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Module Communications Network - Communications Network - Overview

Description and Operation

OVERVIEW

A number of different types of communication network are incorporated into the vehicle wiring harnesses for the transmission of commands and information between control modules. The configuration installed on a particular vehicle depends on the model and equipment level.

 NOTE: The control diagrams shown later in this section are schematics reflecting communications networks fitted to LH (left-hand) vehicles only. For detailed layouts of the various communications networks fitted to LHD (left-hand drive) and RHD (right-hand drive) vehicles, refer to the Electrical Guide.

The communications networks available on the vehicle are shown in the table below.

Network	Baud Rate
LIN (local interconnect network) bus	9.6 kbits/s
Medium speed CAN (controller area network) bus	125 kbits/s
High speed CAN bus	500 kbits/s
Media Orientated System Transport (MOST) ring	24 mbits/s

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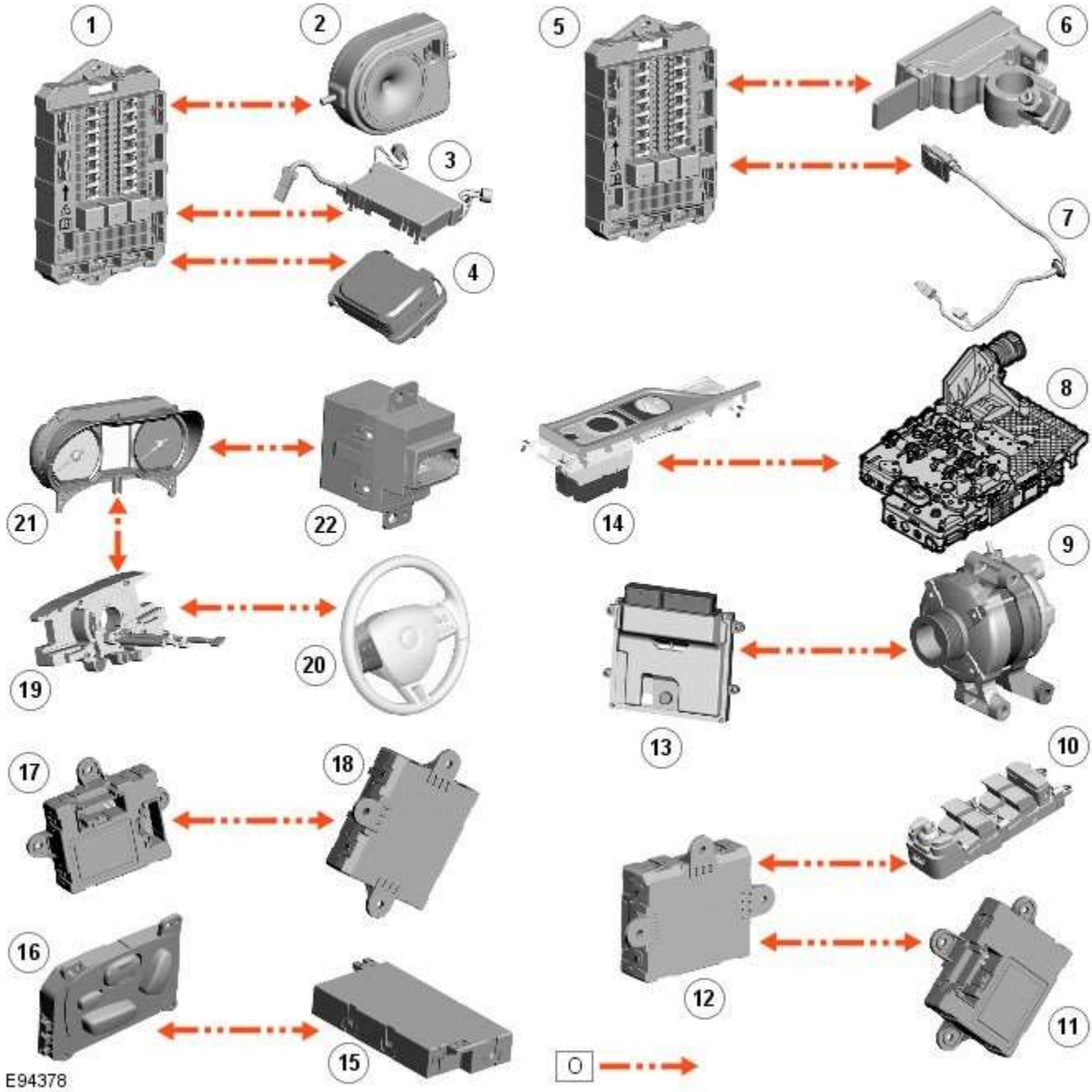
Module Communications Network - Communications Network - System Operation and Component Description

Description and Operation

Control Diagram

NOTE:

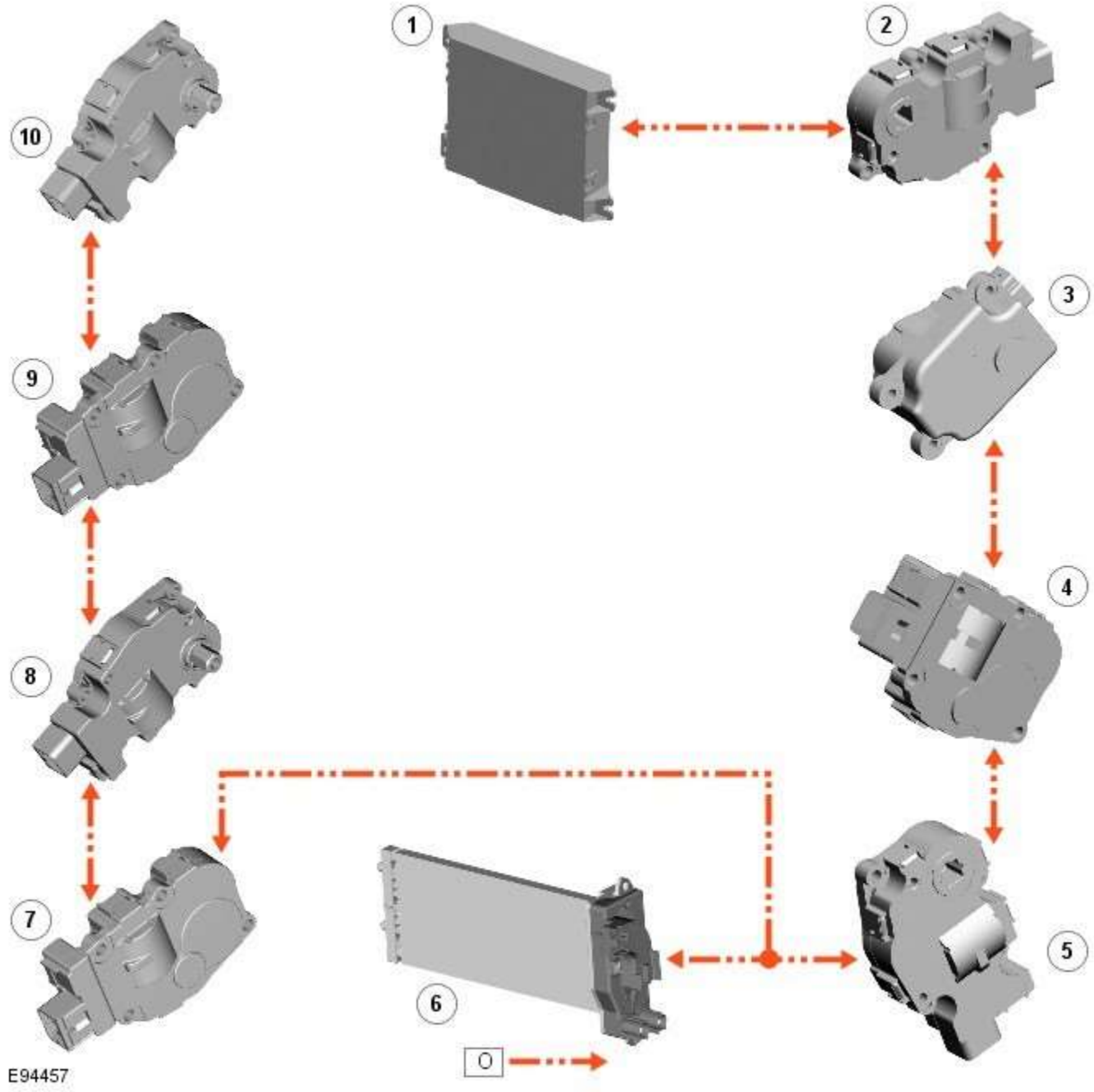
CONTROL DIAGRAM - LIN BUS - SHEET 1 OF 2



Item	Description
	O = LIN (local interconnect network) bus
1	CJB (central junction box)
2	Battery backed sounder
3	Intrusion detection module

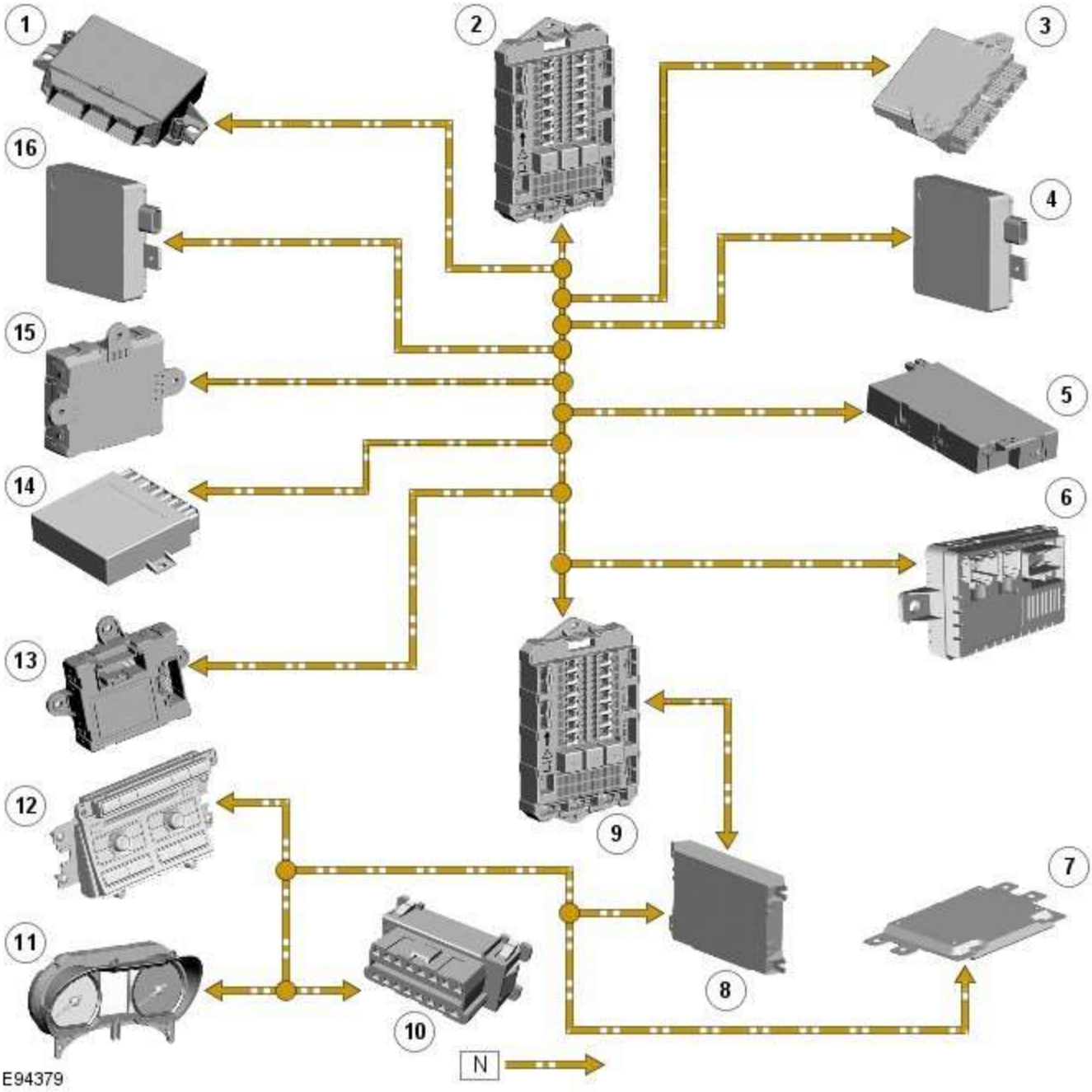
4	Rain/Light sensor
5	RJB (rear junction box)
6	Battery monitoring system module
7	Rear view camera
8	TCM (transmission control module)
9	Generator
10	Driver's door switch pack
11	Rear door control module
12	Driver's door control module
13	ECM (engine control module)
14	Electronic transmission selector
15	Driver's seat module
16	Driver's seat switch pack
17	Rear door control module
18	Front passenger door control module
19	Clockspring
20	Audio and telephone steering wheel switches
21	Instrument cluster
22	Start control module

CONTROL DIAGRAM - LIN BUS - SHEET 2 OF 2



Item	Description
	O = LIN bus
1	ATC (automatic temperature control) module
2	Stepper motor - Windshield defrost
3	Stepper motor - Face/feet distribution
4	Stepper motor - LH (left-hand) temperature blend
5	Stepper motor - RH (right-hand) temperature blend
6	Electric booster heater
7	Stepper motor - RH outer face level vent
8	Stepper motor - RH inner face level vent
9	Stepper motor - LH inner face level vent
10	Stepper motor - LH outer face level vent

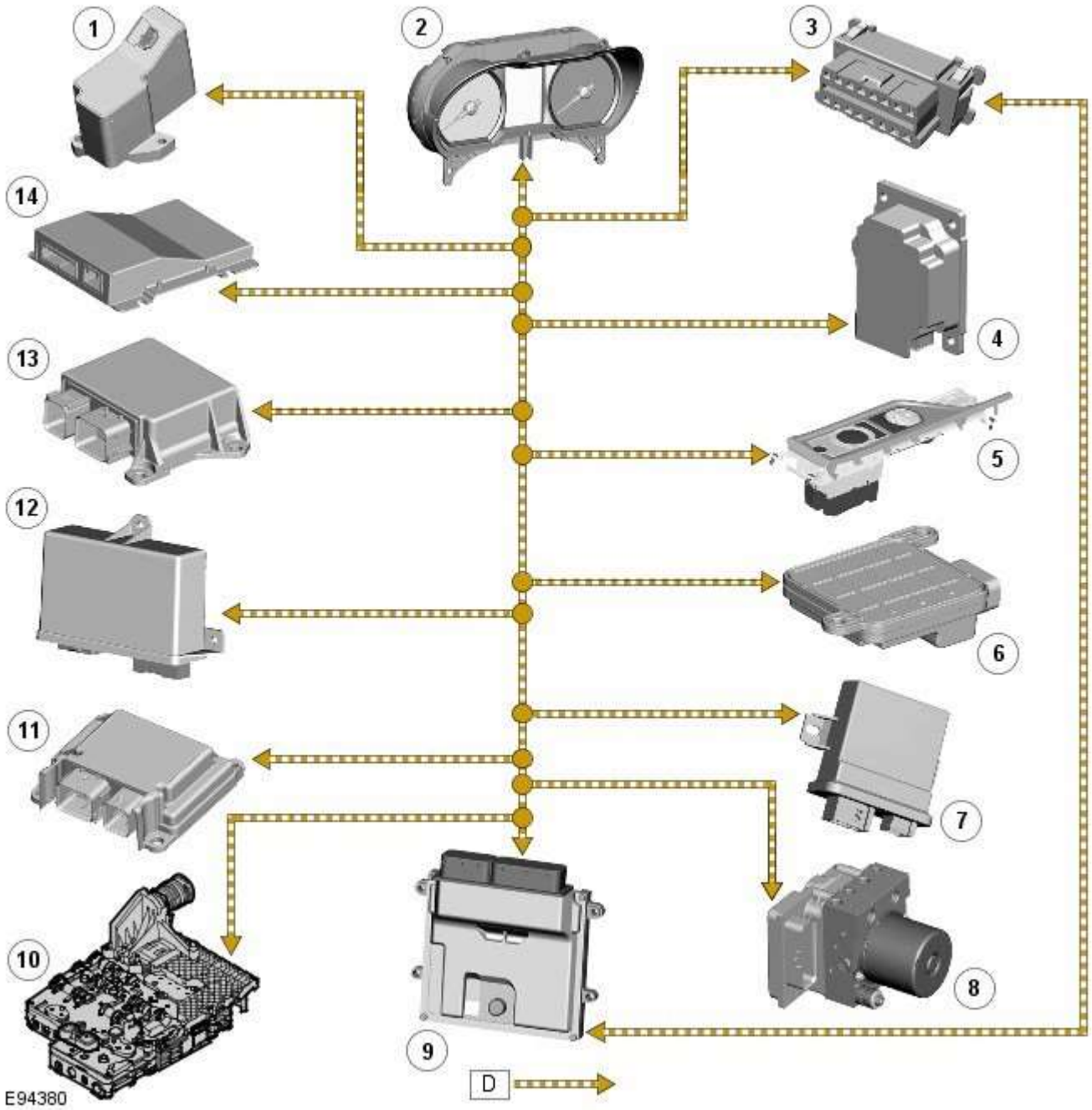
CONTROL DIAGRAM - MEDIUM SPEED CAN BUS



Item	Description
	N = Medium speed CAN (controller area network) bus
1	Parking aid module
2	RJB
3	Keyless vehicle module
4	RH blind spot monitoring module
5	Driver's seat module
6	Front seat climate control module
7	Information control module
8	ATC module
9	CJB
10	Diagnostic socket
11	Instrument cluster
12	Integrated control panel
13	Front passenger door control module

