fixings, such as seat belt retractors, if contamination is at all likely.
- Move door glasses to fully closed position before treating door interiors.
- Treat body areas normally covered by trim before refitting items.
- Check that body and door drain holes are clear after the protective wax has dried.
- Keep all equipment clean, especially wax injection nozzles.



## Application Equipment and Techniques



77M1383

1. Air inlet
2. Flow control (spray pattern adjustment)
3. Pressure cup (1 litre [1.7 pt] capacity). Maximum pressure 9.7 bar, 9.8kg/cm<sup>2</sup> (140 lb/in<sup>2</sup>).
4. Gun connector
5. Lance nipple connection
6. Flexible lance
7. Rigid directional hook wand (forward cone spray pattern)
8. Flexible nylon 1100mm (43 1/4 in) lance with 360° spray pattern
9. Rigid 1100mm (43 1/4 in) lance with 360° spray pattern

When re-treating wax-injected areas which have been disturbed during repairs, it is necessary to use a compressed air spray gun with integral pressure cup and a selection of interchangeable lances.

The following points must be observed during use, according to the attachments fitted:

- Use the rigid or flexible lance attachments with 360° spray dispersal when treating enclosed areas, to ensure maximum coverage.
- Where openings are restricted, use the hook nozzle to provide a more directional spray (e.g. inside narrow or short box sections).
- Spray exposed underbody surfaces directly from the gun less lance attachment and without disconnecting the fluid coupling.

**1100 mm (43 1/4 in) Rigid Lance:** The nozzle on the rigid lance produces a 360° circular spray pattern combined with a forward-directed spray. Although wax is distributed to all box section surfaces in a single stroke, effective and complete coverage is best achieved in long, straight structures and box section cavities by spraying on both outbound and return strokes of the lance.

The rigid lance also provides the positional accuracy required in shaped sections, by allowing visual assessment.

**CAUTION: Do not force the lance into access holes when using this attachment.**

**1100 mm (43 1/4 in) Flexible Nylon Lance:** This lance is similar in pattern to the rigid version, but provides the additional penetration needed for curved sections or in places where access is difficult. Its main limitation is a lack of positional accuracy inside box sections.

Carry out spraying on the outward stroke of the lance. Withdraw the lance slowly to ensure sufficient coverage. **DO NOT withdraw the lance too quickly.** Keep the nylon tube of the lance away from the edges of the access hole to eliminate abrasion and extend the life of the tube. Take care to ensure that spraying ceases just before the nozzle emerges from the access hole. To assist this process, apply RED paint to the final 30mm (1 3/16 in) of the nozzle.

**Hook Nozzle on Flexible Lance:** The rigid hook produces a highly atomised, forward-directed, fully conical spray pattern having long range and good dispersion characteristics. This combination has good directional capabilities for the treatment of short, narrow sections and may also be used for direct spraying of inner wheelarches etc.

Position the flat area at the end of the lance at 180° to the nozzle spray direction. This will help to guide the spray more accurately when it is concealed in a box section or access hole.

For general spraying move the nozzle in an arc from side to side, to ensure full coverage.



**NOTE: Keep all wax injection/application equipment clean. Use white spirit for this purpose immediately after wax injection operations.**

#### **Precautions during Body Repairs and Handling**

Take care when handling the vehicle in the workshop. PVC underbody sealers, seam sealers, underbody wax and body panels may be damaged if the vehicle is carelessly lifted.

Always follow the correct lifting, jacking and towing procedures. **See INTRODUCTION, Information**

#### **Steam Cleaning and Dewaxing**

Due to the high temperatures generated by steam cleaning equipment, there is a risk that certain trim items could be damaged and some adhesives and corrosion prevention materials softened or liquified.

Adjust the equipment so that the nozzle temperature does not exceed 90° C (194° F). Take care not to allow the steam jet to dwell on one area, and keep the nozzle at least 300mm (12 in) from panel surfaces.

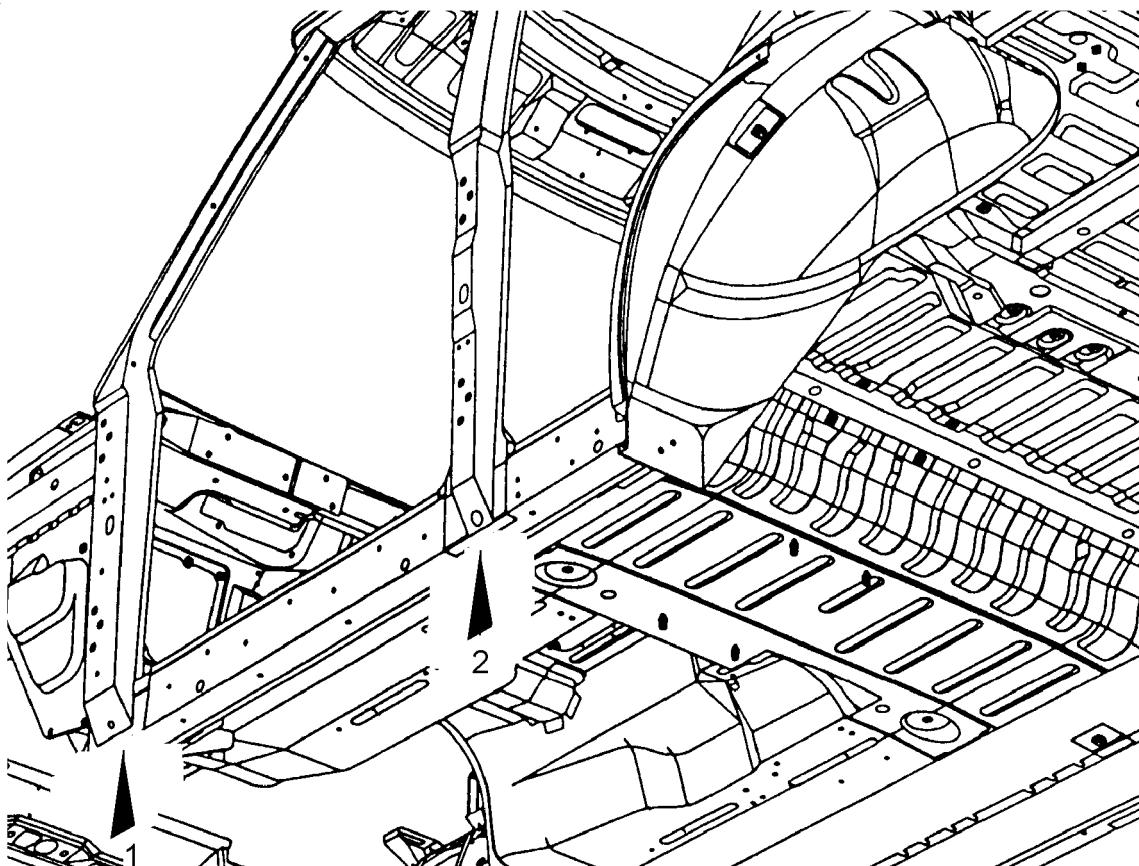
Do NOT remove wax or lacquer from underbody or underbonnet areas during repairs. Should it be necessary to steam clean these areas, apply a new coating of wax or underbody protection as soon as possible.



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CAVITY WAX

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77M1527

1. Injection hole at lower 'A' post.
2. Injection hole at lower 'B' post.

All areas symmetrically opposite to those shown are also treated. **See GENERAL SPECIFICATION DATA, Sealing and corrosion protection.**

## SEALANTS AND ADHESIVES

### Structural Adhesive

Metal-to-metal adhesive is applied to critical joint areas during factory assembly. The material used is a high-temperature, heat cured, nitrile phenolic which serves both to bond two metal surfaces and also to seal the joint against ingress of dust, water, petrol and fumes. This material is not suited for service use, and should be substituted in repair using a suitable medium strength adhesive.

When separating a joint treated with metal-to-metal adhesive, to avoid distortion it is recommended that the joint be gently heated until the bonds weakens sufficiently to permit panel separation.



**NOTE: Spot welding through metal-to-metal adhesive is feasible, but take special care to adjust the transformer setting to ensure a reliable weld. DO NOT carry out MIG welding on a joint area which has been treated with metal-to-metal adhesive until all traces of adhesive have been removed.**

### Seam Sealers

A heat cured, PVC Plastisol sealer is applied to joint areas during factory assembly. This material is not suitable for service use.

Carry out seam sealing after the application of primer and before the surfacer and final paint coats. Ensure that surfaces are first cleaned of all grease and oil. Apply the sealer material to the joint as a bead, either by hand or using an applicator gun. Brush sealer well into the joint and wipe smooth using a cloth soaked with solvent such as Shell SBP3. This will ensure an acceptable cosmetic finish.

Apply sealer to ALL accessible joints following repair work. Be aware that damage to a vehicle can often result in deflection to those areas of the body which are remote from the impact. The sealers in these areas can therefore be disturbed by subsequent straightening and repair operations. Check joints in the vicinity of the area undergoing repair for evidence of cracked sealer, clean them out as required and re-treat them with fresh sealer using the following procedure:

- Clean the affected joint or seam and re-treat any exposed metal areas with a suitable etch phosphate primer.
- Treat affected area with an acid-etch primer.

- Apply appropriate seam sealer as necessary.
- Apply appropriate colour coat (and underbody sealer as applicable).

Where joints are inaccessible following the reassembly or fitment of components, ensure that a paste-type sealer is applied to such joints. Certain seams also become inaccessible after the completion of panel repairs. In such instances the paint process should be carried out and sealers applied before final assembly.

Provided access is adequate, apply the sealer to both sides of the repair joint. Where access is limited to one side only (e.g. box sections), inject the affected box member with cavity wax.



**CAUTION: ALWAYS deploy an extractor unit to remove toxic fumes when using oxy-acetylene equipment to remove panels treated with wax and sealers.**

### Sealing Water Leaks

Sealing charts in this section show those areas of the bodyshell most likely to be affected by accident damage and water leaks, and which could therefore require re-treatment in repair. They do not show those joint areas which only apply to factory assembly operations and which are unlikely to be disturbed in service (e.g. centre tunnel), or where the damage would be so severe that the entire bodyshell would normally be written off.

When water leakage occurs, always adopt a logical approach to the problem using a combination of skill, experience and intuition. Do not attempt to reach a conclusion based only on visual evidence, such as assuming that a leak emanates from the windscreen because the footwell is wet. It will often be found that the source of the leak is elsewhere. The correct procedure will increase the chance of locating a leak, however obscure it may seem.



## Tools and Equipment

The following tools and equipment are recommended for detection and rectification of water leaks:

1. Garden sprayer (hand-operated).
2. Wet/dry vacuum cleaner.
3. Dry absorbent cloths.
4. Battery torch.
5. Small mirror.
6. Weatherstrip locating tool.
7. Trim panel remover.
8. Small wooden or plastic wedges.
9. Dry compressed air supply.
10. Hot air blower.
11. Sealer applicators.
12. Ultrasonic leak detector.

During leak detection, the vehicle should be considered in three basic sections:

- The front interior space,
- The rear passenger space (where applicable), and
- The rear loadspace or boot.

## Testing

From the information supplied by the customer it should be possible for the bodyshop operator to locate the starting point from which the leak may be detected. After the area of the leak has been identified, find the actual point of entry into the vehicle. A simple and effective means initially is an ordinary garden spray with provision for pressure and jet adjustment. This will allow water to be directed in a jet or turned into a fine spray. Use a mirror and a battery-powered torch (NOT a mains voltage inspection lamp) to see into dark corners.

The sequence of testing is particularly important. Start at the lowest point and work slowly upwards, to avoid testing in one area while masking the leak in another. For example, if testing started at the level of the windscreen, any water cascading into the plenum chamber could leak through a bulkhead grommet and into the footwells. Even at this point it could still be wrongly assumed that the windscreen seal was at fault.

Another important part of identifying a water leak is by visual examination of door aperture seals, grommets and weatherstrips for damage, deterioration or misalignment, together with the fit of the door itself against the seals.

## Sealing

When the point of the leak has been detected, proceed to rectify it using the following procedure:

1. Renew all door aperture seals and weatherstrips which have suffered damage, misalignment or deterioration.
2. Check all body seals to ensure that they are correctly located on their mounting flanges/faces using a locating tool if necessary.
3. Dry out body seams to be treated using compressed air and/or a hot air blower as necessary.
4. Apply sealant on the outside of the joint wherever possible to ensure the exclusion of water.
5. When rectifying leaks between a screen glass and its weatherstrip (or in the case of direct glazing, between the glass and bodywork), avoid removing the glass if possible. Apply the approved material either at the glass to weatherstrip or glass to body.

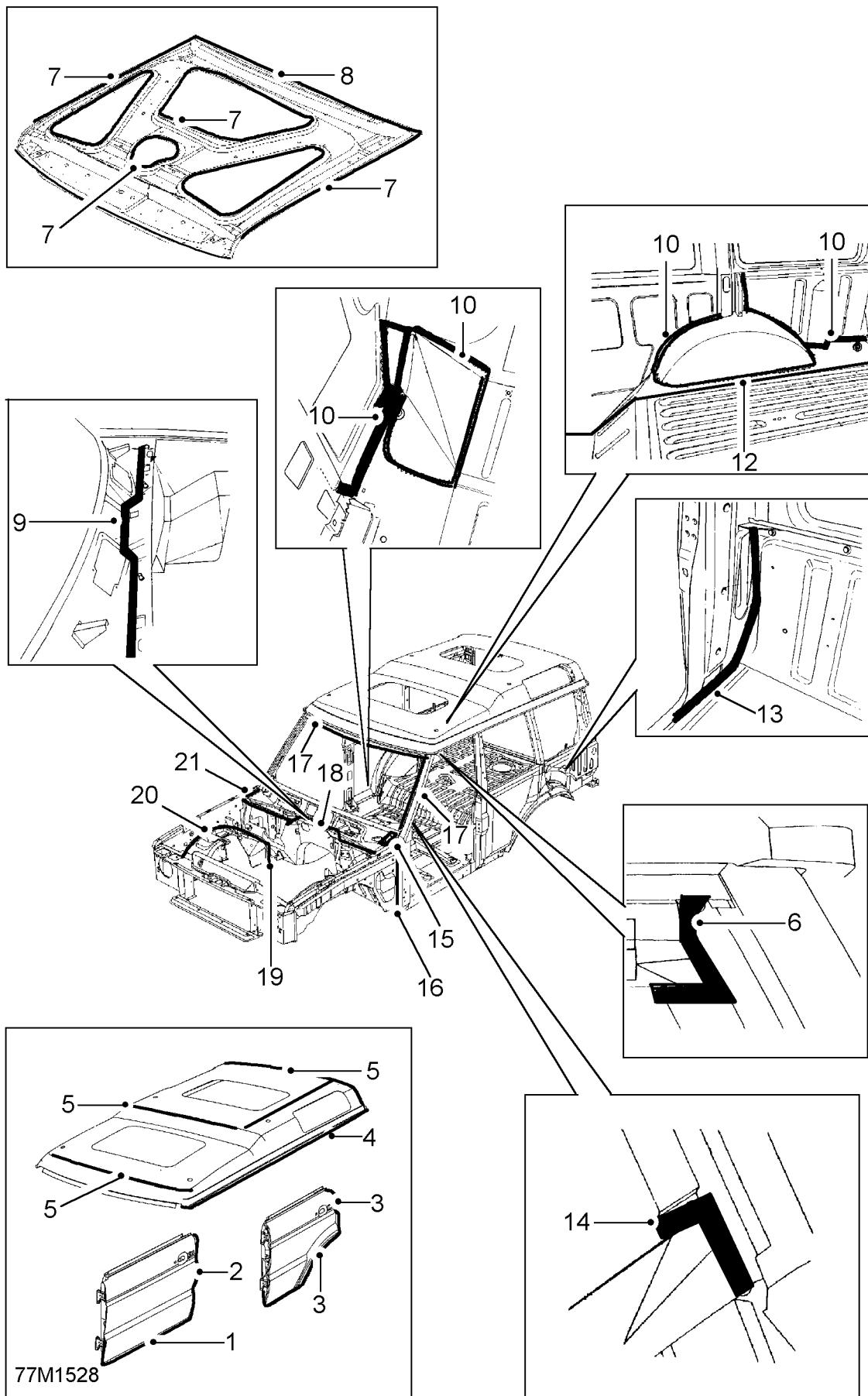
## General

**CAUTION: When using automotive sealants the manufacturer's instructions must be followed. As a general guide, avoid eye contact, prolonged skin contact and inhalation of vapours. Use only in well ventilated areas. In cases of inadvertent eye contact, rinse immediately with clean cold water and seek medical advice as soon as possible. After contact with the skin wash with soap and water and replace any contaminated clothing.**

## SEALING CHARTS

The charts on the following pages show those areas of the monocoque which are treated with sealant and adhesive materials in production. Suitably approved materials must be used during repair.

