

Published: 11-May-2011

## Seating -

### Torque Specifications

Description	Nm	lb-ft
Adaptor bracket - cushion frame screw	45	33
Cushion frame - pretensioner bolt	45	33
Front seat armrest Torx bolt	10	7
Front seat control switch screws	1	1
Front seat cushion bolts	25	18
Front seat tilt motor bolts	10	7
Heater mat control unit bracket screws	3	2
Front seat Torx bolts*	40	30
Front seat height adjustment motor nuts	25	18
Rear center seat belt attachment bolt	47	35
Rear seat cushion bolts	25	18
Rear seat outer pivot bolt	35	26
Rear seat latch attachment bolts	23	17
Seat module bracket Torx bolts	3	1
Squab frame to cushion frame	21	15
Squab frame - Side airbag nut	9	7
Track - Assembly adaptor bracket nuts	21	15
Track - Front and rear foot nuts	21	15

**\*New nuts/bolts must be fitted**

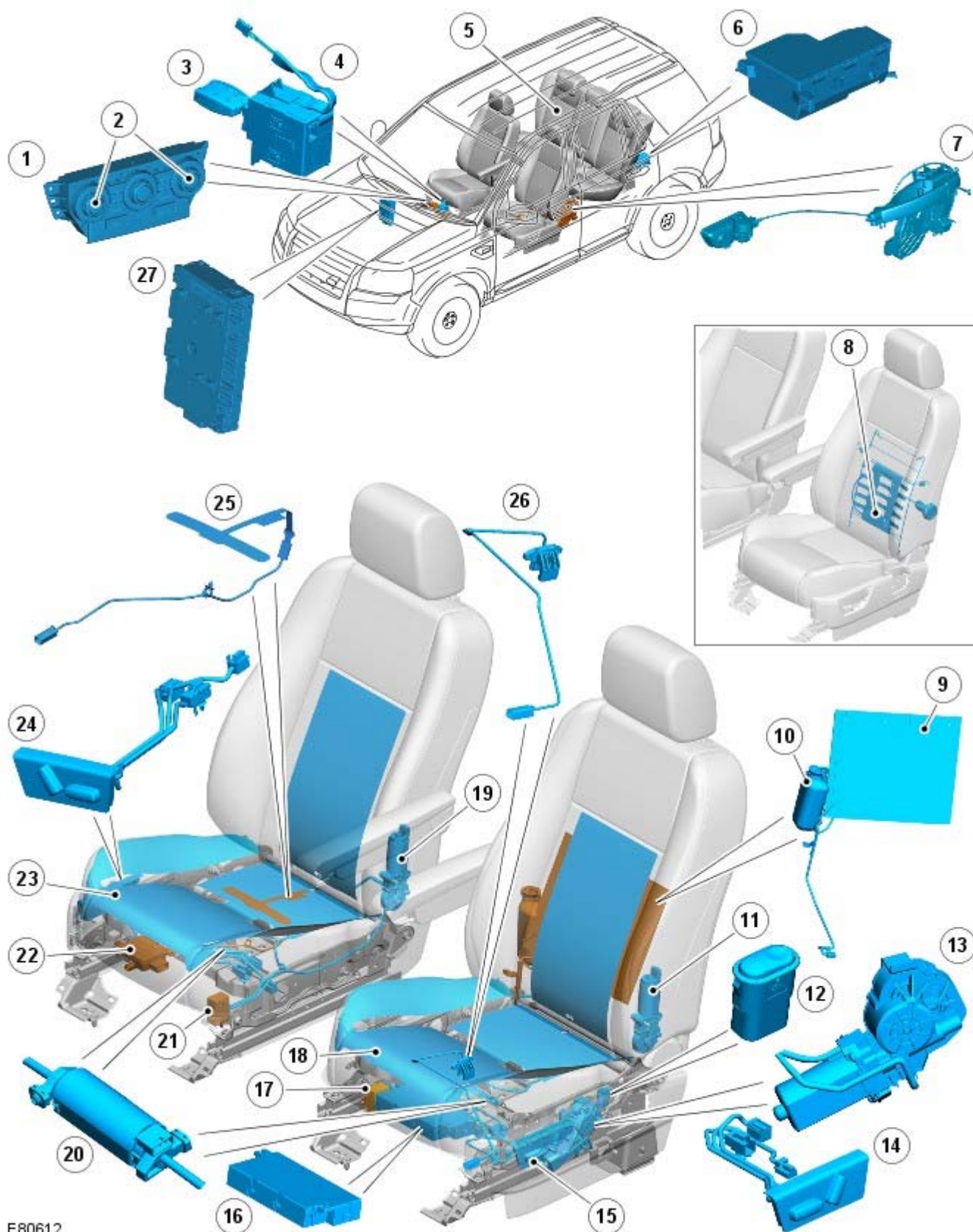
## Part Number Seating - Seats

Description and Operation

Published: 11-May-2011

### COMPONENT LOCATION

NOTE: Left-Hand Drive (LHD) shown; Right-Hand Drive (RHD) similar.



E80612

Item	Part Number	Description
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1	Automatic Temperature Control (ATC) module
2	Front seat heating control switches
3	Remote handset
4	Start control module
5	Rear passenger seats
6	Auxiliary Junction Box (AJB)
7	Driver's door latch and ajar switch
8	Driver's seat manual operated lumbar support
9	Power operated lumbar support air cells
10	Driver's seat power operated lumbar support motor
11	Driver's power operated seat squab recline motor
12	Power operated lumbar support switch
13	Driver's power operated seat height motor
14	Driver's power operated non-memory seat switch pack
15	Driver's power operated memory seat switch pack
16	Driver's power seat module (memory)
17	Driver's seat heating module
18	Driver's seat cushion/squab heating element
19	Passenger power operated seat squab recline motor
20	Driver's and passenger power operated seat slide motor
21	Passenger seat heating module
22	Passenger seat occupancy classification sensor
23	Passenger seat cushion/squab heating element
24	Passenger power operated seat non-memory switch pack
25	Passenger seat occupancy detection sensor
26	Driver's seat position sensor
27	Central Junction Box (CJB)

## OVERVIEW

All vehicles, except those manufactured to North American Specification (NAS), are installed with manually operated front seats as standard. Options available include electrically power operated front seats without memory function, and an electrically power operated driver's seat with memory functionality. The front seats may also be provided with arm rests to improve driver and front passenger comfort.

NAS vehicles are installed with power operated front seats as standard. The front seats feature arm rests to improve driver and front passenger comfort. A driver's power operated seat with memory functionality is provided as an option for NAS vehicles.

Depending on vehicle specification and trim level, vehicles may also feature front heated seats and a lumbar support system. Lumbar support is provided as a manual or electrically operated system, and is only available for the driver's seat.

The rear seat is manufactured to the same specification for all vehicles, and is provided with ISOFIX child safety seat restraints.

All seats incorporate adjustable head restraints. Depending on the vehicle specification the seats are upholstered in either all cloth, cloth/leather/PVC, leather/PVC or all PVC finish.

## FRONT SEAT CONSTRUCTION

The front seat base is manufactured from high strength steel extrusions designed to exceed current legal strength requirements. The seat base is molded to form an anti-submarine hollow that will retain the occupant in the seat during a front end collision. The seat backrest is manufactured from high strength steel and features a wire suspension system to provide increased comfort. The backrest is attached at both sides of the seat base with a high strength steel bracket and pivot.

The seat base and backrest are inlayed with formed sections of dual hardness, molded foam to form the seat squab and cushion. The seats are designed to provide support, comfort and an ergonomic position for the driver and passenger.

The driver and passenger front seats are provided with additional safety features. The front driver's seat is installed with a seat position sensor; the front passenger seat is installed with an occupancy classification system sensor (dependant on vehicle specification) and an occupancy detection system. Both the driver's and passenger seat safety features provide inputs to control the deployment of the air bags and seat belt pre-tensioners.

For additional information, refer to: [Air Bag and Safety Belt Pretensioner Supplemental Restraint System \(SRS\)](#) (501-20B Supplemental Restraint System, Description and Operation).

The front seat belt buckles are mounted integrally with the seats to provide increased anchorage and occupant restraint. For additional information, refer to: [Safety Belt System](#) (501-20A Safety Belt System, Description and Operation).

## MANUALLY OPERATED FRONT SEATS



E83152

Item		Description
A		Driver's seat
B		Front passenger seat
1		Seat squab recline wheel
2		Seat height lever (driver's seat only)
3		Seat slide lever

The manually operated front seats provide a 4-way adjustable passenger seat with forward-rearward, incline-recline functions, and a 6-way adjustable driver's seat with forward-rearward, raise-lower and incline-recline functions. Operation of the seat adjustment levers will move the seat in the corresponding direction. For additional information on the manual seat controls, refer to the relevant section of the Owner's Handbook.

## FRONT POWER OPERATED NON-MEMORY SEATS



E83153

Item		Description
A		Driver's power operated non-memory seat
B		Front passenger power operated non-memory seat

The driver's non-memory seat is 6-way adjustable with forward-rearward, raise-lower and incline-recline functions; the passenger non-memory seat is 4-way adjustable with forward-rearward, incline-recline functions. Height adjustment is not required for the passenger seat.

#### Front Non-Memory Seat Switch Pack and Motors





E83154

Item		Description
A		Driver's power operated non-memory seat
B		Front passenger power operated non-memory seat
1		Seat squab recline motor
2		Driver's seat height motor
3		Driver's power operated non-memory seat switch pack
4		Seat slide motor
5		Passenger power operated non-memory seat switch pack

Movement of the seat is achieved using the control switch pack located on the outboard side of the seat. The seat control switches directly operate the corresponding seat adjustment motors, mounted to the seat frame and backrest. For additional information on the power operated non-memory seat controls, refer to the relevant section of the Owner's Handbook.

The seat adjustment motors are a permanent magnet motor type, coupled to a rack and pinion assembly.

#### DRIVER'S POWER OPERATED MEMORY SEAT

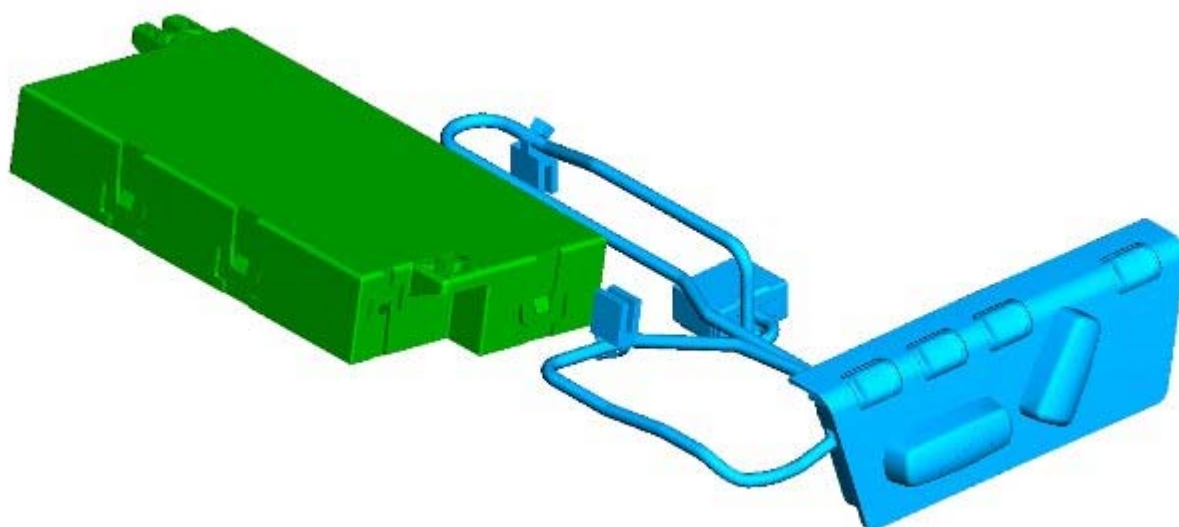


E83155

Item		Description
1		Driver's memory seat switch pack
2		Power seat module

The driver's power operated seat with memory is 6-way adjustable and comprises the same control components as the front non-memory seat. The seat incorporates a power seat module located under the seat frame that allows up to 3 memory positions for the seat to be stored and recalled. If memory exterior mirrors are installed, the power seat module also initiates movement of the exterior mirrors by transmitting a command signal to the front door control modules when the seat memory position is recalled. The front door control modules are used to store and recall the memory exterior mirror positions. For additional information, refer to: [Rear View Mirrors](#) (501-09 Rear View Mirrors, Description and Operation).

### Power Seat Module



E83156

The power seat module is connected in the wiring between the seat switch pack and seat adjustment motors. The module contains a non-volatile Electrically Erasable Programmable Read Only Memory (EEPROM).

The power seat module monitors the seat positions and stores information provided by the seat track Hall sensors. The Hall sensors are incorporated within the seat adjustment motors. All seat memory values and current seat motor positions are

stored in the EEPROM.

In the event of a power loss, when power is restored the current motor positions are recalled from the EEPROM memory and adopted as the current positions. This will allow the relative memory positions to be retained without any need to recalibrate the power seat module.

The power seat module is able to be 'flashed' for service updates or interrogated using the Land Rover approved diagnostic equipment.

Up to 3 different seat positions are able to be stored in the power seat module. Seat positions are stored in memory by pressing the memory button (**M**), and then 1 of the 3 memory store buttons (**1**, **2**, **3**) within 5 seconds. The memory buttons are located on the switch pack. The switch pack memory buttons allow the driver to control the memory storage and recall operations for the seat and exterior mirrors. The switch pack buttons are non-latching, momentary action switches.

On vehicles installed with a high-line instrument cluster and the ignition switched on, the seat position memory store commands are displayed in the message center and a single chime is sounded to confirm the new seat position is saved.

**NOTE:** Low-line instrument clusters are not installed to vehicles equipped with a memory seat system.

For additional information, refer to: [Instrument Cluster](#) (413-01 Instrument Cluster, Description and Operation) / [Information and Message Center](#) (413-08 Information and Message Center, Description and Operation).

The power seat module provides the following driver selectable functions:

- Seat and exterior mirror memory recall
- Immediate seat adjustment.

For further operating details of the driver selectable functions, refer to the section 'Principles of Operation'.

The activity of the seat is automatically monitored by the power seat module. The module will react to motors that are not functioning correctly to an operation request, and will also aim to reduce power consumption during periods of inactivity.

The power seat module provides the following automatic monitoring functions:

- Stall detection mode
- Sleep mode
- Battery monitor mode.

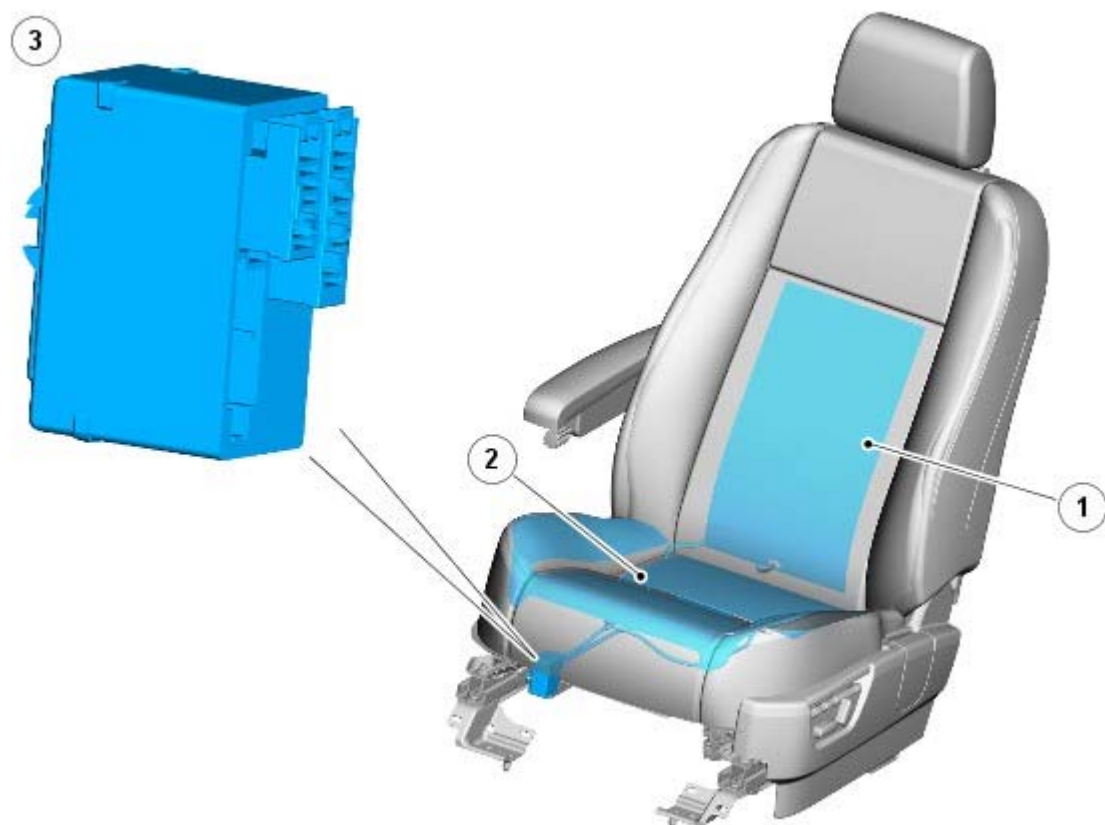
For further operating details of the automatic monitoring functions, refer to the section 'Principles of Operation'.

### **Calibration of Power Seat Module**

If the power seat module is replaced in service, the replacement module must be calibrated using the Land Rover approved diagnostic equipment. The calibration routine is necessary for the power seat module to reset the seat datum values.