14	Tire Pressure Monitoring System (TPMS) module
15	Driver's door control module
16	LH blind spot monitoring module

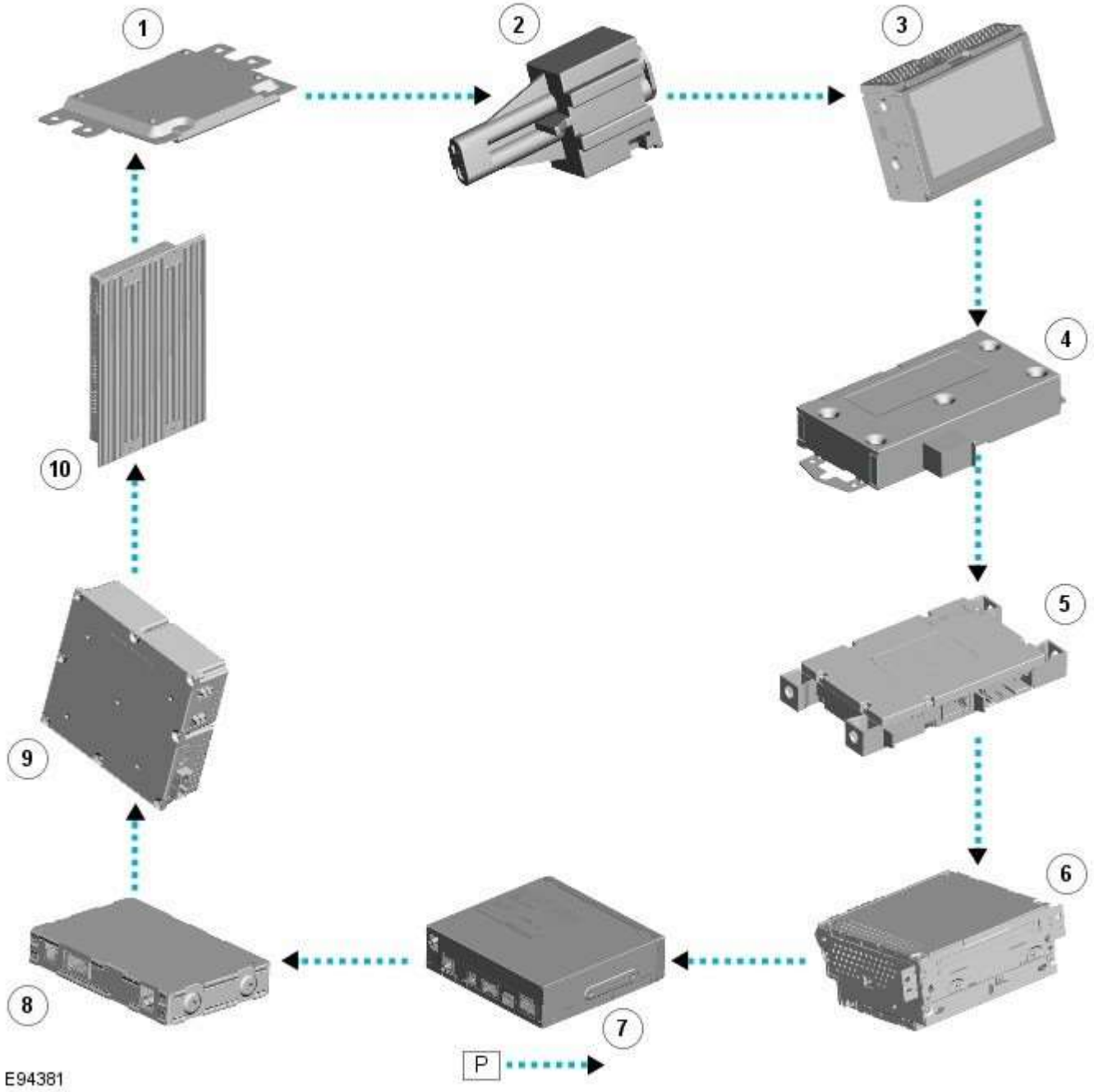
CONTROL DIAGRAM - HIGH SPEED CAN BUS



Item	Description
	D = High speed CAN bus
1	Electric steering column lock
2	Instrument cluster
3	Diagnostic socket
4	Adaptive speed control module
5	Electronic transmission selector
6	Occupant classification system control module
7	Headlamp leveling module
8	ABS (anti-lock brake system) module

9	ECM
10	TCM
11	Pedestrian protection system control module
12	Electric park brake module
13	RCM (restraints control module)
14	Adaptive damping control module

CONTROL DIAGRAM - MOST RING



Item	Description
	P = MOST ring
1	Entertainment system control module
2	Software download socket
3	Touch Screen Display (TSD)
4	Portable audio interface
5	Bluetooth® telephone module

6	Integrated audio module
7	Multi-media module
8	DAB/SDARS receiver
9	Television (TV) tuner
10	Audio system amplifier

System Operation

OPERATION

Refer to the relevant system section for details of system operation.

Component Description

DESCRIPTION

Refer to the relevant system section for details of system description.

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Module Communications Network - Communications Network

Diagnosis and Testing

Principles of Operation

For a detailed description of the Communications Network, refer to the relevant Description and Operation sections in the workshop manual. REFER to: (418-00 Module Communications Network)

Communications Network (Description and Operation),
Communications Network (Description and Operation),
Communications Network (Description and Operation).

Inspection and Verification

CAUTIONS:

 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.

 Electronic modules are sensitive to static electrical charges. If exposed to these charges, damage may result.

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

Visual Inspection

Electrical
• Fuses (refer to electrical guide) • Wiring harness • Correct engagement of electrical connectors • Loose or corroded connections • Routing of fibre optic harnesses • Correct engagement of optical connectors • Correct placement of optical connectors (ring order) • Correct assembly of optical connectors (backout, etc) • Damage to fibre (chafing, abrasion, kinking, cuts, etc)

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 Causes	Action
MOST network fault - Touch screen display displaying flashing logo	• MOST ring broken after the touch screen display • Control module on MOST network power or ground circuit open circuit, high resistance • Control module on MOST network internal failure	• GO to Pinpoint Test B.
MOST network fault - Touch screen display blank	• MOST ring broken between the information and entertainment control module and the touch screen display • Information and entertainment control module or touch screen display power or ground circuit open circuit, high resistance • Wake up signal not received by the information and entertainment control module • Information and entertainment control module or touch screen display internal failure	• GO to Pinpoint Test H.

Controller Area Network (CAN)

Control Module Connections to the CAN Harness

Control modules are connected to the CAN harness either in a 'loop' or 'spur' configuration. In the 'loop' type configuration the CAN harness loops into the module (via two connector pins) and then loops out of the module (via another two connector pins). In the 'spur' type configuration, a harness spur is spliced into the main 'backbone' of the CAN harness and the module is connected to the harness spur via two connector pins.

CAN Harness Architecture

For a detailed description of the CAN Networks and architecture, refer to the relevant Description and Operation section in the Workshop Manual.

CAN Network Integrity Tests

If a control module is suspected of non-communication, the Network Integrity test application available on the manufacturer approved diagnostic system can be used to confirm if communication is possible between the control modules on the vehicle and the manufacturer approved diagnostic system (via the J1962 diagnostic connector). The results from the test can be used to determine if either a single module or multiple modules are failing to communicate.

CAN Terminating Modules

If the Network Integrity test indicates that one or more module on one of the CAN networks (HS or MS) are failing to communicate, there are several checks that can be made. The first step is to identify if both of the CAN terminating modules on each individual CAN Bus are communicating. If both CAN terminating modules for each individual CAN Bus are communicating (identified via the Network Integrity test), then it can be confirmed that the main 'backbone' of the CAN harness is complete. The main 'backbone' of the CAN harness consists of all the modules connected to the CAN harness via a 'loop' configuration and also includes the two terminating modules.

Communication with both CAN terminating modules via the Network Integrity test confirms the physical integrity of the main 'backbone' of the CAN harness (and the harness spur to the J1962 diagnostic connector). This means that there is no requirement to check the resistance of the CAN Network. This is because the standard check for 60 ohms across the CAN High and CAN Low lines will not provide any additional information regarding the physical condition of the CAN harness, beyond what has already been determined from the Network Integrity test.

Non-Communication of a Terminating Module

If a Network Integrity test reveals a terminating module is failing to communicate it can indicate a break in the main 'backbone' of the CAN harness. The first checks should always be to confirm the power and ground supplies to the non-communicating module are correct. Providing these are correct, the resistance between the CAN High and CAN Low lines at the J1962 connector can be checked to determine the integrity of the main 'backbone' of the CAN harness. After disconnecting the battery a reading of 120 ohms would indicate an open circuit in the main 'backbone' of the CAN harness. Alternatively, a reading of 60 ohms would indicate that there is no open circuit fault with the main 'backbone' of the CAN harness.

It is worth noting that even if one of the terminating modules is disconnected from the CAN harness, communications between the modules still connected may still be possible. Therefore communication between the manufacturer approved diagnostic system and the connected modules may also be possible.

Locating CAN Harness Open Circuits

In the case where multiple modules, including a terminating module, are failing to communicate, having first confirmed the power and ground supplies are correct, the approximate location of the open circuit can be identified from analysis of the Network Integrity test results and reference to the relevant CAN network circuit diagrams. For example, if an open circuit existed in a certain position on the CAN harness, any module positioned on the Network between the J1962 connector and the open circuit should return a response during the Network Integrity test. No responses would be returned from any modules past the open circuit fault in the Network.

CAN Harness 'Spur' Type Configuration Circuits

If, after the initial checks (Network Integrity test using the manufacturer approved diagnostic system, and power and ground supplies to the module have been checked and confirmed as correct), a module that is connected to the CAN harness via a 'spur' type configuration is suspected of not communicating, then the physical integrity of the CAN harness 'spur' can be checked.

This is most easily undertaken by individually checking the continuity of the CAN High and CAN Low lines between the non-communicating module connector (with the module disconnected) and the J1962 diagnostic connector.

'Lost Communications' DTCs

As well as the methods described so far in this document, which can be used to determine the location of an open circuit in the CAN harness, 'Lost Communications' DTCs can also be used for this purpose. Lost communication DTCs mean that a module is not receiving CAN information from another module.

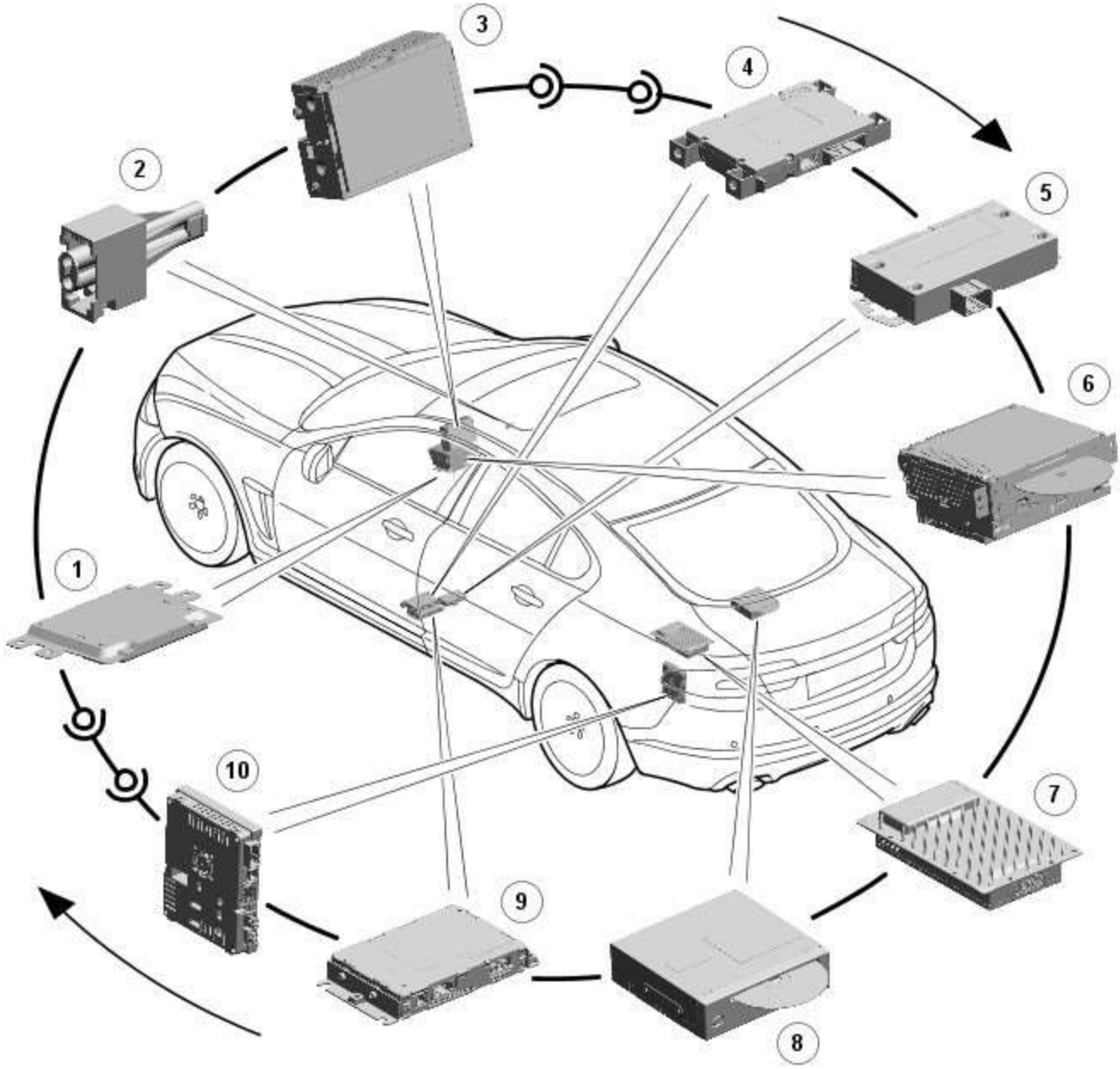
For example, if a global DTC read were to be carried out, only DTCs stored in the modules that the manufacturer approved diagnostic system could communicate with would be displayed. If there was an open circuit fault in a certain position on the CAN harness, the modules that could display DTCs would all be prior to the open circuit on the Network, and these modules should display 'Lost Communications' DTCs with all the modules located on the Network past the open circuit fault.

'Bus off' DTCs

The references to bus and its condition refer to the network concerned and the modules on that network.

If a module logs a 'Bus Off' DTC, it means that the module has detected CAN transmission errors and has disabled it's own CAN transmissions and disconnected itself from the network in an attempt to allow the rest of the network to function. At this point the 'Bus Off' DTC is set. A common cause of 'Bus Off' DTCs can be a short circuit in the CAN network.

Media Oriented Systems Transport (MOST)



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NOTE: Items 1, 2, 3 and 6 will always be present. The remaining items are optional and/or market specific.

Item	Description
1	Information and entertainment control module
2	MOST diagnostic connector
3	Touch screen display
4	Telephone module
5	Portable audio interface module
6	Integrated audio module
7	Power amplifier
8	Navigation control module
9	DAB tuner module
10	Television receiver

Overview

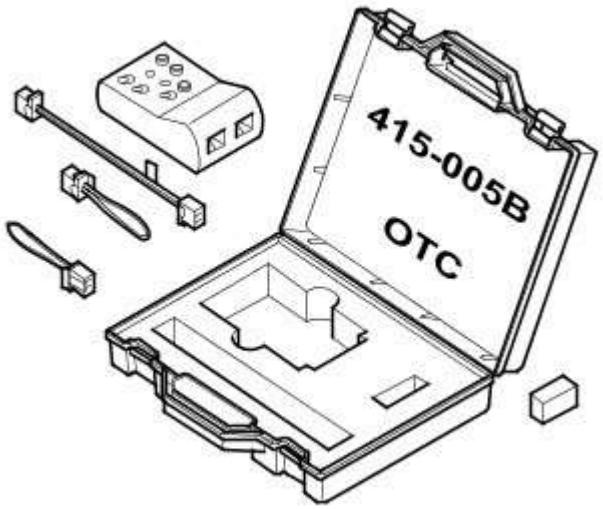
The basic guidelines are covered in the description and operation section, such as not attempting to repair fibre optic cables, but additional precautions include:

- Do not touch the exposed ends of the optical fibres (grease from skin can contaminate the fibre)

- Whenever the fibre optic cable is disconnected, cover the connectors to prevent dust contamination
- Do not expose the fibre optic cable to heat
- Do not bend the fibre optic cable through less than a 25 mm (one inch) radius
- Do not use laser pens to test the fibre optic cable's ability to pass light

MOST Diagnostic Tools

There are two dedicated tools for testing the MOST system:



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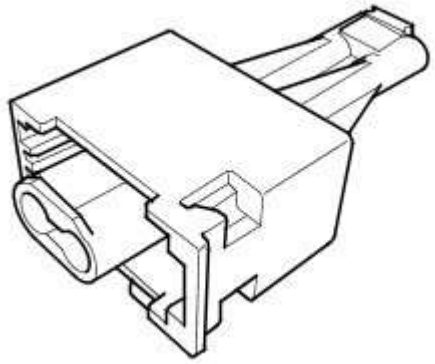
MOST tester. The MOST tester is connected to the MOST network in place of a control module. It will confirm receipt of any existing MOST signal and transmit it to the next control module on the network. Perform the following tests to validate the operation of the MOST tester. GO to Pinpoint Test A.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MOST prism. The MOST prism is connected in the same way as the MOST tester but will simply reflect any existing signal onward to the next control module. Using the MOST prism before or after a long run of harness may cause a ring break as a good signal may be too weak after travelling the extended distance. Also, the MOST prism will pass light in either direction so will not detect reversed MOST terminals elsewhere in the network. For these reasons, the MOST tester is the preferred tool and should be used unless limited access does not permit it

MOST Ring Break Indication

A ring break in the MOST network is indicated by a blank touch screen display if the break is before the touch screen display or a flashing logo of the break is after the touch screen display. Possible causes of ring breaks are listed in the symptom chart

Pinpoint Tests

PINPOINT TEST A : MOST TESTER TESTS		
TEST CONDITIONS	**DETAILS/RESULTS/ACTIONS**	
A1: MOST TESTER BATTERY TEST		
	1	Set the MOST tester power switch to 'on'

	Is the power LED illuminated? **Yes** Test passed. GO to A2. **No** Test failed. Install a new battery into the MOST tester. GO to A1.

A2: 2+0 INPUT/OUTPUT TEST

NOTES:

2+0' indicates that the loop harness connector consists of 2 fibre optic terminals and 0 electrical terminals.

The MOST tester may continue to emit a tone or illuminate the LED after the test switch is released. This does not indicate a fault.

	1	Set the MOST tester power switch to 'on'
	2	Set the connector selector switch to '2+0'
	3	Set the indication switch to 'beep' or 'LED'
	4	Remove the covers from the MOST tester 2+0 connector and the 2+0 loop harness connector
	5	Connect the 2+0 loop harness to the MOST tester 2+0 connector
	6	Operate the test switch and check the MOST tester beep/LED
	Did the MOST tester emit a tone or illuminate the LED? **Yes** Test passed. GO to A3. **No** Test failed. MOST tester or 2+0 harness fault	

A3: 2+4 INPUT/OUTPUT TEST

NOTES:

2+4' indicates that the loop harness connector consists of 2 fibre optic terminals and 4 electrical terminals.

The MOST tester may continue to emit a tone or illuminate the LED after the test switch is released. This does not indicate a fault.

	1	Set the MOST tester power switch to 'on'
	2	Set the connector selector switch to '2+4'
	3	Set the indication switch to 'beep' or 'LED'
	4	Remove the covers from the MOST tester 2+4 connector and the 2+4 loop harness connector
	5	Connect the 2+4 loop harness to the MOST tester 2+4 connector
	6	Operate the test switch and check the MOST tester beep/LED
	Did the MOST tester emit a tone or illuminate the LED? **Yes** Test passed. GO to A4. **No** Test failed. MOST tester or 2+4 harness fault	

A4: ADAPTER HARNESS AND PRISM TEST

NOTE: The MOST tester may continue to emit a tone or illuminate the LED after the test switch is released. This does not indicate a fault.

	1	Set the MOST tester power switch to 'on'
	2	Set the connector selector switch to '2+0'
	3	Set the indication switch to 'beep' or 'LED'
	4	Remove the covers from the MOST tester 2+0 connector, the prism, and the adapter harness connectors
	5	Connect the adapter harness to the MOST tester 2+0 connector
	6	Connect the prism to the adapter harness
	7	Operate the test switch and check the MOST tester beep/LED
	Did the MOST tester emit a tone or illuminate the LED? **Yes** Test passed **No** Test failed. MOST tester, adapter harness or prism fault	

PINPOINT TEST B : MOST NETWORK INITIAL TESTS

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS

B1: MOST NETWORK INITIAL TEST 1

NOTE: When connecting the MOST tester, use the 2+0 or 2+4 socket as appropriate and set the connector selector switch to match the socket in use	
	1 Switch on the audio/video system
	2 Disconnect the MOST harness connector from a control module located after the touch screen display and before the information and entertainment control module
	3 Set the MOST tester power switch to 'on'
	4 Connect the MOST harness connector to the MOST tester
	5 Check the touch screen display for indication of a MOST network fault
	Has the MOST network been restored? **Yes** The disconnected control module is causing the MOST network fault. GO to Pinpoint Test E. **No** The disconnected control module is not causing MOST network fault. GO to B2.
B2: MOST NETWORK INITIAL TEST 2	
	1 Check the MOST tester beep/LED
	Did the MOST tester emit a tone or illuminate the LED? **Yes** MOST signal received. The MOST network fault is located downstream of the MOST tester. GO to Pinpoint Test C. **No** MOST signal not received. The MOST network fault is located upstream of the MOST tester. Disconnect the MOST harness connector from the MOST tester and reconnect it to the control module. GO to Pinpoint Test D.