## Sealing charts (continued)

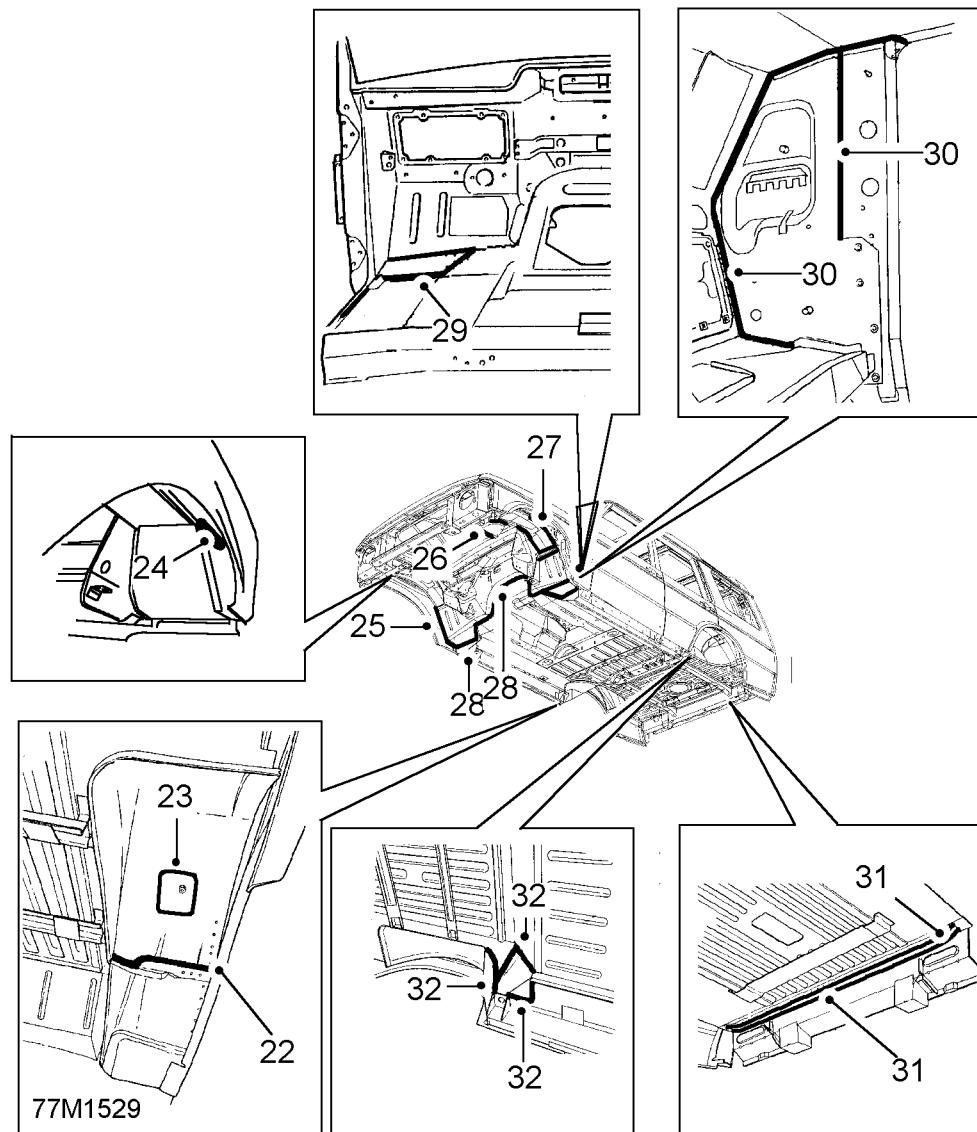




1. Seam sealer light
2. Seam sealer light
3. Seam sealer light
4. Seam sealer light
5. Anti-flutter material
6. Seam sealer light
7. Anti-flutter material
8. Structural adhesive
9. Seam sealer light
10. Seam sealer light
11. Seam sealer light
12. Weld-through sealer
13. Seam sealer light
14. Seam sealer light
15. Seam sealer (on bonnet hinge mount faces)
16. Weld-through sealer
17. Seam sealer light
18. Seam sealer light
19. Seam sealer heavy
20. Seam sealer heavy
21. Seam sealer heavy

All areas symmetrically opposite to those shown are also treated. See **GENERAL SPECIFICATION DATA, Sealing and corrosion protection.**

## Sealing charts

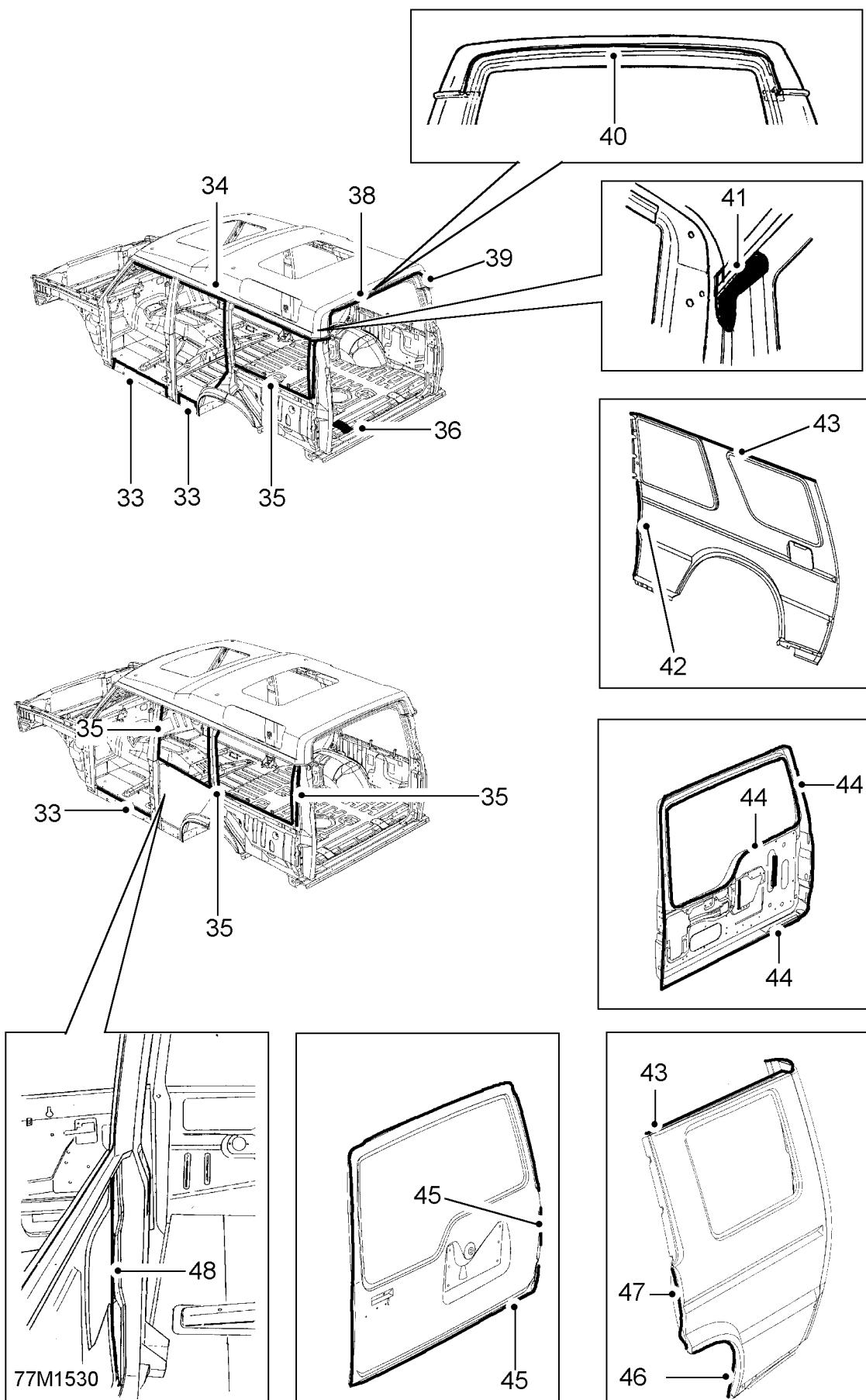




- 22. Seam sealer heavy
- 23. Seam sealer heavy
- 24. Seam sealer heavy
- 25. Seam sealer heavy
- 26. Seam sealer heavy
- 27. Seam sealer heavy
- 28. Seam sealer heavy
- 29. Seam sealer light
- 30. Seam sealer light
- 31. Seam sealer heavy
- 32. Seam sealer heavy

All areas symmetrically opposite to those shown are also treated. *See GENERAL SPECIFICATION DATA, Sealing and corrosion protection.*

## Sealing charts

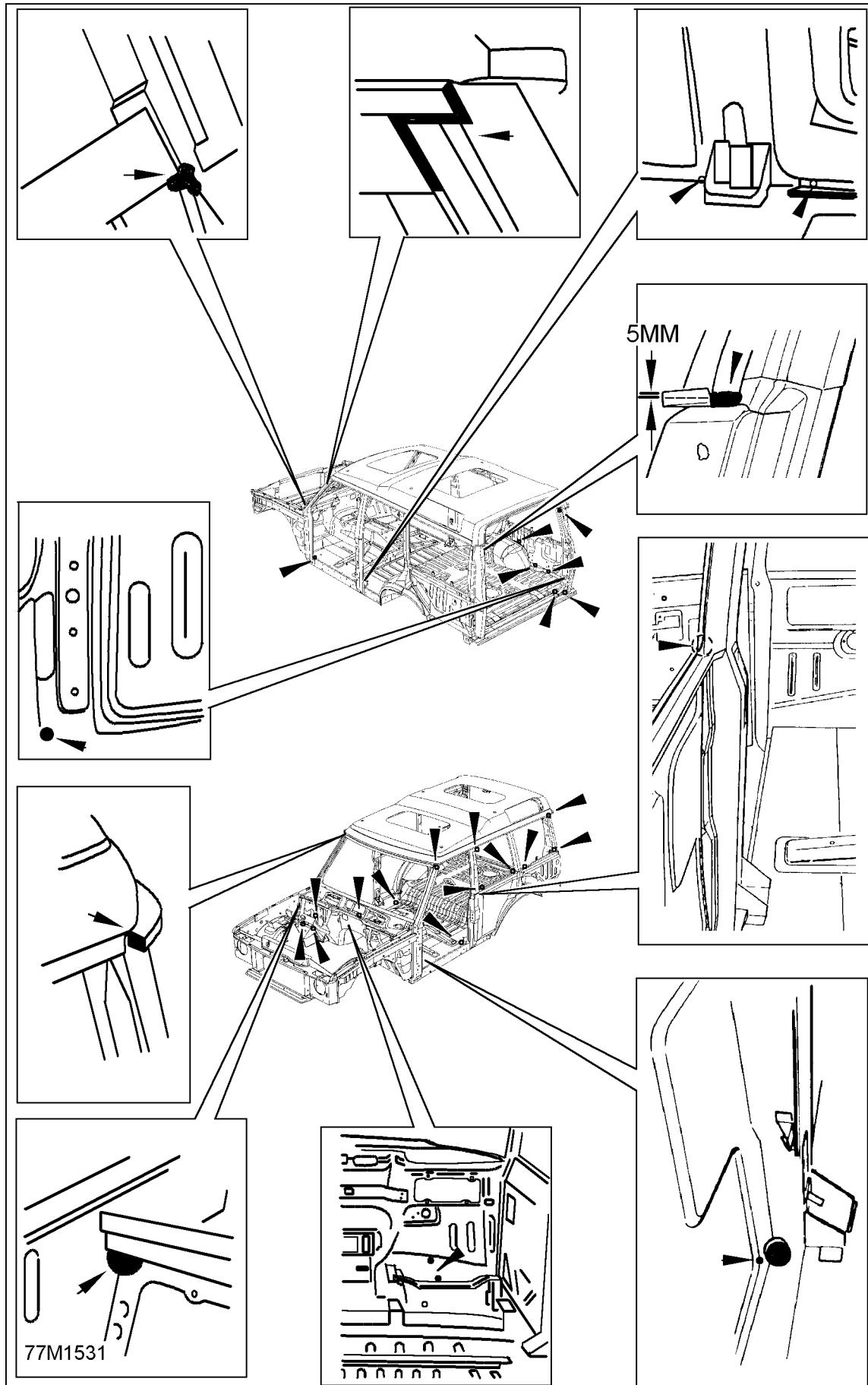




- |   |  |
|---|--|
| 33. Seam sealer light<br>34. Weld-through sealer<br>35. Butyl strip sealer<br>36. Seam sealer light<br>37. Seam sealer light<br>38. Polyurethane tape (on flange)<br>39. Seam sealer light<br>40. Seam sealer light | 41. Seam sealer light<br>42. Seam sealer light<br>43. Seam sealer light<br>44. Weld-through sealer<br>45. Seam sealer light<br>46. Seam sealer heavy<br>47. Seam sealer light<br>48. Seam sealer light (3-door only) |
|---|--|

All areas symmetrically opposite to those shown are also treated. **See GENERAL SPECIFICATION DATA, Sealing and corrosion protection.**

## Putty sealant locations





All areas symmetrically opposite to those shown are also treated. See **GENERAL SPECIFICATION DATA**, **Sealing and corrosion protection**.



## PAINT

### Replacement Panels

Service panels are supplied with a cathodic primer coating as part of the panel protection, and in compliance with the vehicle's Corrosion Warranty where applicable. **DO NOT remove this primer before paint refinishing.** In the event of localised surface damage or imperfections, ensure that the minimum of primer is removed during rectification work for effective repair.

Rectify damage by panel beating or straightening. To remove corrosion or paint runs on outer surfaces, abrade primer coat in the affected area as necessary using the following procedure:

1. Clean the panel using a solvent wipe.
2. Treat exposed areas of metal with an etch phosphate process.
3. Re-treat the affected area using either a separate acid-etch primer and two-pack surfacer, or an integrated etch primer/filler.

### Bolted Panels

Before fitting bolt-on panels, ensure that all mating and adjacent surfaces on the vehicle and replacement panel are free from damage and distortion. Rectify if necessary as described in this section, and apply preformed strip sealer where specified.

Remove all existing sealant using a scraper. This can be made easier by softening the sealant with 3M 8984 General Purpose Adhesive Cleaner or White Spirit before removal.

After the sealant has been removed, apply a suitable etch primer to all bare metal areas such as Berger Standox 1:1 Full Primer 405.0383.6 with 1:1 Activator 801.7997.5.

Where it is necessary to remove the door or bonnet [hood] hinges, ensure that the bare metal surfaces exposed are also etch primed.

### Welded Panels

1. Remove primer from the immediate vicinity of new and existing panel flanges, cleaning to a bright metal finish.
2. Where joints are to be spot welded, apply weld-through zinc rich primer to joint faces of both flanges. Make the spot welds while primer is still wet, or according to the manufacturer's instructions.
3. Dress accessible weld seams.
4. Clean panel using solvent wipe.
5. Treat bare metal with an etch phosphate process.
6. Re-treat repaired areas.



**NOTE: It is not satisfactory to use weld-through, zinc rich primers in conjunction with arc or MIG welding.**

### Sectioned Panels

When replacing part or sectioned panels, the basic procedure is the same as for welded panels described above, with the following variations:

1. Remove primer from both new and existing joint faces, cleaning to a bright metal finish.
2. Where an overlap joint with the existing panel is to be spot welded, apply weld-through, zinc rich primer to both joint faces and spot weld while the primer is still wet or according to the manufacturer's instructions.
3. MIG weld butt joints where applicable.
4. Clean the panel with a solvent wipe.
5. Treat bare metal areas using an etch phosphate process.
6. Re-prime affected areas as necessary as for rectifying transit damage.
7. Treat the inner faces of lap or butt joints with a suitable cavity wax. **See Sealing and corrosion protection.**

### Clinch Panels (eg Doorskins etc.)

1. Abrade primer on new and existing panel joint faces, and clean using a solvent wipe.
2. Apply metal-to-metal adhesive where applicable.
3. Where joints are to be spot welded, apply suitable weld-through, zinc rich primer to weld areas.
4. Where joints are to be MIG, arc or gas welded, apply zinc rich primer in adjacent areas **but leave the welded area untreated.**
5. To retain the panel whilst clinching the flanges, tack spot weld or plug weld as appropriate.
6. Clean the panel with a solvent wipe.
7. Treat bare metal areas with a suitable etch phosphate process.
8. Re-prime affected areas as necessary to rectify transit damage.



**NOTE: Replacement doors, bonnets and tailgates must be treated with a suitable seam sealer on clinched seams, following the primer coat.**

### Paint Refinishing

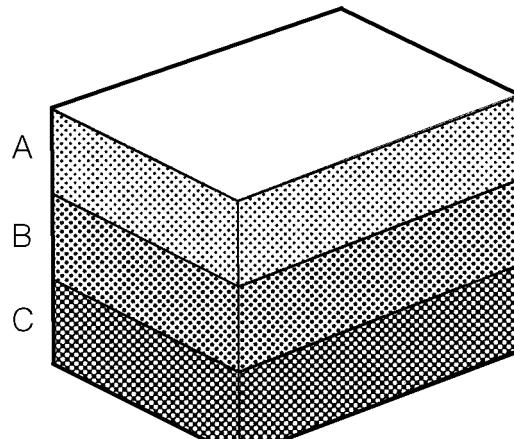
1. Seal all accessible exterior and interior seams with an approved seam sealer. Certain joints such as sill lower flange seams must be left unsealed.
2. Apply a suitable anti-chip primer where specified.
3. Apply a two-pack paint refinishing system.
4. Repair any damage to underbody sealers either at this stage or before paint operations.

### Paint Repairs

Before carrying out paintwork repairs, the vehicle must be thoroughly cleaned using either a steam cleaner or high-pressure washer.

