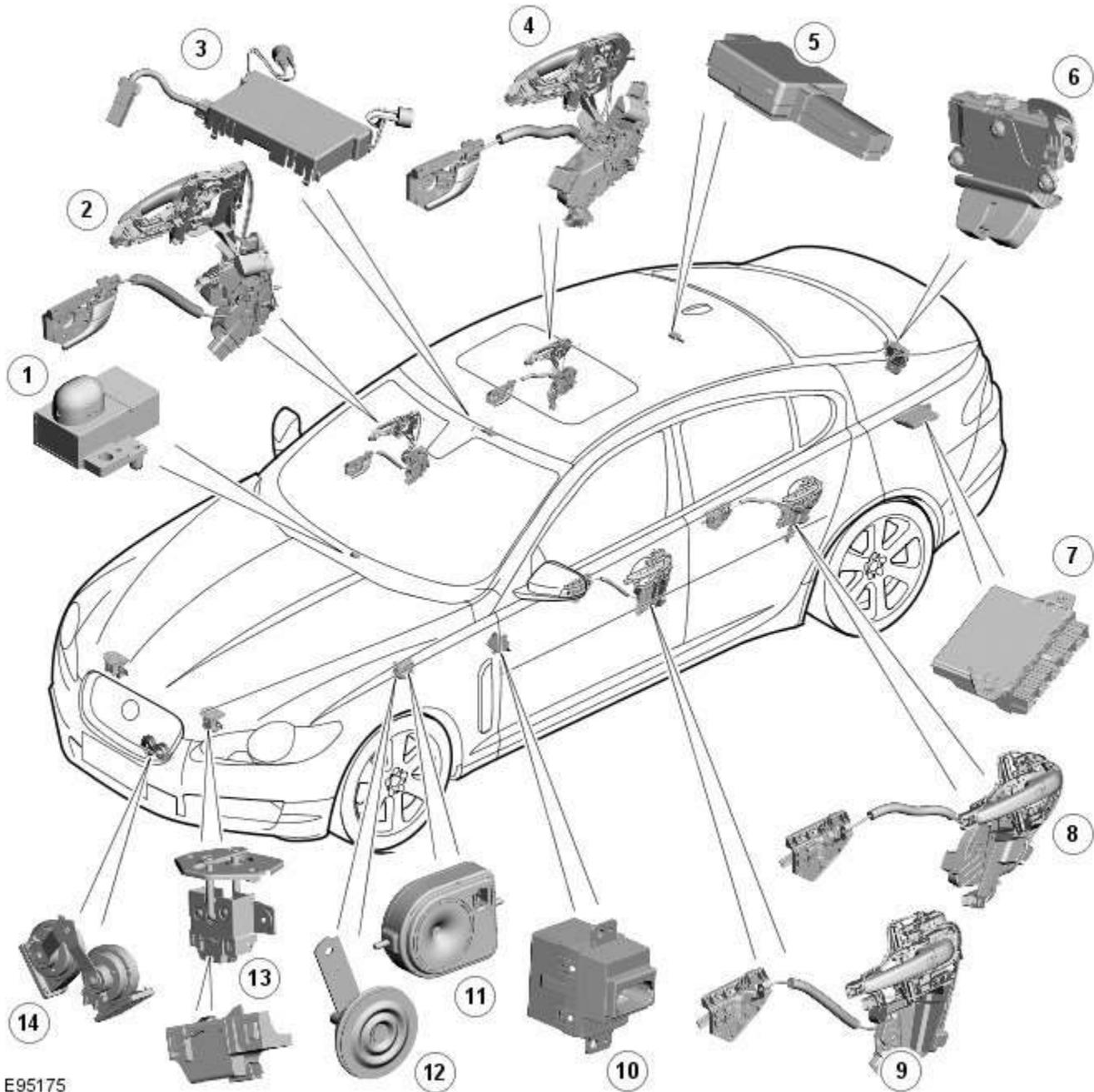


Anti-Theft - Active - Anti-Theft - Active - Component Location

Description and Operation

Component Location



E95175

Item	Description
1	Alarm indicator
2	Latch mechanism - front door
3	Intrusion detection module
4	Latch mechanism - rear door
5	Central locking Radio Frequency (RF) receiver
6	Luggage compartment lid latch mechanism
7	Keyless vehicle module
8	Latch mechanism - rear door
9	Latch mechanism - front door

10	Start control unit
11	Battery backed sounder
12	Passive sounder
13	Hood latch mechanism
14	Vehicle horn

Anti-Theft - Active - Anti-Theft - Active - Overview

Description and Operation

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 [CJB \(central junction box\)](#) automatically arms and disarms the active anti-theft system when it functions the central locking system.

Refer to: [Handles, Locks, Latches and Entry Systems](#) (501-14 Handles, Locks, Latches and Entry Systems, Description and Operation).

Depending on market specification two modes of protection are used: perimeter mode and volumetric mode.

Perimeter mode

Perimeter mode, monitors the security of the hinged panels, which include:

- all doors,
- luggage compartment lid, and
- engine compartment lid.

When perimeter mode is active, the CJB monitors the panel ajar switches in the latch mechanisms of the hinged panels.

Volumetric mode

In volumetric mode the CJB monitors the interior of the vehicle for movement using an ultrasonic sound wave sensor.

If the battery backed sounder incorporates an inclination sensor the vehicle will also be monitored for unauthorised tilting; for example towing or jacking.

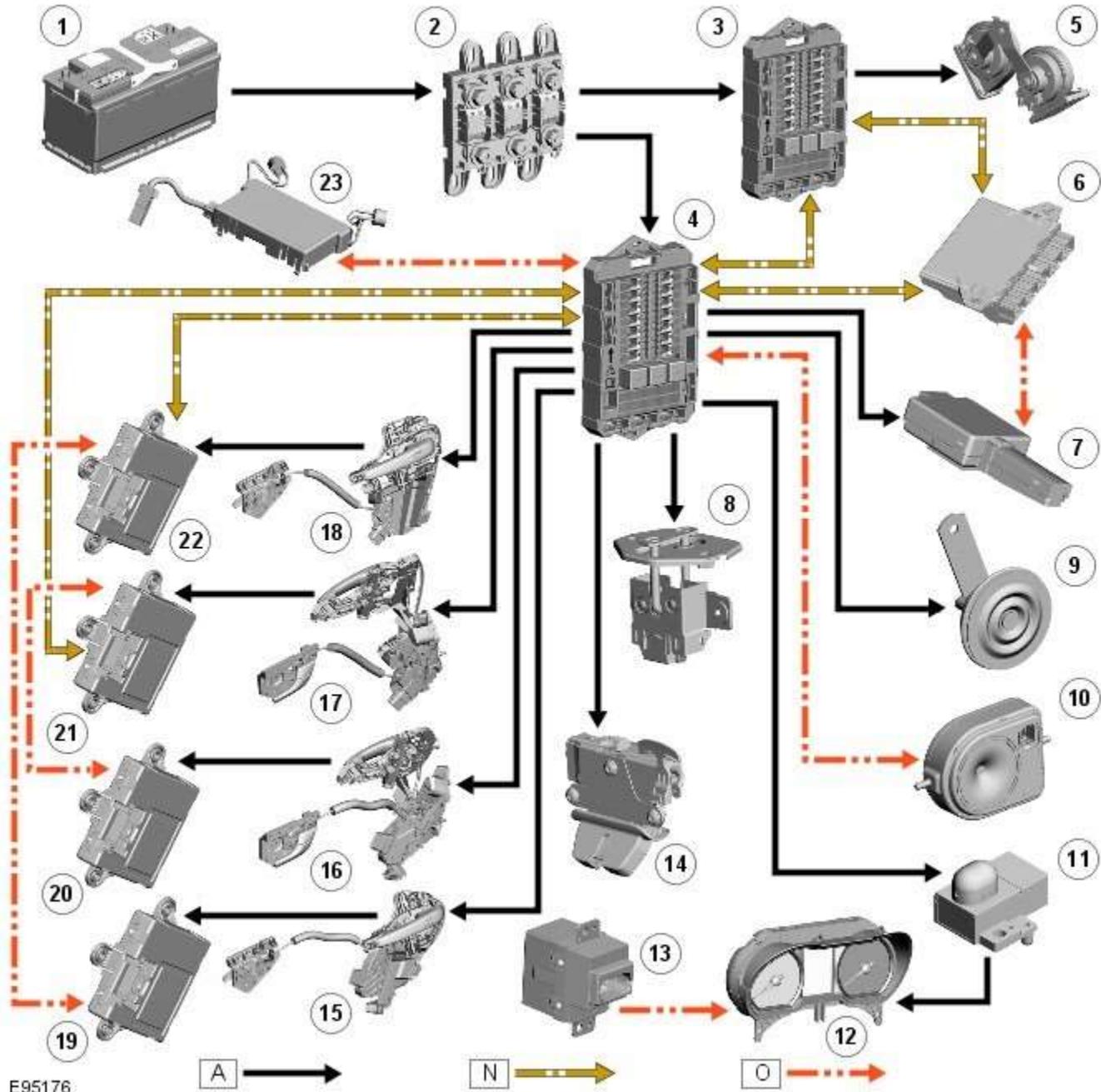
Anti-Theft - Active - Anti-Theft - Active - System Operation and Component Description

Description and Operation

Control Diagram



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



E95176

Item	Description
1	Battery
2	Megafuse (250 amp)
3	RJB (rear junction box)
4	CJB (central junction box)
5	Vehicle horn
6	Keyless vehicle module

7	Central locking - Radio Frequency (RF) receiver
8	Engine compartment lid - latch mechanism
9	Passive sounder
10	Battery backed sounder
11	Alarm indicator
12	Instrument cluster
13	Start control unit
14	Luggage compartment lid - latch mechanism
15	Door latch mechanism - LH (left-hand) rear
16	Door latch mechanism - RH (right-hand) rear
17	Door latch mechanism - RH front
18	Door latch mechanism - LH front
19	Door module - LH rear
20	Door module - RH rear
21	Door module - RH front
22	Door module - LH front
23	Intrusion detection module

System Operation

Anti-Theft - Active

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](#) and [RJB](#) and indicates a trigger condition:

- Visually, using the direction indicators, and
- Audibly, using the vehicle horn and either a passive or active sounder to indicate a trigger condition.

The passive sounder takes the form of an anti-theft disc horn located at the rear of the engine compartment on the [LH](#) side. The active sounder takes the form of a battery backed sounder located in the same position.

Depending on market specification, the battery backed sounder may be fitted with an inclination sensor. Both types of battery backed sounder are visually identical and can only be identified by their part number. Both are also intelligent units, and communicate to the CJB over a [LIN \(local interconnect network\)](#) bus connection.

Monitoring of the hinged panels is carried out using switches located in each door latch assembly, the engine-compartment-lid latch assembly, and the luggage-compartment-lid 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 \(controller area network\)](#) bus.

Monitoring of the cabin interior is carried out using an intrusion detection module mounted behind the roof console. The intrusion detection module comprises an ultrasonic sound wave sensor to determine if there is movement within the cabin.

Information from the intrusion detection module is communicated to the CJB over a LIN bus connection.

CAUTIONS:



The intrusion detection module electrical connections, particularly those to the sensors mounted in the roof console, are very delicate and must be handled with care.



The intrusion detection module is an electro-statically sensitive part and should only be handled in an electro-statically controlled environment.

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

- A door ajar switch indicates a door has been opened.
- The engine compartment lid or luggage compartment lid ajar switches indicate that either has been opened.
- Either front door latch mechanism indicates a door has been unlocked.
- The emergency key blade is used to open either the LH front door or luggage compartment.
- The CJB or RJB are 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.
Refer to: [Anti-Theft - Passive](#) (419-01B Anti-Theft - Passive, Description and Operation).

- The battery backed sounder is disconnected (partial trigger only).
- The vehicle battery is disconnected on a vehicle fitted with a battery backed sounder (partial trigger only).
- The inclination sensor detects a change in vehicle attitude.
- The intrusion detection module detects movement within the cabin.

Component Description

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, Radio Frequency (RF) 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 bus to the:

- CJB,
- RJB,
- door modules, and
- instrument cluster.

The keyless vehicle module also monitors:

- 2 interior antennae,
- 1 luggage compartment antenna,
- a rear bumper antenna, and
- 4 door handle antennae if the passive entry system 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 bus.

Instrument Cluster

The instrument cluster controls the alarm indicator, and in conjunction with the [ECM \(engine control module\)](#), the engine immobilization. The ECM controls the engine crank and fuel functions and the instrument cluster processes the valid transponder information.

Alarm Indicator

The alarm indicator is a [LED \(light emitting diode\)](#) located in the body of the sunload/light sensor. 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. Operation of the alarm indicator is controlled by the instrument cluster which varies the flash rate of the LED to indicate the system status of the alarm and the immobilization systems.

When the ignition is on, the indicator provides a visual indication of the status of the passive anti-theft (engine immobilization) system. If the immobilization system is operating correctly, the LED will be illuminated for 3 seconds at ignition on and then extinguish. If a fault exists in the immobilization system, the LED will be either permanently illuminated or flashing for 60 seconds. This indicates that a fault exists and fault code has been recorded. After the 60 second period the LED will flash at different frequencies which indicate the nature of the fault.

Refer to: [Anti-Theft - Passive](#) (419-01B Anti-Theft - Passive, Description and Operation).

Passive Anti-Theft Horn

The passive anti-theft horn is hardwired to the CJB which activates the horn when the alarm is triggered.

Battery Backed Sounder

Operation of the battery backed sounder is controlled by the CJB on the LIN bus. The sounder is also connected with a permanent battery supply via the CJB. An integral, rechargeable battery powers the sounder if the battery power supply from the CJB is interrupted.

Dependant on vehicle, an inclination sensor is incorporated into the battery backed sounder, to monitor vehicle attitude, see Inclination Sensor.

Inclination Sensor

The CJB monitors the inclination sensor and will activate the alarm system if the vehicle is being raised.

Intrusion Detection Module

The intrusion detection module comprises an ultrasonic sound wave sensor which monitors the vehicle's interior.

The intrusion detection module is activated with volumetric mode which in turn is enabled when the vehicle is double locked. The vehicle can be locked and alarmed with the module de-activated if a pet is to be left in the vehicle for example by single-

locking the active anti-theft system. The intrusion detection modules can also be de-activated by deselecting the 'Alarm Sensors' option in the 'Vehicle Settings' screen on the Touch Screen Display.



NOTE: The Touch Screen method of de-activation of the intrusion detection module is only for one arm cycle, it will revert to active once the engine is next started.

When the volumetric mode is active and the vehicle battery voltage falls below 9 volts, the CJB will ignore any inputs from the intrusion detection module to prevent false alarm activation.

Anti-Theft - Active - Anti-Theft - Active

Diagnosis and Testing

Principles of Operation

For a detailed description of the anti-theft - active system, refer to the relevant Description and Operation sections in the workshop manual. REFER to: (419-01A Anti-Theft - Active)

[Anti-Theft - Active](#) (Description and Operation),

[Anti-Theft - Active](#) (Description and Operation),

[Anti-Theft - Active](#) (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 damage and system integrity.

Visual Inspection

Mechanical	Electrical
<ul style="list-style-type: none"> • Door latch micro switches • Hood ajar switch • Passive anti-theft alarm horn (if installed) • Battery backed sounder (if installed) or battery backed sounder with tilt sensor (if installed) • Vehicle horns 	<ul style="list-style-type: none"> • Fuse(s) • Electrical connector(s) • Wiring Harness

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, check for Diagnostic Trouble Codes (DTCs) and refer to the relevant DTC Index. For additional diagnosis and testing information, refer to the relevant Diagnosis and Testing section in the workshop manual
REFER to: [Remote Keyless Entry \(RKE\) Module](#) (419-10 Multifunction Electronic Modules, Diagnosis and Testing).

DTC Index



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

NOTES:



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.



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).



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.



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



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



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.



Check DDW for open campaigns. Refer to the corresponding bulletins and SSMs which may be valid for the specific customer complaint and carry out the recommendations as required.

DTC	Description	Possible Causes	Action
B1087-83	LIN Bus "A" - Value of signal protection calculation incorrect	<ul style="list-style-type: none"> Checksum of the received LIN frame from battery backed sounder, roof header console, and/or rain/light sensor is incorrect 	<ul style="list-style-type: none"> Check operation of rain/light sensor by covering sensor or applying water to screen, install a new sensor as required
B1087-88	LIN Bus "A" - Bus off	<ul style="list-style-type: none"> Bus off. Battery backed sounder, roof header console, and/or rain/light sensor LIN circuit - short to ground, power 	<ul style="list-style-type: none"> Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and check battery backed sounder, roof header console, and rain/light sensor LIN circuit for short to ground, power
B108F-23	Cabin Lock/Unlock Switch - Signal stuck low	<ul style="list-style-type: none"> Cabin lock/unlock switch signal stuck Switch pressed for longer than 20 seconds Switch circuit short circuit to power or ground Switch failure 	<ul style="list-style-type: none"> Check the switch operation and serviceability. Refer to the electrical circuit diagrams and check the switch circuit
B109C-11	Front Courtesy Light - Circuit short to ground	<ul style="list-style-type: none"> Short to ground 	<ul style="list-style-type: none"> Refer to the electrical circuit diagrams and test front courtesy light circuit for short to ground
B109C-15	Front Courtesy Light - Circuit short to battery or open	<ul style="list-style-type: none"> Short to power or open circuit 	<ul style="list-style-type: none"> Refer to the electrical circuit diagrams and test front courtesy light circuit for short to power or open circuit
B10EB-11	Driver Door Double Locking Motor - Circuit short to ground	<ul style="list-style-type: none"> Driver door double locking motor control circuit - short to ground 	<ul style="list-style-type: none"> Refer to the electrical circuit diagrams and test driver door double locking motor control circuit for short ground
B10EB-15	Driver Door Double Locking Motor - Circuit short to battery or open	<ul style="list-style-type: none"> Driver door double locking motor control circuit - short to power, open circuit 	<ul style="list-style-type: none"> Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and test driver door double locking motor control circuit for short to power or open circuit
B10EC-11	Passenger Door Double Locking Motor - Circuit short to ground	<ul style="list-style-type: none"> Passenger door double locking motor control circuit - short to ground 	<ul style="list-style-type: none"> Refer to the electrical circuit diagrams and test passenger door double locking motor control circuit for short ground
B10EC-15	Passenger Door Double Locking Motor - Circuit short to battery or open	<ul style="list-style-type: none"> Passenger door double locking motor control circuit - short to power, open circuit 	<ul style="list-style-type: none"> Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and test passenger door double locking motor control circuit for short to power or open circuit
B10ED-11	Rear Door Driver Side Double Locking Motor - Circuit short to ground	<ul style="list-style-type: none"> Rear door driver side double locking motor control circuit - short to ground 	<ul style="list-style-type: none"> Refer to the electrical circuit diagrams and test rear door driver side double locking motor control circuit for short ground
B10ED-15	Rear Door Driver Side Double Locking Motor - Circuit short to battery or open	<ul style="list-style-type: none"> Rear door driver side double locking motor control circuit - short to power, open circuit 	<ul style="list-style-type: none"> Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and test rear door driver side double locking motor control circuit for short power, open circuit

DTC	Description	Possible Causes	Action
B10EE-11	Rear Door Passenger Side Double Locking Motor - Circuit short to ground	<ul style="list-style-type: none"> Rear door passenger side double locking motor control circuit - short to ground 	<ul style="list-style-type: none"> Refer to the electrical circuit diagrams and test rear door passenger side double locking motor control circuit for short ground
B10EE-15	Rear Door Passenger Side Double Locking Motor - Circuit short to battery or open	<ul style="list-style-type: none"> Rear door passenger side double locking motor control circuit - short to power, open circuit 	<ul style="list-style-type: none"> Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and test rear door passenger side double locking motor control circuit for short power, open circuit
B10F1-11	Key In Switch - Circuit short to ground	<ul style="list-style-type: none"> Keyless vehicle module, key IN status circuit - short to ground 	<ul style="list-style-type: none"> Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and check keyless vehicle module, key IN status circuit for short to ground
B10F1-12	Key In Switch - Circuit short to battery	<ul style="list-style-type: none"> Keyless vehicle module, key IN status circuit - short to power 	<ul style="list-style-type: none"> Refer to the electrical circuit diagrams and check keyless vehicle module, key IN status circuit for short to power
B10F1-13	Key In Switch - Circuit open	<ul style="list-style-type: none"> Keyless vehicle module, key IN status circuit - open circuit 	<ul style="list-style-type: none"> Refer to the electrical circuit diagrams and check keyless vehicle module, key IN status circuit for open circuit
B1108-11	Driver Door Central Locking Motor - Circuit short to ground	<ul style="list-style-type: none"> Driver door central locking motor control circuit - short to ground 	<ul style="list-style-type: none"> Refer to the electrical circuit diagrams and test driver door central locking motor control circuit for short ground
B1108-15	Driver Door Central Locking Motor - Circuit short to battery or open	<ul style="list-style-type: none"> Driver door central locking motor control circuit - short to power, open circuit 	<ul style="list-style-type: none"> Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and test driver door central locking motor control circuit for short to power, open circuit
B1109-11	Passenger Door Central Locking Motor - Circuit short to ground	<ul style="list-style-type: none"> Short to ground 	<ul style="list-style-type: none"> Refer to the electrical circuit diagrams and test passenger door central locking motor circuit for short to ground
B1109-15	Passenger Door Central Locking Motor - Circuit short to battery or open	<ul style="list-style-type: none"> Short to power or open circuit 	<ul style="list-style-type: none"> Refer to the electrical circuit diagrams and test passenger door central locking motor circuit for short to power or open circuit
B110A-11	Rear Door Driver Side Central Locking Motor - Circuit short to ground	<ul style="list-style-type: none"> Rear driver door central locking motor control circuit - short to ground 	<ul style="list-style-type: none"> Refer to the electrical circuit diagrams and test rear driver door central locking motor control circuit for short ground
B110A-15	Rear Door Driver Side Central Locking Motor - Circuit short to battery or open	<ul style="list-style-type: none"> Rear driver door central locking motor control circuit - short to power, open circuit 	<ul style="list-style-type: none"> Refer to the electrical circuit diagrams and test rear driver door central locking motor control circuit for short to power, open circuit
B110B-11	Rear Door Passenger Side Central Locking Motor - Circuit short to ground	<ul style="list-style-type: none"> Rear passenger door central locking motor circuit short circuit to ground 	<ul style="list-style-type: none"> Refer to the electrical circuit diagrams and check the circuit
B110B-15	Rear Door Passenger Side Central Locking Motor - Circuit short to battery or open	<ul style="list-style-type: none"> Rear passenger door central locking motor circuit short circuit to power or open circuit 	<ul style="list-style-type: none"> Refer to the electrical circuit diagrams and check the circuit
B1163-11	Left Mirror Heater Output Short To Ground - Circuit short to ground	<ul style="list-style-type: none"> Short to ground 	<ul style="list-style-type: none"> Refer to the electrical circuit diagrams and test left mirror heater output circuit for short to ground

