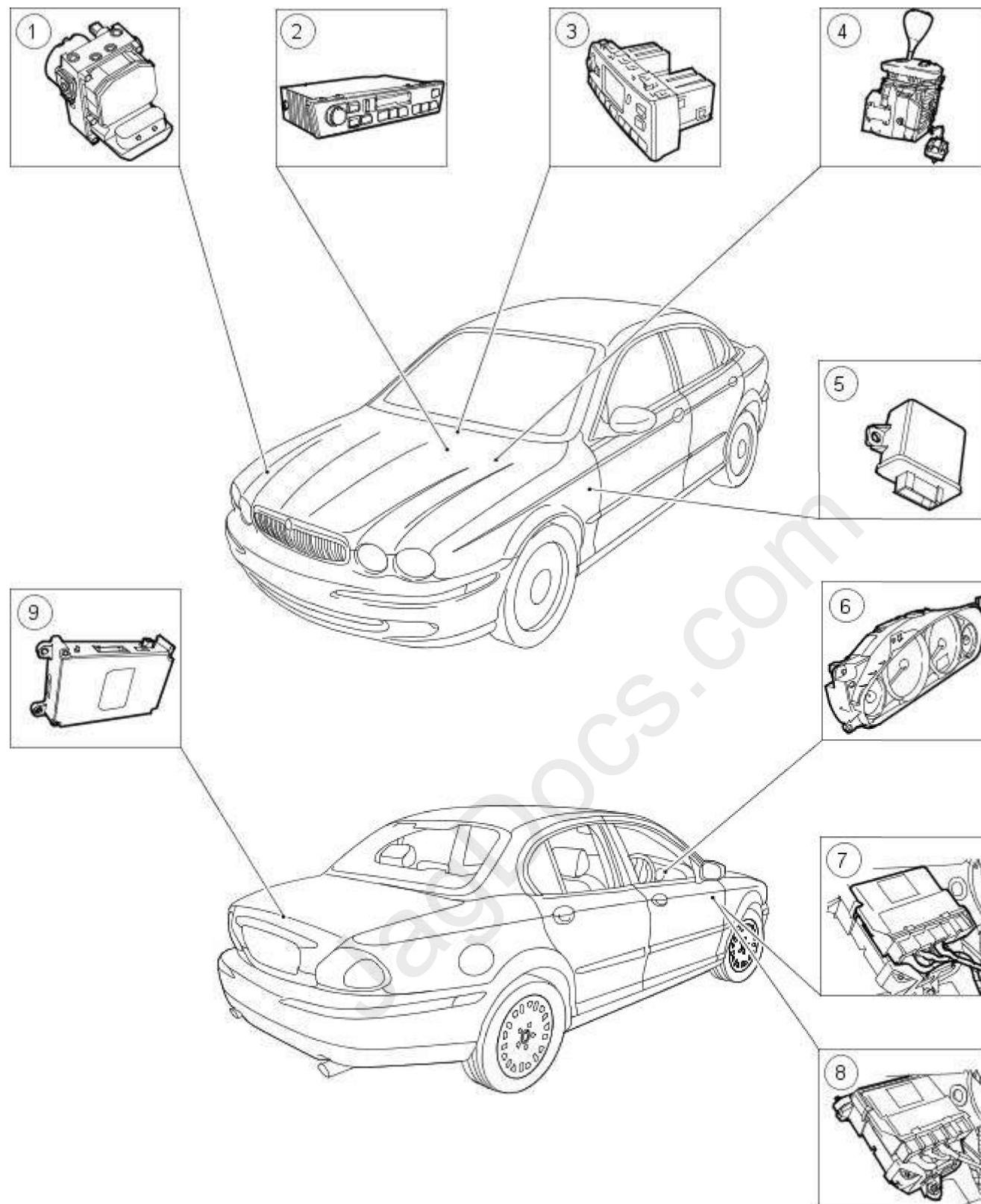


Module Communications Network - Communications Network

Description and Operation



VUJ0004096

| Item | Part Number | Description |
|------|-------------|----------------------------------------------|
| 1 | — | Anti-lock brake control module |
| 2 | — | In car entertainment (ICE) module |
| 3 | — | Dual automatic temperature control (DATC) |
| 4 | — | J Gate module (JGM) |
| 5 | — | High intensity dipped (HID) headlight module |
| 6 | — | Instrument cluster (message center optional) |
| 7 | — | Generic electronic module (GEM) |
| 8 | — | Engine control module (ECM) |
| 9 | — | Voice activated control module (VACM) |