## **FRONT SEAT HEATING**





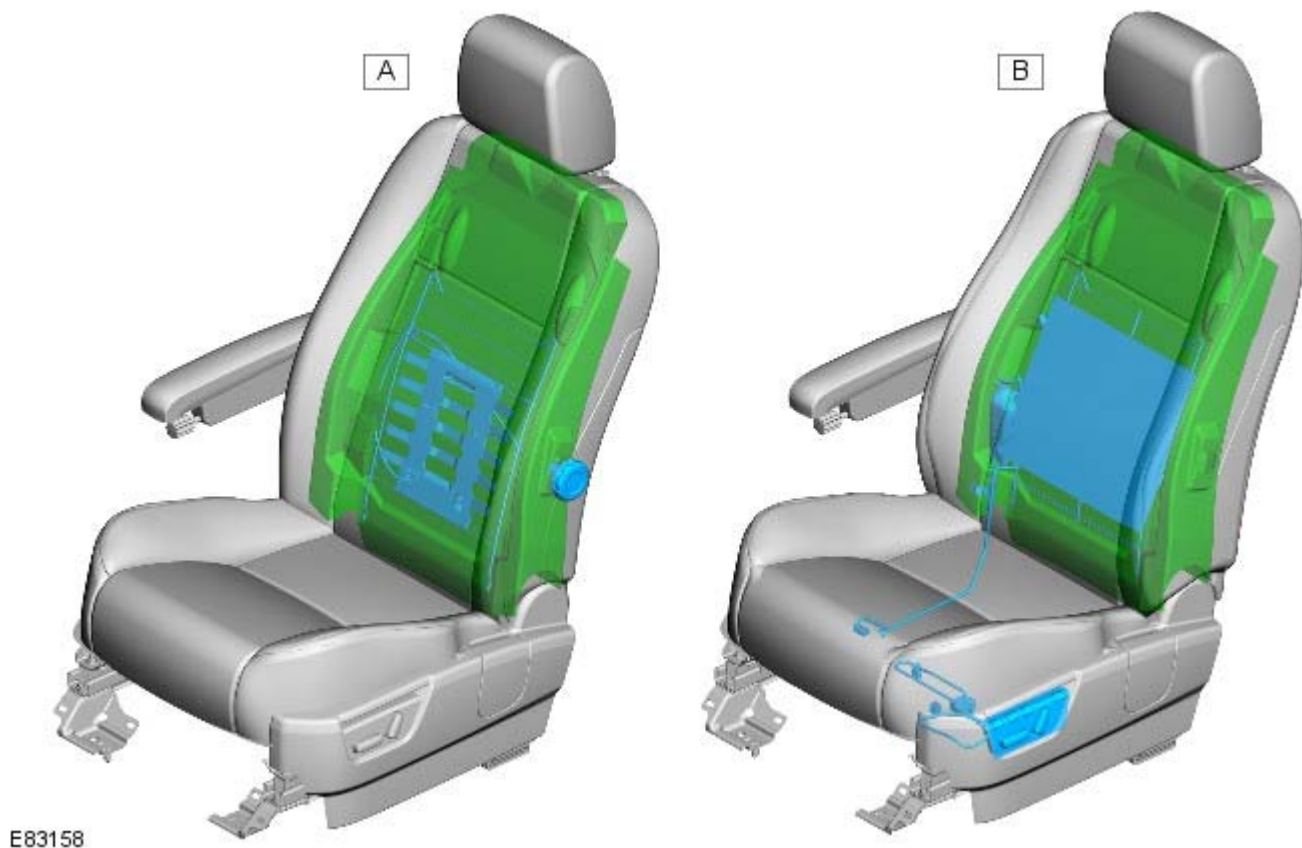
E83157

Item		Description
1		Seat squab heating element
2		Seat cushion heating element
3		Seat heating module

Depending on vehicle specification, seat heating is available for both the manually operated and the power operated seats. A heating element is incorporated within each seat cushion and squab. A seat heating module and electrical wiring is located beneath each front seat.

The seat heating modules are connected on the LIN bus to the ATC, and are also hardwired to the AJB for the power supply. A ground terminal from each seat heating module completes the circuit.  
For additional information, refer to: [Control Components](#) (412-01 Climate Control, Description and Operation).

**LUMBAR SUPPORT**



Item		Description
A		Driver's seat manually operated lumbar support system
B		Driver's seat power operated lumbar support system

Depending on the vehicle specification, the driver's seat only may incorporate a manually operated or a power operated lumbar support system.

### Manually Operated Lumbar Support

The manual adjust lumbar support system is operated by a hand-wheel located on the side of the backrest. The hand-wheel is connected with a cable to a flexible plate mounted behind the backrest squab. As the hand-wheel rotates, the plate is distorted and is forced to bow toward or away from the seat squab. The manual adjust system provides a high level of control over the increase in lumbar support.

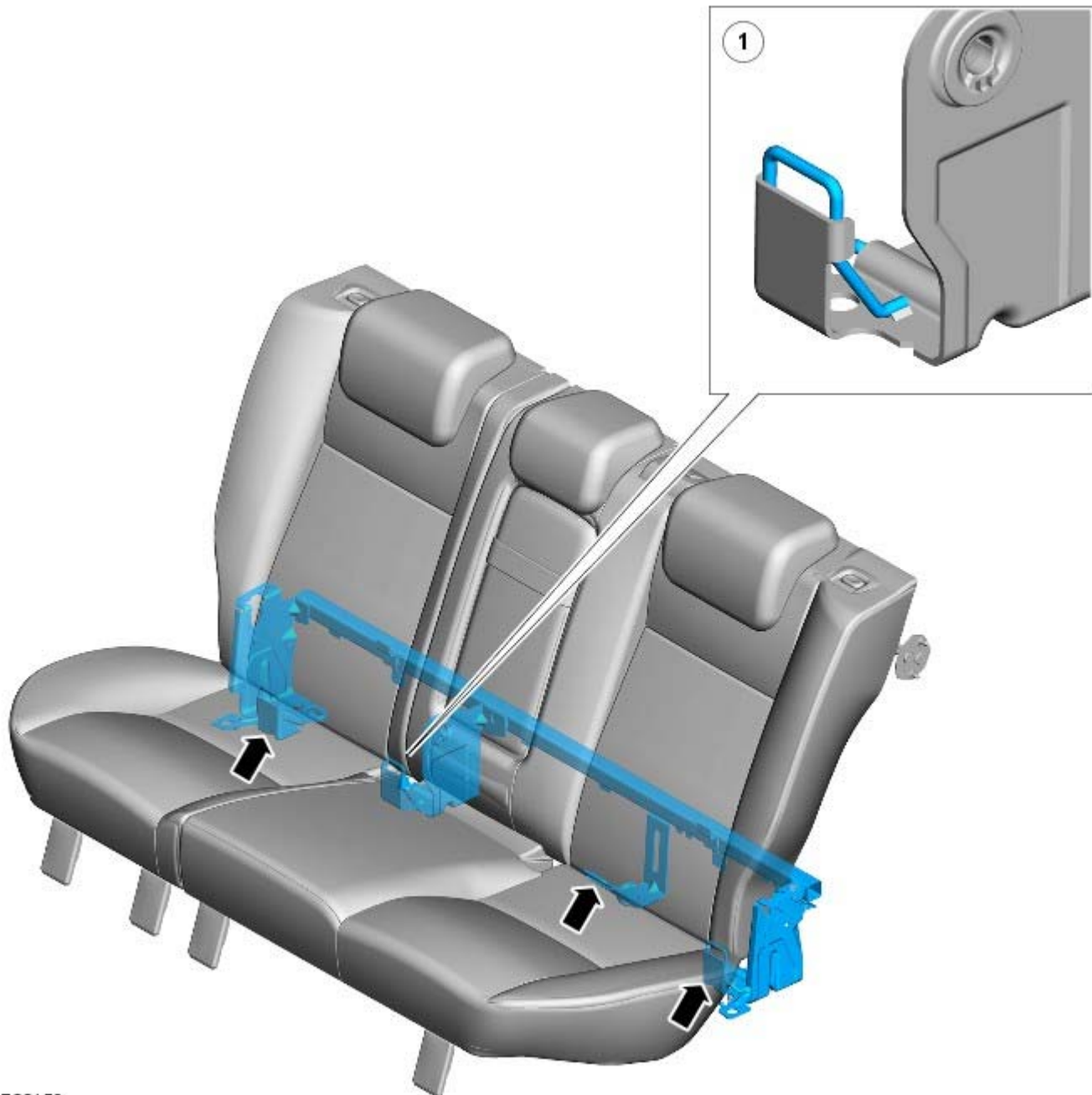
### Power Operated Lumbar Support

The power operated lumbar support system features a single motor driven pump and air cells. The air cells are mounted behind the seat squab. The lumbar motor is controlled using the lumbar switch mounted to the seat frame. Operation of the lumbar switch will energize the lumbar motor, and drive the pump to inflate or deflate the air cells.

Power for the lumbar motor is supplied and controlled by the CJB, via a battery-saver timer relay to the lumbar control switch. The lumbar control switch directs the voltage via a hardwired connection to the lumbar motor.

Lumbar position is not stored within the power seat module.

### REAR SEAT



E83159

Item	Description
1	ISOFIX fastening points

The rear seat is a 60/40 split configuration, and is designed to fold in order to increase luggage capacity. Removal of the rear seat head rests will allow the seat to fold completely flat to the floor.

The rear seat is manufactured from 2 high strength steel extrusions that are joined at each end with a high strength steel bracket and pivot. The rear seat base is formed with an anti-submarine shelf that will retain the rear occupants in the seat during a front end collision.

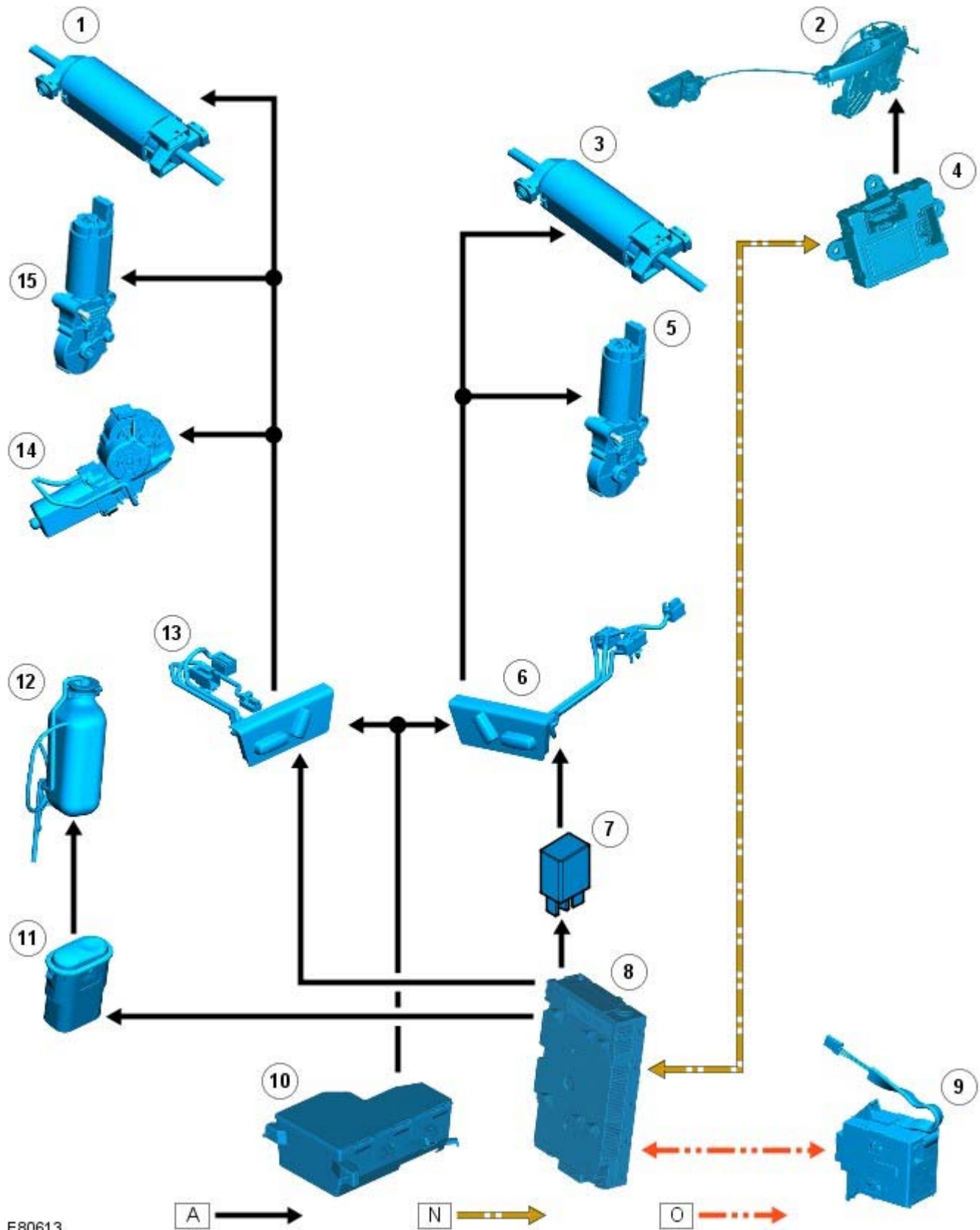
The seat base and backrest are inlaid with formed sections of dual hardness molded foam that form the seat squab and cushion. The seats provide excellent support and comfort for the rear occupants.

An injection molded armrest with stowage tray is mounted in the center of the backrest, and may be folded down from the rear seat when the center position is not occupied.

ISOFIX fastening points are manufactured on the rear seat frame and are provided for secure fastening of compatible child safety seats to the 2 outer seat positions. The ISOFIX fastenings provide the safest method of child safety seat restraint, as the child safety seat is not able to roll or become detached from the rear seat, even during severe vehicle maneuvers.

### CONTROL DIAGRAM - FRONT POWER OPERATED NON-MEMORY SEATS (SHEET 1 OF 3)

NOTE: **A** = Hardwired; **N** = Medium speed Controller Area Network (CAN) bus; **O** = LIN bus.



E80613

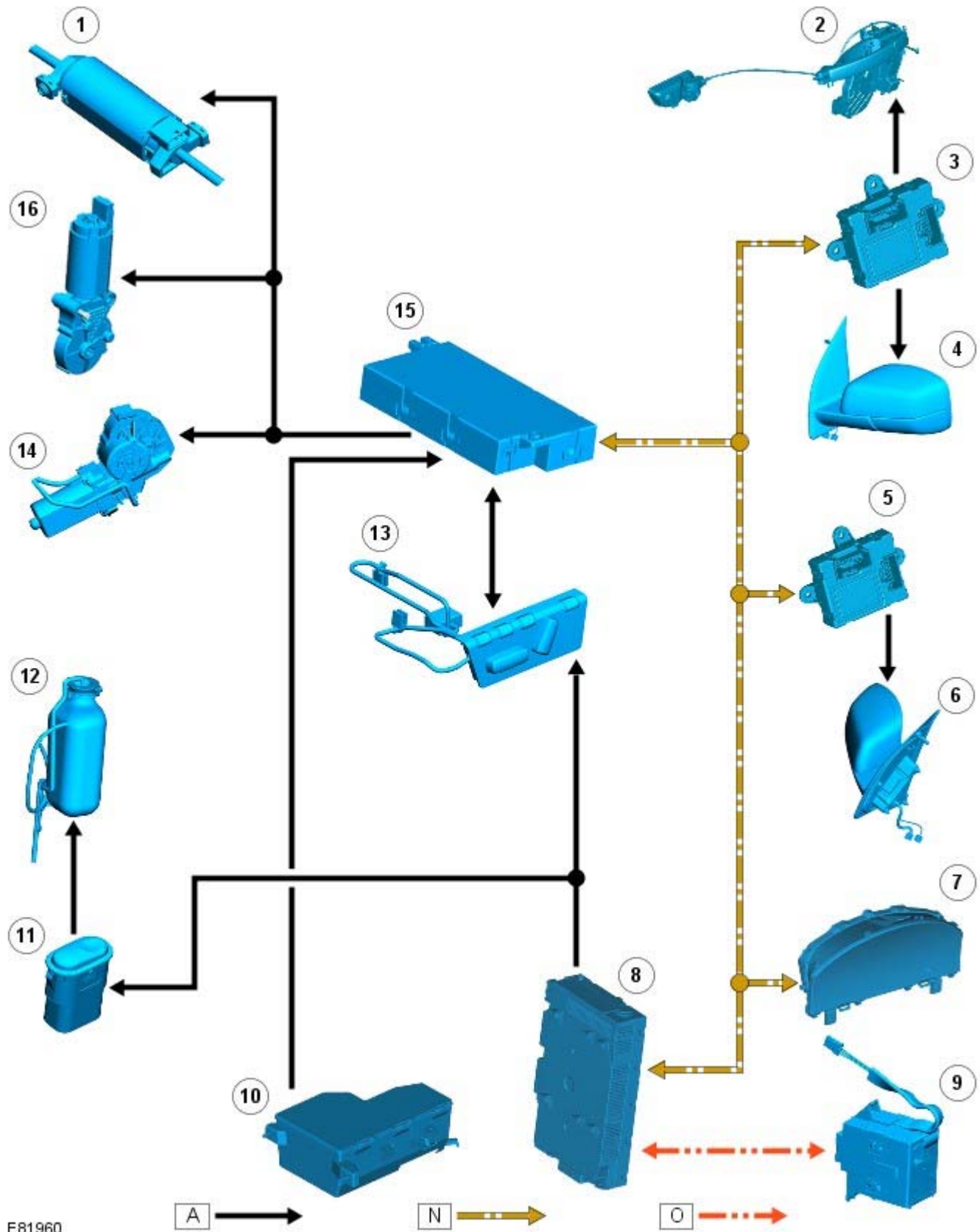
Item		Description
1		Driver's power operated non-memory seat slide motor
2		Driver's door latch with ajar switch
3		Passenger power operated non-memory seat slide motor
4		Driver's door control module
5		Passenger power operated non-memory seat squab recline motor
6		Passenger power operated non-memory seat switch pack
7		Passenger seat relay

8		CJB with internal battery-saver timer relay
9		Start control module
10		AJB
11		Power operated lumbar support switch
12		Power operated lumbar support motor
13		Driver's power operated non-memory seat switch pack
14		Driver's power operated non-memory seat height motor
15		Driver's power operated non-memory seat squab recline motor

## CONTROL DIAGRAM - DRIVER'S POWER OPERATED MEMORY SEAT (SHEET 2 OF 3)

NOTE: **A** = Hardwired; **N** = Medium speed CAN bus; **O** = LIN bus.