DTC	Description	Possible Causes	Action
B1163-15	Left Mirror Heater Output Short To Power - Circuit short to battery or open	<ul style="list-style-type: none"> • Short to power or open circuit 	<ul style="list-style-type: none"> • Refer to the electrical circuit diagrams and test left mirror heater output circuit for short to power or open circuit
B1164-11	Right Mirror Heater Output Short To Ground - Circuit short to ground	<ul style="list-style-type: none"> • Short to ground 	<ul style="list-style-type: none"> • Refer to the electrical circuit diagrams and test right mirror heater output circuit for short to ground
B1164-15	Right Mirror Heater Output Short To Power - Circuit short to battery or open	<ul style="list-style-type: none"> • Short to power or open circuit 	<ul style="list-style-type: none"> • Refer to the electrical circuit diagrams and test right mirror heater output circuit for short to power or open circuit
B1165-11	Left Front Puddle Lamp Output Short To Ground - Circuit short to ground	<ul style="list-style-type: none"> • Short to ground 	<ul style="list-style-type: none"> • Refer to the electrical circuit diagrams and test left front puddle lamp output circuit for short to ground
B1165-15	Left Front Puddle Lamp Output Open Load Or Short To Power - Circuit short to battery or open	<ul style="list-style-type: none"> • Short to power or open circuit 	<ul style="list-style-type: none"> • Refer to the electrical circuit diagrams and test left front puddle lamp output circuit for short to power or open circuit
B1166-11	Right Front Puddle Lamp Output Short To Ground - Circuit short to ground	<ul style="list-style-type: none"> • Short to ground 	<ul style="list-style-type: none"> • Refer to the electrical circuit diagrams and test right front puddle lamp output circuit for short to ground
B1166-15	Right Front Puddle Lamp Output Open Load Or Short To Battery - Circuit short to battery or open	<ul style="list-style-type: none"> • Short to power or open circuit 	<ul style="list-style-type: none"> • Refer to the electrical circuit diagrams and test right front puddle lamp output circuit for short to power or open circuit
B1175-13	Driver Door Ajar Switch - Circuit open	<ul style="list-style-type: none"> • Driver door ajar switch signal circuit - open circuit 	<ul style="list-style-type: none"> • Refer to the electrical circuit diagrams and check driver door ajar switch signal circuit for open circuit
B1176-13	Passenger Door Ajar Switch - Circuit open	<ul style="list-style-type: none"> • Passenger door ajar switch signal circuit - open circuit 	<ul style="list-style-type: none"> • Refer to the electrical circuit diagrams and check passenger door ajar switch signal circuit for open circuit
B117C-07	Rear Power Window Up - Mechanical failures	<ul style="list-style-type: none"> • Set when window is reversed during window up due to mechanical problems, window channel restriction preventing window closure or Window mechanism fault 	<ul style="list-style-type: none"> • Check for mechanical problems with the window operation. Check for obstructions in the window channels and that the glass is not restricted in the full range of travel
B117C-72	Rear Power Window Up - Actuator stuck open	<ul style="list-style-type: none"> • Door module internal relay sticking open 	<ul style="list-style-type: none"> • Renew the relevant rear door module. Refer to the warranty policy and procedures manual if a module is suspect
B117C-73	Rear Power Window Up - Actuator stuck closed	<ul style="list-style-type: none"> • Door module internal relay sticking closed 	<ul style="list-style-type: none"> • Renew the relevant rear door module. Refer to the warranty policy and procedures manual if a module is suspect
B117C-92	Rear Power Window Up - Performance or incorrect operation	<ul style="list-style-type: none"> • Set when auto window up was interrupted (e.g. by pressing local switch) 	<ul style="list-style-type: none"> • Check the window operation. Clear the DTC and retest
B117D-72	Rear Power Window Down - Actuator stuck open	<ul style="list-style-type: none"> • Door module internal relay sticking open 	<ul style="list-style-type: none"> • Renew the relevant rear door module. Refer to the warranty policy and procedures manual if a module is suspect
B117D-73	Rear Power Window Down - Actuator stuck closed	<ul style="list-style-type: none"> • Door module internal relay sticking closed 	<ul style="list-style-type: none"> • Renew the relevant rear door module. Refer to the warranty policy and procedures manual if a module is suspect

DTC	Description	Possible Causes	Action
B117E-07	Front Power Window Up - Mechanical failures	<ul style="list-style-type: none"> Set when window is reversed during window up due to mechanical problems, window channel restriction preventing window closure or Window mechanism fault 	<ul style="list-style-type: none"> Check for mechanical problems with the window operation. Check for obstructions in the window channels and that the glass is not restricted in the full range of travel
B117E-72	Front Power Window Up - Actuator stuck open	<ul style="list-style-type: none"> Door module internal relay sticking open 	<ul style="list-style-type: none"> Renew the relevant front door module. Refer to the warranty policy and procedures manual if a module is suspect
B117E-73	Front Power Window Up - Actuator stuck closed	<ul style="list-style-type: none"> Door module internal relay sticking closed 	<ul style="list-style-type: none"> Renew the relevant front door module. Refer to the warranty policy and procedures manual if a module is suspect
B117E-92	Front Power Window Up - Performance or incorrect operation	<ul style="list-style-type: none"> Set when auto window up was interrupted (e.g. by pressing local switch) 	<ul style="list-style-type: none"> Check the window operation. Clear the DTC and retest
B117F-72	Front Power Window Down - Actuator stuck open	<ul style="list-style-type: none"> Door module internal relay sticking open 	<ul style="list-style-type: none"> Renew the relevant front door module. Refer to the warranty policy and procedures manual if a module is suspect
B117F-73	Front Power Window Down - Actuator stuck closed	<ul style="list-style-type: none"> Door module internal relay sticking closed 	<ul style="list-style-type: none"> Renew the relevant front door module. Refer to the warranty policy and procedures manual if a module is suspect
B1189-29	Front Window Position Sensor - Signal invalid	<ul style="list-style-type: none"> Missing signal from position sensor 1 or 2 Sensor circuit fault Position sensor fault 	<ul style="list-style-type: none"> Refer to the electrical circuit diagrams and check the position sensor circuit between the door module and window motor. Repair as necessary. If the problem persists, renew the window motor
B118A-29	Rear Window Position Sensor - Signal invalid	<ul style="list-style-type: none"> Missing signal from position sensor 1 or 2 Sensor circuit fault Position sensor fault 	<ul style="list-style-type: none"> Refer to the electrical circuit diagrams and check the position sensor circuit between the door module and window motor. Repair as necessary. If the problem persists, renew the window motor
B11C0-13	Driver Side Rear Door Ajar Switch - Circuit open	<ul style="list-style-type: none"> Left rear door ajar switch signal circuit - open circuit 	<ul style="list-style-type: none"> Refer to the electrical circuit diagrams and check left rear door ajar switch signal circuit for open circuit
B11C1-13	Passenger Side Rear Door Ajar Switch - Circuit open	<ul style="list-style-type: none"> Right rear door ajar switch signal circuit - open circuit 	<ul style="list-style-type: none"> Refer to the electrical circuit diagrams and check right rear door ajar switch signal circuit for open circuit
B11D1-83	LIN Bus "C" - Value of signal protection calculation incorrect	<ul style="list-style-type: none"> LIN Bus checksum error; driver switchpack internal fault 	<ul style="list-style-type: none"> Refer to the electrical circuit diagrams and check the LIN Bus circuit between the driver door window switch and the door module. Check the connectors for integrity and security. Clear the DTC and retest. If the problem persists, renew the driver door window switch
B11D1-86	LIN Bus "C" - Signal invalid	<ul style="list-style-type: none"> LIN Bus header error; driver switchpack internal fault 	<ul style="list-style-type: none"> Refer to the electrical circuit diagrams and check the LIN Bus circuit between the driver door window switch and the door module. Check the connectors for integrity and security. Clear the DTC and retest. If the problem persists, renew the driver door window switch
B11D1-87	LIN Bus "C" - Missing message	<ul style="list-style-type: none"> Slave node communication missing; driver switchpack internal fault 	<ul style="list-style-type: none"> Refer to the electrical circuit diagrams and check the LIN Bus circuit between the driver door window switch and the door module. Check the connectors for integrity and

DTC	Description	Possible Causes	Action
			security. Clear the DTC and retest. If the problem persists, renew the driver door window switch
B11F6-11	Driver Folding Mirror Motor - Circuit short to ground	<ul style="list-style-type: none"> • Driver folding mirror motor circuit short circuit to ground • Mirror motor failure 	<ul style="list-style-type: none"> • Refer to the electrical circuit diagrams and check the mirror fold circuit between the drivers door module and the mirror assembly. Repair as necessary
B11F6-15	Driver Folding Mirror Motor - Circuit short to battery or open	<ul style="list-style-type: none"> • Driver mirror heater output circuit short circuit to power or open circuit • Mirror motor failure 	<ul style="list-style-type: none"> • Refer to the electrical circuit diagrams and check the mirror fold circuit between the drivers door module and the mirror assembly. Repair as necessary
B11F7-11	Passenger Folding Mirror Motor - Circuit short to ground	<ul style="list-style-type: none"> • Passenger folding mirror motor circuit short circuit to ground • Mirror motor failure 	<ul style="list-style-type: none"> • Refer to the electrical circuit diagrams and check the mirror fold circuit between the passenger door module and the mirror assembly. Repair as necessary
B11F7-15	Passenger Folding Mirror Motor - Circuit short to battery or open	<ul style="list-style-type: none"> • Passenger mirror heater output circuit short circuit to power or open circuit • Mirror motor failure 	<ul style="list-style-type: none"> • Refer to the electrical circuit diagrams and check the mirror fold circuit between the passenger door module and the mirror assembly. Repair as necessary
B1222-23	Master Lock/Unlock Switch - Signal stuck low	<ul style="list-style-type: none"> • Master lock or unlock switch digital input circuit - signal stuck low 	<ul style="list-style-type: none"> • Refer to the electrical circuit diagrams and check master lock and unlock switch digital input circuits for short to ground, open circuit
B1A98-83	LIN Bus Circuit #1 - Value of signal protection calculation incorrect	<ul style="list-style-type: none"> • Value of signal protection calculation incorrect 	<ul style="list-style-type: none"> • Refer to the electrical circuit diagrams and check the LIN Bus circuit between the rear door control unit and the Driver Door Module. Check the connectors for integrity and security. Clear the DTC and retest. If the problem persists, renew the rear door control module
B1A98-86	LIN Bus Circuit #1 - Signal invalid	<ul style="list-style-type: none"> • Signal invalid 	<ul style="list-style-type: none"> • Refer to the electrical circuit diagrams and check the LIN Bus circuit between the rear door control unit and the Driver Door Module. Check the connectors for integrity and security. Clear the DTC and retest. If the problem persists, renew the rear door control module
B1A98-87	LIN Bus Circuit #1 - Missing message	<ul style="list-style-type: none"> • Missing message 	<ul style="list-style-type: none"> • Refer to the electrical circuit diagrams and check the LIN Bus circuit between the rear door control unit and the Driver Door Module. Check the connectors for integrity and security. Clear the DTC and retest. If the problem persists, renew the rear door control module
B1C09-11	Driver Left/Right Mirror Motor Circuit - Circuit short to ground	<ul style="list-style-type: none"> • Driver mirror adjustment motor circuit short circuit to ground • Mirror left/right motor failure 	<ul style="list-style-type: none"> • Refer to the electrical circuit diagrams and check the mirror motor circuit between the drivers door module and the mirror assembly. Repair as necessary
B1C09-15	Driver Left/Right Mirror Motor Circuit - Circuit short to battery or open	<ul style="list-style-type: none"> • Driver mirror adjustment motor circuit short circuit to power or open circuit • Mirror left/right motor failure 	<ul style="list-style-type: none"> • Refer to the electrical circuit diagrams and check the mirror motor circuit between the drivers door module and the mirror assembly. Repair as necessary
B1C10-11	Driver Up/Down Mirror Motor Circuit - Circuit short to ground	<ul style="list-style-type: none"> • Driver mirror adjustment motor circuit short circuit to ground • Mirror motor failure 	<ul style="list-style-type: none"> • Refer to the electrical circuit diagrams and check the mirror motor circuit between the drivers door module and the mirror assembly. Repair as necessary

DTC	Description	Possible Causes	Action
B1C10-15	Driver Up/Down Mirror Motor Circuit - Circuit short to battery or open	<ul style="list-style-type: none"> • Driver mirror adjustment motor circuit short circuit to power or open circuit • Mirror motor failure 	<ul style="list-style-type: none"> • Refer to the electrical circuit diagrams and check the mirror motor circuit between the drivers door module and the mirror assembly. Repair as necessary
B1C11-11	Passenger Left/Right Mirror Motor Circuit - Circuit short to ground	<ul style="list-style-type: none"> • Passenger mirror adjustment motor circuit short circuit to ground • Mirror motor failure 	<ul style="list-style-type: none"> • Refer to the electrical circuit diagrams and check the mirror motor circuit between the passenger door module and the mirror assembly. Repair as necessary
B1C11-15	Passenger Left/Right Mirror Motor Circuit - Circuit short to battery or open	<ul style="list-style-type: none"> • Passenger mirror adjustment motor circuit short circuit to power or open circuit • Mirror motor failure 	<ul style="list-style-type: none"> • Refer to the electrical circuit diagrams and check the mirror motor circuit between the passenger door module and the mirror assembly. Repair as necessary
B1C12-11	Passenger Up/Down Mirror Motor Circuit - Circuit short to ground	<ul style="list-style-type: none"> • Passenger mirror adjustment motor circuit short circuit to ground • Mirror motor failure 	<ul style="list-style-type: none"> • Refer to the electrical circuit diagrams and check the mirror motor circuit between the passenger door module and the mirror assembly. Repair as necessary
B1C12-15	Passenger Up/Down Mirror Motor Circuit - Circuit short to battery or open	<ul style="list-style-type: none"> • Passenger mirror adjustment motor circuit short circuit to power or open circuit • Mirror motor failure 	<ul style="list-style-type: none"> • Refer to the electrical circuit diagrams and check the mirror motor circuit between the passenger door module and the mirror assembly. Repair as necessary
B1C13-11	Driver Up/Down Mirror Motor Feedback Circuit - Circuit short to ground	<ul style="list-style-type: none"> • Driver mirror adjustment motor circuit short circuit to ground • Mirror motor failure 	<ul style="list-style-type: none"> • Refer to the electrical circuit diagrams and check the mirror motor circuit between the driver door module and the mirror assembly. Repair as necessary
B1C13-15	Driver Up/Down Mirror Motor Feedback Circuit - Circuit short to battery or open	<ul style="list-style-type: none"> • Driver mirror adjustment motor circuit short circuit to power or open circuit • Mirror motor failure 	<ul style="list-style-type: none"> • Refer to the electrical circuit diagrams and check the mirror motor circuit between the driver door module and the mirror assembly. Repair as necessary
B1C14-11	Driver Left/Right Mirror Motor Feedback Circuit - Circuit short to ground	<ul style="list-style-type: none"> • Driver mirror adjustment motor circuit short circuit to ground • Mirror motor failure 	<ul style="list-style-type: none"> • Refer to the electrical circuit diagrams and check the mirror motor circuit between the driver door module and the mirror assembly. Repair as necessary
B1C14-15	Driver Left/Right Mirror Motor Feedback Circuit - Circuit short to battery or open	<ul style="list-style-type: none"> • Driver mirror adjustment motor circuit short circuit to power or open circuit • Mirror motor failure 	<ul style="list-style-type: none"> • Refer to the electrical circuit diagrams and check the mirror motor circuit between the driver door module and the mirror assembly. Repair as necessary
B1C15-11	Passenger Up/Down Mirror Motor Feedback Circuit - Circuit short to ground	<ul style="list-style-type: none"> • Passenger mirror adjustment motor circuit short circuit to ground • Mirror motor failure 	<ul style="list-style-type: none"> • Refer to the electrical circuit diagrams and check the mirror motor circuit between the passenger door module and the mirror assembly. Repair as necessary
B1C15-15	Passenger Up/Down Mirror Motor Feedback Circuit - Circuit short to battery or open	<ul style="list-style-type: none"> • Passenger mirror adjustment motor circuit short circuit to power or open circuit • Mirror motor failure 	<ul style="list-style-type: none"> • Refer to the electrical circuit diagrams and check the mirror motor circuit between the passenger door module and the mirror assembly. Repair as necessary
B1C16-11	Passenger Left/Right Mirror Motor Feedback Circuit - Circuit short to ground	<ul style="list-style-type: none"> • Passenger mirror adjustment motor circuit short circuit to ground • Mirror motor failure 	<ul style="list-style-type: none"> • Refer to the electrical circuit diagrams and check the mirror motor circuit between the passenger door module and the mirror assembly. Repair as necessary
B1C16-15	Passenger Left/Right Mirror Motor Feedback Circuit - Circuit short to battery or open	<ul style="list-style-type: none"> • Passenger mirror adjustment motor circuit short circuit to power or open circuit • Mirror motor failure 	<ul style="list-style-type: none"> • Refer to the electrical circuit diagrams and check the mirror motor circuit between the passenger door module and the mirror assembly. Repair as necessary

DTC	Description	Possible Causes	Action
B1C39-29	Key Lock Switch - Signal invalid	<ul style="list-style-type: none"> • Key lock switch signal invalid, stuck/jammed • Switch held for longer than 20 seconds • Key lock switch circuit short to ground (where connected) • Key lock switch failure • Central Junction Box fault 	<ul style="list-style-type: none"> • Refer to the electrical circuit diagrams and the key lock switch circuit. Clear the DTC and retest. If no other DTCs are present, ignore this fault. If the DTC returns, suspect an internal fault with the Central Junction Box. Refer to the warranty policy and procedures manual if a module is suspect
B1D06-11	Left Turn Indicator - Circuit short to ground	<ul style="list-style-type: none"> • Left turn signal short circuit to ground 	<ul style="list-style-type: none"> • Refer to the electrical circuit diagrams and check left turn signal for short circuit to ground
B1D06-15	Left Turn Indicator - Circuit short to battery or open	<ul style="list-style-type: none"> • Left turn signal short circuit to power • Left turn signal high resistance, open circuit 	<ul style="list-style-type: none"> • Refer to the electrical circuit diagrams and check left turn signal for short circuit high resistance, open circuit
B1D07-11	Right Turn Indicator - Circuit short to ground	<ul style="list-style-type: none"> • Right turn signal short circuit to ground 	<ul style="list-style-type: none"> • Refer to the electrical circuit diagrams and check right turn signal for short circuit to ground
B1D07-15	Right Turn Indicator - Circuit short to battery or open	<ul style="list-style-type: none"> • Right turn signal circuit short circuit to power • Right turn signal circuit high resistance, open circuit 	<ul style="list-style-type: none"> • Refer to the electrical circuit diagrams and check right turn signal for short circuit high resistance, open circuit
B1D17-11	Battery Backed Sounder - Circuit short to ground	<ul style="list-style-type: none"> • Battery backed sounder inclination sensor control circuit - short to ground 	<ul style="list-style-type: none"> • Refer to the electrical circuit diagrams and check battery backed sounder inclination sensor control circuit for short to ground
B1D18-11	Volumetric Sensor - Circuit short to ground	<ul style="list-style-type: none"> • Intrusion sensor module supply circuit - short to ground 	<ul style="list-style-type: none"> • Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and check intrusion sensor module supply circuit for short to ground
B1D97-96	Tilt Sensor - Component internal failure	<ul style="list-style-type: none"> • Component internal failure 	<ul style="list-style-type: none"> • Suspect the battery backed sounder, check and install a new battery backed sounder as required
C1B14-11	Sensor Supply #1 - Circuit short to ground	<ul style="list-style-type: none"> • Short to ground 	<ul style="list-style-type: none"> • Refer to the electrical circuit diagrams and test window sensor supply circuit for short to ground
C1B14-15	Sensor Supply #1 - Circuit short to battery or open	<ul style="list-style-type: none"> • Short to power or open circuit 	<ul style="list-style-type: none"> • Refer to the electrical circuit diagrams and test window sensor supply circuit for short to power or open circuit
C1B15-11	Sensor Supply Voltage A - Circuit short to ground	<ul style="list-style-type: none"> • Position sensor supply circuit short to ground • Position sensor fault 	<ul style="list-style-type: none"> • Refer to the electrical circuit diagrams and check the position sensor supply circuit between the rear door module and the window motor. If the problem persists, renew the window motor
C1B15-15	Sensor Supply Voltage A - Circuit short to battery or open	<ul style="list-style-type: none"> • Position sensor supply circuit short to power or open circuit • Position sensor fault 	<ul style="list-style-type: none"> • Refer to the electrical circuit diagrams and check the position sensor supply circuit between the rear door module and the window motor. If the problem persists, renew the window motor
P1624-13	Anti-Theft System - Circuit open	<ul style="list-style-type: none"> • RJB anti-theft signal circuit - open circuit 	<ul style="list-style-type: none"> • Refer to the electrical circuit diagrams and check RJB anti-theft signal circuit for open circuit