Module Communications Network - Communications Network VIN Range:

E96603->J28492

Diagnosis and Testing

Principles of Operation

The vehicle has four module communication networks. Only three of which are connected to the diagnostic connector. The **standard corporate protocol (SCP)** and **controller area network (CAN)**, which are an unshielded twisted pair cable: data bus + and data bus - and the **International Standard Organization (ISO)** 9141 communication network, which is a single wire network.

The **domestic data bus (D2B)**, which is a fibre optic ring network, can be diagnosed through the SCP network, and with the optical bus tester.

The SCP, CAN and ISO networks can be connected to the Jaguar approved diagnostic system by one diagnostic connector. This makes troubleshooting these systems easier by allowing one smart tester to be able to diagnose any module on the three networks from one connector. On-board diagnosis of the D2B network is through the in car entertainment (ICE) head.

The diagnostic connector is located under the instrument panel.

The ISO 9141 communications network does not permit inter-module communications. When the Jaguar approved diagnostic system communicates with modules on the ISO 9141 communication network, the diagnostic system must ask for all information, the modules will not initiate communications.

The SCP communication network remains operational even with severing of one of the bus wires. Communications will also continue if one of the bus wires is shorted to ground or battery positive voltage (B+), or if some (but not all) termination resistors are lost.

Unlike the SCP communication network, the ISO 9141 communication network will not function if the wire is shorted to ground or battery positive voltage (B+). Also, if one of the modules on the ISO 9141 network loses power or shorts internally, communication to that module will fail.

The anti-lock brake control module is connected to the CAN communication network. The module comes in two forms. The first type is the standard equipped anti-lock brake system (ABS) with traction control. It controls the brake pressure to the four wheels to keep the vehicle under control while braking. The second type of ABS is optional and is called dynamic stability control (DSC). This module adds yaw and steering wheel angle sensors to the package to help in sensing a loss of vehicle control. For additional information, REFER to: [Anti-Lock Control - Stability Assist](#) (206-09 Anti-Lock Control - Stability Assist, Description and Operation).

The in car entertainment (ICE) head is connected to the SCP communication network and also to the D2B network. The D2B communicates with the compact disc player, cellular phone transceiver, navigation system, amplifier, and the voice control module. For additional information on the compact disc,

REFER to: [Audio System](#) (415-00 Information and Entertainment System - General Information, Diagnosis and Testing).

For additional information on the cellular phone,
REFER to: [Cellular Phone](#) (419-08 Cellular Phone, Diagnosis and Testing).

For additional information on the navigation system,
REFER to: [Navigation System](#) (419-07 Navigation System, Diagnosis and Testing).

For additional information on the amplifier,
REFER to: [Audio System](#) (415-01 Audio Unit, Description and Operation).

For additional information on the voice activated control system,
REFER to: [Multifunction Electronic Module](#) (419-10 Multifunction Electronic Modules, Diagnosis and Testing).

The electronic automatic temperature control (EATC) module is connected to the CAN communication network. The EATC module controls automatic climate functions that maintain the vehicle at a constant temperature setting. For additional information,
REFER to: [Climate Control System](#) (412-00 Climate Control System - General Information, Diagnosis and Testing).

The instrument cluster (also known as an instrument cluster module ICM) is connected to the CAN and SCP communication networks. The instrument cluster displays information received on the SCP including speedometer, odometer, fuel, and message center warnings. The instrument cluster displays information received on the CAN including ABS, air conditioning, transmission and engine condition. The instrument cluster also controls the passive anti-theft system (PATS). For additional information;

REFER to: [Instrument Cluster and Panel Illumination](#) (413-00 Instrument Cluster and Panel Illumination, Diagnosis and Testing).

