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## Technical Guide

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# **XK Series, XJ Series and S-TYPE 2001 Model Year Update**

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BY APPOINTMENT TO  
HER MAJESTY QUEEN ELIZABETH II  
MANUFACTURERS OF DAIMLER AND JAGUAR CARS  
JAGUAR CARS LIMITED COVENTRY



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HIS ROYAL HIGHNESS THE PRINCE OF WALES  
MANUFACTURERS OF DAIMLER AND JAGUAR CARS  
JAGUAR CARS LIMITED COVENTRY



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## Technical Guide

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# XK Series, XJ Series and S-TYPE 2001 Model Year Update

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## Preface

This Technical Guide introduces 2001 MY changes to XK Series, XJ Series and S-TYPE vehicles. It is intended to give Jaguar Dealer workshop personnel an overview of the changes which have taken place and is for information purposes only. The contents of this Technical Guide must not be used as a reference source for servicing procedures; all servicing must be carried out in accordance with the appropriate JTIS disc.

This Technical Guide will not be updated. While every effort is made to ensure accuracy, changes may occur between going to press and the equipment being introduced to the market. Once the equipment is in service, details of the changes can be obtained from Service Bulletins and revisions to the JTIS disc.

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# Glossary

The following abbreviations and acronyms are used in this publication:

<b>Abbreviation / Acronym</b>	<b>Description</b>
BPM	body processor module
CAN	controller area network
CM	centimeter
DTC	diagnostic trouble code
ECM	engine control module
EGR	exhaust gas recirculation
EOBD	European on-board diagnostics
EVAP	evaporative emission
EVAP canister	evaporative emission canister
EVAP canister purge valve	evaporative emission canister purge valve
GSM	global system for mobile communications
ISO	International Standards Organization
ISOfix	International Standards Organization fix
JTIS	Jaguar Technical Information System
kN	kilonewton
Km/h	kilometers per hour
LCM	lamp control module
LEV	low emission vehicle
LH	left-hand
MHz	megahertz
MIL	malfunction indicator lamp
mile/h	miles per hour
mm	millimeter
MY	model year
N	newton
N/A	normally aspirated
NAS	North American specification
OBD	on-board diagnostics
PCM	powertrain control module
PSP	power steering pressure
RCM	restraints control module
RH	right-hand
RPC	reverse park control
RPCCM	reverse park control control module
RPM	revolutions per minute
SC	supercharged
SCLM	steering column lock module
SFTP	standard federal testing procedures
SIM	subscriber identity module
SLCM	security and locking control module
SRS	supplemental restraints system
TCM	transmission control module
VEMS	vehicle emergency message system
VIN	vehicle identification number
VSI Unit	vehicle speed interface unit
W	watt
WDS	worldwide diagnostic system

A major change affecting all models is the introduction of a standardized child-seat anchorage system designed to secure a child seat without using the vehicle's safety belts.

## **XK Series**

Changes to the range are the most extensive since the launch and center on occupant safety including:

- Refinements to the vehicle body structure and chassis to enhance crash performance.
- A totally new advanced restraints system which incorporates amongst other things: twin stage air bags, occupancy sensing, side air bags and steering column refinements.

Internal changes include:

- New front seats incorporating independent head restraints and the appropriate advanced restraint system components.
- New rear seats and safety belts.

The aesthetic appeal of the vehicle is enhanced by changes to the following areas:

- Rear bumper, rear lamp cluster and luggage compartment-lid finisher.
- Front bumper which incorporates flush fitting fog lamps.

## **XJ Series**

There are relatively few changes by comparison to the XK Series but significantly the steering column is new and to the same specification as the XK Series.

## **S-TYPE**

The most significant change to S-TYPE is the introduction of a new steering rack and pump.

## Introduction

The XK body structure has been modified in many areas to enhance its crash performance.

- For information about components that have been introduced or modified for crash performance reasons; refer to **Occupant Safety**.
- Details of structural changes can be found in the **XK Supplement to Body and Paint Repair Manual**.

XK Series and S-TYPE components that have been changed for design or aesthetic reasons are discussed in this section.

## Interior Trim

### A-post Trim (XK)

The passenger A-post trim has been modified to accommodate the occupancy sensor; refer to **Occupant Safety**.

### B-post Trim (XK Coupe)

Both B-post trims have been modified to accommodate the new safety belt upper-anchors, and the occupancy sensor on the passenger B-post trim; refer to **Occupant Safety**.

### Rear Quarter Trim (XK Convertible)

Both rear quarter trims have been modified to accommodate the new safety belts, and the occupancy sensor on the passenger rear quarter trim; refer to **Occupant Safety**.

### Headlining (XK)

The headlining has been modified to accommodate the changes to the roof console; refer to **Electrical**.

### Carpets (XK)

The following carpets have been modified:

- The convertible-top container carpet for the introduction of the upper child seat anchor; refer to **Occupant Safety**.
- The main floor carpet for the revised safety-belt lower anchor and seat slides; refer to **Occupant Safety**.

### Luggage Compartment Rear Finisher (XK)

The luggage compartment rear finisher has been modified to accommodate the new rear-lamp assembly bulb holders; refer to **Electrical**.

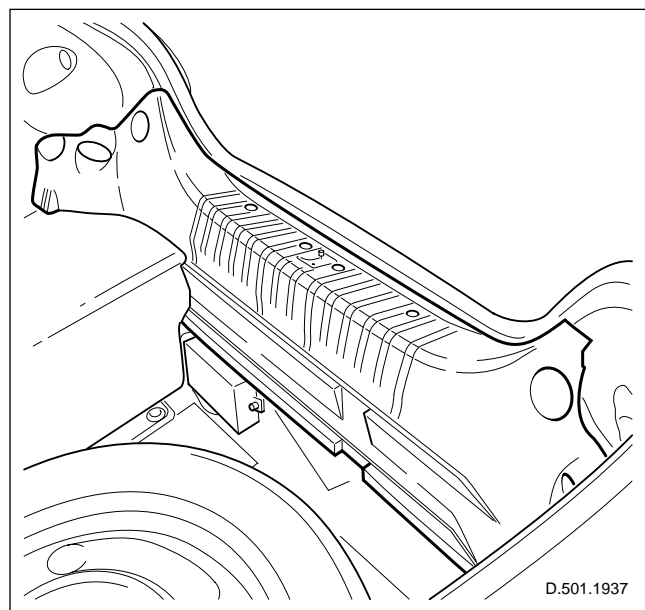


Fig. 1 Luggage compartment rear finisher (XK)



### Luggage Compartment Interior (S-TYPE)

The luggage compartment interior has been changed. The luggage compartment lid has a new liner, which incorporates a pull-down handle.

### Luggage Compartment Storage Unit (S-TYPE)

A new luggage compartment storage unit (fig. 2) is introduced that sits into the dish of the spare wheel. The unit sits into all sizes of spare wheel including the space saver. Moulded recesses in the unit are supplied for the storage of the wheel changing equipment. The unit also provides added support for the luggage compartment floor.

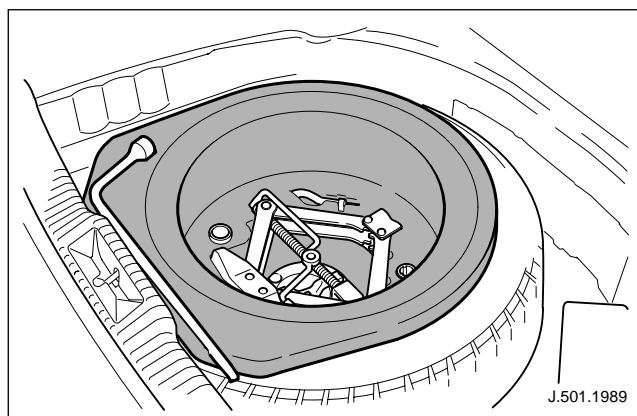


Fig. 2 Luggage compartment storage unit (S-TYPE)

### Rear Tread Plates (S-TYPE)

Rear tread plates are introduced to add protection to the vehicle, as well as complementing the front tread plates.

### Rear Seat Cup Holders (S-TYPE)

Two cup-holders (where fitted) are provided in the center cushion of the rear seats. To open a cup holder push the cover and release. To close, push the cover until the latch engages.

**NOTE:** This feature may not appear until later in the model year.

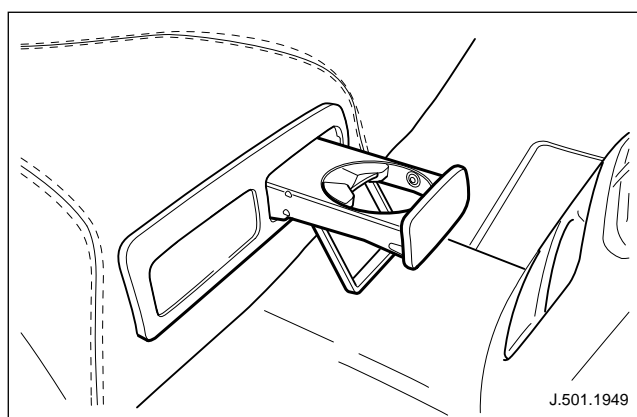


Fig. 3 Rear cup holders (S-TYPE)

## Exterior Trim

### Luggage Compartment Lid (XK)

The Jaguar script has been deleted from the left-hand-side of the luggage compartment lid and is now embossed on a bright finisher located above the license plate. The bright finisher also houses the luggage compartment lid-latch, see below, and the license-plate lamp; refer to **Electrical**.

### Fender Liners (XK)

The front fender-liners have been modified to accommodate the changes made to the front bumper; see below.

## Bumpers

### Front Bumper (XK)

Changes made to the front bumper include:

- New bumper cover to accommodate the flush fitting fog lamps; refer to **Electrical**.
- New bumper beam, strategically developed to compliment the occupant safety system; refer to **Occupant Safety**.
- New bumper badge for normally aspirated (N/A) vehicles.
- New overrider covers and splitter vane to accommodate changes to the front-end structure; refer to **Occupant Safety**. The overrider covers are now specific to either supercharged (SC) or normally aspirated (N/A) vehicles. The bumper meshing has also been modified on SC vehicles to accommodate the changes.

A new undertray and baffle have been introduced to suit the bumper cover, but also allows for the re-routing of the engine oil-cooler pipe; refer to **Powertrain**.

### Rear Bumper (XK)

The following changes have been made to the rear bumper:

- Provision has been made to the bumper cover for the installation of the ultrasonic sensors for the option of the reverse park control; refer to **Electrical**.
- The bumper has been re-styled with a lower rear edge to provide concealment of the luggage compartment under-floor.
- The towing eye is now a screw-in type and a tethered cover is provided in the bumper to provide access to its threaded location. The towing eye is stored in the jacking equipment kit and can be used in either the front or rear towing positions.

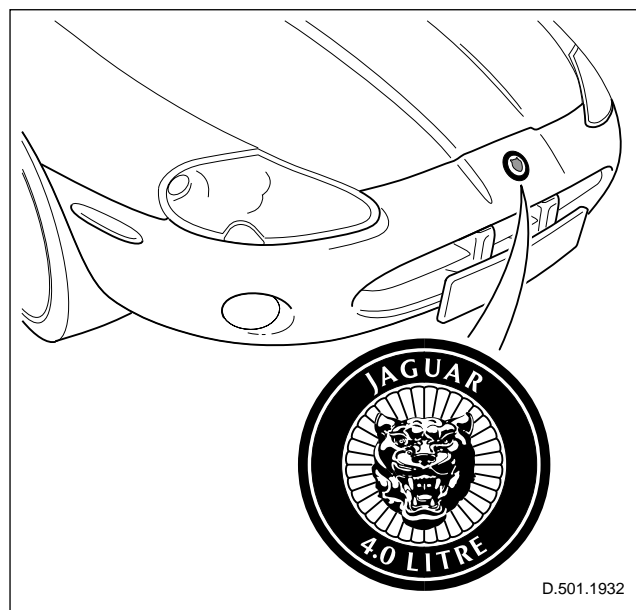


Fig. 4 Front bumper (XK)

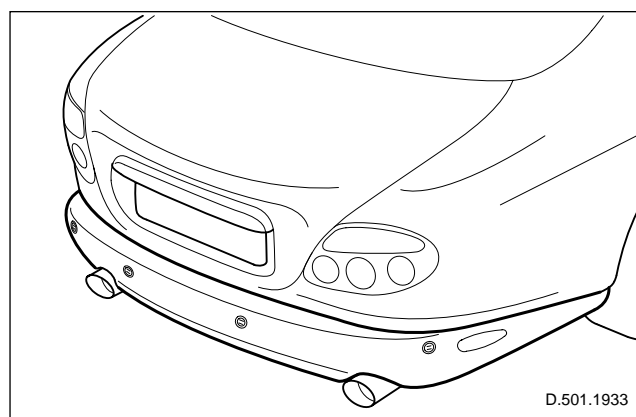


Fig. 5 Reverse-park control sensor locations (XK)

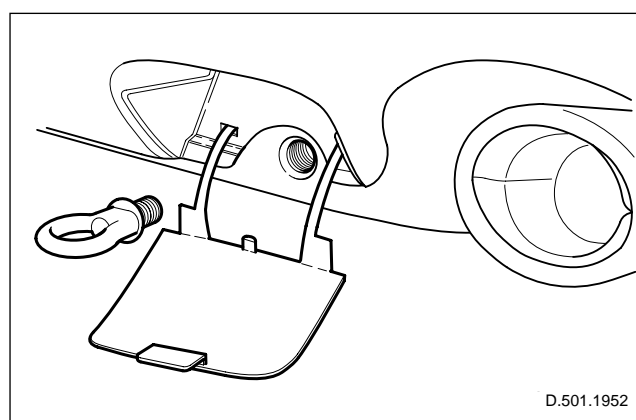


Fig. 6 Towing-eye access cover (XK)

## Handles, Locks, Latches and Entry Systems

### Luggage Compartment Lid-Latch (XK)

A luggage compartment lid-latch is introduced which is housed in the new bright finisher positioned above the license plate. The lid latch has the same functionality as the XJ Series lid latch and is controlled by the security and locking control module (SLCM).

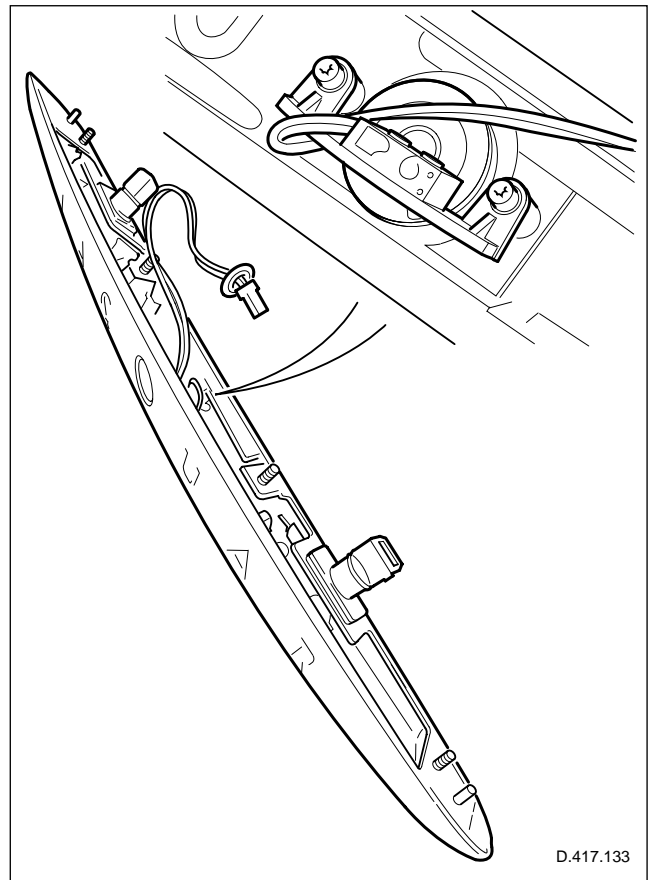


Fig. 7 Luggage compartment lid-latch (XK)

## Seats (XK)

### Front Seats

New driver and passenger seats have been designed and developed incorporating the following new features:

- Side bolster mounted air bags; refer to **Occupant Safety**.
- Independent head restraints.
- Independent front/rear cushion height adjustment.

The driver and passenger seats, although almost identical, have some unique components fitted: the driver's seat has a seat track position sensor and the passenger's seat has a weight sensing system. In both instances the components form an integral part of the occupant safety system; refer to **Occupant Safety**.

**WARNING:** Prior to seat removal and before disconnecting the seat harness (which includes air bag connectors), the vehicle battery should be disconnected and a period of at least one minute allowed to elapse. The same amount of care should be taken when handling and storing these seats, as would be taken when handling and storing vehicle air bags in isolation.

Modified seat slides, covers and brackets have also been introduced to suit the new frame.

### Seat Control Module

Although packaged the same as for previous models, new seat control modules have been introduced to accommodate the additional seat functions. The lumbar pump is now wired directly to the seat switchpack and is therefore no longer controlled by the seat control module.

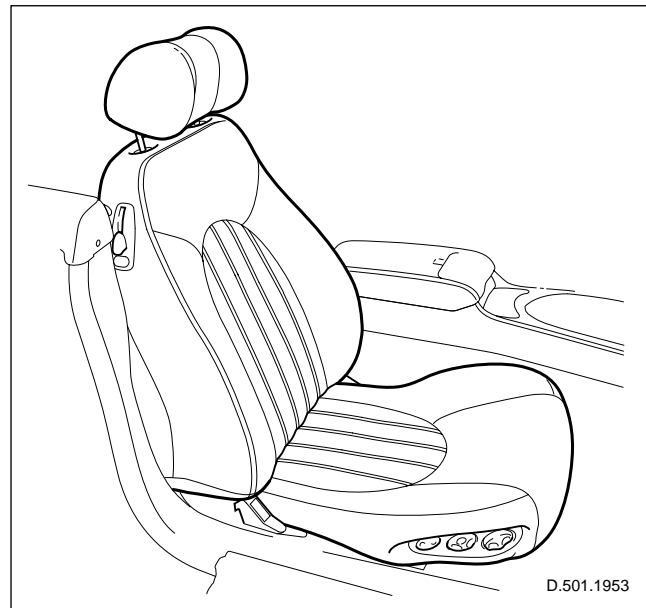
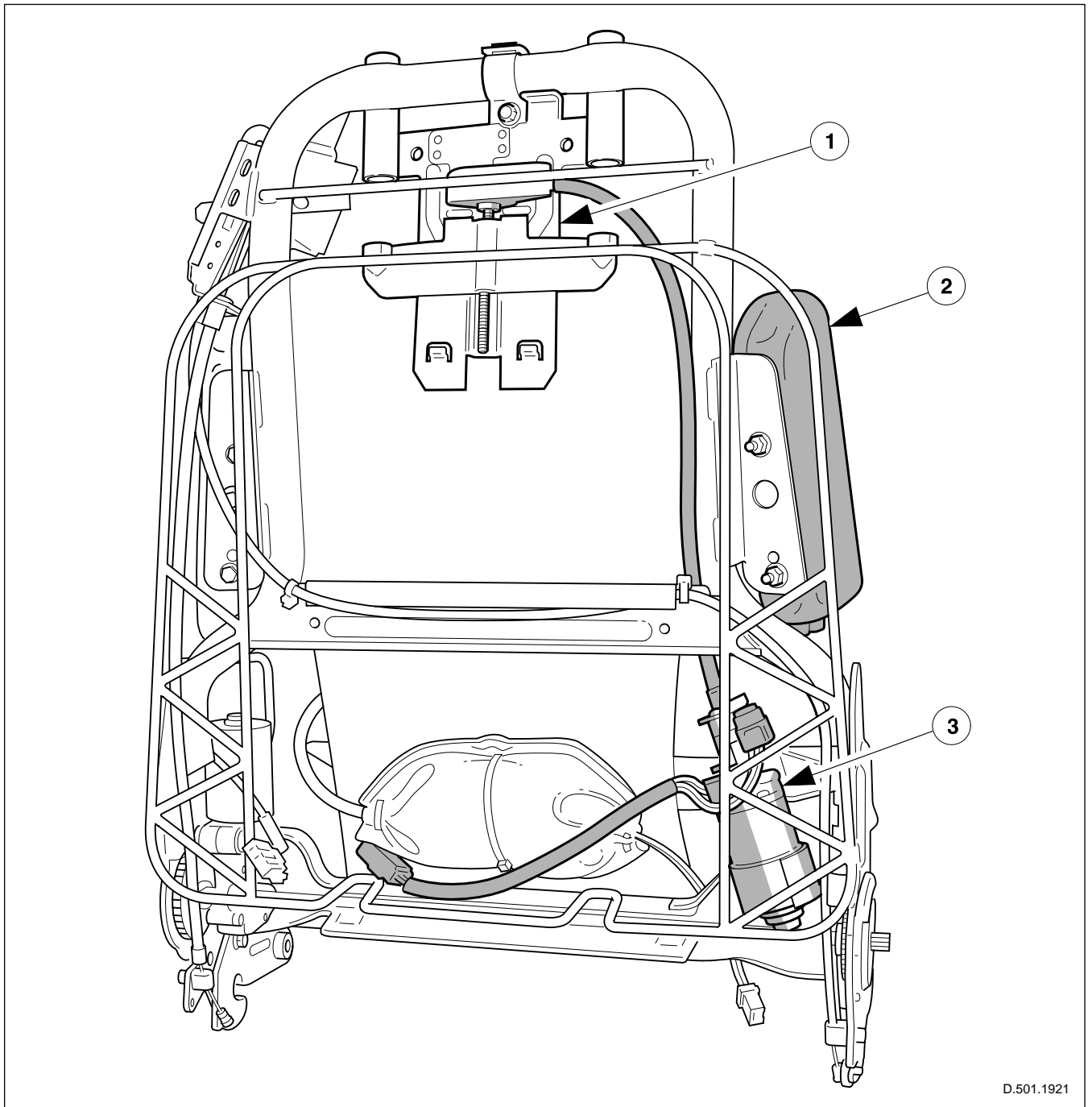


Fig. 8 Front seat

### Head Restraint

The head restraint position is controlled by the following components:

- Head restraint module (mounted inboard on the seat frame).
- Head restraint motor.
- Head restraint switch (refer to seat switch pack).



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**Fig. 9 Head restraint components, left-hand front seat**

1. Head restraint mechanism
2. Head restraint module
3. Head restraint motor

## Tilt Feature

The head restraint module controls the head restraint motor by responding to the status of three switches: tilt, latch and seat.