Wash locally repaired areas using a mild water-mixable detergent and wipe them clean with solvent, immediately prior to paint application.

Abrade damaged paintwork where bare metal has been exposed until the metal is clean and extends beyond the area of immediate damage. Treat the bare metal with an etch phosphate to remove all traces of rust and provide a key for new paint coats. Re-treat the affected area using either a separate acid-etch primer and two-pack surfacer or an integrated etch primer/filler, and follow with a two-pack paint system. Those surfaces not receiving paint must be treated with a cavity wax following paint operations.



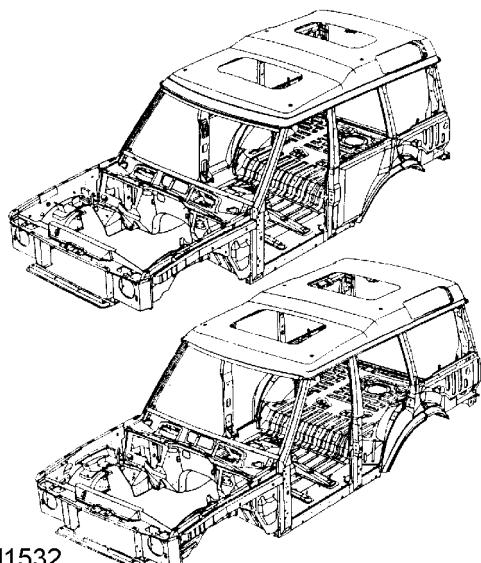
A. Two-pack top coat

B. Two-pack primer filler and etch primer

C. Etch phosphate

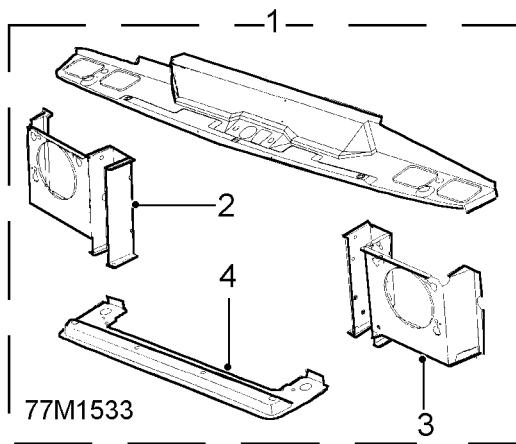


SUBSTRATE	ALUMINIUM PANELS	
	PANEL REPAIR	REPLACEMENT PANEL
<b>PREPARATION</b>	<p>Wet for using P60 Grade paper or dry sand using P240 grit discs.</p>	<p>Wet flat using P60 Grade paper or dry sand using P240 grit discs. Care must be taken to avoid cutting through to bare aluminium.</p>
<b>BODY FILLING</b>	<p>If filling is required, thoroughly abrade bare aluminium area to be filled and apply Standox Polyester</p>	<p>If filling is required, fill small indentations with Standox Polyester stopper 430-5029.</p>
<b>ETCHING</b>	<p>This process is not required if the original electrocoat primer is in sound condition. <b>IF NOT</b></p>	
	<p>Etch the bare aluminium and filler with auto-speed self etch primer 414-1171, mixed 1:1 with activator 801-7995. Apply one coat and allow to dry for approximately 20 minutes. Recoat within 1 hour.</p>	
<b>PRIMING</b>	<p>To obtain maximum adhesion and excellent build, apply Standox 2K 4:1 full primer 405-0381. Coats of 30-40 microns can be wet flattened with P60 grade paper after 45 minutes at 20°C.</p>	
<b>COLOUR COATING</b>	<p>Apply either Standox 2K Standocryl or Standox Metallic Basislack to the colour required. Hardeners and thinners will vary depending upon system employed, conditions available, temperature and size of vehicle etc. Refer to paint manufacturers Technical Information Sheet for correct selection.</p>	

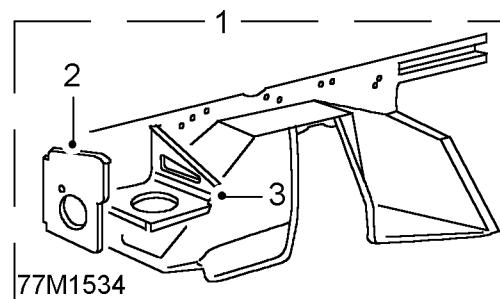
**SERVICE CONDITION OF PANELS****Bodyshell (3- and 5-Door)**

77M1532

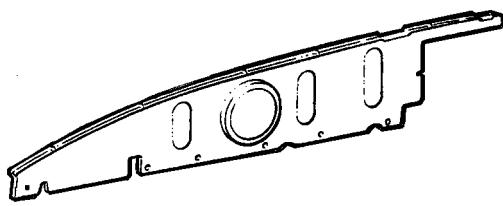
Bodyshells, which are also supplied with sunroof aperture are serviced less front wings, bonnet, side door assemblies and rear door.

**Front Panels**

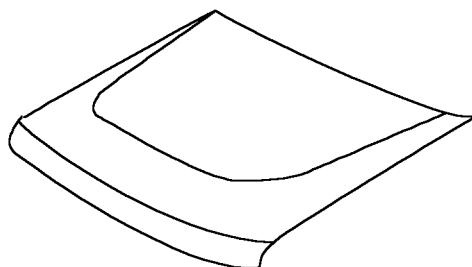
Front panels are serviced as a complete assembly (1) including a bolt-on bonnet lock platform. The following parts are also available separately: headlamp panels 2, 3) and cross brace (4).

**Valance and Wheelarch**

Valance and wheelarch panels are serviced as an assembly (1) and fitted to the bulkhead. The following parts are also available separately: closing panel (2) and battery mounting panel (3).

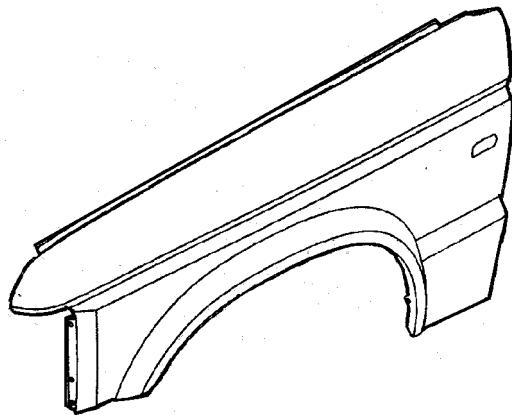
**Wing Extension Panel**

77M1535

**Bonnet**

77M1537

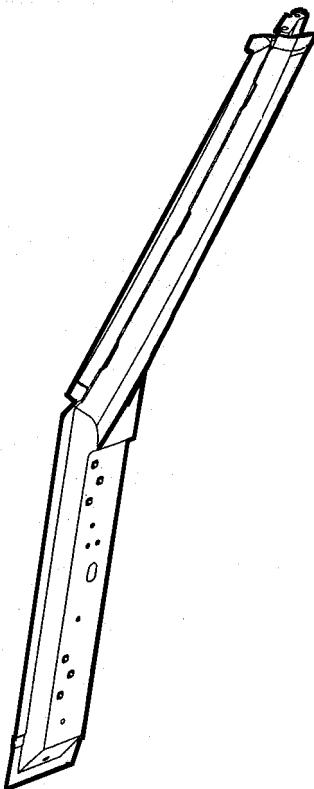
Wing extension panels are serviced as separate parts, and are fitted to the valance and wheelarch.

**Front Wing**

77M1536

Front wings are serviced as separate bolt-on aluminium panels.

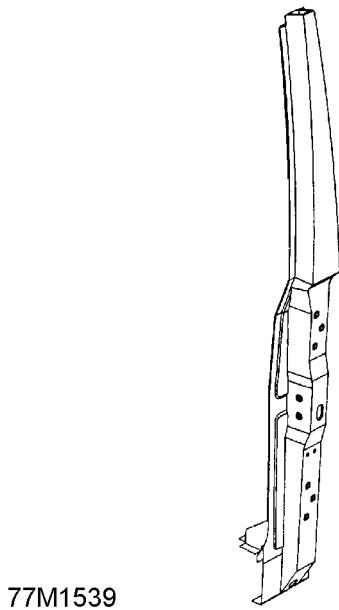
Bonnets are serviced less hinges which are available separately.

**'A' Post**

77M1538

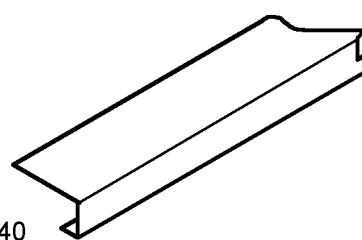
The 'A' post assembly is fitted to the bulkhead, dash side panel and inner sill.

'BC' Post



77M1539

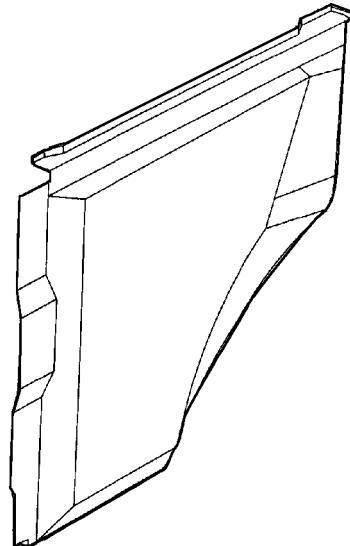
Outer Sill



77M1540

Outer sills are serviced as a complete panel.

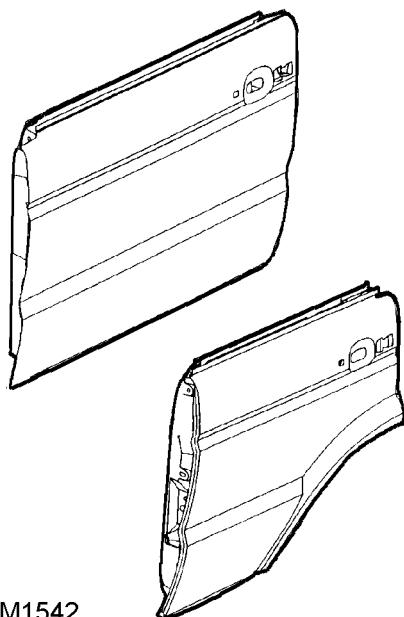
Body Side Closing Panel (3-Door only)



77M1541

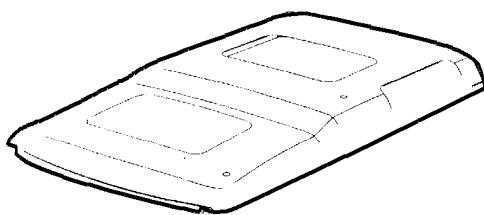
The 'BC' post assembly is fitted to the inner sill and cant rail.

Body side closing panels are serviced as a complete panel.

**Side Door Assemblies and Door Panels**

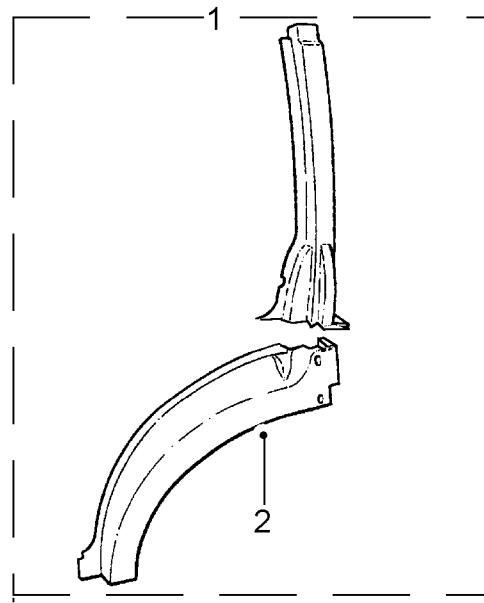
77M1542

Side door assemblies comprise an aluminium outer door panel clinched to a steel frame. Outer door panels are also available separately.

**Roof**

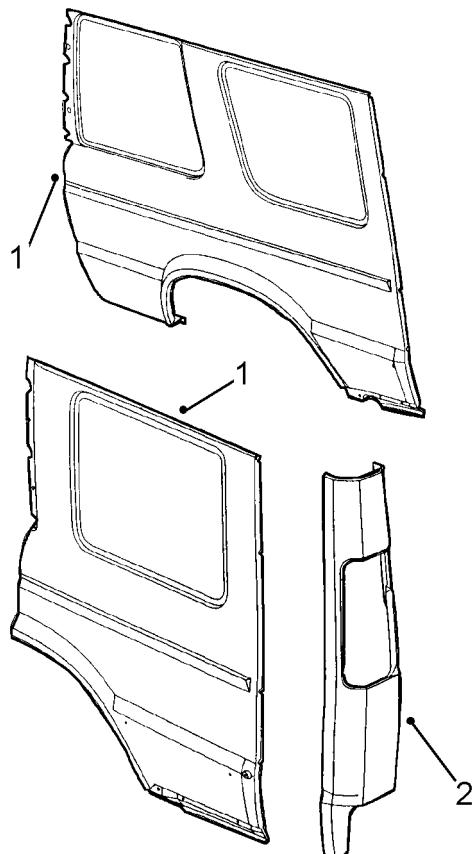
77M1543

Roof panels are serviced as a separate part. Header panel, roof bows and cant rail are available separately.

**'D' Post**

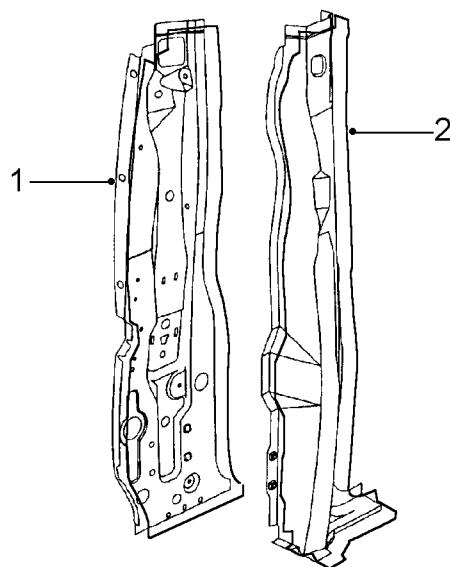
77M1544

'D' posts are serviced as an assembly (1) including the wheelarch panel (2).

**Body Side Panels**

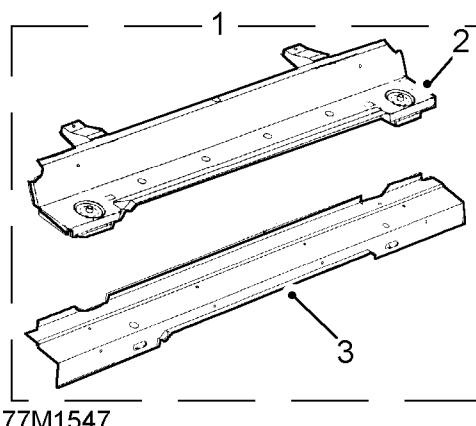
77M1545

Body sides are available as outer panels (1) and rear quarters (2), and are fixed to the body monocoque.

**Rear Corner Panels**

77M1546

Rear corner panels are serviced as separate closing panel (1) and outer panel (2).

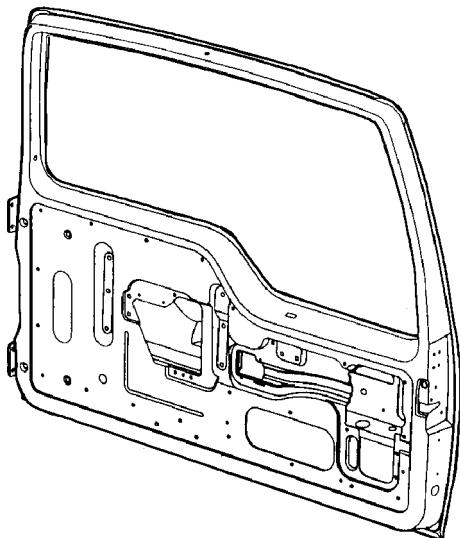
**Rear Panels**

77M1547

Rear panels are serviced as an assembly (1) including closing panel (2) and outer panel (3).



Rear Door



77M1548

Rear doors are serviced less hinges, which are available separately.



## **WELDING PRECAUTIONS, ALUMINIUM PANELS**

The body consists of a steel frame to which alloy outer panels are attached. The front wings [fenders], door panels and body side outer panels are made from a special light magnesium-aluminium alloy.

These aluminium panels can be effectively repaired using the 'Argon Arc' process of welding. This is a specialist operation which should only be carried out by specialist body shop, or an operator skilled in welding aluminium.

Under certain conditions it may not be practical to repair an exterior damaged panel. In such circumstances replacements for all exterior panels, except for the roof, can be fitted.

### **Impacts which do not deploy airbags**

**CAUTION: Check for structural damage in the area of the impact, paying particular attention to bumper armature, longitudinals, crash cans and bracketry.**

### **Panel beating**

1. Aluminium alloy panels can be beaten out after accidental damage in the same way as sheet steel. However, under protracted hammering the material will harden and must then be annealed to prevent the possibility of cracking. Do this by heating the damaged area and allowing it to cool gradually.