For instrument cluster operation and
REFER to: [Anti-Theft - Passive](#) (419-01B Anti-Theft - Passive, Diagnosis and Testing).
for PATS.

The general electronic module (GEM) is connected to the SCP communication network. The GEM controls both interior and exterior lighting, active anti-theft functions and warning chimes. For additional information on interior lamps,

REFER to: [Interior Lighting](#) (417-02 Interior Lighting, Diagnosis and Testing).

For additional information on exterior lighting,
REFER to: [Headlamps](#) (417-01 Exterior Lighting, Diagnosis and Testing).

For additional information on active anti-theft,
REFER to: [Anti-Theft - Active](#) (419-01A Anti-Theft - Active, Diagnosis and Testing).

For additional information on warning chimes,
REFER to: [Warning Devices](#) (413-09 Warning Devices, Diagnosis and Testing).

The engine control module (ECM) is connected to both the CAN and ISO 9141 communication networks. The ECM controls the engine performance, electronic ignition, emission controls, speed control, and on board diagnostics. For additional information;
REFER to: [Electronic Engine Controls - 2.5L NA V6 - AJV6/3.0L NA V6 - AJ27, VIN Range: E96603->J28492](#) (303-14A Electronic Engine Controls - 2.0L NA V6 - AJV6/2.5L NA V6 - AJV6/3.0L NA V6 - AJ27, Diagnosis and Testing).

REFER to: [Electronic Engine Controls - 2.0L NA V6 - AJV6](#) (303-14A Electronic Engine Controls - 2.0L NA V6 - AJV6/2.5L NA V6 - AJV6/3.0L NA V6 - AJ27, Diagnosis and Testing).

or
REFER to: [Electronic Engine Controls](#) (303-14B Electronic Engine Controls - 2.0L Duratorq-TDCi/2.2L Duratorq-TDCi (110kW/150PS) - Puma, Diagnosis and Testing).

The 'phone module is connected to the D2B communication network, and incorporates the VEMS, or Vehicle Emergency Messaging System. The module allows a user to request emergency assistance (police, ambulance, fire, recovery) or directions to a desired location at the touch of a button. Also, if any of the vehicle's airbags are deployed while the VEMS system is powered ON, the system automatically issues a call for emergency assistance. For additional information,
REFER to: [Compact Disc \(CD\) Changer - 4-Door](#) (415-01 Audio Unit, Removal and Installation).

The airbag restraints module is connected to the ISO 9141 communication network. The airbag control module controls the deployment of the air bags based on sensor input. For additional information;

The voice activated control module (VACM) is connected to the D2B communication network. This allows the user to select functions by giving a voice command. The VACM sends the command information by D2B to the correct module or audio unit.

The navigation system (NAV) is connected to the D2B communication network, and performs it's diagnostics via the SCP network. The NAV receives inputs from the GPS antenna and various other sensors. For additional information, REFER to: [Navigation System](#) (419-07 Navigation System, Diagnosis and Testing).

Inspection and Verification

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

Electrical

- Fuses
 - Wiring harness
 - Loose or corroded connections
 - Correct engagement of electrical connectors
- Controller area network (CAN)
- Instrument cluster (IC)
 - Steering wheel rotation sensor (SWRS)
 - Gear selector module (GSI)
 - Headlight levelling module (HID)
 - Yaw rate sensor
 - Electronic air temperature control module (EATCM)
 - Memory seat control module
 - Transmission control module (TCM)
 - Anti-lock brake control module with or without dynamic stability control (ABS/DSC)
 - Engine control module (ECM)
- Standard corporate protocol (SCP)
- Generic electronic module (GEM)
 - Instrument cluster (IC)
 - In-car entertainment (ICE)
 - Navigation system (NAV)
 - Engine control module (ECM)
- International standards organisation (ISO)
- Fuel fired heater module
 - Reverse park aid module
 - Restraints control module (RCM)
 - Headlight levelling module (HID)
 - Roof console scanner
- Domestic data bus (D2B)
- ICE head unit (HU)
 - Compact disc changer (CD)
 - Cellular phone module (CPM)
 - Voice module (VACM)
 - Navigation system module (NSM)
 - Amplifier (AMP)