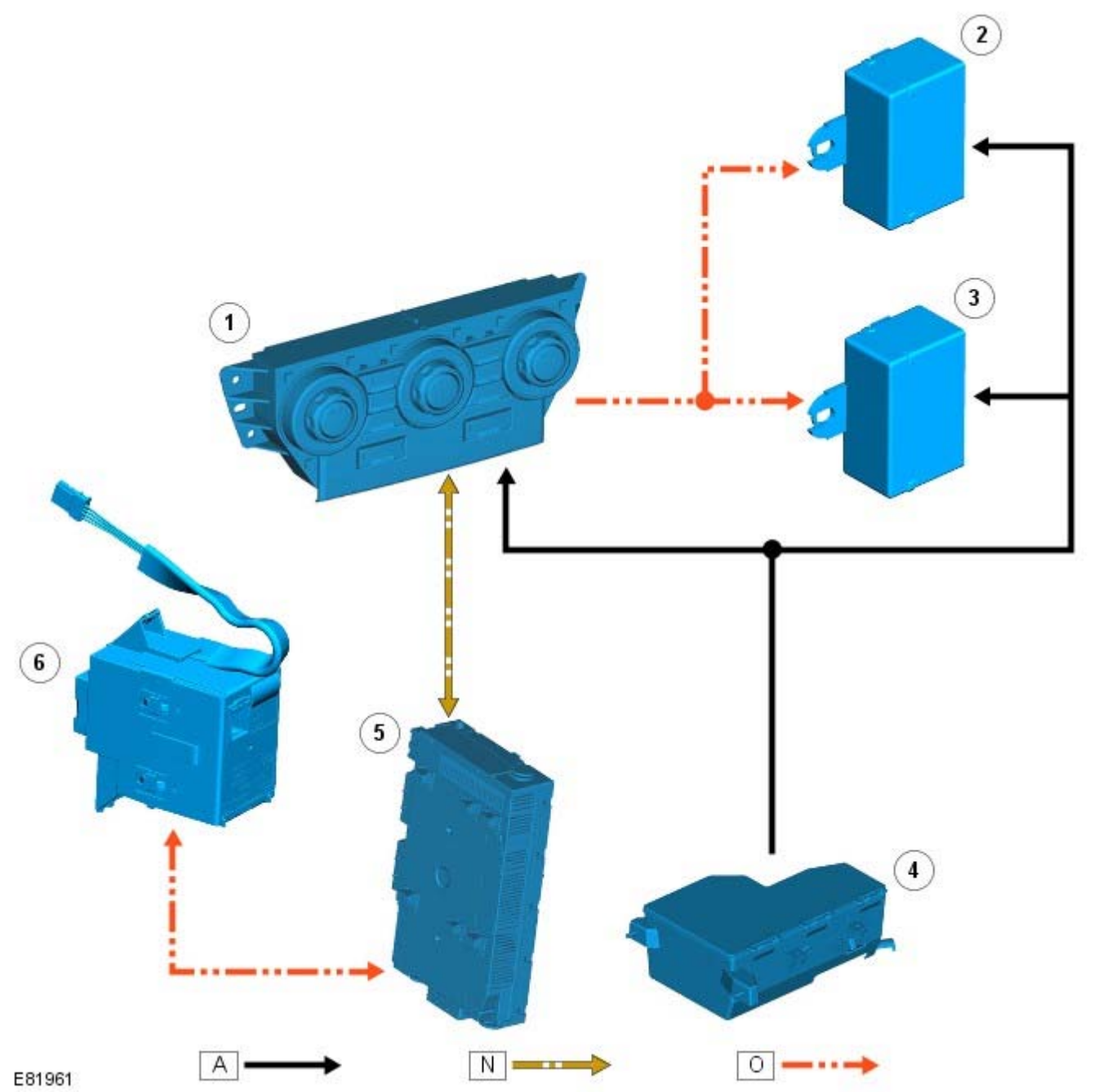


Item		Description
1		Driver's power operated memory seat slide motor
2		Driver's door latch with ajar switch
3		Driver's door control module
4		LH exterior mirror
5		Passenger door control module
6		RH exterior mirror
7		Instrument cluster

8		CJB with battery-saver timer relay
9		Start control module
10		AJB
11		Power operated lumbar support switch
12		Power operated lumbar support motor
13		Driver's power operated memory seat switch pack
14		Driver's power operated memory seat height motor
15		Driver's power seat module
16		Driver's power operated memory seat squab recline motor

CONTROL DIAGRAM - FRONT SEAT HEATING (SHEET 3 OF 3)

NOTE: **A** = Hardwired; **N** = Medium speed CAN bus; **O** = LIN bus.



Item		Description
1		ATC module
2		Driver's seat heating module
3		Passenger seat heating module

4		AJB
5		CJB
6		Start control module

## PRINCIPLES OF OPERATION

### Front Power Operated Non-Memory Seats

The driver's non-memory seat will operate in all ignition power modes. The passenger non-memory seat will only operate when the ignition is in power mode 6 (Ignition).

Power for front passenger seat operation is supplied from the AJB via a passenger seat power relay to the passenger seat control switch pack. Power for the driver's seat operation is supplied directly from the AJB to the driver's seat control switch pack. The front passenger and driver seat power supplies are controlled by the CJB. The seat switch pack directs the voltage to the relevant seat adjustment motor when a seat control switch is pressed. Two pins within each of the seat switch packs control the seat motors. Both pins are normally connected to ground.

The driver and passenger switch packs are also connected in circuit with a battery-saver timer relay that is located in, and controlled by the CJB. The battery-saver timer relay allows operation of the driver and passenger seat controls for 10 minutes after the engine is switched off, and the ignition is then selected to an appropriate power mode. The 10 minute timer is reset if the appropriate ignition power mode is retained and the driver's door is opened or closed. The driver and passenger seat operation is inhibited immediately following central locking of the vehicle.

Operating a seat motor control switch applies voltage to one of the pins while the other pin remains connected to ground. Operating the seat motor control switch in the opposite direction reverses the power and ground connections to the motor, allowing the motor pinion to rotate in the opposite direction. In the event that a motor seizes or sticks, an internal thermal cut-out switch will trip to remove voltage from the motor.

### Driver's Power Operated Memory Seat

The driver's memory seat will operate when the ignition is in power modes 4 (Accessory) and 6 (Ignition), and will not operate during power mode 9 (Engine crank).

Power for the driver's memory seat operation is supplied directly from the AJB to the power seat module. The memory seat switch pack is connected to the power seat module that controls the operation and memory position of the individual seat motors. The power seat module is connected on the medium speed CAN bus to the CJB and the front LH and RH door control modules.

The power seat module is also connected in circuit with a battery-saver timer relay that is located within, and controlled by the CJB. The battery-saver timer relay allows operation of the seat controls for 10 minutes after the engine is switched off, and the ignition is then selected to an appropriate power mode. The 10 minute timer is reset if the appropriate ignition power mode is retained and the driver's door is opened or closed. The driver's seat operation is inhibited immediately following central locking of the vehicle.

Requests for memory exterior mirror movements for a memory recall are transmitted on the medium speed CAN bus by the power seat module to the front door control modules. The front door control modules directly control the memory store and recall positions for the memory exterior mirrors.

For additional information, refer to: [Rear View Mirrors](#) (501-09 Rear View Mirrors, Description and Operation).

### Power Seat Module

The power seat module features driver selectable functions, and automatic monitoring functions.

#### Driver Selectable Functions

- Seat and exterior mirror memory recall
- Immediate seat adjustment.

#### Seat and exterior mirror memory recall function

The memory recall function sets the driver's seat to a stored position, and is activated when a switch pack memory position button is pressed. When memory recall is initiated, only 2 seat adjustment motors will operate at any one time to limit the overall current consumption. To further minimize the current load as the motors energize, the initiation of each of the 2 operating motors is phased with a 10 millisecond delay. The cushion slide and backrest will move first, followed by the cushion height.

As soon as the seat switch pack memory position button is pressed, a message is transmitted by the power seat module on the medium speed CAN bus to the front door control modules. The door control modules then activate the memory recall positions for the exterior mirrors. The instrument cluster message center will display memory recall messages when a memory recall is activated.

The memory recall function operates with 2 separate modes; the operation of each mode is dependant on the vehicle status when the seat memory position button is pressed.

Memory recall operating modes:

- One-touch mode
- Proportional mode.

### One-Touch Mode

When the vehicle is stationary and a switch pack memory position button is pressed, the memory recall function will operate in 'one-touch' mode. One touch mode allows the seat and exterior mirrors to immediately move to the requested stored memory position.

If a seat adjustment or memory position button is operated during memory recall 'one-touch' mode, the current memory recall will be cancelled and the seat (and exterior mirrors via the medium speed CAN bus) will immediately stop moving. The seat will then commence moving in the direction that corresponds to the pressed switch.

Memory recall is also immediately cancelled if the vehicle is driven from the stationary position before the seat has reached the requested memory position.

### Proportional Mode

If the vehicle is already in motion when the switch pack memory position button is pressed, the memory recall function will operate in 'proportional' mode. Proportional mode recalls the seat (and exterior mirror) position for the duration that the memory switch is held in the pressed state. When the memory position button is released the memory recall will immediately stop, unless the seat has already reached the intended memory position.

In order to reach the intended stored memory position while the vehicle is moving, the memory position button must not be released until all seat, and exterior mirror movements are complete.

### Immediate seat adjustment function

The immediate adjustment function is activated when a switch pack seat position switch (recline, slide or height) is operated.

Pressing any of the seat adjustment switches will initiate the corresponding direction motor to move the seat in that direction, until the switch is released. Only 2 seat motors will operate at any one time.

### Automatic Monitoring Functions

The power seat module automatic monitoring functions are detailed as follows:

- Stall detection mode
- Sleep mode
- Battery monitor mode.

### Stall detection mode

A seat motor is deemed to have stalled if there is no change in the input that is received from the corresponding feedback sensor for 200 milliseconds, while that axis is being driven.

If a stall condition is detected by the power seat module then the drive to that axis is cancelled for the remainder of that memory operation (memory recall), or until the switch is re-selected (immediate seat adjustment).

For all seat motor manual movements during an immediate seat adjustment function, when a motor is driven and a stall occurs the power seat module records and stores the stall position (soft stop) that the stall occurred. If movement occurs beyond the stored soft stop stall position, then the stall position is erased from the power seat module memory. This will always allow movement past a previously recorded stall position once movement has been registered beyond that position (i.e. by pressing the switch for longer than 2 seconds).

If the motor movement has stopped due to a motor stall (seat obstruction for example), once the obstruction is cleared then that axis may be activated again to move past the new soft stop stall position by re-selecting the appropriate switch and pressing for longer than 2 seconds. If the switch is not operated to move the seat past the new soft stop position, this position will remain stored in the power seat module memory as the full axis movement.

If motor movement has stopped due to loss of sensor feedback (sensor or wiring failure) then that axis may be activated again to move past the stall position by re-selecting the appropriate switch and pressing for longer than 2 seconds. This allows control of the motor to be maintained if sensor feedback is lost.

Upon re-selection of movement, if sensor pulses are detected then the motor will continue to be driven until the switch is released or another stall condition is detected. If sensor feedback is not detected then the motor is only driven for 0.5 second and then stops, until the switch is released and then pressed again for longer than 2 seconds, when a further 0.5 second of activation is permitted and so on. This is known as 'inch mode'.

If there is a failure with the medium speed CAN bus network, the seat will operate in 'inch mode'.

**NOTE:** For diagnostic purposes, an indication of medium speed CAN bus disconnection is apparent if the seat is operating in 'inch mode' and either the seat control module, CJB or door control modules are not shown connected to the medium speed CAN bus.

### Sleep mode

The power seat module features a sleep mode to reduce power consumption to the required minimum.

If the power seat module is being prevented from entering sleep mode due to motor movement, memory recall or switch pack operation, then the module will enter sleep mode when the current function has terminated.

**NOTE:** In the case of a memory recall, all memory recall operations are carried out before the power seat module enters sleep mode, and not just the current motor movement.

The power seat module will exit sleep mode when any CAN bus activity is detected.

#### **Battery monitor mode**

The power seat module monitors the input power supply to make sure there is sufficient battery voltage available for engine cranking. If the battery voltage drops below 10.5 volts, then the power seat module ignores all requests for a memory recall until the battery voltage is greater than 11.0 volts.

If the battery voltage drops below 8.5 volts, then the power seat module ignores all requests for seat movement until the battery voltage is greater than 9.0 volts.

If the battery voltage is greater than 16.5 volts, then the power seat module ignores all requests for seat movement until the battery voltage drops below 16.0 volts.



## Seating - Seats

Diagnosis and Testing

### Principles of Operation

For a detailed description of the seats, refer to the relevant Description and Operation section in the workshop manual.  
REFER to: [Seats](#) (501-10 Seating, Description and Operation).

### Inspection and Verification



**CAUTION:** Diagnosis by substitution from a donor vehicle is **NOT** acceptable. Substitution of control modules does not guarantee confirmation of a fault, and may also cause additional faults in the vehicle being tested and/or the donor vehicle.

1. Verify the customer concern.
2. Visually inspect for obvious signs of mechanical/electrical damage and system integrity.

#### Visual Inspection

Mechanical	Electrical
<ul style="list-style-type: none"> <li>● Condition, correct installation and security of seat components and fixings</li> </ul>	<ul style="list-style-type: none"> <li>● Fuses</li> <li>● Harnesses for damage/corrosion</li> <li>● Electrical connectors</li> <li>● Damaged/corroded pins</li> </ul>

3. If an obvious cause for an observed or reported concern is found, correct the cause (if possible) before proceeding to the next step
4. If the cause is not visually evident, verify the symptom and refer to the Symptom Chart, alternatively check for Diagnostic Trouble Codes (DTCs) and refer to DTC Index.

### Symptom Chart

Symptom	Possible Cause	Action
No Driver seat movement from driver seat switch-pack (including no memory recall) and no passenger seat movement from passenger seat switch pack	<ul style="list-style-type: none"> <li>● Comfort relay has de-activated which disables Driver seat and Passenger seat functions</li> </ul>	Insert Key and press ignition ON. Check seat function from driver switch pack and passenger switch pack
No Driver seat movement from driver seat switch-pack (including no memory recall)	<ul style="list-style-type: none"> <li>● Driver seat switch pack ground circuit - open circuit</li> </ul>	Check SW Ground 1 connection between driver seat switch-pack and DSM for open circuit
One or more driver seat axis does not move from switch pack or a memory function does not operate correctly	<ul style="list-style-type: none"> <li>● Seat switch stuck or seat switch pack/DSM connection short to power or ground</li> </ul>	Check for the following DSM DTCs. B1B9424 Seat Height Up Switch. B1B9524 Seat Height Down Switch. B1B9624 Seat Slide Forward Switch. B1B9724 Seat Slide Backward Switch. B1C0024 Seat Recline Up Switch. B1C0124 Seat Recline Down Switch. B1C0224 Memory Store Switch. B1C0324 Memory #1 Switch. B1C0424 Memory #2 Switch. B1C0524 Memory #3 Switch. Check Driver seat switch pack for switch stuck condition or Driver seat switch pack/DSM connections for short to ground or power condition
Driver seat axis movement from switch-pack occurs in delayed inch mode (seat axis moves short distance when switch pressed for longer than 2 seconds and then stops. This could occur on ANY seat axis i.e. slide, height or squab)	<ul style="list-style-type: none"> <li>● Motor Hall sensor on affected axis is not connected or not receiving expected signals</li> </ul>	Check for the following DSM DTCs, B1B8731 Seat Height Motor Speed/Position Sensor. B1B8931 Seat Slide Motor Speed/Position Sensor. B1B9331 Seat Recline Motor Speed/Position Sensor. If present then check Hall sensor feedback connection(s) between seat motor(s) and seat module and also check Hall sensor Ground connections for affected axis. When hall sensor connection issue fixed press switch on affected axis for longer than 2 seconds. By keeping the switch pressed the axis movement should now operate for the duration of switch-press. Recalibrate affected seat
Driver seat axis movement from switch-pack occurs in inch mode. When any seat axis movement is requested from the seat switch pack the	<ul style="list-style-type: none"> <li>● Vehicle has MS CAN issue</li> </ul>	Carry out CAN network integrity tests using the manufacturer approved diagnostic system

Symptom	Possible Cause	Action
requested seat axis immediately moves a short distance then stops. This behaviour occurs for ALL seat axis movement (slide, height or squab) when requested. MS CAN communication not possible		
Driver Seat movement from switch-pack occurs in inch mode. When any seat axis movement is requested from the seat switch pack the requested seat axis immediately moves a short distance then stops. This behaviour occurs for ALL seat axis movement (slide, height or squab) when requested	<ul style="list-style-type: none"> <li>DSM is disconnected from the MS CAN bus</li> </ul>	Check for Instrument Cluster DTC U020808 Lost Communication with Driver Seat Module. If this DTC is present then check the Driver Seat Module CAN bus connections
Driver seat movement from switch-pack occurs in inch mode. When any seat axis movement is requested from the seat switch pack the requested seat axis immediately moves a short distance then stops. This behaviour occurs for ALL seat axis movement (slide, height or squab,) when requested	<ul style="list-style-type: none"> <li>Driver Door Module (DDM) is disconnected from the CAN bus</li> </ul>	Check for DSM DTC U019900 Lost Communication with DDM. If this DTC is present then check the DDM CAN bus connections

## DTC Index

NOTE: If the control module or a component is suspect and the vehicle remains under manufacturer warranty, refer to the Warranty Policy and Procedures manual (section B1.2), or determine if any prior approval programme is in operation, prior to the installation of a new module/component.

NOTE: Generic scan tools may not read the codes listed, or may read only five digit codes. Match the five digits from the scan tool to the first five digits of the seven digit code listed to identify the fault (the last two digits give additional information read by the manufacturer approved diagnostic system).

NOTE: When performing electrical voltage or resistance tests, always use a digital multimeter (DMM) accurate to three decimal places, and with an up-to-date calibration certificate. When testing resistance, always take the resistance of the DMM leads into account.

NOTE: Check and rectify basic faults before beginning diagnostic routines involving pinpoint tests.

NOTE: Inspect connectors for signs of water ingress, and pins for damage and/or corrosion.

NOTE: If DTCs are recorded and, after performing the pinpoint tests, a fault is not present, an intermittent concern may be the cause. Always check for loose connections and corroded terminals.

For a complete list of all Diagnostic Trouble Codes (DTCs) that could be logged on this vehicle, please refer to Section 100-00.

REFER to: [Diagnostic Trouble Code \(DTC\) Index - DTC: Driver Seat Module \(DSM\)](#) (100-00 General Information, Description and Operation).

# Seating - Heater Mats

Diagnosis and Testing

## Principles of Operation

Heated seats incorporate heater elements in the cushion and the backrest of the seat. Each cushion heater element has a thermal sensor, which supplies a feedback temperature signal to the related seat heater module. The backrest heater elements do not have a thermal sensor, and are regulated at the same temperature as the cushion heater elements.

For a detailed description of the seat heater mat, refer to the relevant Description and Operation section in the workshop manual. REFER to: Seats (501-10, Description and Operation).

## Inspection and Verification

1. Verify the customer concern.
2. Visually inspect for obvious signs of mechanical or electrical damage.

### Visual inspection

Mechanical	Electrical
<ul style="list-style-type: none"> <li>● Seat heater switches condition and installation</li> </ul>	<ul style="list-style-type: none"> <li>● Fuses</li> <li>● Harnesses and connectors</li> <li>● Seat heater module</li> <li>● Seat heater switches</li> <li>● Seat heater mat</li> </ul>

3. If an obvious cause for an observed or reported concern is found, correct the cause (if possible) before proceeding to the next step.
4. If the cause is not visually evident, verify the symptom and refer to the Symptom Chart.

**NOTE:** If the control module or a component is suspect and the vehicle remains under manufacturer warranty, refer to the warranty policy and procedures manual (section B1.2), or determine if any prior approval programme is in operation, prior to the installation of a new module/component.

**NOTE:** Generic scan tools may not read the codes listed, or may read only five digit codes. Match the five digits from the scan tool to the first five digits of the seven digit code listed to identify the fault (the last two digits give additional information read by the manufacturer approved diagnostic system).

**NOTE:** When performing electrical voltage or resistance tests, always use a digital multimeter (DMM) accurate to three decimal places, and with an up-to-date calibration certificate. When testing resistance, always take the resistance of the DMM leads into account.

**NOTE:** Check and rectify basic faults before beginning diagnostic routines involving pinpoint tests.

**NOTE:** Inspect connectors for signs of water ingress, and pins for damage and/or corrosion.

**NOTE:** If DTCs are recorded and, after performing the pinpoint tests, a fault is not present, an intermittent concern may be the cause. Always check for loose connections and corroded terminals.

### DTC Index

For a complete list of all diagnostic trouble codes that could be logged on this vehicle, please refer to section 100-00.