**CAUTION: Due to the low melting point of the material, take care to apply heat only gradually.**

**CAUTION: Before applying heat to any panel ensure that the panel is clean and free from underseal and that the area to be worked on is well clear of any combustible materials. Ensure that all necessary precautions are taken against fire.**

## **Welding**

### **General**

**CAUTION: Disconnect the battery negative lead before welding operations start.**

**WARNING: When welding near the fuel tank, drain the fuel system and remove the tank removed before welding operations start.**

2. Clean off all grease and paint, and dry thoroughly. Clean the area to be repaired, including the edges, and extend this to at least 15mm (1 5/8 in) either side of the weld using a stiff wire scratch brush or steel wool for this purpose. In addition, clean the welding rod or strip using steel wool. **It is essential to observe cleanliness in order to achieve a satisfactory repair.**
3. Use only 5 per cent magnesium aluminium welding rod (5Mg/A), when carrying out repairs to the aluminium body panels.

### **Welding tears and patches**

1. When repairing a split or crack which extends to the edge of a panel, drill a small hole at the end furthest from the panel edge to prevent the damage from spreading. When welding, start the weld at the same point and work towards the panel edge.
2. When welding a long split or crack, or making a long welded joint, tack the edges to be welded at intervals of between 50 and 100mm (2 to 4 in) with spots. Do this by melting the metal at the starting point of the weld and fusing it into a small amount of the filler rod, repeating the process at the suggested intervals. After this, weld continuously along the joint increasing the speed of the weld as the material heats up.
3. When applying a patch to a hole, cut and trim the patch to the correct shape to fit the hole but leaving a gap of 0.8mm (1/32 in) between the patch and the panel. Proceed to weld as above.

**CAUTION: Never apply an overlay patch.**

### **WELDING PRECAUTIONS, STEEL PANELS**

For ease of reference the diagrams on the following pages show only the type of weld used, where this varies from that used in production.

When carrying out welding operations the following criteria must be observed:

- Where resistance spot welds have been used in production, these must be reproduced with new spot welds in replacement where possible. All such reproduction spot welds must be spaced 30mm (1 3/16 in) apart.
- When spot welding, it is recommended that test coupons of the same metal gauges and materials are produced to carry out peel tests to ensure that welding equipment being used can produce a satisfactory joint. Plug welds must be used if a satisfactory spot weld cannot be produced.
- The electrode arms on hand-held spot welding guns must not exceed 300mm (11 13/16 in) in length.
- Single-sided spot welding is not acceptable.
- Brazing and gas welding are not acceptable EXCEPT where they have been specified in production.
- Where 3 metal thicknesses or more are to be welded together it is imperative to use MIG plug welds to ensure joint strength.
- MIG plug welds must be used in repair joints where there is no access for a resistance spot welder. To replace each production spot weld a hole must be drilled and/or punched, and a MIG weld then made in its place. The number of plug welds must match exactly the number of spot welds which have been removed.
- Where holes are left in an existing panel after removal of the spot welds, a single MIG plug weld will be made in each hole as appropriate.

- The replacement welds in the welding diagrams are denoted by the following symbols:



77M1386

A. Single thickness plug welds

B. Multiple thickness plug welds

C. MIG seam weld

### **Impacts which do not deploy airbags**



**CAUTION: Check for structural damage in the area of the impact, paying particular attention to bumper armature, longitudinals, crash cans and bracketry.**

### **Seat Belt Anchorages**

Seat belt anchorages are safety critical. When making repairs in these areas it is essential to follow design specifications. Note that High Strength Low Alloy (HSLA) steel may be used for seat belt anchorages.

Where possible, the original production assembly should be used, complete with its seat belt anchorages, or the cut line should be so arranged that the original seatbelt anchorage is not disturbed.

All welds within 250mm (9 7/8 in) of seat belt anchorages must be carefully checked for weld quality, including spacing of spot welds.



**WARNING: Body parts incorporating seat belt anchorages MUST be renewed completely if damaged beyond repair, as the welds in these areas are safety critical and cannot be disturbed.**



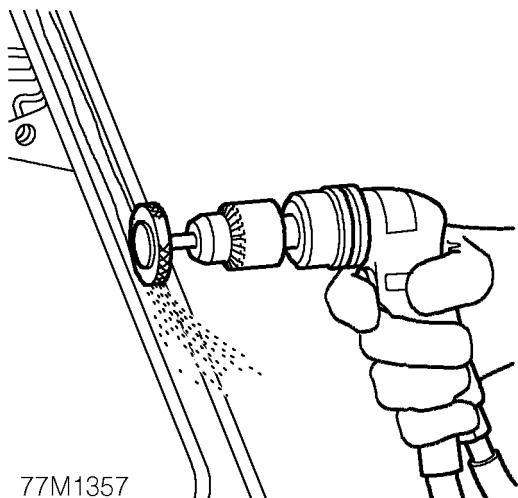

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**PANEL REPLACEMENT PROCEDURE**


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**General**

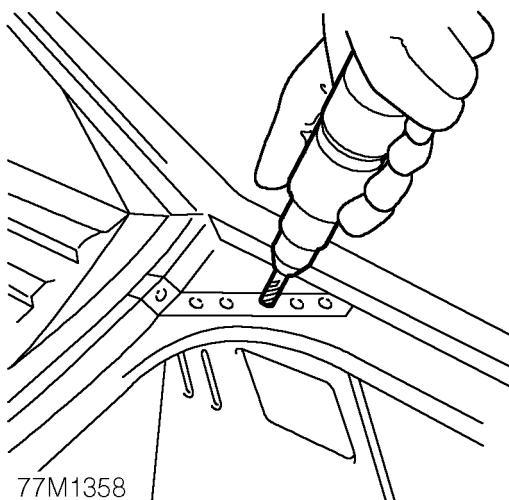
This information is designed to explain the basic panel removal and replacement method. This standard method may vary slightly from one vehicle to another. The main criterion in removal and replacement of body panels is that Land Rover's original standard is maintained as far as possible.

**Remove Panel**

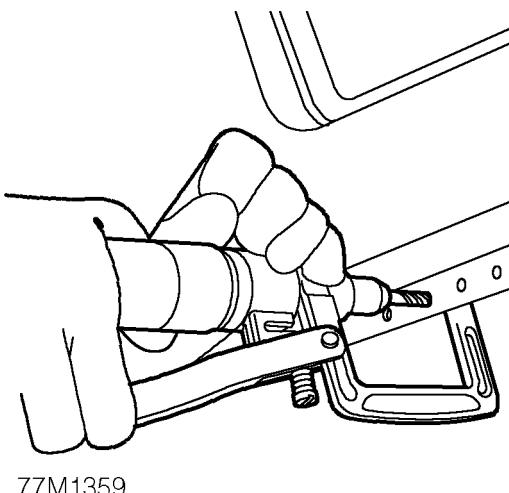
1. Expose resistance spot welds. For those spot welds which are not obviously visible, use a rotary impregnated wire brush fitted to an air drill, or alternatively a hand held wire brush.



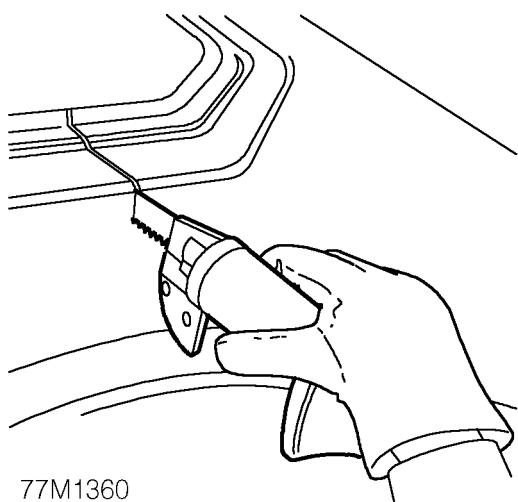
**NOTE: In wheelarch areas it may be necessary to soften underbody coating using a hot air gun, prior to exposing spot welds.**



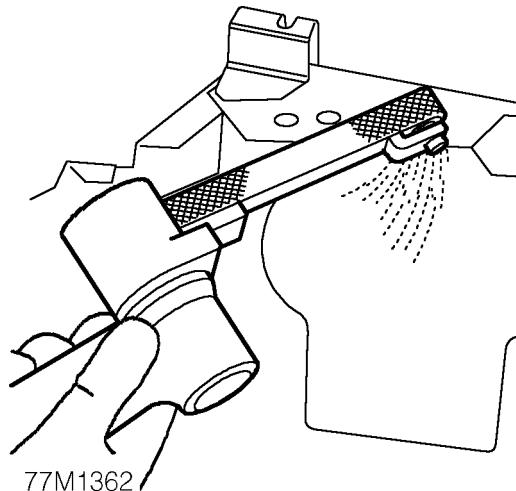
2. Cut out welds using a cobalt drill.



3. Alternatively use a clamp-type spot weld remover.

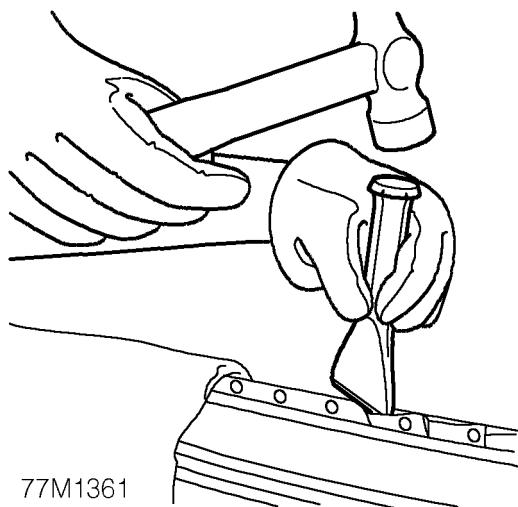


#### Prepare Old Surfaces



- Cut away the bulk of the panel as necessary using an air saw.

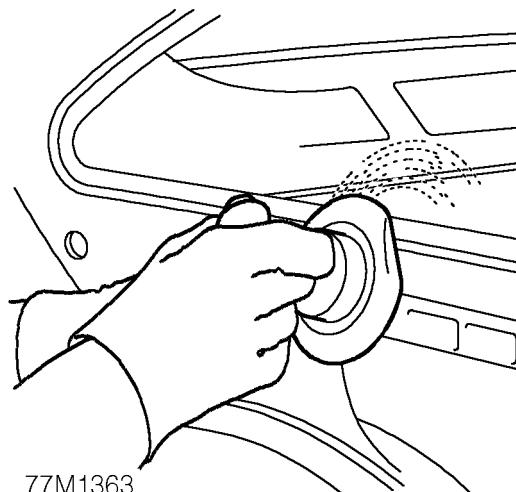
**NOTE:** On certain panel joints MIG welds and braze should be removed using a sander where possible, before cutting out the panel bulk.



- Separate spot welded joints and remove panel remnants using hammer, bolster chisel and pincers.

- Clean all panel joint edges to a bright smooth finish, using a belt-type sander.

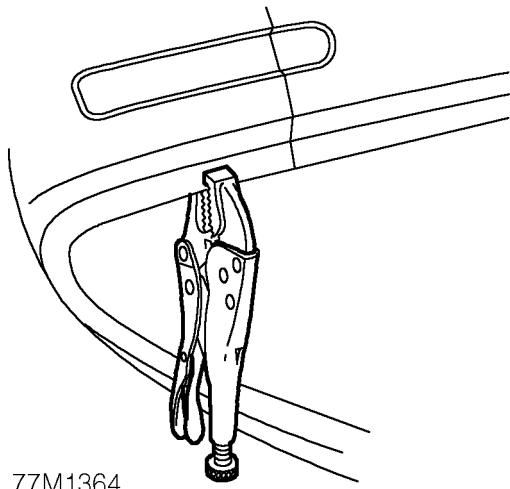
**NOTE:** Prior to sanding, remove remaining sealant using a hot air gun to minimise the risk of toxic fumes caused by generated heat. CARE MUST BE TAKEN TO AVOID EXCESSIVE HEAT BUILD UP WHICH MAY BE CAUSED BY THIS EQUIPMENT.



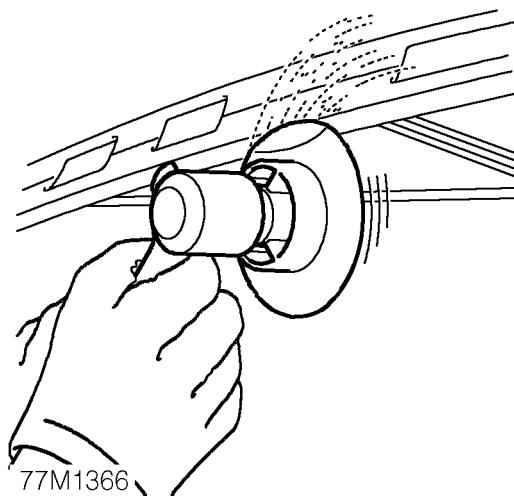
- As an alternative a disc sander may be used. Straighten existing joint edges using shaping block and hammer.



### Prepare New Surfaces

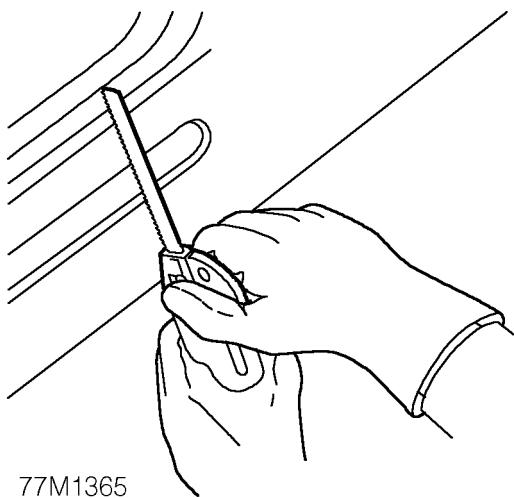


77M1364



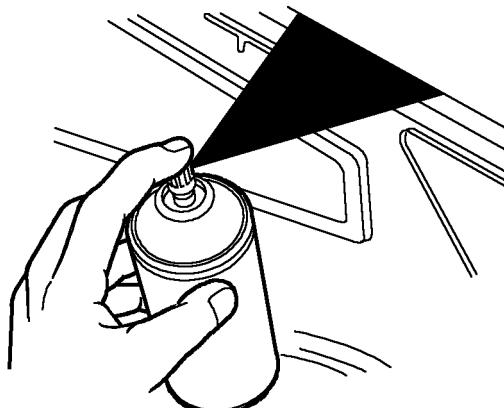
77M1366

8. Mark out bulk of new panel and trim to size, leaving approximately 50mm (1 1/32 in) overlap with existing panel. Offer up new panel/section, align with associated panels (e.g. new rear quarter aligned with door and tailgate). Clamp into position.



77M1365

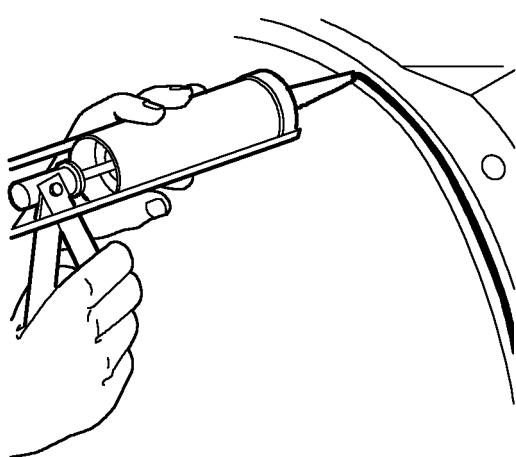
10. Prepare new panel joint edges for welding by sanding to a bright finish. This must include inner as well as outer faces.



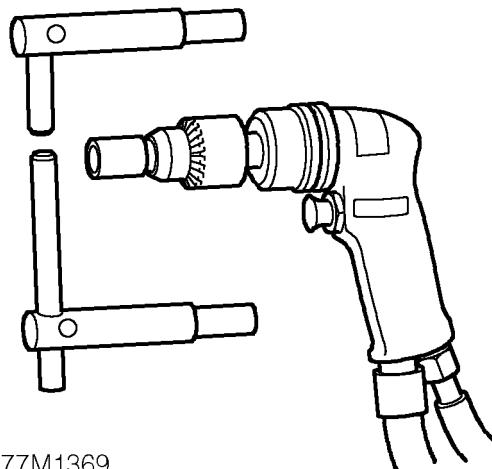
77M1367

9. Cut new and existing panels as necessary to form butt, joggle or brace joint as required. Remove all clamps and metal remnants.

11. Apply suitable weld-through primer to panel joint surfaces to be welded, using brush or aerosol can.



77M1368

**Welding**

77M1369

- 12.** Apply adhesive sealant to panel joint surfaces.  
See **GENERAL SPECIFICATION DATA, Information**

**Offer Up and Align**

Offer up new panel and align with associated panels. Clamp into position using welding clamps or Mole grips. Where a joggle or brace joint is being adopted, make a set in the original panel joint edge or insert a brace behind the joint.



**NOTE:** In cases where access for welding clamps is difficult, it may be necessary to use tack welds.

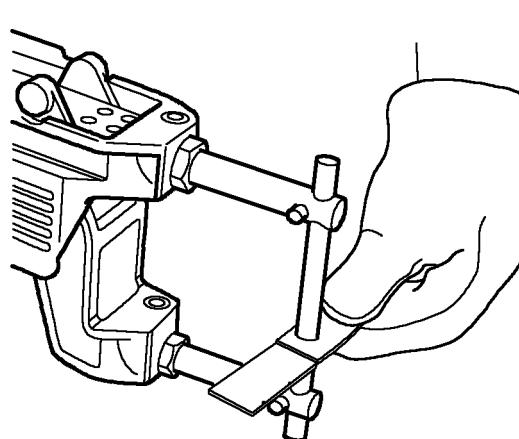
- 13.** Select arms for resistance spot welding and shape electrode tips using a tip trimmer.



