

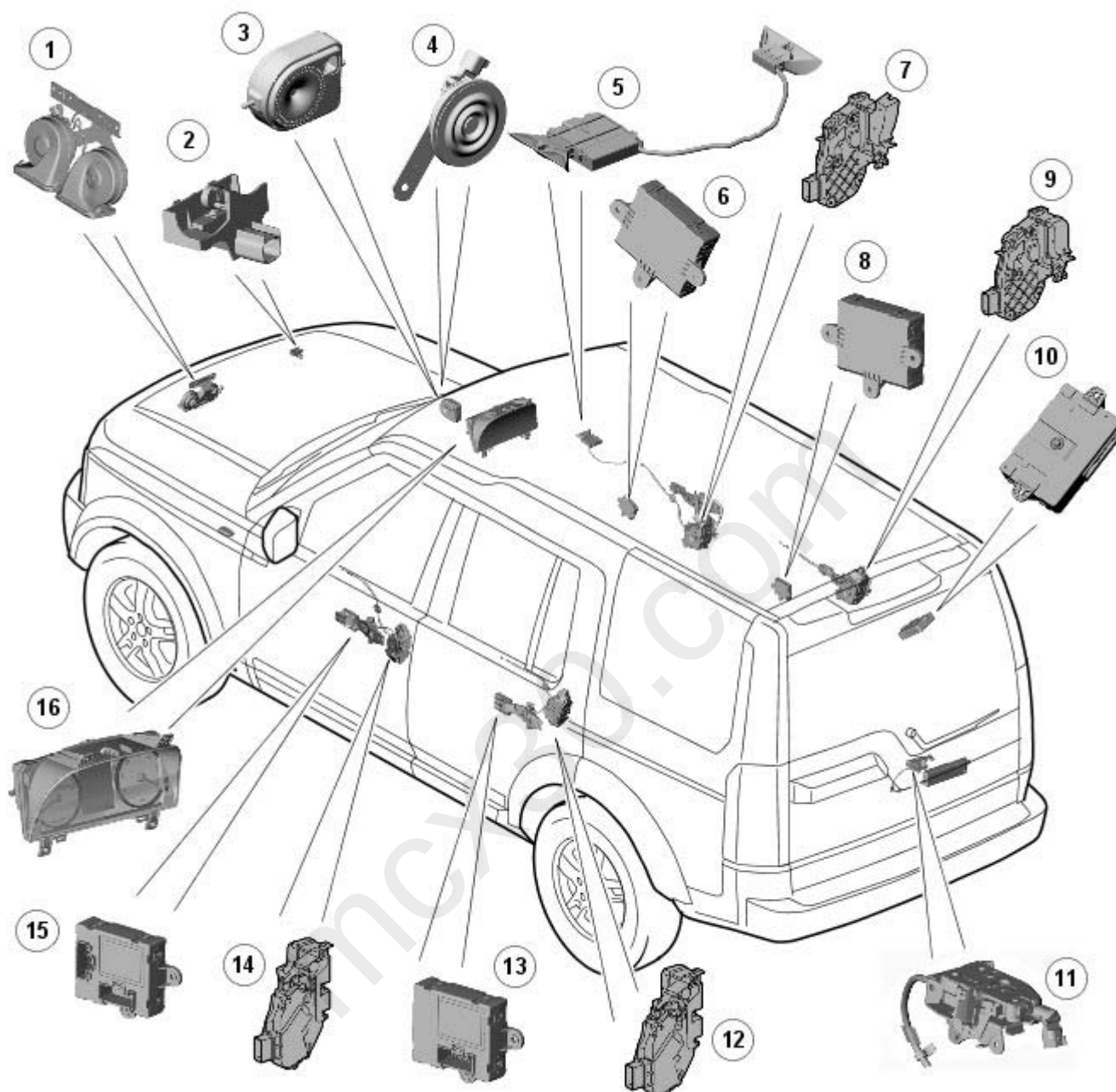
Anti-Theft - Active -**Torque Specifications**