Visual Inspection Chart

Optical

- Routing of fibre optic harnesses
- Correct engagement of optical connectors
- Correct placement of optical connectors (ring order)
- Damage to fibre (chafing, abrasion, kinking, cuts, etc)
- Correct assembly of optical connectors (backout, etc)

Default Modes

Possible TCM default

- Fixed 4th gear
- Erratic gear shifts

Possible ECM default

- Throttle motor and relay disabled
- Throttle valve opening set to default value
- Idle speed controlled by fuel injection intervention
- Idle speed adaptation inhibited
- Throttle opening limited to 30%
- Vehicle speed limited
- Speed (cruise) control limited
- Maximum throttle opening for N range inhibited
- Maximum engine speed reduced
- HO2 sensor control circuit inhibited
- Maximum ignition retard

Symptom Chart

• NOTE: Network DTCs may be set by an error or communications failure in the network. Individual DTCs are in the table, alongside their respective modules, but may also be set by a combination of factors affecting the network, which would result in multiple DTCs being set

For one error, or, as in the case of an open circuit, no DTC being set.

| DTC | Description | Possible Source | Action |
|-------|---------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| P1573 | CAN throttle angle error | <ul style="list-style-type: none"> TP sensor fault (additional DTCs logged) ECM CAN message error | For TP sensor circuit tests, REFER to: Electronic Engine Controls - 2.0L NA V6 - AJV6 (303-14A Electronic Engine Controls - 2.0L NA V6 - AJV6/2.5L NA V6 - AJV6/3.0L NA V6 - AJ27, Diagnosis and Testing) / Electronic Engine Controls - 2.5L NA V6 - AJV6/3.0L NA V6 - AJ27, VIN Range: E96603->J28492 (303-14A Electronic Engine Controls - 2.0L NA V6 - AJV6/2.5L NA V6 - AJV6/3.0L NA V6 - AJ27, Diagnosis and Testing) . Error message sent on CAN, but not CAN related. Check for additional DTCs indicating cause. |
| P1601 | Incorrect ECM or TCM fitted to vehicle | <ul style="list-style-type: none"> ECM configuration TCM configuration | Configure the modules using the Jaguar approved diagnostic system. |
| P1603 | TCM EEPROM failure | <ul style="list-style-type: none"> Battery disconnected while the ignition switched ON B+ power supply circuit; open circuit TCM failure | For TCM EEPROM tests, GO to Pinpoint Test <u>B</u> . |
| P1609 | ECM microprocessor to microprocessor communication failure | <ul style="list-style-type: none"> ECM failure | Please check part is not on any form of prior authorisation before replacement. |
| P1611 | ECM sub CPU failure | <ul style="list-style-type: none"> ECM failure | Please check part is not on any form of prior authorisation before replacement. |
| P1633 | ECM main CPU failure | <ul style="list-style-type: none"> ECM failure | Please check part is not on any form of prior authorisation before replacement. |
| P1634 | Throttle 'watch-dog' circuit malfunction | <ul style="list-style-type: none"> ECM failure | Please check part is not on any form of prior authorisation before replacement. |