### Seat Heater Mat Application Chart

**NOTE:** To ensure an accurate resistance reading, calibrated test equipment **must be used**

Vehicle /Year	Cushion / Backrest	Heater Mat / NTC Resistor	Left Hand Drive		Right Hand Drive		Minimum Resistance	Maximum Resistance
			Passenger Side Connector / Pin	Driver Side Connector / Pin	Passenger Side Connector / Pin	Driver Side Connector / Pin	Ohms At 20°C ± 10°C	Ohms At 20°C ± 10°C
Discovery 3 2006	Cushion	Heater mat	C2950-1 and C2950-4	C0085-1 and C0085-4	C2950-1 and C2950-4	C0085-1 and C0085-4	0,75	1,0
		NTC resistor	C2950-2 and C2950-3	C0085-2 and C0085-3	C2950-2 and C2950-3	C0085-2 and C0085-3	4 000	10 000
	Backrest	Heater mat	connected in series	connected in series	connected in series	connected in series	0,44	0,59
Discovery 4 2010	Cushion	Heater mat	C3542-1 and C3542-4	C3542-1 and C3542-4	C3542-1 and C3542-4	C3542-1 and C3542-4	0,70	1,0
		NTC resistor	C3542-2 and C3542-3	C3542-2 and C3542-3	C3542-2 and C3542-3	C3542-2 and C3542-3	4 000	10 000

Vehicle /Year	Cushion / Backrest	Heater Mat / NTC Resistor	Left Hand Drive		Right Hand Drive		Minimum Resistance	Maximum Resistance
			Passenger Side Connector / Pin	Driver Side Connector / Pin	Passenger Side Connector / Pin	Driver Side Connector / Pin	Ohms At 20°C ±10°C	Ohms At 20°C ±10°C
	Backrest	Heater mat	C3543-1 and C3543-2	C3543-1 and C3543-2	C3543-1 and C3543-2	C3543-1 and C3543-2	0,4	0,7
Range Rover Sport 2010	Cushion	Heater mat	C3542-1 and C3542-4	C3542-1 and C3542-4	C3542-1 and C3542-4	C3542-1 and C3542-4	0,93	1,25
		NTC resistor	C3542-2 and C3542-3	C3542-2 and C3542-3	C3542-2 and C3542-3	C3542-2 and C3542-3	4 000	10 000
	Backrest	Heater mat	C3543-1 and C3543-2	C3543-1 and C3543-2	C3543-1 and C3543-2	C3543-1 and C3543-2	0,43	0,6
Freelander 2	Cushion	Heater mat	C3HS08C-1 and C3HS08C-4	C3HS03C-1 and C3HS03C-4	C3HS08C-1 and C3HS08C-4	C3HS03C-1 and C3HS03C-4	0,8	1,0
		NTC resistor	C3HS08C-2 and C3HS08C-3	C3HS03C-2 and C3HS03C-3	C3HS08C-2 and C3HS08C-3	C3HS03C-2 and C3HS03C-3	4 000	10 000
	Backrest	Heater mat	C3HS08B-1 and C3HS08B-2	C3HS03B-1 and C3HS03B-2	C3HS08B-1 and C3HS08B-2	C3HS03B-1 and C3HS03B-2	0,5	0,7
Range Rover 2010	Cushion	Heater mat	C0969-1 and C0969-4	C2090-1 and C2090-4	C2090-1 and C2090-4	C0969-1 and C0969-4	0.67	0.9
		NTC resistor	C0969-2 and C0969-3	C2090-2 and C2090-3	C2090-2 and C2090-3	C0969-2 and C0969-3	4 000	10 000
	Backrest	Heater mat	C0971-1 and C0971-2	C2091-1 and C2091-2	C2091-1 and C2091-2	C0971-1 and C0971-2	0.53	0.71
	Rear Seat Cushion	Heater mat	C2043-2 and C3030-1	C2042-2 and C3030-1	C2042-2 and C3030-1	C2043-2 and C3030-1	0.74	0.99
		NTC resistor	C2043-1 and C2043-3	C2042-1 and C2042-3	C2042-1 and C2042-3	C2043-1 and C2043-3	4 000	10 000
	Rear Seat Backrest	Heater mat	C3030-1 and C3030-2	C2993-1 and C2993-2	C2993-1 and C2993-2	C3030-1 and C3030-2	0.74	0.93
Range Rover Evoque	Cushion	Heater mat	C3HS07BBM-1 and C3HS07BBM-4	C3HS02ABM-1 and C3HS02ABM-4	C3HS07BBM-1 and C3HS07BBM-4	C3HS02ABM-1 and C3HS02ABM-4	1.1	1.48
		NTC resistor	C3HS07BBM-2 and C3HS07BBM-3	C3HS02ABM-2 and C3HS02ABM-3	C3HS07BBM-2 and C3HS07BBM-3	C3HS02ABM-2 and C3HS02ABM-3	4 000	10 000
	Backrest	Heater mat	C3HS06ABM-1 and C3HS06ABM-2	C3HS01ABM-1 and C3HS01ABM-2	C3HS06ABM-1 and C3HS06ABM-2	C3HS01ABM-1 and C3HS01ABM-2	0.77	1.03

**PINPOINT TEST A : SEAT HEATER MAT**

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
<b>A1: CHECK FOR DTC'S</b>	
<b>1</b>	Where possible use the manufacturer approved diagnostic system to review any logged seat heater mat DTC's
	Were any seat heater mat DTC's logged? <b>Yes</b> Carry out the help text action for any logged DTC's. Clear the DTC and retest. If DTC's return follow the tests listed below <a href="#">GO to A2.</a> <b>No</b> <a href="#">GO to A2.</a>
<b>A2: MANUAL CHECK</b>	
<b>NOTE: On full power the seat should be hot to touch</b>	
<b>1</b>	If required operate the vehicle air conditioning on full for 10 minutes to reduce the in vehicle ambient temperature
<b>2</b>	Operate the seat heater on full power
	Does the seat heater operate correctly? <b>Yes</b> Clear any stored DTC's and retest. If seat heater operation is correct no further action required <b>No</b> <a href="#">GO to A3.</a>
<b>A3: SHORT CIRCUIT TO GROUND</b>	
<b>1</b>	Refer to the electrical circuit diagrams and the seat heater mat application chart (see above) to identify the connector
<b>2</b>	Disconnect the connector
<b>3</b>	Refer to the electrical circuit diagrams and check the seat heater mat ( heater circuit ) and ( thermal sensor circuit ) for short circuit to ground

	<p>Are either of the circuits short circuit to ground?</p> <p><b>Yes</b></p> <p>Repair the circuit or replace the seat heater mat as required. Refer to the warranty policy and procedures manual, or determine if any prior approval programme is in operation, prior to the installation of a new module/component. Clear any stored DTC's and retest</p> <p><b>No</b></p> <p><a href="#">GO to A4.</a></p>
<b>A4: CIRCUIT CONTINUITY TEST</b>	
	<p><b>1</b> Refer to the electrical circuit diagrams and check the seat heater mat ( heater circuit ) for circuit continuity</p>
	<p>Does the seat heater mat <b>heater circuit</b> pass the continuity test?</p> <p><b>Yes</b></p> <p><a href="#">GO to A5.</a></p> <p><b>No</b></p> <p>Repair the circuit or replace the seat heater mat as required. Refer to the warranty policy and procedures manual, or determine if any prior approval programme is in operation, prior to the installation of a new module/component. Clear any stored DTC's and retest</p>
<b>A5: POWER CONSUMPTION</b>	
<p><b>NOTE:</b> The seat heater power supply cycles on and off dependant on the seat and cabin temperature and may only switch on for 5 seconds in 30 seconds</p>	
	<p><b>1</b> Reconnect the connector</p>
	<p><b>2</b> Operate the vehicle air conditioning on full for 10 minutes to reduce the in vehicle ambient temperature</p>
	<p><b>3</b> Refer to the electrical circuit diagrams and check the seat heater mat ( heater circuit ) using a <b>current clamp</b></p>
	<p><b>4</b> Operate the seat heater on full power</p>
	<p><b>5</b> Use the chart above to calculate typical value (<math>V/R=I</math>) (<b>Volts</b> divided by <b>Resistance</b> equals <b>Current in Amps</b>)</p>
	<p><b>6</b> Examples (12 volts / 0.5 ohms =24 amps) (12 volts / 1 ohms = 12 amps) (12 volts / 2 ohms = 6 amps)</p>
	<p>Does the seat heater mat consume the correct level of current?</p> <p><b>Yes</b></p> <p>Clear any stored DTC's and retest. If operation correct, no further action required</p> <p><b>No</b></p> <p><a href="#">GO to A6.</a></p>
<b>A6: RESISTANCE CHECK</b>	
<p><b>NOTE:</b> Ensure the multimeter used is calibrated and a resistance reading of <b>0</b> ohms is shown when the test leads are connected together, alternately subtract any resistance shown from the result</p>	
<p><b>NOTE:</b> The seat heater mat circuits should be checked at the seat heater module connector</p>	
<p><b>NOTE:</b> Refer to the electrical circuit diagrams and to confirm the total resistance of the circuit the cushion and backrest are connected in series</p>	
	<p><b>1</b> Refer to the electrical circuit diagrams and the seat heater mat application chart (see above) to identify the terminals</p>
	<p><b>2</b> Disconnect the connector</p>
	<p><b>3</b> Using a multimeter, carry out a resistance check of the seat heater mat <b>heater circuit</b> and the <b>NTC resistor circuit</b>. Record the results</p>
	<p><b>4</b> Compare the results to the chart (see above)</p>
	<p>Are the results within specification at the given ambient temperature? (tolerance +/- <b>0.5</b> Ohms)</p> <p><b>Yes</b></p> <p>Reconnect the connector. Clear any stored DTC's and retest. If customer concern or DTC's return refer to electrical circuit diagrams and investigate the power and ground supply circuits</p> <p><b>No</b></p> <p>Replace the seat heater mat as required. Refer to the warranty policy and procedures manual, or determine if any prior approval programme is in operation, prior to the installation of a new module/component. Clear any stored DTC's and retest</p>

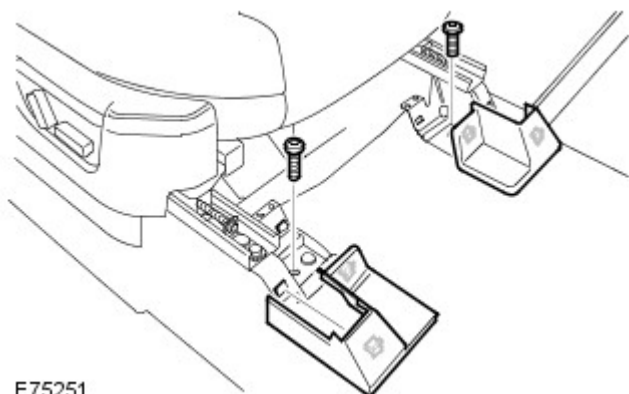


Published: 11-May-2011

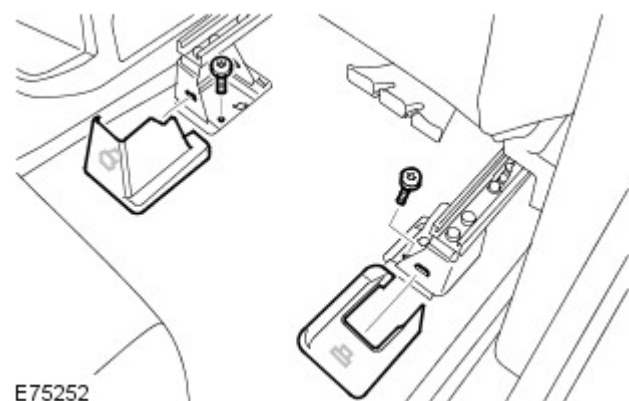
## Seating - Front Seat

Removal and Installation

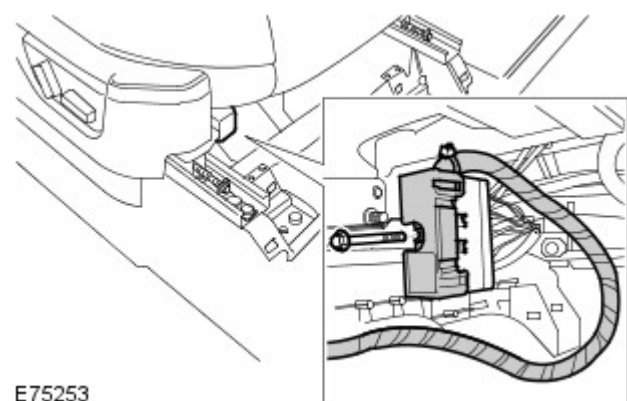
### Removal



1.



2.



3. Disconnect the front seat harness electrical connectors.

### Installation

1. Install the front seat using new bolts.

*Torque: 40 Nm*

2. Connect the front seat harness electrical connectors.

3. Install the rear front seat base trim.

4. Install the front seat base trim.

## Seating - Front Seat Backrest Cover

Removal and Installation

### Removal

#### WARNINGS:



To avoid accidental deployment, the restraints control module backup power supply must be depleted. Wait at least one minute after disconnecting the battery ground cable(s) before commencing any repair or adjustment to the supplemental restraint system (SRS), or any component(s) adjacent to the SRS sensors. Failure to follow these instructions may result in personal injury.



Always wear safety glasses when working on an air bag equipped vehicle and when handling an air bag module. Failure to follow this instruction may result in personal injury.



To minimize the possibility of premature deployment, do not use radio key code savers when working on the supplemental restraint system. Failure to follow this instruction may result in personal injury.



To minimize the possibility of injury in the event of premature deployment, always carry a live air bag module with the bag and trim cover pointed away from the body. Failure to follow this instruction may result in personal injury.



To minimize the possibility of premature deployment, live air bag modules must only be placed on work benches which have been ground bonded and with the trim cover facing up. Failure to follow these instructions may result in personal injury.



Never probe the electrical connectors of air bag modules or any other supplemental restraint system component. Failure to follow this instruction may result in personal injury.



Painting over the driver air bag module trim cover or instrument panel could lead to deterioration of the trim cover and air bags. Do not for any reason attempt to paint discolored or damaged air bag module trim covers or instrument panel. Install a new component. Failure to follow this instruction may result in personal injury.



Make sure that sufficient time has elapsed after disconnecting the battery ground cable(s), before commencing work on the supplemental restraint system (SRS). Failure to follow these instructions may result in personal injury.

NOTE: Removal steps in this procedure may contain installation details.

1. Disconnect the battery ground cable.

Refer to: [Specifications](#) (414-00 Battery and Charging System - General Information, Specifications).

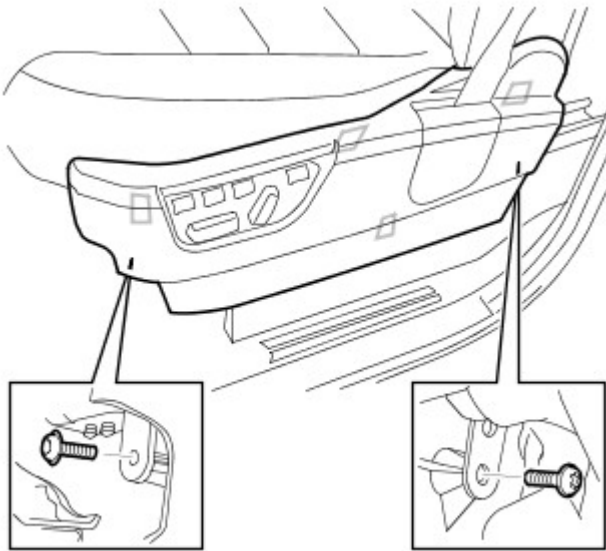
2. Make the SRS system safe.

Refer to: [Standard Workshop Practices](#) (100-00 General Information, Description and Operation).

3. Remove the front safety belt buckle.

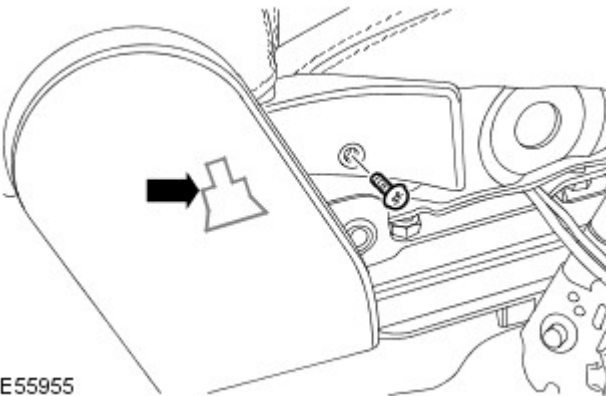
Refer to: [Front Safety Belt Buckle](#) (501-20A Safety Belt System, Removal and Installation).

4.



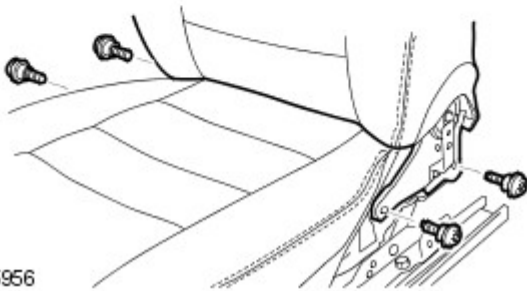
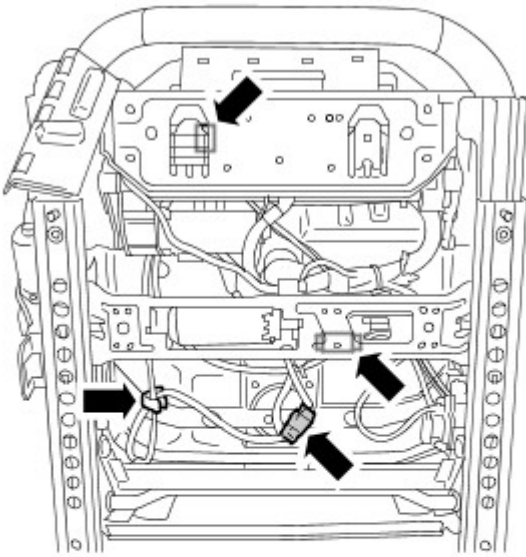
E55954

5.



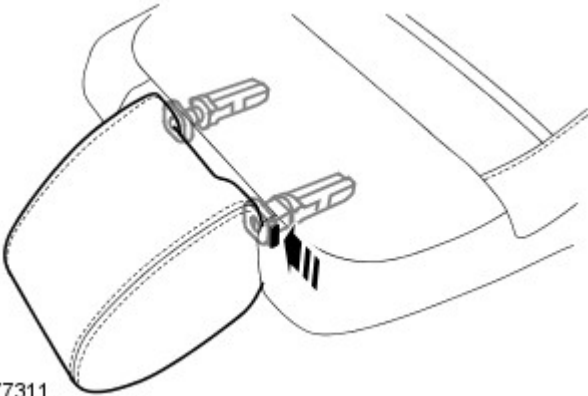
E55955

6. Torque: 25 Nm



E55956

7.