The head restraint automatically lowers when the seat back is tilted forward. This feature is controlled by two microswitches: the seat back tilt knob (2) actuates the tilt microswitch (1) causing the head restraint to fully retract; when the seat back is returned to the normal driving position, the latch microswitch (4) causes the head restraint to return to its previous position. The vehicle occupant can position the head restraint to suit their stature by adjusting the center switch on the switchpack (3).

**NOTE:** The system has been designed to ensure the head restraint will lower in the event that the tilt switch fails. In this condition, the head restraint will not operate until the seat is tilted forward, responding to the latch switch changing state.

Diagnosis of any seat malfunctions should be undertaken using WDS.

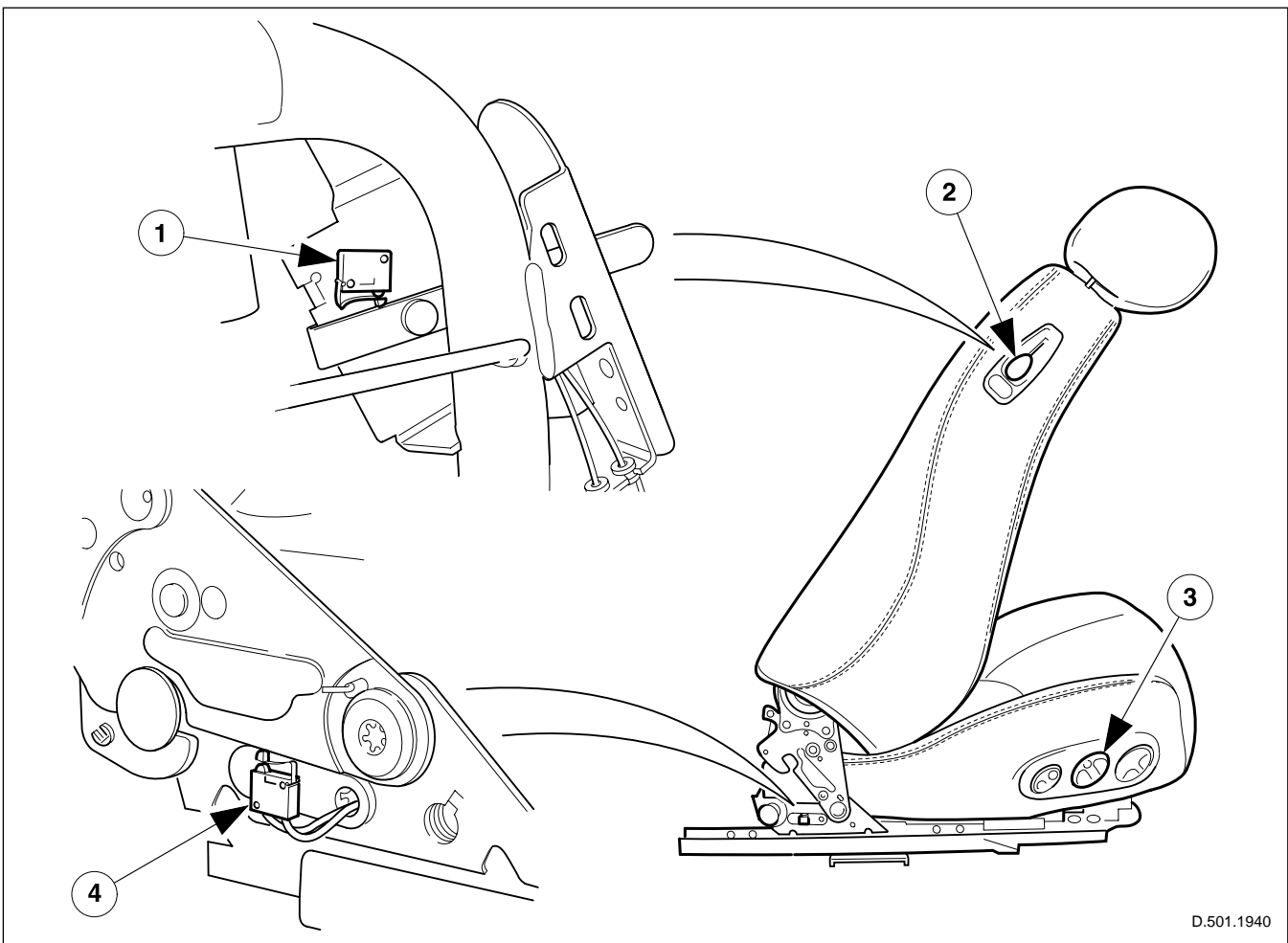
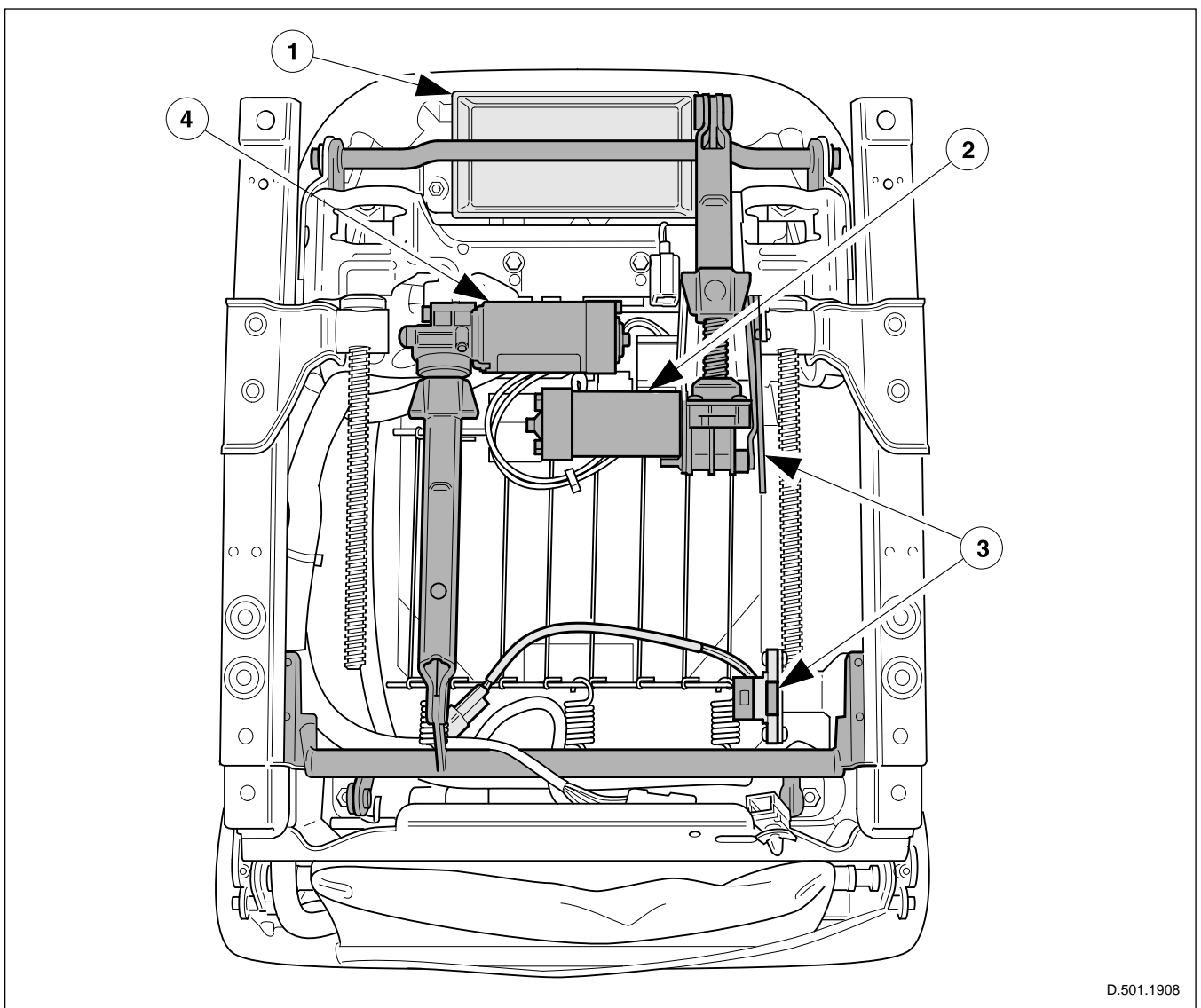


Fig. 10 Front seat tilt and head restraint switches

### Seat Height Adjustment

Unlike the single motor arrangement used for previous models, the new seat has two separate motors and associated mechanisms, to enable the independent height adjustment of the front and rear portions of the seat.



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**Fig. 11 Driver seat underside - component locations**

- |   |  |
|---|--|
| 1. Driver seat control module                         | 3. Seat track position sensor                        |
| 2. Seat height adjustment motor and mechanism (front) | 4. Seat height adjustment motor and mechanism (rear) |

## Seat Switch Pack

The seat switch pack has been redesigned to take account of additional seat functionality.

Switch A controls the seat position and cushion height and tilt.

Switch B controls the seat back angle and the head restraint.

Switch C controls the lumbar support.

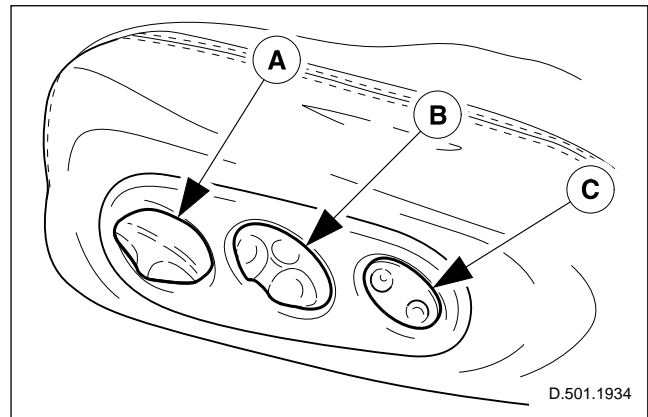


Fig. 12 - Seat switchpack

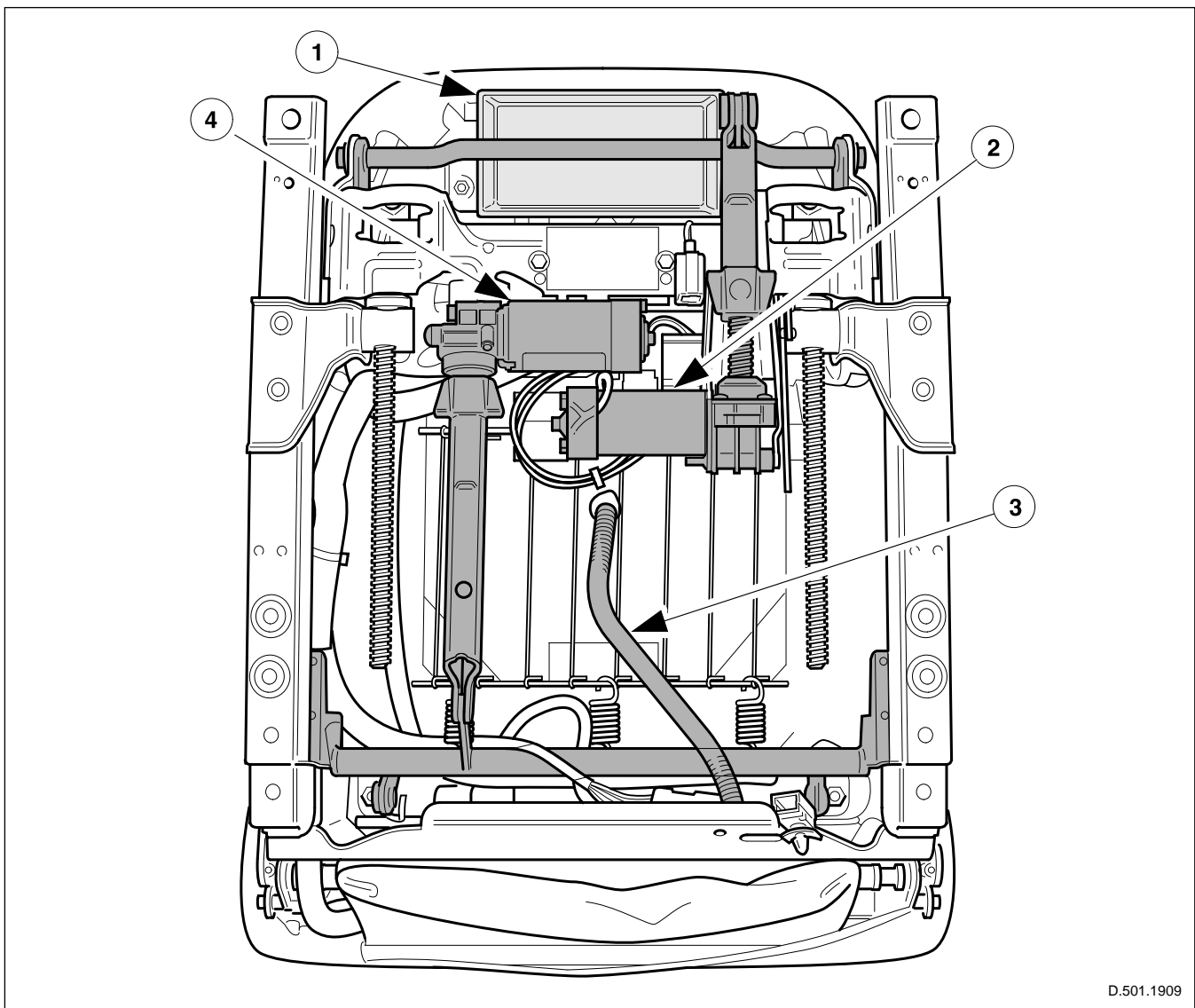
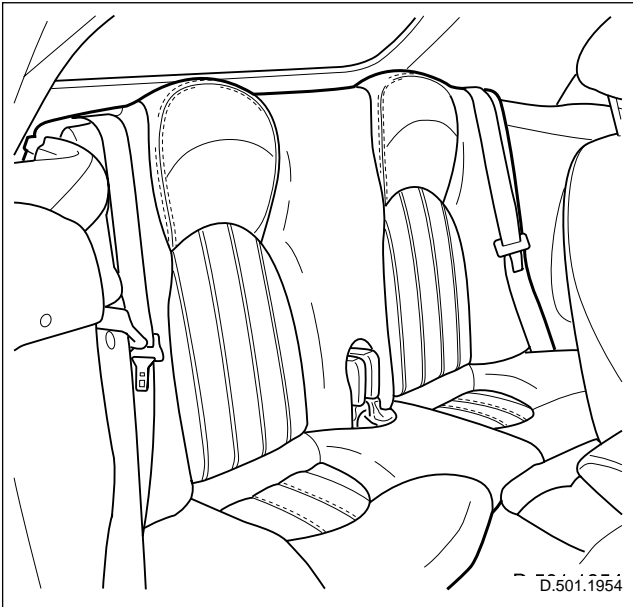


Fig. 13 Passenger seat underside - component locations

- |   |  |
|---|--|
| 1. Passenger seat control module                      | 3. Seat weight sensor hose                           |
| 2. Seat height adjustment motor and mechanism (front) | 4. Seat height adjustment motor and mechanism (rear) |





**Fig. 14** Rear seats

### **Rear Seats**

New rear seats have been introduced that are styled to match the front seats, but in addition take into account the requirement for child seat lower ISOfix anchors; refer to **Occupant Safety**.

## Introduction

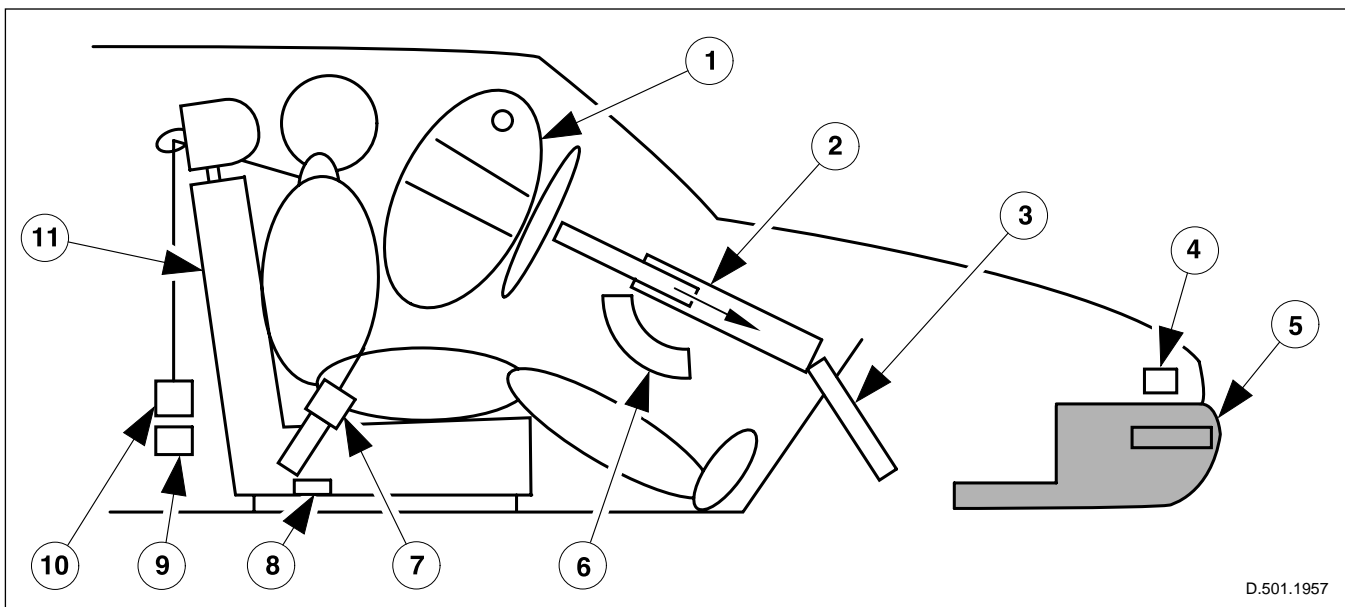
Occupant safety systems for Jaguar vehicles incorporate important design relationships between certain vehicle components. The 2001 MY XK Series, features several enhancements to the occupant safety system and these design relationships (fig.15) including the:

- introduction of new structural components;
- development and refinement of existing structural components;
- introduction of a new advanced restraint system.

Bolt-on components are reviewed in this section, details of body structure changes can be found in the **XK Supplement to Body and Paint Repair Manual**.

**WARNING:** Modifications or repairs to bodywork in the vicinity of sensors could alter performance and affect the firing of the restraint system. Ensure correct alignment and fixing torques are maintained after any repair work; refer to JTIS. Occupant safety components are specifically designed for each vehicle, therefore to maintain the integrity of the system, it is imperative that:

- Only genuine Jaguar replacement parts are installed.
- Parts are not interchanged between models or model years.
- Parts are not modified or omitted.
- Workshop Manual procedures are followed precisely.



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**Fig. 15 Driver safety-component relationship**

- |                            |   |
|----------------------------|---|
| 1. Air bag                 | 7. Safety belt buckle sensor            |
| 2. Steering column - upper | 8. Seat track position sensor           |
| 3. Steering column - lower | 9. Side crash sensor                    |
| 4. Front crash sensor      | 10. Safety belt retractor/pre-tensioner |
| 5. Front-end structure     | 11. Seat                                |
| 6. Knee bolster            |   |

### Front-end Components

#### Introduction

A number of front-end components have been modified or introduced to enhance crash performance. These components include: bumper beam (revised overriders), crush tubes, crossbeam (ears added), crossbeam mounting brackets and crossbeam catcher bracket.

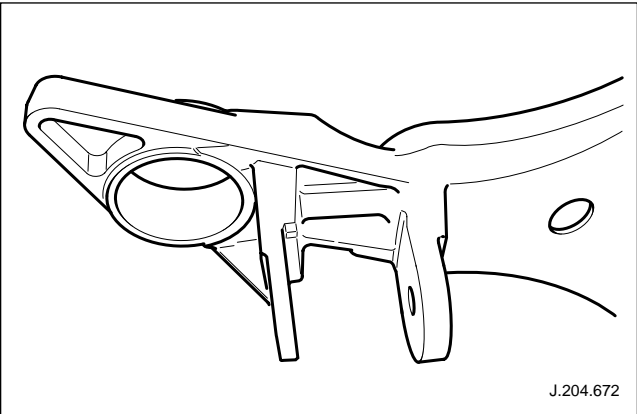


Fig. 16 Crossbeam mounting

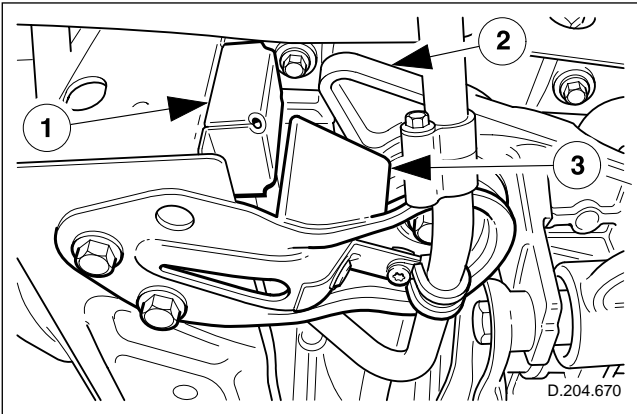


Fig. 17 Left-hand crossbeam mounting

- 1. Catcher bracket
- 2. Crossbeam ear
- 3. Mounting bracket modification

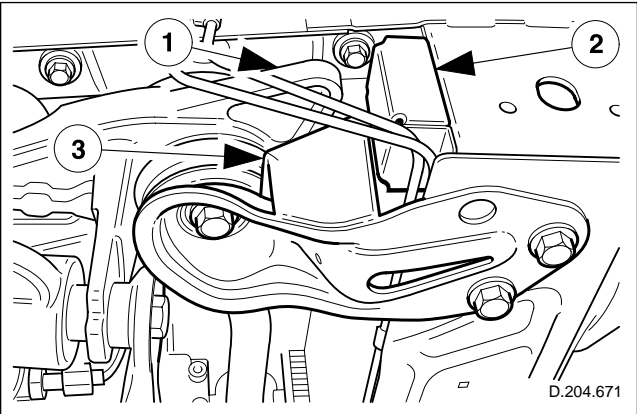


Fig. 18 Right-hand crossbeam mounting

- 1. Crossbeam ear
- 2. Catcher bracket
- 3. Mounting bracket modification

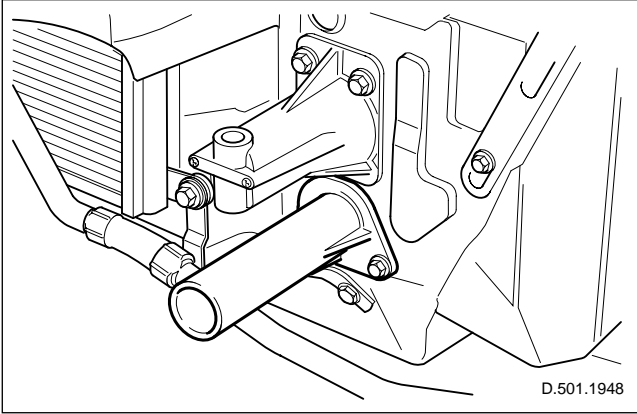


Fig. 19 Left-hand crush tube

## Advanced Restraints System (XK)

### Introduction

**NOTE:** The advanced restraints system does not comprise any components that are interchangeable with components from previous model years. It therefore follows that XK Series modules are no longer interchangeable with XJ Series modules.