| P1637 | CAN ECM to ABS/TCCM or DSC control module network malfunction | <ul style="list-style-type: none"> Module power supply or ground interruption CAN open circuit fault; ABS/TCCM or DSC to ECM CAN short circuit fault ABS/TCCM or DSC module failure ECM failure | Refer to power and ground test for suspect module. For ABS/TCCM or DSC CAN circuit tests, GO to Pinpoint Test <u>C</u> . Please check part is not on any form of prior authorisation before replacement. |
| P1638 | CAN ECM / IC network malfunction | <ul style="list-style-type: none"> Module power supply or ground interruption CAN open circuit fault; IC to ECM CAN short circuit fault IC failure ECM failure | Refer to power and ground test for suspect module. For IC CAN circuit tests, GO to Pinpoint Test <u>D</u> . Please check part is not on any form of prior authorisation before replacement. |
| P1642 | CAN circuit malfunction | <ul style="list-style-type: none"> Module power supply or ground interruption CAN short circuit fault Control module failure; Check for additional logged DTCs to locate module source | Refer to power and ground test for suspect module. For network short circuit tests, GO to Pinpoint Test <u>E</u> . |
| P1643 | CAN ECM / TCM network malfunction | <ul style="list-style-type: none"> Module power supply or ground interruption CAN open circuit fault; TCM to ECM CAN short circuit fault TCM failure ECM failure | Refer to power and ground test for suspect module. For CAN open circuit tests, GO to Pinpoint Test <u>A</u> . For network short circuit tests, GO to Pinpoint Test <u>E</u> . Please check part is not on any form of prior authorisation before replacement. |
| P1646 | ECM HO2 sensor control malfunction, right-hand bank | <ul style="list-style-type: none"> HO2 sensor heater failure HO2 sensor sensing circuit; short circuit to ground, short circuit to high voltage, open circuit ECM failure | For HO2 sensor circuit tests, REFER to: Electronic Engine Controls - 2.0L NA V6 - AJV6 (303-14A Electronic Engine Controls - 2.0L NA V6 - AJV6/2.5L NA V6 - AJV6/3.0L NA V6 - AJ27, Diagnosis and Testing) / Electronic Engine Controls - 2.5L NA V6 - AJV6/3.0L NA V6 - AJ27, VIN Range: E96603->J28492 (303-14A Electronic Engine Controls - 2.0L NA V6 - AJV6/2.5L NA V6 - AJV6/3.0L NA V6 - AJ27, Diagnosis and Testing) . Please check part is not on any form of prior authorisation before replacement. |
| P1647 | ECM HO2 sensor control malfunction, left-hand bank | <ul style="list-style-type: none"> HO2 sensor heater failure HO2 sensor sensing circuit; short circuit to ground, short circuit to high voltage, open circuit ECM failure | For HO2 sensor circuit tests, REFER to: Electronic Engine Controls - 2.0L NA V6 - AJV6 (303-14A Electronic Engine Controls - 2.0L NA V6 - AJV6/2.5L NA V6 - AJV6/3.0L NA V6 - AJ27, Diagnosis and Testing) / Electronic Engine Controls - 2.5L NA V6 - AJV6/3.0L NA V6 - AJ27, VIN Range: E96603->J28492 (303-14A Electronic Engine Controls - 2.0L NA V6 - AJV6/2.5L NA V6 - AJV6/3.0L NA V6 - AJ27, Diagnosis and Testing) . Please check part is not on any form of prior authorisation before replacement. |
| P1648 | ECM KS self-test failure | <ul style="list-style-type: none"> ECM failure | Please check part is not on any form of prior authorisation before replacement. |
| P1656 | TP sensor amplifier circuit malfunction | <ul style="list-style-type: none"> ECM failure | Please check part is not on any form of prior authorisation before replacement. |