DTC	Description	Possible Causes	Action
P254F-13	Engine Hood Switch Circuit/Open - Circuit open	<ul style="list-style-type: none"> Hood ajar switch signal circuit - open circuit 	<ul style="list-style-type: none"> Refer to the electrical circuit diagrams and check hood ajar switch signal circuit for open circuit
U0010-00	Medium Speed CAN Communication Bus - No sub type information	<ul style="list-style-type: none"> Medium speed CAN communication Bus 	<ul style="list-style-type: none"> Carry out network integrity test using manufacturer approved diagnostic system. Refer to electrical circuit diagrams and test Medium speed CAN network for open, short circuit and high resistance
U0140-00	Lost Communication With CJB - No sub type information	<ul style="list-style-type: none"> Logged when subscribed CAN message missing from CJB 	<ul style="list-style-type: none"> Refer to the electrical circuit diagrams and test power and ground supplies to Central Junction Box. Check CAN network between Driver Door Module and Central Junction Box. Carry out network integrity test using manufacturer approved diagnostic system
U0208-00	Lost Communication With Driver Seat Module (DSM) - No sub type information	<ul style="list-style-type: none"> Missing message 	<ul style="list-style-type: none"> Refer to the electrical circuit diagrams and test power and ground supplies to Driver Seat Module. Check CAN network between Driver Door Module and Driver Seat Module. Carry out network integrity test using manufacturer approved diagnostic system
U0300-00	Internal Control Module Software Incompatibility - No sub type information	<ul style="list-style-type: none"> Car configuration file mismatch with vehicle specification 	 <p>NOTE: After updating the car configuration file, set the ignition to on and wait 30 seconds before clearing the DTCs</p> <ul style="list-style-type: none"> Using the manufacturer approved diagnostic system, check and up-date the car configuration file as necessary
U2002-24	Switch - Signal stuck high	<ul style="list-style-type: none"> Signal stuck high 	<ul style="list-style-type: none"> Clear DTC and re-test. If DTC remains, install a new passenger side window switch
U2004-24	Auxiliary Switch Pack - Signal stuck high	<ul style="list-style-type: none"> Signal stuck high Left or right rear door local switch pressed for longer than 20 seconds Switch circuit short to ground or power 	<ul style="list-style-type: none"> Refer to the electrical circuit diagrams and check the left and right door switch circuits
U2010-11	Switch Illumination - Circuit short to ground	<ul style="list-style-type: none"> Switch illumination circuit short to ground 	<ul style="list-style-type: none"> Refer to electrical circuit diagrams and check the switch illumination circuit
U2012-08	Car Configuration Parameter(s) - Bus signal/message failures	<ul style="list-style-type: none"> Bus signal/message failures 	<ul style="list-style-type: none"> Cycle the ignition status and re-test. If DTC remains, re-configure the RJB using the manufacturer approved diagnostic system
U2013-24	Switch Pack - Signal stuck high	<ul style="list-style-type: none"> Signal stuck high 	<ul style="list-style-type: none"> Clear DTC and re-test. If DTC remains, install a new driver side window switch pack
U2014-44	Control Module Hardware - Data memory failure	<ul style="list-style-type: none"> Data Memory Failure 	<ul style="list-style-type: none"> Install a new DDM/PDM, Refer to the warranty policy and procedures manual if a module is suspect
U2100-00	Initial Configuration Not Complete - No sub type information	<ul style="list-style-type: none"> Driver/passenger door module is not configured correctly 	<ul style="list-style-type: none"> Re-configure the DDM/PDM using the manufacturer approved diagnostic system
U2101-00	Control Module Configuration Incompatible - No sub type information	<ul style="list-style-type: none"> Car configuration file mismatch with vehicle specification 	<ul style="list-style-type: none"> Re-configure the module using the manufacturer approved diagnostic system. Check the configuration of the Car Configuration File (CCF)

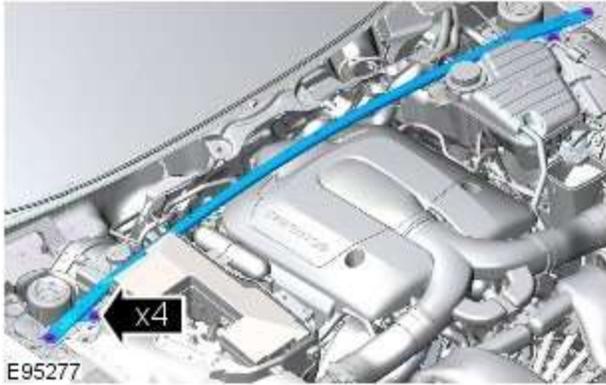
DTC	Description	Possible Causes	Action
U3003-62	Battery Voltage - Signal compare failure	<ul style="list-style-type: none"><li data-bbox="548 149 922 218">• Mis-match of battery voltage, of 2 volts or lower, between DDM/PDM and RJB	<ul style="list-style-type: none"><li data-bbox="992 149 1484 268">• Check vehicle battery and charging system. Refer to the relevant section in the workshop manual. Refer to the electrical circuit diagrams and check the power and ground supply circuits to both modules

Anti-Theft - Active - Anti-Theft Alarm Horn

Removal and Installation

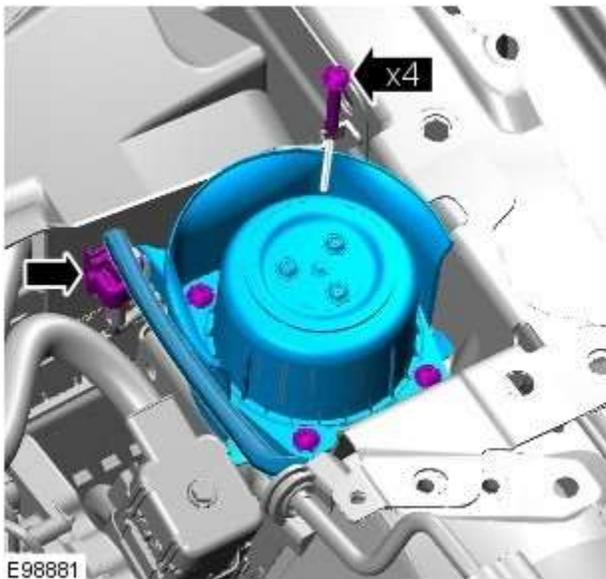
Removal

1. Remove the cowl vent screen.
For additional information, refer to: [Cowl Vent Screen](#) (501-02 Front End Body Panels, Removal and Installation).

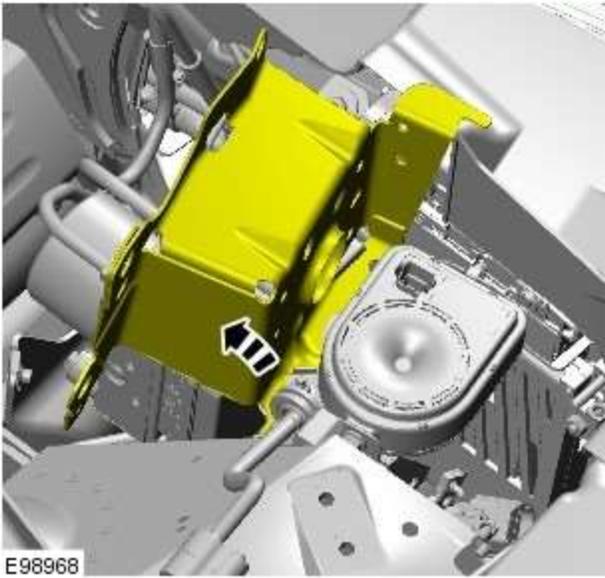


2. Remove the engine compartment brace.

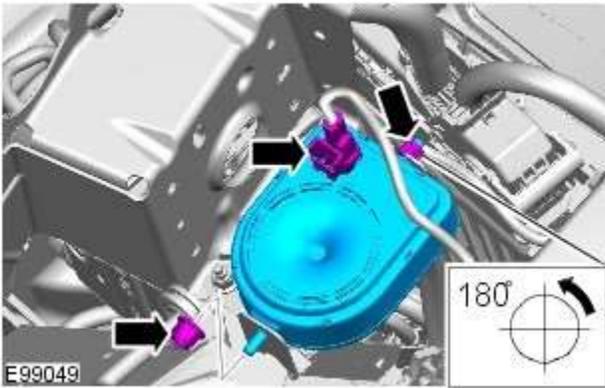
3. Remove the secondary bulkhead LH panel.
For additional information, refer to: [Secondary Bulkhead Panel LH - 3.0L NA V6 - AJ27](#) (501-02 Front End Body Panels, Removal and Installation).



4. Remove the pedestrian protection actuator.
 - Reposition the pedestrian protection hood actuator.

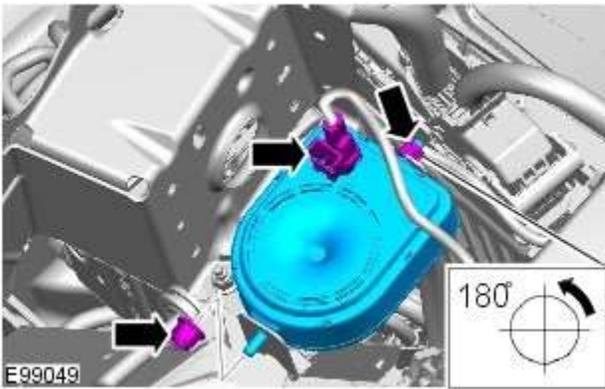


5. Release the pedestrian protection actuator bracket.

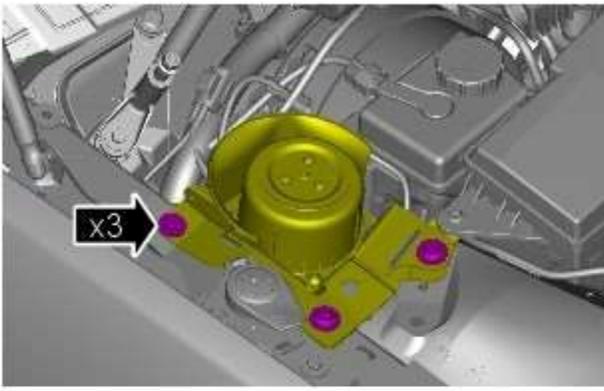


6. Remove the anti-theft alarm horn.

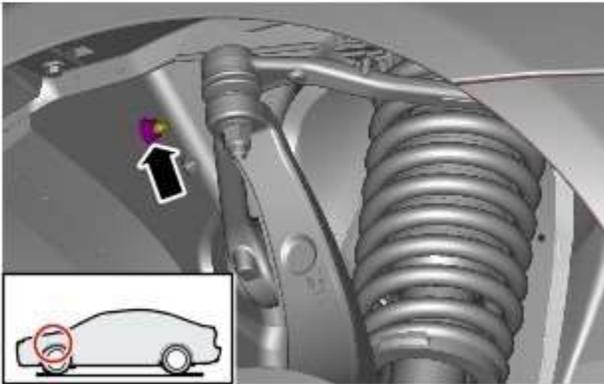
Installation



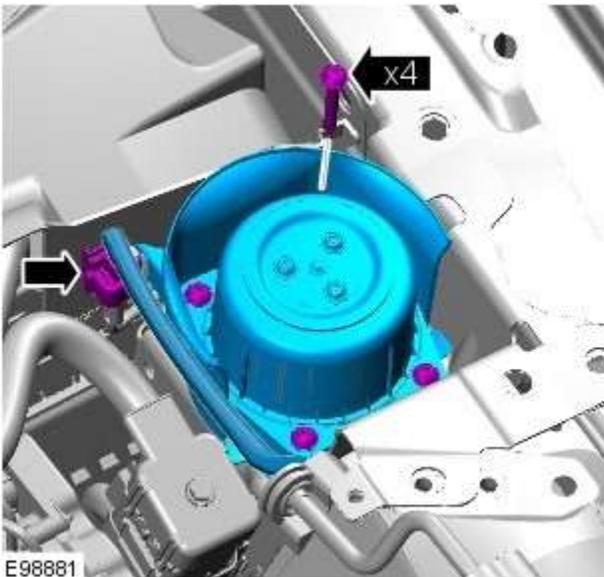
1. Install is the reverse of removal.
• Tighten to 7 Nm.



2. Tighten to 25 Nm.



E98989



3. Tighten to 8 Nm.

E98881



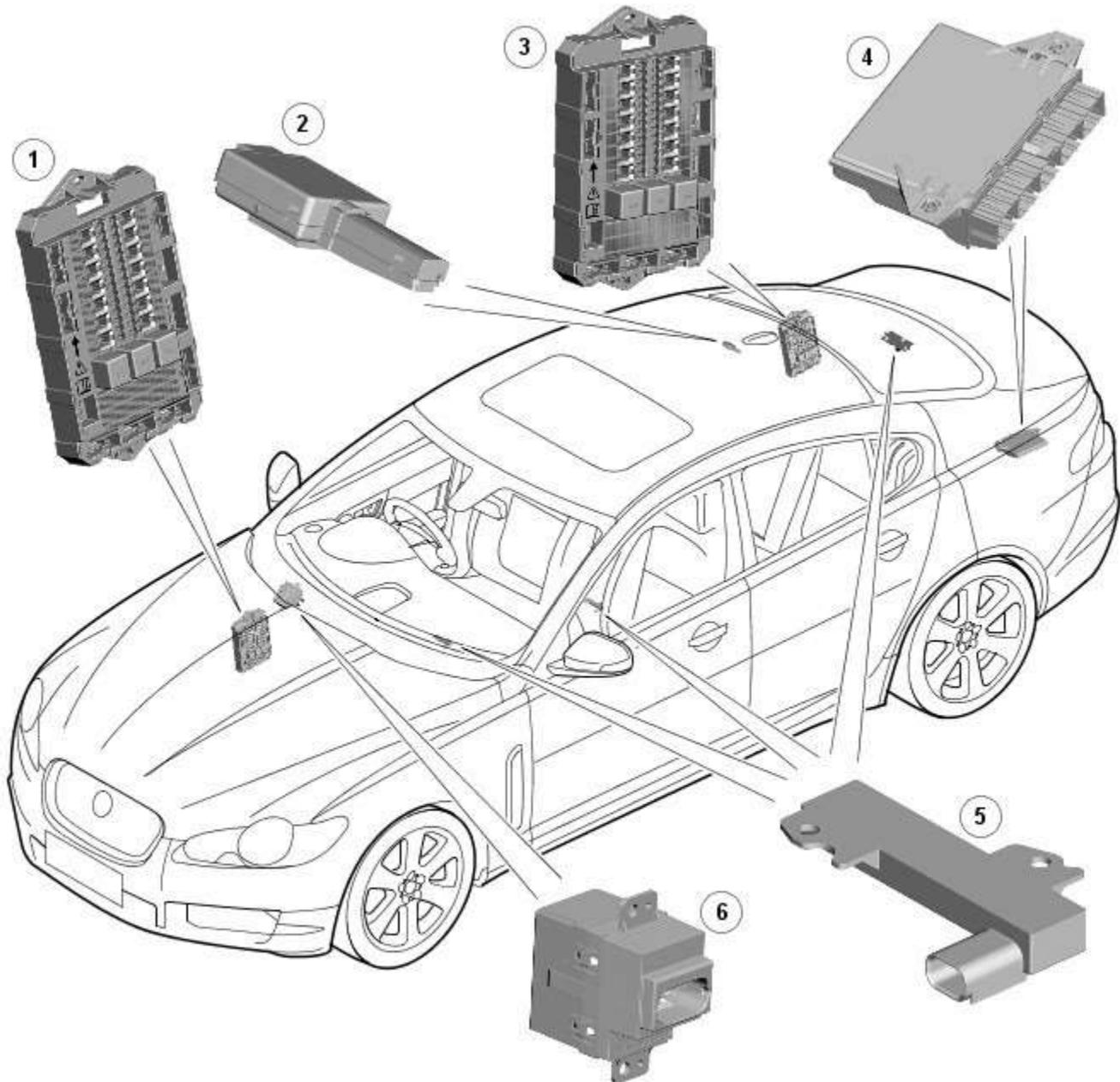
E95277

4. Tighten to 25 Nm.

Anti-Theft - Passive - Anti-Theft - Passive - Component Location

Description and Operation

Component Location



E94900

Item	Description
1	CJB (central junction box)
2	Radio frequency receiver
3	RJB (rear junction box)
4	Keyless vehicle module
5	Low frequency antennae (3 off)
6	Start control module

Anti-Theft - Passive - Anti-Theft - Passive - Overview

Description and Operation

Overview

The [PATS \(passive anti-theft system\)](#) prevents the vehicle's engine from being started by unauthorized persons.

Engine starting is prevented by inhibiting the fuel, engine (spark, injectors and crank) and ignition systems from operating.

This is achieved by using a uniquely coded Smart Key and an encoded data exchange between multiple control modules.

The system is automatic and requires no input from the driver.

The engine start system is initiated when the encoded data between the Smart Key and vehicle control modules is verified. The engine can then be started when the drive selector is in the 'Park' position, and the start/stop switch and the brake pedal are pressed simultaneously.

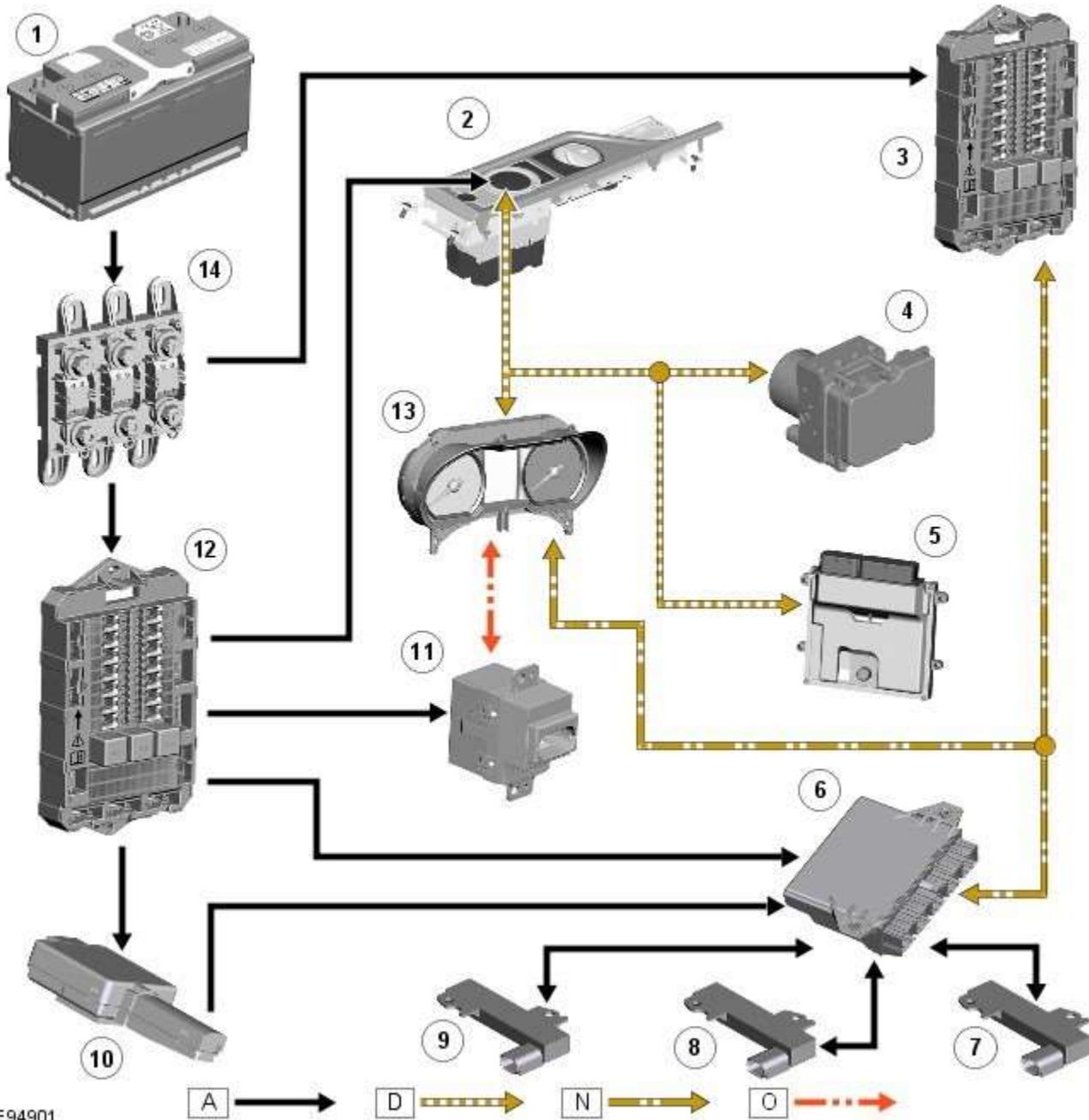
Anti-Theft - Passive - Anti-Theft - Passive - System Operation and Component Description

Description and Operation

Control Diagram



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



E94901

Item	Description
1	Battery
2	Drive selector
3	RJB (rear junction box)
4	ABS (anti-lock brake system)
5	ECM (engine control module)
6	Keyless vehicle module

7	Low frequency antenna - front
8	Low frequency antenna - center
9	Low frequency antenna - rear
10	Radio frequency receiver
11	Start control module
12	CJB (central junction box)
13	Instrument cluster
14	Megafuse (250 amp)

System Operation

The passive start function prevents the vehicle from being started by unauthorized persons. It does this by immobilizing the ignition, fuel and engine crank functions. The system is automatic and requires no input from the driver.

At the request of the [CJB](#), the keyless vehicle module prompts each of the Low Frequency (LF) antennae to output a signal. When the Smart Key is in the vehicle cabin, it detects the LF signals and responds with a Radio Frequency (RF) data-identification signal back to the keyless vehicle module via the RF receiver.

If the data received matches that stored in the keyless vehicle module it continues the passive start process by communicating a 'Smart Key **valid**' signal to the CJB via the medium speed [CAN \(controller area network\)](#) bus.

Once the CJB receives the authorization and confirms a response with an internal calculation, it passes the result to the instrument cluster on the medium speed CAN bus.

Before the instrument cluster sends a mobilization signal to the [ECM](#) it will exchange encrypted data with:

- The electric steering lock mechanism to authorize unlocking the steering column.
- The [RJB](#) to authorize fuel pump operation. Once the RJB receives the authorization and confirms the response with an internal calculation, it will enable the [FPDM \(fuel pump driver module\)](#).
- The CJB to authorize the ignition status. If the drive selector is in the park position and the driver presses the brake pedal and simultaneously presses the start/stop switch, the CJB interprets this as an engine crank request. Before the engine crank request is allowed, the CJB compares a brake pressure signal received from the [ABS](#) module. The brake pressure signal is compared to an internally stored threshold value within the CJB. If the signal is greater than the stored threshold value, a crank request signal is sent to the ECM on the high speed CAN bus.

Once these factors have been confirmed, and the vehicle is in 'Park', the engine can be started by pressing the brake pedal and the Stop/Start button simultaneously.

NOTES:



If the keyless vehicle module fails to locate the Smart Key, the message 'SMART KEY NOT FOUND PLEASE INSERT IN SLOT' will appear in the instrument cluster message center. When inserted the start control module will read the transponder within the Smart Key. If the transponder identification is valid, authorization will be transmitted to the instrument cluster on the [LIN \(local interconnect network\)](#) bus.



When the vehicle is delivered from the factory the passive start function is inhibited. In this condition the vehicle can only be started by placing the Smart Key in the start control module. The system should be switched on during the Pre-Delivery Inspection (PDI) using the Jaguar approved diagnostic system. For additional information, refer to the PDI Manual.

To ensure optimum long term reliability of the smart key the battery must be replaced with a brand new, unused battery. If a used battery is installed the "SMART KEY BATTERY LOW" message may not be cleared. To avoid contamination of the contacts the battery should be removed from its packaging and installed into the smart key while wearing gloves. To confirm that the replacement battery is working correctly press the unlock button twice while holding the smart key outside the vehicle, then enter the vehicle with the smart key, press the start button and confirm that the "SMART KEY BATTERY LOW" message is not displayed.

Component Description

Start Control Module

The start control module is used if the keyless vehicle module is unable to authorise the Smart Key.

If the keyless vehicle module is unable to identify the Smart Key, for example if the Smart Key battery voltage is low or there is local RF interference, the transponder within the Smart Key can be read in the conventional manner. The driver will be alerted to this by a chime and a message in the instrument cluster message center 'SMART KEY NOT FOUND PLEASE INSERT IN SLOT'.