PINPOINT TEST C : MOST NETWORK DOWNSTREAM TESTS	
TEST CONDITIONS	**DETAILS/RESULTS/ACTIONS**
C1: MOST NETWORK DOWNSTREAM TEST 1	
	1 Refer to the electrical circuit diagrams and identify the succeeding control module on the MOST network
	Is this control module the information and entertainment control module? **Yes** GO to Pinpoint Test F. **No** GO to C2.
C2: MOST NETWORK DOWNSTREAM TEST 2	
	1 Disconnect the MOST harness connector
	2 Direct the MOST harness connector at a suitable surface and check for the presence of red light
	Is red light present? **Yes** Disconnect the MOST harness connector from the MOST tester and reconnect it to the control module. GO to C3. **No** The fault is in the MOST harness between the MOST tester and the disconnected MOST harness connector. Install a new MOST harness as necessary
C3: MOST NETWORK DOWNSTREAM TEST 3	
NOTE: When connecting the MOST tester, use the 2+0 or 2+4 socket as appropriate and set the connector selector switch to match the socket in use	
	1 Connect the succeeding MOST harness connector to the MOST tester
	2 Check the touch screen display for indication of a MOST network fault
	Has the MOST network been restored? **Yes** The disconnected control module is causing the MOST network fault. GO to Pinpoint Test E. **No** The disconnected control module is not causing the MOST network fault. GO to C1.

PINPOINT TEST D : MOST NETWORK UPSTREAM TESTS	
TEST CONDITIONS	**DETAILS/RESULTS/ACTIONS**
D1: MOST NETWORK UPSTREAM TEST 1	
	1 Refer to the electrical circuit diagrams and identify the preceding control module on the MOST network
	Is this control module the touch screen display? **Yes** GO to Pinpoint Test G. **No** GO to D2.
D2: MOST NETWORK UPSTREAM TEST 2	
	1 Disconnect the MOST harness connector from the control module

	2 Direct the MOST harness connector at a suitable surface and check for the presence of red light
	Is red light present? **Yes** The MOST network fault is in the control module or the MOST harness to the succeeding control module. GO to D3. **No** The MOST network fault is located upstream of the disconnected control module. Reconnect the MOST harness connector to the control module. GO to D1.

D3: MOST NETWORK UPSTREAM TEST 3

NOTE: When connecting the MOST tester, use the 2+0 or 2+4 socket as appropriate and set the connector selector switch to match the socket in use

	1 Connect the MOST harness connector to the MOST tester
	2 Check the touch screen display for indication of a MOST network fault
	Has the MOST network been restored? **Yes** The disconnected control module is causing the MOST network fault. GO to Pinpoint Test E. **No** The fault is in the MOST harness between the MOST tester and the succeeding control module. Install a new MOST harness as necessary

PINPOINT TEST E : CONTROL MODULE TESTS

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS

E1: CONTROL MODULE TEST 1

NOTES:

When connecting the MOST tester, use the 2+0 or 2+4 socket as appropriate and set the connector selector switch to match the socket in use

The MOST tester may continue to emit a tone or illuminate the LED after the test switch is released. This does not indicate a fault.

	1 Connect the MOST tester to the relevant control module using the adapter harness
	2 Operate the test switch and check the MOST tester beep/LED
	Did the MOST tester emit a tone or illuminate the LED? **Yes** MOST signal received. Tests inconclusive. Reconnect the MOST harness connector to the control module and confirm that the MOST network fault is still present. Repeat the tests from the beginning. GO to Pinpoint Test B. **No** GO to E2.

E2: CONTROL MODULE TEST 2

	1 Refer to the electrical circuit diagrams and test the relevant control module power and ground circuits for open circuit, high resistance
	Are the power and ground circuits within specification? **Yes** GO to E3. **No** Repair the power and/or ground circuit

E3: CONTROL MODULE TEST 3

	1 Reconnect the MOST harness to the control module
	2 Check the touch screen display for indication of a MOST network fault
	Has the MOST network been restored? **Yes** Tests inconclusive. Repeat the tests from the beginning. GO to Pinpoint Test B. **No** Install a new control module

PINPOINT TEST F : MOST NETWORK FINAL DOWNSTREAM TEST

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS

F1: MOST NETWORK FINAL DOWNSTREAM TEST 1

NOTES:

When connecting the MOST tester, use the 2+0 or 2+4 socket as appropriate and set the connector selector switch to match the socket in use

The MOST tester may continue to emit a tone or illuminate the LED after the test switch is released. This does not indicate a fault.	
	1 Disconnect the MOST harness connector from the MOST tester
	2 Reconnect the MOST harness connector to the control module
	3 Disconnect the MOST harness connector from the information and entertainment control module
	4 Connect the MOST harness connector to the MOST tester
	5 Operate the test switch and check the MOST tester beep/LED
	Did the MOST tester emit a tone or illuminate the LED? **Yes** GO to F2. **No** The fault is in the harness between the information and entertainment control module and the preceeding control module. Install a new MOST harness as necessary
F2: MOST NETWORK FINAL DOWNSTREAM TEST 2	
	1 Disconnect the MOST harness connector from the MOST tester
	2 Reconnect the MOST harness connector to the information and entertainment control module
	3 Check the touch screen display for indication of a MOST network fault
	Has the MOST network been restored? **Yes** Tests inconclusive. Repeat the tests from the beginning. GO to Pinpoint Test B. **No** Install a new information and entertainment control module

PINPOINT TEST G : MOST NETWORK FINAL UPSTREAM TESTS

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
G1: MOST NETWORK FINAL UPSTREAM TEST 1	
NOTE: The MOST tester may continue to emit a tone or illuminate the LED after the test switch is released. This does not indicate a fault.	
	1 Disconnect the MOST harness connector from the touch screen display
	2 Connect the MOST tester to the touch screen display using the adapter harness
	3 Operate the test switch and check the MOST tester beep/LED
	Did the MOST tester emit a tone or illuminate the LED? **Yes** The fault is in the MOST harness between the touch screen display and the succeeding control module. Install a new MOST harness as necessary **No** GO to G2.
G2: MOST NETWORK FINAL UPSTREAM TEST 2	
	1 Reconnect the MOST harness to the touch screen display
	2 Check the touch screen display for indication of a MOST network fault
	Has the MOST network been restored? **Yes** Tests inconclusive. Repeat the tests from beginning. GO to Pinpoint Test B. **No** Install a new touch screen display

PINPOINT TEST H : BLANK SCREEN TESTS

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
H1: BLANK SCREEN TEST 1	
NOTE: When connecting the MOST tester, use the 2+0 or 2+4 socket as appropriate and set the connector selector switch to match the socket in use	
	1 Switch on the audio/video system
	2 Remove the cover from the MOST diagnostic connector
	3 Set the MOST tester power switch to 'on'
	4 Connect the MOST tester to the MOST diagnostic connector
	5 Check the touch screen display for indication of a MOST network fault
	Has the MOST network been restored? **Yes** The MOST diagnostic connector cover is causing the MOST network fault. GO to H2. **No** The MOST diagnostic connector cover is not causing MOST network fault. GO to H3.
H2: BLANK SCREEN TEST 2	

	1 Disconnect the MOST tester
	2 Install the cover to the MOST diagnostic connector
	Has the MOST network been restored? **Yes** No further action required **No** Install a new MOST diagnostic connector cover
H3: BLANK SCREEN TEST 3	
	1 Check the MOST tester beep/LED
	Did the MOST tester emit a tone or illuminate the LED? **Yes** MOST signal received. The MOST network fault is located downstream of the MOST tester. GO to H4. **No** MOST signal not received. The MOST network fault is located upstream of the MOST tester. Disconnect the MOST tester from the MOST diagnostic connector and install the cover. GO to H5.
H4: BLANK SCREEN TEST 4	
	1 Disconnect the MOST harness connector from the touch screen display
	2 Direct the MOST harness connector at a suitable surface and check for the presence of red light
	Is red light present? **Yes** GO to Pinpoint Test J. **No** The fault is in the MOST harness between the MOST diagnostic connector and the touch screen display. Install a new MOST harness as necessary
H5: BLANK SCREEN TEST 5	
	1 Disconnect the MOST harness connector from the information and entertainment control module
	2 Direct the information and entertainment control module at a suitable surface and check for the presence of red light
	Is red light present? **Yes** Install a new MOST harness between the information and entertainment control module and the MOST diagnostic connector **No** GO to Pinpoint Test I.

PINPOINT TEST I : INFORMATION AND ENTERTAINMENT CONTROL MODULE TESTS	
TEST CONDITIONS	**DETAILS/RESULTS/ACTIONS**
I1: INFORMATION AND ENTERTAINMENT CONTROL MODULE TEST 1	
	1 Using the manufacturer approved diagnostic system, check the information and entertainment control module for related DTCs
	Is communication possible between the manufacturer approved diagnostic system and the information and entertainment control module? **Yes** Refer to the relevant DTC index **No** GO to I2.
I2: INFORMATION AND ENTERTAINMENT CONTROL MODULE TEST 2	
	1 Refer to the electrical circuit diagrams and test the information and entertainment control module power and ground circuits for open circuit, high resistance
	Are the power and ground circuits within specification? **Yes** GO to I3. **No** Repair the power and/or ground circuit
I3: INFORMATION AND ENTERTAINMENT CONTROL MODULE TEST 3	
	1 Using the manufacturer approved diagnostic system, perform a CAN network integrity test. Refer to the electrical circuit diagrams and test the medium speed CAN bus circuit for short circuit to ground, short circuit to power, open circuit, high resistance
	Is the medium speed CAN bus within specification? **Yes** Install a new information and entertainment control module **No** Repair the medium speed CAN bus circuit

PINPOINT TEST J : TOUCH SCREEN DISPLAY TESTS	
TEST CONDITIONS	**DETAILS/RESULTS/ACTIONS**
J1: TOUCH SCREEN DISPLAY TEST 1	
	1 Refer to the electrical circuit diagrams and test the touch screen display power and ground circuits for open circuit, high resistance

	Are the power and ground circuits within specification? **Yes** GO to J2. **No** Repair the power and/or ground circuit
J2: TOUCH SCREEN DISPLAY TEST 2	
	1 Reconnect the MOST harness to the touch screen display
	2 Check the touch screen display for indication of a MOST network fault
	Has the MOST network been restored? **Yes** Tests inconclusive. Repeat the tests from beginning. GO to Pinpoint Test B. **No** Install a new touch screen display

DTC Index

Central Junction Box (CJB)

CAUTIONS:

 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

 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 5-digit codes. Match the 5 digits from the scan tool to the first 5 digits of the 7-digit code listed to identify the fault (the last 2 digits give extra information read by the manufacturer-approved diagnostic system)

 When performing voltage or resistance tests, always use a digital multimeter accurate to three decimal places and with a current 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

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

 If diagnostic trouble codes 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

 Where an 'on demand self-test' is referred to, this can be accessed via the 'diagnostic trouble code monitor' tab on the manufacturers approved diagnostic system

 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 Cause	Action
B00D511	Restraint System Passenger Disable Indicator	• PAD lamp supply circuit - short to ground	Refer to the electrical circuit diagrams and check PAD lamp supply circuit for short to ground
B00D512	Restraint System Passenger Disable Indicator	• PAD lamp supply circuit - short to power	Refer to the electrical circuit diagrams and check PAD lamp supply circuit for short to power
B00D513	Restraint System Passenger Disable Indicator	• PAD lamp supply circuit - open circuit	Refer to the electrical circuit diagrams and check PAD lamp supply circuit for open circuit

DTC	Description	Possible Cause	Action
B100951	Ignition Authorisation	• Faulty instrument cluster • Target SID re-synchronisation error following programming • CAN fault	Check ignition, power and ground supplies to CJB and instrument cluster. Re-synchronize ID by re-configuring the instrument cluster as a new module. Check CAN communications between instrument cluster and tester
B100962	Ignition Authorisation	• Low speed CAN fault • CJB fault • Instrument cluster fault • Incorrect module installed (CJB/Instrument cluster) • Target SID synchronisation error following re-programming • Noise/EMC related error	Check CAN communications between CJB and instrument cluster. Check ignition, power and ground supplies to CJB and instrument cluster. Confirm correct module is installed. Re-synchronise ID by re-configuring the instrument cluster as a new module. Check CAN network for interference/EMC related issues
B100963	Ignition Authorisation	• CJB fault • Low speed CAN fault • Instrument cluster fault • Low battery voltage <9V	Check Power and Ground supplies to CJB and instrument cluster. Check CAN communications between CJB and instrument cluster. Check battery is in fully charged and serviceable condition, refer to the battery care manual
B100964	Ignition Authorisation	• CJB fault • Low speed CAN fault • Instrument cluster fault	Check power and ground supplies to CJB and instrument cluster. Check CAN communications between CJB and instrument cluster
B102B67	Passive Key	• CJB fault • Low speed CAN fault • Remote Keyless Entry (RKE) module fault • Write target SID synchronisation error following re-programming	Check power and ground supplies to CJB and RKE module. Check CAN communications between CJB and RKE module. Re-synchronise ID by re-configuring the RKE module as a new module
B102B87	Passive Key	• CJB fault • Low speed CAN fault • RKE module fault • Key fob battery low/battery contact issue • Interference from other RF signal • EMC/noise • Receiver fault • Receiver not programmed correctly • Serial communications fault (between receiver and RKE module) • Key fault • Passive antenna fault • Confirm placement of key within vehicle	Check power and ground supplies to CJB, RKE module and receiver. Check CAN communications between CJB and instrument cluster. Check key fob battery. Confirm vehicle surroundings, move vehicle. Check CAN network for interference/EMC related issues. Disconnect battery, then re-connect - confirm operation by re-programming keys. Check serial circuit between receiver and RKE module. Confirm spare key works. Refer to the electrical circuit diagrams and test circuits to all 3 antennas. Check whereabouts of key
B108413	Boot/Trunk Motor Close Switch	• Trunk latch open signal circuit - open circuit	Refer to the electrical circuit diagrams and check trunk latch open signal circuit for open circuit
B108783	LIN Bus "A"	• Checksum of the received LIN frame from battery backed sounder, roof header console, and/or rain/light sensor is incorrect	Check operation of rain/light sensor by covering sensor or applying water to screen, install a new sensor as required
B108788	LIN Bus "A"	• Bus off. Battery backed sounder, roof header console, and/or rain/light sensor LIN circuit - short to ground, power	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
B108A11	Start Button	• Start/Stop switch analogue input circuits 1 or 2 - short to ground	Refer to the electrical circuit diagrams and check Start/Stop switch analogue input circuits 1 and 2 for short to ground

DTC	Description	Possible Cause	Action
B108A12	Start Button	• Start/Stop switch analogue input circuits 1 or 2 - short to power	Refer to the electrical circuit diagrams and check Start/Stop switch analogue input circuits 1 and 2 for short to power
B109512	Wiper On/Off Relay	• Wiper On/Off relay control circuit - short to power	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and check wiper On/Off relay control circuit for short to power
B109514	Wiper On/Off Relay	• Wiper On/Off relay control circuit - short to ground, open circuit	Refer to the electrical circuit diagrams and check wiper On/Off relay control circuit for short to ground, open circuit
B109612	Wiper High/Low Relay	• Wiper Fast/Slow relay control circuit - short to power	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and check wiper Fast/Slow relay control circuit for short to power
B109614	Wiper High/Low Relay	• Wiper Fast/Slow relay control circuit - short to ground, open circuit	Refer to the electrical circuit diagrams and check wiper Fast/Slow relay control circuit for short to ground, open circuit
B109712	Heated Windshield Relay	• Heated windshield relay control circuit - short to power	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and check heated windshield relay control circuit for short to power
B109714	Heated Windshield Relay	• Heated windshield relay control circuit - short to ground, open circuit	Refer to the electrical circuit diagrams and check heated windshield relay control circuit for short to ground, open circuit
B10A612	Main Light Switch	• Master light switch signal from roof header console circuit - short to power	Refer to the electrical circuit diagrams and check master light switch signal from roof header console circuit for short to power
B10A623	Main Light Switch	• Master light switch signal from roof header console signal stuck low. Switch is read as ON for too long a time	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and check master light switch signal from roof header console for short to ground
B10AD09	Rain Sensor	• Component failures	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system. Suspect the rain/light sensor, check and install a new sensor as required
B10AD11	Rain Sensor	• Rain/light sensor power 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 check rain/light sensor power circuit for short to ground
B10AD96	Rain Sensor	• Component internal failure	Suspect the rain/light sensor, check and install a new sensor as required
B10E511	PCM Wake-up Signal	• ECM wake-up signal circuit - short to ground	Refer to the electrical circuit diagrams and check ECM wake-up signal circuit for short to ground
B10E512	PCM Wake-up Signal	• ECM wake-up signal circuit - short to power	Refer to the electrical circuit diagrams and check ECM wake-up signal circuit for short to power
B10E513	PCM Wake-up Signal	• ECM wake-up signal circuit - open circuit	Refer to the electrical circuit diagrams and check ECM wake-up signal circuit for open circuit
B10F111	Key In Switch	• Keyless vehicle module, key IN status 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 check keyless vehicle module, key IN status circuit for short to ground
B10F112	Key In Switch	• Keyless vehicle module, key IN status circuit - short to power	Refer to the electrical circuit diagrams and check keyless vehicle module, key IN status circuit for short to power
B10F113	Key In Switch	• Keyless vehicle module, key IN status circuit - open circuit	Refer to the electrical circuit diagrams and check keyless vehicle module, key IN status circuit for open circuit