| DTC | Description | Possible Source | Action |
|-------|---------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| P1699 | CAN ECM to EATCM network malfunction | <ul style="list-style-type: none"> Module power supply or ground interruption CAN open circuit fault; EATCM to ECM CAN short circuit fault; EATCM to ECM EATCM failure ECM failure | Refer to power and ground test for suspect module. For EATCM open circuit tests, GO to Pinpoint Test <u>A</u> . For network short circuit tests, GO to Pinpoint Test <u>F</u> . Please check part is not on any form of prior authorisation before replacement. |
| P1777 | CAN torque reduction error | <ul style="list-style-type: none"> ECM CAN message error | Error message sent on CAN, but not CAN related. Check for additional DTCs indicating cause. |
| P1796 | CAN network malfunction | <ul style="list-style-type: none"> Module power supply or ground interruption CAN short circuit fault TCM failure | Refer to power and ground test for suspect module. For network short circuit test, GO to Pinpoint Test <u>A</u> . |
| P1797 | CAN TCM/ECM network malfunction | <ul style="list-style-type: none"> Module power supply or ground interruption CAN open circuit fault; TCM to ECM CAN short circuit fault TCM failure ECM failure | Refer to power and ground test for suspect module. For TCM open/short circuit tests, GO to Pinpoint Test <u>C</u> . |
| P1799 | CAN TCM to ABS/TCCM or DSC module network malfunction | <ul style="list-style-type: none"> Module power supply or ground interruption CAN short circuit fault ABS/TCCM or DSC module failure TCM failure | Refer to power and ground test for suspect module. For ABS/TCCM short circuit tests, GO to Pinpoint Test <u>G</u> . |
| U1041 | GEM SCP network invalid vehicle speed data | <ul style="list-style-type: none"> ABS/DSC wheel speed message error SCP network error | For GEM SCP network tests, GO to Pinpoint Test <u>H</u> . |
| U1135 | GEM SCP network invalid ignition switch data | <ul style="list-style-type: none"> Instrument cluster ignition switch message error SCP network error | For GEM SCP network tests, GO to Pinpoint Test <u>H</u> . |
| U1147 | GEM anti-theft SCP network invalid ignition key-in data | <ul style="list-style-type: none"> GEM key-in message error SCP network error | For GEM SCP network tests, GO to Pinpoint Test <u>H</u> . |
| U1262 | GEM SCP network ignition switch state message missing | <ul style="list-style-type: none"> SCP circuit(s); open circuit SCP network error | For GEM SCP network tests, GO to Pinpoint Test <u>H</u> . |
| U1262 | ICE SCP network circuit fault | <ul style="list-style-type: none"> SCP network circuit; open circuit, short circuit to B+, short circuit to ground SCP network circuit fault Audio unit fault | For ICE SCP network tests, GO to Pinpoint Test <u>I</u> . |
| U1900 | CAN instrumentation messages missing | <ul style="list-style-type: none"> Engine management, ABS, or DSC fault CAN network fault | For ABS/DSC CAN network tests, GO to Pinpoint Test <u>G</u> . |
| U1900 | Automatic climate control CAN fault | <ul style="list-style-type: none"> CAN circuit; open circuit, short circuit to B+, short circuit to ground Automatic climate control module internal CAN fault CAN network fault | For EATC CAN network tests, GO to Pinpoint Test <u>F</u> . |
| U1900 | ABS CAN fault | <ul style="list-style-type: none"> CAN circuit: open circuit, short circuit to B+, short circuit to ground ABS control module internal CAN fault CAN network fault | For ABS/DSC CAN network tests, GO to Pinpoint Test <u>G</u> . |
| U1900 | DSC CAN fault | <ul style="list-style-type: none"> CAN circuit; open circuit, short circuit to B+, short circuit to ground DSC control module internal CAN fault CAN network fault | For ABS/DSC CAN network tests, GO to Pinpoint Test <u>G</u> . |
| U2003 | CD autochanger not responding on D2B network | <ul style="list-style-type: none"> D2B network 'wake-up' circuit; short circuit to B+, short circuit to ground D2B network fault | For D2B 'wake-up' circuit tests, GO to Pinpoint Test <u>K</u> . For CD autochanger D2B network tests, GO to Pinpoint Test <u>J</u> . For D2B permanent supply tests, GO to Pinpoint Test <u>R</u> . |
| U2008 | Cellular telephone not responding on D2B network | <ul style="list-style-type: none"> D2B network 'wake-up' circuit; short circuit to B+, short circuit to ground D2B network fault | For D2B 'wake-up' circuit tests, GO to Pinpoint Test <u>K</u> . For cellular telephone D2B network tests, GO to Pinpoint Test <u>L</u> . For D2B permanent supply tests, GO to Pinpoint Test <u>R</u> . For D2B accessory switched supply tests, GO to Pinpoint Test <u>S</u> . For D2B ignition switched supply tests, GO to Pinpoint Test <u>I</u> . |
| U2019 | VACM not responding on D2B network | <ul style="list-style-type: none"> D2B network 'wake-up' circuit; short circuit to B+, short circuit to ground D2B network fault | For D2B 'wake-up' circuit tests, GO to Pinpoint Test <u>K</u> . For VACM D2B network tests, GO to Pinpoint Test <u>M</u> . For D2B accessory switched supply tests, GO to Pinpoint Test <u>S</u> . For D2B ignition switched supply tests, GO to Pinpoint Test <u>I</u> . |