Description	Nm	lb-ft
RH Hood latch Torx bolts	10	7
Security antenna	6	4

Anti-Theft - Active - Anti-Theft - Active

Description and Operation

COMPONENT LOCATION



E129744

Item	Part Number	Description
1	-	Horns
2	-	Hood ajar switch
3	-	Battery backed-up sounder and inclination sensor (if fitted)
4	-	Passive sounder (if fitted)
5	-	Interior motion sensor
6	-	Driver door module
7	-	Driver door latch
8	-	Rear door module
9	-	Rear door latch
10	-	Keyless vehicle module
11	-	Upper tailgate latch
12	-	Rear door latch
13	-	Rear door module
14	-	Passenger door latch
15	-	Passenger door module
16	-	Instrument cluster

OVERVIEW

The active anti-theft system is available with three different levels of vehicle protection depending on market specification:

- Hinged panel sensing
- Hinged panel and intrusion sensing
- Hinged panel, intrusion and inclination sensing.

The system is controlled by software in the [CJB \(central junction box\)](#) which indicates an alarm trigger condition:

- Visually, using the direction indicators.
- Audibly, using the vehicle horn and, depending on market specification, either a passive or active sounder.

The passive sounder is an anti-theft disc horn and the active sounder is a BBUS (battery backed-up sounder).

The BBUS is an intelligent unit which communicates to the [CJB](#) over a [LIN \(local interconnect network\)](#) connection. The BBUS is fitted with an inclination sensor.

Monitoring of the hinged panels is carried out using switches located in each door latch assembly, the hood latch assembly, and the tailgate latch assembly. The condition of the switches is monitored by the [CJB](#).

Monitoring of front door lock status is carried out using switches located in the door latch mechanisms. The condition of the switches is monitored by the front door modules and transmitted to the [CJB](#) over the medium-speed [CAN \(controller area network\)](#).

Monitoring of the cabin interior is carried out using an interior motion sensor, which comprises an ultrasonic sound wave sensor to determine if there is movement within the cabin. Information from the interior motion sensor is communicated to the [CJB](#) over a [LIN](#) connection.

When armed, the active anti-theft system can be triggered in one of the following ways:

- A door ajar switch indicates a door is open.
- The hood or upper tailgate ajar switches indicate that either is open.
- Either front door latch mechanism indicates a door has been unlocked.
- The emergency key blade is used to open the [LH \(left-hand\)](#) front door.
- The [CJB](#) is disconnected (this may result in only a partial trigger).
- An attempt is made to start the engine without a valid signal from the Smart Key.
- The BBUS is disconnected (partial trigger only).
- The vehicle battery is disconnected on a vehicle fitted with a BBUS (partial trigger only).
- The inclination sensor detects a change in vehicle attitude.
- The interior motion sensor detects movement within the cabin.
- Panic alarm from the Smart Key.

• CAUTIONS:



The interior motion sensor electrical connections, particularly those to the sensors mounted in the roof console, are very delicate and must be handled with care.



The interior motion sensor is an electro-statically sensitive part and should only be handled in an electro-statically controlled environment.

Alarm Indicator

The alarm indicator is a [LED \(light emitting diode\)](#) located in the instrument cluster, operation of the alarm indicator is controlled by a hardwired input the [CJB](#). When the ignition is off the indicator gives a visual indication of the active anti-theft system to show if the alarm system is active or not active.

The alarm [LED](#) will begin to flash once every 2 seconds to indicate that the vehicle alarm is armed.

Door Modules

The door modules provide the interface between the door latch-motors, the door latch-switches and the [CJB](#). The door modules provide door switch status information and enable the door latch-motors on request from the [CJB](#) or the keyless vehicle module.

Keyless Vehicle Module

The Keyless Vehicle Module interfaces with the Central locking, RF (radio frequency) receiver and collects RF signal information which is transmitted from the Smart Key. This information is translated into commands which are passed on the medium-speed [CAN](#) to the:

- [CJB](#),
- front door modules, and
- instrument cluster.

The keyless vehicle module also monitors:

- four interior antennas,
- two load-space antennas,
- four door handle antennas and one rear bumper antenna, if passive entry is fitted.

On vehicles with passive entry, the additional fast latch motors are controlled via the keyless vehicle module and the locking status is passed to the [CJB](#) on the medium speed [CAN](#).

Passive Anti-Theft Horn

The passive anti-theft horn is hardwired to the [CJB](#) and activates when the alarm is triggered.