Once inserted the start control module will read the transponder within the Smart Key. If the transponder identification is valid, authorization will be transmitted to the instrument cluster on the [LIN](#) bus.



NOTE: Inserting the Smart Key into the start control module will not charge the Smart Key battery. The battery is non-chargeable and must be replaced if defective.

A message 'REMOVE SMART KEY' will be displayed if the Smart Key is still in the start control module and the driver's door is opened.

Low Frequency Antenna

Three Low Frequency (LF) antennae for the passive start system are positioned in specific locations in the vehicle; refer to Component Location graphic.



NOTE: On vehicles with the passive entry system, five additional antennae are used; one integrated into the rear bumper and one in each door handle assembly. These are only used by the passive entry system and have no function in the passive start system.

The keyless vehicle module transmits an LF signal via the antennae which is received by the Smart Key. The Smart Key then responds by transmitting a Radio Frequency (RF) signal which is received by the RF receiver and passed to the keyless vehicle module for authorization.

Keyless Vehicle Module

The keyless vehicle module controls signal transmissions to and from the Smart Key and provides authorization to allow the vehicle to be started. The module has a medium speed CAN connection to the CJB for authorizing vehicle starting.

Radio Frequency Receiver

The Radio Frequency (RF) receiver transmission is received from the Smart Key to enable key identification.

Anti-Theft - Passive - Anti-Theft - Passive

Diagnosis and Testing

Principle of Operation

For a detailed description of the Anti-Theft - Passive system, refer to the relevant Description and Operation sections in the workshop manual. REFER to: (419-01B Anti-Theft - Passive)

[Anti-Theft - Passive](#) (Description and Operation),

[Anti-Theft - Passive](#) (Description and Operation),

[Anti-Theft - Passive](#) (Description and Operation).

Inspection and Verification

Anti-theft - Passive

The best method to confirm the correct operation of the Passive Anti-Theft System (PATS) is to check the LED (located in the center of the instrument panel). The LED should illuminate solid for 3 seconds, when the ignition status is set to ON, and then extinguish. This validates all PATS functions (i.e. the key transponder matches a stored key code, the challenge/response sequence between the respective modules was successful resulting in the EMS being enabled).

Ignition fails to operate

Check that the smart key is located within the vehicle interior, and that it is the correct one for the vehicle.

Insert the smart key into the start control unit (located at out board side of driver instrument panel lower panel), this is an alternative method to allow Ignition On/Engine Start.



Check that the start button circuit to the CJB is not open circuit or short circuit to power.

Check that the Low Speed CAN network is not malfunctioning, i.e. open circuit or short circuit. This would mean that the remote keyless entry module, Central Junction Box (CJB) and instrument cluster would be unable to communicate.

Engine fails to crank

If a PATS fault is detected, the LED will flash for 60 seconds at 4Hz with a 50% duty cycle. At the end of this period, the LED will flash a 2 digit code; this code is repeated 10 times. The meaning of these fault codes along with the frequency of flashing is given in the accompanying table. As a general rule a fault code of 16 or less will cause the vehicle not to crank. Additionally, the manufacturer approved diagnostic system should be used to check the instrument cluster, CJB & ECM for Diagnostic Trouble Codes (DTCs).

One potential occurrence for failing to crank could be due to the P & N start switch (input to the ECM).

Check the Crank Request output from the CJB to ECM is not short circuit to ground or open circuit.

Check the Starter Relay circuit.



NOTE: On petrol engine variants, due to Smart Start, both sides of Relay Coil are switched directly from ECM (If conditions correct). On diesel engine variants the low side only is switched directly from the ECM.

Check that the Steering Column Lock correctly operates and the steering wheel can turn freely.

Check that the High Speed CAN network is not malfunctioning, i.e. the CAN circuit is open or short circuit. This would mean that the instrument cluster and ECM would be unable to communicate resulting in no Challenge being performed to enable the ECM. This would be supported by LED Flash Code 24, see PATS Fault Code Table.

Also check the CAN network between the ABS module and the CJB. The CJB uses the CAN_BrakePressureTMC signal to determine if the brake pedal has been pressed in order to allow an engine crank. The CJB uses a value of 0x05, if the CJB sees a value less than this, it will not enable the Crank Request Output.

Engine cranks but will not start

If the Engine is cranking it means that the ECM has passed the authorisation required with the Instrument Cluster. If this authorisation failed, the ECM would not engage the starter relay. This could be confirmed by verifying the PATS LED prove out (illuminated solid for 3 seconds) or by reading DTCs from the instrument cluster and ECM.

In this case, the fuel pump circuit should be verified. The Fuel Pump Delivery Module (FPDM), which is supplied via the RJB (authentication required with the instrument cluster) and controlled by the ECM, supplies the fuel pump.

In all cases of suspected non-start issues, the most logical failure modes should be eliminated first. i.e.

1. Check all relevant supplies and grounds to the relevant modules listed herein.
2. Note any unusual behaviour from other systems/functionality.
3. Note any functions that are not operating as expected.

PATS Fault Codes

For the various PATS modes/faults listed in the table, the instrument cluster will store a DTC and indicate this to the customer during the detection period defined in the 'when logged' column, by illuminating the indicator as described for 60 seconds and then flashing the LED 10 times as appropriate. The indication will stop immediately the ignition status is set to OFF any time during the fault indication sequence. Up to 4 DTCs could be stored per key read sequence (1-10 read attempts). No DTCs will be stored until all retry attempts are complete. Only the highest priority fault code will be flashed.

To determine the fault code from the LED: The LED will flash initially ten times with 1.5 seconds between. The LED will remain OFF for 2.5 seconds then flash a number of times with 0.5 seconds between (the number of times the LED flashes represents the first digit of the code), the LED will remain OFF for 1.5 seconds then flash a number of times with 1.5 seconds between (the number of times the LED flashes represents the second digit of the code).

The PATS LED will be commanded on as shown under 'indication'. Normal PATS operations are complete within 400ms of the ignition switch transition from OFF to ON or START, worst case for ECM communication problems will be less than 2 seconds. If PATS is not complete during the 2 seconds the ECM will terminate PATS and await the next ignition ON or START event. PATS faults will be indicated via the LED as soon as possible and will terminate the LED prove out. At ignition OFF all previous flashing will cease and the perimeter anti-theft system will control the LED when the vehicle is locked and armed.

PATS Fault Code Table

Mode of Operation/Fault	When Logged	Ignition Status	DTC	LED Fault Code	Indication
Prove out	N/A	Transition from OFF to ON	N/A	N/A	3 Seconds of steady illumination
Perimeter Anti-theft Control	N/A	OFF - Vehicle locked and armed	N/A	N/A	Off or 0.5Hz flashing at 5% duty cycle ± 20% until Off
Start Control Unit already programmed	Key Insert	Any	B1B0105	N/A	No Indication
Start Control Unit status = invalid response	Key Insert	Any	B1B0167	N/A	No Indication
Start Control Unit programming error	Key Insert	Any	B1B0151	N/A	No Indication
Start Control Unit challenge response error	Key Insert	OFF	B1B0162	N/A	No Indication
Key Programming timer expired or Key Auth Timer expired	Key Insert	Any	B1B0187	N/A	No Indication
Transponder challenge response error	Key Insert	Any	B1B0164	N/A	No Indication
Transponder keys stored below minimum number required	B&A/Dealer	Any	B1B0100	N/A	No Indication
Transponder not programmed	B&A/Dealer	Any	B1B0155	N/A	No Indication
If the instrument cluster sends a 'theft' key status to the ECM or the ECM returns a status message containing the data 'Disabled/Theft', the instrument cluster will set this DTC	EMS CAN communication	OFF to ON	B1B3364	16	60 seconds of 4Hz flashing at 50% duty cycle followed by fault code 16 flashing 10 times

Mode of Operation/Fault	When Logged	Ignition Status	DTC	LED Fault Code	Indication
During manufacturing a Target ID is transferred from the ECM when requested by the instrument cluster. The instrument cluster stores this unique vehicle number in EEPROM. If this ID fails to store in EEPROM correctly, the instrument cluster will set this DTC	B&A/Dealer	OFF to ON	B1B3305	22	60 seconds of steady indication followed by fault code 22 flashing 10 times
If the status message received from the ECM contains the data challenge response error, the instrument cluster will set this DTC	Challenge/Response	OFF to ON	B1B3362	23	60 seconds of steady indication followed by fault code 23 flashing 10 times
After the instrument cluster has transmitted its first PATS idle message, it will start a 2 second timer running. If the PATS sequence does not complete (Cluster received the Enable msg) within this time period the instrument cluster will set this DTC	Idle message missing	OFF to ON	B1B3387	24	60 seconds of steady indication followed by fault code 24 flashing 10 times

1. If an obvious cause for an observed or reported concern is found, correct the cause (if possible) before proceeding to the next step.
2. If the cause is not visually evident, verify the symptom and refer to the manufacturer approved diagnostic system.

Telematics - Telematics

Diagnosis and Testing

The complexity of the electronics involved with the JaguarNet system, of which the GPS antenna and navigation display are parts, and the multiplexed communication network which are connected to it preclude the use of workshop general electrical test equipment. Therefore, reference should be made to the approved Jaguar diagnostic system for detailed instructions on testing the VEMS unit.

The approved Jaguar diagnostic system tests and analyses all functions of the VEMS and the various systems affected by it.

Where a fault is indicated, some basic diagnostic methods may be necessary to confirm that connections are good and that wiring is not damaged before installing a new component.

Navigation System - Navigation System

Diagnosis and Testing

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.

NOTES:



If a control module or a component is suspect and the vehicle remains under manufacturer warranty, 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.



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



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

1. Verify the customer concern.
2. Visually inspect for obvious signs of damage, water ingress and system integrity.

Visual Inspection

Mechanical	Electrical
<ul style="list-style-type: none"> • Navigation system DVD player Mechanism 	<ul style="list-style-type: none"> • Navigation system display • Navigation system module • GPS antenna • Wiring harness for damage and corrosion • ABS Module • Electrical connector(s) • Audio unit

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, check for Diagnostic Trouble Codes (DTCs) and refer to the DTC Index.

Symptom Chart

Symptom	Possible Cause	Action
Poor satellite reception	<ul style="list-style-type: none"> • Electrical harness open/short circuit, dis-connected • Component failure • No reception from satellite 	GO to Pinpoint Test A.
Map disc will not insert/eject	<ul style="list-style-type: none"> • Electrical harness open/short circuit, dis-connected • Component failure • Map disc failure 	GO to Pinpoint Test B.
Black screen (navigation map screen does not display)	<ul style="list-style-type: none"> • Electrical harness open/short circuit, dis-connected • Component failure • GVIF cable 	GO to Pinpoint Test C.
Navigation map screen color is abnormal	<ul style="list-style-type: none"> • Electrical harness open/short circuit, dis-connected • Component failure • GVIF cable 	GO to Pinpoint Test D.

Symptom	Possible Cause	Action
Vehicle's current position mark turns independently	<ul style="list-style-type: none"> Electrical harness open/short circuit, dis-connected Component failure Vehicle on a turntable in a parking building 	GO to Pinpoint Test E.
Car current position not stable	<ul style="list-style-type: none"> Electrical harness open/short circuit, dis-connected Component failure 	GO to Pinpoint Test E.
Map display is incomplete	<ul style="list-style-type: none"> Map disc contaminated/damaged Electrical harness open/short circuit, dis-connected Incorrect market map disc Component failure 	GO to Pinpoint Test G.
No navigation voice guidance	<ul style="list-style-type: none"> Voice guidance soft key set to OFF position Volume level set too low Component failure 	GO to Pinpoint Test H.
No response to pressing navigation menu	<ul style="list-style-type: none"> Interruption during map disc update Electrical harness open/short circuit, dis-connected Incorrect Navigation Control Module (NCM) installed Incorrect car configuration data received 	GO to Pinpoint Test I.
'NO DVD PLEASE INSERT MAP DVD' message is displayed	<ul style="list-style-type: none"> A disc other than the map disc is inserted 	Insert the correct map disc
'UNABLE TO READ DATA CONSULT YOUR DEALER' message is displayed	<ul style="list-style-type: none"> DVD player abnormality 	Check and install a new Navigation Control Module (NCM) as required. Refer to the new module/component installation note at top of DTC Index.
'UNABLE TO READ DATA TEMPERATURE IS TOO HIGH' message is displayed	<ul style="list-style-type: none"> Operating temperature has been exceeded Navigation Control Module (NCM) internal temperature is high 	Move the vehicle to a cool location, and turn the engine OFF. Wait for a while, then verify conditions again. If the temperature around the Navigation Control Module (NCM) is high, take measures to lower temperature
'UNABLE TO READ DVD CORRECTLY CHECK IF THE DVD IS DAMAGED OR DIRTY' message is displayed	<ul style="list-style-type: none"> Check map disc for contamination, deformation, cracks, scratches or non-genuine disc 	Clean the map disc and retest, replace the map disc
'UNABLE TO READ DATA CHECK IF MAP DVD IS CORRECT' message is displayed	<ul style="list-style-type: none"> Incorrect DVD map disc is inserted 	Insert a map disc with the correct part number

Pinpoint Tests

NOTES:



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 Program is in operation, prior to the installation of a new module/component.



Navigation Diagnostic Screen Access

1. With the vehicle at rest, place the ignition switch in either "ACC", "ON", or start the engine.
2. On the "Menu" screen, press the top center of the screen for more than three seconds.
3. Enter the PIN code, and then touch "OK". 660: Diagnosis Menu screen 661: System Check screen (DTC code verification screen) 662: GPS Information screen.
4. The diagnostics screen will be displayed.

PINPOINT TEST A : POOR SATELLITE RECEPTION

PINPOINT TEST B : MAP DISC WILL NOT INSERT/EJECT

NOTE: Ensure the parking brake is applied, and ignition status is set to Auxiliary or ON.

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
B1: CHECK NAVIGATION DISC SLOT SHUTTER	
	1 Check the navigation map disc slot shutter is open. Is the navigation map disc slot shutter is open? Yes GO to B2. No Open the map disc slot shutter. GO to B2.
B2: CHECK NAVIGATION MAP DISC WILL INSERT/EJECT	
	1 Check that it is possible to insert/eject navigation map disc. Is it possible to insert/eject navigation map disc? Yes Operation is normal. No Refer to the electrical circuit diagrams and check power supply and ground connections to the Navigation Control Module (NCM). If power supply and ground connections are good, install a new Navigation Control Module (NCM) as required. Refer to the new module/component installation note at top of DTC Index.

PINPOINT TEST C : BLACK SCREEN (NAVIGATION MAP SCREEN DOES NOT DISPLAY)

NOTE: Ensure the parking brake is applied, and ignition status is set to Auxiliary or ON.

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
C1: CHECK SCREEN SAVER FUNCTION	
	1 Check the screen saver function operation. Does the screen saver function operate? Yes Press the display panel button. GO to C2. No GO to C2.
C2: CHECK DISPLAY BACKLIGHT	
	1 Check the display backlight operation. Does the display backlight operate? Yes Refer to the electrical circuit diagrams and check the GVIF cable between Navigation Control Module (NCM) and HLDF screen is properly connected. If the GVIF cable between Navigation Control Module (NCM) and HLDF screen is properly connected, check and install a new GVIF cable as required. Refer to the new module/component installation note at top of DTC Index. If the GVIF cable between Navigation Control Module (NCM) and HLDF screen is properly connected and NOT damaged, check and install a new Navigation Control Module (NCM) as required. Refer to the new module/component installation note at top of DTC Index. Re-check the system. No Check the HLDF display. Re-check the system.

PINPOINT TEST D : NAVIGATION MAP SCREEN COLOUR IS ABNORMAL

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
D1: COLOUR BAR CHECK	
	1 Carry out the display diagnostics 'colour bar check' (PIN code 660). Are the results of the display diagnostics 'colour bar check' normal? Yes Check the HLDF display. Re-check the system. No Check the condition of the map disc for dirt or scratches. Refer to the electrical circuit diagrams and check the GVIF cable between Navigation Control Module (NCM) and HLDF screen is properly connected. If the GVIF cable between Navigation Control Module (NCM) and HLDF screen is properly connected, check and install a new GVIF cable as required. Refer to the new module/component installation note at top of DTC Index. If the GVIF cable between Navigation Control Module (NCM) and HLDF screen is properly connected and NOT damaged, check and install a new Navigation Control Module (NCM) as required. Refer to the new

module/component installation note at top of DTC Index.
Re-check the system.

PINPOINT TEST E : VEHICLE'S CURRENT POSITION MARK TURNS INDEPENDENTLY

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
E1: VEHICLES CURRENT POSITION MARK TURNS INDEPENDENTLY	
1	Determine if the ignition status was turned to Auxiliary or On, while the vehicle was in motion with steering turned such as after an engine stall.
	Was ignition status set to Auxiliary or On? Yes The angular speed of the vehicle at the time of the ignition status change will be logged as the standard value. To re-set the standard value, turn ignition status to 'OFF' then to 'Auxiliary' or 'On' with the vehicle stationary. Re-test the vehicle. No Check and install a new Navigation Control Module (NCM) as required. Refer to the new module/component installation note at top of DTC Index.

PINPOINT TEST F : CAR CURRENT POSITION NOT STABLE

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
F1: SYSTEM CHECK FOR DTCS	
1	Check the system for DTCS which may be logged.
	Are any system DTCS logged? Yes Carry out repair actions to correct the DTCS logged. Re-check the system for car current position not stable. No GO to F2.
F2: VEHICLE SPEED INPUT CHECK	
1	Select Vehicle Sensor from the navigation diagnostic menu screen (PIN code 660), check Current speed. The current speed must match the speedometer.
	From the Vehicle Sensor screen, does the current speed must match the speedometer? Yes GO to F3. No Carry out MOST ring circuit checks. Check the Anti-Lock Brake System Module for related DTCS and refer to the relevant DTC Index. Carry out network integrity tests using the manufacturer approved diagnostic system. Refer to electrical circuit diagrams and check CAN circuits if required. Repair wiring harness as required.
F3: CHECK NUMBER OF SATELLITES	
1	From the navigation diagnostic GPS information screen (PIN code 662), check the number of satellites displayed.
	Is the number of satellites displayed on the screen 0? Yes Carry out pinpoint test A "Poor Satellite Reception" No GO to F4.
F4: CHECK IF SYMPTOMS ARE OCCURRING IN PARTICULAR LOCATIONS	
1	Confirm if the 'car current position not stable' symptom is occurring in particular locations.
	Is the 'car current position not stable' symptom occurring in particular locations? Yes Signal reflections from buildings or a particular location may be responsible. No Carry out pinpoint test A "Poor Satellite Reception"

PINPOINT TEST G : MAP DISPLAY IS INCOMPLETE

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
G1: SYSTEM CHECK FOR DTCS	
1	Check the system for DTCS which may be logged.
	Are any system DTCS logged? Yes Carry out repair actions to correct the DTCS logged. Re-check the system for 'Map display is incomplete'. No GO to G2.
G2: CHECK MAP DISC	
1	Check map disc for contamination, deformation, cracks, scratches or non-genuine disc and correct market.

	<p>Has a fault been identified with the map disc?</p> <p>Yes Replace the map disc. Re-check the system for 'Map display is incomplete'.</p> <p>No Check and install a new Navigation Control Module (NCM) as required. Refer to the new module/component installation note at top of DTC Index.</p>
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PINPOINT TEST H : NO NAVIGATION VOICE GUIDANCE

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
H1: CHECK ALL AUDIO OUTPUT SYSTEMS	
	1 Check audio output across all systems.
	Is there sound output across all systems?
	Yes GO to H2.
	No GO to H3.
H2: CHECK VOICE GUIDANCE SOFT KEY	
	1 Check navigation screen menu, voice guidance soft key is not set to OFF position.
	Is the voice guidance soft key set to OFF position?
	Yes Set the voice guidance soft key to ON position. Re-check the system
	No GO to H3.
H3: VOLUME LEVEL CHECK	
	1 Check the volume level is not set too low.
	Is the volume level set too low?
	Yes Increase the volume level and re-test vehicle.
	No Refer to electrical circuit diagrams and check integrity of amplifier and speaker system wiring harness and connectors. GO to H4.
H4: NAVIGATION VOICE ONLY NOT AUDIBLE	
	 NOTE: Only the navigation voice cannot be heard.
	1 Press the 'Navigation voice repeat' soft key.
	After the navigation voice repeat soft key is pressed, can voice still not be heard even though it has become louder?
	Yes Check and install a new Navigation Control Module (NCM) as required. Refer to the new module/component installation note at top of DTC Index.
	No Operation is normal.

PINPOINT TEST I : NO RESPONSE TO PRESSING NAVIGATION MENU

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
I1: NO RESPONSE TO PRESSING NAVIGATION MENU	
	 NOTE: 15 minutes are required for the program to update. If the engine is accidentally turned OFF, start the engine again, and wait for 15 minutes.
	1 Check that the engine was not turned 'OFF' during a navigation software update.
	Was the engine turned 'OFF' during a navigation software update?
	Yes Check the correct map disc is inserted into the Navigation Control Module (NCM). Start the engine and allow to idle for 15 minutesTurn the engine 'OFF', and then start the engine again.Verify that the navigation screen displays. Navigation was in the program update mode.
	No GO to I3.
I2: NO RESPONSE TO PRESSING NAVIGATION MENU	
	1 Check that the engine was not turned 'OFF' after inserting the new map disc.
	Was the engine turned 'OFF' after inserting the new map disc?
	Yes Check the correct map disc is inserted into the Navigation Control Module (NCM). Start the engine and allow to idle for 15 minutesTurn the engine 'OFF', and then start the engine again.
	No GO to I3.
I3: NO RESPONSE TO PRESSING NAVIGATION MENU	

	1 Check the "Loading" button on the navigation diagnostics screen (PIN code 660) has been pressed, and "YES" has been selected.
	Has the "Loading" button on the navigation diagnostics screen been pressed, and has "YES" been selected? Yes Check the correct map disc is inserted into the Navigation Control Module (NCM). Start the engine and allow to idle for 15 minutes. Turn the engine 'OFF', and then start the engine again. No Refer to electrical circuit diagrams and check integrity of navigation system wiring harness and connectors. GO to 14.
I4: SYSTEM CHECK FOR DTCS	
	1 Check the system for DTCs which may be logged.
	Is DTC U300055 logged? Yes Using the manufacturer approved diagnostic system check/amend the Car Configuration File parameter in block 2, byte 127 to match vehicle market/specification. If the DTC remains check navigation system module part number and ensure the correct component is installed to vehicle market/specification. No GO to 15.
I5: NO RESPONSE TO PRESSING NAVIGATION MENU	
	1 Turn the engine 'OFF', wait for a moment, and then turn the engine 'ON' again.
	Does the navigation screen fail to display even if the navigation button is pressed? Yes Check the HLDF is installed correctly. Check the Navigation Control Module (NCM) is installed correctly. No Operation is normal.