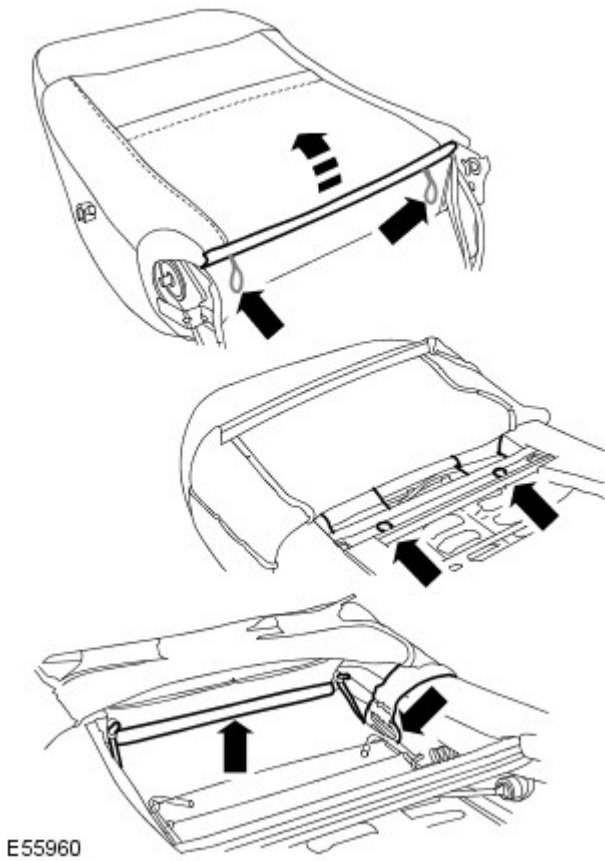
E77311

8. Remove the seat armrest.

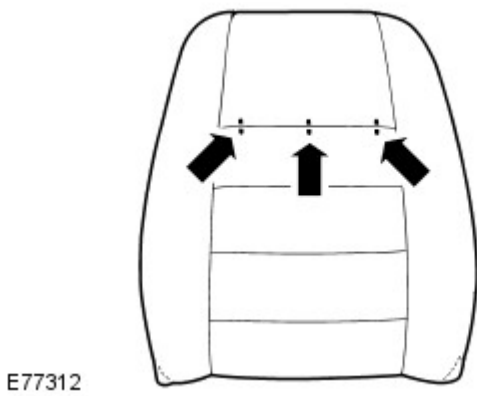
Refer to: [Front Seat Armrest](#) (501-10 Seating, Removal and Installation).



9.



10.



## Installation

1. To install, reverse the removal procedure.

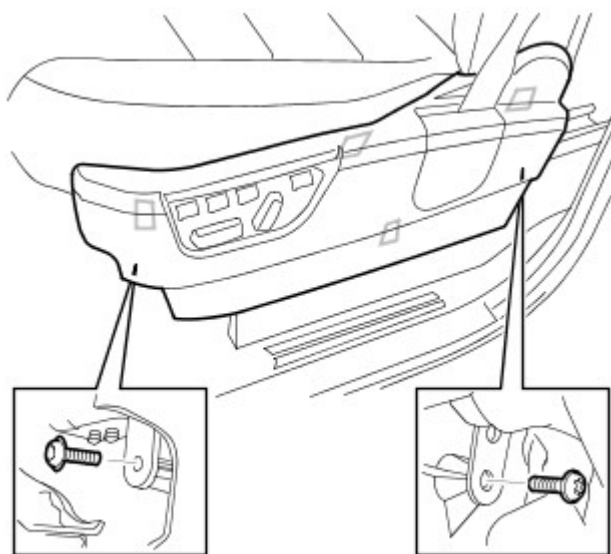
Published: 11-May-2011

## Seating - Front Seat Control Switch

Removal and Installation

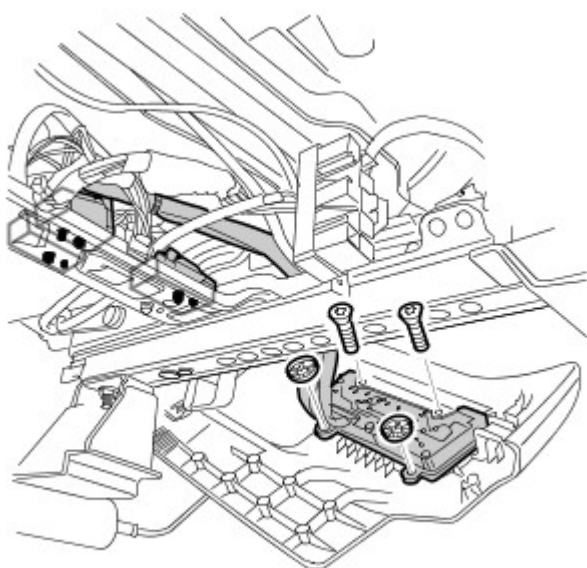
### Removal

1.



E55954

2.



E77727

### Installation

1. To install, reverse the removal procedure.

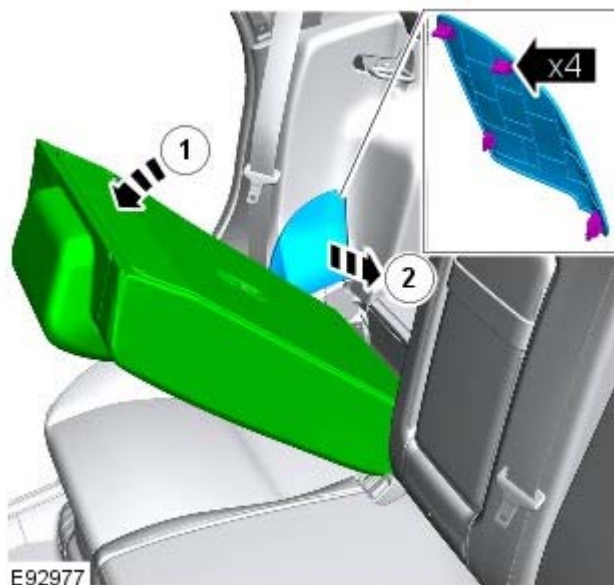
Published: 11-May-2011

## Seating - Rear Seat Backrest Cover

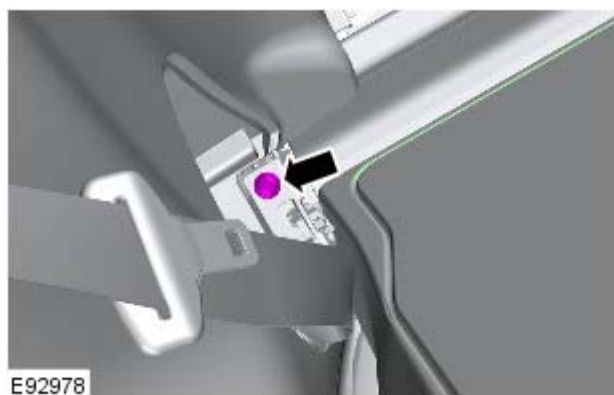
Removal and Installation

### Removal

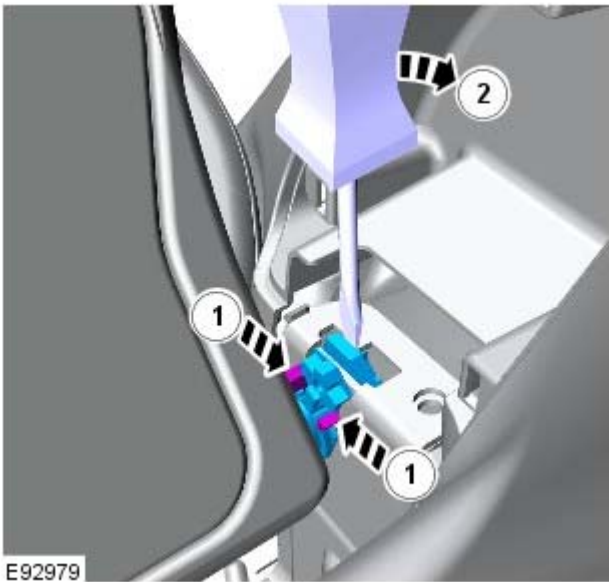
NOTE: This procedure covers the removal and installation of both rear seat backrests and the LH rear seat backrest cover. The RH rear seat backrest cover is similar. All notes and cautions must be followed strictly to avoid any chance of NVH or failure of the rear seat backrests.



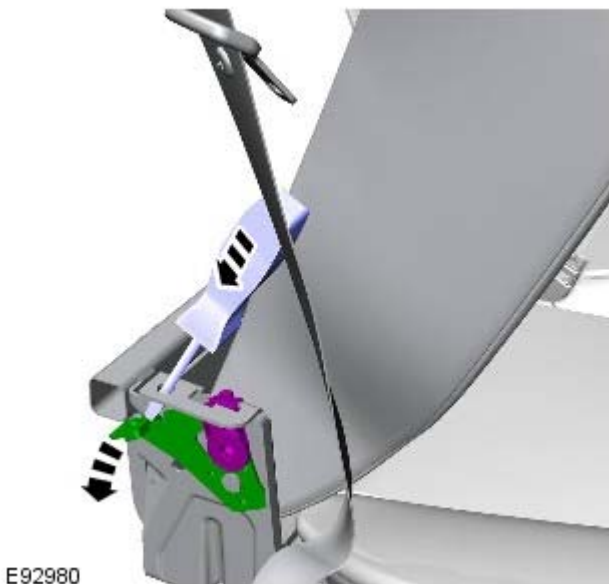
1.



2.




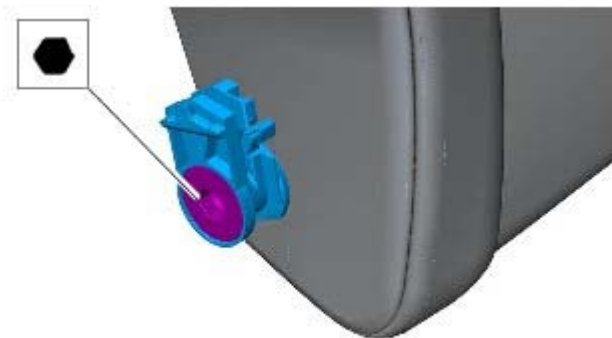
3. Release the RH rear seat backrest outer pivot pin bushing.



4. Using a screwdriver, release the outer pivot pin bushing locking arm.

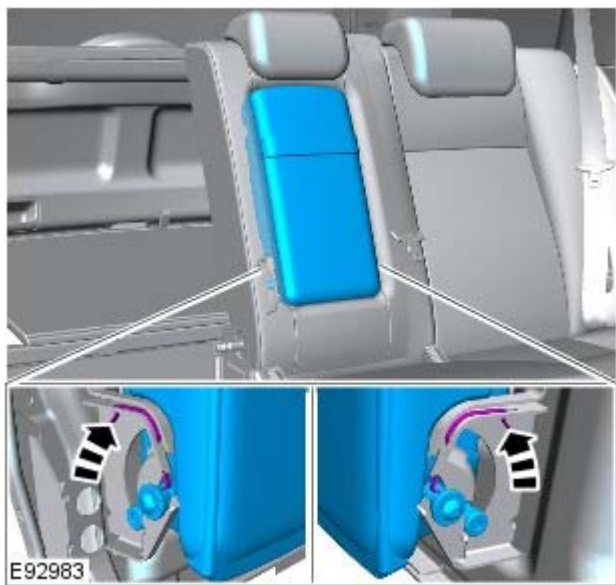


5.  **CAUTION:** The left-hand rear seat backrest inner pivot pin has radial grooves. When removing the RH backrest from the LH backrest take care not to damage the RH backrest inner pivot bushing.
  - Release the RH rear seat backrest outer pivot pin bushing from the mounting bracket.
  - Release the RH rear seat backrest from the LH rear seat backrest.



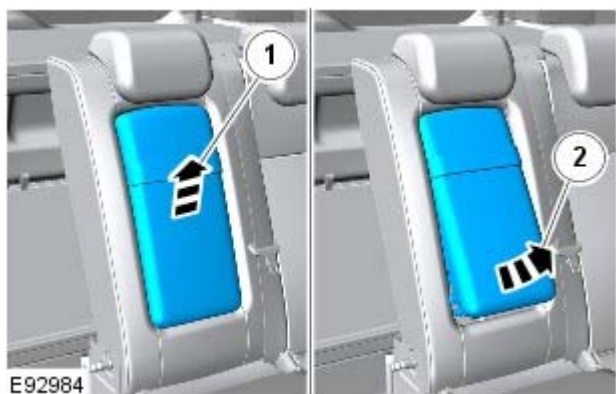
E92982

6. Remove and discard the RH rear seat backrest outer pivot pin bushing.



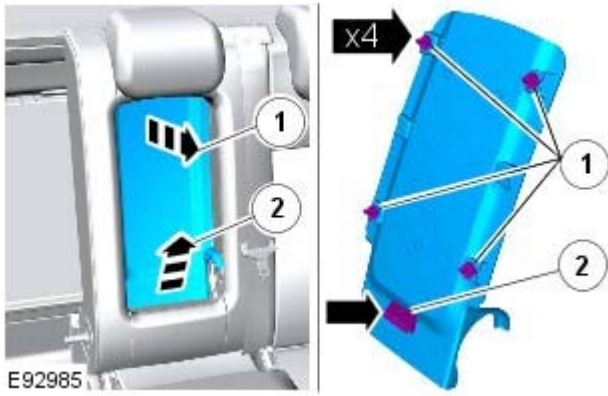
E92983

- 7.
- If installed, release the armrest.
  - Remove and discard the armrest pivot bushing spring clips.



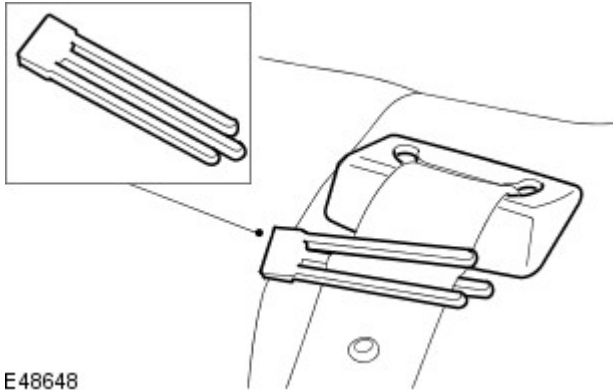
E92984


- 8.
- Slide the armrest upwards.
  - Slide the armrest outwards.



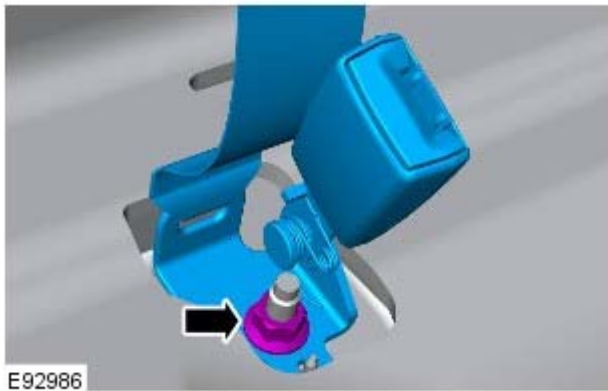
9.

- Remove the armrest backing plate.
- Remove and discard the 4 fir tree clips.

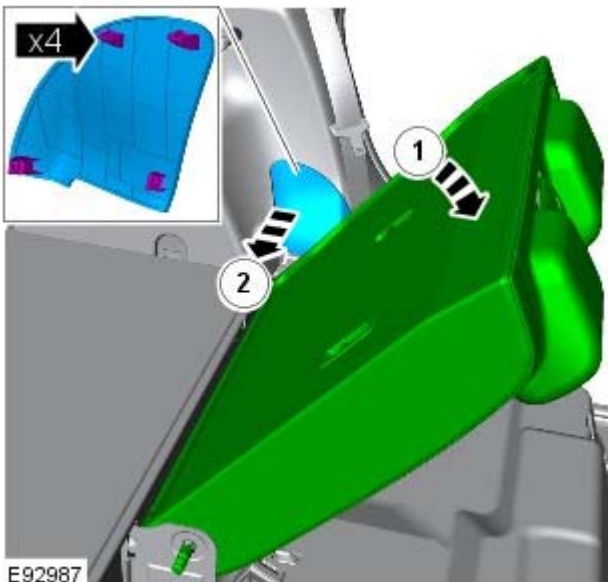


10.  **CAUTION:** Make sure that a webbing retainer is installed at least 200 mm towards the rear center safety belt retractor from the webbing stop.

Install the safety belt webbing retainer.

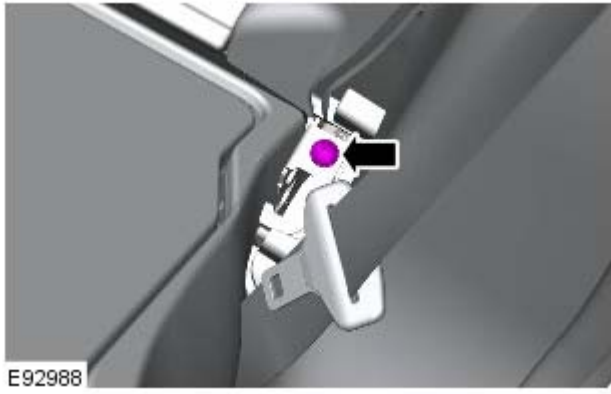


11. Remove the rear center safety belt lower anchor nut.

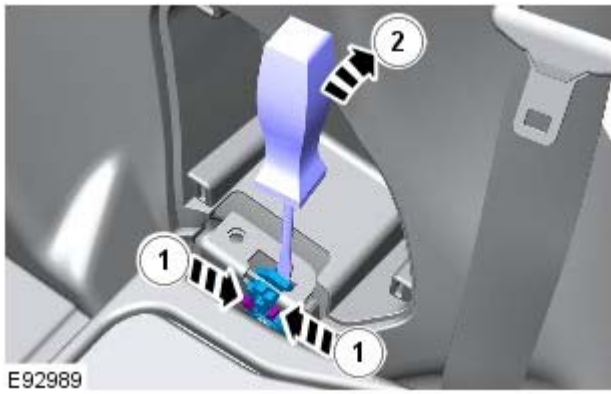


12.

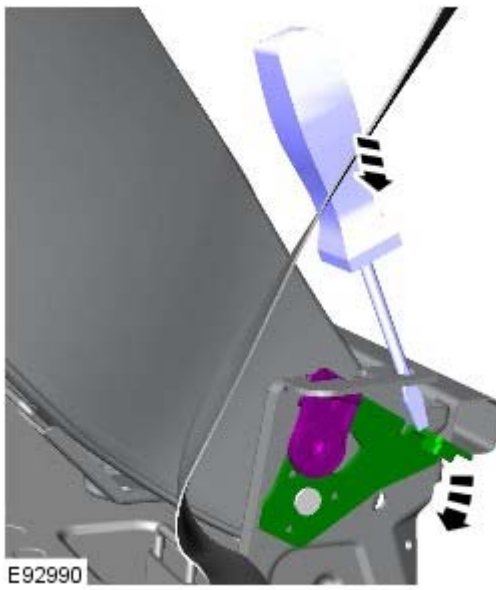




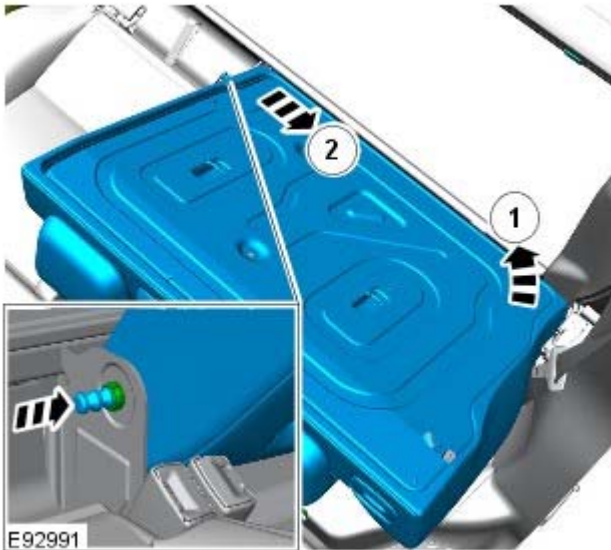
13.