**NOTE:** To maintain efficiency, the tips will require regular cleaning with emery cloth.

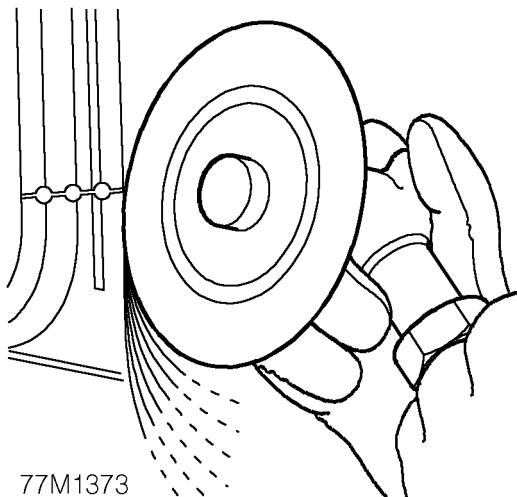
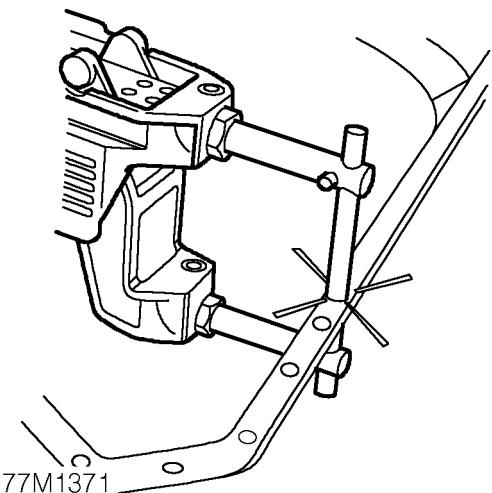


**CAUTION:** Use electrode arms not exceeding 300mm (12 in) in length.

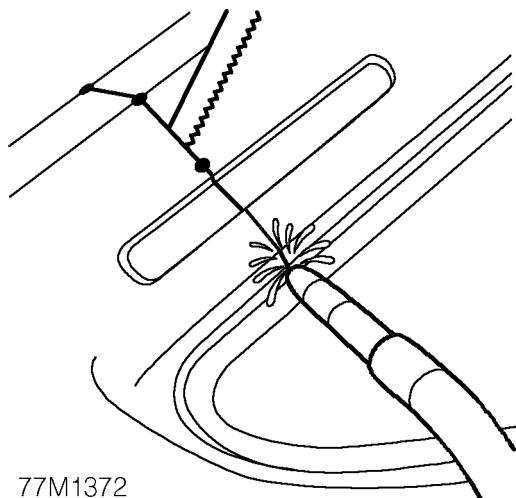


77M1370

- 14.** Fit resistance spot welding arms and test equipment for satisfactory operation, using test coupons. Where monitoring equipment is not available, verify weld strength by checking that metal around the weld puddle pulls apart under tension during pulling.

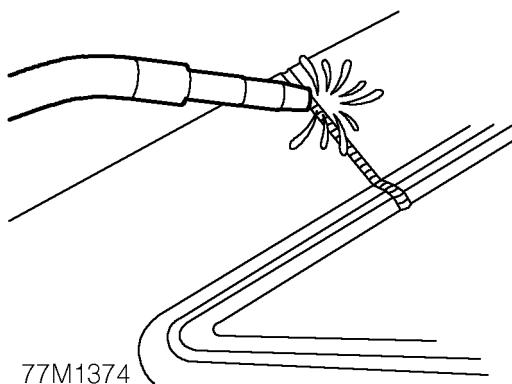


15. Use a resistance spot welder where access permits. Try to ensure weld quality by using a weld monitor where possible.

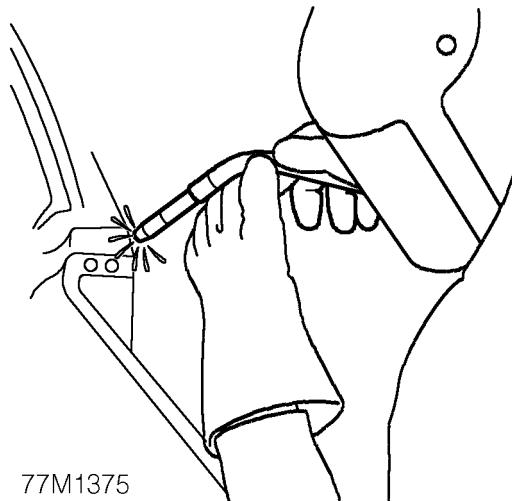
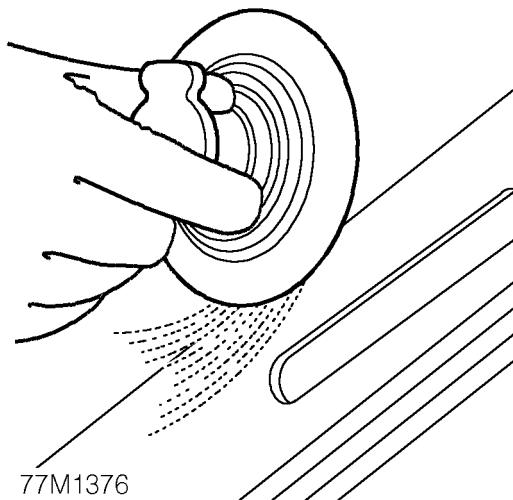


17. Dress MIG tack welds using a sander with 36 grit disc, or a belt-type sander where access is limited.

16. MIG tack weld butt joints and re-check alignment and panel contours where necessary. Ensure that a gap is maintained to minimise welding distortion, by inserting a hacksaw blade as an approximate guide.



18. MIG seam weld butt joints.



19. Always use MIG plug welds where excessive metal thickness or lack of access make resistance spot welding impractical. Make plug welds either by using holes left by the spot weld cutter, or through holes punched or drilled for the purpose.

20. Dress all welds using a sander with 36 grit disc, or a belt-type sander and/or impregnated wire brush.



**NOTE: Brazing operations, if required, must be carried out at this point.**

#### Body Trim

The following panel repair operations itemise body trim components which must be removed for access during each repair.

Because of the unpredictable nature of accident damage, the items listed make no allowance for any difficulties which may be found in removal and only apply to an undamaged vehicle. No allowance is made for any difficulties which may be found during panel removal. Damaged body trim items must be renewed as necessary following body repairs.




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**FRONT PANEL ASSEMBLY**


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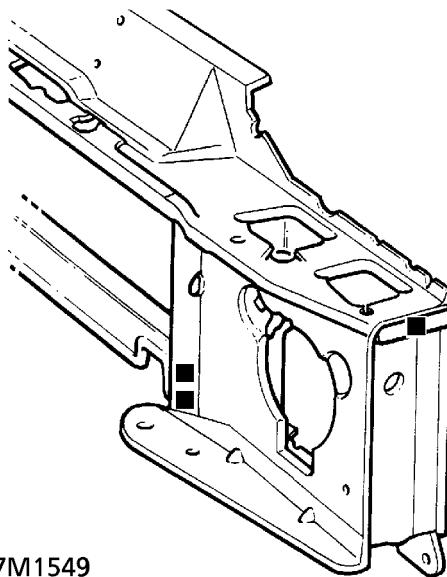
**Remove**

1. Disconnect both battery leads.
2. Raise front of vehicle.

**WARNING: Support on safety stands.**



3. Disconnect all ECUs.
4. Disconnect airbags and sensor system. *See SUPPLEMENTARY RESTRAINT SYSTEM, Repair.*
5. Disconnect alternator.
6. Remove both headlights.
7. Remove both front direction indicators.
8. Remove battery at RH inner wing.
9. Remove both wings [fenders]. *See CHASSIS AND BODY, Repair.*
10. Remove bonnet lock.
11. Remove bonnet safety catch bracket.
12. Remove front bumper assembly.
13. Remove front grille.
14. Remove radiator.
15. Remove power steering fluid reservoir and bracket at LH of radiator.
16. Remove ignition coil and bracket at LH of radiator (petrol engine vehicles).
17. Remove owner jack and jack cover at LH inner wing.
18. Remove engine air cleaner box at LH inner wing.
19. Remove battery.

**Refit**


77M1549

20. Prepare and clean panel joint faces. Punch or drill holes in new front panel assembly for plug welding at both sides as shown.
21. Reverse removal procedure.
22. Remove stands and lower vehicle.

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HEADLAMP PANEL

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Refit

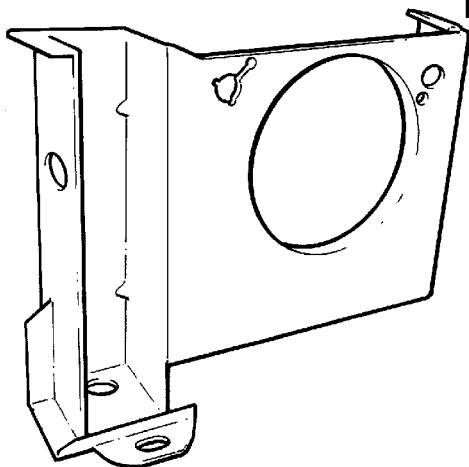
## Remove

1. Disconnect battery earth lead.
2. Raise front of vehicle.

**WARNING: Support on safety stands.**



3. Disconnect all ECUs.
4. Disconnect airbags and sensor system. **See SUPPLEMENTARY RESTRAINT SYSTEM, Repair.**
5. Disconnect alternator.
6. Remove RH or LH headlight.
7. Remove RH or LH front direction indicator.
8. Remove battery at RH inner wing (RH only).
9. Remove RH or LH wing [fender]. **See CHASSIS AND BODY, Repair.**
10. Remove front grille.
11. Remove radiator/oil coolers.
12. Remove power steering fluid reservoir and bracket at LH of radiator (LH only).
13. Remove ignition coil and bracket at LH of radiator - on petrol engine vehicles (LH only).
14. Remove owner jack and jack cover at LH inner wing (LH only).
15. Remove engine air cleaner box at LH inner wing (LH only).
16. Remove battery at RH inner wing (RH only).



77M1550

17. Prepare and clean panel joint faces. Punch or drill hole in headlamp panel top outer corner for plug welding as shown.
18. Reverse removal procedure.
19. Remove stands and lower vehicle.



## VALANCE AND WHEELARCH

### Remove

1. Disconnect battery earth lead.
2. Raise front of vehicle.

**WARNING: Support on safety stands.**



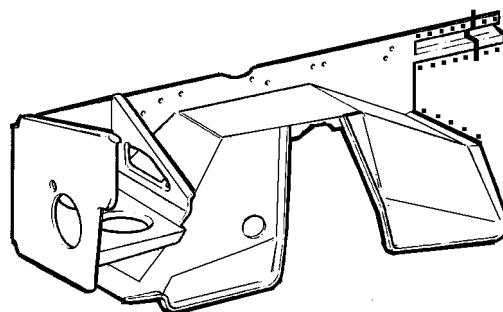
3. Disconnect all ECUs.
4. Disconnect airbags and sensor system.
5. Remove driver's or passenger's airbag module. *See SUPPLEMENTARY RESTRAINT SYSTEM, Repair.*
6. Disconnect alternator.
7. Remove RH or LH headlight.
8. Remove RH or LH front direction indicator.
9. Remove battery at RH inner wing.
10. Remove ignition coil and bracket at LH of radiator (petrol engine vehicles).
11. Remove power steering fluid reservoir at LH of radiator.
12. Remove RH or LH wing [fender]. *See CHASSIS AND BODY, Repair.*
13. Remove front grille.
14. Remove radiator/oil coolers.
15. Remove expansion tank and bracket on RH inner wing (RH only).
16. Remove charcoal canister and bracket on RH inner wing (RH only).
17. Remove fuse box - engine compartment and bracket at RH inner wing (RH only).
18. Remove lower steering shaft and universal joints (RH only).
19. Remove steering wheel (RH only).
20. Remove upper steering column (RH only).

21. Remove RH or LH front shock absorber
22. Remove engine air intake box at LH inner wing (LH only).
23. Remove bonnet [hood]. *See CHASSIS AND BODY, Repair.*
24. Remove modulator unit at LH inner wing (LH only).
25. Remove brake servo assembly (RH only).
26. Remove weatherstrips at upper edge of bulkhead and inner wing.
27. Remove air intake plenum cowl. *See CHASSIS AND BODY, Repair.*

### Refit



**NOTE: In this operation the valance and wheelarch is fitted in combination with a front panel assembly and wing extension panel.**



77M1551

28. Prepare and clean panel joint faces. Punch or drill holes in new valance and wheelarch for plug welding, and cut new panel to form seam welded butt joint with existing panel as shown.
29. Reverse removal procedure.
30. Remove stands and lower vehicle.

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WING EXTENSION PANEL

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Refit

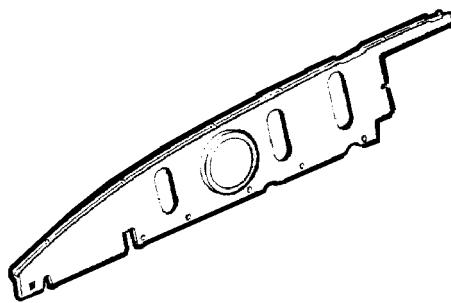
## Remove

1. Disconnect battery earth lead.
2. Raise front of vehicle.

**WARNING: Support on safety stands.**



3. Disconnect all ECUs.
4. Disconnect airbags and sensor system. *See SUPPLEMENTARY RESTRAINT SYSTEM, Repair.*
5. Disconnect alternator.
6. Remove RH or LH headlight.
7. Remove RH or LH front direction indicator.
8. Remove battery at RH inner wing.
9. Remove RH or LH wing [fender]. *See CHASSIS AND BODY, Repair.*
10. Remove expansion tank and bracket on RH inner wing (RH only).
11. Remove charcoal canister and bracket on RH inner wing, if fitted (RH only).
12. Remove fuse box - engine compartment and bracket at RH inner wing (RH only).
13. Remove engine air intake box at LH inner wing (LH only).
14. Remove bonnet [hood]. *See CHASSIS AND BODY, Repair.*
15. Remove modulator unit at LH inner wing (LH only).
16. Remove brake servo assembly (RH only).
17. Remove weatherstrips at upper edge of bulkhead and inner wing.
18. Remove air intake plenum cowl. *See CHASSIS AND BODY, Repair.*



77M1552

19. Prepare and clean panel joint faces. Punch or drill hole in lower front corner of new wing extension panel for plug welding as shown.
20. Reverse removal procedure.
21. Remove stands and lower vehicle.



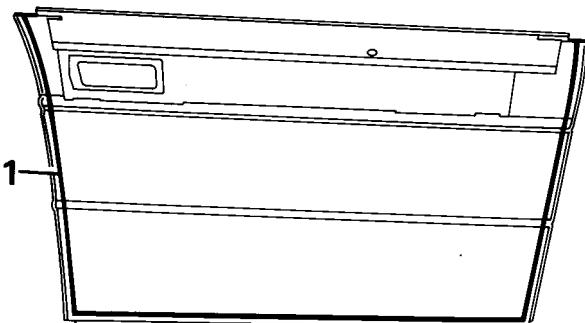

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**FRONT DOOR OUTER PANEL**


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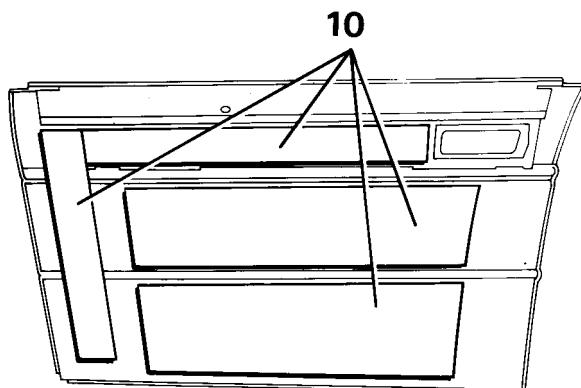
**Remove**

1. Remove front door. **See CHASSIS AND BODY, Repair.**
2. Remove front door trim panel. **See CHASSIS AND BODY, Repair.**
3. Remove window lift motor, door lock actuator and door harness, if fitted.
4. Remove exterior mirror.
5. Remove the door glass and regulator, door lock, and inner and outer release handles. **See CHASSIS AND BODY, Repair.**
6. Remove door and with hinge halves noting the thickness of shims fitted, to assist with refitting. **See CHASSIS AND BODY, Repair.**
7. Remove the existing door outer panel by grinding off the edge of the flange.
8. Clean door frame and remove all trace of sealant.
9. Prime all bare metal with etch primer.