DTC Index

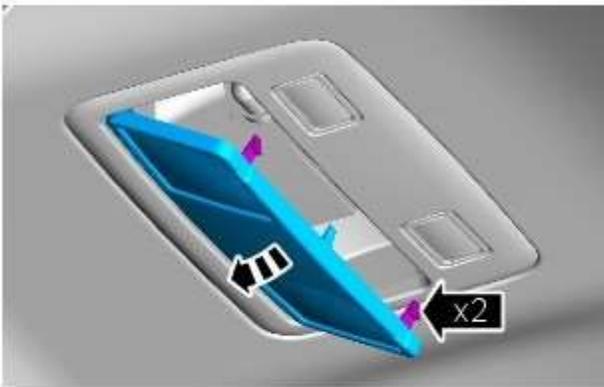
For a list of Diagnostic Trouble Codes (DTCs) that could be logged on this vehicle, please refer to Section 100-00.
REFER to: Diagnostic Trouble Code (DTC) Index - DTC: Navigation Control Module (NCM) (100-00, Description and Operation).

Navigation System - Navigation System Antenna

Removal and Installation

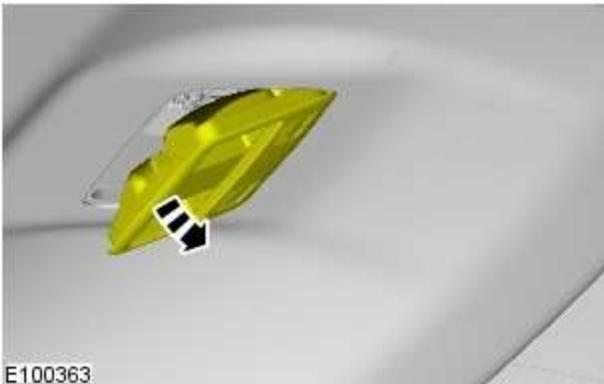
Removal

1. Remove the interior lamp lens.

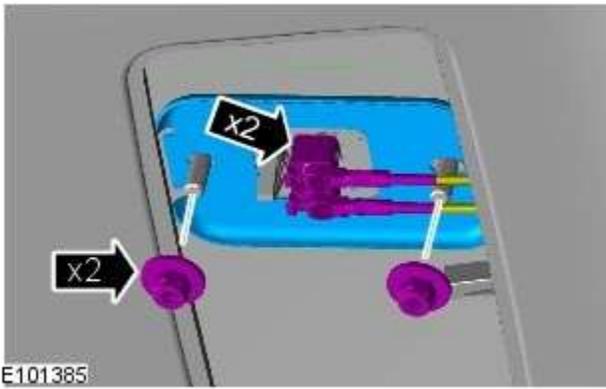


E99917

2. Release the interior lamp.



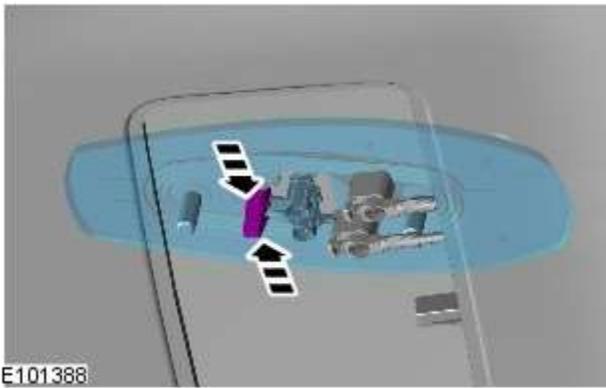
E100363



3. CAUTION: Make sure that the latch is pressed before disconnecting the electrical connector.

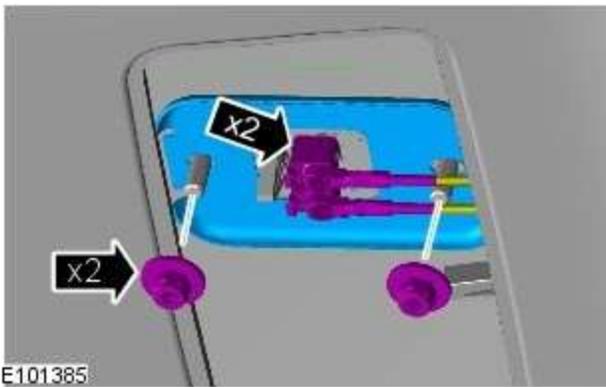
Release and disconnect the 2 electrical connectors.

- Remove the 2 nuts.
- Remove the reinforcement plate.



4. Remove the global positioning sensor (GPS) antenna.

Installation



1. To install, reverse the removal procedure.
 - Tighten to 6 Nm.

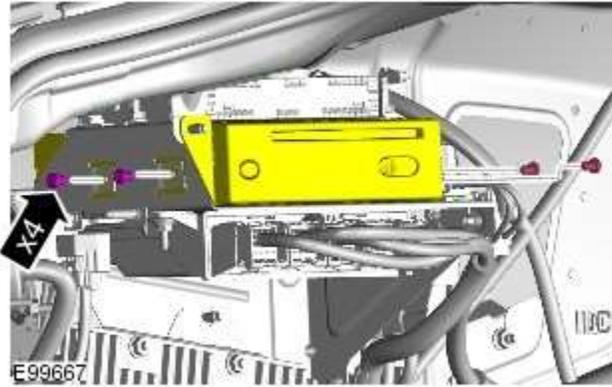
Navigation System - Navigation System Module

Removal and Installation

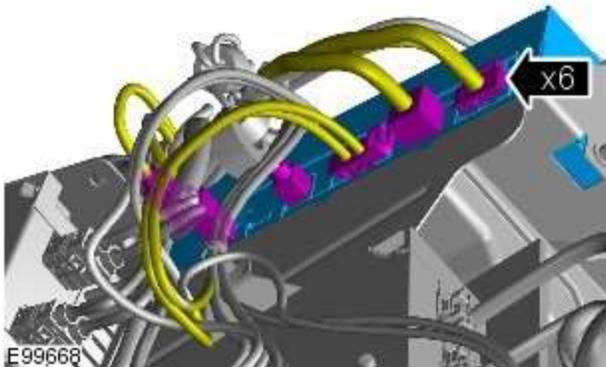
Removal

1. Disconnect the battery ground cable.
For additional information, refer to: [Battery Disconnect and Connect](#) (414-01 Battery, Mounting and Cables, General Procedures).
2. Remove the LH luggage compartment side trim panel.
For additional information, refer to: [Loadspace Trim Panel LH](#) (501-05 Interior Trim and Ornamentation, Removal and Installation).

3. Release the navigation system module.

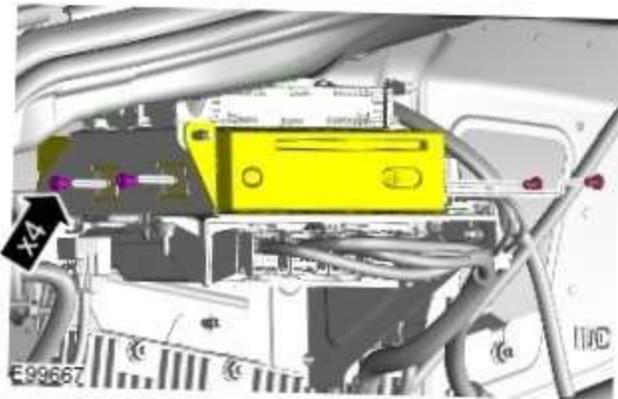


4. Remove the navigation system module.



Installation

1. Install is the reverse of removal.



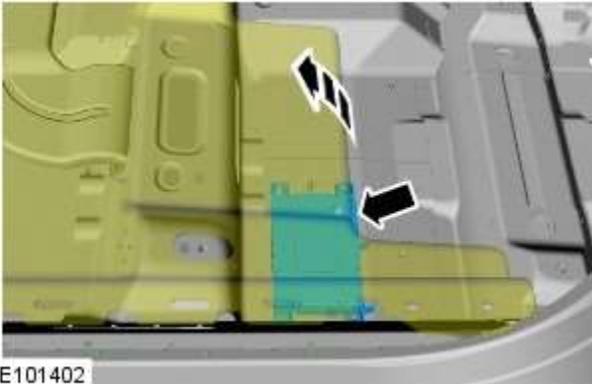
2. Tighten to 10 Nm.

Cellular Phone - Bluetooth Module

Removal and Installation

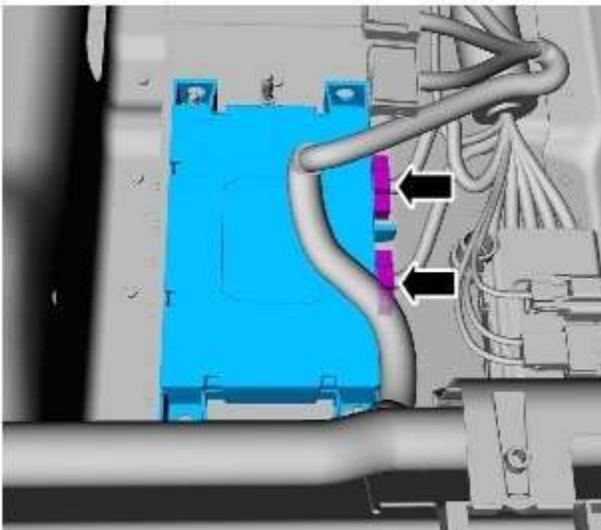
Removal

1. Disconnect the battery ground cable.
For additional information, refer to: [Battery Disconnect and Connect](#) (414-01 Battery, Mounting and Cables, General Procedures).
2. Remove the left hand front seat.
3. Lift the carpet for access.



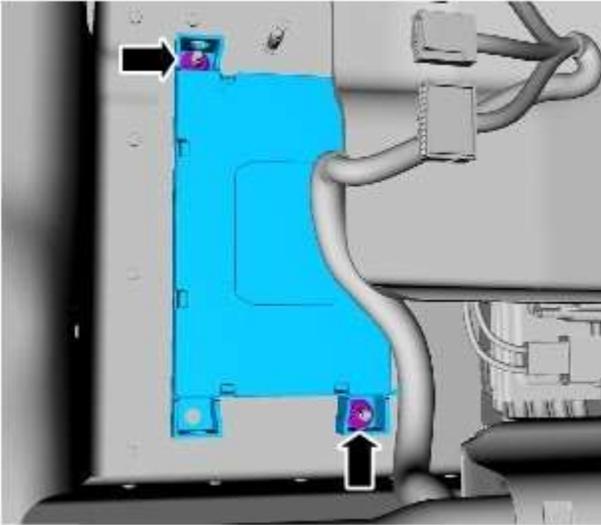
E101402

4. Disconnect the 2 electrical connectors.



E101404

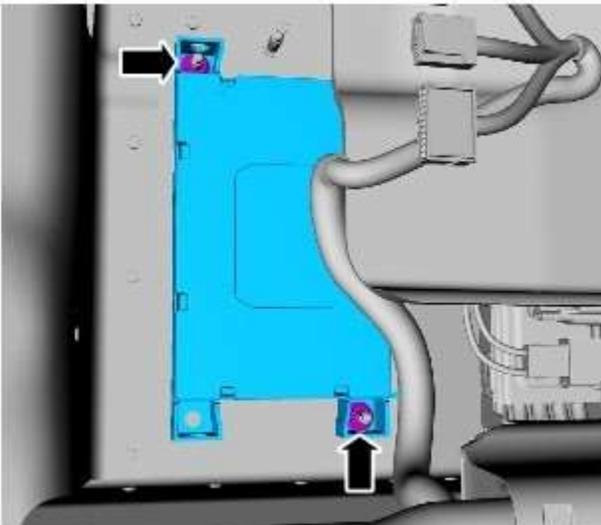
5. Remove the bluetooth module.



E101403

Installation

1. Install is the reverse of removal.
 - Tighten to 10 Nm.



E101403

Multifunction Electronic Modules -

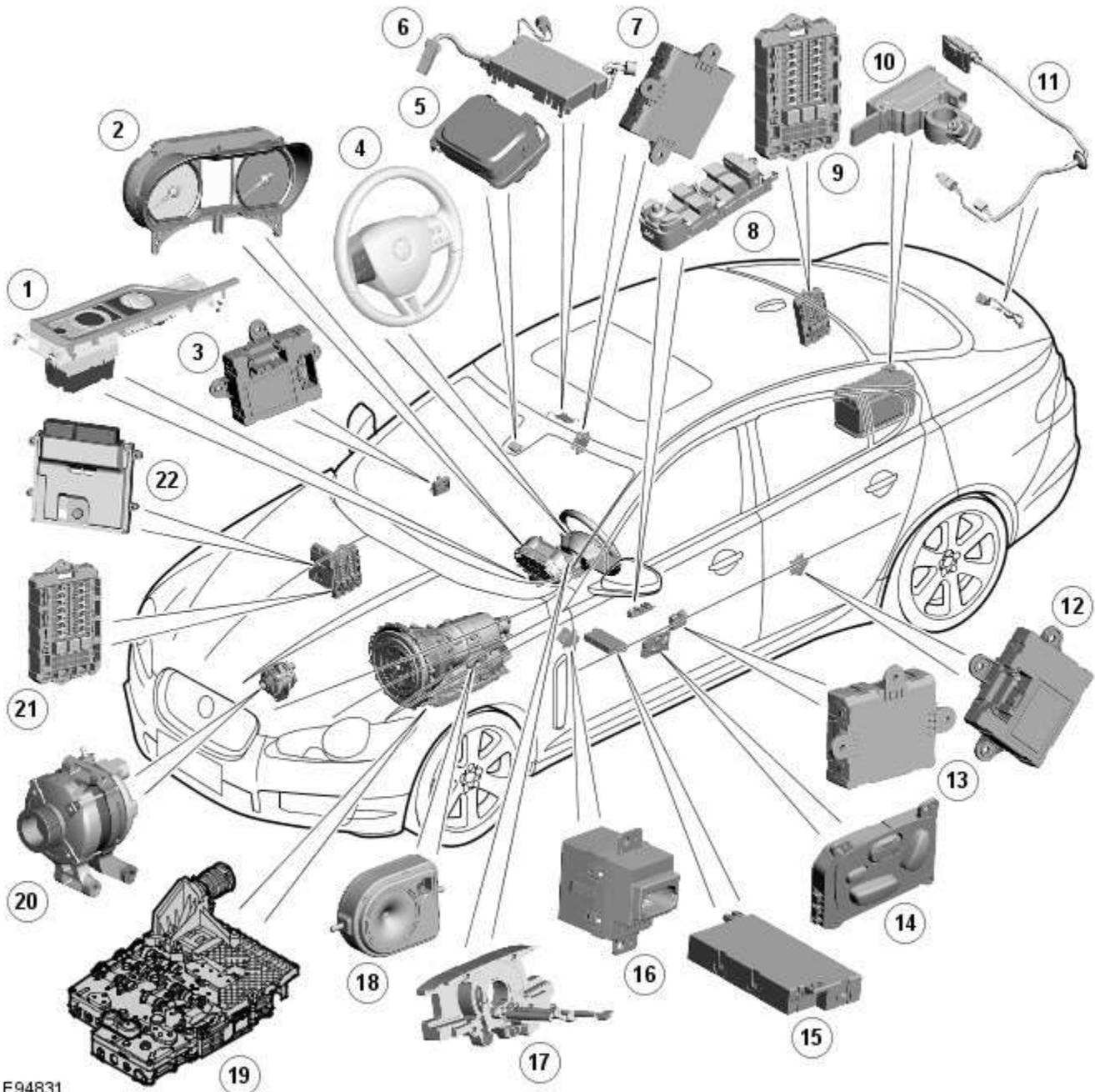
Torque Specifications

Description	Nm	lb-ft	lb-in
Rear electronic module retaining bolts	10	7	89
Multifunction voice activated module retaining bolts	10	7	89
Front electronic module retaining bolts	10	7	89

Multifunction Electronic Modules - Module Controlled Functions - Component Location

Description and Operation

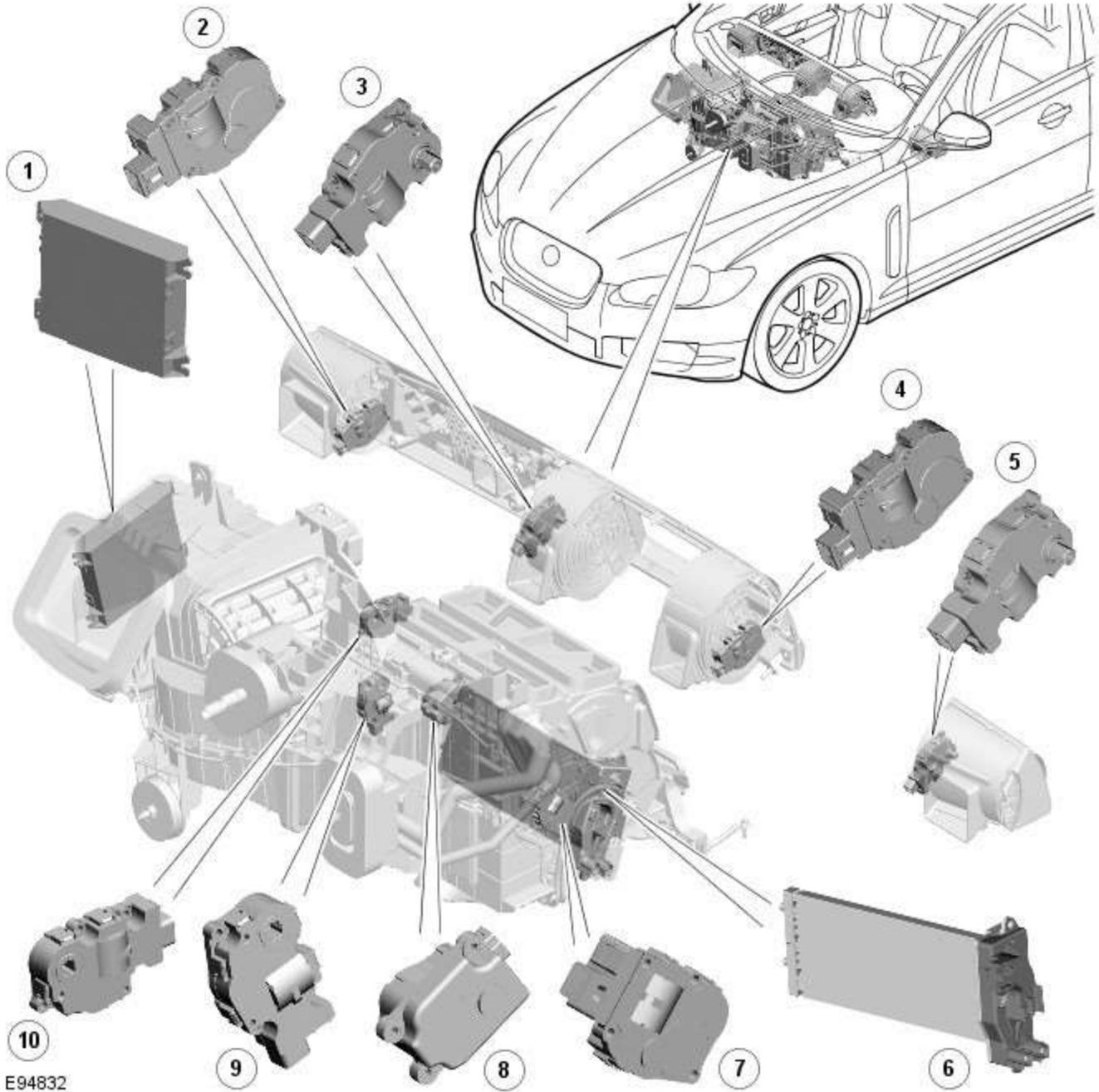
COMPONENT LOCATION - LIN BUS (Sheet 1 of 2)



E94831

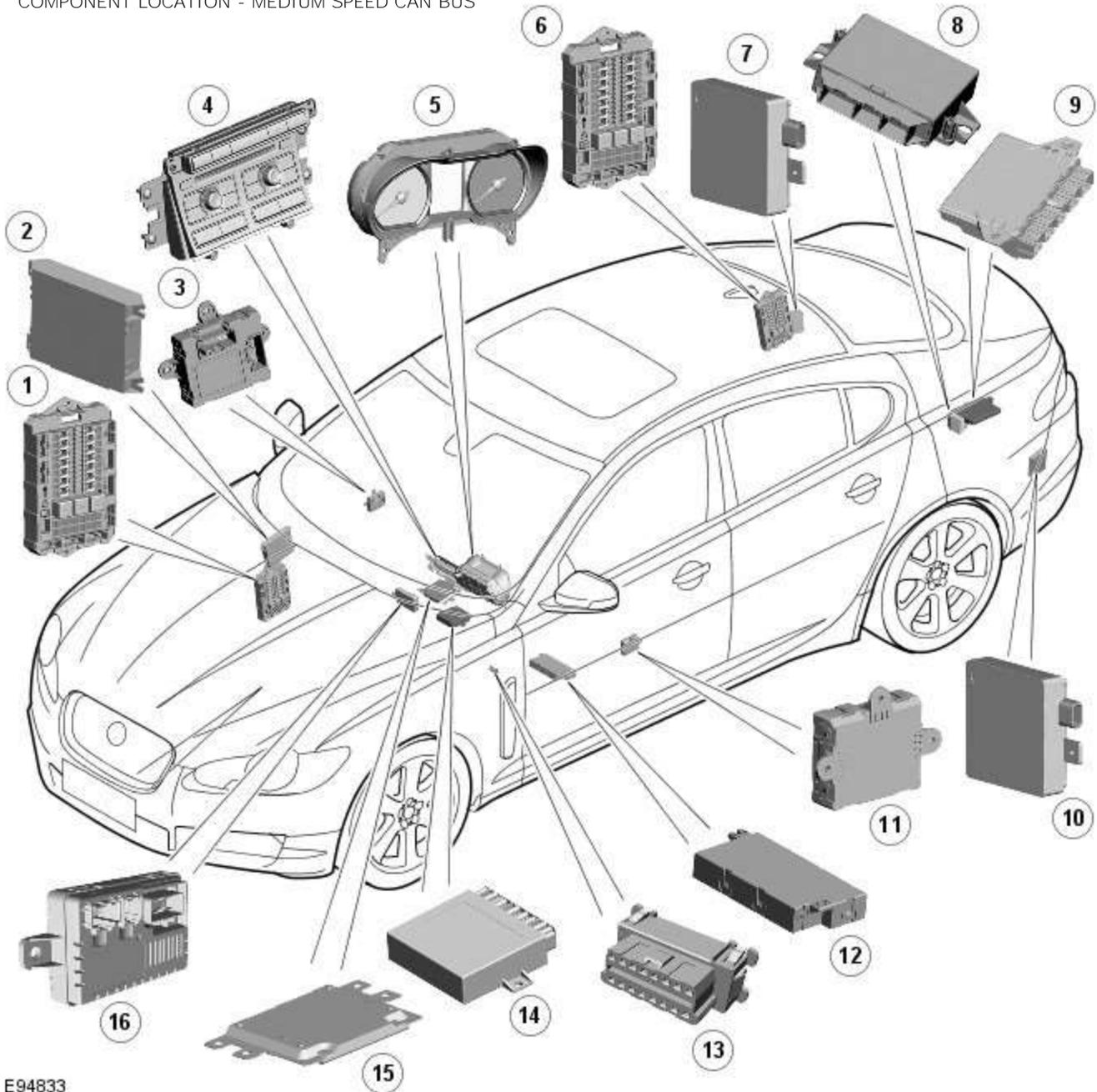
Item	Description
	NOTE: LHD (left-hand drive) vehicle shown
1	Electronic transmission selector
2	Instrument cluster
3	Passenger door module
4	Steering wheel switches
5	Rain/light sensor
6	Intrusion detection module
7	Passenger side rear door module