DTC	Description	Possible Cause	Action
B10F211	Sunroof Control	• Sunroof enable signal 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 check sunroof enable signal circuit for short to ground
B10F212	Sunroof Control	• Sunroof enable signal circuit - short to power	Refer to the electrical circuit diagrams and check sunroof enable signal circuit for short to power
B10F213	Sunroof Control	• Sunroof enable signal circuit - open circuit	Refer to the electrical circuit diagrams and check sunroof enable signal circuit for open circuit
B10F311	Left Front Position Light	• Left front side lamps 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 check left front side lamps circuit for short to ground
B10F315	Left Front Position Light	• Left front side lamps 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 front side lamps circuit for short to power, open circuit
B10F411	Right Front Position Light	• Right front side lamps 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 check right front side lamps circuit for short to ground
B10F415	Right Front Position Light	• Right front side lamps 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 right front side lamps circuit for short to power, open circuit
B10F812	Accessory socket 'A' relay	• Accessory socket 'A' relay control circuit - short to power	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and check accessory socket 'A' relay control circuit for short to power
B10F814	Accessory socket 'A' relay	• Accessory socket 'A' relay control circuit - short to ground, open circuit	Refer to the electrical circuit diagrams and check accessory socket 'A' relay control circuit for short to ground, open circuit
B10F912	Accessory socket 'B' relay	• Front powerpoint, trailer tow connector, road pricing connector, sunblind power supply circuits - short to power	Refer to the electrical circuit diagrams and check front powerpoint, trailer tow connector, road pricing connector, sunblind power supply circuits for short to power
B10F914	Accessory socket 'B' relay	• Front powerpoint, trailer tow connector, road pricing connector, sunblind power supply circuits - short to ground, open circuit	Refer to the electrical circuit diagrams and check front powerpoint, trailer tow connector, road pricing connector, sunblind power supply circuits for short to ground, open circuit
B10F993	Accessory socket 'B' relay	• Front powerpoint, trailer tow connector, road pricing connector, sunblind power supply circuits - short to power, ground, 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 front powerpoint, trailer tow connector, road pricing connector, sunblind power supply circuits for short to power, ground, open circuit
B10FA93	Delayed Power Off relay	• ADRC ECM, roof header console lamp, glove box lamp , RH/LH footwell lamps, JAG Sense glove box module, RH/LH sunvisor lamps, rear dome lamps switched power circuits - 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 ADRC ECM, roof header console lamp, glove box lamp , RH/LH footwell lamps, JAG Sense glove box module, RH/LH sunvisor lamps, rear dome lamps switched power circuits for short to power, open circuit
B10FF11	Ignition control	• ECM and FPDB ignition 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 check ECM and FPDB ignition control circuit for short to ground
B10FF13	Ignition control	• ECM and FPDB ignition control circuit - 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 ECM and FPDB ignition control circuit for open circuit

DTC	Description	Possible Cause	Action
B110011	O2 sensor heater relay	• FPDB O2 sensor heater relay 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 check FPDB O2 sensor heater relay control circuit for short to ground
B113D12	Sunroof Global Open/Close Control	• Roof opening panel global open/close control circuit - short to power	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and check roof opening panel global open/close control circuit for short to power
B113D14	Sunroof Global Open/Close Control	• Roof opening panel global open/close control circuit - short to ground, open circuit	Refer to the electrical circuit diagrams and check roof opening panel global open/close control circuit for short to ground, open circuit
B114011	Engine Crank Authorisation	• Engine crank authorisation signal 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 check engine crank authorisation signal circuit for short to ground
B114211	Ignition Status 1	• Ignition supply 1 circuits - 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 check all ignition supply 1 circuits for short to ground
B114311	Ignition Status 2	• Ignition supply 2 circuits - 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 check all ignition supply 2 circuits for short to ground
B114411	Heated Steering Wheel Supply	• Heated steering wheel supply 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 check heated steering wheel supply circuit for short to ground
B114511	Glovebox Locking Motor	• Glovebox latch locking motor 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 check glovebox latch locking motor circuit for short to ground
B114512	Glovebox Locking Motor	• Glovebox latch locking motor control circuit - short to power	Refer to the electrical circuit diagrams and check glovebox latch locking motor control circuit for short to power
B114513	Glovebox Locking Motor	• Glovebox latch locking motor control circuit - open circuit	Refer to the electrical circuit diagrams and check glovebox latch locking motor control circuit for open circuit
B114612	Passive sounder Supply	• Security passive sounder control circuit - short to power	Refer to the electrical circuit diagrams and check security passive sounder control circuit for short to power
B114614	Passive sounder Supply	• Security passive sounder control circuit - short to ground, open circuit	Refer to the electrical circuit diagrams and check security passive sounder control circuit for short to ground, open circuit
B115811	Front Passenger Seat Heater Sensor	• Front passenger seat heater sensor 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 check front passenger seat heater sensor circuit for short to ground
B115813	Front Passenger Seat Heater Sensor	• Front passenger seat heater sensor circuit - 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 front passenger seat heater sensor circuit for open circuit
B115911	Driver Seat Heater Sensor	• Driver seat heater sensor 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 check driver seat heater sensor circuit for short to ground
B115913	Driver Seat Heater Sensor	• Driver seat heater sensor circuit - 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 seat heater sensor circuit for open circuit
B115A11	Front Passenger Seat Heater	• Front passenger seat heater supply 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 check front passenger seat heater supply circuit for short to ground
B115A15	Front Passenger Seat Heater	• Front passenger seat heater 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 check front passenger seat heater supply circuit for short to power, open circuit

DTC	Description	Possible Cause	Action
B115B11	Driver Seat Heater	• Driver seat heater supply 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 check driver seat heater supply circuit for short to ground
B115B15	Driver Seat Heater	• Driver seat heater 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 check driver seat heater supply circuit for short to power, open circuit
B117513	Driver Door Ajar Switch	• Driver door ajar switch signal circuit - open circuit	Refer to the electrical circuit diagrams and check driver door ajar switch signal circuit for open circuit
B117613	Passenger Door Ajar Switch	• Passenger door ajar switch signal circuit - open circuit	Refer to the electrical circuit diagrams and check passenger door ajar switch signal circuit for open circuit
B117712	Screenwash Level Switch	• Screenwash level switch signal circuit - short to power	Refer to the electrical circuit diagrams and check screenwash level switch signal circuit for short to power
B11C013	Driver Side Rear Door Ajar Switch	• Left rear door ajar switch signal circuit - open circuit	Refer to the electrical circuit diagrams and check left rear door ajar switch signal circuit for open circuit
B11C113	Passenger Side Rear Door Ajar Switch	• Right rear door ajar switch signal circuit - open circuit	Refer to the electrical circuit diagrams and check right rear door ajar switch signal circuit for open circuit
B122223	Master Lock/Unlock Switch	• Master lock or unlock switch digital input circuit - signal stuck low	Refer to the electrical circuit diagrams and check master lock and unlock switch digital input circuits for short to ground, open circuit
B123711	Gear Shift Module Early Wake-up	• Transmission shift module wake-up 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 check transmission shift module wake-up control circuit for short to ground
B123712	Gear Shift Module Early Wake-up	• Transmission shift module wake-up control circuit - short to power	Refer to the electrical circuit diagrams and check transmission shift module wake-up control circuit for short to power
B123713	Gear Shift Module Early Wake-up	• Transmission shift module wake-up control circuit - open circuit	Refer to the electrical circuit diagrams and check transmission shift module wake-up control circuit for open circuit
B123E13	Crank Enable	• OK to crank signal circuit - open circuit	Refer to the electrical circuit diagrams and check OK to crank signal circuit for open circuit
B1A8596	Ambient Light Sensor	• Light sensor internal electronic failure	Check and install a new sensor as required
B1C4513	Front Wiper Park Position Switch	• Windshield wiper motor park switch signal circuit - open circuit	Refer to the electrical circuit diagrams and check windshield wiper motor park switch signal circuit for open circuit
B1C4523	Front Wiper Park Position Switch	• Signal stuck low	Refer to the electrical circuit diagrams and check front wiper park position switch input circuit for short, open circuit
B1C7812	Powerwash Relay	• Powerwash relay control circuit - short to power	Refer to the electrical circuit diagrams and check powerwash relay control circuit for short to power
B1C7814	Powerwash Relay	• Powerwash relay control circuit - short to ground, open circuit	Refer to the electrical circuit diagrams and check powerwash relay control circuit for short to ground, open circuit
B1C7911	Front Washer Pump	• Screenwash pump control circuit - short to ground	Refer to the electrical circuit diagrams and check screenwash pump control circuit for short to ground

DTC	Description	Possible Cause	Action
B1C7913	Front Washer Pump	• Screenwash pump control circuit - 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 screenwash pump control circuit for open circuit
B1C9812	Left Corner Lamp Circuit	• Left front corner lamp control circuit - short to power	Refer to the electrical circuit diagrams and check left front corner lamp control circuit for short to power
B1C9814	Left Corner Lamp Circuit	• Left front corner lamp control circuit - short to ground, open circuit	Refer to the electrical circuit diagrams and check left front corner lamp control circuit for short to ground, open circuit
B1C9912	Right Corner Lamp Circuit	• Right front corner lamp control circuit - short to power	Refer to the electrical circuit diagrams and check right front corner lamp control circuit for short to power
B1C9914	Right Corner Lamp Circuit	• Right front corner lamp control circuit - short to ground, open circuit	Refer to the electrical circuit diagrams and check right front corner lamp control circuit for short to ground, open circuit
B1D0011	Left Low Beam	• Left dip beam 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 check left dip beam control circuit for short to ground
B1D0012	Left Low Beam	• Left dip beam control circuit - short to power	Refer to the electrical circuit diagrams and check left dip beam control circuit for short to power
B1D0013	Left Low Beam	• Left dip beam control circuit - open circuit	Refer to the electrical circuit diagrams and check left dip beam control circuit for open circuit
B1D0111	Right Low Beam	• Right dip beam 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 check right dip beam control circuit for short to ground
B1D0112	Right Low Beam	• Right dip beam control circuit - short to power	Refer to the electrical circuit diagrams and check right dip beam control circuit for short to power
B1D0113	Right Low Beam	• Right dip beam control circuit - open circuit	Refer to the electrical circuit diagrams and check right dip beam control circuit for open circuit
B1D0211	Left High Beam Circuit	• Left high beam control circuit - short to ground	Refer to the electrical circuit diagrams and check left high beam control circuit for short to ground
B1D0212	Left High Beam Circuit	• Left high beam control circuit - short to power	Refer to the electrical circuit diagrams and check left high beam control circuit for short to power
B1D0213	Left High Beam Circuit	• Left high beam control circuit - open circuit	Refer to the electrical circuit diagrams and check left high beam control circuit for open circuit
B1D0311	Right High Beam Circuit	• Right high beam control circuit - short to ground	Refer to the electrical circuit diagrams and check right high beam control circuit for short to ground
B1D0312	Right High Beam Circuit	• Right high beam control circuit - short to power	Refer to the electrical circuit diagrams and check right high beam control circuit for short to power
B1D0313	Right High Beam Circuit	• Right high beam control circuit - open circuit	Refer to the electrical circuit diagrams and check right high beam control circuit for open circuit
B1D1711	Battery Backed Sounder	• Battery backed sounder inclination sensor control circuit - short to ground	Refer to the electrical circuit diagrams and check battery backed sounder inclination sensor control circuit for short to ground
B1D1811	Volumetric Sensor	• Intrusion sensor module supply 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 check intrusion sensor module supply circuit for short to ground

DTC	Description	Possible Cause	Action
B1D2711	Heater Coolant Pump	• Heater coolant pump 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 check heater coolant pump control circuit for short to ground
B1D2713	Heater Coolant Pump	• Heater coolant pump control circuit - 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 heater coolant pump control circuit for open circuit
B1D9796	Tilt Sensor	• Component internal failure	Suspect the battery backed sounder, check and install a new battery backed sounder as required
P057112	Brake Switch A Circuit	• Footbrake switch circuit - short to power	Refer to the electrical circuit diagrams and check footbrake switch circuit for short to power
P080111	Reverse Inhibit Control Circuit	• Electrochromic rear view mirror, reverse inhibit 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 check electrochromic rear view mirror, reverse inhibit circuit for short to ground
P080112	Reverse Inhibit Control Circuit	• Electrochromic rear view mirror, reverse inhibit circuit - short to power	Refer to the electrical circuit diagrams and check electrochromic rear view mirror, reverse inhibit circuit for short to power
P080113	Reverse Inhibit Control Circuit	• Electrochromic rear view mirror, reverse inhibit circuit - open circuit	Refer to the electrical circuit diagrams and check electrochromic rear view mirror, reverse inhibit circuit for open circuit
P085013	Park/Neutral Switch Input Circuit	• Park/Neutral signal circuit - open circuit	Refer to the electrical circuit diagrams and check Park/Neutral signal circuit for open circuit
P162413	Anti-theft System	• RJB anti-theft signal circuit - open circuit	Refer to the electrical circuit diagrams and check RJB anti-theft signal circuit for open circuit
P254F13	Engine Hood Switch Circuit/Open	• Hood ajar switch signal circuit - open circuit	Refer to the electrical circuit diagrams and check hood ajar switch signal circuit for open circuit
U001988	Low Speed CAN Communication Bus	• Bus OFF	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system.
U014200	Lost Communication With Body Control Module "B"	• No sub type information	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system.
U015500	Lost Communication With Instrument Panel Cluster (IPC) Control Module	• No sub type information	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system.
U015600	Lost Communication With Information Center "A"	• No sub type information	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system.
U016400	Lost Communication With HVAC Control Module	• No sub type information	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system.
U016800	Lost Communication With Vehicle Security Control Module	• No sub type information	Check power and ground supplies to vehicle security module
U019900	Lost Communication With "Door Control Module A"	• No sub type information	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system.
U020000	Lost Communication With "Door Control Module B"	• No sub type information	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system.

DTC	Description	Possible Cause	Action
U021400	Lost Communication With Remote Function Actuation	• No sub type information	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system.
U023100	Lost Communication With Rain Sensing Module	• No sub type information	Check power and ground supplies to rain sensing module. LIN circuit fault
U030000	Internal Control Module Software Incompatibility	• No sub type information	Suspect the CJB. Check and install a new CJB as required, refer to the new module/component installation note at the top of the DTC Index
U1000-00	Solid State Driver Protection Active - Driver Disabled - No sub type information	• Central junction box output circuit - Short circuit to ground, short circuit to power	 NOTE: The relevant output is disabled while this DTC is set. Do not clear the DTC until the fault has been rectified • Using the manufacturer approved diagnostic system, check for other central junction box short circuit to ground and/or short circuit to power DTCs and refer to the relevant DTC index for corrective actions • Once circuit faults have been rectified, clear DTC and retest
U1A1449	CAN Initialisation Failure	• Internal electronic failure	Suspect the CJB. Check and install a new CJB as required, refer to the new module/component installation note at the top of the DTC Index
U200813	Sensor Cluster	• Instrument cluster security signal circuit - open circuit	Refer to the electrical circuit diagrams and check instrument cluster security signal circuit for open circuit
U201012	Switch Illumination	• Switch/interior illumination PWM supply circuit - short to power	Refer to the electrical circuit diagrams and check switch/interior illumination PWM supply circuit for short to power
U201014	Switch Illumination	• Switch/interior illumination PWM supply circuit - short to ground, open circuit	Refer to the electrical circuit diagrams and check switch/interior illumination PWM supply circuit for short to ground, open circuit
U210000	Initial Configuration Not Complete	• RJB configuration (parameters) failure	Re-configure the RJB using the manufacturer approved diagnostic system
U3000-49	Control Module - Internal electronic failure	• Central junction box - Internal failure	 NOTE: The relevant output is disabled while this DTC is set • Using the manufacturer approved diagnostic system, check for other central junction box short circuit to ground and/or short circuit to power DTCs and refer to the relevant DTC index for corrective actions • Install a new central junction box as required. Clear DTCs and retest
U300055	Control Module	• Not configured	Re-configure the RJB using the manufacturer approved diagnostic system. Check the correct CJB is installed to vehicle market/specification. Install a new/correct CJB as required, refer to the new module/component installation note at the top of the DTC Index
U300087	Control Module	• Missing message	Carry out CAN network integrity test using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and check CAN network between RJB and CJB for short, open circuit. Check RJB and then CJB for related DTCs and refer to the relevant DTC Index
U300281	Vehicle Identification Number	• Invalid serial data received	Suspect the CJB has previously been installed to another vehicle. Check and install the original or a new CJB
U300317	Battery Voltage	• Circuit voltage above threshold	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system.

DTC	Description	Possible Cause	Action
U300362	Battery Voltage	• Mis-match in battery voltage, of 2 volts or more, between CJB and RJB	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system.

Rear Junction Box (RJB)

CAUTIONS:

 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

 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 5-digit codes. Match the 5 digits from the scan tool to the first 5 digits of the 7-digit code listed to identify the fault (the last 2 digits give extra information read by the manufacturer-approved diagnostic system)

 When performing voltage or resistance tests, always use a digital multimeter accurate to three decimal places and with a current 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

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

 If diagnostic trouble codes 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

 Where an 'on demand self-test' is referred to, this can be accessed via the 'diagnostic trouble code monitor' tab on the manufacturers approved diagnostic system

 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
P046011	Fuel Level Sensor A Circuit	• Fuel level sensor A analogue input circuit - short to ground	Carry out any pinpoint test associated with this DTC using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and check fuel level sensor A analogue input circuit for short to ground
P046015	Fuel Level Sensor A Circuit	• Fuel level sensor A analogue input circuit - short to power, open circuit	Carry out any pinpoint test associated with this DTC using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and check fuel level sensor A analogue input circuit for short to power, open circuit
P057112	Brake Switch A Circuit	• Footbrake switch digital input signal circuits - short to power	Refer to the electrical circuit diagrams and check footbrake switch digital input signal circuits for short to power
P123012	Fuel Pump Low Speed Malfunction (VLCM)	• High Side output not driven - Diagnosis feedback indicates output is short to power	Refer to the electrical circuit diagrams and check fuel pump delivery module for short to power

DTC	Description	Possible Causes	Action
P123014	Fuel Pump Low Speed Malfunction (VLCM)	• High Side output not driven - Diagnosis feedback indicates output is short to ground, open circuit	Refer to the electrical circuit diagrams and check fuel pump delivery module for short to ground, open circuit
P123093	Fuel Pump Low Speed Malfunction (VLCM)	• High Side output not driven - Diagnosis feedback indicates output is at open load or short to power	Carry out any pinpoint test associated with this DTC using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and check fuel pump delivery module for short to power, open circuit
P134611	Fuel Level Sensor B Circuit	• Fuel level sensor B analogue input circuit - short to ground	Carry out any pinpoint test associated with this DTC using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and check fuel level sensor B analogue input circuit for short to ground
P134615	Fuel Level Sensor B Circuit	• Fuel level sensor B analogue input circuit - short to power, open circuit	Carry out any pinpoint test associated with this DTC using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and check fuel level sensor B analogue input circuit for short to power, open circuit
P162413	Anti-theft System	• Anti-theft signal circuit from CJB - open circuit	Refer to the electrical circuit diagrams and check anti-theft signal circuit from CJB for open circuit
C111A11	Right Stop Lamp	• Right stomp lamp control circuit - short to ground	Carry out any pinpoint test associated with this DTC using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and check right stomp lamp control circuit for short to ground
C111A12	Right Stop Lamp	• Right stomp lamp control circuit - short to power	Refer to the electrical circuit diagrams and check right stomp lamp control circuit for short to power
C111A13	Right Stop Lamp	• Right stomp lamp control circuit - open circuit	Refer to the electrical circuit diagrams and check right stomp lamp control circuit for open circuit
C111B11	Left Stop Lamp	• Left stomp lamp control circuit - short to ground	Carry out any pinpoint test associated with this DTC using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and check left stomp lamp control circuit for short to ground
C111B13	Left Stop Lamp	• Left stomp lamp control circuit - open circuit	Refer to the electrical circuit diagrams and check left stomp lamp control circuit for open circuit
C112011	Reversing lamp	• Reverse lamp control circuit - short to ground	Carry out any pinpoint test associated with this DTC using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and check reverse lamp control circuit for short to ground
C112012	Reversing lamp	• Reverse lamp control circuit - short to power	Refer to the electrical circuit diagrams and check reverse lamp control circuit for short to power
C112013	Reversing lamp	• Reverse lamp control circuit - open circuit	Refer to the electrical circuit diagrams and check reverse lamp control circuit for open circuit
C1120-15	Reversing lamp - circuit short to battery or open	• Reverse lamp control circuit - short circuit to power, open circuit, high resistance	• Refer to the electrical circuit diagrams and check reverse lamp control circuit for short circuit to power, open circuit, high resistance. Repair wiring harness as required. Clear DTC and retest
B100A51	Fuel Pump Authorisation	• RJB fault • Low speed CAN fault • Instrument cluster fault	Check power and ground supplies to RJB. Check CAN communications between RJB and instrument cluster. Check power and ground supplies to instrument cluster
B100A62	Fuel Pump Authorisation	• Low speed CAN fault • RJB fault • Instrument cluster fault • Incorrect module installed (RJB/Instrument cluster)	Check CAN communications between RJB and instrument cluster. Check power and ground supplies to RJB and instrument cluster. Confirm correct module installed. Re-synchronise ID by re-configuring the RJB as a new module. Check CAN network for interference/EMC related issues