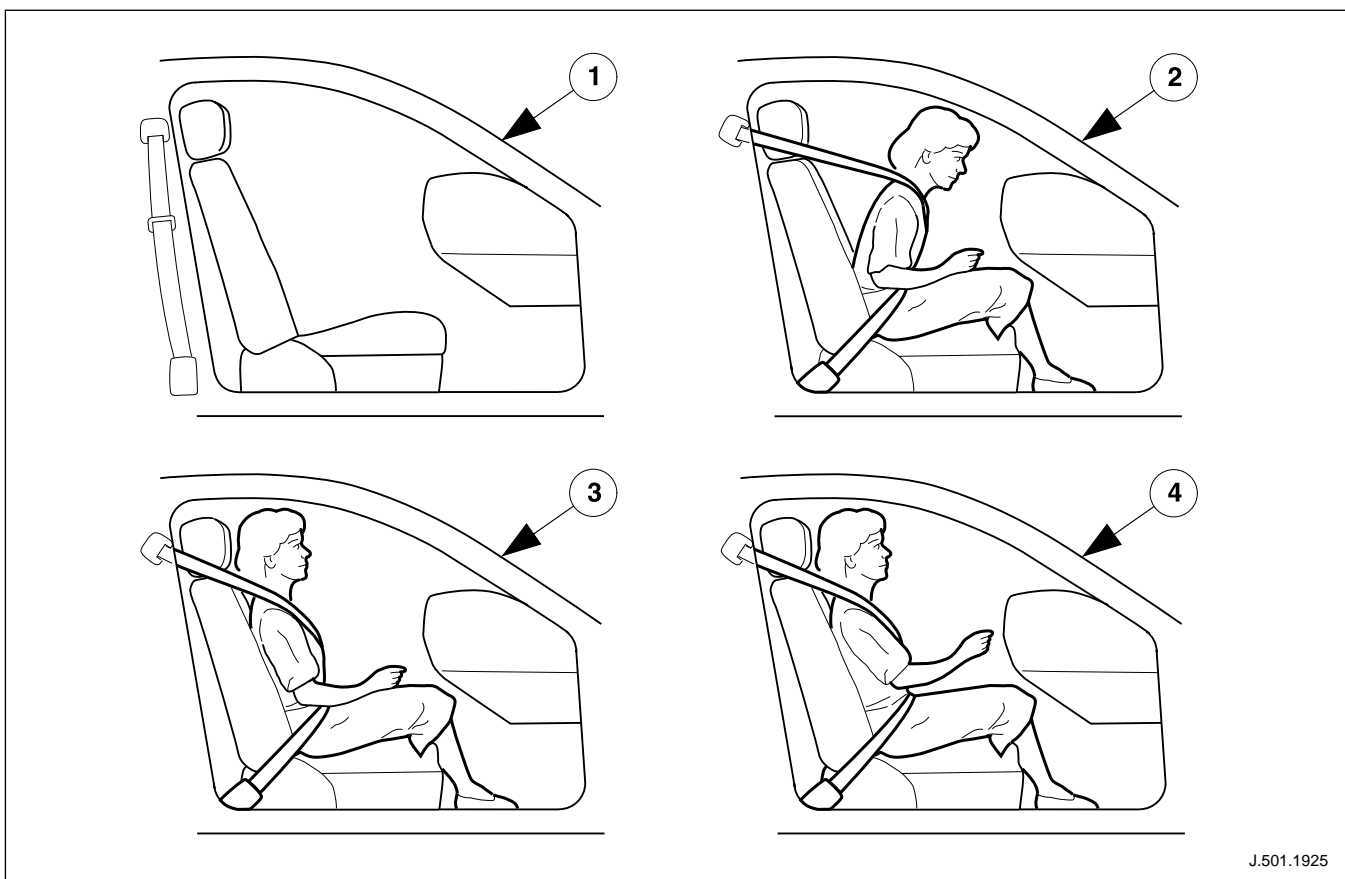
New technologies have permitted the development of an 'Advanced Restraint System' that provides an improved overall level of frontal crash protection for front seat occupants. The system analyzes the occupancy scenario and crash severity before activating the appropriate safety devices to help better protect a range of occupants in a variety of frontal crash situations.

Benefits of the new system include:

- Optimization of the deployment restraint devices.
- The reduction in potential for air bag induced injuries.

- The significant reduction in passenger air bag deployments (particularly when passenger seats are unoccupied) and a general reduction in all air bag deployments.

Some typical passenger position scenarios are demonstrated in fig. 20.



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**Fig. 20 Basic occupancy scenarios (passenger side)**

1. Empty Seat - No deploy
2. Out of Position - No deploy
3. In Position - Deploy
4. Extremities - No effect on deployment decision

In order to support the advanced restraint system requirements, a new restraint control architecture has been introduced comprising the following systems or components:

- Passenger occupancy sensing system.
- All-electronic crash sensing including frontal crash severity sensing and advanced restraints management.
- Driver air bag with twin stage inflator.
- Passenger air bag with twin stage inflator.
- Child seat lower ISOfix anchors for rear seats.
- Safety belt system including front belt use detection, load limiting and electrical comfort system.
- Front seats including driver seat track position sensor and passenger seat weight-sensing system.
- Lower steering column.
- Front seat mounted, side air bags.

The systems diagram (fig. 21) provides an indication of how the electrical component parts interact with each other; refer to **2001 MY XK Series Electrical Guide** for detailed information.

In addition, the following components have been modified:

- Passenger air bag deployment door.
- Steering wheel.
- Upper steering column.
- Rear seats (provision for child seat lower ISOfix anchors and new safety belt buckles).

# Occupant Safety

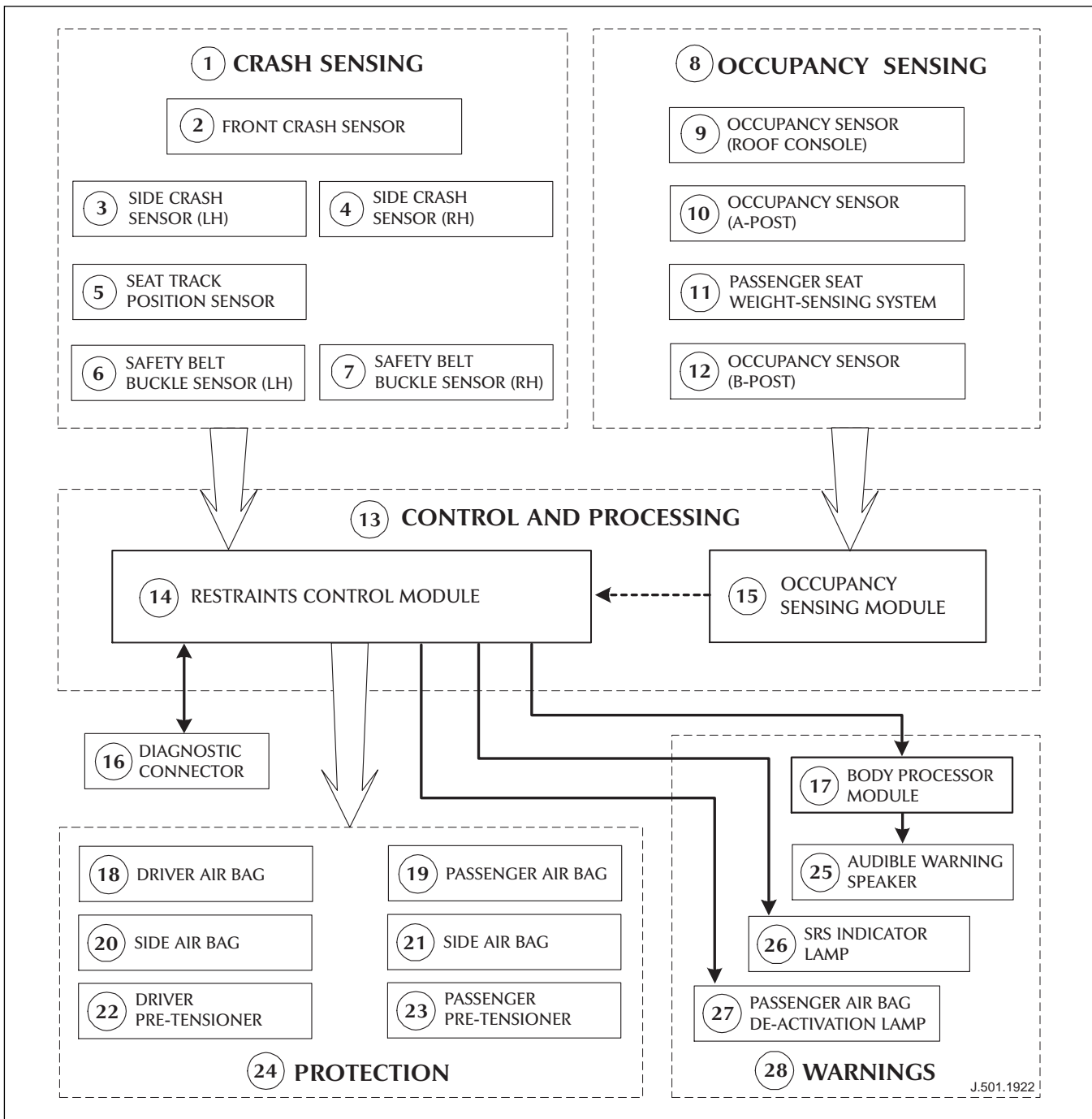
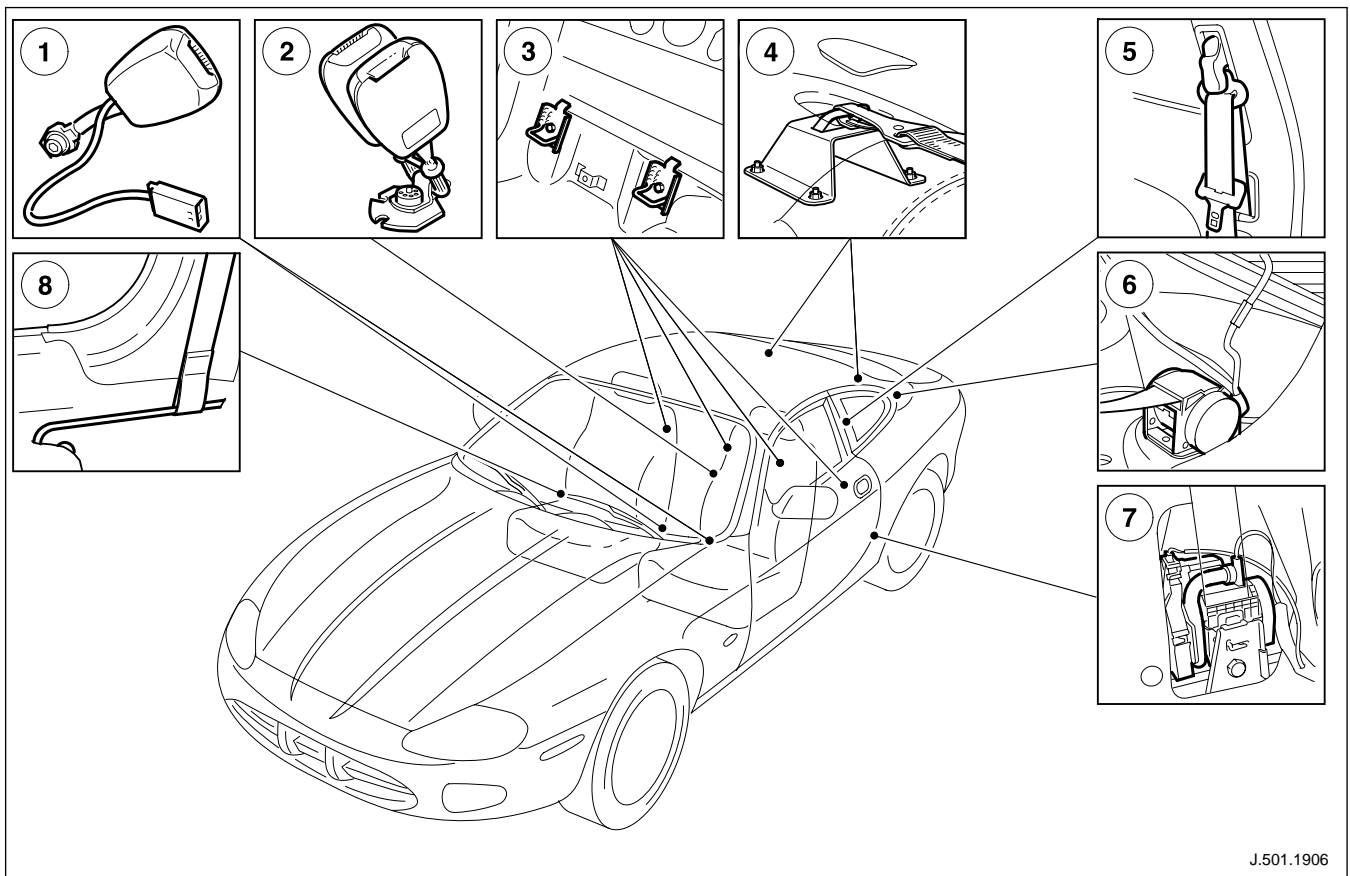


Fig. 21 Advanced restraints system diagram

**Key to fig. 21:**

- |  |  |
|--|--|
| 1. Crash sensing                         | 15. Occupancy sensing module             |
| 2. Front crash sensor                    | 16. Diagnostic connector                 |
| 3. Side crash sensor (LH)                | 17. Body processor module                |
| 4. Side crash sensor (RH)                | 18. Driver air bag                       |
| 5. Seat track position sensor            | 19. Passenger air bag                    |
| 6. Safety belt buckle sensor (LH)        | 20. Side air bag                         |
| 7. Safety belt buckle sensor (RH)        | 21. Side air bag                         |
| 8. Occupancy sensing                     | 22. Driver pre-tensioner                 |
| 9. Occupancy sensor (roof console)       | 23. Passenger pre-tensioner              |
| 10. Occupancy sensor (A-post)            | 24. Protection                           |
| 11. Passenger seat weight-sensing system | 25. Audible warning speaker              |
| 12. Occupancy sensor (B-post)            | 26. SRS indicator lamp                   |
| 13. Control and processing               | 27. Passenger air bag de-activation lamp |
| 14. Restraints control module            | 28. Warnings                             |

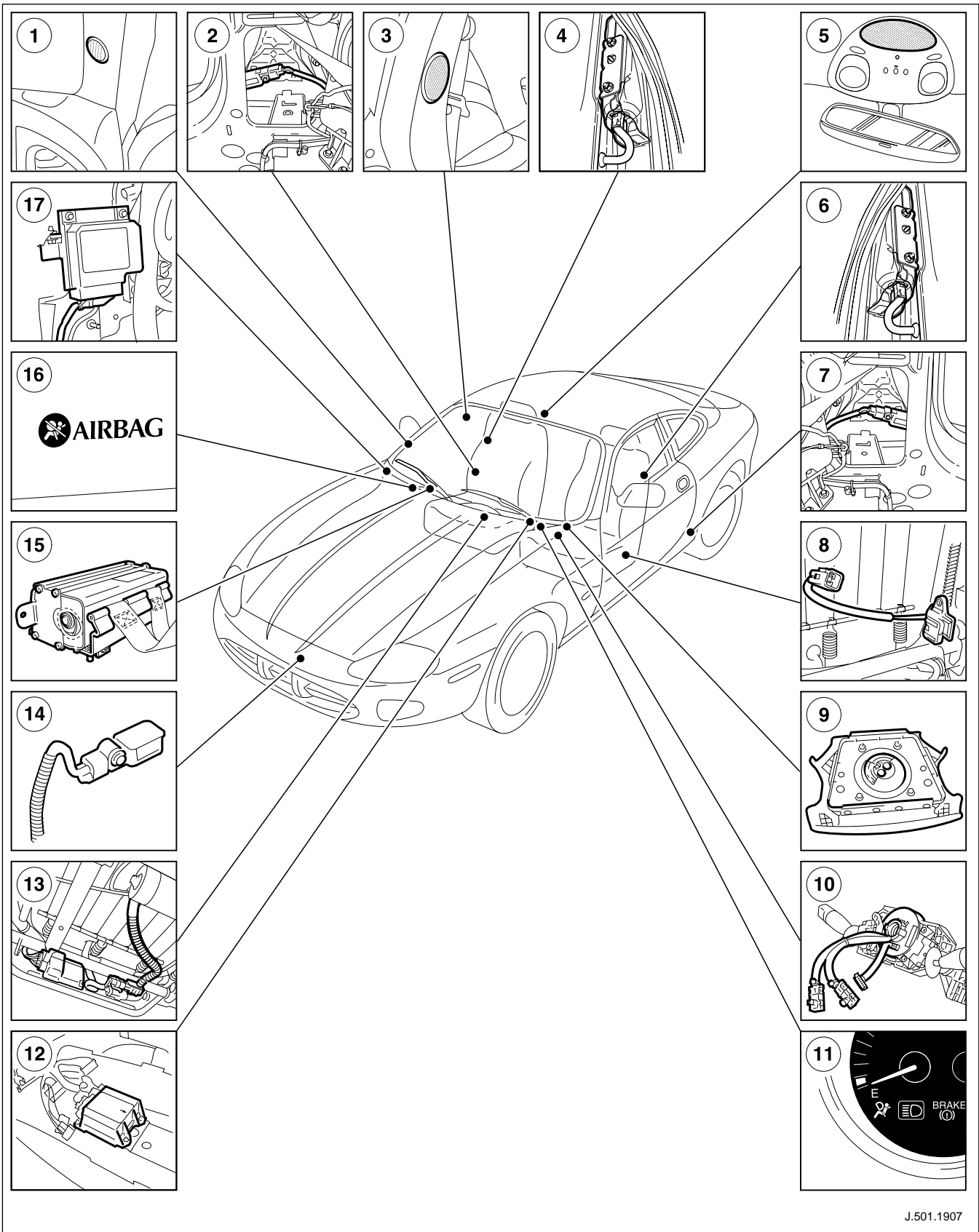


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**Fig. 22 Occupant restraints - location of active components**

- |   |  |
|---|--|
| 1. Front safety belt buckle               | 5. Front safety belt upper anchor            |
| 2. Rear center safety belt buckle         | 6. Rear safety belt retractor                |
| 3. Child seat lower ISOfix anchors        | 7. Front safety belt retractor/pre-tensioner |
| 4. Child seat upper anchor (where fitted) | 8. Front safety belt lower anchor            |

# Occupant Safety



J.501.1907

Fig. 23 Occupant restraints - location of passive components



## Key to fig. 23:

- |   |   |
|---|---|
| <ol style="list-style-type: none"> <li>1. Occupancy sensor - A-post</li> <li>2. Side crash sensor</li> <li>3. Occupancy sensor - B-post</li> <li>4. Side air bag module</li> <li>5. Occupancy sensor - roof console</li> <li>6. Side air bag module</li> <li>7. Side crash sensor</li> <li>8. Seat track position sensor</li> <li>9. Driver air bag module</li> </ol> | <ol style="list-style-type: none"> <li>10. Air bag sliding contact</li> <li>11. SRS indicator lamp</li> <li>12. Restraint control module</li> <li>13. Passenger seat weight-sensing system</li> <li>14. Front crash sensor</li> <li>15. Passenger air bag module</li> <li>16. Passenger air bag de-activation indicator lamp</li> <li>17. Occupancy sensing module</li> </ol> |
|---|---|

## Sensors (XK)

**WARNING:** Before commencing work on any part of the restraint system, the vehicle battery should be disconnected and a period of at least one minute allowed to elapse.

- The sensors do not contain any serviceable parts.
- Serial numbers of new parts should be logged against VIN for traceability.

### Front Crash Scenario

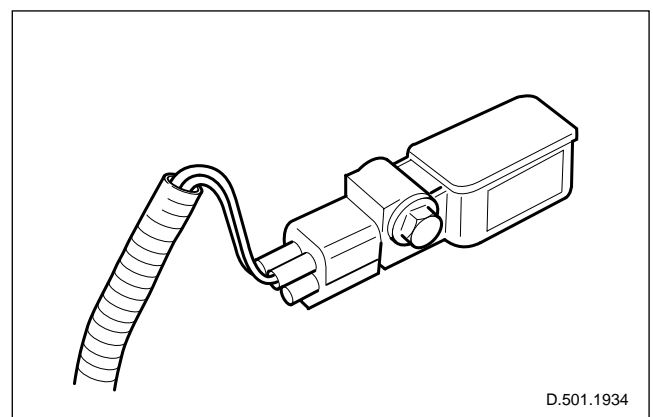
The restraints control module (RCM), controls air bag deployment decisions by using signals from its internal accelerometer and the following sensors:

- Front crash sensor.
- Seat track position sensor.
- Safety belt buckle sensor.
- Passenger seat weight-sensing system.
- Occupancy sensors.

### Front Crash Sensor

The front crash sensor:

- is mounted on a bracket which is located on the left-hand side of the radiator upper mounting member;
- collects acceleration data from the front of the vehicle and sends it back to the RCM as an analogue signal;
- provides the main source of data that enables the RCM to gauge the severity of a frontal impact.



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**Fig. 24** Front crash sensor

# Occupant Safety

## Seat Track Position Sensor

The seat track position sensor, a 'Hall effect' type, is fitted to the underside of the driver's seat. The sensor is actuated by the steel blade that is attached to the seat slide; refer to fig. 25.