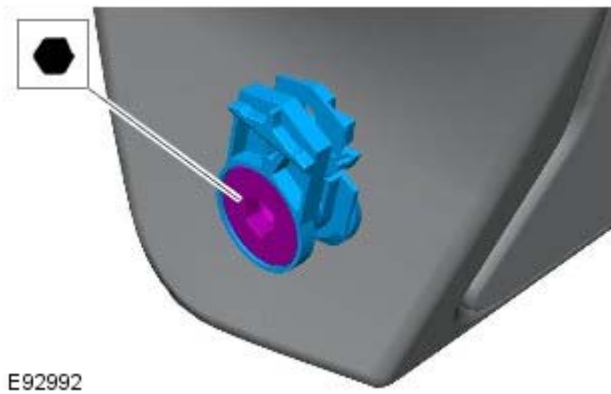
14. Release the LH rear seat backrest outer pivot pin bushing.



15. Using a screwdriver, release the outer pivot pin bushing locking arm.



16.  **CAUTION:** The left-hand rear seat backrest inner pivot pin has radial grooves. Take care not to damage the center hinge pivot bushing.
- Release the LH rear seat backrest outer pivot pin bushing from the mounting bracket.
  - Carefully slide the LH rear seat backrest inner pivot pin out of the center hinge pivot bushing.

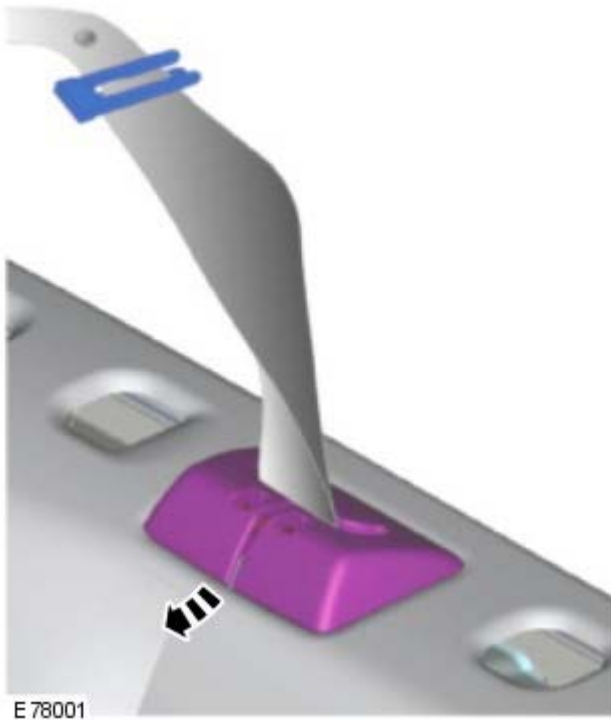


17. Remove and discard the LH rear seat backrest outer pivot pin bushing.



- 18.


19. Remove the center safety belt trim panel.



20. Remove the rear seat backrest release button trim panel.

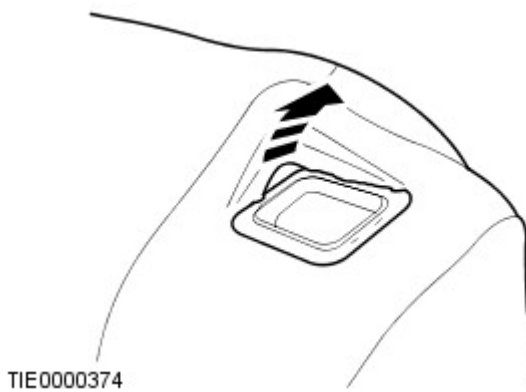




21.  **CAUTION:** Make sure that the head restraint guide tube locking tang is fully depressed before removal.
- Using a screwdriver, depress the locking tang.
  - Pull the guide tube upwards.
  - Remove and discard the head restraint guide tubes.

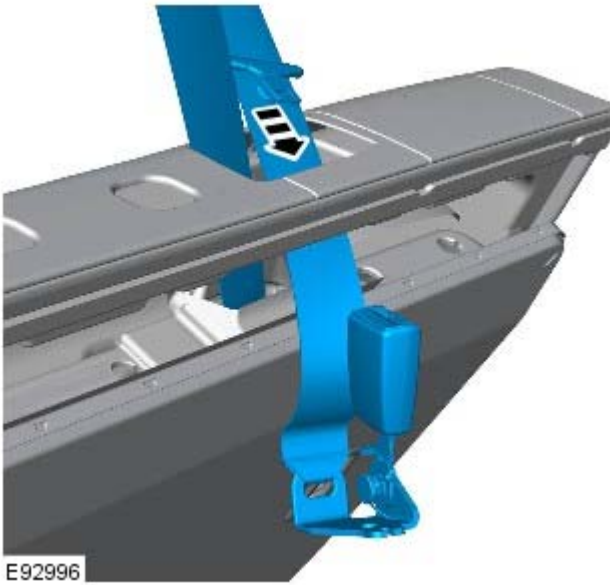


22. Release the rear seat backrest cover from the rear seat backrest frame.

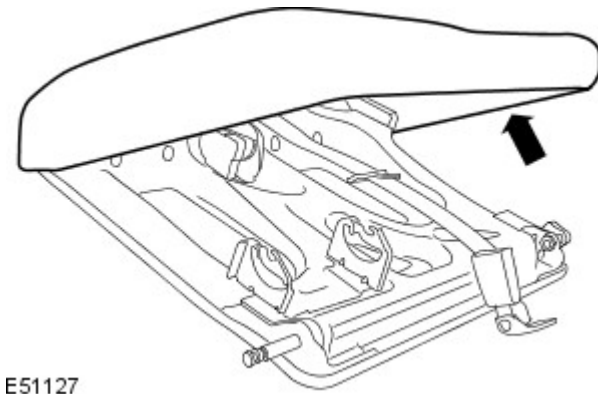


23. Release the rear seat backrest cover and pad assembly from the rear seat backrest release button.

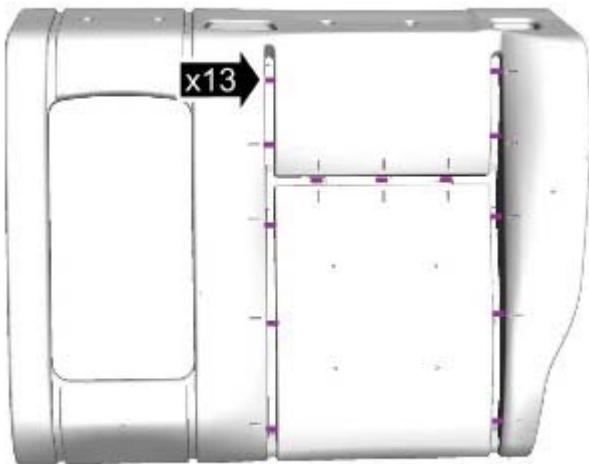
24. Release the rear center safety belt and lower anchor from the backrest cover.



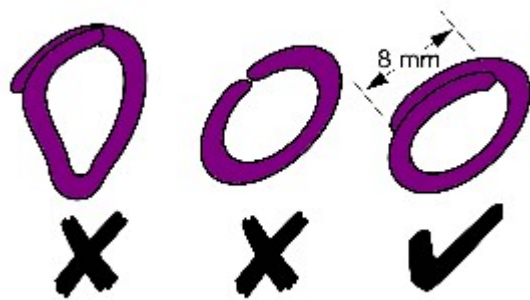
25. Remove the rear seat backrest cover and pad assembly.



26. Remove and discard the hog rings.



## Installation



V4001063

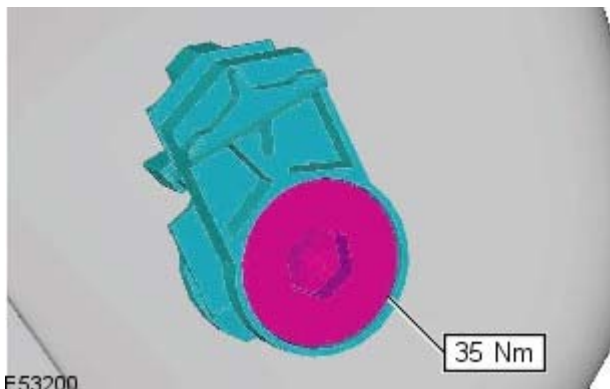
1. NOTE: If a replacement rear seat backrest cover is to be installed, cut out holes for the head restraint guide tubes and center safety belt trim panel. Use the existing rear seat backrest cover as a template. This also applies to the backrest squab foam.

NOTE: Use hog ring pliers to close the hog rings. Do not use any other tool. The hog rings must be closed to overlap as illustrated.

NOTE: Make sure that new hog rings are installed.

Using hog ring pliers, install the 13 hog rings.

2. Guide the rear center safety belt and lower anchor through the backrest cover.
3. Install the rear seat backrest cover and pad assembly.
4. Secure the rear seat backrest cover and pad assembly around the rear seat backrest release button.
5. Secure the rear seat backrest cover to the rear seat backrest frame.
6. Install new head restraint guide tubes.
7. Install the rear seat backrest release button trim panel.
8. Install the center safety belt trim panel.
9. Install the head restraints.



E53200

10. Install a new LH rear seat backrest outer pivot pin bushing.

Torque: 35 Nm

11. CAUTIONS: Install a new bolt to the outer pivot pin bushing locking arm.



Torque: 23 Nm

NOTE: The center hinge pivot bushing must be replaced if excessive damage or wear is present.

13. Install the LH rear quarter trim access panel.



NOTE: The left-hand rear seat backrest inner pivot pin has radial grooves. Take care not to damage the center hinge pivot bushing.


14. WARNING: Install the LH rear seat backrest inner pivot pin to the center hinge pivot bushing. Make sure that the safety belt anchor is correctly installed.



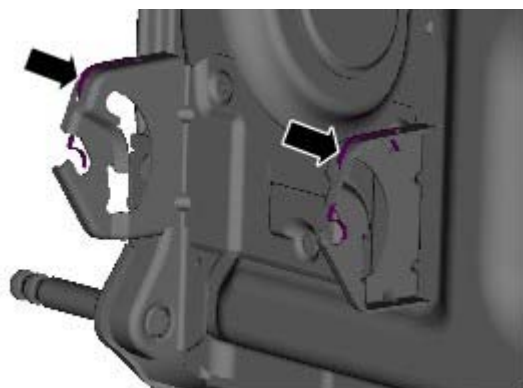
● Carefully lower the LH rear seat backrest outer pivot pin bushing into the safety belt anchor. Secure the bushing into the safety belt anchor.




*Torque: 40 Nm*

15.  **CAUTION:** Check for correct operation of the rear center safety belt retractor.

Remove the safety belt webbing retainer.



E51565

16.  **WARNING:** New armrest pivot bushing spring clips must be installed. Failure to follow this instruction may result in personal injury.

If installed with armrest, install new armrest pivot bushing spring clips.

17.

- Install 4 new fir tree clips to the armrest backing plate.
- Install the armrest backing plate.



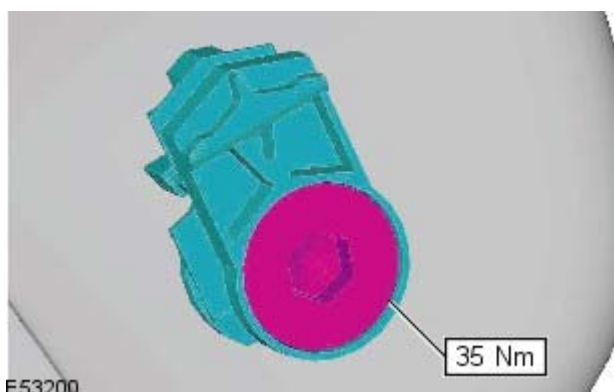
E51513

18. **NOTE:** Make sure that the armrest pivot bushing spring clips locate in the armrest pivot bushing grooves.

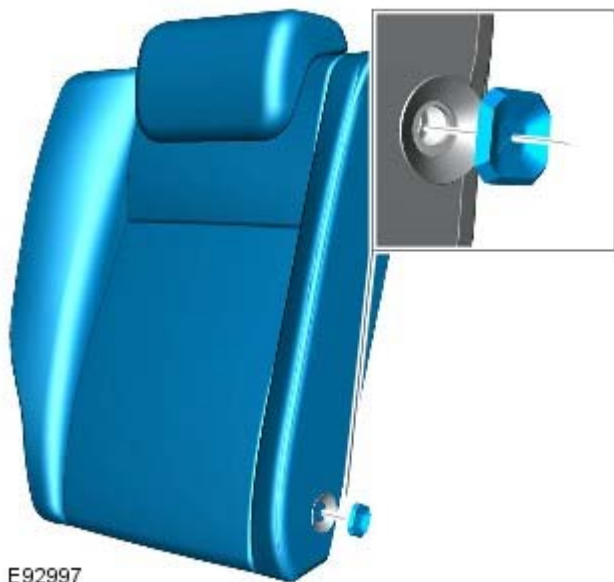
Install the armrest.

19. Install a new RH rear seat backrest outer pivot pin bushing.


*Torque: 35 Nm*



E53200




E92997

20.  **CAUTION:** If the existing right-hand rear seat backrest is to be installed, the condition of the inner pivot bushing must be checked and a service pad installed. If excessive damage is present to the inner pivot bushing the right-hand rear seat backrest frame must be replaced.

**NOTE:** This step is not necessary if a new right-hand rear seat backrest is to be installed.

Install the service pad to the RH rear seat backrest inner pivot bushing.

21.  **CAUTION:** The left-hand rear seat backrest inner pivot pin has radial grooves. When installing the RH backrest, take care not to damage the inner pivot bushing.
- Carefully guide the RH rear seat backrest inner pivot bushing onto the LH rear seat backrest inner pivot pin.
  - Carefully lower the RH rear seat backrest outer pivot pin bushing into the mounting bracket.

22. Install a new bolt to the outer pivot pin bushing locking arm.

*Torque:* 23 Nm

23. Install the RH rear quarter trim access panel.

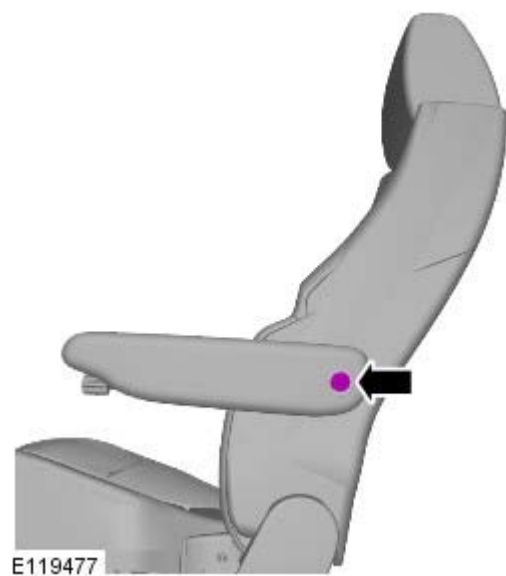
## Seating - Front Seat Armrest

Removal and Installation

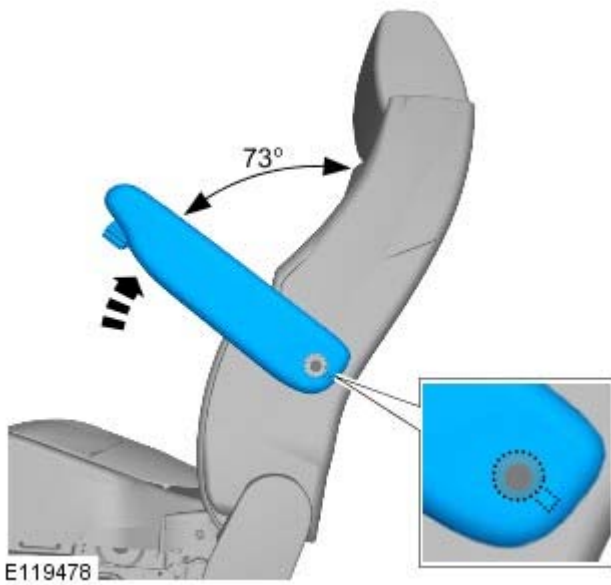
### Removal




1.
  - Remove the cover.

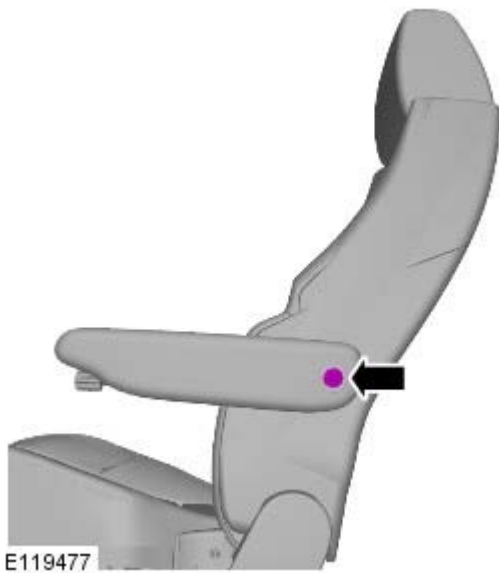


2.
  - Remove the Torx bolt.



3.  **CAUTION:** Make sure that the seat armrest slot is correctly aligned before removing the seat armrest. Failure to follow this instruction may result in damage to the vehicle.
  - Raise the seat armrest to the position shown.
  - Slide the seat armrest towards the centre of the vehicle.

## Installation



1.
  - To install, reverse the removal procedure.
  - Tighten the Torx bolt to 10 Nm (7 lb.ft).

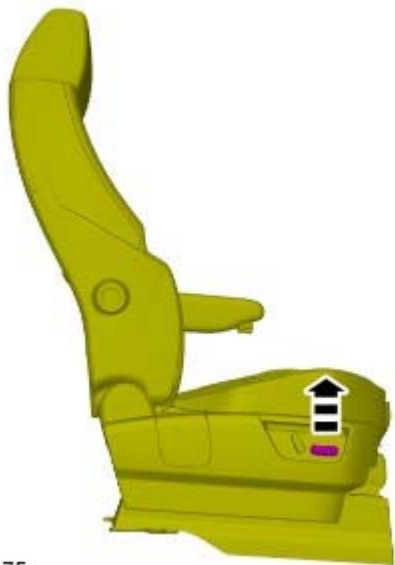
Published: 11-May-2011

## Seating - Front Seat Armrest

Removal and Installation

### Removal

1. Raise the seat base for access.



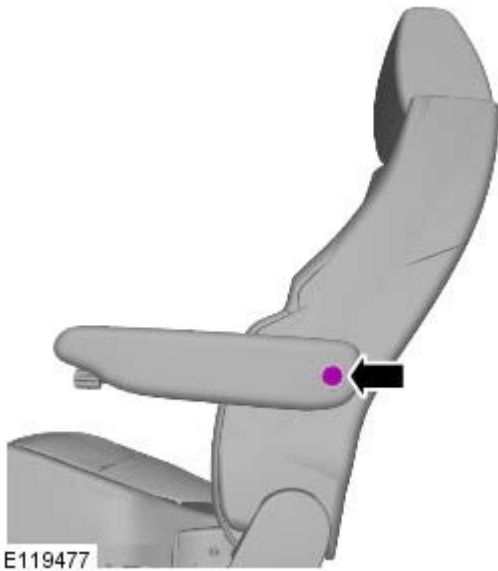
E119475


2. Remove the cover.



E119476

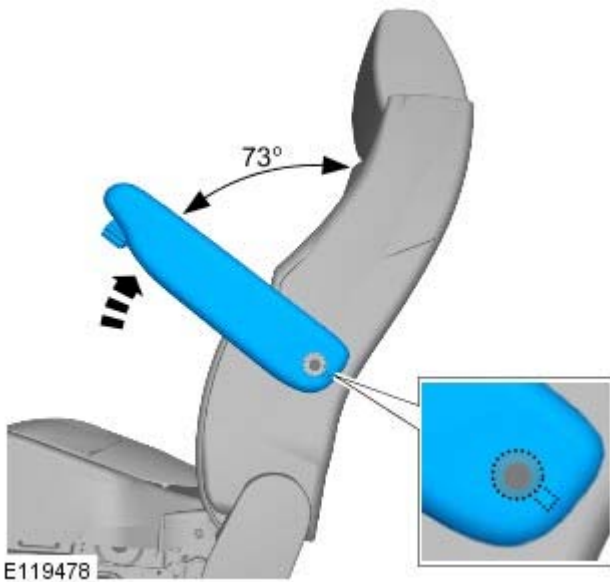
3. Remove the Torx bolt.