8	Driver's door switches
9	RJB (rear junction box)
10	Battery monitoring system module
11	Rear view camera
12	Driver's side rear door module
13	Driver's door module
14	Driver's seat switches
15	Driver's seat module
16	Start control module
17	Clockspring
18	Battery backed sounder
19	TCM (transmission control module)
20	Generator
21	CJB (central junction box)
22	ECM (engine control module)



Item	Description
NOTE: LHD vehicle shown	
1	ATC (automatic temperature control) module
2	RH (right-hand) outer face level vent
3	RH inner face level vent
4	LH (left-hand) inner face level vent
5	LH outer face level vent
6	Electric booster heater
7	Stepper motor - LH temperature blend
8	Stepper motor - windshield defrost
9	Stepper motor - RH temperature blend
10	Stepper motor - face/feet

COMPONENT LOCATION - MEDIUM SPEED CAN BUS

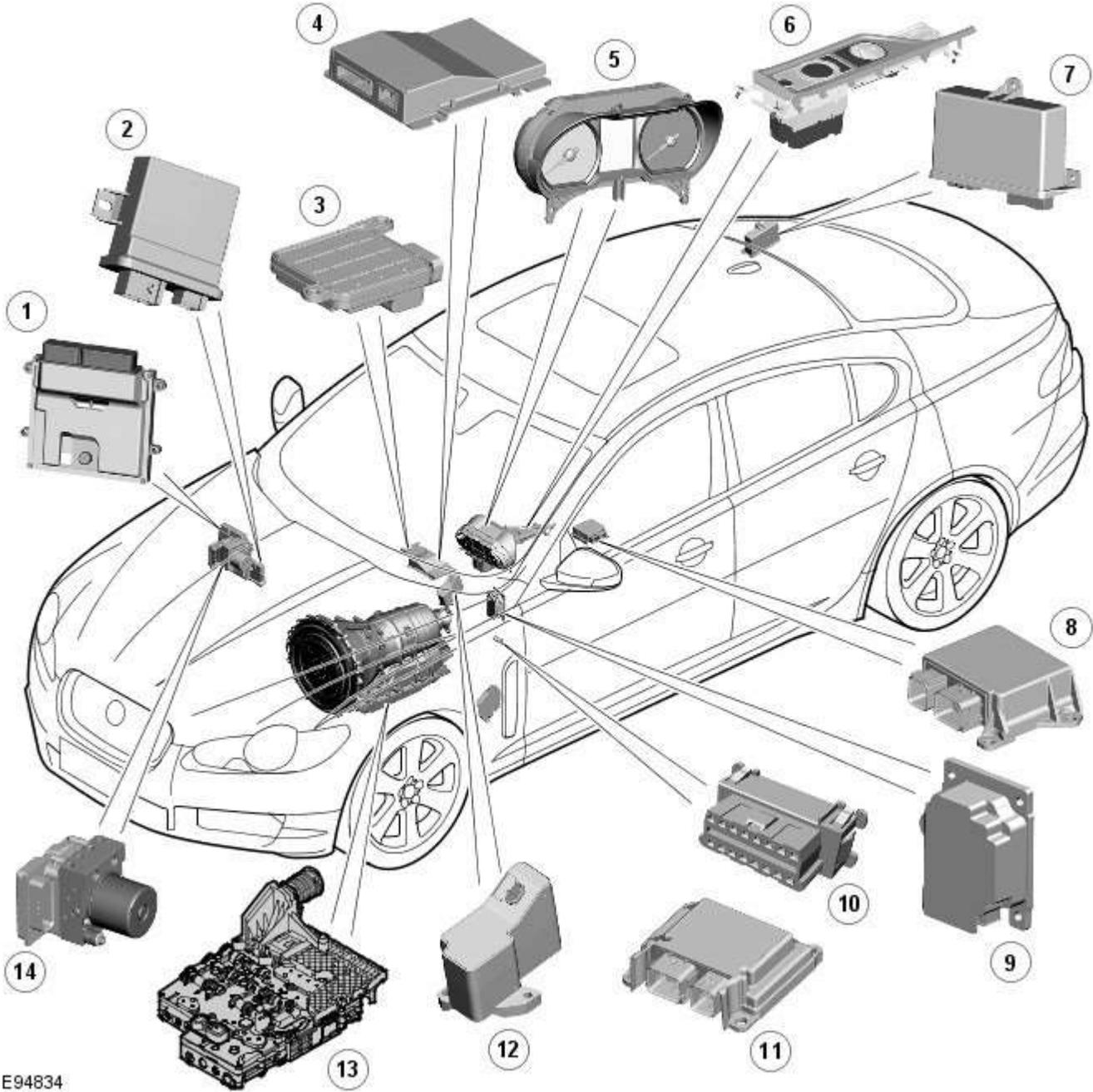


E94833

Item	Description
NOTE: LHD vehicle shown	
1	CJB
2	ATC module
3	Passenger door module
4	Audio system control panel
5	Instrument cluster
6	RJB
7	RH blind spot monitoring module
8	Parking aid module
9	Keyless vehicle module
10	LH blind spot monitoring module
11	Driver's door module
12	Driver's seat module
13	Diagnostic socket

14	Tire Pressure Monitoring System (TPMS) control module
15	Entertainment system control module
16	Climate seat module

COMPONENT LOCATION - HIGH SPEED CAN BUS

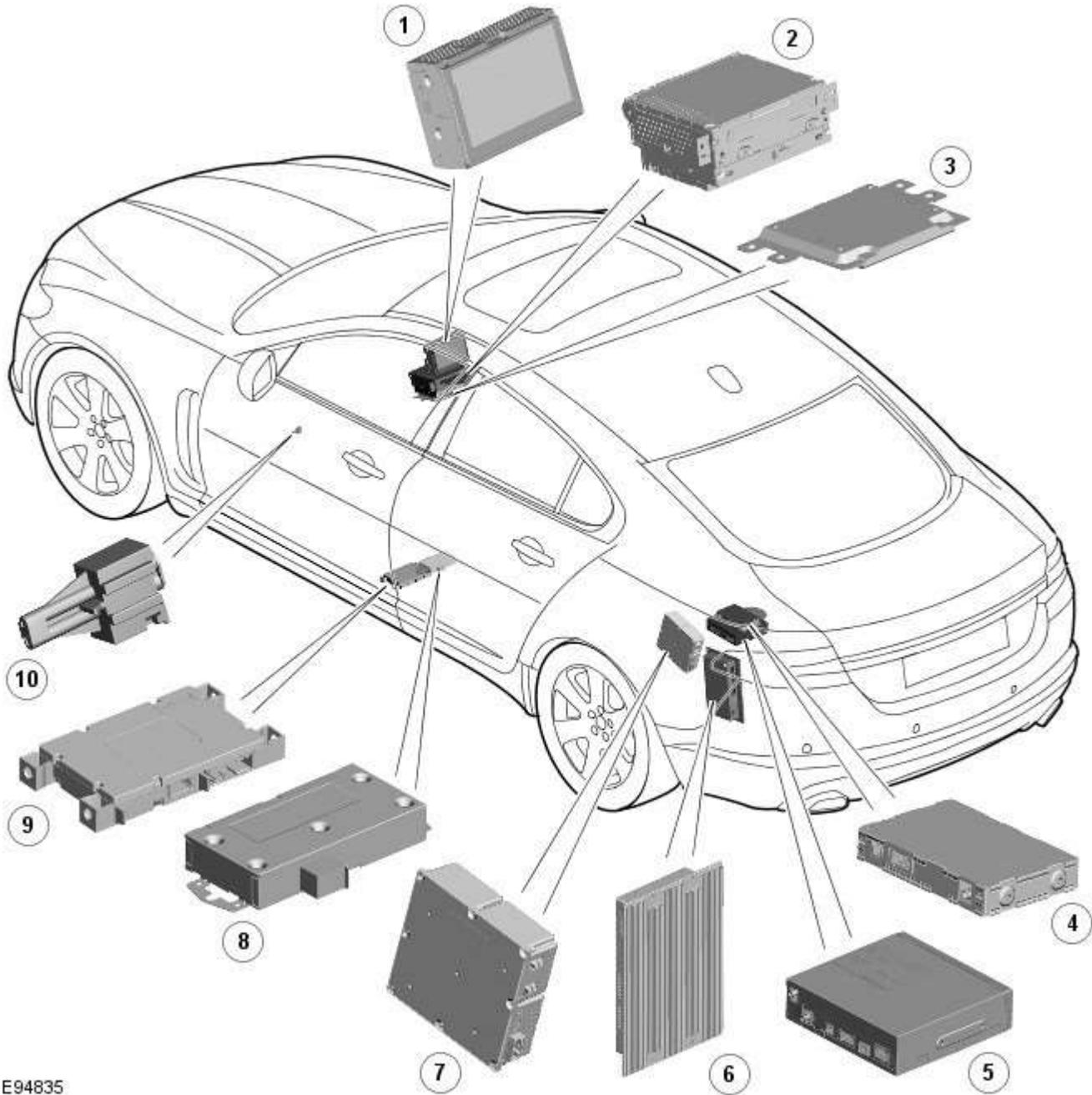


E94834

Item	Description
	NOTE: LHD vehicle shown
1	ECM - V8 shown
2	Headlamp leveling control module
3	Occupant classification system control module
4	Adaptive damping control module
5	Instrument cluster
6	Electronic transmission selector
7	Electronic Parking Brake (EPB) module
8	RCM (restraints control module)

9	Adaptive speed control module
10	Diagnostic socket
11	Pedestrian protection control module
12	Electric steering column lock
13	TCM
14	ABS (anti-lock brake system) module

COMPONENT LOCATION - MOST



E94835

Item	Description
	NOTE: LHD vehicle shown
1	Touch Screen Display (TSD)
2	Integrated audio module
3	Entertainment system control module
4	Digital Audio Broadcast (DAB)/Satellite Digital Audio Radio System (SDARS)
5	Multimedia module

6	Audio system amplifier
7	Television (TV) tuner
8	Portable audio interface
9	Blue tooth phone module
10	Software download socket

Multifunction Electronic Modules - Module Controlled Functions - Overview

Description and Operation

OVERVIEW

The vehicle electrical system comprises a number of control modules which are interconnected via several network systems.

The following network systems are used on the vehicle:

- High speed [CAN \(controller area network\)](#) bus
- Medium speed [CAN](#) bus
- [LIN \(local interconnect network\)](#) bus
- K Bus
- Media Orientated Systems Transport (MOST) ring.

Multifunction Electronic Modules - Module Controlled Functions - System Operation and Component Description

Description and Operation

System Operation

MODULE CONTROLLED FUNCTIONS

Refer to the relevant section for details of system operation.

Component Description

MODULES, SYSTEMS AND FUNCTION

The **CJB (central junction box)** is the 'gateway' for the network systems which allows information to be exchanged between networks.

The entertainment system components are connected on a fiber optic MOST ring. The MOST ring can send and receive information to/from the other network systems via a 'gateway' in the Integrated Control Module.

The following table shows each vehicle control module, the network system to which it is connected, its function and location in the vehicle.

Module	Network System	Function	Vehicle Location
Instrument cluster	High speed CAN (controller area network) bus	Receives data from other vehicle systems to provide information to the driver. Also functions as the gateway for the bus systems.	Instrument panel.
Steering column	High speed CAN bus	Controls the locking and unlocking of the steering column.	Upper steering column.
Diagnostic socket	High speed CAN bus	Allows the transfer of vehicle information using a Jaguar approved diagnostic system or other diagnostic tool.	In the lower instrument panel on the driver's side, adjacent to the start control module.
RCM (restraints control module)	High speed CAN bus	Controls the deployment of the supplementary restraint components.	At rear of floor console.
TCM (transmission control module)	High speed CAN bus	Controls automatic transmission operation.	Inside the transmission and accessible via the fluid pan.
ECM (engine control module)	High speed CAN bus	Controls engine management and fuel system operation.	Rear of the engine compartment on the bulkhead.
ABS (anti-lock brake system)	High speed CAN bus	Controls all aspects of the braking system	Rear of the engine compartment on the bulkhead.
Headlamp leveling module	High speed CAN bus	Controls the static dynamic headlamp leveling function.	In the lower instrument panel, behind the glovebox.
Occupant classification system control module (NAS only)	High speed CAN bus	Detects when a passenger is in the front passenger seat and can determine their size and weight.	Below the front passenger seat.
Adaptive damping control module	High speed CAN bus	Controls the adjustment of the dampers.	Below the front passenger seat.
Electronic Parking Brake (EPB) module	High speed CAN bus	Controls the application and release of the electronic parking brake.	In the luggage compartment, above the RH (right-hand) wheel arch.
Pedestrian protection module	High speed CAN bus	Controls and monitors the pedestrian protection system.	LH (left-hand) 'A' pillar.
Adaptive speed control module	High speed CAN bus	Controls the vehicle's road speed in relation to other vehicles when in speed control mode.	Behind the instrument panel on the driver's side.
Electronic transmission selector	High speed CAN bus	Allows the driver to electronically select the required automatic transmission mode. Transmits driver selections to the TCM .	In the floor console.
Jaguar Drive control module	High speed CAN bus	Controls the Jaguar Drive function and communicates with other system modules.	Integral with the electronic transmission selector software in the floor console.
CJB	Medium speed CAN bus	Controls body functions and power distribution.	On RH 'A' pillar.
Diagnostic socket	Medium speed CAN bus	Allows the transfer of vehicle information using a Jaguar approved diagnostic system or other diagnostic tool.	In the lower instrument panel on the driver's side, adjacent to the start control module.
Passenger door module	Medium speed CAN bus	Controls window and locking functions.	In the front passenger door.
Parking aid module	Medium speed CAN bus	Controls the parking aid system.	In the LH side of the luggage compartment, adjacent to the keyless vehicle module.

Module	Network System	Function	Vehicle Location
Driver's seat module	Medium speed CAN bus	Controls driver's seat positioning and also memory functions of other personalized functions.	Below the driver's seat.
Instrument cluster	Medium speed CAN bus	Receives data from other systems to provide driver information.	In the instrument panel.
Driver's door module	Medium speed CAN bus	Controls window and locking functions.	In the driver's door.
ATC (automatic temperature control) module	Medium speed CAN bus	Contains controls for the heating and air conditioning systems.	On the end of the air conditioning evaporator and blower assembly.
Information control module	Medium speed CAN bus	Contains controls for the entertainment systems.	In the instrument panel below the integrated control panel.
Integrated control panel	Medium speed CAN bus	Contains controls for the entertainment systems and gateway between audio system and other vehicle systems.	In the instrument panel.
Front seat climate control module	Medium speed CAN bus	Controls the temperature requirements of the driver and passenger front seats.	Below the RH front seat.
LH blind spot monitoring module	Medium speed CAN bus	Controls the operating parameters of the system and provides driver indications and fault monitoring.	Behind the outer part of the rear bumper, rearward of the rear wheel.
RH blind spot monitoring module	Medium speed CAN bus	Controls the operating parameters of the system and provides driver indications and fault monitoring.	Behind the outer part of the rear bumper, rearward of the rear wheel.
Keyless vehicle module	Medium speed CAN bus	Allows the vehicle to be opened and closed without the use of a key.	In the LH side of the luggage compartment, adjacent to the parking aid module.
RJB (rear junction box)	Medium speed CAN bus	Controls body functions and power distribution.	RH of luggage compartment.
Tire pressure monitoring control module	Medium speed CAN bus	Monitors the vehicle tires to warn of deflation.	Below the rear of the floor console.
TCM	K Bus	Data transfer between TCM and diagnostic socket. NOTE: Only fitted to early build vehicles.	Inside the transmission and accessible by removal of the fluid pan.
Driver's side rear door module	LIN (local interconnect network)	Controls window and locking operation.	In the driver's side rear door.
Passenger side rear door module	LIN	Controls window and locking operation.	In the passenger side rear door.
Driver's door module	LIN	Memory/adjustment functions for seat, steering column and mirrors and door security functions.	In the driver's door.
Passenger front door module	LIN	Memory/adjustment functions for seat, steering column and mirrors and door security functions.	In the passenger door.
Driver's door switches	LIN	Transmit driver selections to the driver's door module.	In the driver's door panel.
ECM	LIN	Receives a load signal from the generator.	In the engine compartment on the bulkhead.
Generator	LIN	Provide load signal to the ECM .	On the LH side at the front of the engine.
Driver's seat module	LIN	Control position of driver's seat.	Below the driver's seat on the floor pan.
Driver's seat switches	LIN	Provide driver selection inputs to the driver's seat module.	On the outside of the trim panel on the driver's seat.
Air quality sensor	LIN	Measures quality of air entering the vehicle interior.	At the front of the vehicle, behind the air intake grill.
Windshield (defrost) stepper motor	LIN	Moves flaps within the heater assembly to direct air flow to the windshield.	On the heater assembly.
Face/feet stepper motor	LIN	Moves flaps within the heater assembly to direct air flow to instrument panel vents and/or footwell.	On the heater assembly.
LH temperature blend stepper motor	LIN	Moves flaps within the heater assembly to control temperature in LH side footwell.	On the heater assembly.
RH temperature blend stepper motor	LIN	Moves flaps within the heater assembly to direct air flow to RH side footwell.	On the heater assembly.
Electric booster heater	LIN	Controls operation of the electric booster heater.	Inside the heater assembly.
LH outer face level vent	LIN	Controls the operation of the face level vent stepper motor.	In the instrument panel.
LH inner face level vent	LIN	Controls the operation of the face level vent stepper motor.	In the instrument panel.
RH inner face level vent	LIN	Controls operation of the face level vent stepper motor.	In the instrument panel.
RH outer face level vent	LIN	Controls operation of the face level vent stepper motor.	In the instrument panel.
ATC module	LIN	Controls operation of the climate system functions.	In the instrument panel.
Steering wheel audio switches	LIN	Converts analogue signals from steering wheel switches into digital messages.	On the steering wheel.

Module	Network System	Function	Vehicle Location
Steering wheel clockspring	LIN	Passes digital messages from the steering wheel audio switches to the instrument cluster.	Behind the steering wheel, on the upper steering column.
Instrument cluster	LIN	Receives digital signals from other vehicle systems.	On the driver's side of the instrument panel.
Battery backed sounder	LIN	Activated by CJB when alarm trigger is received.	In the LH side of the engine compartment, near the bulkhead.
CJB	LIN	Controls body functions and power distribution.	On the RH 'A' pillar.
RJB	LIN	Controls body functions and power distribution.	On the RH of the luggage compartment.
Battery monitoring system module	LIN	Monitors the condition and charge of the vehicle battery.	On the vehicle battery positive terminal in the luggage compartment.
Intrusion detection module	LIN	Detects movement in the vehicle interior and activates the anti-theft system.	In the front overhead console.
Rain/light sensor	LIN	Detects ambient light levels and moisture on the windscreen for operation of the automatic headlamps and wiper systems.	On the inside of the windshield behind the interior rear view mirror.
Start control module	LIN	Used to identify the Smart Key - component of the keyless start system.	In the lower instrument panel on the driver's side.
Rear view camera	LIN	Passes digital images data from the rear view camera to the RJB	In the luggage compartment lid trim finisher.
Driver's window switch	LIN	Controls operation of the driver's window.	In the driver's door trim panel.
Electronic transmission selector	LIN	Sends selector position to the TCM .	In the floor console.
TCM	LIN	Receives selector position information to control the transmission.	inside the transmission and accessible by removal of the fluid pan.
Information control module	Media Oriented System Transport (MOST)	Contains controls for the entertainment system and gateway between audio system and other vehicle systems.	In the instrument panel below the integrated control panel.
Integrated control panel	MOST	Contains controls for the entertainment system.	In the instrument panel.
Digital Audio Broadcast (DAB) receiver (SDARS NAS only)	MOST	Receives digital radio broadcasts.	In the LH side of the luggage compartment, above the keyless vehicle module.
Bluetooth® phone module	MOST	Controls operation of the Bluetooth® phone system.	Below the LH front seat, adjacent to the portable audio module.
Amplifier/tuner	MOST	Provides amplification for the entertainment systems and reception of radio RF broadcasts.	In the LH side of the luggage compartment.
Navigation computer	MOST	Reads map data from a DVD (digital versatile disc) to calculate and display visual route guidance information via the TSD and audible guidance via the amplifier to the driver.	In the LH side of the luggage compartment.
Touch Screen Display (TSD)	MOST	Provides the driver interface to the entertainment, navigation and driver personalization functions.	In the center of the instrument panel.
TV tuner	MOST	Controls the reception of television signals and audio/visual inputs.	In the LH side of the luggage compartment.
Portable Audio Module	MOST	Controls the auxiliary inputs for additional audio inputs via the portable audio interface.	Below the LH front seat, adjacent to the Bluetooth® phone module.
MOST diagnostic connector	MOST	Allows for diagnostic fault detection of the MOST ring.	Below the air ducting in the floor console.

Refer to Communications Network section for further details.

Refer to: [Communications Network](#) (418-00 Module Communications Network, Description and Operation).

Multifunction Electronic Modules - Driver Door Module (DDM)

Diagnosis and Testing

Description and Operation

For a detailed description of the multifunction electronic control modules, refer to the relevant Description and Operation sections in the workshop manual. REFER to: (419-10 Multifunction Electronic Modules)

[Module Controlled Functions](#) (Description and Operation),

[Module Controlled Functions](#) (Description and Operation),

[Module Controlled Functions](#) (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 damage and system integrity.

Visual Inspection

Electrical
<ul style="list-style-type: none"> • Fuse(s) • Electrical connector(s) • Wiring Harness

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, check for Diagnostic Trouble Codes (DTCs) and refer to the DTC Index.

DTC Index



CAUTION: When probing connectors to take measurements in the course of the pinpoint tests, use the adaptor kit, part number 3548-1358-00.