DTC	Description	Possible Causes	Action
		• Write target SID synchronisation error following re-programming • Noise/EMC related error	
B100A63	Fuel Pump Authorisation	• RJB fault • Low speed CAN fault • Instrument cluster fault • Low battery voltage <9V	Check power and ground supplies to RJB and instrument cluster. Check CAN communications between RJB and instrument cluster. Check battery is in fully charged and serviceable condition, refer to the battery care manual
B102612	Steering Column Lock	• Steering column lock ground circuit - short to power	Refer to the electrical circuit diagrams and check steering column lock ground circuit for short to power
B108783	LIN Bus "A"	• The checksum of the received LIN frame is incorrect	Check the battery monitoring system and rear parking aid system for DTCs and refer to relevant DTC Index
B108786	LIN Bus "A"	• The header of the LIN message received is incorrect	Carry out any pinpoint test associated with this DTC using the manufacturer approved diagnostic system. Check the battery monitoring system and rear parking aid system for DTCs and refer to relevant DTC Index
B108788	LIN Bus "A"	• Battery monitoring system LIN circuit - short to ground, power	Carry out any pinpoint test associated with this DTC using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and check battery monitoring system LIN circuit for short to ground, power
B108A23	Start Button	• Start/Stop switch digital input signal circuit - stuck low	Carry out any pinpoint test associated with this DTC using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and check Start/Stop switch digital input signal circuit for short to ground
B10A111	Trailer Tow Detection	• Trailer tow detection digital input circuit - short to ground	Carry out any pinpoint test associated with this DTC using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and check trailer tow detection digital input circuit for short to ground
B10AF12	Blower Fan Relay	• High Side output not driven - Diagnosis feedback indicates output is short to power	Refer to the electrical circuit diagrams and check blower motor supply circuit for short to power
B10AF14	Blower Fan Relay	• High Side output not driven - Diagnosis feedback indicates output is short to ground, open circuit	Refer to the electrical circuit diagrams and check blower motor supply circuit for short to ground, open circuit
B10AF93	Blower Fan Relay	• High Side output not driven - Diagnosis feedback indicates output is at open load or short to power	Carry out any pinpoint test associated with this DTC using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and check blower motor supply circuit for short to power, open circuit
B10DD11	Airbag Deployed	• Airbag deployed digital input signal circuit - short to ground	Carry out any pinpoint test associated with this DTC using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and check airbag deployed digital input signal circuit for short to ground
B10DD15	Airbag Deployed	• Airbag deployed digital input signal circuit - short to power, open circuit	Carry out any pinpoint test associated with this DTC using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and check airbag deployed digital input signal circuit for short to power, open circuit
B10DD38	Airbag Deployed	• Signal frequency incorrect	Check the RCM for related DTCs and refer to the relevant DTC Index
B10DE11	Low Fuel Warning Switch	• Diesel run-dry switch analogue input circuit - short to ground	Carry out any pinpoint test associated with this DTC using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and check diesel run-dry switch analogue input circuit for short to ground

DTC	Description	Possible Causes	Action
B10DE15	Low Fuel Warning Switch	• Diesel run-dry switch analogue input circuit - short to power, open circuit	Carry out any pinpoint test associated with this DTC using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and check diesel run-dry switch analogue input circuit for short to power, open circuit
B111211	Park Aid Ignition	• Parking aid ignition supply circuit - short to ground	Carry out any pinpoint test associated with this DTC using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and check parking aid ignition supply circuit for short to ground
B111212	Park Aid Ignition	• Parking aid ignition supply circuit - short to power	Refer to the electrical circuit diagrams and check parking aid ignition supply circuit for short to power
B111511	High Mounted Stop Lamp Control	• High mounted stop lamp control circuit - short to ground	Carry out any pinpoint test associated with this DTC using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and check high mounted stop lamp control circuit for short to ground
B111611	Left Tail Lamp	• Left hand tail lamp control circuit - short to ground	Carry out any pinpoint test associated with this DTC using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and check left hand tail lamp control circuit for short to ground
B111711	Right Tail Lamp	• Right hand tail lamp control circuit - short to ground	Carry out any pinpoint test associated with this DTC using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and check right hand tail lamp control circuit for short to ground
B111A11	Number Plate Lamps	• Right hand or left hand number plate lamp control circuits - short to ground	Carry out any pinpoint test associated with this DTC using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and check right hand and left hand number plate lamp control circuits for short to ground
B111A12	Number Plate Lamps	• Right hand or left hand number plate lamp control circuits - short to power	Refer to the electrical circuit diagrams and check right hand and left hand number plate lamp control circuits for short to power
B111A13	Number Plate Lamps	• Right hand or left hand number plate lamp control circuits - open circuit	Refer to the electrical circuit diagrams and check right hand and left hand number plate lamp control circuits for open circuit
B111A-15	Number Plate Lamps - circuit short to battery or open	• Right or left side licence plate lamp(s) inoperative • Right or left side licence plate lamp control circuits - short circuit to power, open circuit, high resistance	• Refer to the electrical circuit diagrams and check right side and left side licence plate lamp control circuits for short circuit to power, open circuit, high resistance. Repair wiring harness as required. Clear DTC and retest
B111D12	Boot/Trunk Motor Open	• Luggage compartment lid latch actuator control circuit - short to power	Carry out any pinpoint test associated with this DTC using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and check luggage compartment lid latch actuator control circuit for short to power
B111D14	Boot/Trunk Motor Open	• Luggage compartment lid latch actuator control circuit - short to ground, open circuit	Carry out any pinpoint test associated with this DTC using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and check luggage compartment lid latch actuator control circuit for short to ground, open circuit
B111E11	Boot/Trunk Lamps	• Luggage compartment lamp control circuit - short to ground	Carry out any pinpoint test associated with this DTC using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and check luggage compartment lamp control circuit for short to ground
B111E12	Boot/Trunk Lamps	• Luggage compartment lamp control circuit - short to power	Refer to the electrical circuit diagrams and check luggage compartment lamp control circuit for short to power

DTC	Description	Possible Causes	Action
B111E13	Boot/Trunk Lamps	• Luggage compartment lamp control circuit - open circuit	Refer to the electrical circuit diagrams and check luggage compartment lamp control circuit for open circuit
B111E-15	Boot/Trunk Lamps - circuit short to battery or open	• Luggage compartment lamp inoperative • Luggage compartment lamp control circuit - short circuit to power, open circuit, high resistance	• Refer to the electrical circuit diagrams and check luggage compartment lamp control circuit for short circuit to power, open circuit, high resistance. Repair wiring harness as required. Clear DTC and retest
B112312	Restraints Ignition Relay	• High Side output not driven - diagnosis feedback indicates output is short to power	Carry out any pinpoint test associated with this DTC using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and check restraints ignition relay output for short to power
B112314	Restraints Ignition Relay	• High Side output not driven - diagnosis feedback indicates output is short to ground, open circuit	Carry out any pinpoint test associated with this DTC using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and check restraints ignition relay output for short to ground, open circuit
B112393	Restraints Ignition Relay	• High Side output not driven - diagnosis feedback indicates output is at open load or short to power	Carry out any pinpoint test associated with this DTC using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and check restraints ignition relay output for open load or short to power
B112411	Lamp Fade Control	• Interior lamp fade control circuit - short to ground	Refer to the electrical circuit diagrams and check interior lamp fade control circuit for short to ground
B112412	Lamp Fade Control	• Interior lamp fade control circuit - short to power	Refer to the electrical circuit diagrams and check interior lamp fade control circuit for short to power
B113C12	Hazard Switch Illumination	• Hazard switch illumination control circuit - short to power	Refer to the electrical circuit diagrams and check hazard switch illumination control circuit for short to power
B113C14	Hazard Switch Illumination	• Hazard switch illumination control circuit - short to ground, open circuit	Refer to the electrical circuit diagrams and check hazard switch illumination control circuit for short to ground, open circuit
B113E12	External Boot/Trunk Release Switch	• External luggage compartment lid release switch digital input circuit - short to power	Refer to the electrical circuit diagrams and check external luggage compartment lid release switch digital input circuit for short to power
B113E23	External Boot/Trunk Release Switch	• External luggage compartment lid release switch digital input circuit - signal stuck low	Carry out any pinpoint test associated with this DTC using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and check external luggage compartment lid release switch digital input circuit for short to ground
B11D949	Vehicle Battery	• Vehicle battery damaged/worn out	Check battery is in fully charged and serviceable condition using the Midtronics battery tester and the battery care manual
B11DB49	Battery Monitoring Module	• Internal electronic failure	Suspect the battery monitoring module. Check and install a new module as required, refer to the new module/component installation note at the top of the DTC Index
B11DB87	Battery Monitoring Module	• Battery monitoring module connector dis-connected/poor connection Battery • monitoring module to RJB LIN circuit - open circuit	Carry out any pinpoint test associated with this DTC using the manufacturer approved diagnostic system. If additional DTCs B108783, B108786, B108787 are logged, suspect the RJB. Check and install a new RJB as required, refer to the new module/component installation note at the top of the DTC Index. If additional DTCs B108783, B108786, B108787 are NOT logged, check for good/clean contact at battery monitoring module

DTC	Description	Possible Causes	Action
		• Battery monitoring module to battery positive monitor circuit - open circuit • Battery monitoring module/RJB failure	connector, refer to electrical circuit diagrams and check battery monitoring module to RJB LIN circuit and battery monitoring module to battery positive monitor circuit for open circuit. Clear DTC and repeat automated diagnostic procedure using manufacturer approved diagnostic system. If DTC remains suspect the battery monitoring module, check and install a new battery monitoring module as required, refer to the new module/component installation note at the top of the DTC Index
B123A11	Left Front Turn Indicator	• Left front turn signal lamp control circuit - short to ground	Refer to the electrical circuit diagrams and check left front turn signal lamp control circuit for short to ground
B123A12	Left Front Turn Indicator	• Left front turn signal lamp control circuit - short to power	Refer to the electrical circuit diagrams and check left front turn signal lamp control circuit for short to power
B123A13	Left Front Turn Indicator	• Left front turn signal lamp control circuit - open circuit	Refer to the electrical circuit diagrams and check left front turn signal lamp control circuit for open circuit
B123A-15	Left Front Turn Indicator - circuit short to battery or open	• Left front turn signal lamp control circuit - short circuit to power, open circuit, high resistance	• Refer to electrical circuit diagrams and check left front turn signal lamp control circuit for short circuit to power, open circuit, high resistance. Repair wiring harness as required. Clear DTC and retest
B123B11	Right Front Turn Indicator	• Right front turn signal lamp control circuit - short to ground	Refer to the electrical circuit diagrams and check right front turn signal lamp control circuit for short to ground
B123B12	Right Front Turn Indicator	• Right front turn signal lamp control circuit - short to power	Refer to the electrical circuit diagrams and check right front turn signal lamp control circuit for short to power
B123B13	Right Front Turn Indicator	• Right front turn signal lamp control circuit - open circuit	Refer to the electrical circuit diagrams and check right front turn signal lamp control circuit for open circuit
B123B-15	Right Front Turn Indicator - circuit short to battery or open	• Right front turn signal lamp control circuit - short circuit to power, open circuit, high resistance	• Refer to electrical circuit diagrams and check right front turn signal lamp control circuit for short circuit to power, open circuit, high resistance. Repair wiring harness as required. Clear DTC and retest
B124711	Left Rear Turn Indicator	• Left rear turn signal lamp control circuit - short to ground	Refer to the electrical circuit diagrams and check left rear turn signal lamp control circuit for short to ground
B124712	Left Rear Turn Indicator	• Left rear turn signal lamp control circuit - short to power	Refer to the electrical circuit diagrams and check left rear turn signal lamp control circuit for short to power
B124713	Left Rear Turn Indicator	• Left rear turn signal lamp control circuit - short to power, open circuit	Refer to the electrical circuit diagrams and check left rear turn signal lamp control circuit for open circuit
B1247-15	Left Rear Turn Indicator - circuit short to battery or open	• Left rear turn signal lamp control circuit - short circuit to power, open circuit, high resistance	• Refer to electrical circuit diagrams and check left rear turn signal lamp control circuit for short circuit to power, open circuit, high resistance. Repair wiring harness as required. Clear DTC and retest
B124811	Right Rear Turn Indicator	• Right rear turn signal lamp control circuit - short to ground	Refer to the electrical circuit diagrams and check right rear turn signal lamp control circuit for short to ground

DTC	Description	Possible Causes	Action
B124812	Right Rear Turn Indicator	• Right rear turn signal lamp control circuit - short to power	Refer to the electrical circuit diagrams and check right rear turn signal lamp control circuit for short to power
B124813	Right Rear Turn Indicator	• Right rear turn signal lamp control circuit - open circuit	Refer to the electrical circuit diagrams and check right rear turn signal lamp control circuit for open circuit
B1248-15	Right Rear Turn Indicator - circuit short to battery or open	• Right rear turn signal lamp control circuit - short circuit to power, open circuit, high resistance	• Refer to electrical circuit diagrams and check right rear turn signal lamp control circuit for short circuit to power, open circuit, high resistance. Repair wiring harness as required. Clear DTC and retest
B126113	Fuel Flap/Door Release Switch	• Fuel filler flap digital input signal circuit - open circuit	Refer to the electrical circuit diagrams and check fuel filler flap digital input signal circuit for open circuit
B1A7911	Rear Fog Lamp	• Rear fog lamp control circuit - short to ground	Carry out any pinpoint test associated with this DTC using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and check rear fog lamp control circuit for short to ground
B1A7912	Rear Fog Lamp	• Rear fog lamp control circuit - short to power	Refer to the electrical circuit diagrams and check rear fog lamp control circuit for short to power
B1A7913	Rear Fog Lamp	• Rear fog lamp control circuit - open circuit	Refer to the electrical circuit diagrams and check rear fog lamp control circuit for open circuit
B1C5512	Horn Relay	• Horn control circuit - short to power	Refer to the electrical circuit diagrams and check horn control circuit for short to power
B1C5514	Horn Relay	• Horn control circuit - short to ground, open circuit	Refer to the electrical circuit diagrams and check horn control circuit for short to ground, open circuit
B1C8312	Rear Defog Relay	• High Side output not driven - diagnosis feedback indicates output is short to power	Refer to the electrical circuit diagrams and check heated rear window power supply circuit for short to power
B1C8314	Rear Defog Relay	• High Side output not driven - diagnosis feedback indicates output is short to ground, open circuit	Refer to the electrical circuit diagrams and check heated rear window power supply circuit for short to ground, open circuit
B1C8393	Rear Defog Relay	• High Side output not driven - diagnosis feedback indicates output is at open load or short to power	Carry out any pinpoint test associated with this DTC using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and check heated rear window power supply circuit for open load and short to power
B1C9112	Fuel Flap/Door Lock Relay Coil Circuit	• Fuel filler flap locking motor control circuit - short to power	Refer to the electrical circuit diagrams and check fuel filler flap locking motor control circuit for short to power
B1C9114	Fuel Flap/Door Lock Relay Coil Circuit	• Fuel filler flap locking motor control circuit - short to ground, open circuit	Refer to the electrical circuit diagrams and check fuel filler flap locking motor control circuit for short to ground, open circuit
B1D3512	Hazard Switch	• Hazard warning lamp switch digital input circuit - short to power	Refer to the electrical circuit diagrams and check hazard warning lamp switch digital input circuit for short to power

DTC	Description	Possible Causes	Action
B1D3523	Hazard Switch	• Hazard warning lamp switch digital input circuit - signal stuck low	Carry out any pinpoint test associated with this DTC using the manufacturer approved diagnostic system. Refer to the electrical circuit diagrams and check hazard warning lamp switch digital input circuit for short to ground
U001988	Low Speed CAN Communication Bus	• Bus off	Carry out any pinpoint test associated with this DTC using the manufacturer approved diagnostic system
U014000	Lost Communication With Body Control Module	• No sub type information	Carry out any pinpoint test associated with this DTC using the manufacturer approved diagnostic system
U015500	Lost Communication With Instrument Panel Cluster (IPC) Control Module	• No sub type information	Carry out any pinpoint test associated with this DTC using the manufacturer approved diagnostic system
U015900	Lost Communication With Parking Assist Control Module "A"	• No sub type information	Carry out any pinpoint test associated with this DTC using the manufacturer approved diagnostic system
U016400	Lost Communication With HVAC Control Module	• No sub type information	Carry out any pinpoint test associated with this DTC using the manufacturer approved diagnostic system
U021400	Lost Communication With Remote Function Actuation	• No sub type information	Carry out any pinpoint test associated with this DTC using the manufacturer approved diagnostic system
U030046	Internal Control Module Software Incompatibility	• Calibration/parameter memory failure	Suspect the RJB. Check and install a new RJB as required, refer to the new module/component installation note at the top of the DTC Index
U100000	Solid State Driver Protection Active -Driver Disabled	• No sub type information	Carry out any pinpoint test associated with this DTC using the manufacturer approved diagnostic system
U1A1449	CAN Initialisation Failure	• Internal electronic failure	Suspect the RJB. Check and install a new RJB as required, refer to the new module/component installation note at the top of the DTC Index
U300049	Control Module	• Internal electronic failure	Suspect the RJB. Check and install a new RJB as required, refer to the new module/component installation note at the top of the DTC Index
U300055	Control Module	• Not configured	Re-configure the RJB using the manufacturer approved diagnostic system

Published: 11-May-2011

Module Communications Network - Auxiliary Junction Box (AJB)

Removal and Installation

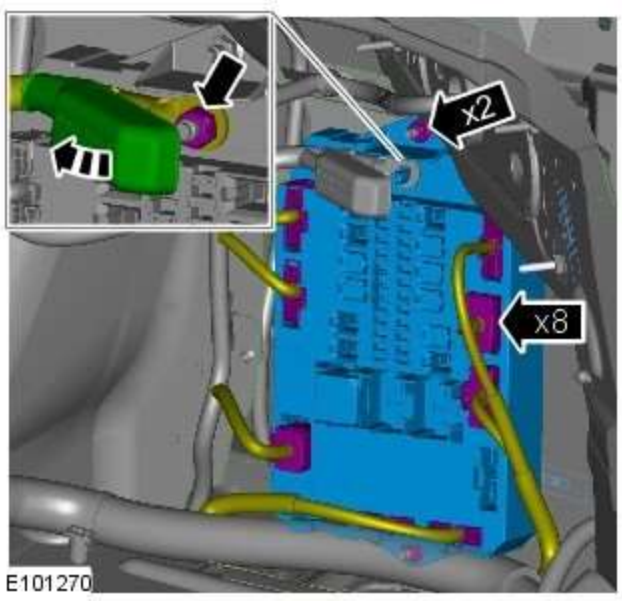
Removal

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: Loadspace Trim Panel RH (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.