Battery Backed-Up Sounder (BBUS)

The BBUS uses an integral sounder to produce an audio warning when the alarm is triggered. An inclination sensor is incorporated into the BBUS, to monitor vehicle attitude, see Inclination Sensor.

Operation of the BBUS is controlled by the [CJB](#) via exchange signals on the [LIN](#). Under normal operation the BBUS is powered by a permanent battery power supply from the [CJB](#). However, if the power feed is disrupted an integral rechargeable battery powers the BBUS.

On receipt of the arming signals, the BBUS sounder and the inclination sensor respond with a status signal. If there is no response to the arming signals within 12 seconds, the [CJB](#) assumes there is a fault and sends a disarm signal to the sounder or the inclination sensor, as appropriate. The [CJB](#) also stores a related fault code.

If the alarm is subsequently triggered, with the BBUS sounder disarmed, the [CJB](#) uses the passive anti-theft horn or vehicle horn to sound the audio warning.

Inclination Sensor

The inclination sensor measures the longitudinal and lateral angle of the vehicle over a range of $\pm 16^\circ$ from the horizontal. When the anti-theft alarm system is armed in the intrusion detection mode, the BBUS stores the current angles in memory and monitors the inclination sensor readings. If the vehicle attitude changes in either direction by more than the alarm limit, the BBUS activates the sounder.

Interior Motion Sensor

When the vehicle is double locked, the interior motion sensor monitors for movement in the vehicle's cabin.

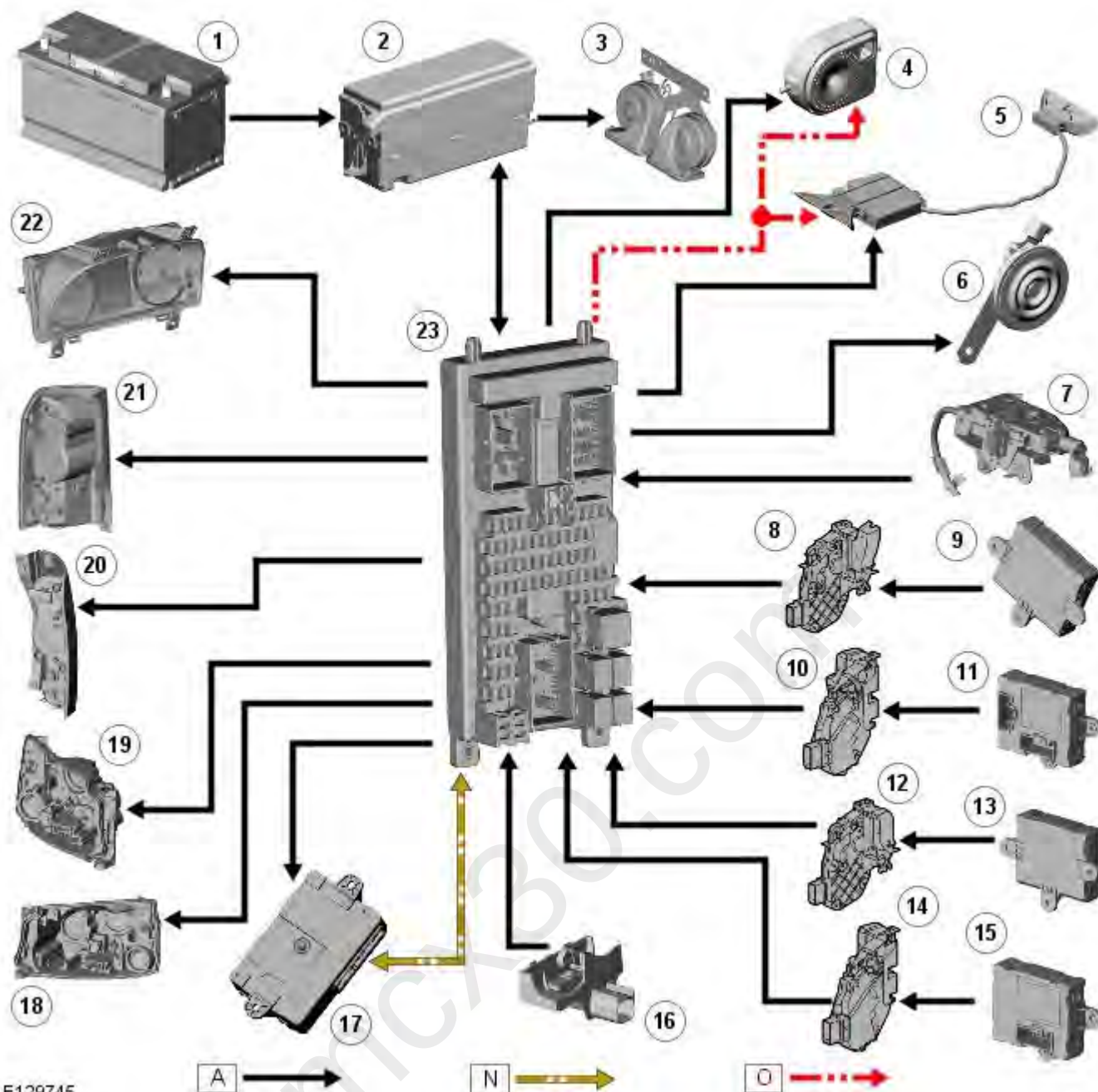
The interior motion sensor consists of a micro-controller, two acoustic transmitters and one acoustic receiver. The receiver and one of the transmitters face forward and the other transmitter faces rearward to ensure complete coverage of the vehicle's cabin.