NOTES:



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.



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).



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.



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



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



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	Description	Possible Cause	Action
B10EB11	Driver door double locking motor	<ul style="list-style-type: none"> • Driver door double locking motor control circuit - short to ground 	Refer to the electrical circuit diagrams and test driver door double locking motor control circuit for short ground

DTC	Description	Possible Cause	Action
B10EB15	Driver door double locking motor	<ul style="list-style-type: none"> Driver door double locking motor control circuit - short to power, open circuit 	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and test driver door double locking motor control circuit for short to power or open circuit
B10EC11	Passenger door double locking motor	<ul style="list-style-type: none"> Passenger door double locking motor control circuit - short to ground 	Refer to the electrical circuit diagrams and test passenger door double locking motor control circuit for short ground
B10EC15	Passenger door double locking motor	<ul style="list-style-type: none"> Passenger door double locking motor control circuit - short to power, open circuit 	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and test passenger door double locking motor control circuit for short to power or open circuit
B10ED11	Rear door driver side double locking motor	<ul style="list-style-type: none"> Rear door driver side double locking motor control circuit - short to ground 	Refer to the electrical circuit diagrams and test rear door driver side double locking motor control circuit for short ground
B10ED15	Rear door driver side double locking motor	<ul style="list-style-type: none"> Rear door driver side double locking motor control circuit - short to power, open circuit 	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and test rear door driver side double locking motor control circuit for short power, open circuit
B10EE11	Rear door passenger side double locking motor	<ul style="list-style-type: none"> Rear door passenger side double locking motor control circuit - short to ground 	Refer to the electrical circuit diagrams and test rear door passenger side double locking motor control circuit for short ground
B10EE15	Rear door passenger side double locking motor	<ul style="list-style-type: none"> Rear door passenger side double locking motor control circuit - short to power, open circuit 	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and test rear door passenger side double locking motor control circuit for short power, open circuit
B110811	Driver door central locking motor	<ul style="list-style-type: none"> Driver door central locking motor control circuit - short to ground 	Refer to the electrical circuit diagrams and test driver door central locking motor control circuit for short ground
B110815	Driver door central locking motor	<ul style="list-style-type: none"> Driver door central locking motor control circuit - short to power, open circuit 	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and test driver door central locking motor control circuit for short to power, open circuit
B110A11	Rear door driver side central locking motor	<ul style="list-style-type: none"> Rear driver door central locking motor control circuit - short to ground 	Refer to the electrical circuit diagrams and test rear driver door central locking motor control circuit for short ground
B110A15	Rear door driver side central locking motor	<ul style="list-style-type: none"> Rear driver door central locking motor control circuit - short to power, open circuit 	Refer to the electrical circuit diagrams and test rear driver door central locking motor control circuit for short to power, open circuit
B116311	Left Mirror Heater Output	<ul style="list-style-type: none"> Left mirror heater control circuit - short to ground 	Refer to the electrical circuit diagrams and test left mirror heater control circuit for short to ground
B116315	Left Mirror Heater Output	<ul style="list-style-type: none"> Left mirror heater control circuit - short to power, open circuit 	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and test left mirror heater control circuit for short to power, open circuit
B116411	Right Mirror Heater Output	<ul style="list-style-type: none"> Right mirror heater control circuit - short to ground 	Refer to the electrical circuit diagrams and test right mirror heater control circuit for short to ground
B116415	Right Mirror Heater Output	<ul style="list-style-type: none"> Right mirror heater control circuit - short to power, open circuit 	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and test right mirror heater control circuit for short to power, open circuit
B116511	Left Front Puddle Lamp Output	<ul style="list-style-type: none"> Left front puddle lamp control circuit - short to ground 	Refer to the electrical circuit diagrams and test left front puddle lamp control circuit for short to ground

DTC	Description	Possible Cause	Action
B116515	Left Front Puddle Lamp Output	<ul style="list-style-type: none"> Left front puddle lamp control circuit - short to power, open circuit 	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and test left front puddle lamp control circuit for short to power, open circuit
B116611	Right Front Puddle Lamp Output	<ul style="list-style-type: none"> Right front puddle lamp control circuit - short to ground 	Refer to the electrical circuit diagrams and test right front puddle lamp control circuit for short to ground
B116615	Right Front Puddle Lamp Output	<ul style="list-style-type: none"> Right front puddle lamp control circuit - short to power, open circuit 	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and test right front puddle lamp control circuit for short to power, open circuit
B117C07	Rear Power Window Up	<ul style="list-style-type: none"> Mechanical failure 	Check rear window mechanism for mechanical failure
B117C72	Rear Power Window Up	<ul style="list-style-type: none"> Actuator stuck open 	Suspect the rear door module. Check and install a new module as required, refer to the new module/component installation note at the top of the DTC Index
B117C73	Rear Power Window Up	<ul style="list-style-type: none"> Actuator stuck closed 	Suspect the rear door module. Check and install a new module as required, refer to the new module/component installation note at the top of the DTC Index
B117C92	Rear Power Window Up	<ul style="list-style-type: none"> Performance or incorrect operation 	Refer to the electrical circuit diagrams and check rear door module power and ground supplies
B117D72	Rear Power Window Down	<ul style="list-style-type: none"> Actuator stuck open 	Suspect the rear door module. Check and install a new module as required, refer to the new module/component installation note at the top of the DTC Index
B117D73	Rear Power Window Down	<ul style="list-style-type: none"> Actuator stuck closed 	Suspect the rear door module. Check and install a new module as required, refer to the new module/component installation note at the top of the DTC Index
B117E07	Front Power Window Up	<ul style="list-style-type: none"> Mechanical failure 	Check front window mechanism for mechanical failure
B117E72	Front Power Window Up	<ul style="list-style-type: none"> Actuator stuck open 	Suspect the DDM. Check and install a new DDM as required, refer to the new module/component installation note at the top of the DTC Index
B117E73	Front Power Window Up	<ul style="list-style-type: none"> Actuator stuck closed 	Suspect the DDM. Check and install a new DDM as required, refer to the new module/component installation note at the top of the DTC Index
B117F72	Front Power Window Down	<ul style="list-style-type: none"> Actuator stuck open 	Suspect the DDM. Check and install a new DDM as required, refer to the new module/component installation note at the top of the DTC Index
B117F73	Front Power Window Down	<ul style="list-style-type: none"> Actuator stuck closed 	Suspect the DDM. Check and install a new DDM as required, refer to the new module/component installation note at the top of the DTC Index
B118929	Front Window Position Sensor	<ul style="list-style-type: none"> Front window hall position sensor - signal invalid 	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
B118A29	Rear Window Position Sensor	<ul style="list-style-type: none"> Rear window hall position sensor - signal invalid 	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
B11D183	LIN Bus Circuit "C"	<ul style="list-style-type: none"> Value of signal protection calculation incorrect 	Suspect driver switchpack. Check and install a new driver switchpack as required, refer to the new module/component installation note at the top of the DTC Index
B11D186	LIN Bus Circuit "C"	Signal invalid	Suspect driver switchpack. Check and install a new driver switchpack as required, refer to the new module/component installation note at the top of the DTC Index
B11D187	LIN Bus Circuit "C"	Missing message	Suspect driver switchpack. Check and install a new driver switchpack as required, refer to the new module/component installation note at the top of the DTC Index
B11F611	Driver Folding Mirror Motor	<ul style="list-style-type: none"> Driver folding mirror motor control circuit - short to ground 	Refer to the electrical circuit diagrams and check driver folding mirror motor control circuit for short to ground
B11F615	Driver Folding Mirror Motor	<ul style="list-style-type: none"> Driver folding mirror motor control circuit - short to power, open circuit 	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and check driver folding mirror motor control circuit for short to power, open circuit

DTC	Description	Possible Cause	Action
B1A9883	LIN Bus Circuit #1	<ul style="list-style-type: none"> Value of signal protection calculation incorrect 	Refer to the electrical circuit diagrams and check LIN circuit between DDM and rear door module for short/open circuits
B1A9886	LIN Bus Circuit #1	<ul style="list-style-type: none"> Signal invalid 	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and check LIN circuit between DDM and rear door module for short/open circuits
B1A9887	LIN Bus Circuit #1	<ul style="list-style-type: none"> Missing message 	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and check LIN circuit between DDM and rear door module for short/open circuits
B1C0911	Driver Left/Right Mirror Motor Circuit	<ul style="list-style-type: none"> Driver left/right mirror motor control circuit - short to ground 	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and test driver left/right mirror motor control circuit for short to ground
B1C0915	Driver Left/Right Mirror Motor Circuit	<ul style="list-style-type: none"> Driver left/right mirror motor control circuit - short to power, open circuit 	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and test driver left/right mirror motor control circuit for short to power, open circuit
B1C1011	Driver Up/Down Mirror Motor Circuit	<ul style="list-style-type: none"> Driver up/down mirror motor control circuit - short to ground 	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and test driver up/down mirror motor control circuit for short to ground
B1C1015	Driver Up/Down Mirror Motor Circuit	<ul style="list-style-type: none"> Driver up/down mirror motor control circuit - short to power, open circuit 	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and test driver up/down mirror motor control circuit for short to power, open circuit
B1C1311	Driver Up/Down Mirror Motor Feedback Circuit	<ul style="list-style-type: none"> Driver up/down mirror motor feedback circuit - short to ground 	Refer to the electrical circuit diagrams and test driver up/down mirror motor feedback circuit for short to ground
B1C1315	Driver Up/Down Mirror Motor Feedback Circuit	<ul style="list-style-type: none"> Driver up/down mirror motor feedback circuit - short to power, open circuit 	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and test driver up/down mirror motor feedback circuit for short to power, open circuit
B1C1411	Driver Left/Right Mirror Motor Feedback Circuit	<ul style="list-style-type: none"> Driver left/right mirror motor feedback circuit - short to ground 	Refer to the electrical circuit diagrams and test driver left/right mirror motor feedback circuit for short to ground
B1C1415	Driver Left/Right Mirror Motor Feedback Circuit	<ul style="list-style-type: none"> Driver left/right mirror motor feedback circuit - short to power, open circuit 	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and test driver left/right mirror motor feedback circuit for short to power, open circuit
B1D0611	Left Turn Indicator	<ul style="list-style-type: none"> Left side turn indicator repeater lamp circuit - short to ground 	Refer to the electrical circuit diagrams and check left side turn indicator repeater lamp circuit for short to ground
B1D0615	Left Turn Indicator	<ul style="list-style-type: none"> Left side turn indicator repeater lamp circuit - short to power, open circuit 	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and check left side turn indicator repeater lamp circuit for short to power, open circuit
B1D0711	Right Turn Indicator	<ul style="list-style-type: none"> Right side turn indicator repeater lamp circuit - short to ground 	Refer to the electrical circuit diagrams and check right side turn indicator repeater lamp circuit for short to ground
B1D0715	Right Turn Indicator	<ul style="list-style-type: none"> Right side turn indicator repeater lamp circuit - short to power, open circuit 	Refer to the electrical circuit diagrams and check right side turn indicator repeater lamp circuit for short to power, open circuit
C1B1411	Sensor Supply #1	<ul style="list-style-type: none"> Window position hall sensors supply circuit - short to ground 	Refer to the electrical circuit diagrams and test window position hall sensors supply circuit for short to ground

DTC	Description	Possible Cause	Action
C1B1415	Sensor Supply #1	<ul style="list-style-type: none"> Window position hall sensors supply circuit - short to power, open circuit 	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and test window position hall sensors supply circuit for short to power, open circuit
C1B1511	Sensor Supply #2	<ul style="list-style-type: none"> Hall sensor supply circuit - short to ground 	Refer to the electrical circuit diagrams and test window position hall sensors supply circuit for short to ground
C1B1515	Sensor Supply #2	<ul style="list-style-type: none"> Hall sensor supply circuit - short to power, open circuit 	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and test window position hall sensors supply circuit for short to power, open circuit
U001000	Medium Speed CAN Communication Bus	<ul style="list-style-type: none"> Bus off 	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
U014000	Lost Communication With Body Control Module	<ul style="list-style-type: none"> Missing message from CJB 	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
U020800	Lost Communication With Seat Control Module "A"	<ul style="list-style-type: none"> Missing message from driver seat module 	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
U030000	Internal Control Module Software Incompatibility	<ul style="list-style-type: none"> Invalid configuration message is received 	Re-configure the RJB using the manufacturer approved diagnostic system. Clear the DTC and re-test. If the DTC remains suspect the DDM. Check and install a new module as required, refer to the new module/component installation note at the top of the DTC Index
U200224	Switch	<ul style="list-style-type: none"> Signal stuck high 	Clear DTC and re-test. If DTC remains, suspect the passenger side window switch. Check and install a new passenger side window switch
U200424	Auxiliary Switch Pack	<ul style="list-style-type: none"> Left or right rear door local switch - signal stuck high 	Check for stuck rear window switch. Refer to the electrical circuit diagrams and check left or right rear door local switch circuit for short circuit
U201011	Switch illumination	<ul style="list-style-type: none"> Rear window switch illumination circuit - short to ground 	Refer to the electrical circuit diagrams and check rear window switch illumination circuit for short to ground
U201208	Car Configuration Parameter(s)	<ul style="list-style-type: none"> Bus signal/message failures 	Cycle the ignition status and re-test. If DTC remains, re-configure the RJB using the manufacturer approved diagnostic system
U201324	Switch Pack	<ul style="list-style-type: none"> Signal stuck high 	Clear DTC and re-test. If DTC remains, install a new driver door switch pack
U201444	Control Module Hardware	<ul style="list-style-type: none"> Data memory failure 	Suspect the DDM. Check and install a new DDM as required, refer to the new module/component installation note at the top of the DTC Index
U210000	Initial Configuration Not Complete	<ul style="list-style-type: none"> No sub type information 	Re-configure the DDM using the manufacturer approved diagnostic system
U300049	Control Module	<ul style="list-style-type: none"> Internal electronic failure 	Suspect the DDM. Check and install a new DDM as required, refer to the new module/component installation note at the top of the DTC Index
U300255	Vehicle Identification Number	<ul style="list-style-type: none"> Not configured 	Re-configure the DDM as new using the manufacturer approved diagnostic system and re-test. If DTC remains install a new module, refer to the new module/component installation note at the top of the DTC Index
U300281	Vehicle Identification Number (VIN)	<ul style="list-style-type: none"> Vehicle/component mis-match. Corrupt VIN data being transmitted, module previously installed to other vehicle 	Check and install correct/new module as required, refer to the new module/component installation note at the top of the DTC Index
U300362	Battery voltage	<ul style="list-style-type: none"> Mis-match in battery voltage, of 2 volts or more, between DDM and RJB 	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system

Multifunction Electronic Modules - Remote Keyless Entry (RKE) Module

Diagnosis and Testing

Principles of Operation

For a detailed description of the Remote Keyless Entry system, refer to the relevant Description and Operation sections in the workshop manual. REFER to: (419-10 Multifunction Electronic Modules)

[Module Controlled Functions](#) (Description and Operation),

[Module Controlled Functions](#) (Description and Operation),

[Module Controlled Functions](#) (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 damage and system integrity.

Visual Inspection

Mechanical	Electrical
<ul style="list-style-type: none"> • Misaligned door(s), hood or luggage compartment lid • Door latch(s) • Actuating rod(s) • Exterior door handle(s) • Interior door handle(s) • Door lock cylinder • Cable(s) • Luggage compartment lid exterior release switch 	<ul style="list-style-type: none"> • Fuse(s) • Wiring harness • Electrical connector(s) • Door lock actuator(s) • Remote transmitter batteries • Vehicle battery • Remote transmitter • Door lock switch(s)

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, check for Diagnostic Trouble Codes (DTCs) and refer to the DTC Index.

DTC Index



CAUTION: When probing connectors to take measurements in the course of the pinpoint tests, use the adaptor kit, part number 3548-1358-00.

NOTES:



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.



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).



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.



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



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



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	Description	Possible Cause	Action
B102B00	Passive Key	<ul style="list-style-type: none"> Response Error - general failure 	Using the manufacturer approved diagnostic system, clear all passive keys, re-learn all passive keys
B10C100	Left Front Unlock Pull Switch	<ul style="list-style-type: none"> No subtype information 	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
B10C124	Left Front Unlock Pull Switch	<ul style="list-style-type: none"> Signal stuck high - button stuck in active position 	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system. Check for stuck left front unlock switch. Refer to the electrical circuit diagrams and check left front unlock switch circuit for short to ground
B10C200	Left Rear Unlock Pull Switch	<ul style="list-style-type: none"> No subtype information 	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
B10C224	Left Rear Unlock Pull Switch	<ul style="list-style-type: none"> Signal stuck high - button stuck in active position 	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system. Check for stuck left rear unlock switch. Refer to the electrical circuit diagrams and check left rear unlock switch circuit for short to ground
B10C300	Right Front Unlock Pull Switch	<ul style="list-style-type: none"> No subtype information 	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
B10C324	Right Front Unlock Pull Switch	<ul style="list-style-type: none"> Signal stuck high - button stuck in active position 	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system. Check for stuck right front unlock switch. Refer to the electrical circuit diagrams and check right front unlock switch circuit for short to ground
B10C400	Right Rear Unlock Pull Switch	<ul style="list-style-type: none"> No subtype information 	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
B10C424	Right Rear Unlock Pull Switch	<ul style="list-style-type: none"> Signal stuck high - button stuck in active position 	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system. Check for stuck right rear unlock switch. Refer to the electrical circuit diagrams and check right front unlock switch circuit for short to ground
B10C524	Trunk Unlock Pull Switch	<ul style="list-style-type: none"> Signal stuck high - button stuck in active position 	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system. Check for stuck luggage compartment lid unlock switch. Refer to the electrical circuit diagrams and check luggage compartment lid unlock switch circuit for short to ground
B10C61F	Exterior Trunk Antenna	<ul style="list-style-type: none"> Circuit intermittent - general electrical error 	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and check exterior luggage compartment antenna circuits for short to ground, power, open circuit
B10C71F	Interior Trunk Antenna	<ul style="list-style-type: none"> Circuit intermittent - general electrical error 	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and check interior luggage compartment antenna circuits for short to ground, power, open circuit
B10C81F	Interior Center Antenna	<ul style="list-style-type: none"> Circuit intermittent - general electrical error 	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and check interior center antenna circuits for short to ground, power, open circuit
B10C91F	Interior Front Antenna	<ul style="list-style-type: none"> Circuit intermittent - general electrical error 	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and check interior front antenna circuits for short to ground, power, open circuit
B10CA1F	Left Rear Door Handle Antenna	<ul style="list-style-type: none"> Circuit intermittent - general electrical error 	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and check left rear door handle antenna circuits for short to ground, power, open circuit
B10CB1F	Right Rear Door Handle Antenna	<ul style="list-style-type: none"> Circuit intermittent - general electrical error 	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and check right rear door handle antenna circuits for short to ground, power, open circuit
B10CC24	Left Front Latch Clutch Switch	<ul style="list-style-type: none"> Signal stuck high - button stuck in active position 	Check for stuck left front door latch clutch switch. Refer to the electrical circuit diagrams and check left front door latch clutch switch circuit for short to ground
B10CD24	Left Rear Latch Clutch Switch	<ul style="list-style-type: none"> Signal stuck high - button stuck in active position 	Check for stuck left rear door latch clutch switch. Refer to the electrical circuit diagrams and check left rear door latch clutch switch circuit for short to ground

DTC	Description	Possible Cause	Action
B10CE24	Right Front Latch Clutch Switch	<ul style="list-style-type: none"> Signal stuck high - button stuck in active position 	Check for stuck right front door latch clutch switch. Refer to the electrical circuit diagrams and check right front door latch clutch switch circuit for short to ground
B10CF24	Right Rear Latch Clutch Switch	<ul style="list-style-type: none"> Signal stuck high - button stuck in active position 	Check for stuck right rear door latch clutch switch. Refer to the electrical circuit diagrams and check right rear door latch clutch switch circuit for short to ground
B10D124	Left Front Lock Button	<ul style="list-style-type: none"> Signal stuck high - button stuck in active position 	Check for stuck left front door handle lock switch. Refer to the electrical circuit diagrams and check left front door handle lock switch circuit for short to ground
B10D224	Left Rear Lock Button	<ul style="list-style-type: none"> Signal stuck high - button stuck in active position 	Check for stuck left rear door handle lock switch. Refer to the electrical circuit diagrams and check left rear door handle lock switch circuit for short to ground
B10D324	Right Front Lock Button	<ul style="list-style-type: none"> Signal stuck high - button stuck in active position 	Check for stuck right front door handle lock switch. Refer to the electrical circuit diagrams and check right front door handle lock switch circuit for short to ground
B10D424	Right Rear Lock Button	<ul style="list-style-type: none"> Signal stuck high - button stuck in active position 	Check for stuck right rear door handle lock switch. Refer to the electrical circuit diagrams and check left front door handle lock switch circuit for short to ground
U001000	Medium Speed CAN Communication Bus	<ul style="list-style-type: none"> No subtype information 	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system. Carry out CAN network integrity test using the manufacturer approved diagnostic system
U014000	Lost Communication With Body Control Module	<ul style="list-style-type: none"> Missing message from CJB 	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system. Carry out CAN network integrity test using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and check power and ground supplies to CJB
U014200	Lost Communication With Body Control Module "B"	<ul style="list-style-type: none"> Missing message from RJB 	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system. Carry out CAN network integrity test using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and check power and ground supplies to RJB
U015500	Lost Communication With Instrument Panel Cluster (IPC) Control Module	<ul style="list-style-type: none"> Missing message from instrument cluster 	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system. Carry out CAN network integrity test using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and check power and ground supplies to instrument cluster
U030000	Internal Control Module Software Incompatibility	<ul style="list-style-type: none"> Invalid configuration message is received 	Re-configure the RJB using the manufacturer approved diagnostic system. Clear the DTC and retest. If the DTC is still logged suspect the remote keyless entry module, refer to the new module installation note at the top of the DTC Index
U201F00	External Receiver	<ul style="list-style-type: none"> No subtype information - communication error 	Suspect the RF receiver, check and install a new RF receiver as required, refer to the new module/component installation note at top of DTC Index
U201F13	External Receiver	<ul style="list-style-type: none"> Line open 	Refer to the electrical circuit diagrams and test RF receiver communication circuit to remote keyless entry module for short to ground or open circuit
U201F87	External Receiver	<ul style="list-style-type: none"> Transmission error 	Refer to the electrical circuit diagrams and check the data line between the RF receiver and the remote keyless entry module for short, open circuit. Suspect the RF receiver or remote keyless entry module, check and install a new RF receiver or remote keyless entry module as required, refer to the new module/component installation note at top of DTC Index
U210000	Initial Configuration Not Complete	<ul style="list-style-type: none"> No subtype information 	Configure the Remote Keyless Entry module using the manufacturer approved diagnostic system
U210100	Control Module Configuration Incompatible	<ul style="list-style-type: none"> No subtype information 	Re-configure the RJB using the manufacturer approved diagnostic system
U300049	Control Module	<ul style="list-style-type: none"> Internal electronic failure 	Install a new remote keyless entry module, refer to the new module installation note at the top of the DTC Index
U300281	Vehicle Identification Number	<ul style="list-style-type: none"> Vehicle/component mis-match. Module previously installed to other vehicle 	Install correct/new module to vehicle specification, refer to the new module/component installation note at the top of the DTC Index

DTC	Description	Possible Cause	Action
U300362	Battery Voltage	<ul style="list-style-type: none"><li data-bbox="516 149 834 243">• Mis-match in battery voltage, of 2 volts or more, between remote keyless entry module and RJB	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system

Multifunction Electronic Modules - Passenger Door Module (PDM)

Diagnosis and Testing

Description and Operation

For a detailed description of the multifunction electronic control modules, refer to the relevant Description and Operation sections in the workshop manual. REFER to: (419-10 Multifunction Electronic Modules)

[Module Controlled Functions](#) (Description and Operation),

[Module Controlled Functions](#) (Description and Operation),

[Module Controlled Functions](#) (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 damage and system integrity.