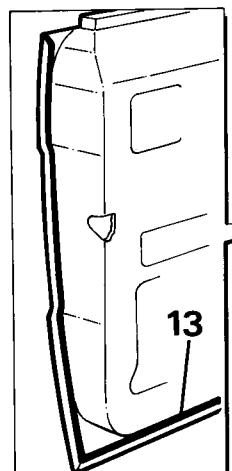


J5050M

11. Apply a (minimum thickness 4 mm (1/8 in) bead of 3M 8684 Flexseal to outer edge of new outer panel.
12. Fit new door outer panel to door frame and clinch the flange.



J5049M



J5051M

10. Apply Supra SDP25 self adhesive sound deadening pads to replacement panel locations illustrated.

13. Apply a bead of Flexseal to outer edge of clinched joint. Work the bead as required to achieve a smooth, cosmetically acceptable seal.
14. Paint panel as necessary. **See Panels,**
15. Refit associated parts to door in reverse order of removal.
16. Refit door to vehicle. Adjust as necessary to achieve a satisfactory fit.

## 'A' POST

## Remove

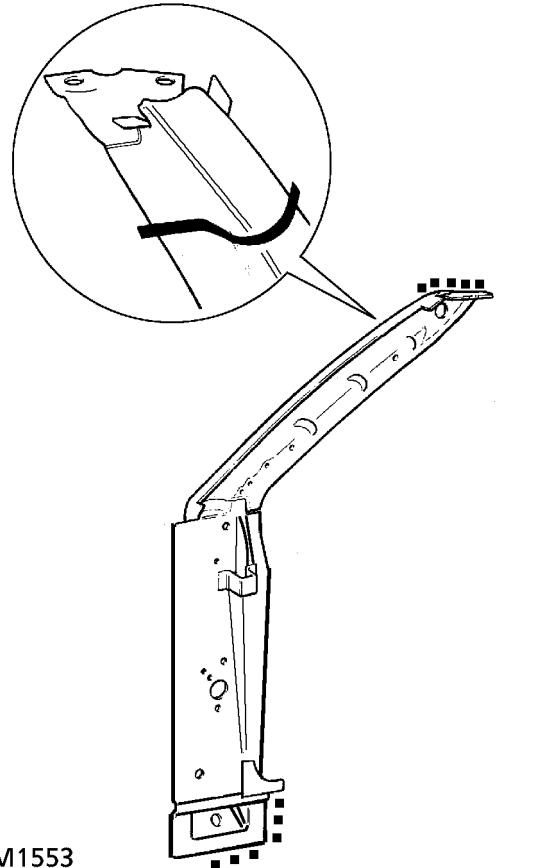
1. Disconnect battery earth lead.
2. Raise side of vehicle.

**WARNING:** Support on safety stands.



3. Disconnect all ECUs.
4. Disconnect airbags and sensor system. *See SUPPLEMENTARY RESTRAINT SYSTEM, Repair.*
5. Disconnect alternator.
6. Remove wing [fender]. *See CHASSIS AND BODY, Repair.*
7. Remove bonnet [hood]. *See CHASSIS AND BODY, Repair.*
8. Remove weatherstrips at upper edge of bulkhead and inner wing.
9. Remove bonnet hinge.
10. Remove air intake plenum cowl. *See CHASSIS AND BODY, Repair.*
11. Remove dash panel assembly. *See CHASSIS AND BODY, Repair.*
12. Remove windscreen glass. *See CHASSIS AND BODY, Repair.*
13. Remove front door. *See CHASSIS AND BODY, Repair.*
14. Remove footwell trim.
15. Remove 'A' post upper trim.
16. Remove sill finisher. *See CHASSIS AND BODY, Repair.*
17. Remove headlining. *See CHASSIS AND BODY, Repair.*
18. Remove front treadplate.
19. Remove front door aperture weatherstrip.
20. Remove front mud flap.
21. Remove wheel arch liner - front. *See CHASSIS AND BODY, Repair.*

## Refit



77M1553

22. Prepare and clean panel joint faces. Punch or drill holes in new 'A' post for plug welding as shown. Cut upper section of outer panel to form seam welded joint with existing panel.
23. Reverse removal procedure.
24. Remove stands and lower vehicle.



## 'BC' POST (5-DOOR)

Refit

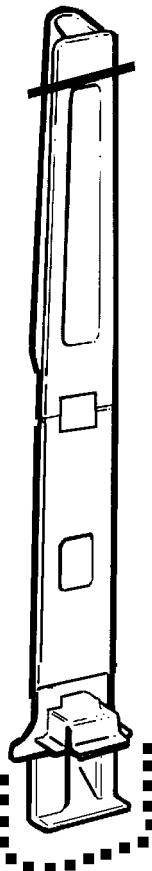
## Remove

1. Disconnect battery earth lead.
2. Raise side of vehicle.

**WARNING:** Support on safety stands.



3. Disconnect all ECUs.
4. Disconnect airbags and sensor system. *See SUPPLEMENTARY RESTRAINT SYSTEM, Repair.*
5. Remove sill finisher. *See CHASSIS AND BODY, Repair.*
6. Remove front seat. *See CHASSIS AND BODY, Repair.*
7. Remove headlining. *See CHASSIS AND BODY, Repair.*
8. Remove front and rear treadplates.
9. Remove front and rear door aperture weatherstrips.
10. Remove 'BC' post trim.
11. Remove rear side door. *See CHASSIS AND BODY, Repair.*



77M1554

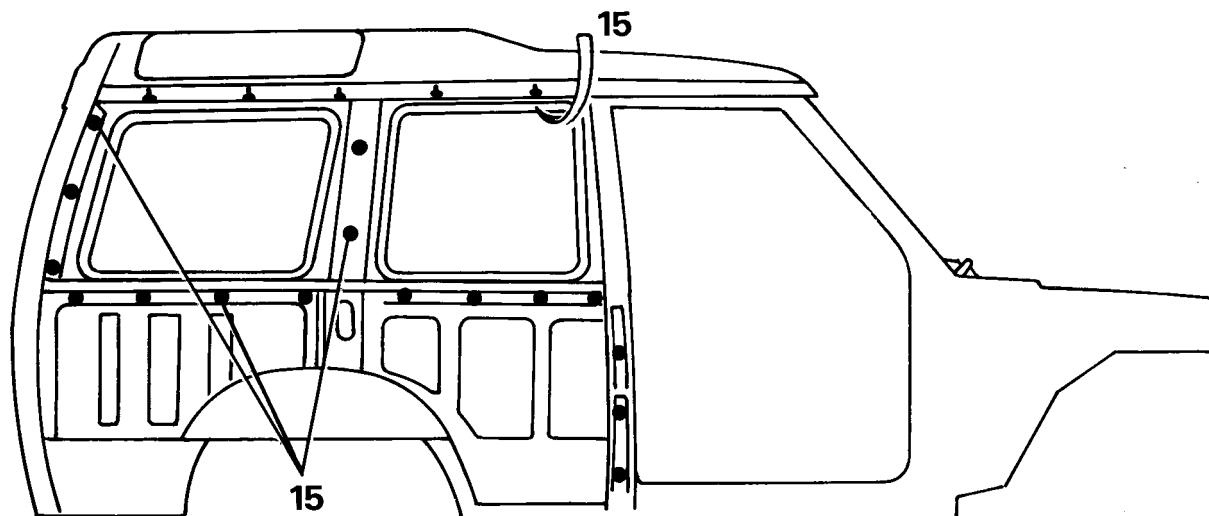
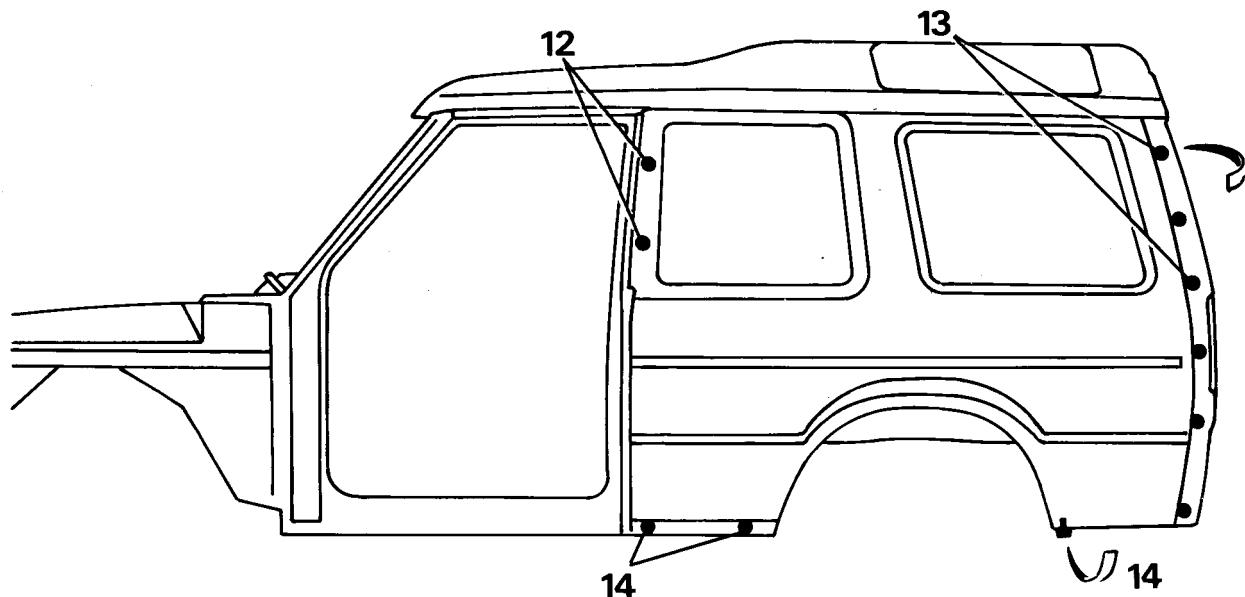
12. Prepare and clean panel joint faces. Punch or drill holes in new 'BC' post repair panel for plug welding. Cut closing panel as shown to form a seam welded butt joint with the existing panel.
13. Reverse removal procedure.
14. Remove stands and lower vehicle.

**BODY SIDE PANEL (3-DOOR)****Remove**

 **NOTE:** In this operation, the body side panel is replaced in combination with a rear quarter panel. The procedure for replacing a RH or LH body side panel is the same, except that the fuel filler pipe must be disconnected when fitting a RH panel.

1. Disconnect battery negative lead.
2. Remove rear bumper assembly.

3. Remove sill finisher. *See CHASSIS AND BODY, Repair.*
4. Working inside vehicle, remove rear fold down seat. *See CHASSIS AND BODY, Repair.*
5. Remove rear, side and front body side trim panels. Remove alpine light trim casing. *See CHASSIS AND BODY, Repair.*
6. Remove body side opening window, leaving hinges in place. *See CHASSIS AND BODY, Repair.* If renewing body side panel, remove rubber seal from window aperture.
7. If renewing body side panel remove fixed side window and mounting rubber. *See CHASSIS AND BODY, Repair.*



J5042M

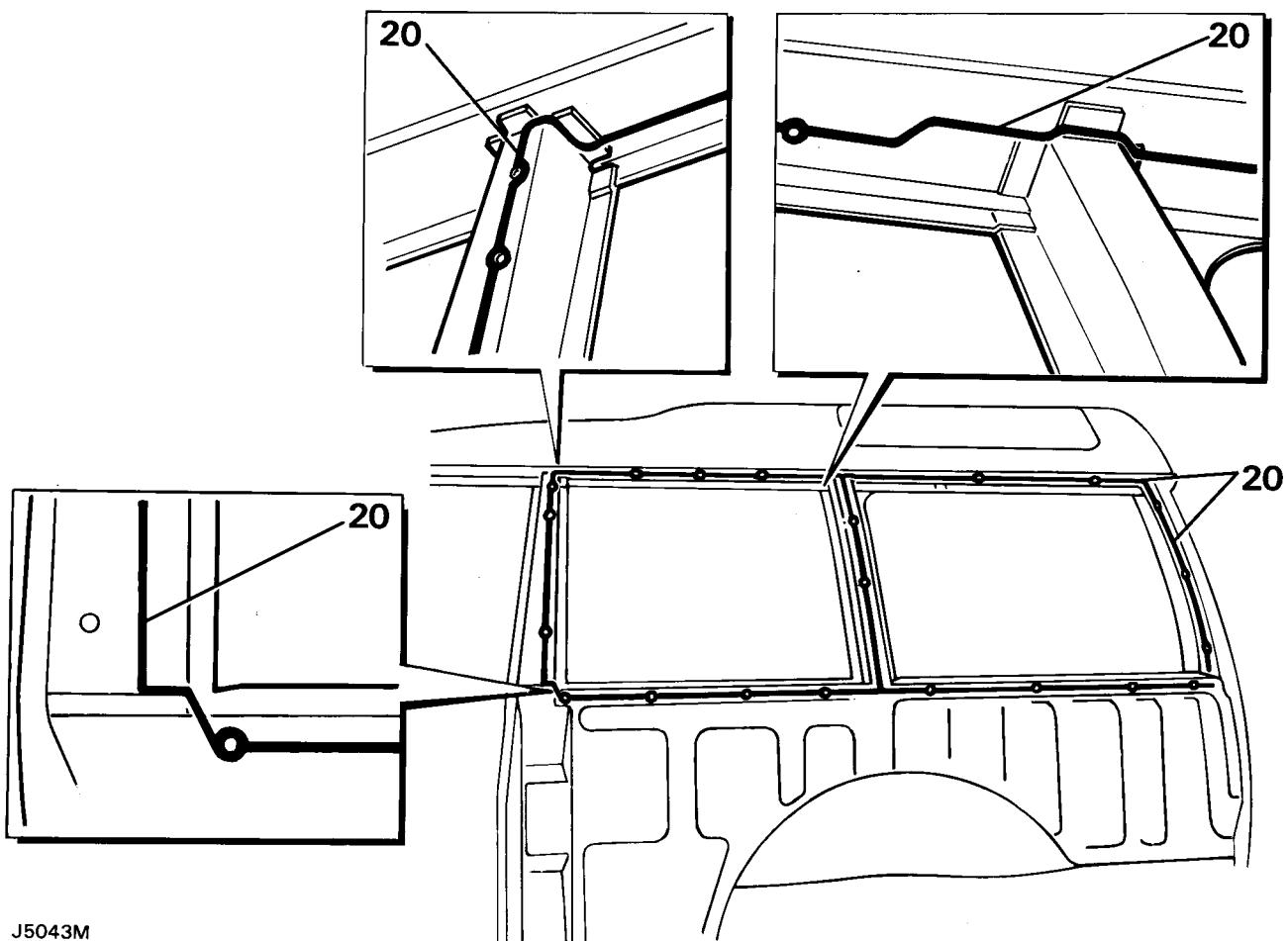


8. Remove rear light unit and release rubber boot from outer panel.
9. Drill out two pop rivets securing rear speaker mounting bracket to body side panel.

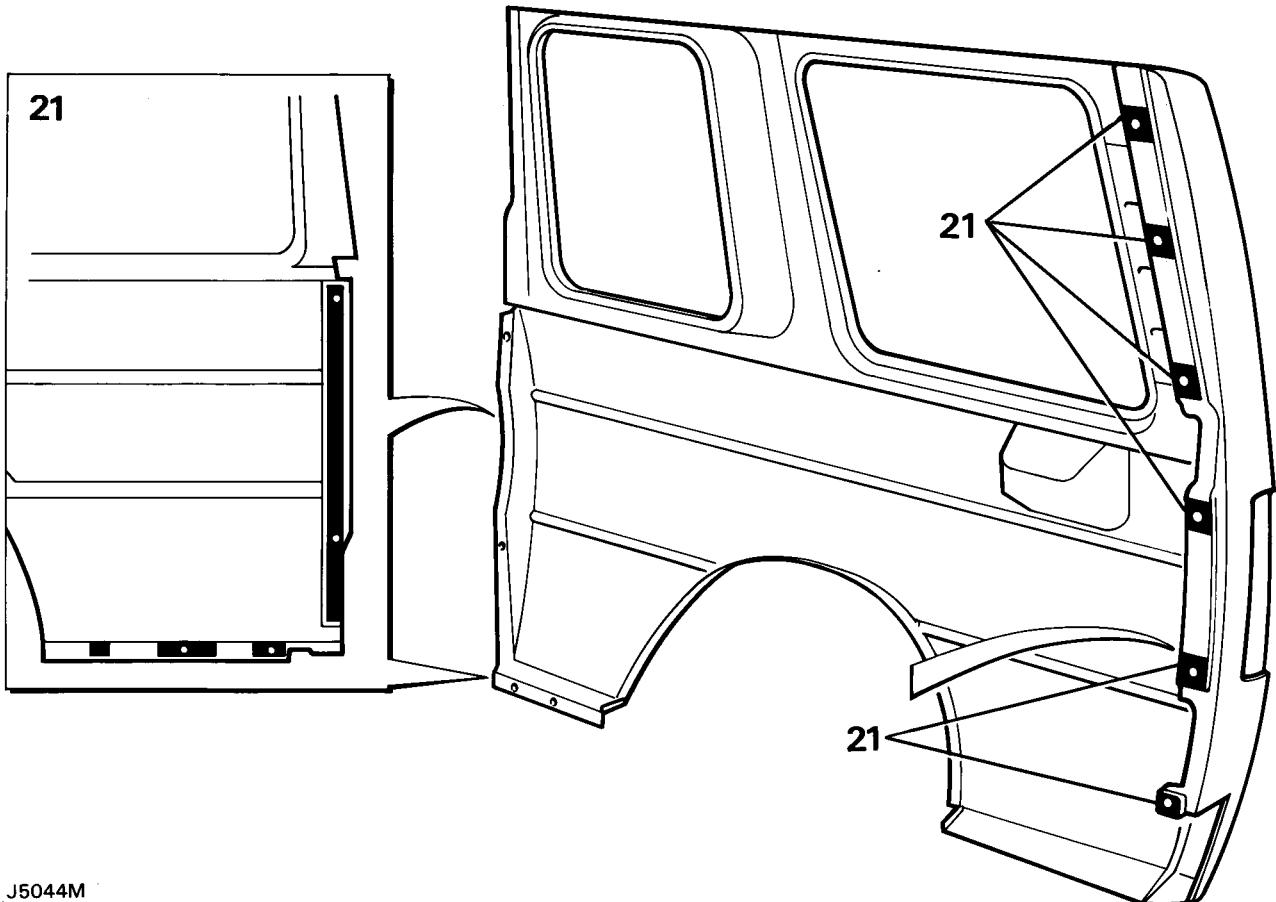
**CAUTION: Prior to disconnecting the fuel filler and breather hoses check the level of fuel in the tank. Drain as necessary to prevent spillage.**

10. Working beneath the vehicle, loosen worm drive clips securing filler and breather hoses, and disconnect hoses from tank (RH body side panel only).
11. Disconnect fuel filler negative lead (RH body side panel only).
12. Remove capping from 'BC' post, and remove two bolts securing body side panel to 'BC' post.