The interior motion sensor is powered by a feed from the [CJB](#) and activates and de-activates the interior motion sensor. When the interior motion sensor is active it outputs ultrasonic pulses from the transmitters and checks the echoes picked up by the receiver for changes to the passenger compartment profile. If it detects a change of profile, indicating movement in the passenger compartment, the interior motion sensor reports the alarm to the [CJB](#).

Each time the interior motion sensor is armed, it performs a self test. If there are no faults the interior motion sensor sends an acknowledgment signal to the [CJB](#). If the [CJB](#) does not receive the acknowledgment signal it de-activates the interior motion sensor.

CONTROL DIAGRAM

- NOTE: **A** = Hardwired; **N** = Medium Speed CAN Bus; **O** = LIN Bus



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Item	Part Number	Description
1	-	Battery
2	-	Engine junction box
3	-	Horns
4	-	Battery backed-up sounder with integrated inclination sensor (if fitted)
5	-	Interior motion sensor
6	-	Passive sounder (if fitted)
7	-	Upper tailgate latch
8	-	Driver door latch
9	-	Driver door module
10	-	Passenger door latch
11	-	Passenger door module
12	-	Rear door latch
13	-	Rear door module
14	-	Rear door latch
15	-	Rear door module
16	-	Hood ajar switch
17	-	Keyless vehicle module
18	-	Left-hand front lamp (indicator)
19	-	Right-hand front lamp (indicator)
20	-	Left-hand tail lamp (indicator)
21	-	Right-hand tail lamp (indicator)
22	-	Instrument cluster
23	-	CJB

PRINCIPLES OF OPERATION

The active anti-theft system arms and disarms in conjunction with the locking and unlocking of the central locking system. For additional information, refer to: [Handles, Locks, Latches and Entry Systems](#) (501-14 Handles, Locks, Latches and Entry Systems, Description and Operation).

Depending on the configuration of the [CJB](#), the active anti-theft system can be armed and disarmed when the locking system is activated with the Smart Key. Visual and audible confirmation of the arming and disarming is provided by the direction indicators and the BBUS.

On vehicles not fitted with the interior motion sensor and BBUS, the anti-theft alarm system is armed in the perimeter mode when the vehicle is either single or double locked.

On vehicles with the interior motion sensor the anti-theft alarm system is armed in one of two modes:

- Single Locking: only the hinged panels are monitored.
- Double Locking: the hinged panels the vehicle interior, and if the BBUS is incorporated the vehicle attitude, are monitored.

When the vehicle is double-locked, the [CJB](#) sends an arming signal to the BBUS and interior motion sensor. If the [CJB](#) does not receive an acknowledgment signal from the BBUS and the interior motion sensor, the [CJB](#) disables the associated alarm feature for the remainder of the armed cycle.