Published: 11-May-2011

Module Communications Network - Central Junction Box (CJB)

Removal and Installation

Removal

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

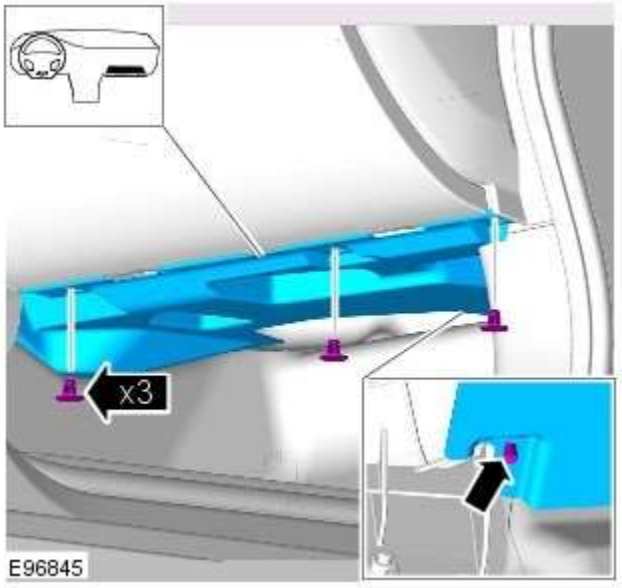
All vehicles

1. Refer to: Battery Disconnect and Connect (414-01 Battery, Mounting and Cables, General Procedures).

2. Refer to: Cowl Side Trim Panel (501-05 Interior Trim and Ornamentation, Removal and Installation).

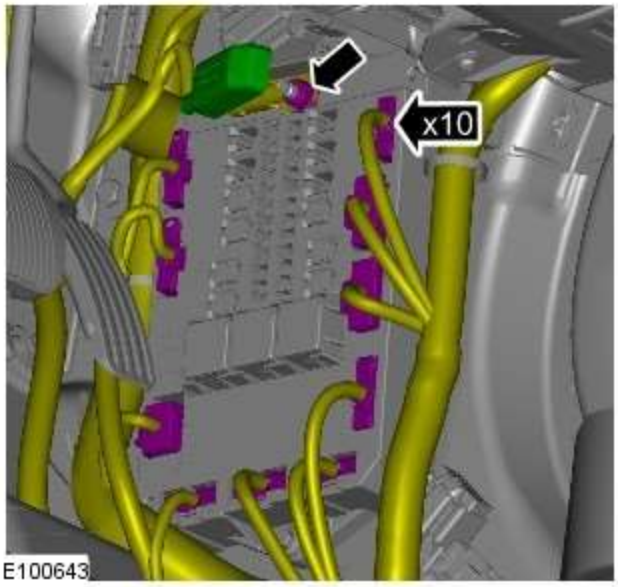
Left-hand drive vehicles

3.



All vehicles

4.



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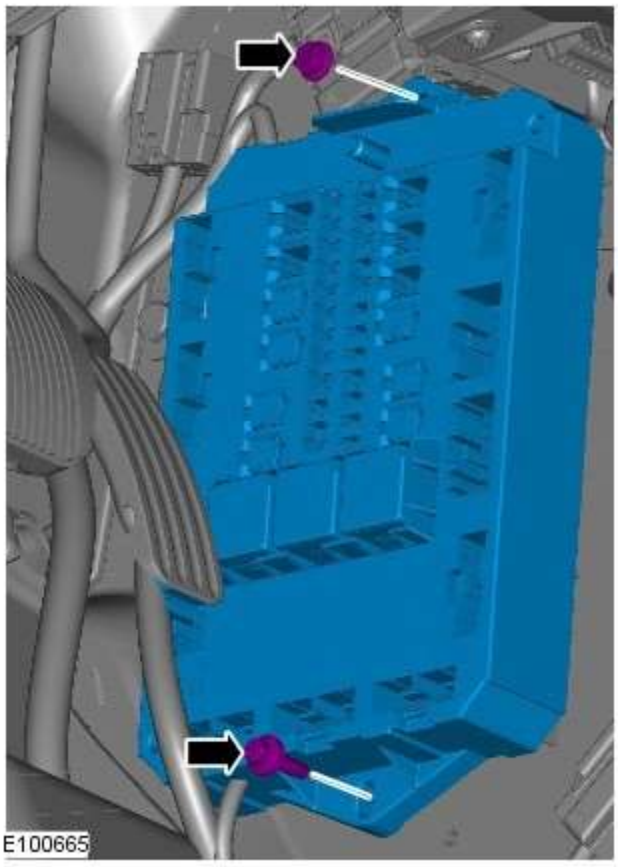


Installation

1. To install, reverse the removal procedure.
2. Configure the CJB using the diagnostic tool.

Published: 21-Jan-2014

Wiring Harnesses - Wiring Harness

Description and Operation

Introduction

CAUTION: Do **not** use any other heat shrink sleeve other than the approved glue lined heat shrink sleeve mentioned in the repair procedure.

The purpose of this document is to promote quick and efficient minor repair to harness connectors or cables using approved methods. Repairs may only be made to cables and connectors which have been mechanically, **not electrically** damaged. It also applies where the whole extent of the damage can be clearly identified and rectified.

Care and neatness are essential requirements in making a perfect repair.

Caution:

This harness repair guide, does not approve repairs to any of the following circuits:

1. Any media orientated system transport network harnesses.
2. Supplement restraint system (SRS) firing circuits (Air bags).
3. Link lead assembles, which are unique to safety critical circuits such as anti-lock brake system (ABS) and thermocouple circuits. An example of this is the ABS wheel speed sensors with moulded connectors.
4. 4. Screened cables, leads and wiring harness(s).

If any harness(s) with defective electrical connector terminals or wires from the above circuits are a concern, new components must be installed.

Repair Components

CAUTION: Where the repair procedure indicates that a glue lined heat shrink sleeve should be applied, apply sufficient heat to the glue lined heat shrink to melt the glue in order to provide a water tight seal. Do **not** over heat the glue lined heat shrink sleeve so that the wiring harness insulation becomes damaged.

The wiring harness repair components comprises:

- Pre-terminated wiring harness(s) of different sizes and types
- Three sizes of butt splice connectors
- A selection of colored cable identification sleeves
- Two sizes of glue lined heat shrink sleeves

A suitable heat source, for shrinking heat shrink sleeves will be required.

The pre-insulated diamond grip range of electrical connector terminals and in-line, butt splice connectors are the **only** acceptable product for the repairs of wiring harnesses. The butt connectors not only grip the wire but also the insulation, making a very secure joint.

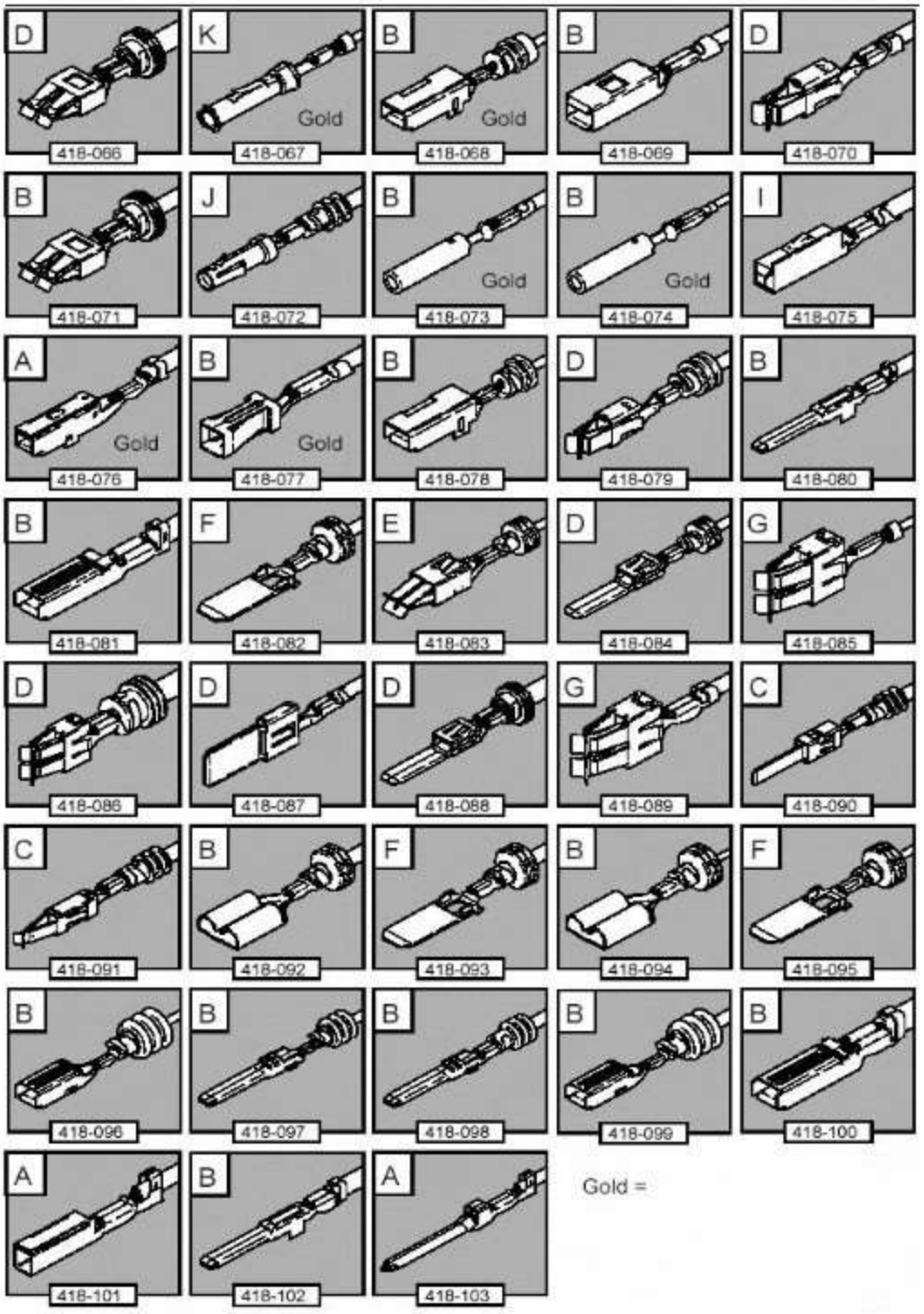
If an electrical connector terminal is not available approval for the repair is **NOT** given and in these circumstances a new wiring harness must be installed.

Pre-Terminated Wiring Harness(s) and Butt Splice Connectors

The pre-terminated wiring harness(s) are supplied with the insulation in one of three colors, red, blue or yellow. The colors do not apply to any particular circuit but to the harness wire size. See the Relationship Table in the Repair Method section.

Butt splice connectors are also supplied with red, blue or yellow coverings, which must be matched to the pre-terminated wiring harness insulation color.

Pre-Terminated Wiring Harness(s)



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The illustration shows:

- The pre-terminated wiring harness(s) which are available via Jaguar/Land Rover authorised parts.
- The part number of the pre-terminated wiring harness
- The letter showing the extractor tip which must be used to remove this type of electrical connector terminal
- Those electrical connector terminals which are gold

Some of the pre-terminated wiring harness(s) have seals installed to the insulation for sealed connector applications. It is

essential for prevention of moisture ingress that a sealed pre-terminated wiring harness must be used where a sealed terminal was removed.

 CAUTION: Where the repair procedure indicates that a glue lined heat shrink sleeve should be applied, apply sufficient heat to the glue lined heat shrink to melt the glue in order to provide a water tight seal. Do **not** over heat the glue lined heat shrink sleeve so that the wiring harness insulation becomes damaged.

Two sizes of heat shrink sleeving are available. Each heat shrink sleeve contains a sealant glue. These must be used when connecting wiring harness(s) or electrical connector terminal(s) at all times. The smaller diameter heat shrink sleeve is to be used with the red and blue butt splice connectors and the larger diameter sleeve with the yellow butt splice connectors.

For ease and speed, some of the pre-terminated wiring harness(s) may already have the insulation partly stripped at the splice end. If the repair requires insulation to be stripped from the cable, refer to the Relationship Table for the correct length of insulation to be stripped.

The Pre-Terminated Wiring Harness(s) illustration shows the electrical connector terminal type, the part number of the pre-terminated wiring harness and the letter of the extractor tip which must be used to extract the electrical connector terminal from the connector housing. Additionally, those electrical connector terminal(s) which are gold are identified, all others are therefore, tinned and not gold.

Wiring Harness Cable Identification Sleeves

A selection of colored sleeves are available for maintaining the wiring harness cable identification on the pre-terminated wiring harness. Place the correct colored sleeve(s) over the pre-terminated wiring harness insulation as near to the electrical connector as possible with the main wiring harness cable color nearest to the electrical connector.

For example, if the original wiring harness cable color is pink with a black trace put the pink wiring harness cable identification sleeve on the pre-terminated wiring harness first followed by a black sleeve, and slide both along the wiring harness cable to the electrical connector terminal.

List of Parts

Description	Part Number	Quantity
Pre-Terminated Wiring Harness(s)	418-066 to 418-103 inclusive	10 each
Glue Lined Heat Shrink Pack – small diameter	418-104	25 per pack
Glue Lined Heat Shrink Pack – larger diameter	418-105	10 per pack
Case Assembly Comprising – carry case, lid, inner lid, base, insert, trays foam spacers	418-106	1
Butt Splice Connector – Red	418-107	50 per pack
Butt Splice Connector – Blue	418-108	50 per pack
Butt Splice Connector – Yellow	418-109	20 per pack
Sleeve Identification Pack – for Red insulation	418-112	500
Sleeve Identification Pack – for Blue insulation	418-113	500
Sleeve Identification Pack – for Yellow insulation	418-114	500

Harness repair components can be ordered from Jaguar/Land Rover authorised parts.

Repair Tools

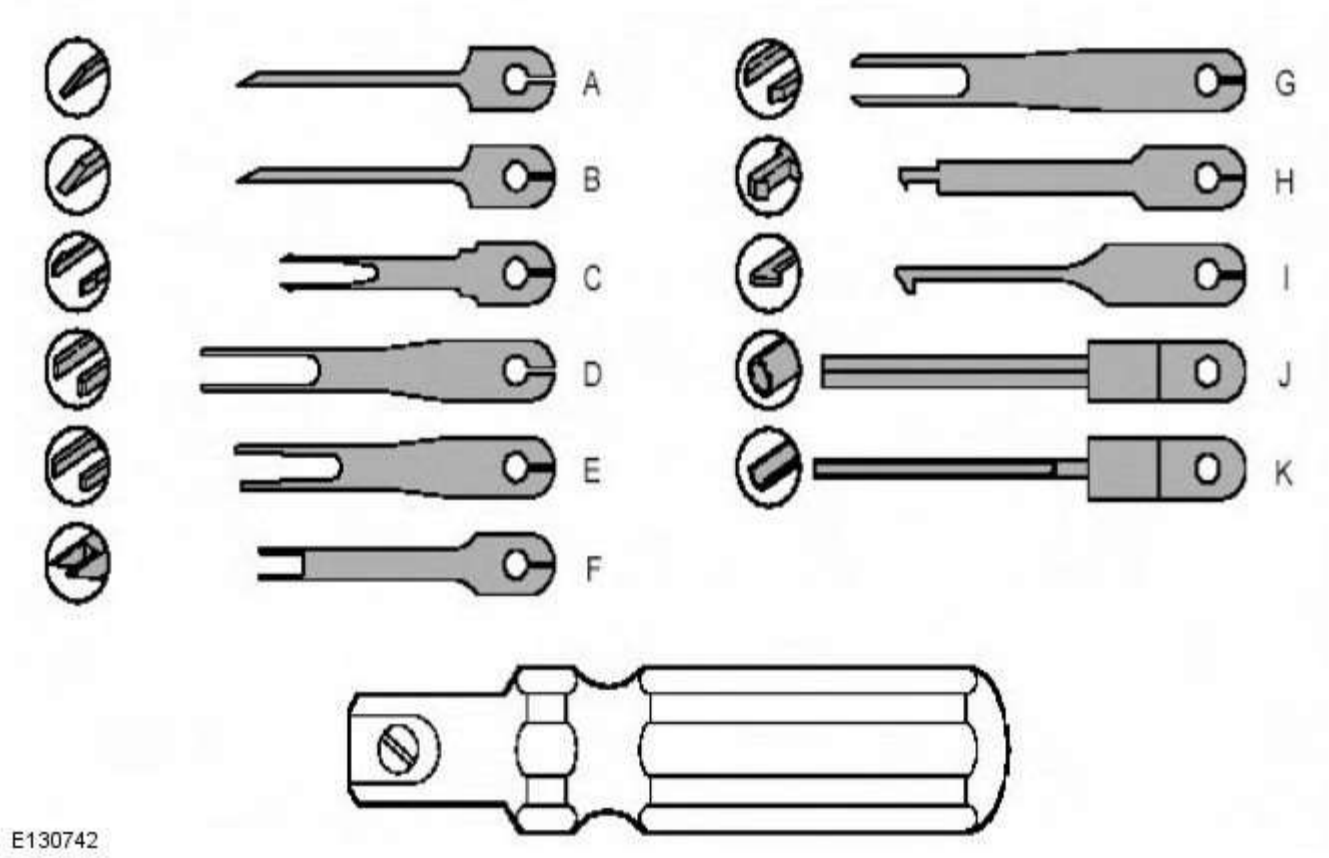
The wiring harness repair tools comprises:

- Crimping pliers
- A wire cutter and insulation stripper
- An electrical connector terminal extraction handle and tips

Extraction Handle and Tips

The extraction handle, in conjunction with the correct tip, is used to remove a terminal from an electrical connector. Each tip is marked with an identification letter, A to K inclusive. Each tip has been specially designed to extract a particular type of electrical connector terminal. The use of any other tool is **not** recommended and is liable to cause damage to the electrical connector. The tip is fastened to the handle by a screw which holds the tip firmly yet allows it to be easily replaced.