The magnetic field disturbance caused, when the steel blade passes through the sensor, creates an output signal for the RCM. On receipt of this signal, which indicates when the seat is forward of a defined point in its travel, the RCM disables the second stage output of the driver air bag. Malfunction of the sensor or associated circuits will cause the SRS indicator lamp to illuminate. Diagnosis must be undertaken using WDS.

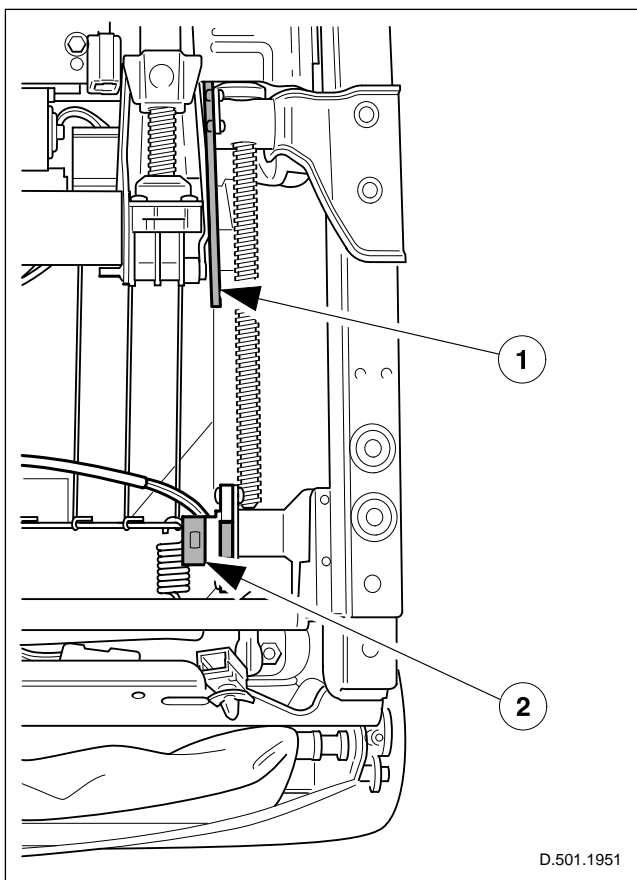


Fig. 25 Seat track position sensor

1. Steel blade
2. Hall effect sensor

## Safety Belt Buckle Sensor

The safety belt buckle sensor is a 'Hall effect' type, which provides an output signal in response to the magnetic field disturbance caused by the insertion of the safety belt tongue into the buckle. The output signal from the sensor is used by the RCM to determine whether the front seat occupants are correctly restrained. Malfunction of the sensor or associated circuits will cause the SRS indicator lamp to illuminate. Diagnosis should be undertaken using WDS.

The Hall effect sensor:

- is used in conjunction with the other components of the advanced restraint system to ensure that air bag and safety belt deployment only occurs where necessary;
- forms an integral part of the electrical comfort system; refer to **Safety Belts**.

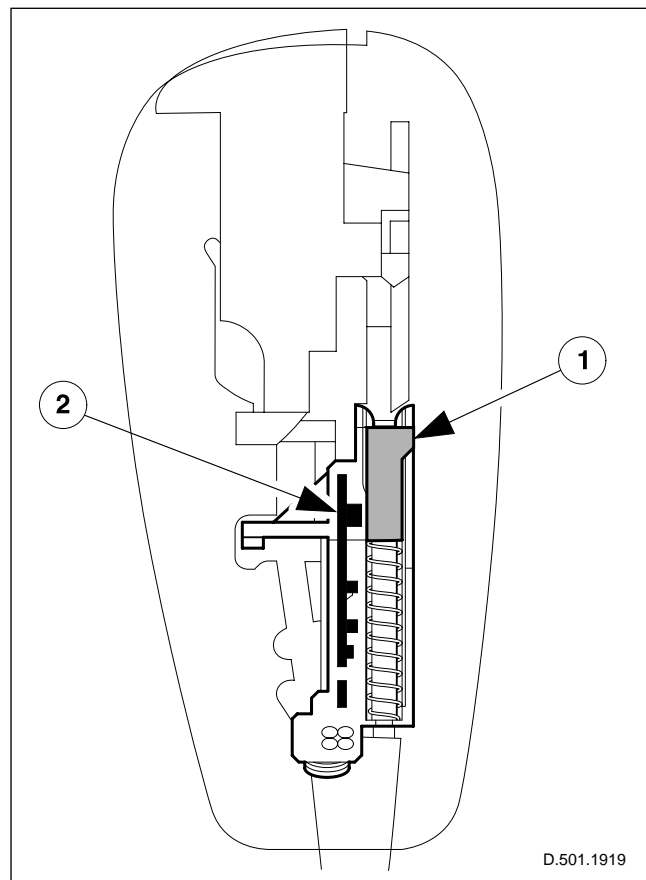


Fig. 26 Safety belt buckle sensor

1. Magnet
2. Hall effect sensor

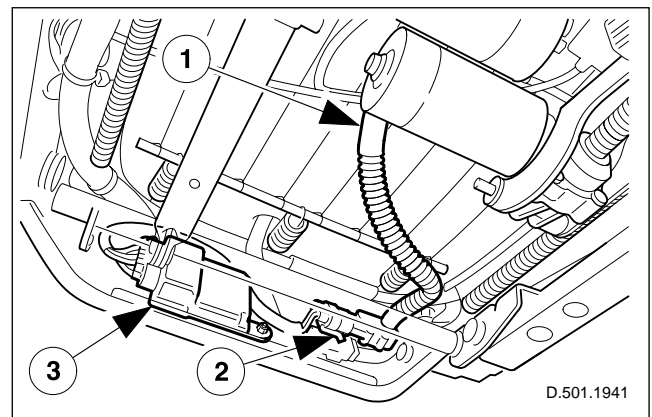
## Passenger Seat Weight Sensing System

**Note:** The weight sensing system does not comprise any serviceable items.

The following components are combined and calibrated during manufacture to form the seat weight sensing system:

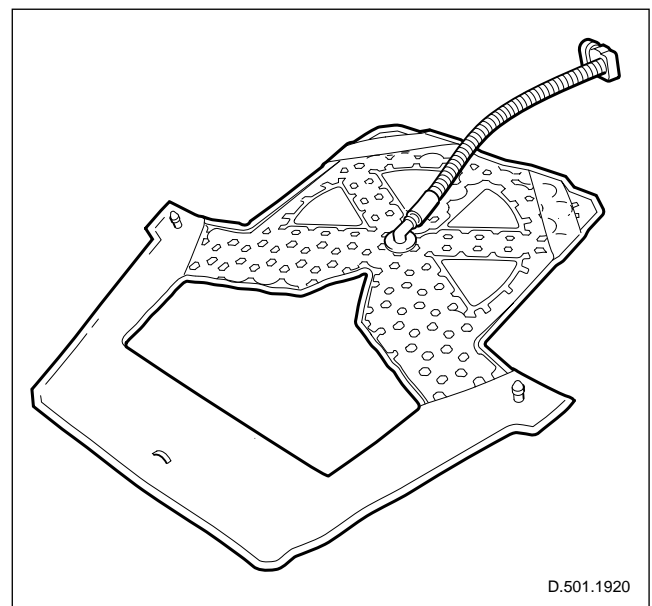
- Passenger seat cushion.
- Silicone-filled bladder (integrated into the passenger seat cushion).
- Seat weight-sensing module (mounted under the seat).
- Pressure sensor (attached to the bladder and mounted under the seat).

The silicone-filled bladder responds to weight changes on the passenger seat. The pressure sensor responds to these pressure changes and provides an appropriate signal to the seat weight-sensing module. The seat weight-sensing module, processes the input signal received from the pressure sensor and makes it available to the restraints control module (RCM) via the controller area network (CAN). In addition, the module performs self-diagnostic functions on the system, with any malfunctions being notified to the RCM accordingly. Malfunction of the sensing system or associated circuits will cause the SRS indicator lamp to illuminate. Diagnosis of the system can only be undertaken using WDS; refer to JTIS for further information.



**Fig. 27 Passenger seat weight-sensing system - component location**

1. Hose - silicon bladder to pressure sensor
2. Pressure sensor
3. Seat weight-sensing module



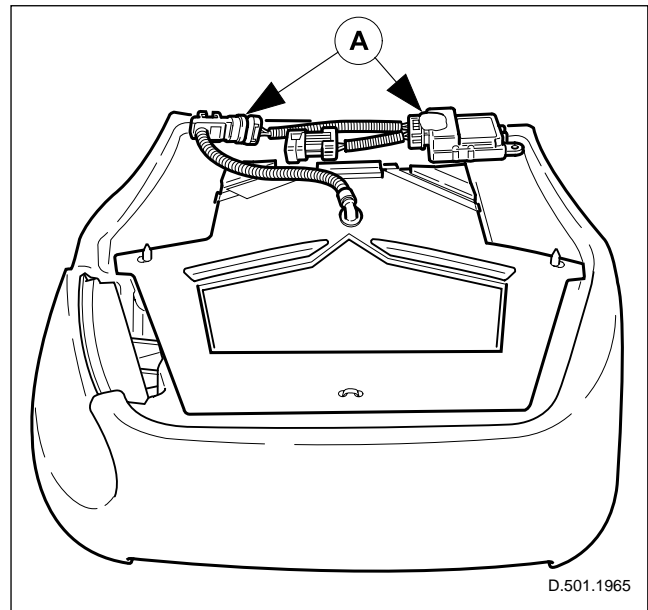
**Fig. 28 Passenger seat weight-sensing system - silicon bladder**

# Occupant Safety

The seat weight-sensing system responds to the occupancy of the front passenger seat in accordance with Table 1. The advanced restraints system via the RCM, monitors and processes the data from the seat weight-sensing system and several other sensors, before making a deployment decision; refer to the advanced restraints system diagram (fig. 21). The system is designed to take account of several variables in addition to weight, including: seat back angle; inclination of the vehicle; exact position and structure of the weight on the seat.

### Service Kit

Individual components of the seat weight-sensing system are not serviceable; the system must be replaced as a complete unit. Due to the sophistication of the weight-sensing system, each replacement system requires calibration. To avoid the need to provide calibration equipment to each dealer, a pre-calibrated service kit assembly is available. The kit has two fixed connectors (A) and a single connector to interface with the vehicle harness. After installation, the system will require initialization by WDS; refer to JTIS for further information.



**Fig. 29 Passenger seat weight sensing system - service kit**

Passenger seat status	Passenger air bag status	Passenger air bag de-activation indicator lamp status
Empty	OFF	OFF
Occupied (small occupant)	OFF	ON
Occupied (large occupant)	ON	OFF

**Table 1 Passenger seat occupancy**

## Occupancy Sensors

The occupancy sensor system uses ultrasound at an operating frequency of 40 kilohertz to monitor passenger seat occupancy.

**NOTE:** Medical studies have shown that frequencies within this range do not present any danger or discomfort.

The advanced restraints system uses four ultrasonic sensors, one at the A-post, one at the B-post and two in the roof console; refer to fig. 30.

The sensors:

- Determine the presence and position of the front seat occupant with respect to the passenger air bag deployment door.

- Determine air bag deployment decisions by classifying occupants as either 'in position' or 'out of position'.
- Are part of a system that is sophisticated enough to be unaffected by body extremities; refer to fig. 20.

The sensor positions are identical for the coupe and convertible, except that, since the convertible has no B-post, the equivalent sensor is mounted in the rear quarter trim capping; refer to fig. 31.

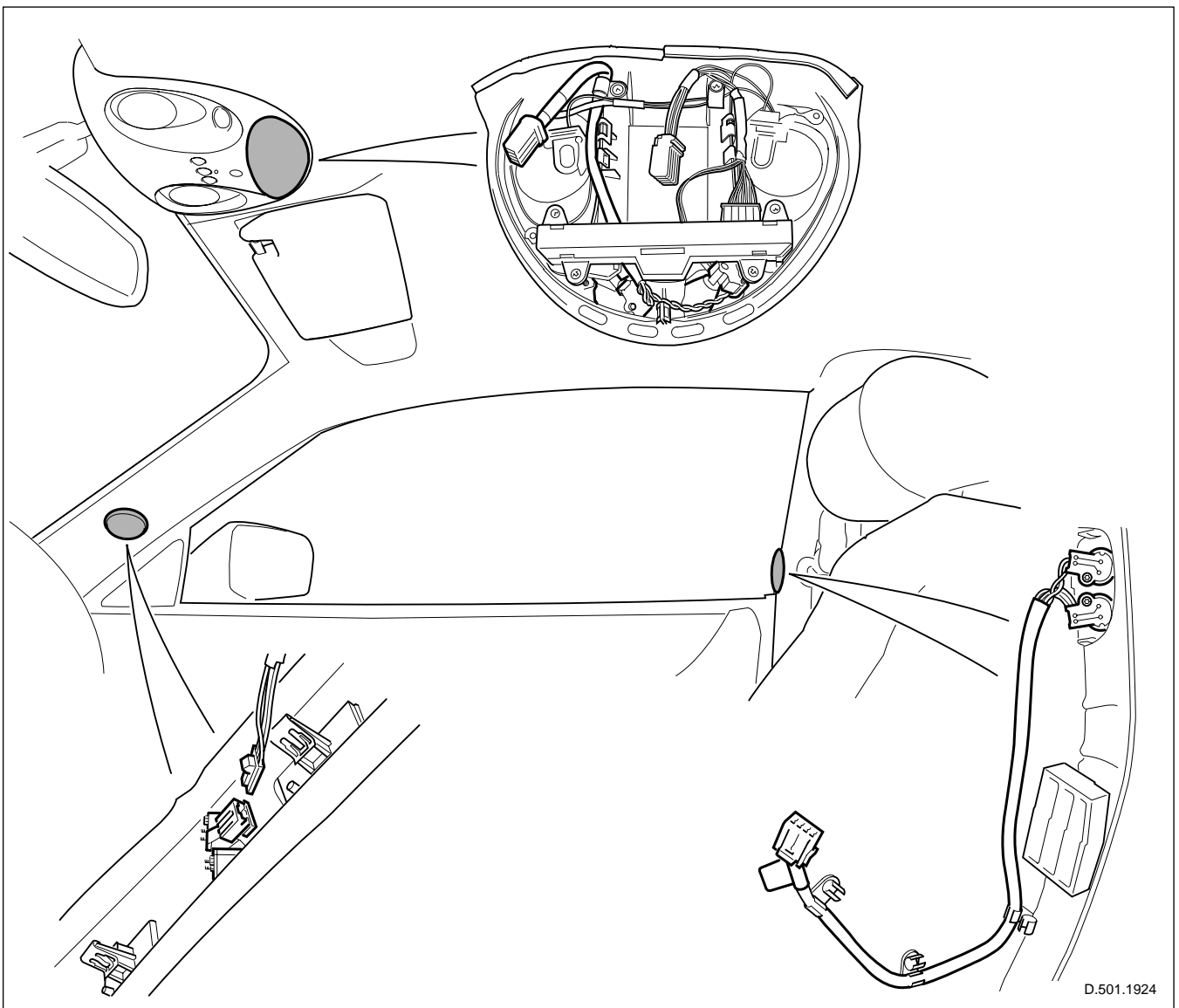


Fig. 30 Occupancy sensors - component location (coupe)

## Occupant Safety

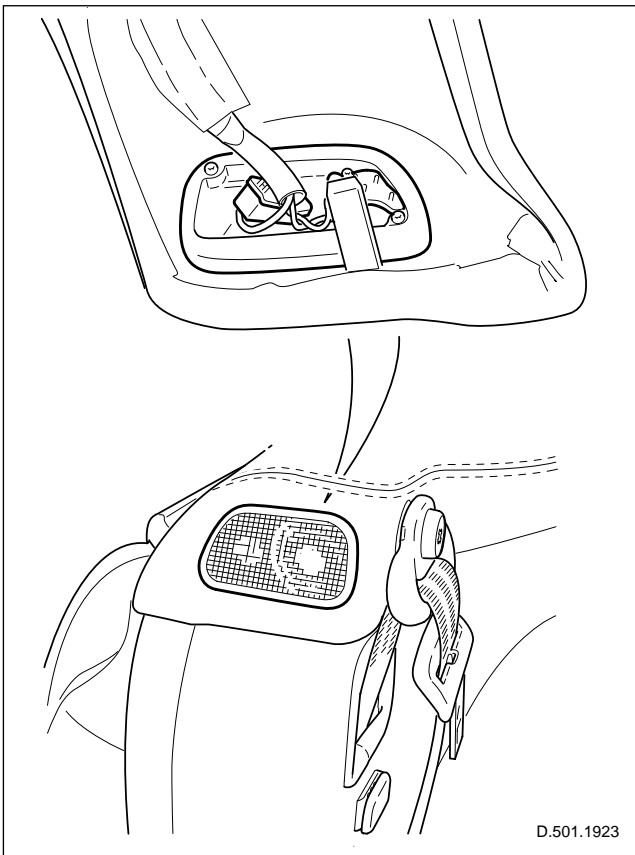


Fig. 31 Occupancy sensor - convertible

- The four sensors are strategically placed to detect the presence and movement of the front passenger seat occupant. Fig. 32 shows the approximate area of coverage provided by the sensors.
- The occupancy sensing module constantly monitors and processes the signals received from the occupancy sensors.
- The RCM uses the data received from the occupancy sensing module, in conjunction with data from other sensors in the system (refer to fig. 20), to make deployment decisions.

Data from the sensors is correlated by the occupancy sensing module and used to decide when the front passenger seat occupant has leaned into an area in front of the passenger air bag door, known as the 'keep-out zone'. The system is designed to ignore body extremities (hands, feet) and respond only to head or body movements. When the passenger leans forward into the zone, the system will disable the passenger air bag and provide visual confirmation by illuminating the passenger air bag deactivation indicator lamp; refer to **Air Bag Modules**.

Obstruction of any sensor for longer than 10 seconds will cause the system to log a 'blocked' code and will illuminate the SRS indicator lamp. Subsequent clearance of the obstruction will reinstate the SRS indicator lamp, but the code will remain logged.

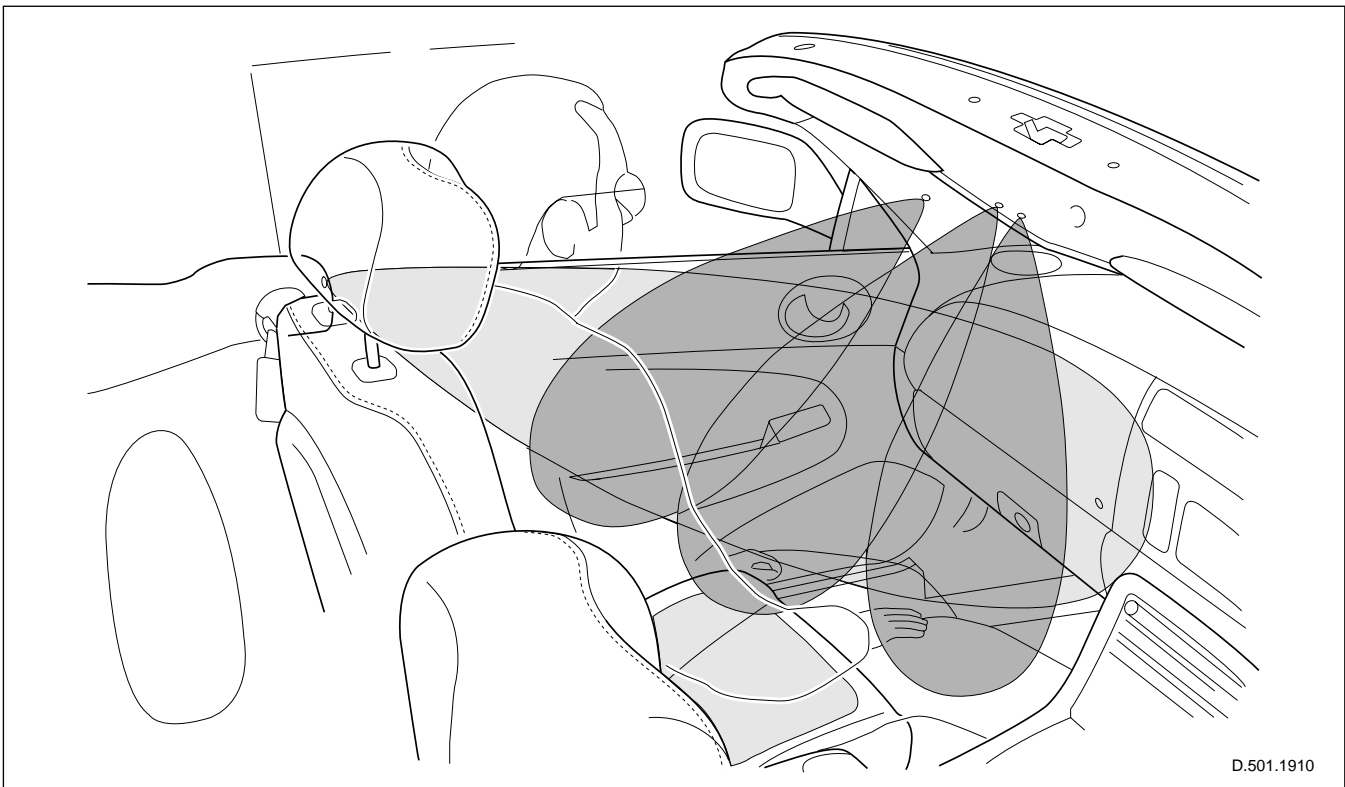


Fig. 32 Occupancy sensors - coverage

The system will continue to function when sensors are blocked or malfunctioning, but with reduced efficiency, due to the loss of coverage.

Refer to JTIS for sensor servicing information.

## Side Crash Scenario

Data from the side crash sensor are used by the restraints control module (RCM), in conjunction with acceleration data from the RCM's internal accelerometer to make a deployment decision. The RCM processes the acceleration data and subject to an impact being of high enough severity, decides whether the side air bag should be deployed. The decision is forwarded to the deployment handler (within the RCM) which responds appropriately; for example: in the case that the passenger seat weight-sensing system calculates that the seat is empty, or occupied by a small person, the passenger side air bag will be disabled.

## Side Crash Sensor

The side crash sensor:

- Is mounted on a bracket, which is attached to the vehicle body, behind the safety belt retractor.
- Comprises an accelerometer and processing circuits but, unlike XJ Series and S-TYPE, the sensor does not make deployment decisions.