Locking and Arming the Vehicle

• **NOTE:** The vehicle will only lock, if all door, tailgate and hood apertures are closed. If a lock attempt is made when an aperture is open, the vehicle will not lock and two audible error warnings will sound.

Single locking:

- Pressing the lock button briefly on either the door handle or Smart Key, will initiate the [CJB](#) to arm the anti-theft alarm system in the perimeter mode and send an arming signal to the sounder in the BBUS. This secures the vehicle and prevents the doors being opened from outside of the vehicle; however they can still be unlocked and opened from inside the vehicle. The hazard warning lamps will flash once as confirmation and 'if enabled' an audible warning will also sound. The alarm indicator in the instrument cluster will flash continuously.

Double locking:

- Pressing the lock button twice within three seconds on either the door handle or Smart Key, will initiate the [CJB](#) to arm the anti-theft alarm system in the perimeter mode and interior motion detection mode. The [CJB](#) will also send an arming signal to the BBUS. Double locking secures the vehicle and prevents the doors being unlocked or opened from inside or outside of the vehicle, except with a recognized Smart Key. The perimeter alarm and interior motion protection are turned on. The hazard warning lamps will flash twice, with a long second flash as confirmation and if enabled an audible warning will also sound.
- The vehicle set-up menu in the message center allows the intrusion detection and inclination protection to be temporarily disabled the next time the vehicle is locked using the Smart Key. This feature prevents accidental triggering of the active anti-theft system during transportation of the vehicle or if a pet is left in the vehicle. The sensor override functionality will be active for one lock/unlock cycle only and will default back to sensor active mode automatically.

Emergency Disarming

If the alarm has been triggered and cannot be disarmed with the Smart Key, it can be disarmed using the emergency Smart Key blade. This is achieved by unlocking the left-hand front door with the key blade and deactivating the alarm by:

- pressing the unlock button on the Smart Key, or by
- pressing the engine START/STOP button with the Smart Key inside the vehicle.

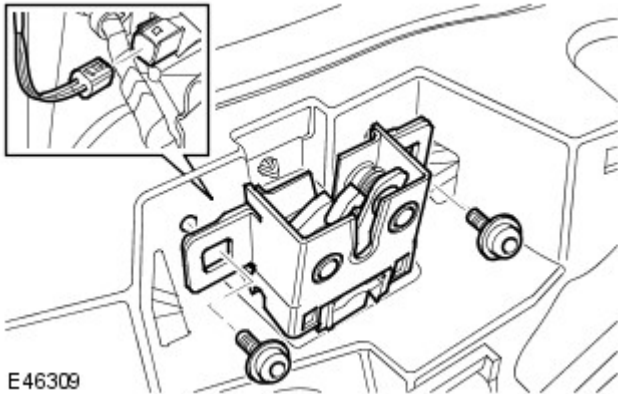
Anti-Theft - Active - Hood Switch

Removal and Installation

Removal

• **NOTE:** Before installing a new hood switch, diagnose the hood switch by using a digital multimeter. Make sure that continuity through hood switch is present when the switch is pressed (hood closed condition). Repeat the test to make sure continuity IS NOT present when the switch IS NOT pressed. If the hood switch continuity is NOT present, continue with this procedure. If the continuity is present, install the original hood switch to the vehicle.

1. Disconnect the battery ground cable.
For additional information, refer to: [Specifications](#) (414-00 Battery and Charging System - General Information, Specifications).
2. Release the RH hood latch.
 - Remove the 2 Torx bolts.
 - Disconnect the electrical connector.