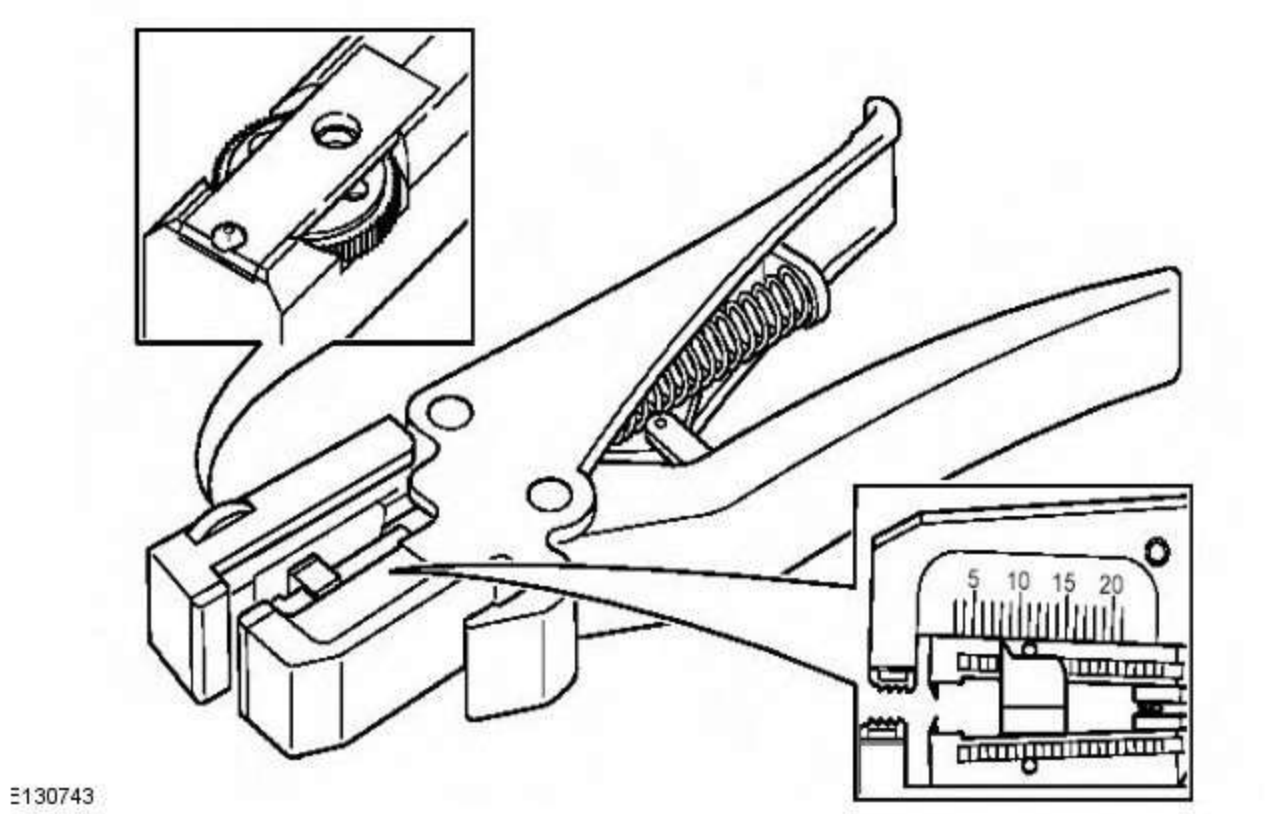
Extraction Handle and Tips



Insulation Stripper

The moving jaw has an adjuster wheel which has a series of holes in it. Turning the wheel and placing the cable in the matching size hole will automatically adjust the jaw to the correct pressure. Note that some wiring harness(s) may have a harder insulation and slight adjustment of the wheel may be needed to make a clean strip but exercise care not to damage the wire.

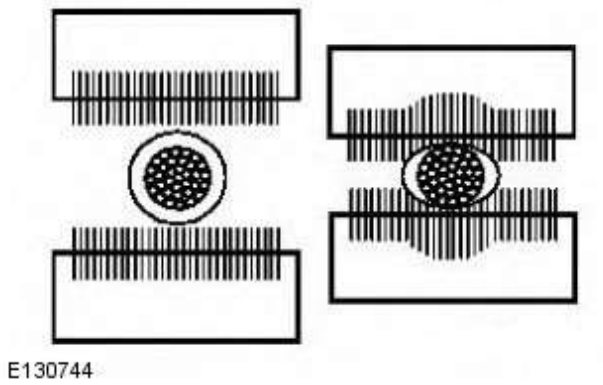
Insulation Stripper



By pressing the outer edges of the wiring harness cable length stop together the adjuster can be slid up or down the jaw. This decreases or increases the length by which the wiring harness cable insulation will be stripped from the pre-terminated wiring harness or wiring harness wire. The adjuster has a position indicator to align with a graduated scale and this sets the correct length in millimetres, of insulation to be stripped. The amount of insulation to be stripped is shown in the Relationship Table.

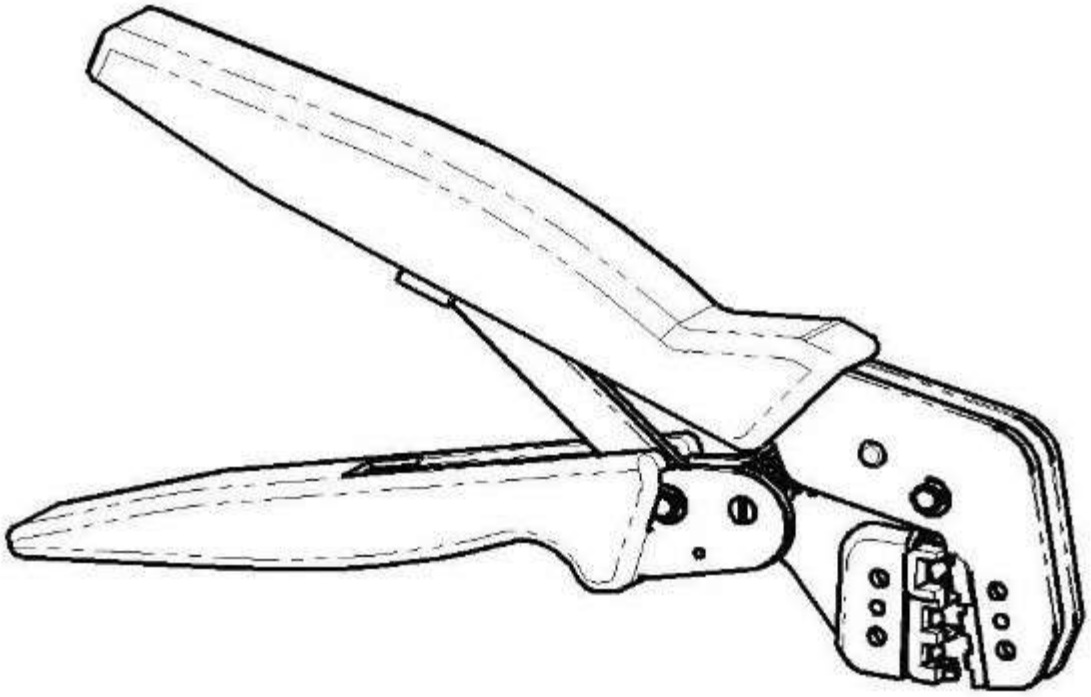
The illustration shows the insulation stripper tool and a wiring harness correctly gripped in the jaws. A wire cutter is provided on the outer side of the fixed jaw.

Cable Correctly Gripped in Stripper Blades



Crimping Pliers

Crimping Pliers



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The crimping pliers have a moving jaw and a stationary jaw, with three different sized crimping enclosures. Each of the enclosures is identified by a red, blue or yellow coloured dot which corresponds to the three colours of the pre-terminated wiring harness(s) and butt splice connector colors.

Description	Part Number	Quantity
Extraction Tool Handle	418-110	1
Extraction Tip Pack consists of 2 spare screws plus	418-S111	1
Tip A	418-118	1
Tip B	418-119	1
Tip C	418-120	1
Tip D	418-121	1
Tip E	418-122	1
Tip F	418-123	1
Tip G	418-124	1
Tip H	418-125	1
Tip I	418-126	1
Tip J	418-127	1
Tip K	418-128	1
Crimping Pliers	YRW500010	1
Wire Stripping Tool	418-117	1

Harness repair tools can be ordered from:

Bosch Automotive Service Solutions

Ironstone Way

Brixworth Industrial Estate

Brixworth

Northants

NN6 9UD

United Kingdom

Telephone: +44 (0) 1327 303400

Fax: +44 (0) 1327 303499

Email: css.uk@bosch-automotive.com

Repair Methods

CAUTION: **Several different types and sizes of terminal may be found in a single electrical connector housing.**

It is necessary to identify:

- The conductor (wire) size of the affected wiring harness
- The electrical connector range from which the damaged wiring harness is to be removed
- The terminal type

Use of the approved diagnostic tool will greatly assist in the quick identification of electrical connectors and faulty pin terminal(s).

Reference can also be made to the vehicle Electrical Guides, held by Dealers, to identify wiring harness(s) and electrical connector(s).

By using the Relationship Table, the wiring harness conductor (wire) size can be related to a suitable pre-terminated wiring harness by the color of the insulation. Also, the correct length of insulation to be stripped from the wiring harness lead is identified.

Relationship Table

CABLE RANGE	SPLICE	STRIP LENGTH
0.35 mm^2 to 1.50 mm^2	RED	6.00 to 7.00 mm
1.00 mm^2 to 2.50 mm^2	BLUE	6.00 to 7.00 mm
4.00 mm^2 to 6.00 mm^2	YELLOW	9.00 to 9.50 mm

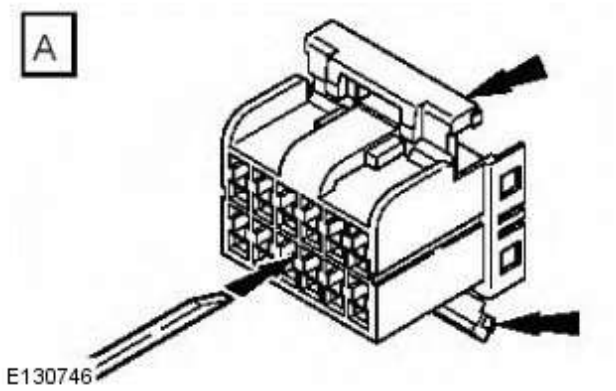
Electrical Connector Terminal Extraction

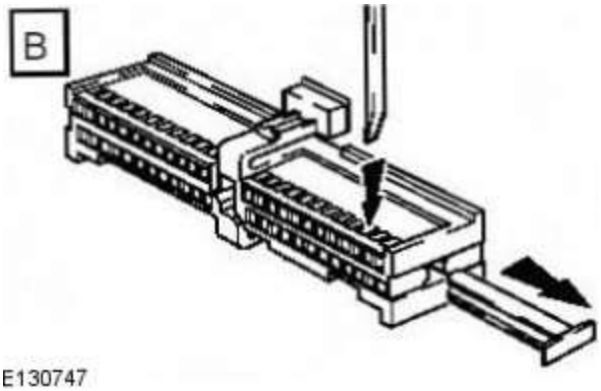
It must be noted that some electrical connector(s) have anti-backout devices which prevent the terminals from being removed from the electrical connector. Some examples of these are shown in following illustrations. The anti-backout device must be released before attempting to remove the terminal from the electrical connector. Some anti-backout devices require a special tip to release the device. Most can be released by carefully using a suitable small screwdriver.

Various types of electrical connector have seals installed internally or externally to prevent moisture ingress. These normally do not have to be removed but make sure that they are installed when the electrical connectors are connected.

The illustrations show examples of each tip used on different types of electrical connector(s). There are a large number of different types of electrical connector used on vehicles therefore only one example using each tip is shown. Technicians experience and judgement will dictate which type of tip should be used for those electrical connector(s) which are not shown. Care should be exercised to avoid further damage when removing the terminals from the electrical connector.

NOTE: **Examples of the extraction tips and anti-backout tips.**





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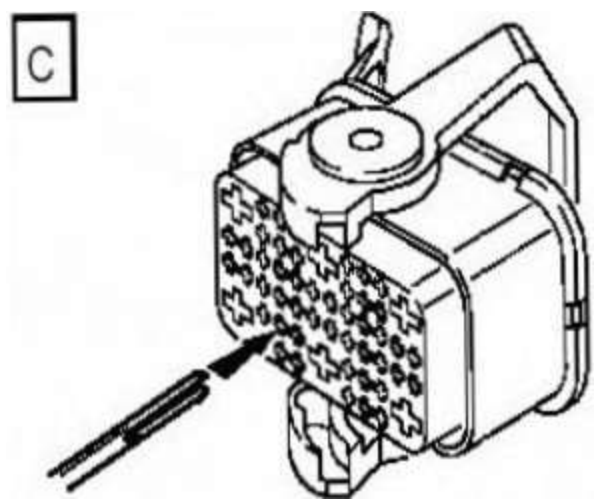

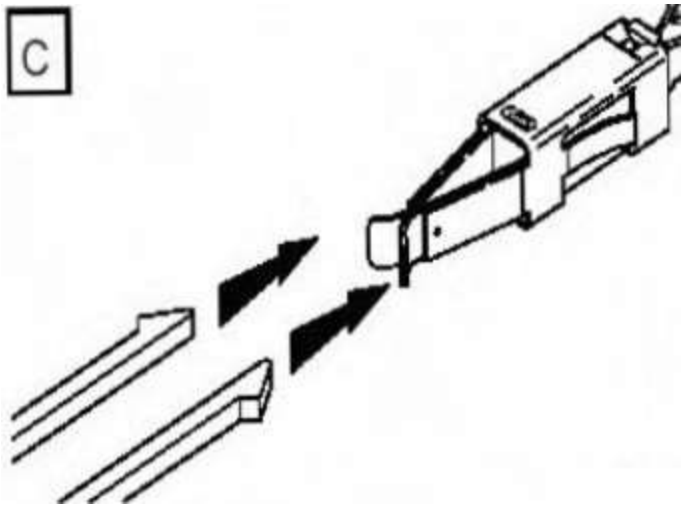

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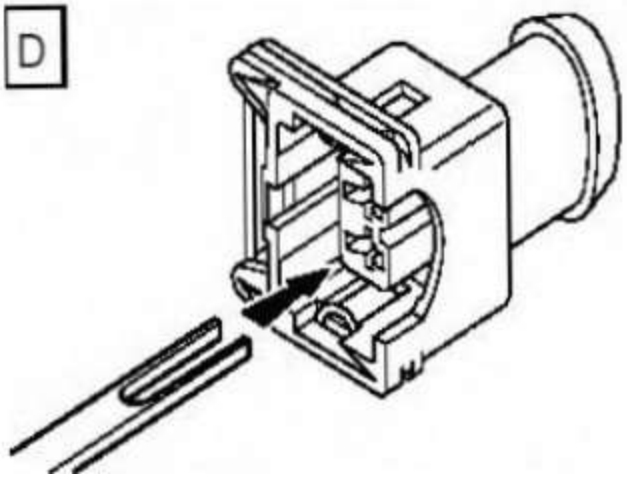

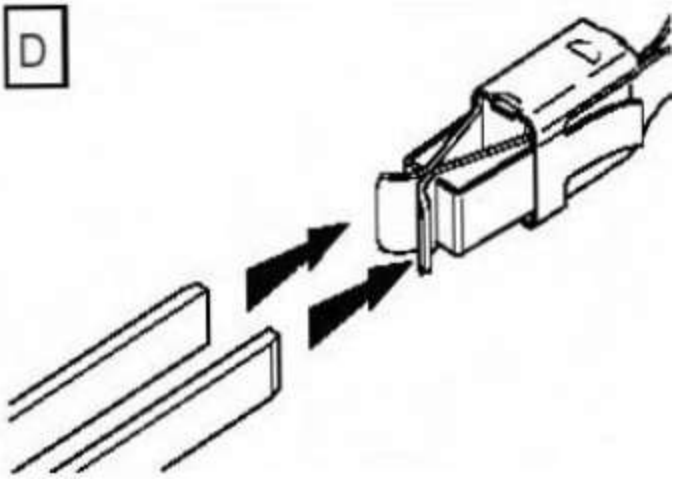

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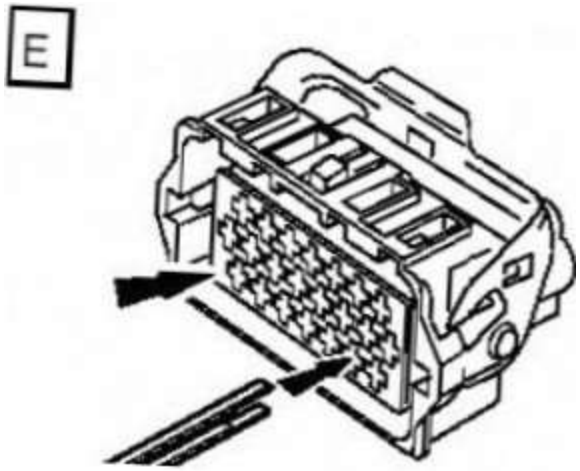

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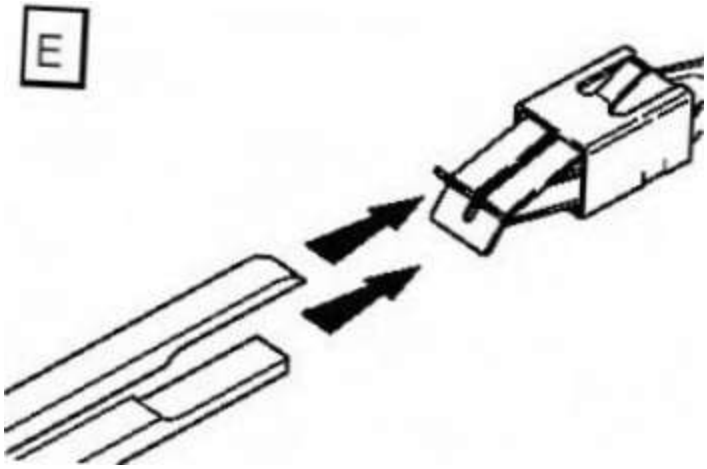

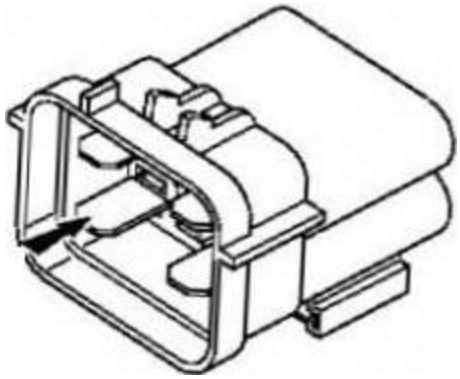

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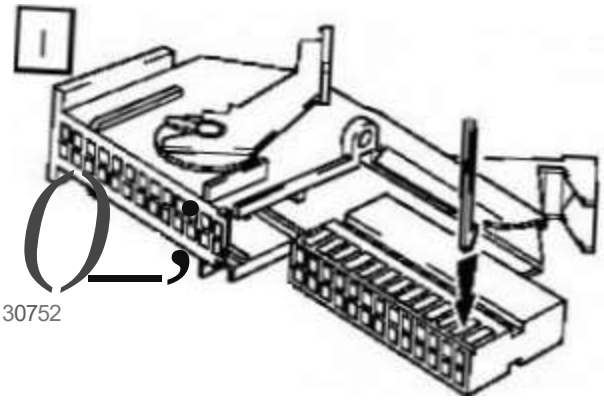

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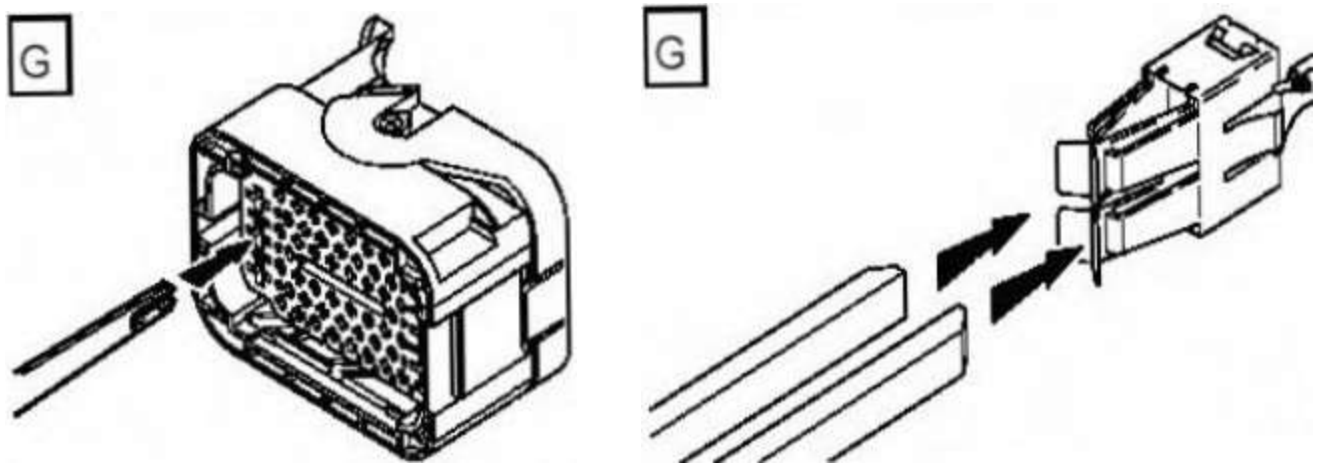