4.  **CAUTION:** Make sure that the seat armrest slot is correctly aligned before removing the seat armrest. Failure to follow this instruction may result in damage to the vehicle.

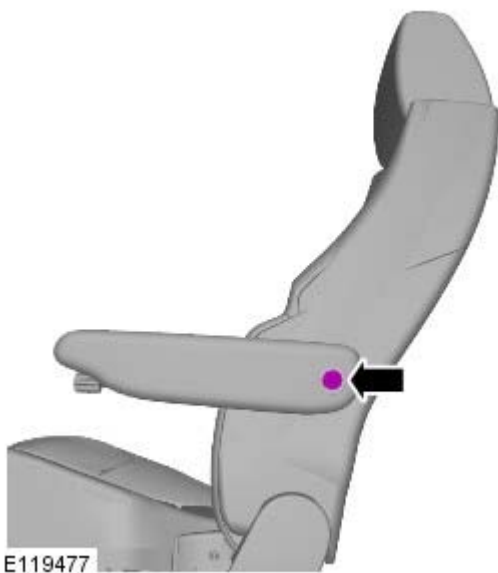
Remove the seat armrest.

- Raise the seat armrest to the position shown.
- Slide the seat armrest towards the centre of the vehicle.



## Installation

1. To install, reverse the removal procedure.
  - Tighten the Torx bolt to 10 Nm (7 lb.ft).







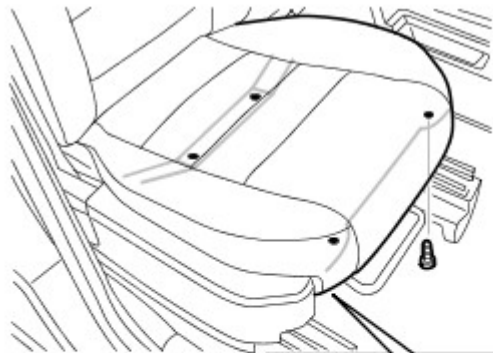
Published: 11-May-2011

## Seating - Front Seat Cushion

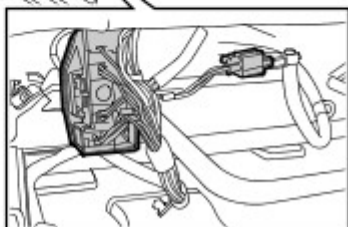
Removal and Installation

### Removal

**NOTE:** In this procedure the cushion is removed as an assembly. There is a separate procedure showing removal of the cushion cover.



1. Torque: 25 Nm



E55647

### Installation

1. To install, reverse the removal procedure.

## Seating - Front Seat Track

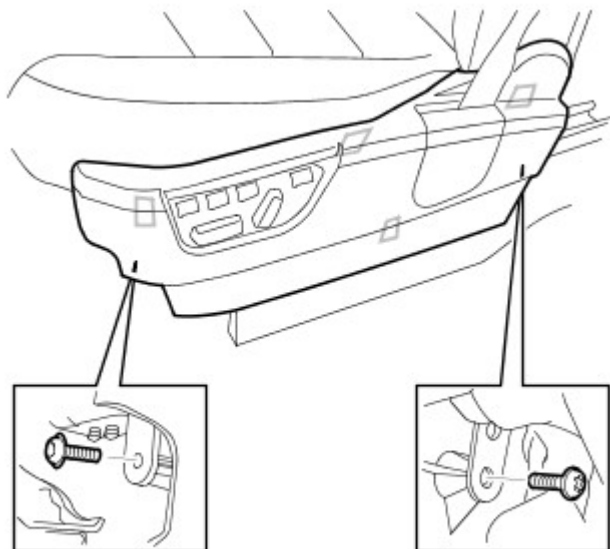
### Removal and Installation

#### Removal

**NOTE:** The front seat track motor is supplied as part of the front seat lower frame assembly.

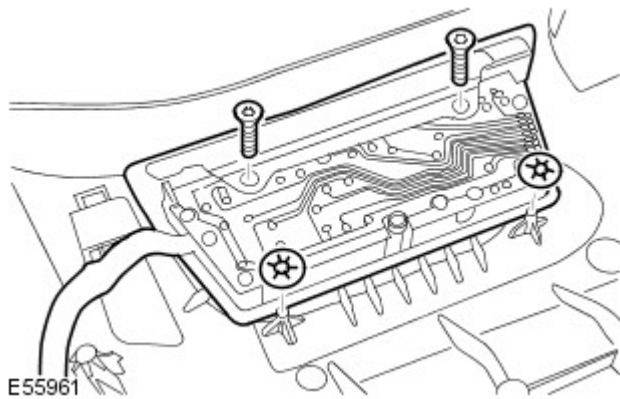
1. Remove the front seat.  
For additional information, refer to: [Front Seat](#) (501-10 Seating, Removal and Installation).

2.



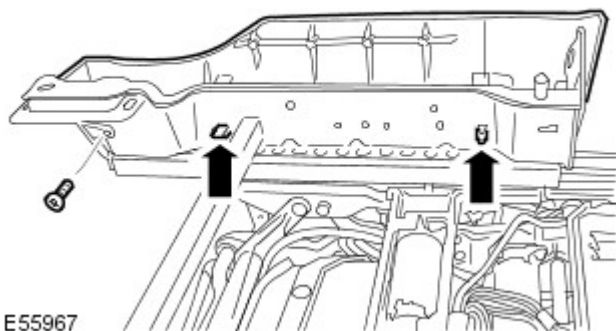
E56089

3. Release the seat control switch.



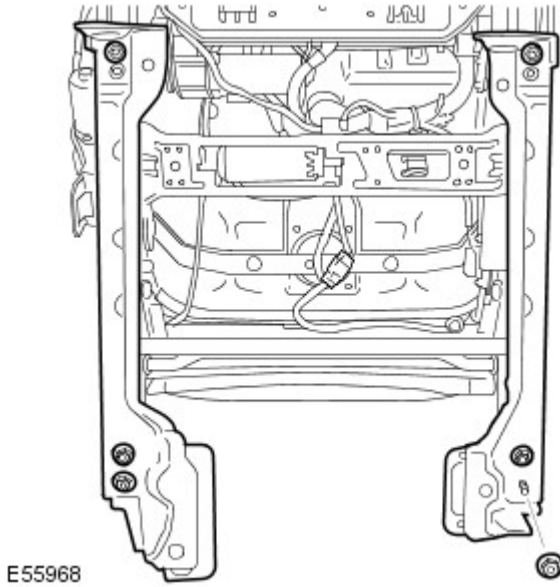
E55961

4.

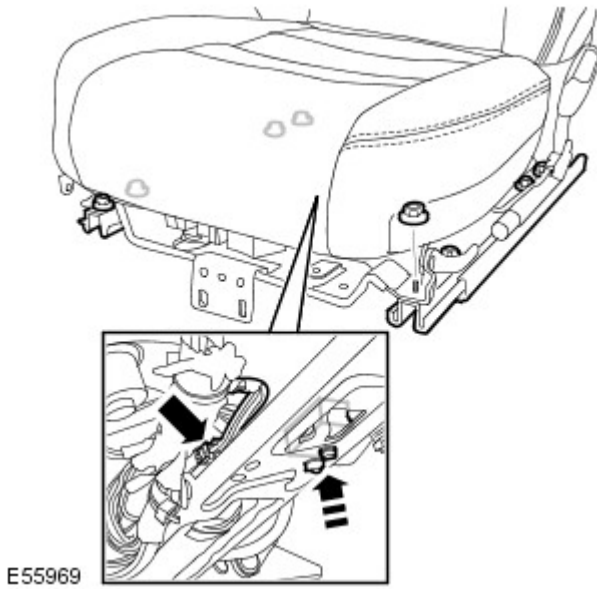


E55967

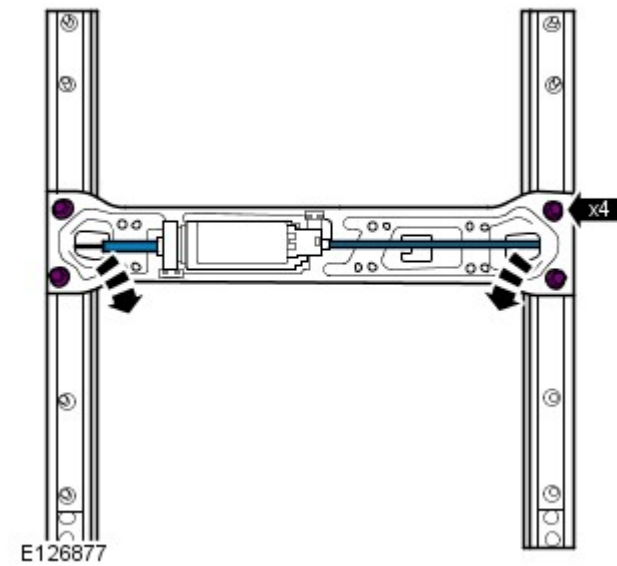
5. TORQUE: 25 Nm



6. TORQUE: 25 Nm



7. TORQUE: 10 Nm

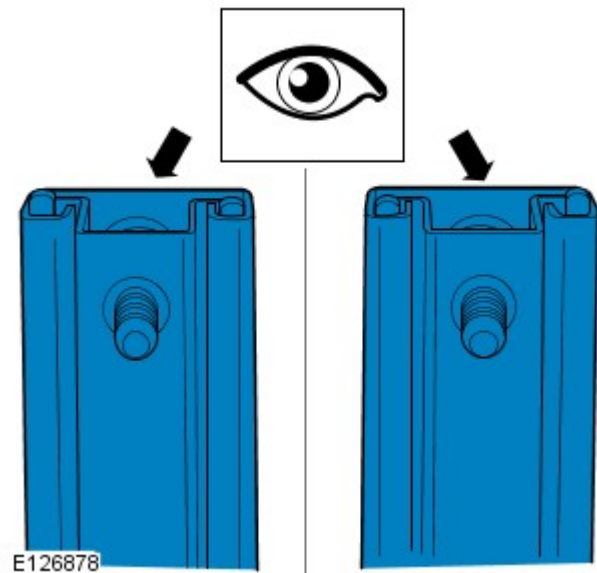




8. NOTE: Do not disassemble further if the component is removed for access only.

## Installation

- 1.



2. To install, reverse the removal procedure.

Published: 11-May-2011

## Seating - Front Seat Track Motor

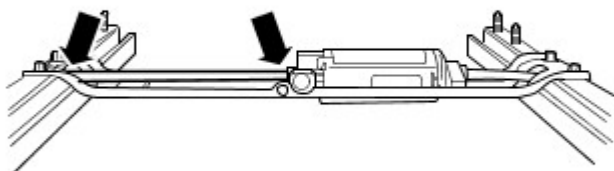
Removal and Installation

### Removal

1. Raise the seat base for access.

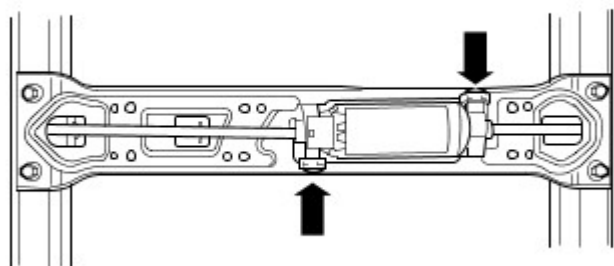
2.

- Remove the drive cable.
- Disconnect the seat motor electrical connector.



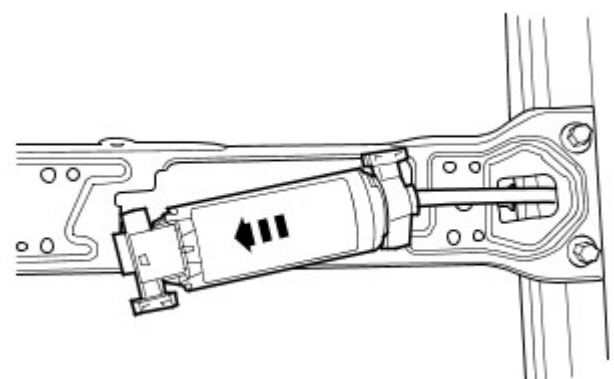
E131397

3. Remove the 2 clips.



E131398

4. Remove the front seat track motor.



E131399

### Installation

1.

- Install the front seat track motor.
- Install the drive cable.
- Install the 2 clips.

2.

- Install the drive cable.

- Connect the seat motor electrical connector.

## Seating - Front Seat Tilt Motor

Removal and Installation

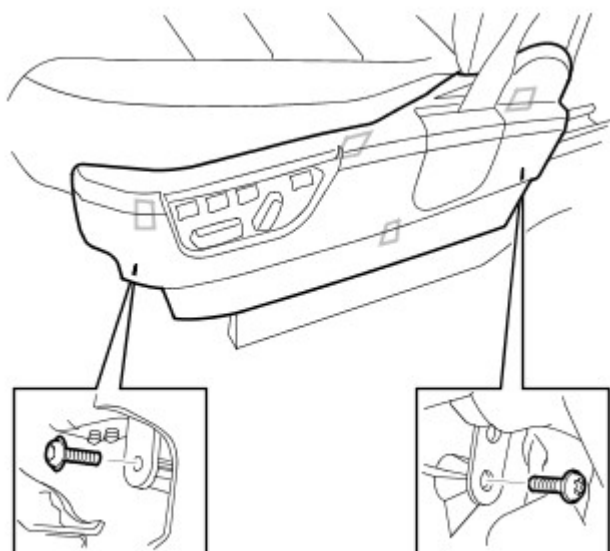
### Removal

**NOTE:** Removal steps in this procedure may contain installation details.

1. Remove the front seat.

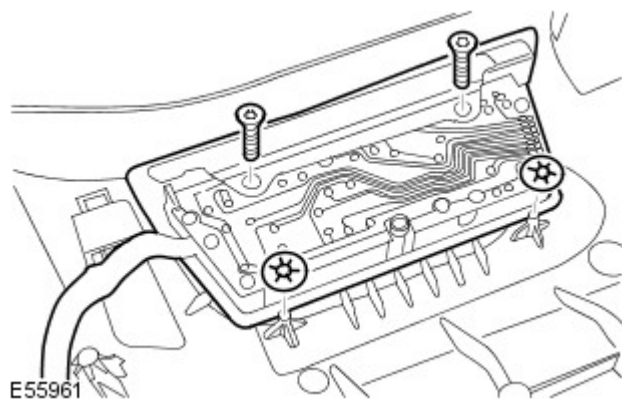
Refer to: [Front Seat](#) (501-10 Seating, Removal and Installation).

- 2.



E56089

- 3.



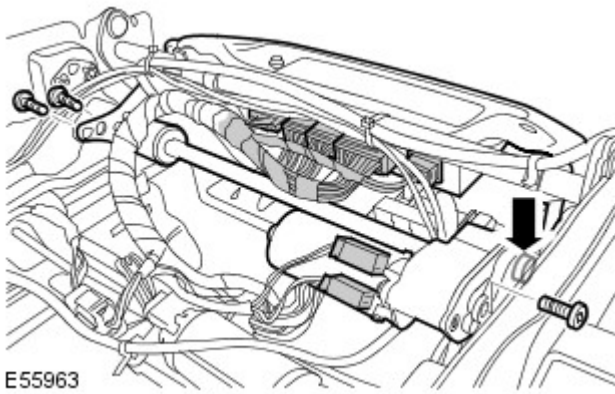
E55961

4. Remove the front seat cushion assembly.

Refer to: [Front Seat Cushion](#) (501-10 Seating, Removal and Installation).

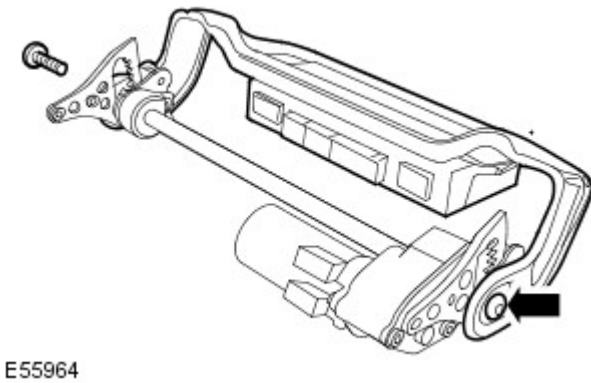


5. *Torque:* 10 Nm



6. *NOTE:* Do not disassemble further if the component is removed for access only.

*Torque:* 10 Nm



## Installation

1. To install, reverse the removal procedure.

## Seating - Front Seat Recliner Motor

### Removal and Installation

#### Removal

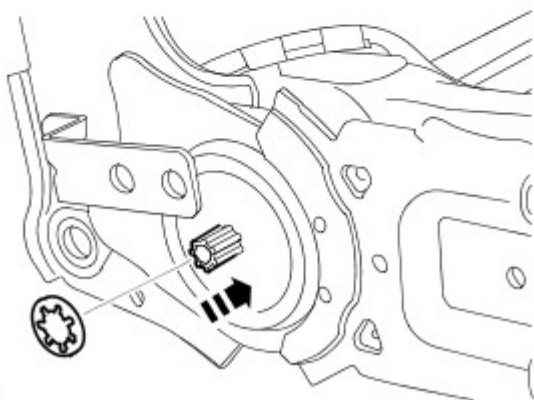
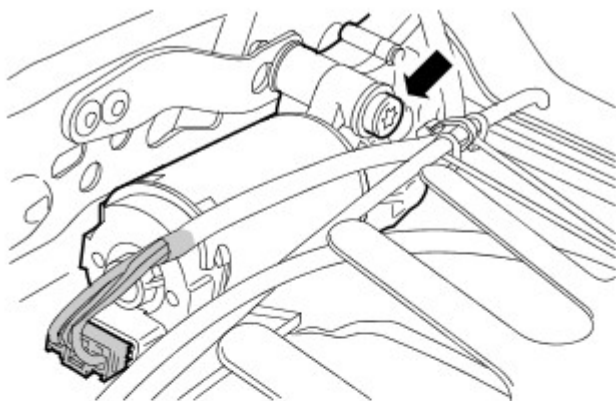
**NOTE:** Removal steps in this procedure may contain installation details.