3. Remove the hood switch.

Installation

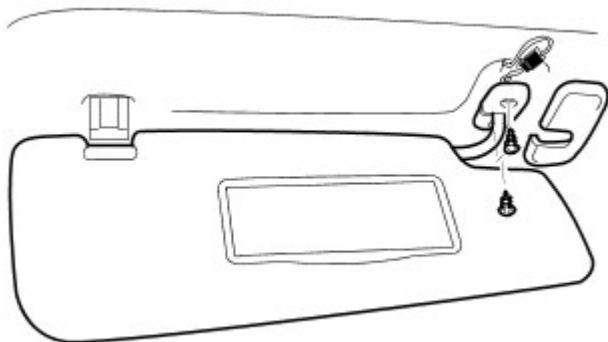
1. Install the hood switch.
2. Install the RH hood latch.
 - Connect the electrical connector.
 - Tighten the Torx bolts to 10 Nm (7 lb.ft).
3. Open and close the hood to check the hood latch operation.
4. Adjust the hood latch.
 - Loosen the 2 hood latch Torx bolts.
 - Lower the hood and check for alignment.
 - Open the hood and tighten the Torx bolts to 10 Nm (7 lb.ft).
 - Check for the correct operation of the hood safety catch.
 - If necessary, repeat the above adjustment procedure.

Anti-Theft - Active - Antenna

Removal and Installation

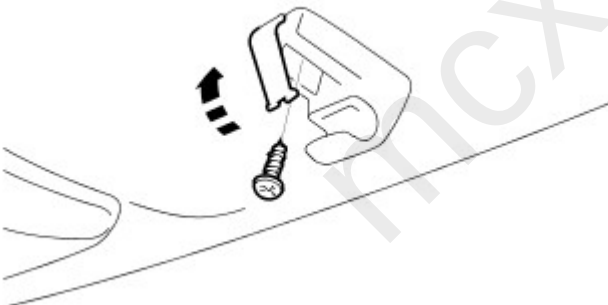
Removal

1. Disconnect the battery ground cable.
For additional information, refer to: [Specifications](#) (414-00 Battery and Charging System - General Information, Specifications).
2. Remove the RH A-pillar upper trim panel.
For additional information, refer to: [A-Pillar Trim Panel](#) (501-05 Interior Trim and Oramentation, Removal and Installation).
3. Remove the RH B-pillar upper trim panel.
For additional information, refer to: [B-Pillar Upper Trim Panel](#) (501-05 Interior Trim and Oramentation, Removal and Installation).
4. Remove the RH C-pillar upper trim panel.
For additional information, refer to: [C-Pillar Upper Trim Panel](#) (501-05 Interior Trim and Oramentation, Removal and Installation).
5. Remove the RH sun visor.
 - Remove the screw covers.
 - Remove the 2 screws.
 - Release and disconnect the electrical connector.



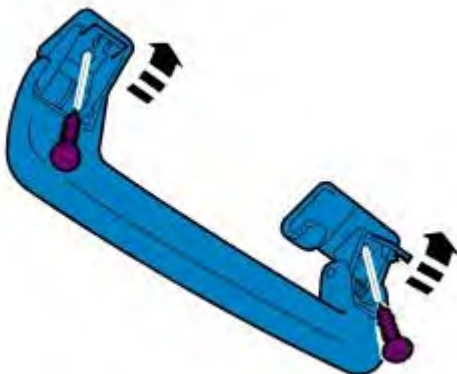
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6. Remove the sun visor retaining clip.
 - Release the screw cover.
 - Remove the screw.

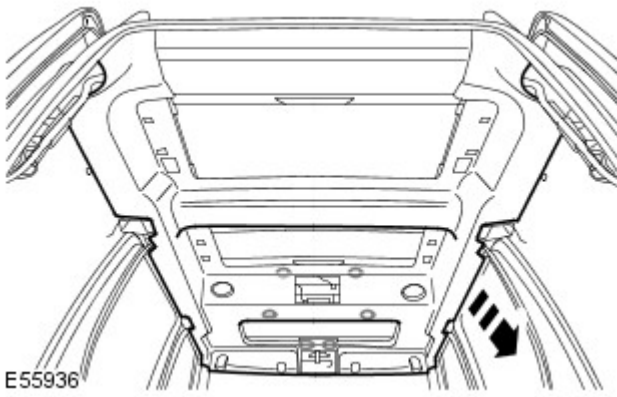


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7. Remove the RH passenger assist handles.
 - Carefully release the 6 screw covers.
 - Remove the 6 screws.