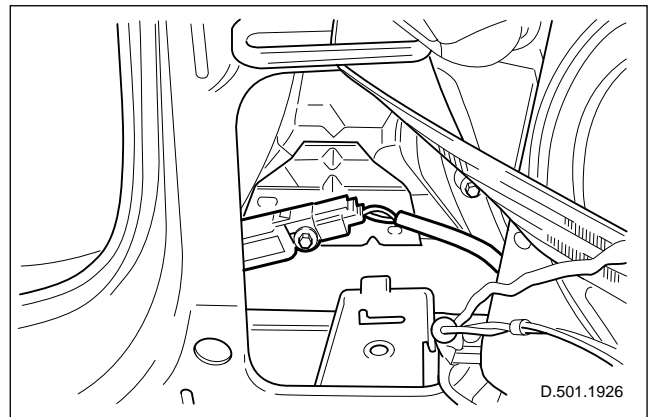


Fig. 33 Side crash sensor

## Control and Processing (XK)

### Restraints Control Module

Internally, the RCM has two areas that determine which elements of the restraint system are to be deployed:

#### Area 1 - Crash severity evaluation

The first area evaluates crash severity by using data from the RCM's internal accelerometer, the front crash sensor and the safety belt buckle sensor. Based on this data, the RCM decides which level of air bag deployment is required and forwards the information to the second area, the deployment handler.

#### Area 2 - Deployment handler

The status of the seat track position sensor, occupancy sensors, seat weight-sensing system and safety belt buckle sensors are examined before a decision is made about which restraints should finally be deployed. For instance, if the occupancy sensing and seat weight-sensing system indicate that the passenger seat is empty, then no restraint deployment will take place on the passenger side, even if full deployment takes place for the driver.

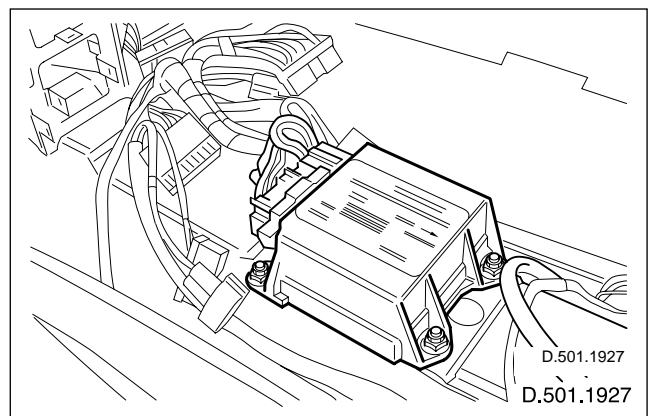


Fig. 34 Restraints Control Module

# Occupant Safety

The restraints control module (RCM):

- Is fixed to the top of the drive shaft tunnel below the center console.

**NOTE:** Due to the importance of the module being securely fixed to the vehicle body, the ground connection is made via the fixings and is monitored by the diagnostic system. A bad connection causes a diagnostic trouble code (DTC) to be generated. Refer to **JTIS** for the correct torque figures.

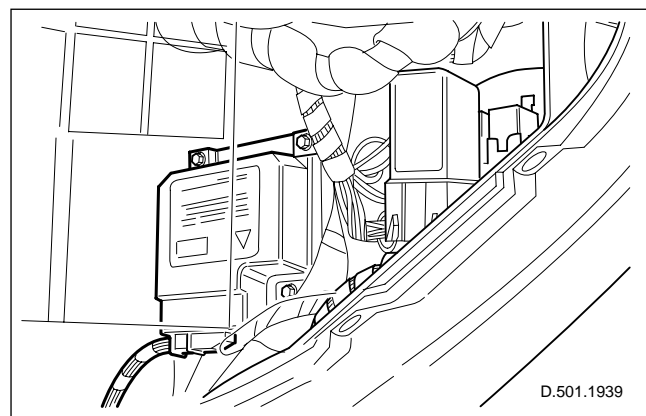
- Identifies severity and direction of impact and makes decision on deployment of air bags and pre-tensioners.
- Provides firing signals to all air bags and pre-tensioners.
- Performs on board testing of the air bag and pre-tensioner firing circuits, warning indicator circuits and module status (the front and side crash sensors perform basic self-tests).
- Stores fault codes.
- Drives the SRS indicator lamp on the instrument pack: if the warning lamp fails (fault code recorded) a warning tone is sounded.
- Is connected to the diagnostic connector via the ISO data bus to enable communication with WDS or scan tool.
- Provides temporary back-up power to operate the air bags in the event of loss of battery supply in crash conditions.
- In the event of a crash, records certain data for subsequent access via the diagnostic connector. This data includes deceleration information, firing delay and fault codes.

**NOTE:** Diagnosis of any malfunctions relating to the adaptive restraints system must always be undertaken using WDS.

## Occupancy sensing module

The module:

- is located on the right-hand side of the instrument panel;
- processes signals received from the occupancy sensors;
- makes data available to the RCM, via a local CAN.



**Fig. 35** Occupancy sensing module location



## Safety Belts (XK)

### Front Safety Belts

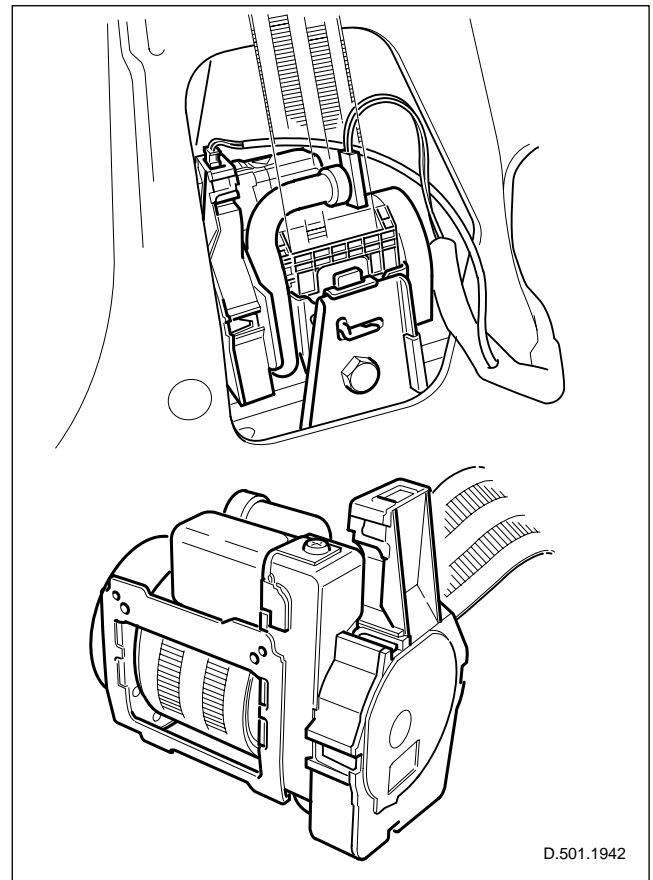
**WARNING:** Prior to the removal of front safety belts and before disconnecting front safety belt connectors, the vehicle battery should be disconnected and a period of at least one minute allowed to elapse. The same amount of care should be taken when handling and storing front safety belts, as would be taken when handling and storing air bags.

**NOTE:** The control of safety belt pre-tensioners has now been incorporated into the restraints control module (RCM), resulting in the deletion of the pre-tensioner control module.

The front safety belt system is new and includes the following changes:

- Safety belt buckles are fitted with 'Hall effect' sensors to suit the new adaptive restraints system; refer to **Sensors**.
- The addition of the electrical comfort system.
- The safety belt upper anchor has been repositioned and the safety belt lower anchor (slider bar) has been modified.

**NOTE:** Safety belts are not serviceable items. As with all electronically monitored, occupant safety components, the SRS indicator lamp will illuminate if a DTC has been stored. Diagnosis must be undertaken using WDS.



**Fig. 36** Front safety belt retractor/pre-tensioner

## Electrical Comfort System

Standard retraction applies when the safety belt tongue is not engaged with the safety belt buckle. Fig. 37 shows the relationship between force required to withdraw the webbing and the distance the webbing has moved. The top curve (C) represents the extraction force on the webbing; the bottom curve (E) represents the retraction force on the webbing.

(A) shows the force when the webbing is withdrawn to the maximum extent, (B) shows a typical point at which the webbing might be worn and (D) the webbing fully retracted. The dotted lines represent the instantaneous change in force on the webbing.

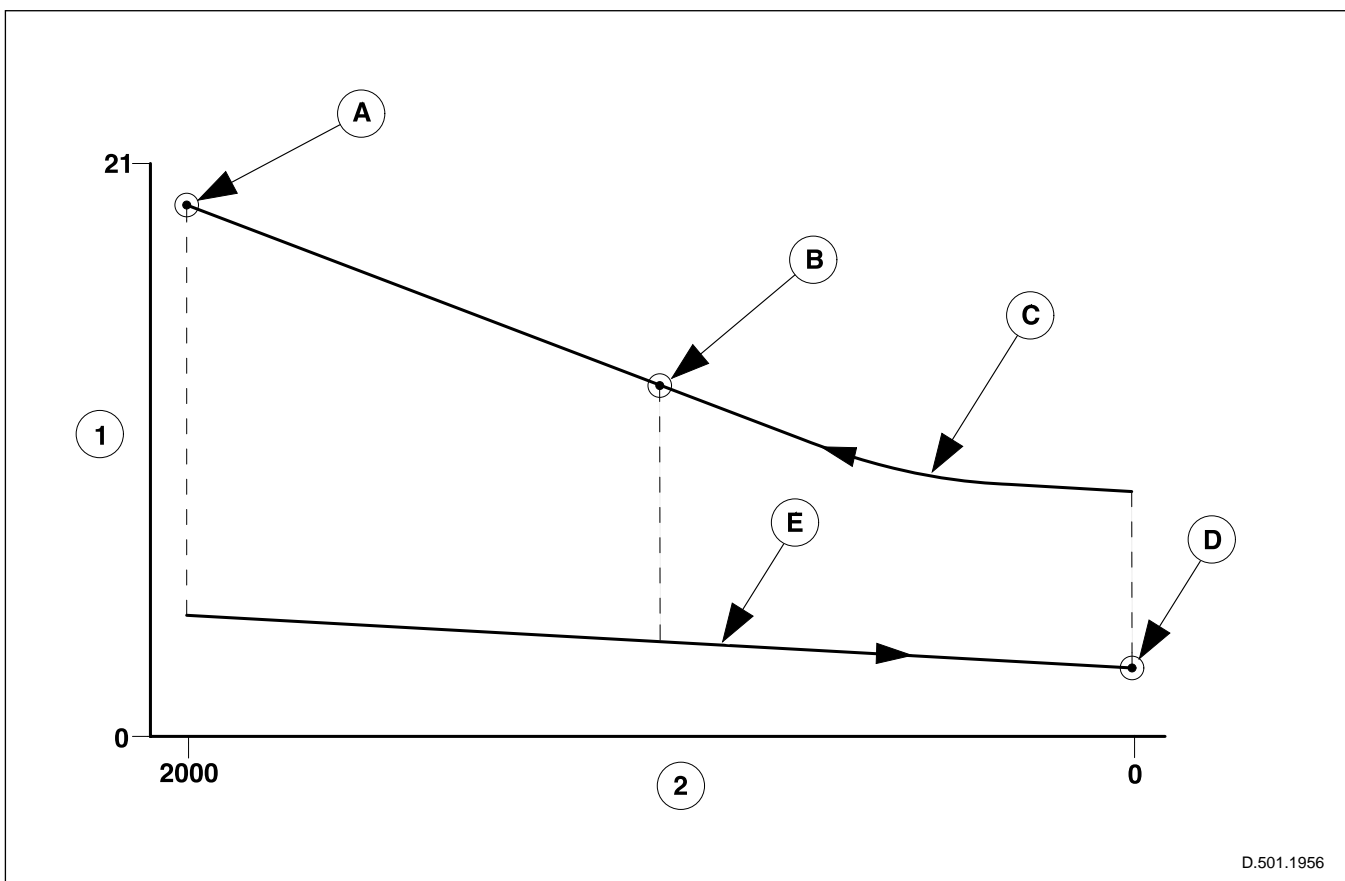


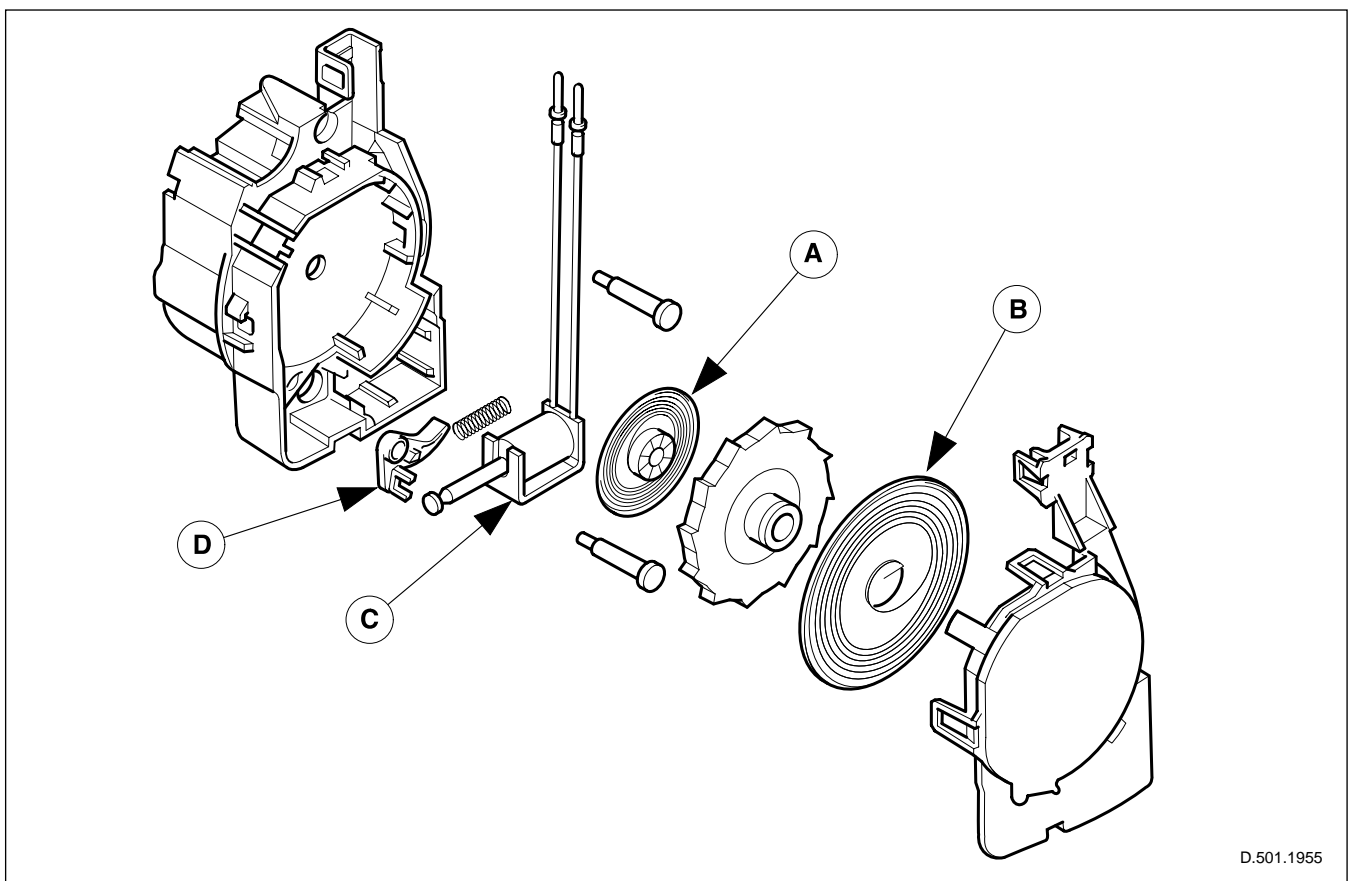
Fig. 37 Force/webbing relationship - standard retraction mode

1. Force on webbing (N)
2. Webbing distance (mm)

In addition to the standard retraction, the front safety belts have an electrical comfort system, designed to reduce the force exerted on the occupant, by the safety belt webbing under typical driving conditions. The system utilizes a mechanism in the retractor to keep the belt force at a controlled and pre-defined level.

**NOTE:** Fig. 38 is provided as an aid to understanding only. The comfort system does not comprise any serviceable components.

The safety belt, on initial extraction of the webbing, is controlled by the retraction spring (B). Whenever the front safety belt tongue, engages with the safety belt buckle, the comfort system solenoid (C) actuates the comfort switch (D) causing the comfort spring (A) to change the force exerted on the occupant as shown in fig. 39.



**Fig. 38** Electrical comfort system

# Occupant Safety

After the buckle tongue is inserted into the buckle (A), the comfort solenoid, switches operation to the comfort spring. During the period that the buckle remains engaged, the comfort system is in operation, reducing the force exerted on the occupant by the safety belt webbing, in accordance with the extraction curve (B) and the retraction curve (D). When the tongue is released from the buckle (C), the comfort solenoid disengages the comfort spring, re-engages the retraction spring and causes the force on the webbing to immediately revert to the standard retraction mode (fig. 37).

## Front safety belt buckle

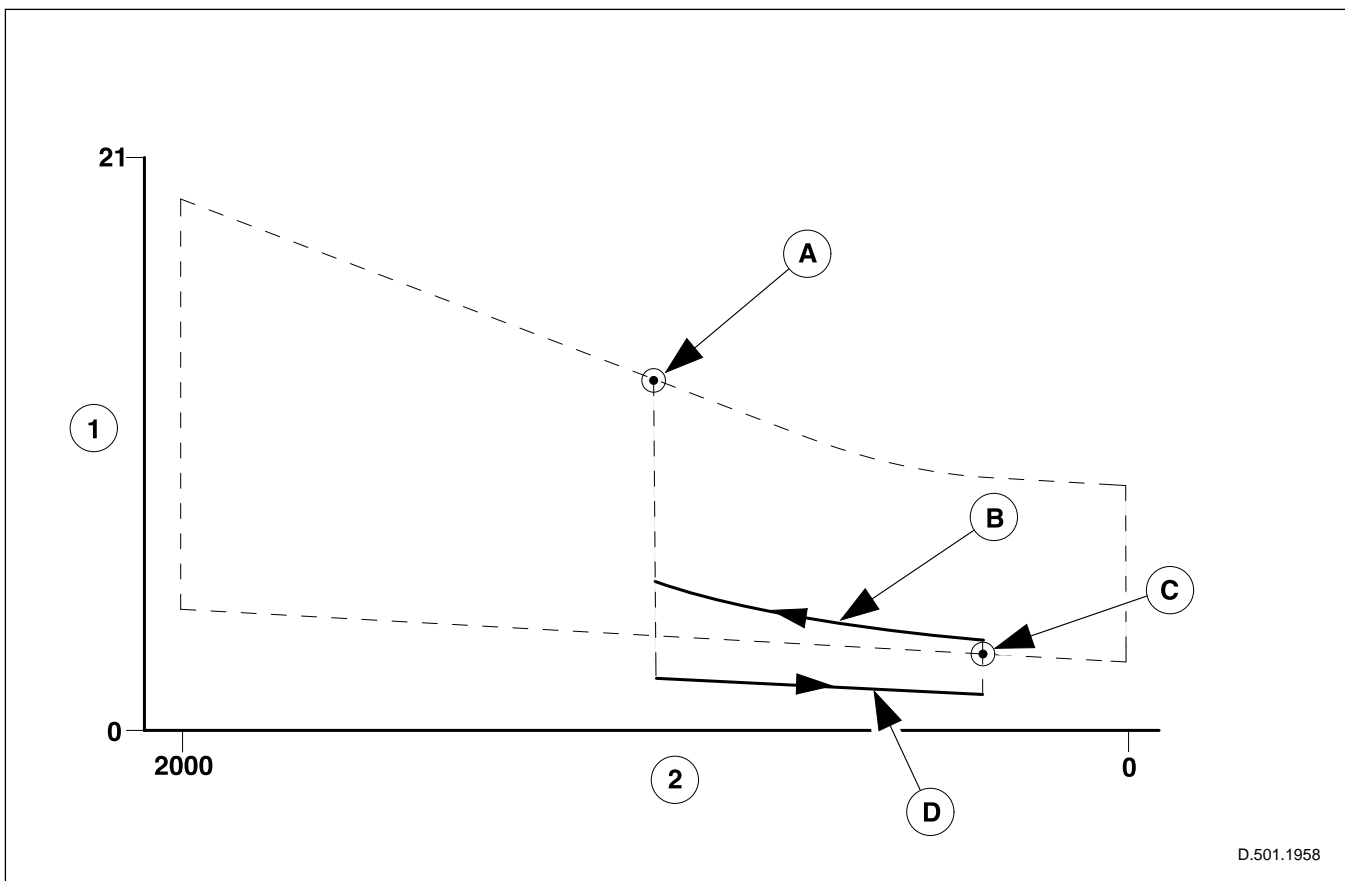
The buckles are new, to compliment the safety belt and to accommodate the Hall effect sensors; refer to **Sensors**.

## Front safety belt upper anchor (coupe)

The shape, form and material used for the upper anchor cover has been changed to meet new safety standards. The top D-loop position has been raised slightly whilst the bottom D position remains unchanged, thereby increasing the overall range of adjustment.

## Front safety belt lower anchor

The lower anchor has been modified to suit the new arrangement.