| DTC | Description | Possible Source | Action |
|--------------------------------|---------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| U2196 | Instrument cluster CAN engine speed message invalid | <ul style="list-style-type: none"> Verify integrity of engine management system CAN network fault | For instrument cluster CAN network tests, GO to Pinpoint Test <u>D</u> . |
| U2197 | Instrument cluster CAN engine speed message invalid | <ul style="list-style-type: none"> Verify integrity of engine management system CAN network fault | For instrument cluster CAN network tests, GO to Pinpoint Test <u>D</u> . |
| U2199 | Instrument cluster CAN engine coolant temperature message invalid | <ul style="list-style-type: none"> Verify integrity of engine management system CAN network fault | For instrument cluster CAN network tests, GO to Pinpoint Test <u>D</u> . |
| U2200 | Instrument cluster CAN odometer count message invalid | <ul style="list-style-type: none"> Verify integrity of ABS or DSC systems CAN network fault | For instrument cluster CAN network tests, GO to Pinpoint Test <u>D</u> . |
| U2202 | Invalid DSC control module CAN configuration data received from ECM | <ul style="list-style-type: none"> Reconfigure the ECM using the Jaguar approved diagnostic system CAN network fault | For ECM CAN network tests, GO to Pinpoint Test <u>E</u> . |
| U2202 | Invalid ABS control module CAN configuration data received from ECM | <ul style="list-style-type: none"> Reconfigure the ECM using the Jaguar approved diagnostic system CAN network fault | For ECM CAN network tests, GO to Pinpoint Test <u>E</u> . |
| U2509 | ECM unable to fulfill ABS CAN torque reduction request | <ul style="list-style-type: none"> Verify integrity of engine management system CAN network fault | For ABS/DSC CAN network tests, GO to Pinpoint Test <u>G</u> . |
| U2509 | ECM unable to fulfill DSC CAN torque reduction request | <ul style="list-style-type: none"> Verify integrity of engine management system CAN network fault | For ABS/DSC CAN network tests, GO to Pinpoint Test <u>G</u> . |
| U2510 (security flash code 23) | Anti-theft ECM identification mismatch | <ul style="list-style-type: none"> ECM configuration fault Incorrect ECM installed | Reconfigure ECM using the Jaguar approved diagnostic system. Please check part is not on any form of prior authorisation before replacement. |
| U2511 | Anti-theft ECM invalid data | <ul style="list-style-type: none"> ECM configuration fault Incorrect ECM installed SCP network error | Reconfigure ECM using the Jaguar approved diagnostic system. Please check part is not on any form of prior authorisation before replacement. |
| U2514 | GEM wash/wipe SCP network vehicle speed message missing | <ul style="list-style-type: none"> SCP circuit(s); open circuit SCP network error | For GEM SCP network tests, GO to Pinpoint Test <u>H</u> . |
| U2520 | Memory seats | <ul style="list-style-type: none"> CAN open circuit fault: memory seat module to diagnostic connector CAN short circuit fault Memory seat module failure | For CAN open/short circuit tests, GO to Pinpoint Test <u>A</u> . |
| U2600 | Audio D2B network 'wake-up' circuit fault | <ul style="list-style-type: none"> D2B network 'wake-up' circuit; short circuit to B+ | For D2B 'wake-up' circuit tests, GO to Pinpoint Test <u>K</u> . |
| U2601 | Audio D2B network 'wake-up' circuit fault | <ul style="list-style-type: none"> D2B network 'wake-up' circuit; short circuit to B+ | For D2B 'wake-up' circuit tests, GO to Pinpoint Test <u>K</u> . |
| U2601 | Voice activation module D2B network 'wake-up' circuit fault | <ul style="list-style-type: none"> D2B network 'wake-up' circuit; short circuit to ground | For D2B 'wake-up' circuit tests, GO to Pinpoint Test <u>K</u> . |
| U2602 | Break in optical ring FROM ICE head unit (transmitter) | <ul style="list-style-type: none"> D2B network module disconnected D2B network optical ring broken | For optical ring tests, GO to Pinpoint Test <u>P</u> . |
| U2603 | Break in optical ring TO ICE head unit (receiver) | <ul style="list-style-type: none"> D2B network module disconnected D2B network optical ring broken | For optical ring tests, GO to Pinpoint Test <u>Q</u> . |
| U2609 | Voice activation module D2B network 'wake-up' signal out of specification | <ul style="list-style-type: none"> D2B network 'wake-up' circuit; high resistance Voice activation module failure | For D2B 'wake-up' circuit tests, GO to Pinpoint Test <u>K</u> . |
| U2610 | Voice activation module D2B network 'position status report' not received | <ul style="list-style-type: none"> D2B network fault | For D2B 'wake-up' circuit tests, GO to Pinpoint Test <u>K</u> . |
| U2611 | Voice activation module D2B network 'alarm clear command' not received | <ul style="list-style-type: none"> D2B network fault | For D2B 'wake-up' circuit tests, GO to Pinpoint Test <u>K</u> . |
| U2613 | Navigation control module not responding on D2B network | <ul style="list-style-type: none"> D2B network 'wake-up' circuit; short circuit to B+, short circuit to ground D2B network fault Module permanent supply fault Module accessory switched | For D2B 'wake-up' circuit tests, GO to Pinpoint Test <u>K</u> . For navigation module optical tests, GO to Pinpoint Test <u>N</u> . For D2B permanent supply tests, GO to Pinpoint Test <u>R</u> . For D2B accessory switched supply tests, GO to Pinpoint Test <u>S</u> . |