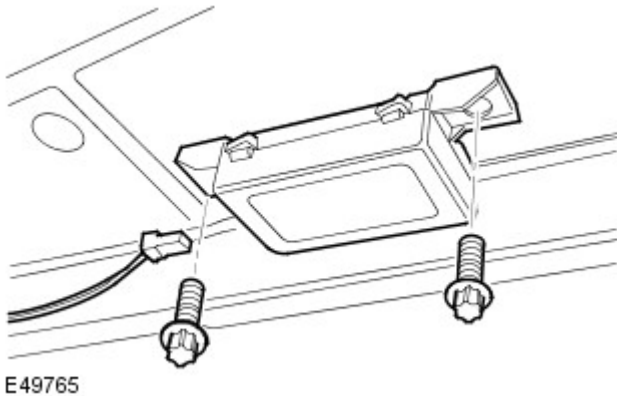


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8. Release the RH side of the headliner.

- Release the 6 clips.



9. Remove the alarm antenna.

- Disconnect the electrical connector.
- Remove the 2 bolts.

Installation

1. Install the alarm antenna.

- Connect the electrical connector.
- Tighten the bolts to 10 Nm (7 lb.ft).

2. Secure the RH side of the headliner.

- Carefully secure the clips.

3. Install the RH passenger assist handles.

- Install the screws.
- Install the screw covers.

4. Install the sun visor retaining clip.

- Install the screw.
- Install the screw cover.

5. Install the RH sun visor.

- Connect and secure the electrical connector.
- Install the screws.
- Install the screw covers.

6. Install the RH C-pillar upper trim panel.

For additional information, refer to: [C-Pillar Upper Trim Panel](#) (501-05 Interior Trim and Ornamentation, Removal and Installation).

7. Install the RH B-pillar upper trim panel.

For additional information, refer to: [B-Pillar Upper Trim Panel](#) (501-05 Interior Trim and Ornamentation, Removal and Installation).

8. Install the LH A-pillar upper trim panel.

For additional information, refer to: [A-Pillar Trim Panel](#) (501-05 Interior Trim and Ornamentation, Removal and Installation).

9. Connect the battery ground cable.
For additional information, refer to: [Specifications](#) (414-00 Battery and Charging System - General Information, Specifications).

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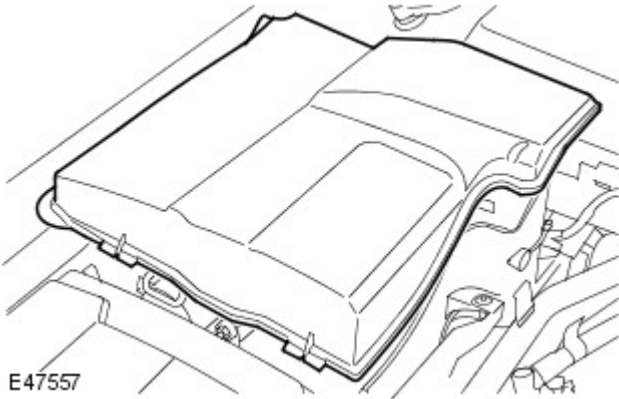
Anti-Theft - Active - Anti-Theft Alarm Horn with Integral Battery

Removal and Installation

Removal

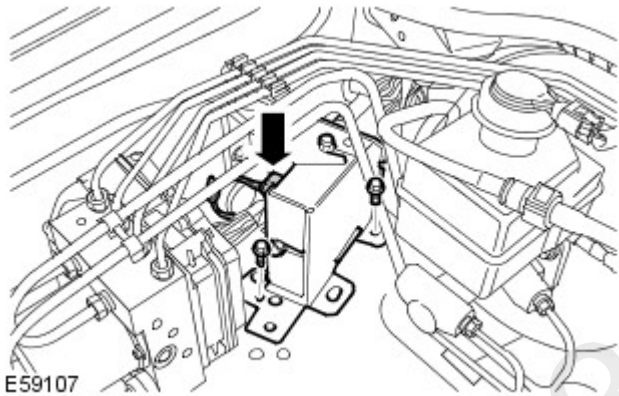
1. Remove the auxiliary battery box cover.

- Release the 2 clips.



2. Remove the anti-theft alarm horn.

- Disconnect the electrical connector.
- Remove the 2 bolts.



Installation

1. Install the anti-theft alarm horn.

- Tighten the bolts to 10 Nm (7 lb.ft).
- Connect the electrical connector.

2. Install the auxiliary battery box cover.