13. Remove six countersunk self-tapping screws securing rear quarter panel to 'E' post.
14. Remove three bolts securing lower edge of body side panel at exterior of vehicle; one adjacent to rear mud flap, and two between rear wheel arch and sill finisher.
15. Working from inside vehicle, remove twenty-one bolts securing body side panel.
16. Starting from 'BC' post and working towards rear of vehicle, ease outer panel away from body to break seal. When seal strength has been completely broken, push panel towards rear of vehicle to disengage rear quarter panel from 'E' post. Lift body side and rear quarter panel assembly clear.
17. Remove fuel filler pipe (RH panel assembly only).



J5043M



J5044M

### Cleaning/painting

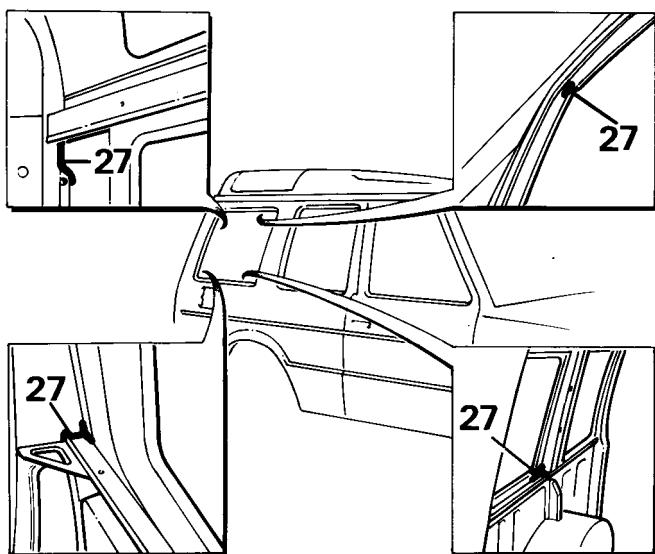
18. Thoroughly clean all traces of existing sealant from joint faces of body monocoque and panel.
19. Paint all cleaned surfaces with etch primer.
20. Apply a 6 mm (1/4 in) bead of 3M 8537 Super Seam Sealer to the monocoque as shown.
21. Apply 20 x 20 mm (13/16 x 13/16 in) squares of 3M 8572 Bolted Panel Sealer to inner faces of six securing screw holes in rear quarter panel, and strips of sealer to inner faces of panel as shown.



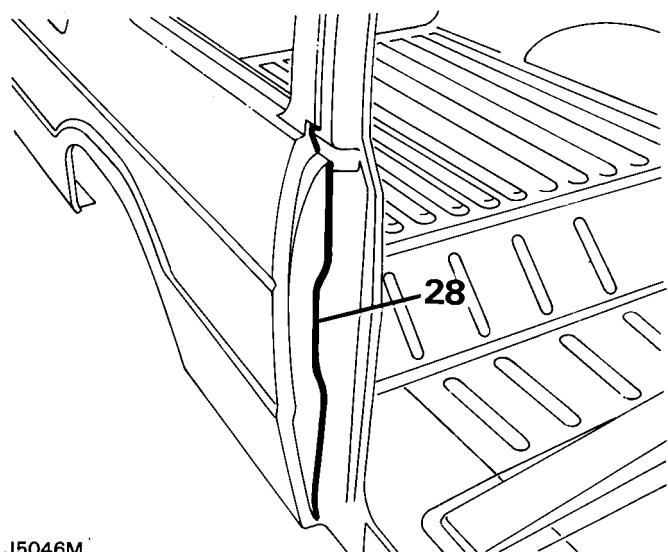
**CAUTION: Allow sufficient clearance at lower edge of panel to prevent the blockage of drain holes.**

### Refit

22. Locate panel on body. **Ensure that sealant is not displaced.** Working from inside vehicle, loosely fit twenty-one bolts securing panel.
23. Loosely fit six countersunk, self-tapping screws securing rear quarter panel to 'E' post, also three screws securing lower section of body side panel.
24. Starting with five bolts securing upper edge of panel, tighten bolts evenly to draw panel upwards to its correct location.
25. Tighten remaining bolts and six screws at 'E' post, ensuring a satisfactory seal between the joint faces.
26. Clean off all surplus sealant from exposed surfaces.



J5045M



J5046M

**27.** Using thumb pressure, apply 3M 8572 Bolted Panel Sealer to all corners of window apertures to seal any uneven contours between panels.

- 28.** Apply a bead of 3M 8684 Flexseal to joint at lower section of 'BC' post. Work the bead to produce a smooth, cosmetically acceptable finish.
- 29.** Paint as necessary. *See Panels,*
- 30.** Refit capping to 'BC' post.
- 31.** Refit fuel filler pipe and breather (where applicable).
- 32.** Reverse operations 1 to 11 to refit windows and associated parts.

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**BODY SIDE PANEL (5-DOOR)**

---

**Remove**

 **NOTE:** In this operation, the body side panel is replaced in combination with a rear quarter panel. The procedure for replacing a RH or LH body side panel is the same, except that the fuel filler pipe must be disconnected when fitting a RH panel.

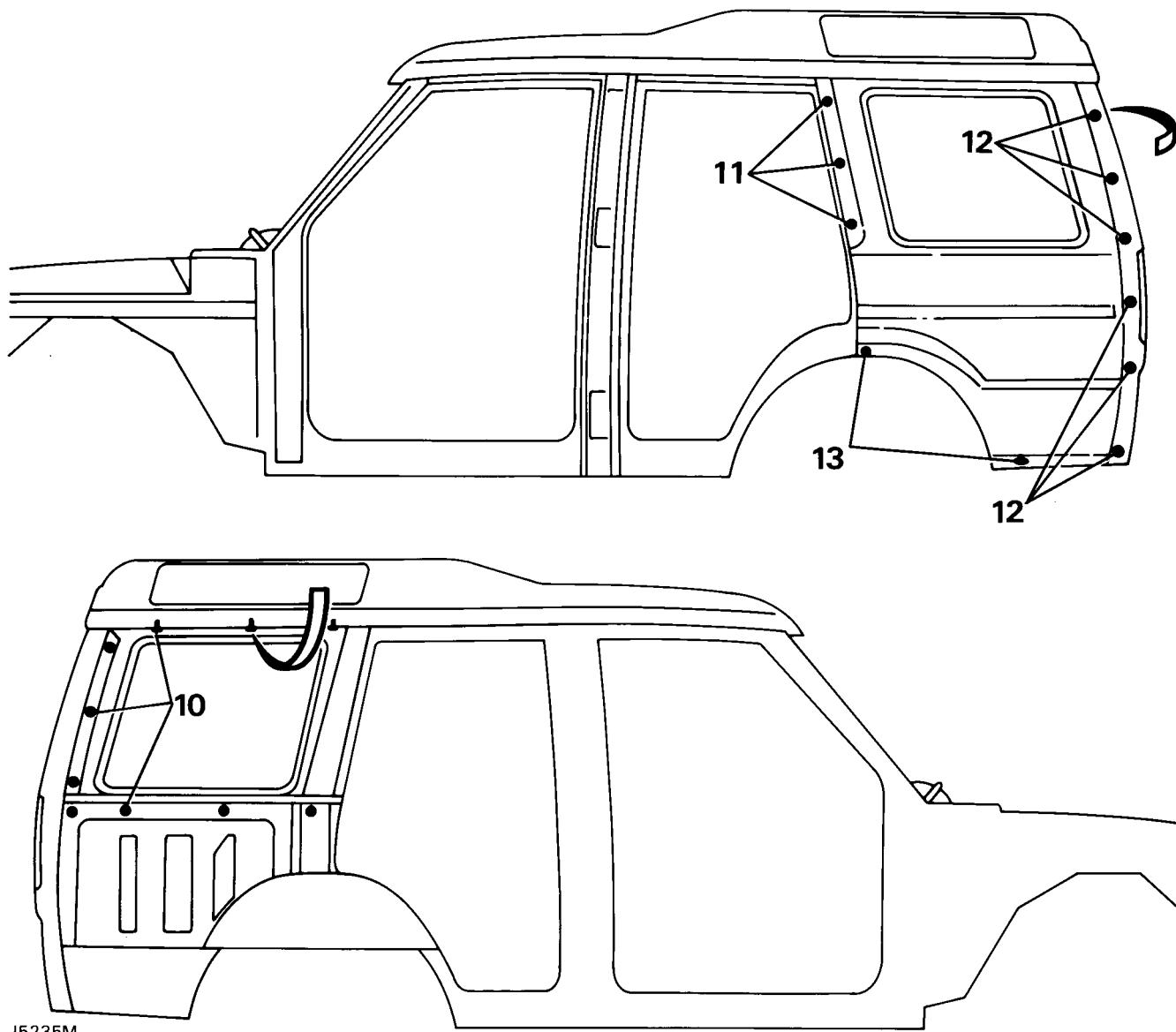
1. Disconnect battery negative lead.
2. Remove rear bumper assembly.
3. Working inside vehicle, remove fold down rear seat. **See CHASSIS AND BODY, Repair.**
4. Remove rear side and 'D' post trim panels. Remove alpine light trim casing. **See CHASSIS AND BODY, Repair.**

5. If renewing body side panel remove rear side fixed window and mounting rubber. **See CHASSIS AND BODY, Repair.**
6. Remove rear light unit and release rubber boot from outer panel.
7. Drill out two pop rivets securing rear speaker mounting bracket to body side panel.

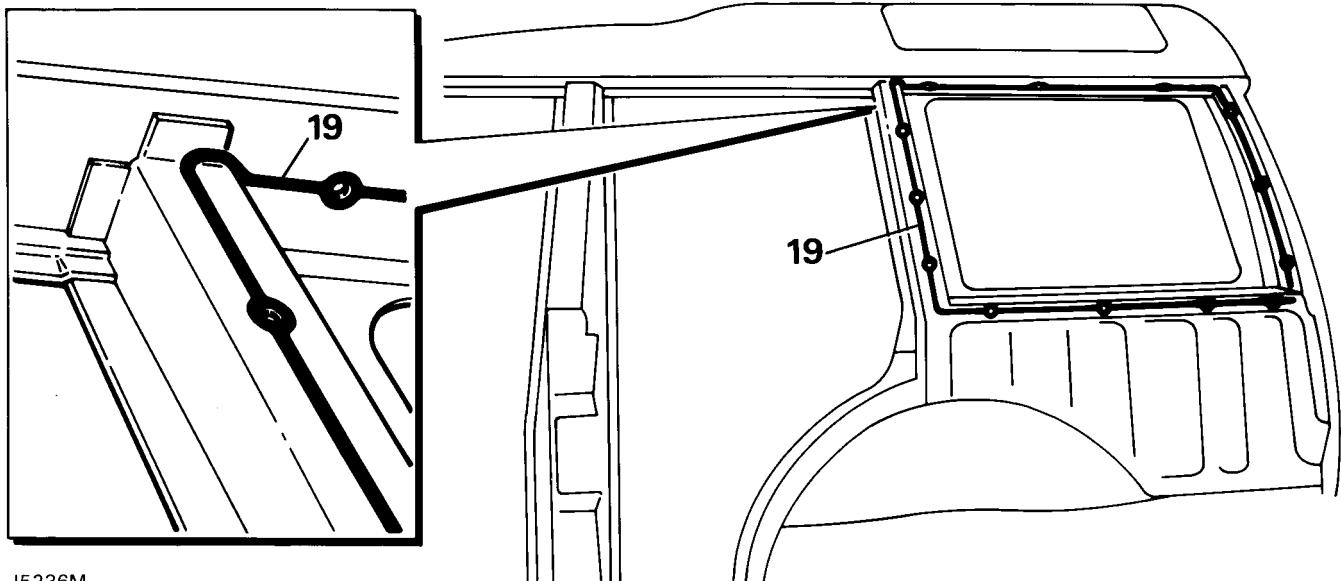


**CAUTION:** Prior to disconnecting the fuel filler and breather hoses, check level of fuel in tank. Drain as necessary to prevent spillage.

8. Working beneath vehicle, loosen worm drive clips securing filler and breather hoses, and disconnect hoses from tank (RH body side panel only).
9. Disconnect fuel filler negative lead (RH body side panel only).



10. Working through the three apertures in 'D' post, remove nuts and washers, and detach 'D' post capping.
11. Remove three countersunk self-tapping screws securing body side panel to 'D' post.
12. Remove six countersunk self-tapping screws securing rear quarter panel to 'E' post.
13. Remove two bolts; one inside wheel arch and one at lower edge of body side panel.



J5236M

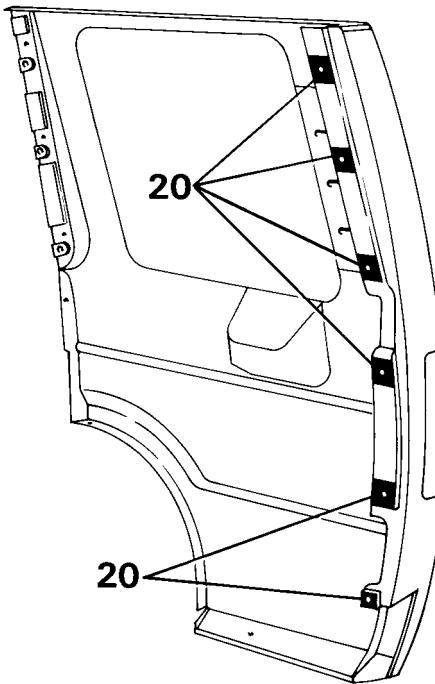
14. Working from inside vehicle, remove ten bolts securing body side panel.
15. Starting from 'D' post and working towards rear of vehicle, ease body side panel away from body to break seal. When seal strength has been completely broken, push outer panel towards rear of vehicle to disengage rear quarter panel from 'E' post, then lift body side and rear quarter panel assembly clear.
16. Remove fuel filler pipe (RH body side panel only).

#### Cleaning/painting

17. Thoroughly clean all traces of existing sealant from joint faces on monocoque and panel.
18. Paint cleaned surfaces with etch primer.

#### Refit

19. Apply a 6 mm (1/4 in) bead of 3M 8537 Super Seam Sealer to the areas of the monocoque as shown.



J5237M

20. Apply 20 x 20 mm (13/16 x 13/16 in) squares of 3M 8572 Bolted Panel Sealer to inner faces of six securing screw holes in rear quarter panel.
21. Locate panel on body. **Ensure that sealant is not displaced.** Working from inside vehicle, loosely fit ten bolts securing panel.
22. Loosely fit countersunk, self-tapping screws securing rear quarter panel to 'E' post, and body side panel to 'D' post.

23. Loosely fit two bolts inside wheel arch and at lower edge of body side panel.
24. Starting with three bolts securing upper edge of panel, evenly tighten bolts to draw panel upwards to its correct location.
25. Tighten remaining bolts and self-tapping screws, ensuring a satisfactory seal between the joint faces.
26. Clean off all surplus sealant from exposed surfaces.
27. Using thumb pressure, apply 3M 8572 Bolted Panel Sealer to all corners of window aperture to seal any uneven contours between panels.
28. Apply a bead of 3M 8684 Flexseal to joint at lower section of 'D' post. Work the bead to produce a smooth, cosmetically acceptable finish.
29. Paint as necessary. **See Panels,**
30. Refit capping to 'D' post and secure with nuts and washers.
31. Reverse removal operations to refit fuel filler pipe and breather (where applicable).
32. Reverse operations 1 to 9 to refit associated parts.