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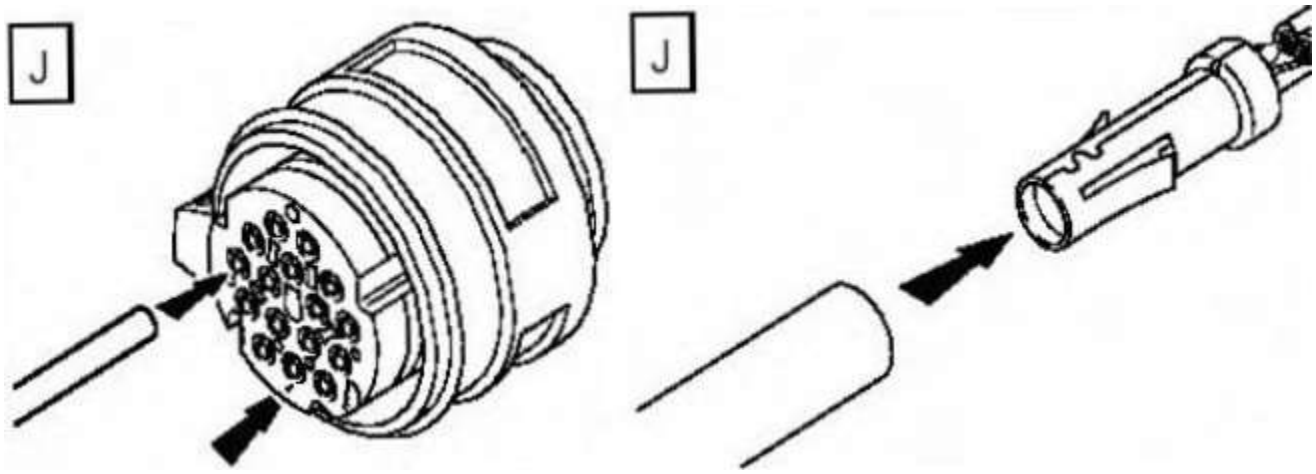

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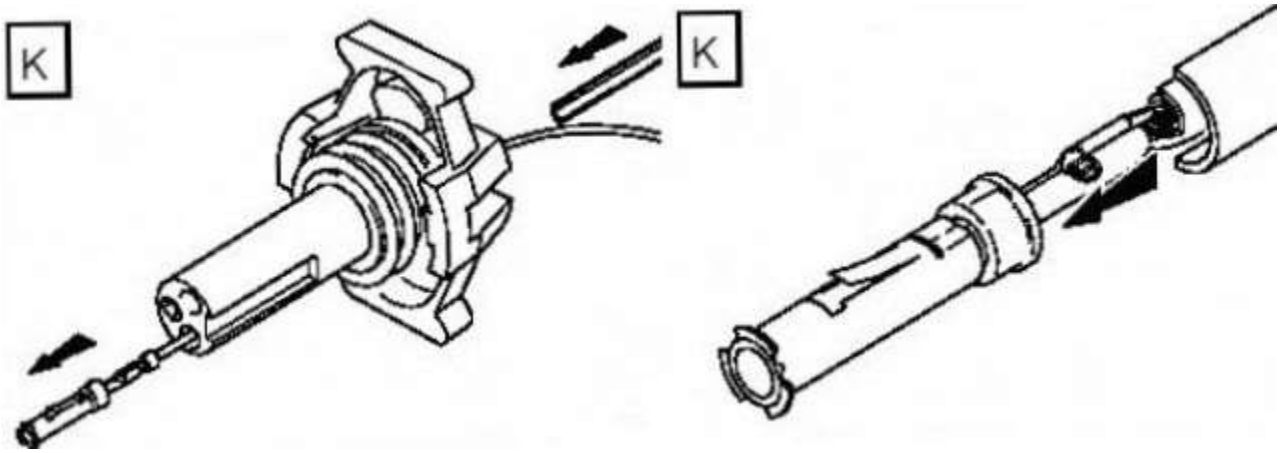

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NOTE: The chart shows the electrical connector types, terminal pins/sockets, extractor tip and anti-backout tip.

Electrical connector terminal type	Pin or socket	Extractor tip	Anti-backout tip
Mulitlock 040 series	D	A	
Mulitlock 040 series	B	A	
Mulitlock 070 series	B	B	
Mulitlock 040 series	D	B	
Econoseal III 070 series	D	B	
Econoseal III 070 series	B	B	
Econoseal III 070 series	B	B	
Econoseal III J2	D	B	
Econoseal III 250 series	B	F	
Econoseal III 250 series	D	B	
Econoseal III 250 series	B	F	
Econoseal III 250 series	D	B	
Micro-timer II 1.5mm	D	C	
Micro-timer II 1.5mm	B	C	
Std power timer 4.8 flat	D	G	
Std power timer 5.8 flat	B	D	
Std power timer 5.8 flat	B	D	
Std power timer 2.8 flat	D	D	
Std power timer 4.8 flat	D	G	
Std power timer 5.8 flat	B	D	
Ford 2.8 flat	D	E	H
Mulitlock 070 series	D	B	
Mulitlock 070 series	B	B	
Junior power timer 2.8 flat	D	D	
Sumitomo TS90 connector	B	B	H
Modu IV gold plated	D	B	
Mulitlock 040 series gold plated	D	A	
Micro qualock	D	I	
EECV	D	B	
EECV	D	B	
Kostal dia 1.50 series	D	J	
AMP 6.3 flat	D	B	
Junior power timer 2.8 flat	D	D	
2.8 series	D	B	I
Sumitomo TS90 connector	D	B	H
Ducon 0.60 gold plated	D	K	
AMP 6.3 flat	D	D	
Econoseal III 250 series	B	F	

Repair Procedure

CAUTIONS:

Do not use crimping pliers, insulation strippers, butt splice connectors, heat shrink sleeves or pre-terminated wiring harness(s) that are not supplied with by authourised Jaguar/Land Rover parts. Each part has been designed to be used only with the other parts available from Jaguar/Land Rover parts.

Where the repair procedure indicates that a glue lined heat shrink sleeve should be applied, apply sufficient heat to the glue lined heat shrink to melt the glue in order to provide a water tight seal. Do **not** over heat the glue lined heat shrink sleeve so that the wiring harness insulation becomes damaged.

It is not correct to make more than five repair joints on the wiring harness to any electrical connector and if more damage is found at the same electrical connector then a new wiring harness must be installed.

1. Remove the faulty terminal from the electrical connector using the extractor tool and correct tip. Make sure that any anti-backout device is released before trying to remove the terminal.
2. CAUTION: A number of electrical connector terminals are gold plated or gold flashed. When defective, they must be installed with a gold pre-terminated wiring harness(s). It is not always easy to identify the female as gold but the male pins are visually easier, therefore always check both male and female terminals to identify those which are gold. Under no circumstances are gold and tin terminals to be mixed as this will lead to early failure of the electrical contact.

   NOTE: Never use a harness lead with a smaller diameter than the original harness lead.

   Select the correct size and type of pre-terminated wiring harness and butt splice connector.
3. Using the wire cutter on the stripping tool, cut the pre-terminated wiring harness and the harness cable to the required

length.

4. NOTE: See illustration: **Stripping Insulation**

   From the Relationship Table, find the correct length of insulation to be stripped from the pre-terminated wiring harness and set the adjustable cable length stop to the correct length. Place the pre-terminated wiring harness in the wire stripper and remove the insulation.
5. Put the cable identification sleeve(s) on to the wiring harness with the main cable colour nearest to the terminal.
6. During this next step do not over tighten. Place the selected butt splice connector in the crimping tool, matching the aperture and the butt connector colours. Make sure that the window indentation in the butt connector is resting over the guide bar on the lower jaw. Partially close the grip until the butt connector is securely held in the aperture. This will give support to the butt connector while the pre-terminated wiring harness is inserted into it.
7. NOTE: See illustration: **Splice Correctly Located**

   Insert the pre-terminated wiring harness into the butt connector and make sure that the wire is against the wire stop. Close the grip firmly, crimping the lead to the butt connector. When the handles have been completely closed the butt connector will be freed from the tool as the handles are released. If the handles have not been completely closed then the jaws will hold the butt connector and it cannot be removed from the tool until the crimp is fully made by closing the handles completely.
8. Make sure that the harness cable has been squarely cut and the correct length of insulation removed. If more than one splice is needed the butt connectors must be not be crimped to the wiring harness at the same distance from the connector. The splices must be staggered to prevent a bulk of splices in the same area of the wiring harness.
9. It is preferable to cover the butt splice joint with heat shrink sleeve. This is desirable not essential, except where the electrical connector is a sealed electrical connector. Use the smaller diameter sleeve for red and blue pre-terminated wiring harness(s) and the large diameter sleeve for the yellow pre-terminated wiring harness(s). It is advisable to place the heat shrink over the completed joint but in some instances the sleeve will not pass over the terminal. Check, and if required, place the correct size sleeve onto the harness cable or pre-terminated wiring harness before crimping the butt splice to the wiring harness.
10. Place the harness cable into the butt splice with the splice window over the guide bar. Make sure that the cable harness wire is against the stop in the butt splice, crimp the butt splice connector to the wiring harness.
11. Gently pull the harness cables each side of the butt splice to make sure that a secure joint has been made.
12. WARNING: Do not use a naked flame in areas where fuel or oil have been spilt. Clean the area of residual oil and fuel and wait until the fuel spill has fully evaporated.

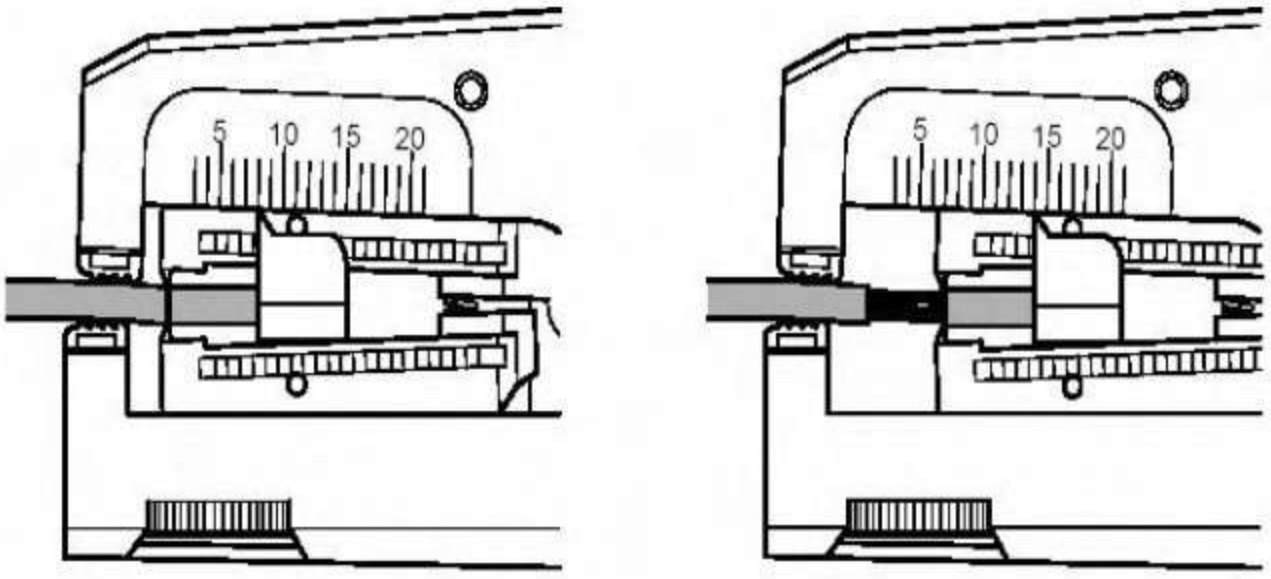
    CAUTIONS:

    When using a heat source make sure that it is localised and causes no damage to surrounding materials.

    Where the repair procedure indicates that a glue lined heat shrink sleeve should be applied, apply sufficient heat to the glue lined heat shrink to melt the glue in order to provide a water tight seal. Do **not** over heat the glue lined heat shrink sleeve so that the wiring harness insulation becomes damaged.

    Using a suitable heat source, shrink the sleeve over the butt splice.
13. If further pre-terminated wiring harness(s) are to be installed to the same electrical connector, make sure that the lead is cut at a different length to the previous joint. This makes sure that the splices will, where possible, be staggered on the wiring harness and prevent a bulk of splices in one area.
14. When all of the splices have been made, fit the terminal(s) to the electrical connector, taking care that the terminals are correctly orientated.
15. Install the wiring harness cover and secure with adhesive electrical tape. Do not cover the wiring harness right to the electrical connector as the terminals must have a little movement and not be firmly bound to the electrical connector or wiring harness. Make sure that the cable identification sleeve(s) are showing at the wiring harness electrical connector.

Stripping Insulation



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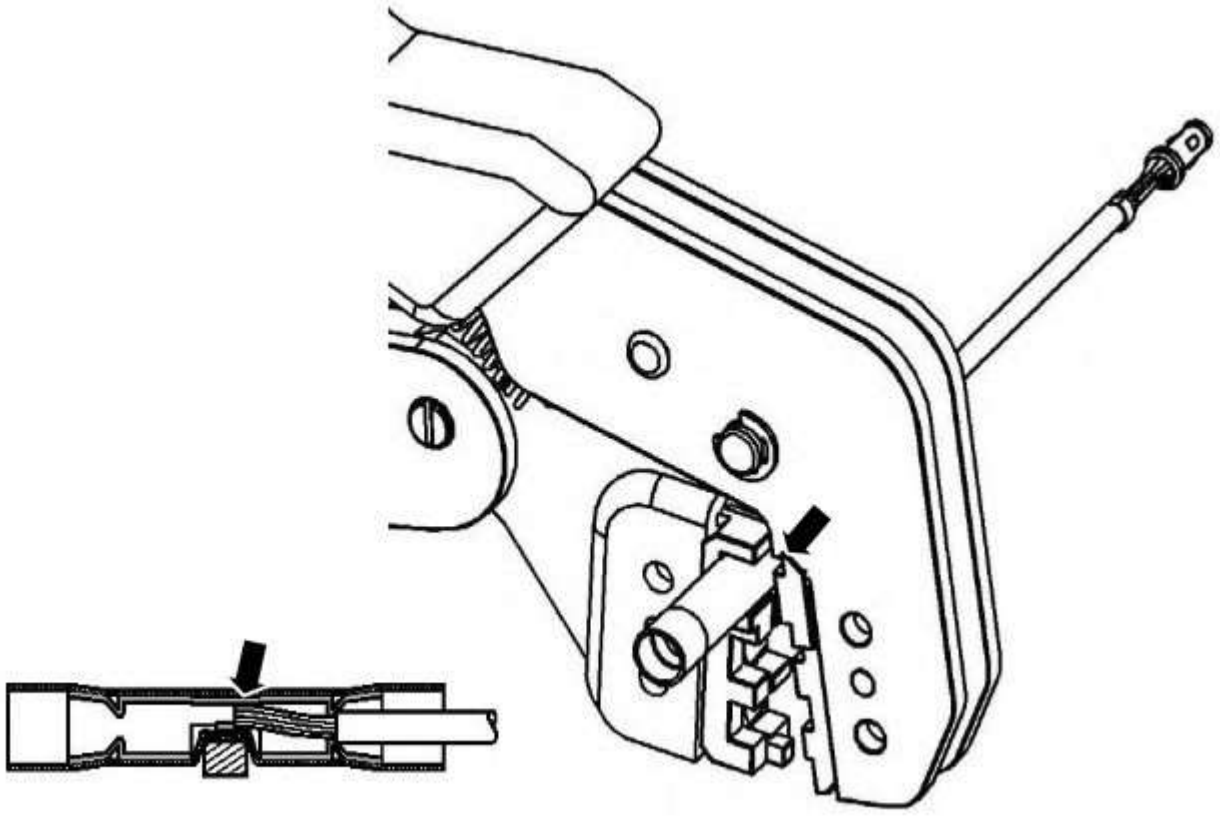
Splice Correctly Located



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Published: 11-May-2011

Wiring Harnesses - Wiring Harness Repair

General Procedures

1. For additional information, refer to: Wiring Harness (418-02 Wiring Harnesses, Description and Operation).

Published: 11-May-2011

Wiring Harnesses - Luggage Compartment Lid Wiring Harness

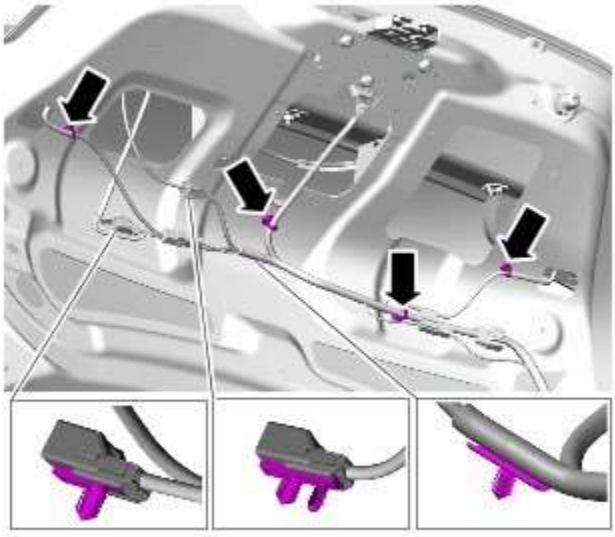
Removal and Installation

Removal

1. Remove the luggage compartment lid trim panel.

   Refer to: Luggage Compartment Lid Trim Panel (501-05 Interior Trim and Ornamentation, Removal and Installation).

2.



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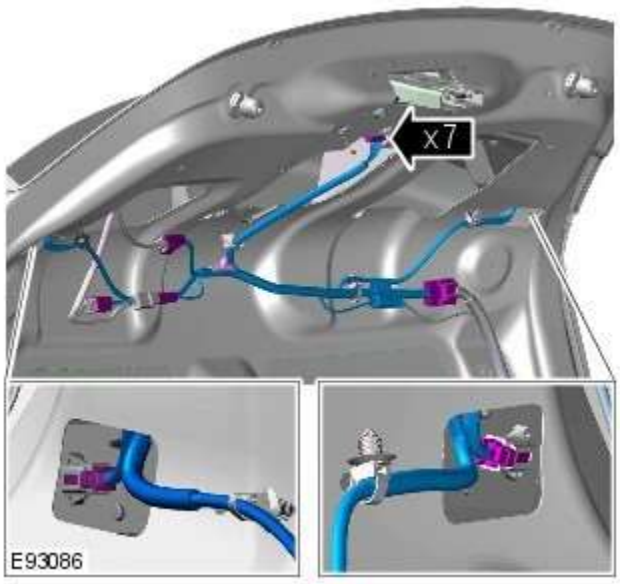

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Installation

1. To install, reverse the removal procedure.