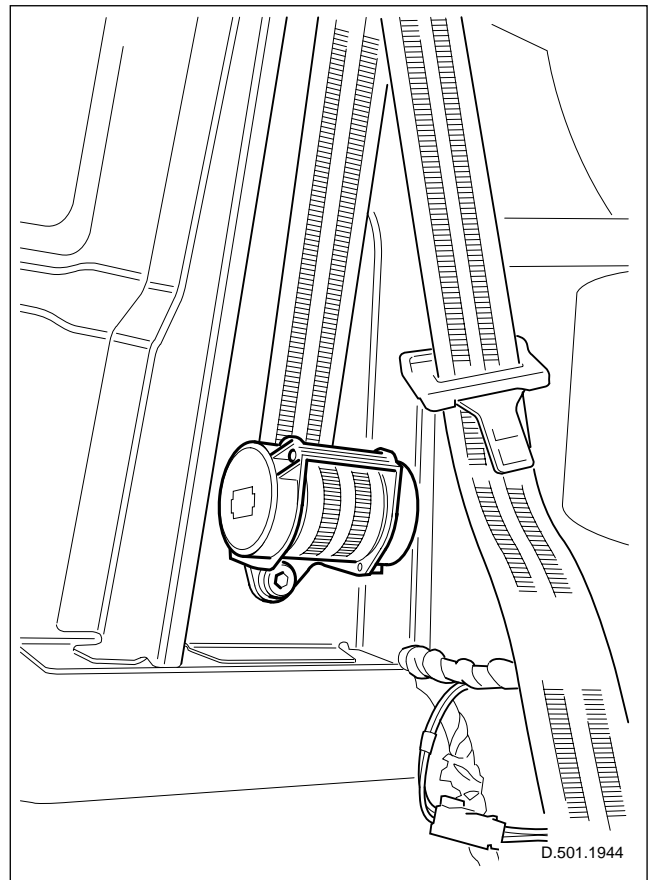


**Fig. 39 Force/webbing relationship - comfort spring mode**

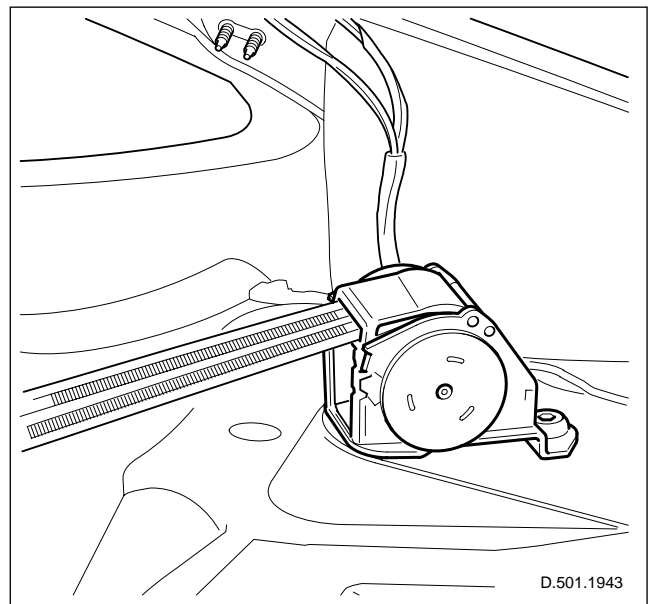
1. Force on webbing (N)
2. Webbing distance (mm)

## Rear Safety Belts

The rear safety belts are new, three point, dual locking sensed inertia reels with automatic locking retractor feature and matching buckles in all markets. Functionality is identical to 2000 MY, but the belts are styled to match the vehicle interior and the webbing is designed to provide improved occupant comfort.



**Fig. 40 Rear safety belt (convertible)**



**Fig. 41 Rear safety belt (coupe)**

## ISOfix Standardized Child Seat Anchorage System

The ISOfix standardized child-seat anchorage system also known as LATCH is a universal system, which allows the child seat to be secured directly and easily to the vehicle body without the use of adult safety belts.

Dependent on vehicle and market, the ISOfix system will be either fitted as standard, or fitted by the dealer if ordered as an accessory.

### Anchors

For each rear outboard seat position, the ISOfix system uses two lower anchors bolted to the body in the seat pan area. To ensure universal compatibility, the size, position and orientation of the lower anchors are controlled by an ISO standard specification.

Upper anchors, which are usually used in conjunction with the lower anchors to secure the child seat, are fitted as standard to Jaguar vehicles in both Australian and North American markets. In other markets, if the lower anchors are fitted as an accessory the upper anchors will be supplied in the accessory kit. Note that the upper anchors for the XK convertible have been modified; refer to fig. 43.

**NOTE:** Care must be taken not to damage or scratch the anchors; the anchors must be serviced by replacement only.

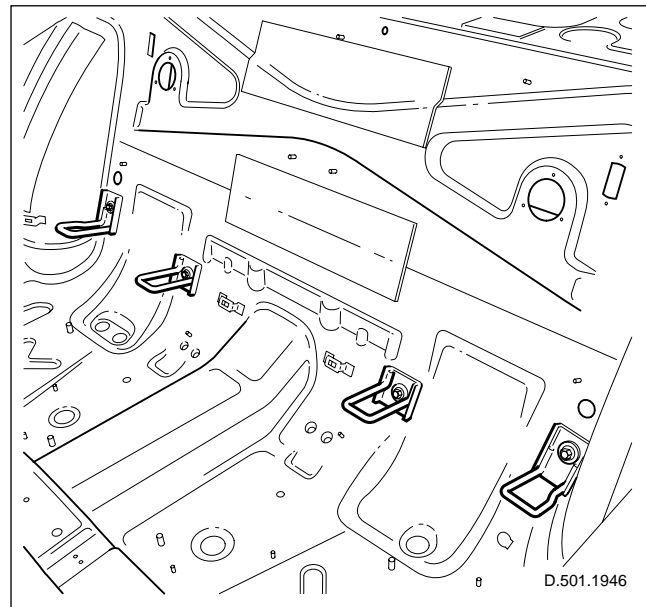


Fig. 42 ISOfix lower anchors (X)

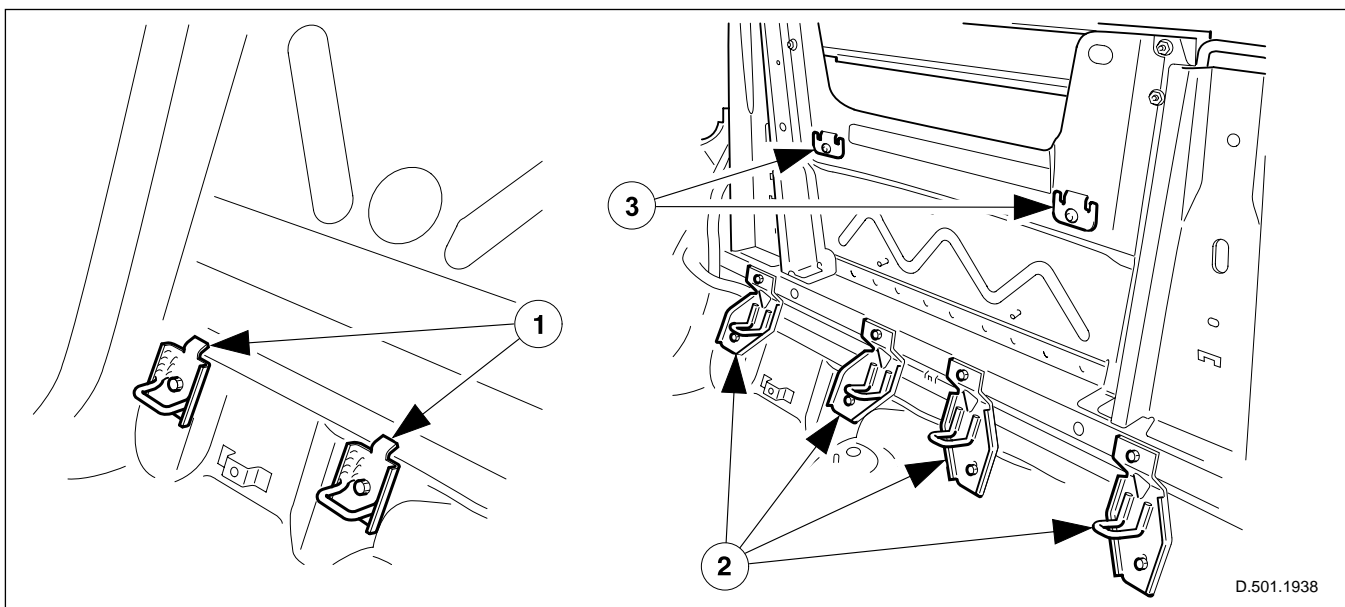
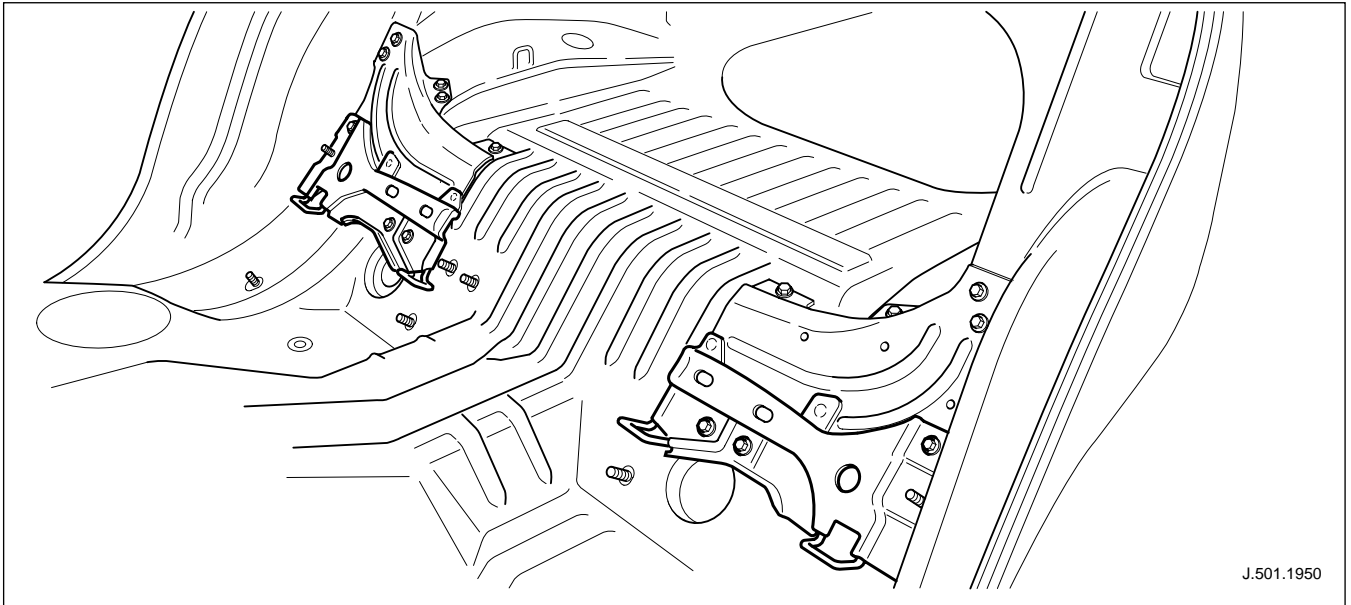


Fig. 43 ISOfix lower anchors (XK)

1. Lower anchors (coupe)
2. Lower anchors (convertible)
3. Upper anchors (convertible)



**Fig. 44 ISOfix lower anchors (S-Type)**

### Plastic Guides

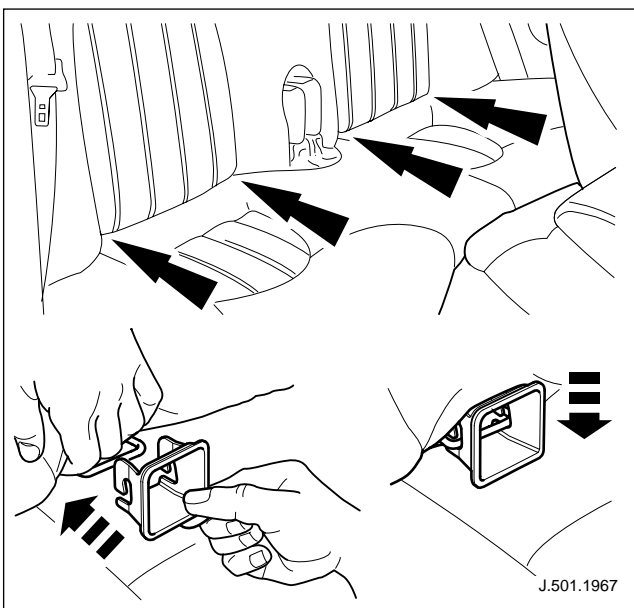
The lower anchors are accessible through the gap between the rear-seat back and cushion:

1. On XK and XJ vehicles, plastic guides are fitted to the lower anchors before the fitting of the child seat.

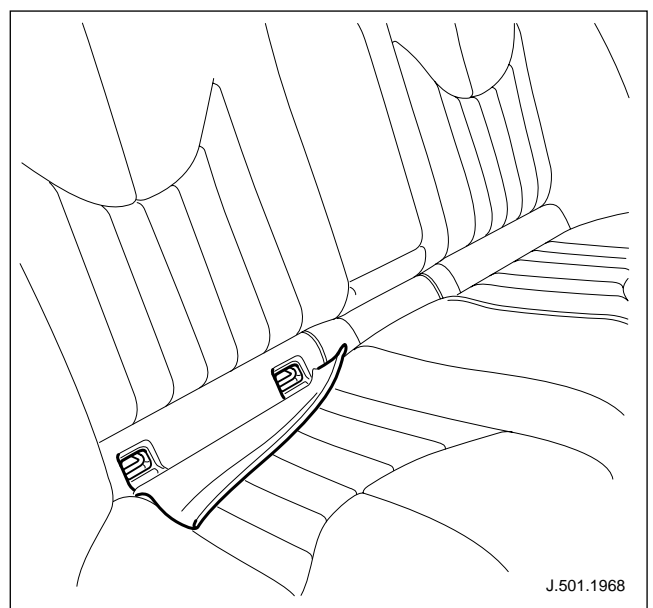
To fit the guides (fig. 45):

- Separate the gap between the cushion and seat back to expose the lower anchor.
- Insert the plastic guide into the gap so that it locates onto the lower anchor.

- Push the plastic guide fully rearwards until a stop is felt, then rotate the rear of the plastic guide downwards to lock into place on the lower anchor.
  - Reverse the procedure to remove the plastic guide.
2. On S-Type vehicles (fig. 46) the lower anchors are immediately accessible by releasing the Velcro fastening on the seat flap.



**Fig. 45 Plastic guides (XK and XJ)**



**Fig. 46 ISOfix anchor seat-flap (S-Type)**

# Occupant Safety

## Child Seat

The child seat, which must be designed to ISOfix specification, is clipped onto the anchors by either rigid extendible rails or flexible tether straps. A quick release mechanism is incorporated to allow easy removal of the child seat.

It should be emphasized that in all markets the use of the ISOfix system must be used in conjunction with the upper anchor on forward facing child seats and some rearward facing child seats. Always refer to the child-seat fitting instructions.

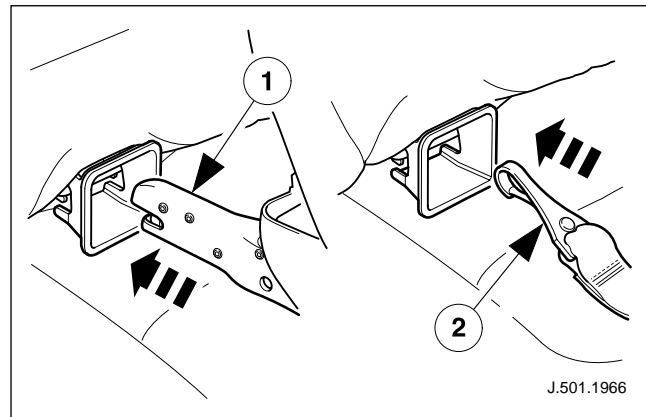


Fig. 47 Rigid child seat rail (1) and Tether strap (2)



## Air Bag Modules

### Driver Air Bag Module (XK)

The driver air bag module is controlled by the restraints control module (RCM), which chooses between first or second stage deployment, depending on occupant position and crash severity.

**NOTE:** Variation in passenger airbag deployment is determined by the timing of the first and second stage ignition signals. This facilitates adaptation of the stiffness and timing of the airbag to optimize occupant protection.

The module comprises:

- A twin stage inflator as opposed to the single stage inflator.
- Separate chambers for the two inflation stages, each independently activated by the RCM.
- Two air bag squib connectors, that have foolproof mechanical keying and are color coded to the respective plug on the inflator.
- A non-azide propellant that reduces particulates and effluents.

The air bag deploys radially, to reduce the risk of air bag induced injury to a driver that is positioned close to the steering wheel.

**NOTE:** Disposal of twin stage air bags is different to single stage air bags; refer to JTIS.

### Driver Air Bag Module (XJ)

The functionality of the driver air bag module remains the same as for previous model years, but a new cover has been introduced (identical to XK), that allows the air bag to deploy through the center stitching.

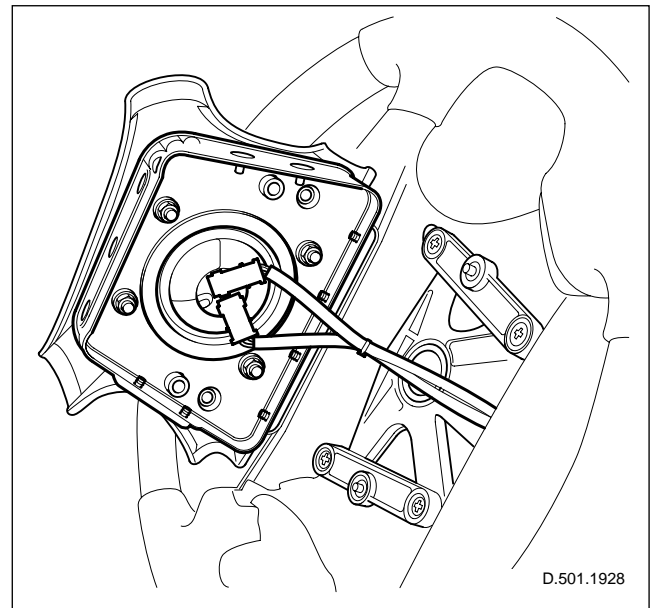


Fig. 48 Driver air bag module (XK)

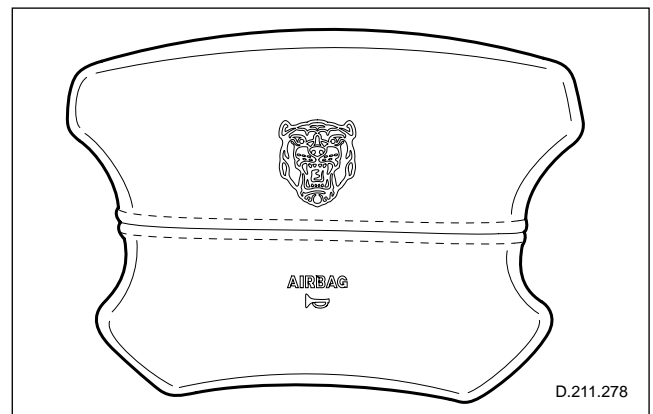


Fig. 49 Driver air bag cover (XK and XJ)

# Occupant Safety

## Passenger Air Bag Module (XK)

The passenger air bag module is controlled by the restraints control module (RCM), which chooses between first or second stage deployment, depending on occupant status and crash severity.

**NOTE:** Variation in passenger airbag deployment is determined by the timing of the first and second stage ignition signals. This facilitates adaptation of the stiffness and timing of the airbag to optimize occupant protection.

The module comprises:

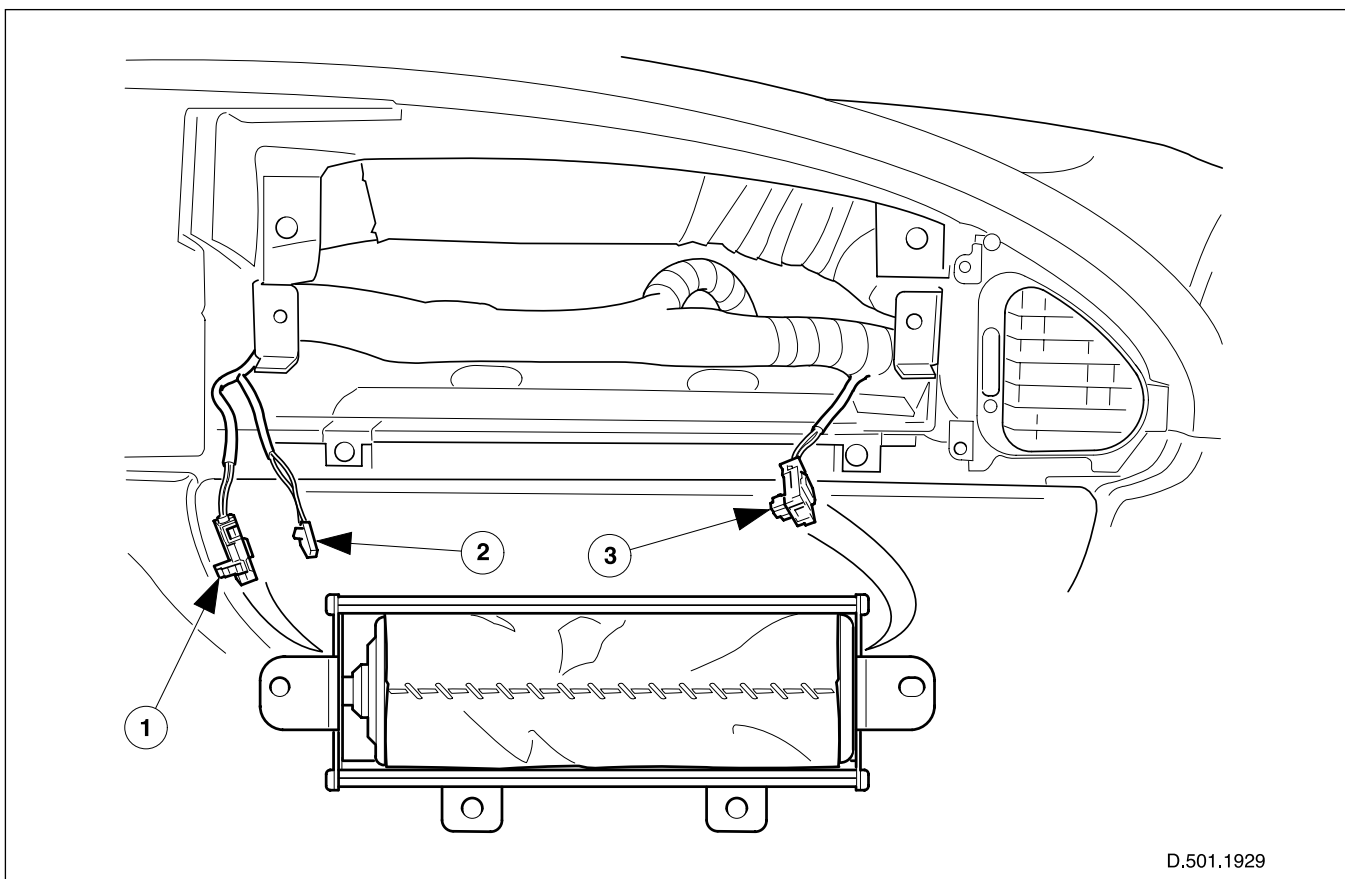
- A twin stage inflator as opposed to the single stage inflator.
- Two air bag squib connectors to accommodate the twin stage inflation.