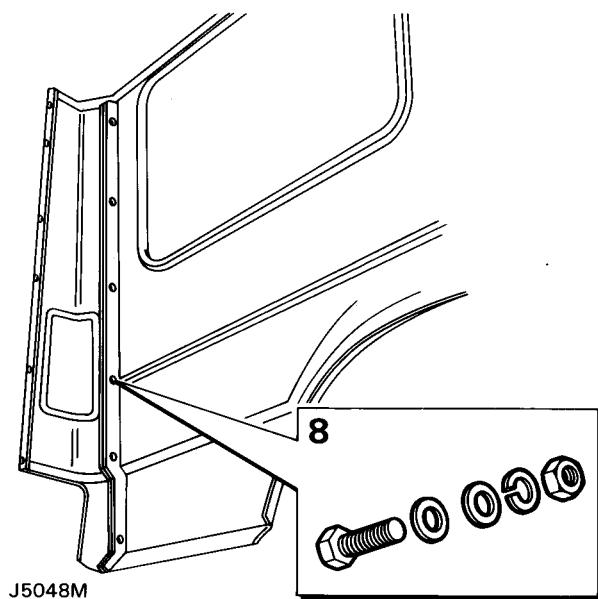
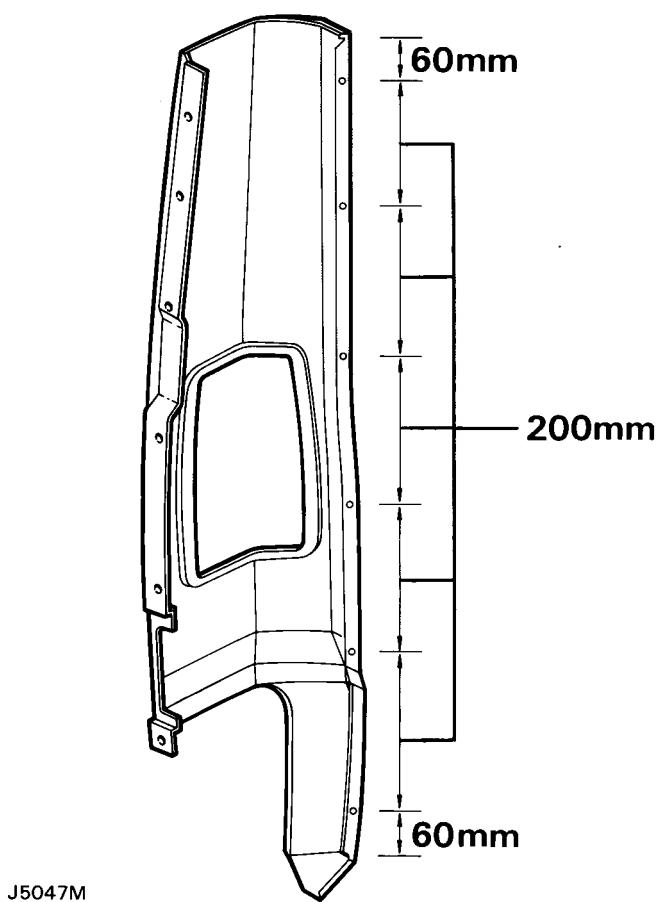
#### Rear quarter panel replacement

1. Remove body side panel and rear quarter panel assembly from vehicle. **See this section.**
2. Using a suitable high-speed saw, cut off rear quarter panel. Make the line of cut approximately 30 mm (1 3/16 in) from joint with flange.



**CAUTION: Avoid the use of an air chisel as this could damage the body side panel.**

3. Remove flange from body side panel using a spot weld cutter.



8. Bolt panels together using M6 X 20 mm (13/16 in) plated bolts, plain nuts, and spring washers.
9. Refit panel assembly to vehicle.
10. Paint as necessary. ***See Panels,***

4. Mark centre line of front flange on the replacement rear quarter panel. Mark and drill six 6.5 mm (1/4 in) holes at locations shown.
5. Align and clamp rear quarter panel to body side panel. Using a marker, transfer locations of the holes on rear quarter panel flange to body side panel flange.
6. Remove rear quarter panel and drill six 6.5 mm (1/4 in) holes at locations marked on body side panel flange.
7. Remove all roughness from edges of holes as necessary, and apply etch primer to all bare metal areas.



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**BODY SIDE CLOSING PANEL (3-DOOR)**

---

Refit

**Remove**

1. Disconnect battery earth lead.
2. Raise side of vehicle.

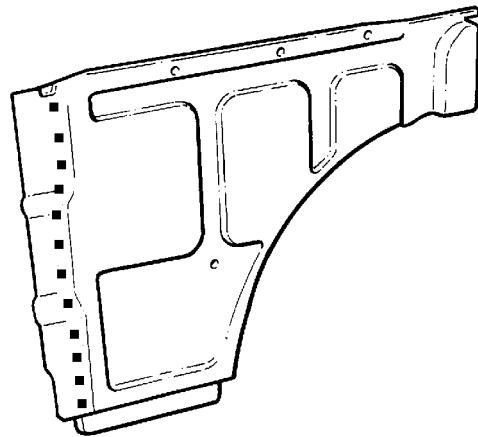


**NOTE:** In this operation, the body side closing panel is replaced in combination with a body side outer panel.

**WARNING:** Support on safety stands.



3. Disconnect all ECUs.
4. Disconnect airbags and sensor system. *See SUPPLEMENTARY RESTRAINT SYSTEM, Repair.*
5. Disconnect alternator.
6. Remove headlining. *See CHASSIS AND BODY, Repair.*
7. Remove treadplate.
8. Remove door aperture weatherstrip.
9. Remove rear outer seat belt. *See CHASSIS AND BODY, Repair.*
10. Remove front seat belt. *See CHASSIS AND BODY, Repair.*
11. Remove rear passenger seat. *See CHASSIS AND BODY, Repair.*



77M1555

12. Prepare and clean panel joint faces. Punch or drill holes in new closing panel for plug welding as shown.
13. Reverse removal procedure.
14. Remove stands and lower vehicle.

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WHEELARCH PANEL (5-DOOR)

---

## Remove

1. Disconnect battery earth lead.
2. Raise side of vehicle.

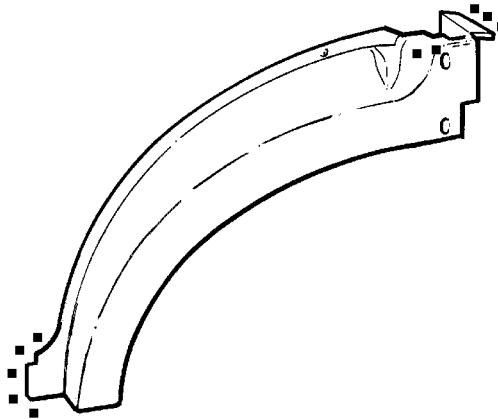


**WARNING:** Support on safety stands.

## Refit



**NOTE:** In this operation, the rear body side outer panel must be removed to enable access to the wheelarch panel.



77M1556

3. Disconnect all ECUs.
4. Disconnect airbags and sensor system. *See SUPPLEMENTARY RESTRAINT SYSTEM, Repair.*
5. Disconnect alternator.
6. Remove rear side door treadplate.
7. Remove rear outer seat belt. *See CHASSIS AND BODY, Repair.*
8. Remove rear passenger seat. *See CHASSIS AND BODY, Repair.*
9. Prepare and clean panel joint faces. Drill or punch holes in new panel at lower end for plug welding as shown, and plug weld to existing panel at upper end using holes left by spot weld cutter.
10. Reverse removal procedure.
11. Remove stands and lower vehicle.



## 'D' POST (5-DOOR)

Refit

## Remove

1. Disconnect battery earth lead.
2. Raise side of vehicle.

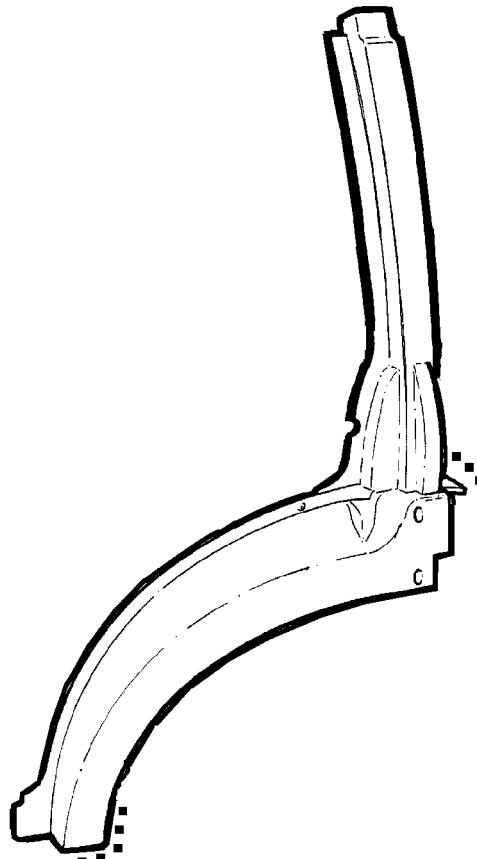


**NOTE:** In this operation, rear body side outer panel must be removed to enable access to the 'D' post.

**WARNING:** Support on safety stands.



3. Disconnect all ECUs.
4. Disconnect airbags and sensor system. *See SUPPLEMENTARY RESTRAINT SYSTEM, Repair.*
5. Disconnect alternator.
6. Remove headlining. *See CHASSIS AND BODY, Repair.*
7. Remove rear side door treadplate.
8. Remove rear outer seat belt. *See CHASSIS AND BODY, Repair.*
9. Remove rear passenger seat. *See CHASSIS AND BODY, Repair.*



77M1557

10. Prepare and clean panel joint faces. Drill or punch holes in new panel at lower end for plug welding as shown, and plug weld to existing panel at centre section using holes left by spot weld cutter.
11. Reverse removal procedure.
12. Remove stands and lower vehicle.

**REAR CORNER PANELS****Remove**

1. Disconnect battery earth lead.
2. Raise rear of vehicle.

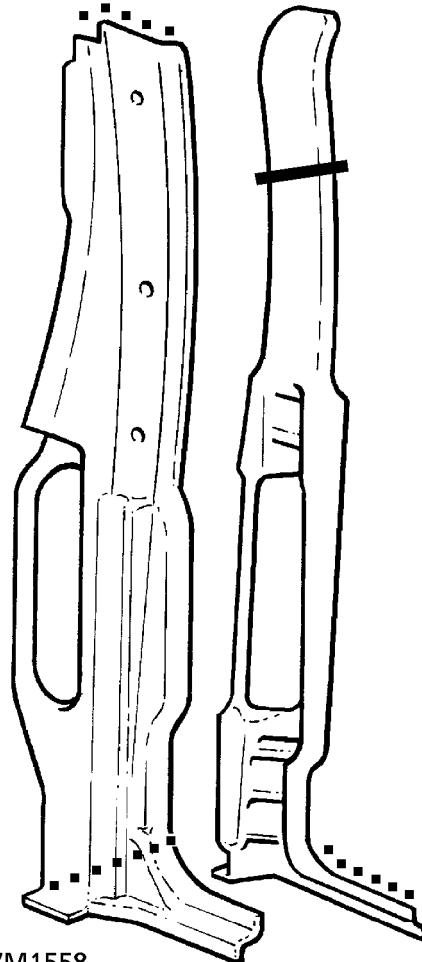
**WARNING: Support on safety stands.**



3. Disconnect all ECUs.
4. Disconnect airbags and sensor system. *See SUPPLEMENTARY RESTRAINT SYSTEM, Repair.*
5. Disconnect alternator.
6. Remove headlining. *See CHASSIS AND BODY, Repair.*
7. Remove rear bumper assembly.
8. Remove rear side door (RH only). *See CHASSIS AND BODY, Repair.*
9. Remove rear door check stay (RH only). *See CHASSIS AND BODY, Repair.*
10. Rear door striker and catch plate (LH only).
11. Rear grab handle (LH only). *See CHASSIS AND BODY, Repair.*
12. 'E' post trim casing. *See CHASSIS AND BODY, Repair.*
13. Remove rear door aperture weatherstrip.
14. Remove rear door treadplate.
15. Remove rear door upper trim panel. *See CHASSIS AND BODY, Repair.*

**Refit**

**NOTE:** In this operation, the rear corner panels are replaced in combination with a rear body side outer panel and rear quarter panel.



16. Prepare and clean panel joint faces. Punch or drill holes in new rear corner panels for plug welding, and cut closing panel to form seam welded joint with existing panel as shown.
17. Reverse removal procedure.
18. Remove stands and lower vehicle.



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**REAR PANEL ASSEMBLY**

---

**Remove**

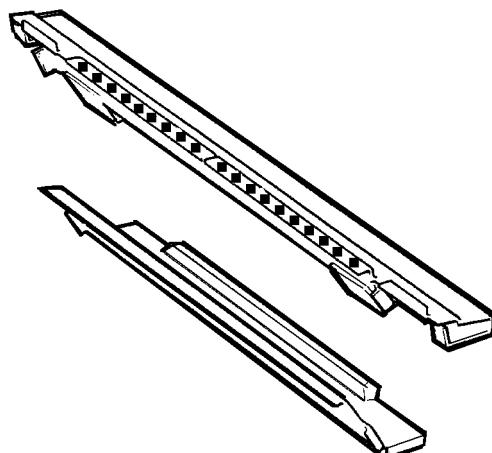
1. Disconnect battery earth lead.
2. Raise rear of vehicle.



**WARNING: Support on safety stands.**

**Refit**

**NOTE: In this operation, both outer rear corner panels must be removed to enable access to the outer rear panel joints.**



77M1559

3. Disconnect all ECUs.
4. Disconnect airbags and sensor system. *See SUPPLEMENTARY RESTRAINT SYSTEM, Repair.*
5. Disconnect alternator.
6. Remove rear bumper assembly.
7. Remove rear door. *See CHASSIS AND BODY, Repair.*
8. Remove rear door check stay. *See CHASSIS AND BODY, Repair.*
9. Remove rear door aperture weatherstrip.
10. Remove rear door treadplate.

11. Prepare and clean panel joint faces. Punch or drill holes in new assembly front flange for plug welding as shown.
12. Reverse removal procedure.
13. Remove stands and lower vehicle.

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REAR PANEL ASSEMBLY SECTION

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## Remove

1. Disconnect battery earth lead.
2. Raise rear of vehicle.

**WARNING:** Support on safety stands.

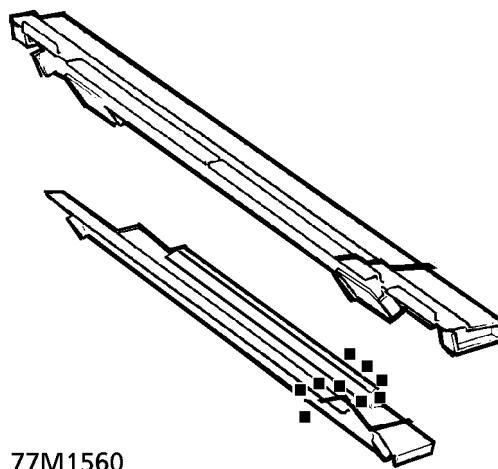


3. Disconnect all ECUs.
4. Disconnect airbags and sensor system. *See SUPPLEMENTARY RESTRAINT SYSTEM, Repair.*
5. Disconnect alternator.
6. Remove rear bumper assembly.
7. Remove rear door (RH only). *See CHASSIS AND BODY, Repair.*
8. Remove rear door check stay (RH only). *See CHASSIS AND BODY, Repair.*
9. Remove rear door aperture weatherstrip.
10. Remove rear door treadplate.
11. Remove rear door upper trim panel. *See CHASSIS AND BODY, Repair.*

## Refit



**NOTE:** In this operation, the outer rear corner panel must be removed to enable access to the outer rear panel joints.



77M1560

12. Prepare and clean panel joint faces. Punch or drill holes in new crossmember lower face for plug welding, and cut new panels to form seam welded joints with existing panels as shown.
13. Reverse removal procedure.
14. Remove stands and lower vehicle.



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OUTER REAR PANEL SECTION

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## Remove

1. Disconnect battery earth lead.
2. Raise rear of vehicle.

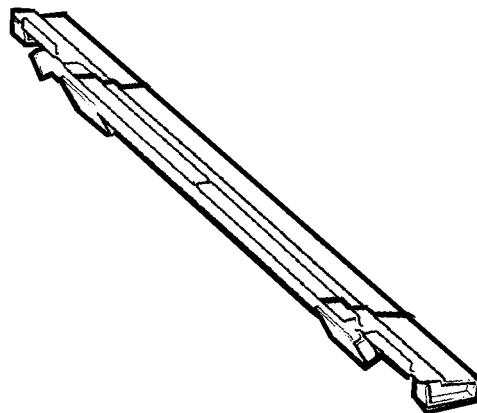


**WARNING:** Support on safety stands.

## Refit



**NOTE:** In this operation, the ends of the outer rear panel are left in position to avoid disturbing the rear corner panels.



77M1561

3. Disconnect all ECUs.
4. Disconnect airbags and sensor system. *See SUPPLEMENTARY RESTRAINT SYSTEM, Repair.*
5. Disconnect alternator.
6. Remove rear bumper assembly.
7. Remove rear door. *See CHASSIS AND BODY, Repair.*
8. Remove rear door check stay. *See CHASSIS AND BODY, Repair.*
9. Remove rear door aperture weatherstrip.

10. Prepare and clean panel joint faces. Punch or drill holes in new outer rear panel front flange as shown in rear panel assembly operation. *See Panels,*
11. Cut new panel to form seam welded joints with existing panel as shown above.
12. Reverse removal procedure.
13. Remove stands and lower vehicle.