1. Remove the front seat backrest cover.

Refer to: [Front Seat Backrest Cover](#) (501-10 Seating, Removal and Installation).

2. Remove the front seat backrest pad.

3. Torque: 10 Nm



E77412

#### Installation

1. To install, reverse the removal procedure.

## Seating - Front Seat Height Adjustment Motor

### Removal and Installation

#### Removal

NOTE: Front seat height adjustment motor is supplied as part of the front seat frame assembly.

NOTE: Removal steps in this procedure may contain installation details.

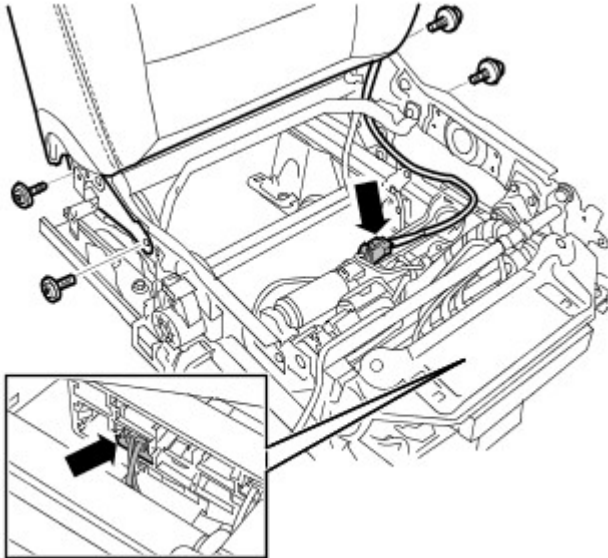
1. Remove the front safety belt buckle.

Refer to: [Front Safety Belt Buckle](#) (501-20A Safety Belt System, Removal and Installation).

2. Remove the front seat cushion assembly.

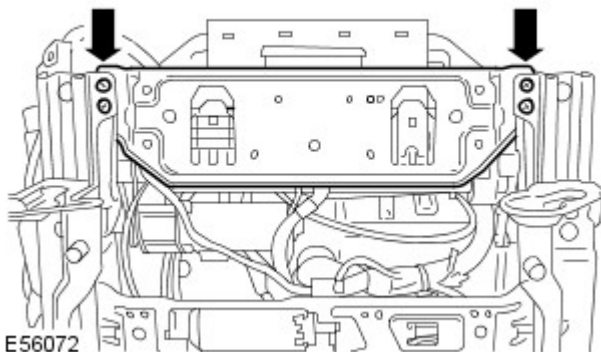
Refer to: [Front Seat Cushion](#) (501-10 Seating, Removal and Installation).

3. Torque: 25 Nm

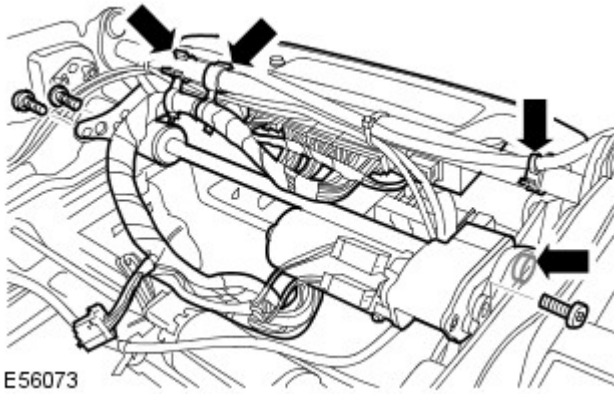


E56071

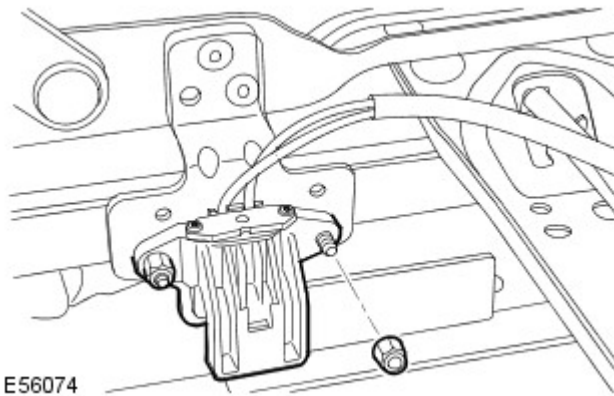
- 4.



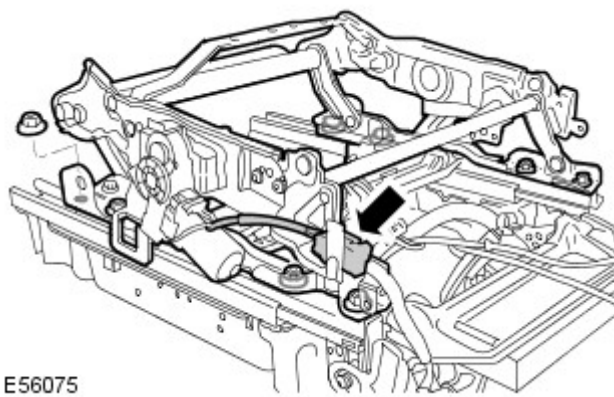
E56072



5. Torque: 10 Nm



6. Torque: 4 Nm



7. Torque: 25 Nm

## Installation

1. To install, reverse the removal procedure.

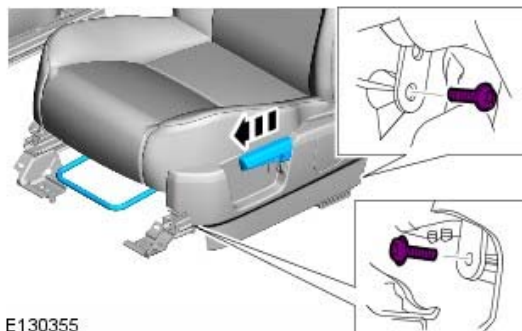
## Seating - Front Seat Manual Height Adjustment Lever

### Removal and Installation

#### Removal

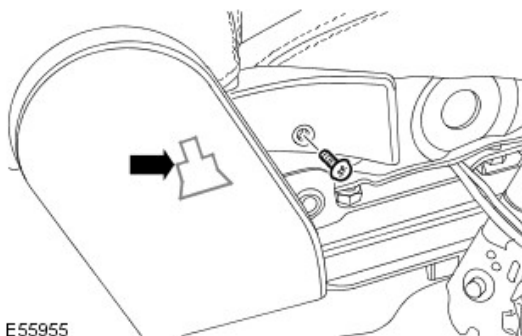
1. Remove the drivers side seat slides.  
For additional information, refer to: [Front Seat Track](#) (501-10 Seating, Removal and Installation).
2. Remove the front seat cushion base.  
For additional information, refer to: [Front Seat Cushion](#) (501-10 Seating, Removal and Installation).

3.



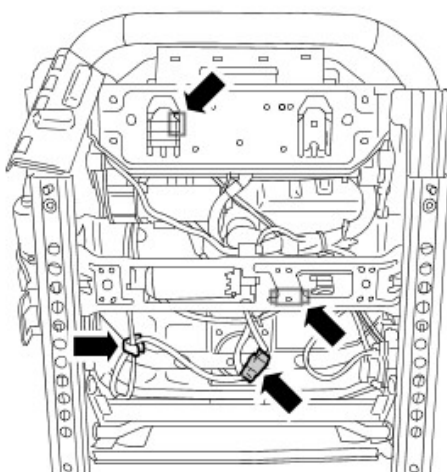
E130355

4.



E55955

5. TORQUE: 25 Nm



E55956

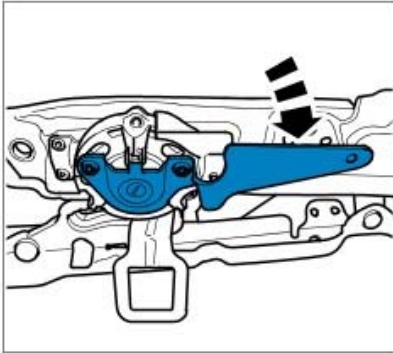
6. **CAUTIONS:**

**!** Tie straps must be fitted, failure to follow this instruction may result in personal injury.

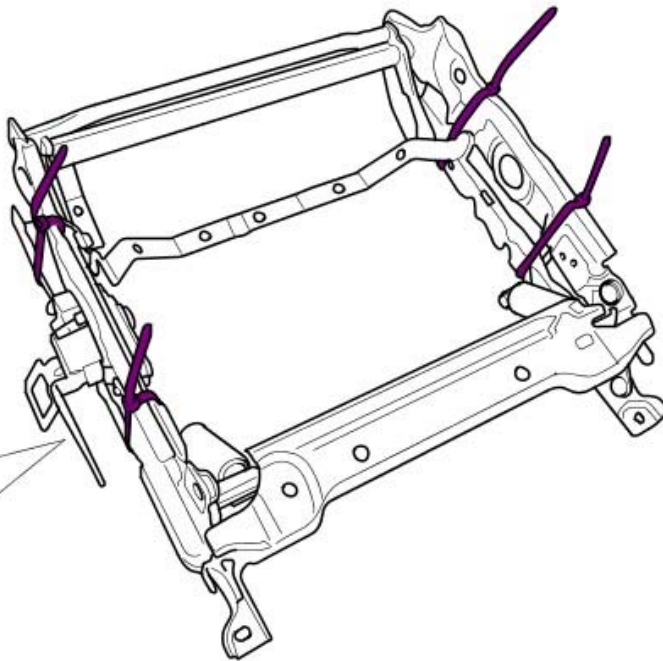
**!** Failure to follow this instruction may cause damage to the vehicle.

Secure the seat base using the 4 tie straps supplied, as shown.

- Using the seat height adjuster, lower the seat base to its lowest position.

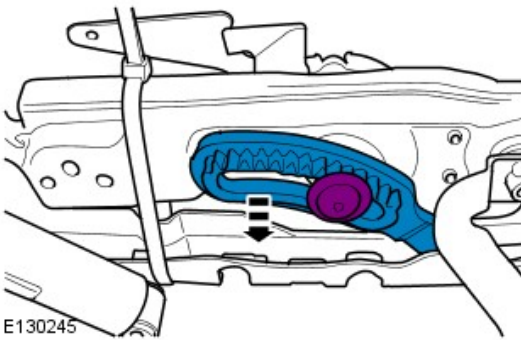


E130243



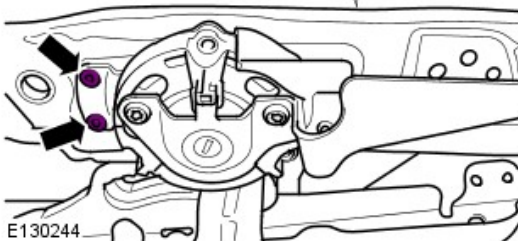
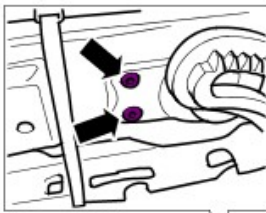
7. Release the arm from the height adjuster.

- Remove the Torx bolt.



E130245

8. Drill out the 4 rivets.



E130244

**Installation**

1. To install, reverse the removal procedure.

Published: 11-May-2011

## Seating - Front Seat Cushion Cover

Removal and Installation

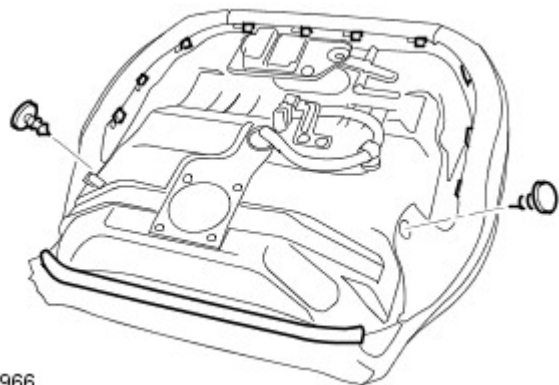
### Removal

NOTE: Removal steps in this procedure may contain installation details.

1. Remove the front seat cushion assembly.

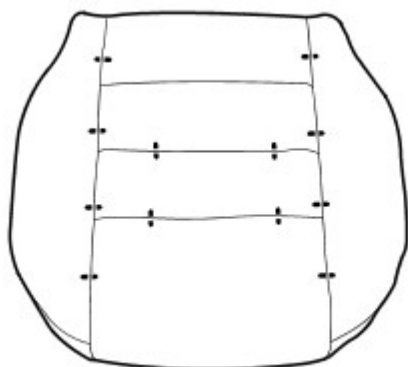
Refer to: [Front Seat Cushion](#) (501-10 Seating, Removal and Installation).

2.



E55966

3.



E56020

### Installation

1. To install, reverse the removal procedure.



Published: 11-May-2011

## Seating - Rear Seat Cushion Cover

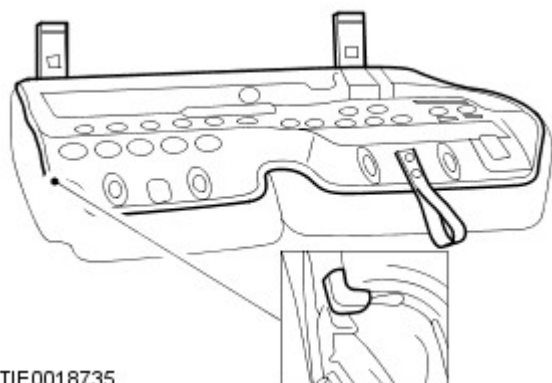
Removal and Installation

### Removal

NOTE: LH rear seat cushion cover shown, RH similar.

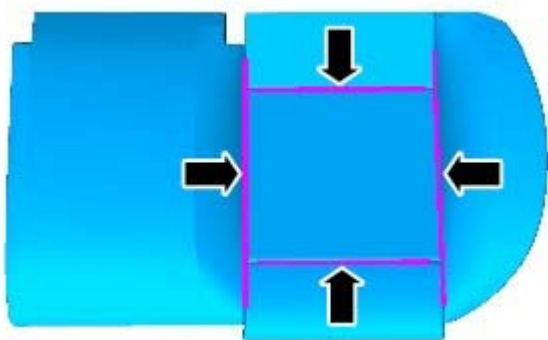
NOTE: Removal steps in this procedure may contain installation details.

1.



TIE0018735

2.



E65707

### Installation

1. To install, reverse the removal procedure.

Published: 11-May-2011

## Seating - Front Seat Backrest Heater Mat

Removal and Installation

### Removal

**NOTE:** Removal steps in this procedure may contain installation details.

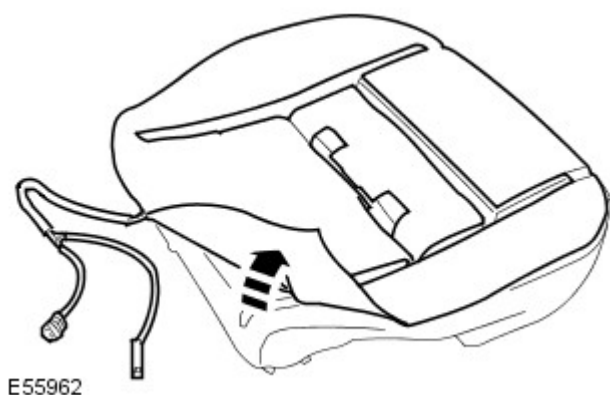
1. Disconnect the battery ground cable.

Refer to: [Specifications](#) (414-00 Battery and Charging System - General Information, Specifications).

2. Remove the front seat backrest cover.

Refer to: [Front Seat Backrest Cover](#) (501-10 Seating, Removal and Installation).

- 3.



### Installation

1. To install, reverse the removal procedure.

Published: 11-May-2011

## Seating - Front Seat Cushion Heater Mat

Removal and Installation

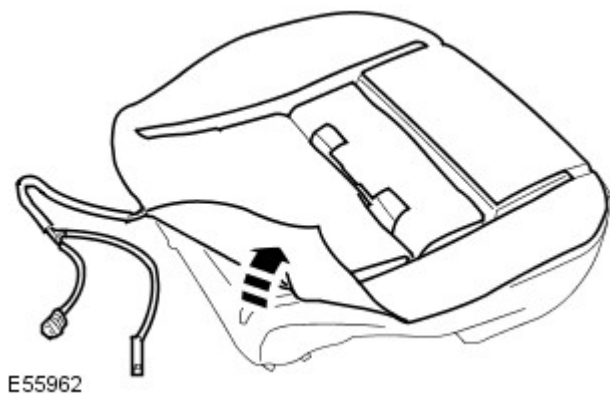
### Removal

**NOTE:** Removal steps in this procedure may contain installation details.

1. Remove the front seat cushion cover.

Refer to: [Front Seat Cushion Cover](#) (501-10 Seating, Removal and Installation).

- 2.



### Installation

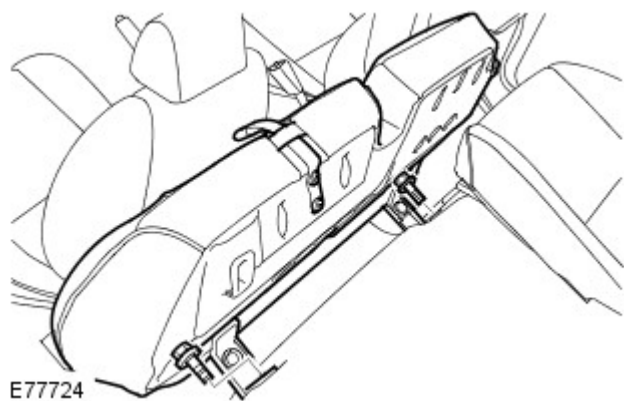
1. To install, reverse the removal procedure.

Published: 11-May-2011

## Seating - Rear Seat Cushion

Removal and Installation

### Removal



1. Torque: 25 Nm

### Installation

1. To install, reverse the removal procedure.

## Seating - Lumbar Assembly

### Removal and Installation

#### Removal

1. Disconnect the battery ground cable.

Refer to: [Specifications](#) (414-00 Battery and Charging System - General Information, Specifications).

2. Make the SRS system safe.

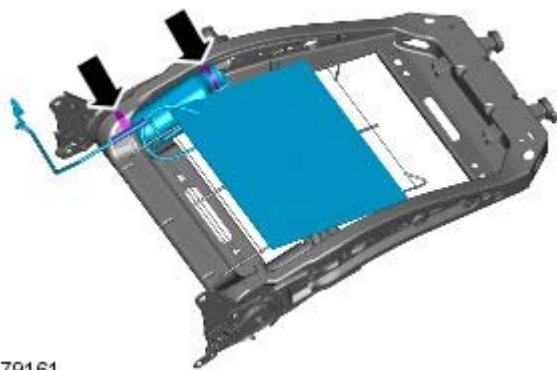
Refer to: Supplemental Restraint System (SRS) Depowering and Repowering (501-20, General Procedures).

3. Remove the front seat backrest cover.

Refer to: [Front Seat Backrest Cover](#) (501-10 Seating, Removal and Installation).

4. Remove the front seat backrest pad.

- 5.



E79161

#### Installation

1. To install, reverse the removal procedure.