The inflator is a development of the heated gas inflator technology developed for the S-TYPE sports saloon, which replaces the conventional pyrotechnic device, previously used for the XK Series of vehicles.

The heated gas inflator:

- Comprises a high-pressure mix of clean air and hydrogen gas, triggered by two separate ignition squibs.
- Produces a controlled generation of clean gas to rapidly fill the air bag.
- Is classified as a stored flammable gas (not as an explosive) and as such, has less restrictive storage and transportation requirements.
- Produces a very clean burn and almost no particulates.
- Is almost free of any toxins, making disposal or recycling much easier.

**NOTE:** Disposal of twin stage air bags is different from single stage air bags; refer to JTIS.



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**Fig. 50** Passenger air bag system connectors

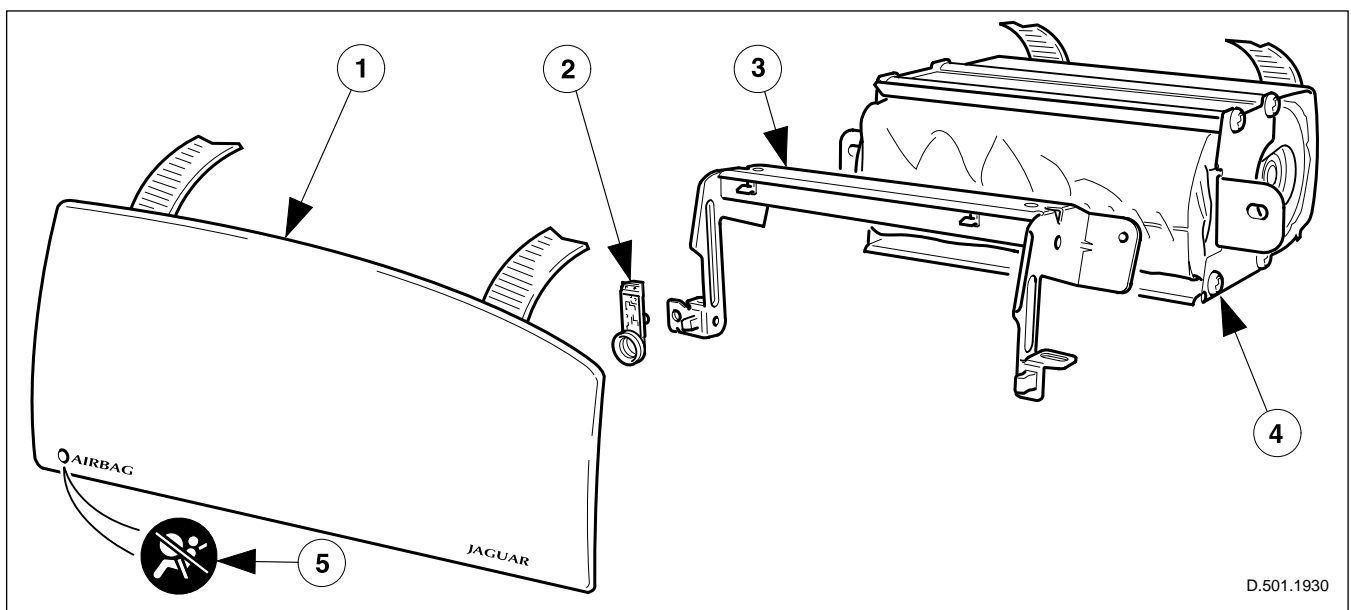
1. Air bag connector
2. Air bag de-activation indicator lamp connector
3. Air bag connector

## Passenger Air Bag Deployment Door (XK)

The passenger air bag deployment door has a built-in lens that displays the air bag de-activated symbol. The symbol is backlit by the air bag de-activation indicator lamp, which is attached to the deployment-door mounting bracket. The illumination of the symbol is designed to inform the front seat occupants whether or not the passenger air bag has been de-activated by the occupancy sensing system; refer to **Sensors**.

**CAUTION:** Care must be taken, when removing and installing the air bag de-activation indicator lamp; refer to JTIS.

**NOTE:** The passenger air bag door is attached to an energy-absorbing device, designed to provide a progressive deceleration force for the door, during deployment. The deceleration is achieved by manufacturing the door tethers so that the stitching will yield during deployment. The torn stitching apparent after deployment is the intentional and obvious result of such a design.



**Fig. 51** Passenger air bag module - components (XK)

1. Deployment door
2. Air bag de-activation indicator lamp
3. Deployment door mounting bracket
4. Air bag module
5. Air bag de-activation indicator lens

# Occupant Safety

## Side Air Bag Module (XK)

The side air bag module is a new feature for the XK Series of vehicles, designed to provide protection for the thorax (the part of the trunk between the neck and the abdomen) and head. The module

- is mounted in the outboard bolster of each front seat;
- is standard fit and specification in all markets;
- does not require routine maintenance;
- has no serviceable parts;
- uses compressed argon to inflate the bag.

**NOTE:** As with all occupant safety components, the SRS indicator lamp will illuminate if a DTC has been stored. Diagnosis must be undertaken using WDS.

In an air bag deployment situation, the air bag deploys through the stitch seam in the side bolster. To ensure the air bag always emerges at the same point, a chute is attached to the inside of the trim cover and wrapped around the air bag module (fig. 53).

**WARNING:** In a service situation, the module must be correctly located in the chute. Failure to follow the service procedure could result in incorrect air bag deployment; refer to JTIS.

**NOTE:** In the event of a side impact that is sufficient to deploy the bag, it will be necessary to replace the complete seat.

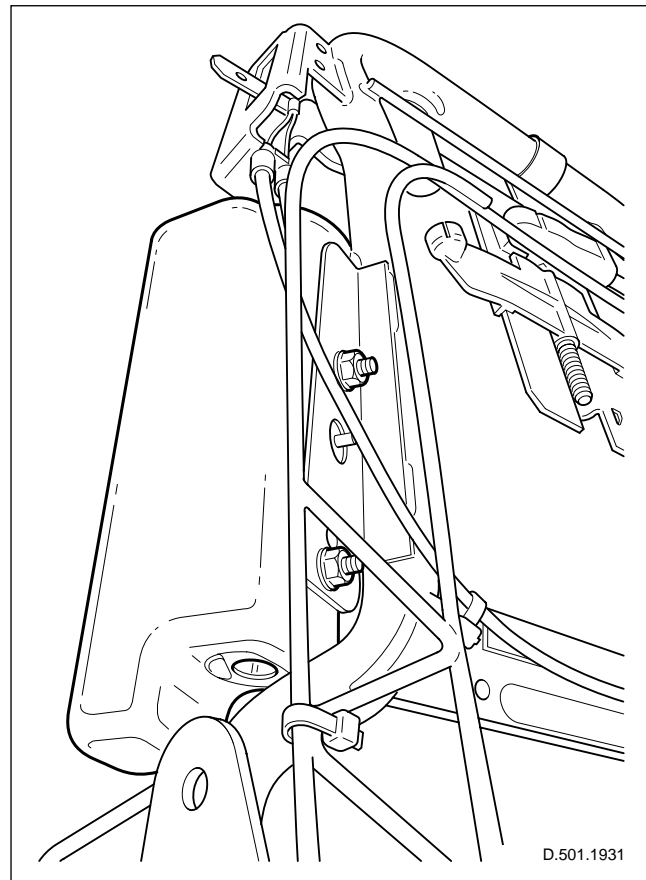


Fig. 52 Side air bag module

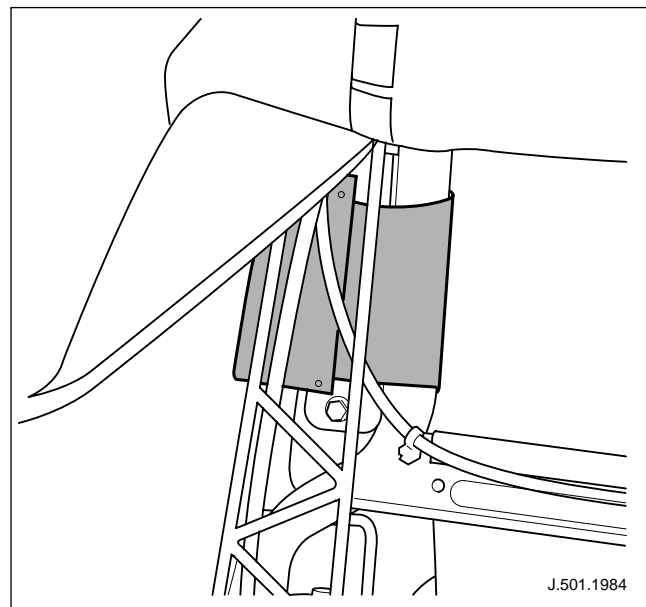


Fig. 53 Side air bag deployment chute

## Steering Wheel and Column

### Steering Wheel (XK and XJ)

- The XK Series steering wheel is new but comprises only a minor freshening compared with 2000 MY.
- The XJ Series steering wheel is new and identical to the XK Series steering wheel.
- Driver airbag modules have been modified to suit the changes; refer to **Air Bag Modules**.
- Switchgear is carry-over 2000 MY.
- Adaptive SCCM is available for all variants of XK Series wheel.

Where appropriate, variations are available to accommodate the following options: Speed Control/Audio System, Audio System only and Adaptive Speed Control/Audio System.

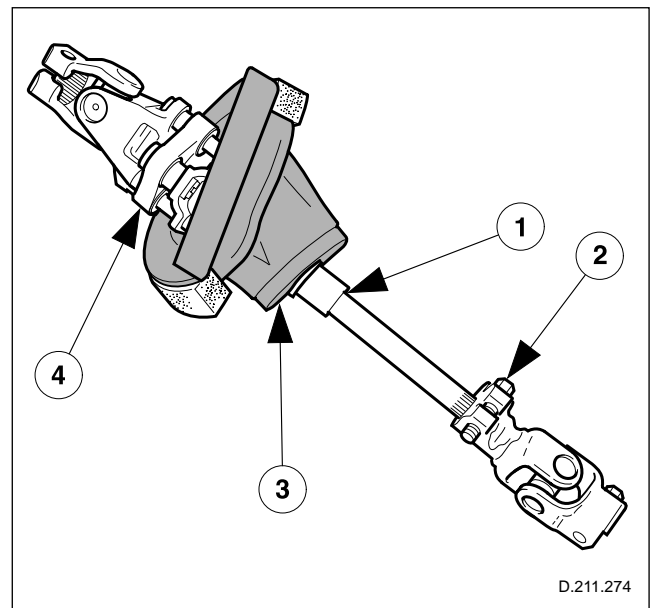
### Lower Steering Column Assembly (XK and XJ)

Fundamental changes have been made to the crash mechanism of the lower steering column in order to reduce the intrusion of the upper steering column into the vehicle occupant cell. Changes include:

- The replacement of the sliding mechanism with a tube-in-tube arrangement (where the inner tube is designed to break-away from the crimped fixing to the outer tube, at a pre-determined load).
- The addition of a rubber isolator, to control axial and torsional movements for suspension and steering.
- The incorporation of a flexible disc into the gaiter (XK only), to accommodate the axial movement of the isolator.

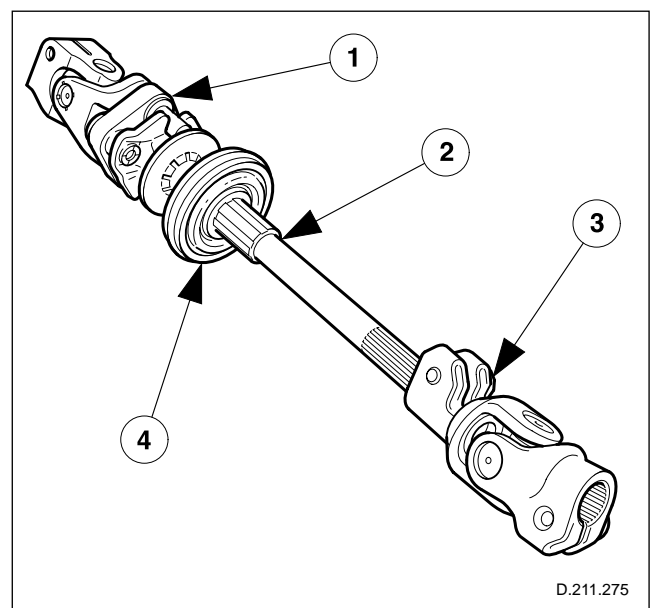
**NOTE:** For XJ, the flexible disc is separate from the gaiter (fig.55).

In addition, attachment of the column to the steering rack is improved by the incorporation of a sliding adjustment to the lower universal joint.



**Fig. 54 Lower steering column assembly (XK)**

1. Break-away shoulder
2. Adjusting bolt
3. Flexible disc
3. Rubber isolator



**Fig. 55 Lower steering column assembly (XJ)**

1. Rubber isolator
2. Break-away shoulder
3. Adjusting bolt
4. Flexible disc

# Occupant Safety

## Upper Steering Column Assembly (XK and XJ)

**WARNING:** The new column, although appearing physical identical, is **NOT** interchangeable with previous model years.

The performance of the upper steering column remains the same as 2000 MY with the exception that the load at which the column will crush (the build load) has been reduced from 5 to 3.3kN. The reduced build load enhances chest protection for belted and especially small stature drivers.

## Air Bag Sliding Contact (XK)

In order to support the twin stage output, driver air bag module, a new air bag sliding contact has been introduced; refer to **Occupant Safety**.

**NOTE:** The connections to the vehicle harness have been re-routed and now exit from the side of the sliding contact housing.

## Air Bag Sliding Contact (XJ)

The air bag sliding contact is new, but comprises only a minor revision.

**NOTE:** The single stage output for the driver air bag module is retained. The connections to the vehicle harness have been re-routed and now exit from the side of the sliding contact housing.

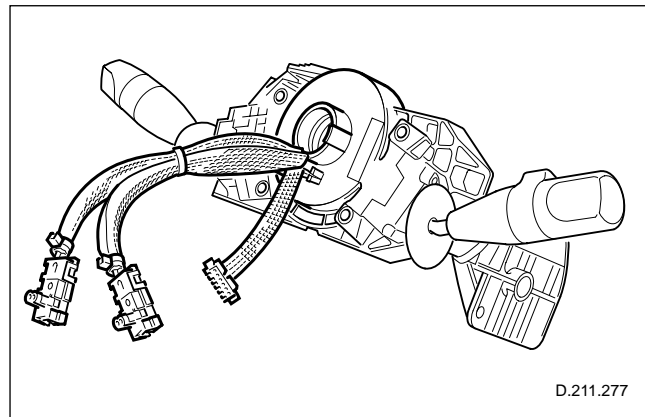


Fig. 56 Air bag sliding contact (XK)

## Engine

### Oil Cooler Pipes (XK)

The engine oil-cooler pipes have been re-routed on supercharged (SC) vehicles to accommodate the structural changes made to the front-end of the vehicle; refer to **Occupant Safety**.

## Emissions

### EVAP Canister Purge Valve (XK and XJ)

To comply with Standard Federal Testing Procedures (SFTP) a test port is provided on the evaporative emission (EVAP) canister purge valve to enable leak test diagnosis of the fuel system.

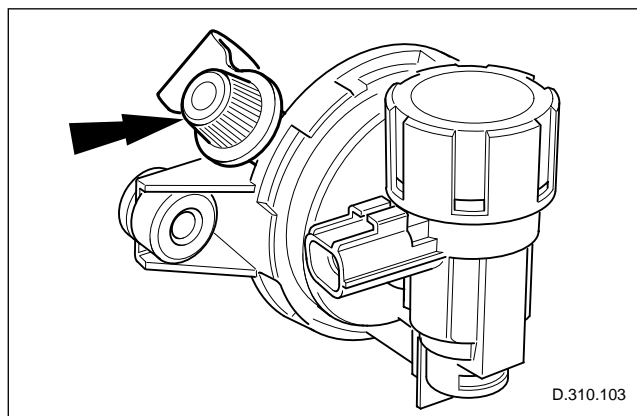


Fig. 57 EVAP canister purge valve

### Emission Label (XK and XJ)

The emission label has been revised to reflect the new emission requirements. The label shown in Fig. 58 is XK Series, the XJ Series label is located in the center of the radiator closing panel.

### Misfire Detection

The misfire detection system now operates throughout the engine operating range; the malfunction indicator lamp (MIL) will illuminate if a misfire is detected.

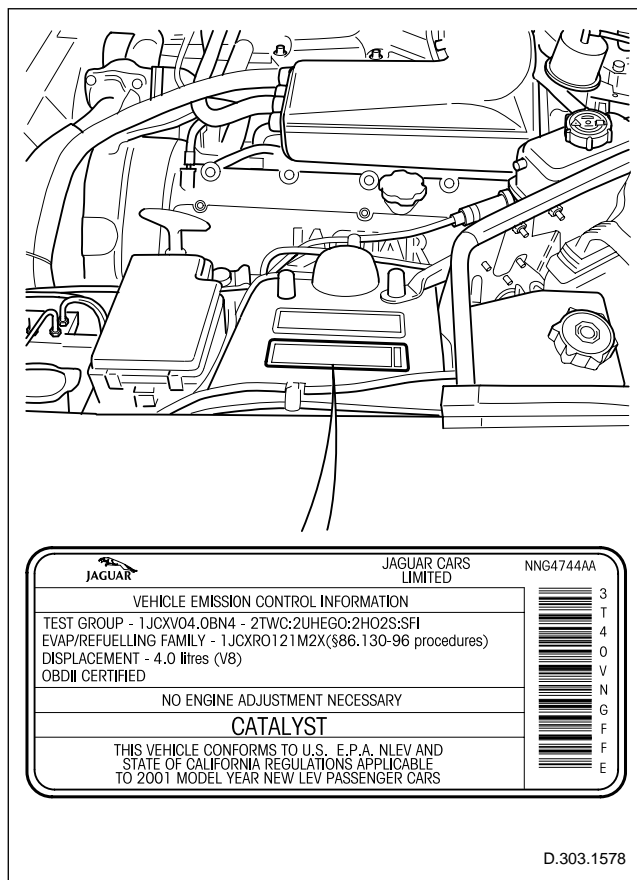


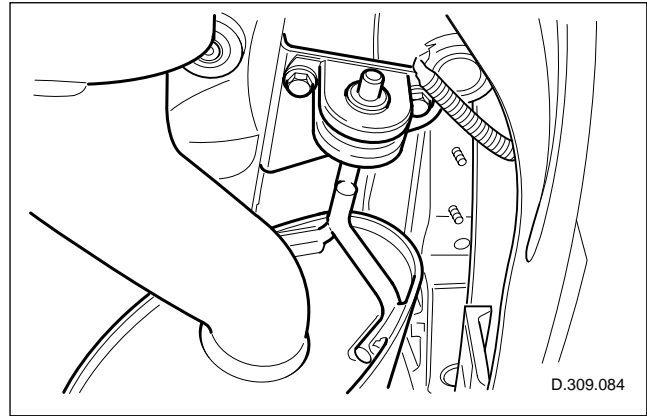
Fig. 58 Emission label (XK)

## Exhaust

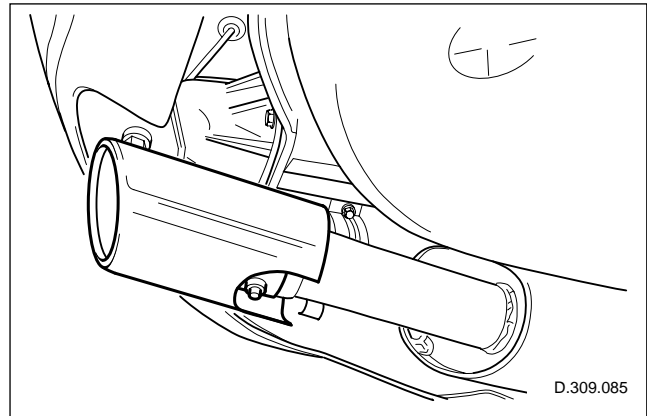
### Exhaust System

#### Exhaust System Modifications (XK and XJ)

- XK and XJ vehicles: for improved exhaust system corrosion resistance and durability the stainless steel throughout the exhaust system has been upgraded.
- XJ Series only: the hanging brackets on the rear mufflers have been redesigned to improve durability, the rear mufflers maintain compatibility with the pre 2001 MY exhaust system and body brackets.
- XKR only: new rear mufflers have been introduced to house the new large oval tailpipes.
- XK Series only: the rear-muffler hanging brackets and body brackets have been redesigned to improve durability and stability to the rear of the exhaust system. The 2001 MY rear muffler can only be fitted with the new body bracket, apart from this compatibility with the pre 2001 MY exhaust system is maintained. The new body brackets are fixed to the body using the existing fastener locations.
- XKR only: Larger removable tail-pipe finisher's are now fitted to provide commonality with XJR in bringing visual differentiation between supercharged and normally aspirated vehicles. This type of tailpipe finisher is secured to the exhaust pipe by a single screw.



**Fig. 59 Rear-muffler hanging bracket and body bracket (XK)**



**Fig. 60 Tailpipe finisher (XKR)**



## Fuel System

### Fuel Tank

#### Fuel Level Sensor (XK and XJ)

The fuel level sensor has been removed from the rear of the fuel tank and relocated inside the tank. This is to reduce the number of fuel system joints and to ensure a constant fuel level sensor reading.

The fuel level sensor is now situated next to the fuel pump(s) and is attached to a bracket located on the surge reservoir. The fuel level sensors electrical feed is incorporated with the fuel pump connector situated on the evaporative-loss flange. This has changed the connector from a 4-way connector to a 6-way connector.

#### Fuel Cap (XK and XJ)

A redesigned fuel cap is introduced which is now tethered to the fuel filler flap.