Visual Inspection

Electrical
<ul style="list-style-type: none"> • Fuse(s) • Electrical connector(s) • Wiring Harness

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, check for Diagnostic Trouble Codes (DTCs) and refer to the DTC Index.

DTC Index



CAUTION: When probing connectors to take measurements in the course of the pinpoint tests, use the adaptor kit, part number 3548-1358-00.

NOTES:



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.



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).



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.



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



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



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	Description	Possible Cause	Action
B10EB11	Driver door double locking motor	<ul style="list-style-type: none"> • Driver door double locking motor control circuit - short to ground 	Refer to the electrical circuit diagrams and test driver door double locking motor control circuit for short ground

DTC	Description	Possible Cause	Action
B10EB15	Driver door double locking motor	<ul style="list-style-type: none"> Driver door double locking motor control circuit - short to power, open circuit 	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and test driver door double locking motor control circuit for short to power or open circuit
B10EC11	Passenger door double locking motor	<ul style="list-style-type: none"> Passenger door double locking motor control circuit - short to ground 	Refer to the electrical circuit diagrams and test passenger door double locking motor control circuit for short ground
B10EC15	Passenger door double locking motor	<ul style="list-style-type: none"> Passenger door double locking motor control circuit - short to power, open circuit 	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and test passenger door double locking motor control circuit for short to power or open circuit
B10ED11	Rear door driver side double locking motor	<ul style="list-style-type: none"> Rear door driver side double locking motor control circuit - short to ground 	Refer to the electrical circuit diagrams and test rear door driver side double locking motor control circuit for short ground
B10ED15	Rear door driver side double locking motor	<ul style="list-style-type: none"> Rear door driver side double locking motor control circuit - short to power, open circuit 	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and test rear door driver side double locking motor control circuit for short power, open circuit
B10EE11	Rear door passenger side double locking motor	<ul style="list-style-type: none"> Rear door passenger side double locking motor control circuit - short to ground 	Refer to the electrical circuit diagrams and test rear door passenger side double locking motor control circuit for short ground
B10EE15	Rear door passenger side double locking motor	<ul style="list-style-type: none"> Rear door passenger side double locking motor control circuit - short to power, open circuit 	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and test rear door passenger side double locking motor control circuit for short power, open circuit
B110911	Passenger door central locking motor	<ul style="list-style-type: none"> Passenger door central locking motor control circuit - short to ground 	Refer to the electrical circuit diagrams and test passenger door central locking motor control circuit for short ground
B110915	Passenger door central locking motor	<ul style="list-style-type: none"> Passenger door central locking motor control circuit - short to power, open circuit 	Refer to the electrical circuit diagrams and test passenger door central locking motor control circuit for short to power, open circuit
B110B11	Rear door passenger side central locking motor	<ul style="list-style-type: none"> Rear passenger door central locking motor control circuit - short to ground 	Refer to the electrical circuit diagrams and test rear passenger door central locking motor control circuit for short ground
B110B15	Rear door passenger side central locking motor	<ul style="list-style-type: none"> Rear passenger door central locking motor control circuit - short to power, open circuit 	Refer to the electrical circuit diagrams and test rear passenger door central locking motor control circuit for short to power, open circuit
B116311	Left Mirror Heater Output	<ul style="list-style-type: none"> Left mirror heater control circuit - short to ground 	Refer to the electrical circuit diagrams and test left mirror heater control circuit for short to ground
B116315	Left Mirror Heater Output	<ul style="list-style-type: none"> Left mirror heater control circuit - short to power, open circuit 	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and test left mirror heater control circuit for short to power, open circuit
B116411	Right Mirror Heater Output	<ul style="list-style-type: none"> Right mirror heater control circuit - short to ground 	Refer to the electrical circuit diagrams and test right mirror heater control circuit for short to ground
B116415	Right Mirror Heater Output	<ul style="list-style-type: none"> Right mirror heater control circuit - short to power, open circuit 	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and test right mirror heater control circuit for short to power, open circuit
B116511	Left Front Puddle Lamp Output	<ul style="list-style-type: none"> Left front puddle lamp control circuit - short to ground 	Refer to the electrical circuit diagrams and test left front puddle lamp control circuit for short to ground

DTC	Description	Possible Cause	Action
B116515	Left Front Puddle Lamp Output	<ul style="list-style-type: none"> Left front puddle lamp control circuit - short to power, open circuit 	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and test left front puddle lamp control circuit for short to power, open circuit
B116611	Right Front Puddle Lamp Output	<ul style="list-style-type: none"> Right front puddle lamp control circuit - short to ground 	Refer to the electrical circuit diagrams and test right front puddle lamp control circuit for short to ground
B116615	Right Front Puddle Lamp Output	<ul style="list-style-type: none"> Right front puddle lamp control circuit - short to power, open circuit 	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and test right front puddle lamp control circuit for short to power, open circuit
B117C07	Rear Power Window Up	<ul style="list-style-type: none"> Mechanical failure 	Check rear window mechanism for mechanical failure
B117C72	Rear Power Window Up	<ul style="list-style-type: none"> Actuator stuck open 	Suspect the rear door module. Check and install a new module as required, refer to the new module/component installation note at the top of the DTC Index
B117C73	Rear Power Window Up	<ul style="list-style-type: none"> Actuator stuck closed 	Suspect the rear door module. Check and install a new module as required, refer to the new module/component installation note at the top of the DTC Index
B117C92	Rear Power Window Up	<ul style="list-style-type: none"> Performance or incorrect operation 	Refer to the electrical circuit diagrams and check rear door module power and ground supplies
B117D72	Rear Power Window Down	<ul style="list-style-type: none"> Actuator stuck open 	Suspect the rear door module. Check and install a new module as required, refer to the new module/component installation note at the top of the DTC Index
B117D73	Rear Power Window Down	<ul style="list-style-type: none"> Actuator stuck closed 	Suspect the rear door module. Check and install a new module as required, refer to the new module/component installation note at the top of the DTC Index
B117E07	Front Power Window Up	<ul style="list-style-type: none"> Mechanical failure 	Check the front window mechanism for mechanical failure
B117E72	Front Power Window Up	<ul style="list-style-type: none"> Actuator stuck open 	Suspect the PDM. Check and install a new PDM as required, refer to the new module/component installation note at the top of the DTC Index
B117E73	Front Power Window Up	<ul style="list-style-type: none"> Actuator stuck closed 	Suspect the PDM. Check and install a new PDM as required, refer to the new module/component installation note at the top of the DTC Index
B117F72	Front Power Window Down	<ul style="list-style-type: none"> Actuator stuck open 	Suspect the PDM. Check and install a new PDM as required, refer to the new module/component installation note at the top of the DTC Index
B117F73	Front Power Window Down	<ul style="list-style-type: none"> Actuator stuck closed 	Suspect the PDM. Check and install a new PDM as required, refer to the new module/component installation note at the top of the DTC Index
B118929	Front Window Position Sensor	<ul style="list-style-type: none"> Front window hall position sensor - signal invalid 	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
B118A29	Rear Window Position Sensor	<ul style="list-style-type: none"> Rear window hall position sensor - signal invalid 	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
B11D183	LIN Bus Circuit "C"	<ul style="list-style-type: none"> Value of signal protection calculation incorrect 	Suspect driver switchpack. Check and install a new driver switchpack as required, refer to the new module/component installation note at the top of the DTC Index
B11D186	LIN Bus Circuit "C"	Signal invalid	Suspect driver switchpack. Check and install a new driver switchpack as required, refer to the new module/component installation note at the top of the DTC Index
B11D187	LIN Bus Circuit "C"	Missing message	Suspect driver switchpack. Check and install a new driver switchpack as required, refer to the new module/component installation note at the top of the DTC Index
B11F711	Passenger Folding Mirror Motor	<ul style="list-style-type: none"> Passenger folding mirror motor control circuit - short to ground 	Refer to the electrical circuit diagrams and check passenger folding mirror motor control circuit for short to ground
B11F715	Passenger Folding Mirror Motor	<ul style="list-style-type: none"> Passenger folding mirror motor control circuit - short to power, open circuit 	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and check passenger folding mirror motor control circuit for short to power, open circuit

DTC	Description	Possible Cause	Action
B1A9883	LIN Bus Circuit #1	<ul style="list-style-type: none"> Value of signal protection calculation incorrect 	Refer to the electrical circuit diagrams and check LIN circuit between DDM and rear door module for short/open circuits
B1A9886	LIN Bus Circuit #1	<ul style="list-style-type: none"> Signal invalid 	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and check LIN circuit between DDM and rear door module for short/open circuits
B1A9887	LIN Bus Circuit #1	<ul style="list-style-type: none"> Missing message 	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and check LIN circuit between DDM and rear door module for short/open circuits
B1C1111	Passenger Left/Right Mirror Motor Circuit	<ul style="list-style-type: none"> Passenger left/right mirror motor control circuit - short to ground 	Refer to the electrical circuit diagrams and test passenger left/right mirror motor control circuit for short to ground
B1C1115	Passenger Left/Right Mirror Motor Circuit	<ul style="list-style-type: none"> Passenger left/right mirror motor control circuit - short to power, open circuit 	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and test passenger left/right mirror motor control circuit for short to power, open circuit
B1C1211	Passenger Up/Down Mirror Motor Circuit	<ul style="list-style-type: none"> Passenger up/down mirror motor control circuit - short to ground 	Refer to the electrical circuit diagrams and test passenger up/down mirror motor control circuit for short to ground
B1C1215	Passenger Up/Down Mirror Motor Circuit	<ul style="list-style-type: none"> Passenger up/down mirror motor control circuit - short to power, open circuit 	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and test passenger up/down mirror motor control circuit for short to power, open circuit
B1C1511	Passenger Up/Down Mirror Motor Feedback Circuit	<ul style="list-style-type: none"> Passenger up/down mirror motor feedback circuit - short to ground 	Refer to the electrical circuit diagrams and test passenger up/down mirror motor feedback circuit for short to ground
B1C1515	Passenger Up/Down Mirror Motor Feedback Circuit	<ul style="list-style-type: none"> Passenger up/down mirror motor feedback circuit - short to power, open circuit 	Refer to the electrical circuit diagrams and test passenger up/down mirror motor feedback circuit for short to power, open circuit
B1C1611	Passenger Left/Right Mirror Motor Feedback Circuit	<ul style="list-style-type: none"> Passenger left/right mirror motor feedback circuit - short to ground 	Refer to the electrical circuit diagrams and test passenger left/right mirror motor feedback circuit for short to ground
B1C1615	Passenger Left/Right Mirror Motor Feedback Circuit	<ul style="list-style-type: none"> Passenger left/right mirror motor feedback circuit - short to power, open circuit 	Refer to the electrical circuit diagrams and test passenger left/right mirror motor feedback circuit for short to power, open circuit
B1D0611	Left Turn Indicator	<ul style="list-style-type: none"> Left side turn indicator repeater lamp circuit - short to ground 	Refer to the electrical circuit diagrams and check left side turn indicator repeater lamp circuit for short to ground
B1D0615	Left Turn Indicator	<ul style="list-style-type: none"> Left side turn indicator repeater lamp circuit - short to power, open circuit 	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and check left side turn indicator repeater lamp circuit for short to power, open circuit
B1D0711	Right Turn Indicator	<ul style="list-style-type: none"> Right side turn indicator repeater lamp circuit - short to ground 	Refer to the electrical circuit diagrams and check right side turn indicator repeater lamp circuit for short to ground
B1D0715	Right Turn Indicator	<ul style="list-style-type: none"> Right side turn indicator repeater lamp circuit - short to power, open circuit 	Refer to the electrical circuit diagrams and check right side turn indicator repeater lamp circuit for short to power, open circuit
C1B1411	Sensor Supply #1	<ul style="list-style-type: none"> Front window position hall sensor supply circuit - short to ground 	Refer to the electrical circuit diagrams and test front window position hall sensor supply circuit for short to ground

DTC	Description	Possible Cause	Action
C1B1415	Sensor Supply #1	<ul style="list-style-type: none"> Front window position hall sensor supply circuit - short to power, open circuit 	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and test front window position hall sensor supply circuit for short to power, open circuit
C1B1511	Sensor Supply #2	<ul style="list-style-type: none"> Hall sensor supply circuit - short to ground 	Refer to the electrical circuit diagrams and test window position hall sensors supply circuit for short to ground
C1B1515	Sensor Supply #2	<ul style="list-style-type: none"> Hall sensor supply circuit - short to power, open circuit 	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and test window position hall sensors supply circuit for short to power, open circuit
U001000	Medium Speed CAN Communication Bus	<ul style="list-style-type: none"> Bus off 	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
U014000	Lost Communication With Body Control Module	<ul style="list-style-type: none"> Missing message from CJB 	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
U020800	Lost Communication With Seat Control Module "A"	<ul style="list-style-type: none"> Missing message from driver seat module 	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
U030000	Internal Control Module Software Incompatibility	<ul style="list-style-type: none"> Invalid configuration message is received 	Re-configure the RJB using the manufacturer approved diagnostic system. Clear the DTC and re-test. If the DTC remains suspect the PDM. Check and install a new module as required, refer to the new module/component installation note at the top of the DTC Index
U200224	Switch	<ul style="list-style-type: none"> Signal stuck high 	Clear DTC and re-test. If DTC remains, suspect the passenger side window switch. Check and install a new passenger side window switch
U200424	Auxiliary Switch Pack	<ul style="list-style-type: none"> Left or right rear door local switch - signal stuck high 	Check for stuck rear window switch. Refer to the electrical circuit diagrams and check left or right rear door local switch circuit for short circuit
U201011	Switch illumination	<ul style="list-style-type: none"> Rear window switch illumination circuit - short to ground 	Refer to the electrical circuit diagrams and check rear window switch illumination circuit for short to ground
U201208	Car Configuration Parameter(s)	<ul style="list-style-type: none"> Bus signal/message failures 	Cycle the ignition status and re-test. If DTC remains, re-configure the RJB using the manufacturer approved diagnostic system
U201324	Switch Pack	<ul style="list-style-type: none"> Signal stuck high 	Clear DTC and re-test. If DTC remains, install a new driver door switch pack
U201444	Control Module Hardware	<ul style="list-style-type: none"> Data memory failure 	Suspect the PDM. Check and install a new PDM as required, refer to the new module/component installation note at the top of the DTC Index
U210000	Initial Configuration Not Complete	<ul style="list-style-type: none"> No sub type information 	Re-configure the PDM using the manufacturer approved diagnostic system
U300049	Control Module	<ul style="list-style-type: none"> Internal electronic failure 	Suspect the PDM. Check and install a new PDM as required, refer to the new module/component installation note at the top of the DTC Index
U300255	Vehicle Identification Number	<ul style="list-style-type: none"> Not configured 	Re-configure the PDM as new using the manufacturer approved diagnostic system and re-test. If DTC remains install a new module, refer to the new module/component installation note at the top of the DTC Index
U300281	Vehicle Identification Number (VIN)	<ul style="list-style-type: none"> Vehicle/component mis-match. Corrupt VIN data being transmitted, module previously installed to other vehicle 	Check and install correct/new module as required, refer to the new module/component installation note at the top of the DTC Index
U300362	Battery voltage	<ul style="list-style-type: none"> Mis-match in battery voltage, of 2 volts or more, between PDM and RJB 	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system

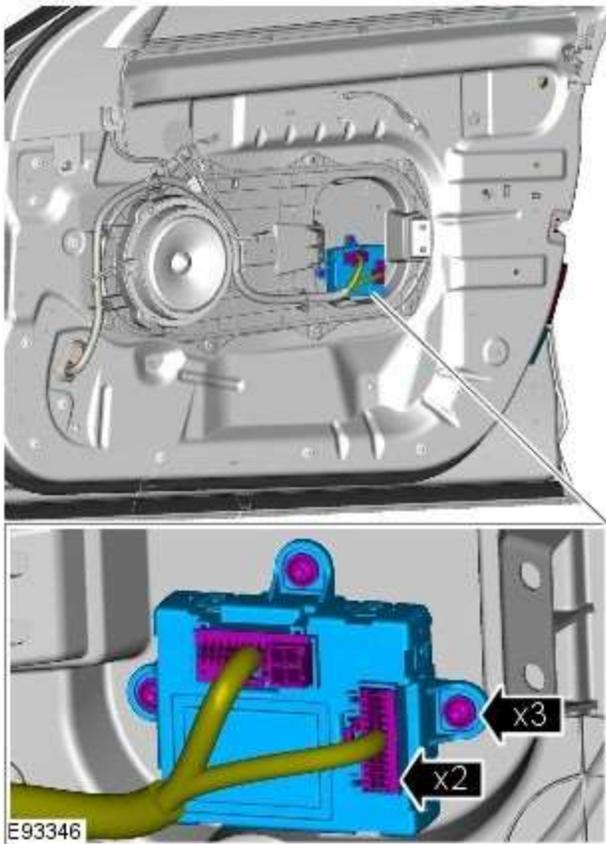
Multifunction Electronic Modules - Driver Door Module (DDM)

Removal and Installation

Removal

1. Refer to: [Battery Disconnect and Connect](#) (414-01 Battery, Mounting and Cables, General Procedures).
2. Refer to: [Front Door Trim Panel](#) (501-05 Interior Trim and Ornamentation, Removal and Installation).

3.



Installation

1. To install, reverse the removal procedure.
2. If a new component has been installed, configure using Jaguar approved diagnostic equipment.

Multifunction Electronic Modules - Driver Seat Module (DSM)

Removal and Installation

Removal



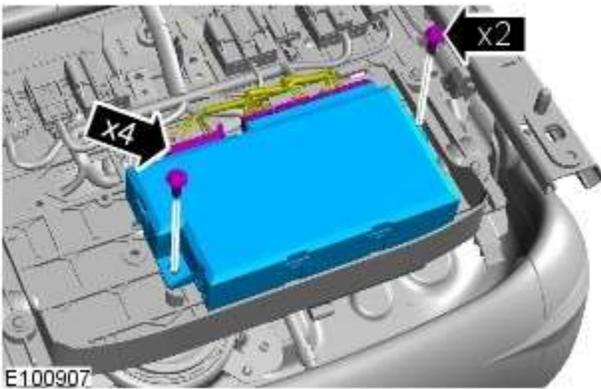
NOTE: Removal steps in this procedure may contain installation details.

1. Make the air bag supplemental restraint system (SRS) safe.

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

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

3.



Installation

1. To install, reverse the removal procedure.

2. If a new component has been installed, configure using Jaguar approved diagnostic equipment.

Multifunction Electronic Modules - Passenger Door Module (PDM)

Removal and Installation

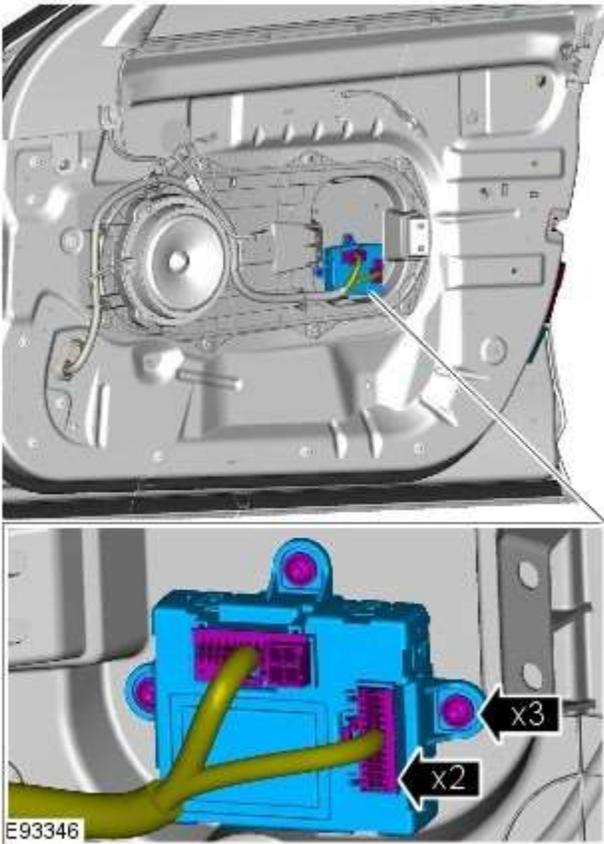
Removal



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

1. Refer to: [Battery Disconnect and Connect](#) (414-01 Battery, Mounting and Cables, General Procedures).
2. Refer to: [Front Door Trim Panel](#) (501-05 Interior Trim and Ornamentation, Removal and Installation).

3.



Installation

1. To install, reverse the removal procedure.

Multifunction Electronic Modules - Rear Door Module (RDM)

Removal and Installation

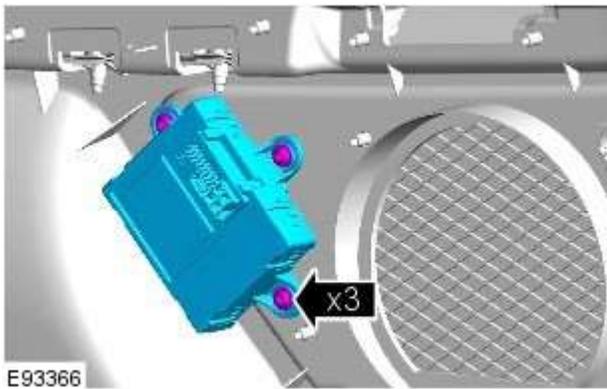
Removal



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

1. Refer to: [Battery Disconnect and Connect](#) (414-01 Battery, Mounting and Cables, General Procedures).
2. Refer to: [Rear Door Trim Panel](#) (501-05 Interior Trim and Ornamentation, Removal and Installation).

3. **Torque:** 1.5 Nm



Installation

1. To install, reverse the removal procedure.