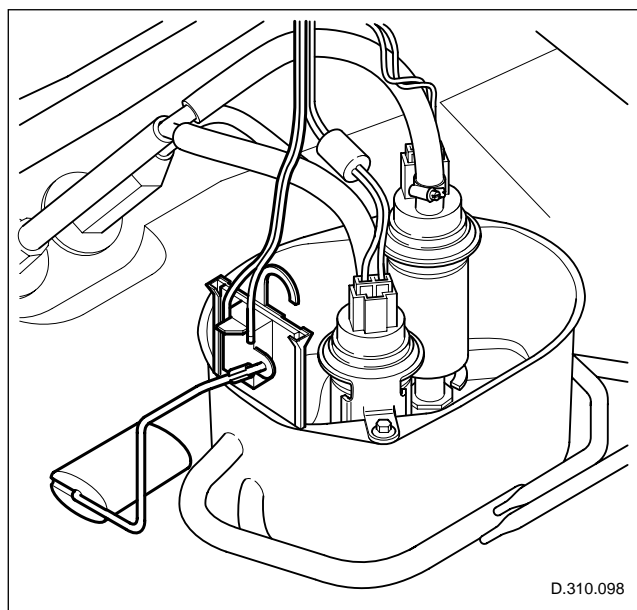


Fig. 61 Fuel level sensor

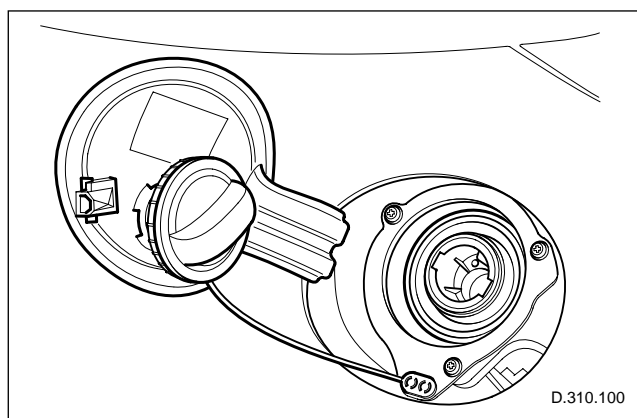


Fig. 62 Fuel filler cap (XK)

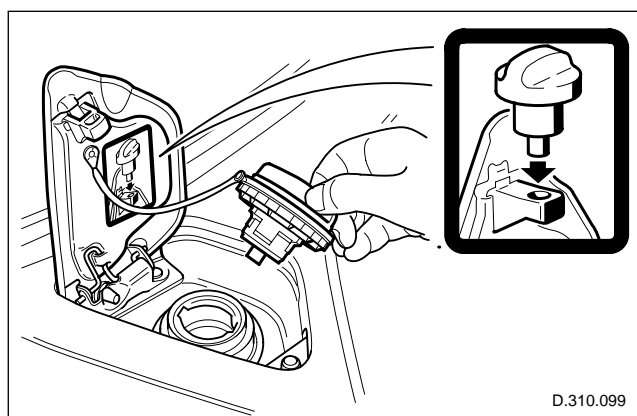


Fig. 63 Fuel filler cap (XJ)

## Steering System

### Power Steering Fluid Cooler (XK and XJ)

The power steering fluid cooler has been relocated on the XK Series, due to the option of having adaptive speed control fitted to the vehicle.

The new position of the cooler has caused a reduction in the amount of air-flow passing through the cooler's matrix. To compensate for this reduced air-flow, improvements have been made to make the cooler approximately 12% more efficient.

This improved fluid cooler is also fitted to the XJ Series as an enhancement to the power steering system.

### Steering Column Gaiter (XJ)

For improved robustness the steering column gaiter has been modified.

### Steering Columns (XK and XJ)

The steering columns have changed on XK and XJ vehicles; refer to **Occupancy Safety**

### Steering Rack and Pump (S-TYPE)

A new steering rack and pump have been fitted to the S-TYPE which are similar to the components used on the XJ and XK vehicles, however there are no carry-over parts from these vehicles. The new system functions as the previous system with regards to:

- variable steering assistance;
- pump output being controlled by the power steering pressure (PSP) switch at low engine speeds;
- and the number of turns from lock-to-lock.

The pumping and cooling of the power steering fluid also remains the same, although the pipe connections to the steering rack and pump have changed as Quickfit connectors are no longer used. Connection to the pump is now via a tube nut, and connection to the rack is via a latch-plate connector. Both connections are similar to those used on XJ and XK vehicles.

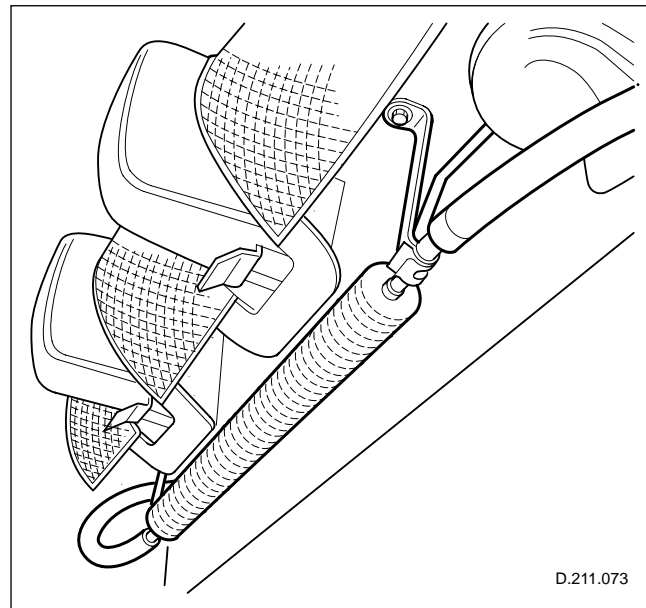


Fig. 64 Power steering fluid cooler (XK)

## Electrical Power Supply System

### High Power Protection Module (XK and XJ)

A new high-power protection module has been fitted which incorporates two individual power cable covers. The connectors on the power cables have been modified to accommodate the new protection module.

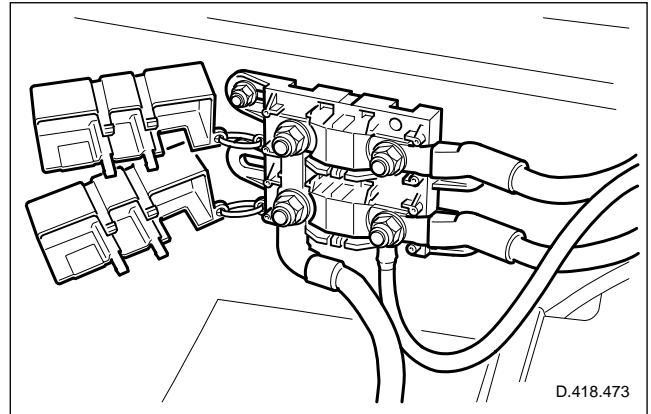


Fig. 65 High power protection module

## Modules

### Engine Control Module (XK & XJ)

The engine control module (ECM) has been modified to cater for:

- The introduction of adaptive speed control (where installed).
- Diagnostic and calibration revisions to comply with new OBDII / LEV regulations.
- Full range misfire detection.
- EOBD, stage III requirements.

### Transmission Control Module (XK & XJ)

The transmission control module (TCM) has been modified to suit revised, transmission related diagnostic codes.

### Body Processor Module (XK)

The body processor module (BPM) has been modified to support the advanced restraints system features. An audible warning, to indicate failure of the air bag bulb, has been added to the existing list of prioritized warnings.

### Driver and Passenger Seat Control Module (XK)

The seat control modules have been updated to accommodate the additional seat functions; refer to **Seats**.

### Head Restraint Module (XK)

A new module has been introduced to control the operation of the powered head restraint; refer to **Seats**.

### Front Door Control Module (XJ)

The module has been modified to align front window functionality with the XK Series of vehicles. The module also incorporates a timer, which allows the operation of the front windows for a ten-minute period after the ignition key is turned to position 0. If either front door is opened during the ten-minute period, the timer will be cancelled.

## Exterior Lighting

### Front Fog Lamps (XK)

New flush fitting fog lamps with a unique internal bright reflector and a lens shape to compliment the bumper profile have been fitted as a body styling enhancement.

### Rear Lamp Assembly (XK)

New rear lamp assemblies with a jewel-appearance lens and a bright bezel are now fitted. These lamps use the same technology and are similar in design as those used on the S-TYPE.

The rear lamp assembly cover has been revised to accommodate the new lamp assembly, the cover is attached to the lamp assembly by two fasteners.

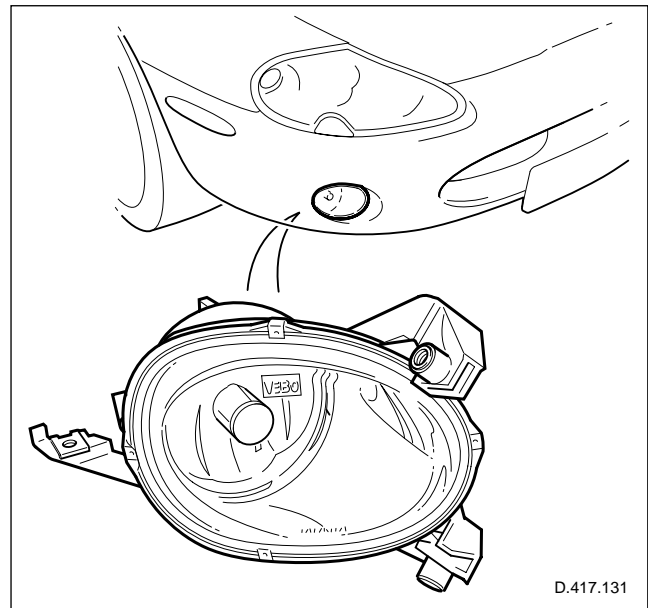


Fig. 66 Fog lamp

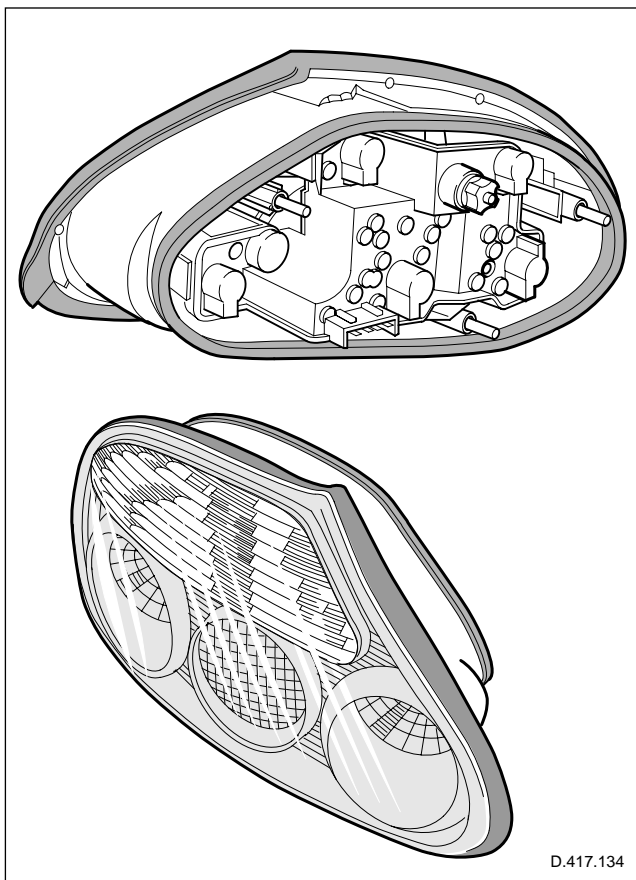


Fig. 67 Rear lamp assembly

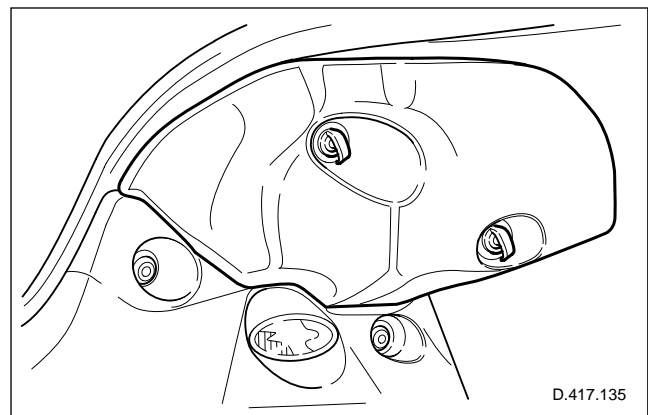


Fig. 68 Rear lamp assembly cover

## License Plate Lamp

The license plate lamp is now housed in the new bright finisher positioned above the license plate. The bulb holder locations are shown arrowed in Fig. 69

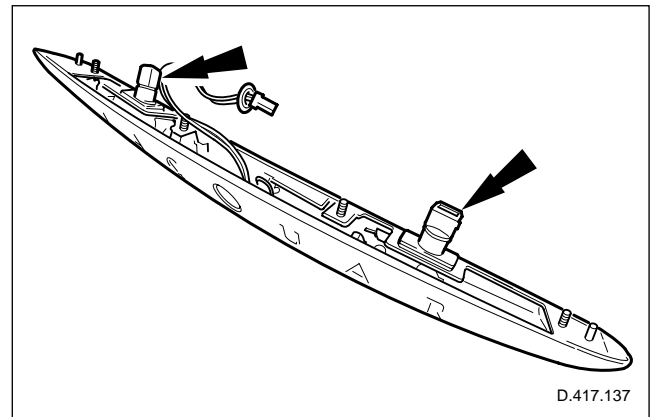


Fig. 69 License plate lamp (XK)

## Interior Lighting

### Mood Lamp (XK)

A mood lamp has been added to the roof console to provide additional illumination. The mood lamp (arrowed Fig. 70) is switched ON and OFF with the exterior lights and operates in conjunction with the instrument panel illumination. The illumination level of the mood lamp as with the instrument panel can be adjusted by the instrument panel dimmer-control. The mood lamp cannot be switched off independently.

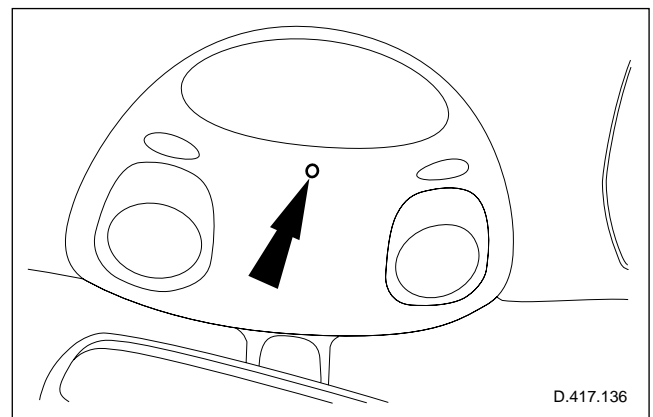


Fig. 70 Mood lamp

## Instrument Cluster (XK & XJ)

A new instrument cluster has been introduced for all markets.

Changes include:

- A range of new messages and warning symbols (where applicable) to suit the adaptive speed control; refer to **Adaptive Speed Control**.
- The modification of software to take account of the revised fuel level sensor; refer to Fuel.
- 'CHECK GAS CAP' message added (NAS markets).

The cluster has also been updated to support the navigation requirements and as a result the vehicle speed interface unit (VSI unit) has been deleted.

## Anti-theft

### Security and Locking Control Module

#### XK

The lamp control module (LCM) has now been deleted and its functionality integrated within the security and locking control module (SLCM). The module detects bulb failure for stop and tail lamps only.

The SLCM is also programmed to control the luggage compartment release; refer to **Luggage Compartment Lid-Latch**.

#### XK and XJ

New anti-theft protocol has been introduced that interfaces with the new key fob transmitter.

### Key Fob Transmitter (XK and XJ)

The key fob transmitter has been re-designed and now looks similar to the S-TYPE transmitter. Although functionality remains the same, the transmitter and anti-theft system protocol, are not compatible with previous model years.

### Inclination Sensor (XK)

Where installed, the inclination sensor (which provides an input to the SLCM) is now disabled (cars with deadlocking option only) unless deadlocking is selected.

## Cellular Phone

### In-Car Telephone (XK and XJ)

A new model of telephone is introduced; refer to manufactures literature.

### Telephone Keypad (S-TYPE)

A telephone digital dialer keypad (shown shaded) is now fitted as standard with both the factory fitted and accessory fitted telephone systems. The keypad replaces the coin tray in the vehicle's instrument panel.

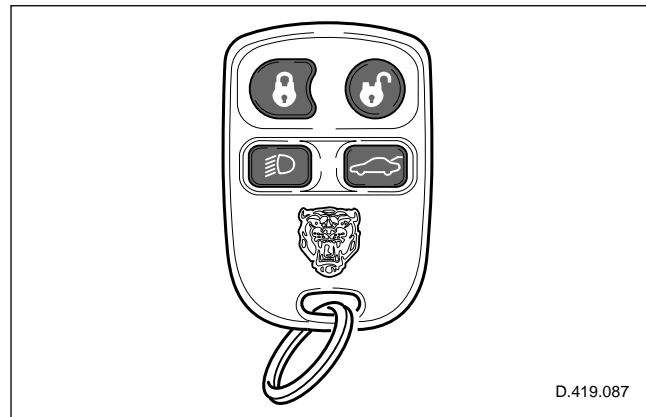


Fig: 71 Key fob transmitter

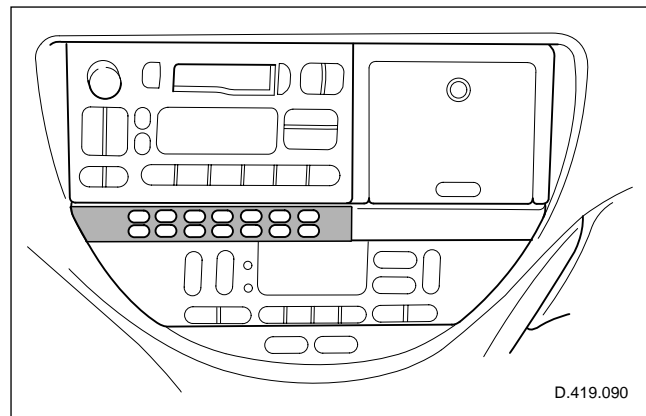


Fig: 72 Telephone keypad (S-TYPE)

## Navigation System

The vehicle speed interface unit (VSI unit) has been deleted and its functions incorporated into the instrument cluster.

## Reverse Park Control (XK)

Previously fitted as an accessory only, the reverse park control (RPC) in some markets is now offered as a customer option.

### Function

The function of the RPC, is to provide an audible proximity warning when reversing the vehicle. If an object is detected in the vehicle's path by the RPC, a beep tone will be heard which increases in rate as the vehicle approaches the object. At a predetermined distance from the object the beep will become continuous for three seconds and then turn off, informing the driver to stop.

### Operation

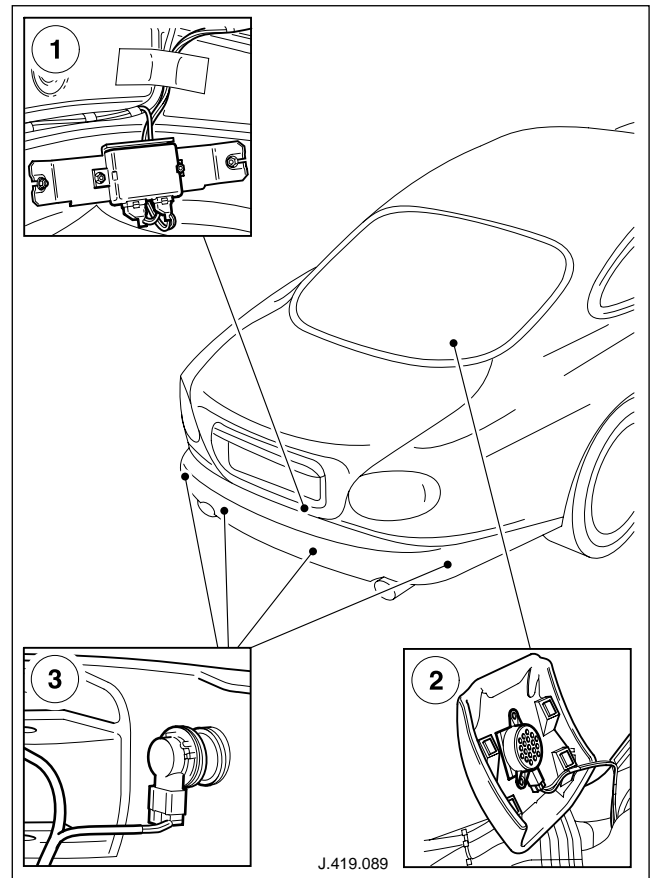
When the ignition is on and reverse gear is selected, the four ultrasonic sensors located in the bumper emit beams covering the area behind, and to the side of the bumper. These beams are reflected by a detected object and re-enter the sensors. The reflected beam information is processed by the reverse park control control module (RPCCM), which calculates the distance of the object from the vehicle's bumper. The sounder is activated and gives the appropriate warning signal starting from an intermittent beep at approximately 150 cm from the object, increasing in rate to a continuous 'stop' tone at approximately 20 cm. The two sensors on the corner of the bumper also detect objects to within 20 to 50 cm of the side of the bumper. If the object is not high enough to do damage to the vehicle it will not be detected by the sensors.

Unlike the S-TYPE the RPC cannot be switched off.

### Malfunction Indication

If a malfunction occurs in the system, the reverse warning beep will be cancelled until the malfunction is rectified. Also each time the ignition is switched on, a continuous tone lasting 6-8 seconds, will sound the first time that reverse gear is selected but not on subsequent selections of reverse.

Diagnosis must be undertaken using the Worldwide Diagnostic System (WDS).



**Fig. 73 Reverse park control**

1. Reverse park control control module (RPCCM) - located in the rear left-hand corner of the luggage compartment
2. Speaker - located in the rear of the center console
3. Ultrasonic sensors

## Electrical Harnesses (XK)

### Luggage Compartment and Lid Harnesses

Modified to support the new rear lamp assemblies, new electric luggage-compartment release and new high-power protection module.

### Seat Harness

Modified to support the new features to both front seats, which are side air bag and occupancy sensing, also new harness shield fitted.

### Left Front Harness

Modified to support adaptive speed control and revised crash sensing.

### Instrument Panel Harness

Modified to support the revised air bag system, new front seat features, occupancy sensing and mood lighting.

### Rear Cabin Harness

Modified to support the new safety belt features and occupancy sensing.

### Engine Management Harness

Modified to support the diagnostic upgrade and adaptive speed control.

### Navigation System Harness

Modified for the Japanese market.

### Roof Harness

Modified to support occupancy sensing and mood lighting.

### Reverse Park Control Harness

New harness to support the optional fit reverse park control (RPC).

## Electrical Harnesses (XJ)

### Engine Management Harness

Modified to support the diagnostic upgrade.

### Instrument Panel Harness

Modified to support the accessory-option glovebox auxiliary socket.