| DTC | Description | Possible Source | Action |
|-------|---------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | | <ul style="list-style-type: none"> supply fault ● Module ignition switched supply fault | |
| U2614 | Amplifier not responding on D2B network | <ul style="list-style-type: none"> ● D2B network 'wake-up' circuit; short circuit to B+, short circuit to ground ● D2B network fault | For D2B 'wake-up' circuit tests, GO to Pinpoint Test <u>K</u> . For amplifier optical tests, GO to Pinpoint Test <u>O</u> . For D2B permanent supply tests, GO to Pinpoint Test <u>R</u> . For D2B accessory switched supply tests, GO to Pinpoint Test <u>S</u> . |
| None | ISO circuit malfunction, RCM | <ul style="list-style-type: none"> ● RCM K-line circuit; open circuit ● RCM K-line circuit; short circuit | For RCM ISO tests, GO to Pinpoint Test <u>AP</u> . |
| None | ISO circuit malfunction, HID module | <ul style="list-style-type: none"> ● HID module K-line circuit; open circuit ● HID module K-line circuit; short circuit | For HID module ISO tests, GO to Pinpoint Test <u>AQ</u> . |
| None | ISO circuit malfunction, roof console module | <ul style="list-style-type: none"> ● Roof console module K-line circuit; open circuit ● Roof console module K-line circuit; short circuit | For roof console module ISO tests, GO to Pinpoint Test <u>AR</u> . |
| None | ISO circuit malfunction, reverse park aid module | <ul style="list-style-type: none"> ● Reverse park aid module K-line circuit; open circuit ● Reverse park aid module K-line circuit; short circuit | For reverse park aid module ISO tests, GO to Pinpoint Test <u>AS</u> . |
| None | ISO circuit malfunction, ECM | <ul style="list-style-type: none"> ● ECM K-line circuit; open circuit ● ECM K-line circuit; short circuit | For ECM ISO tests, GO to Pinpoint Test <u>AT</u> . |
| None | ISO circuit malfunction, fuel fired heater (FFH) module | <ul style="list-style-type: none"> ● FFH module K-line circuit; open circuit ● FFH module K-line circuit; short circuit | For FFH module ISO tests, GO to Pinpoint Test <u>AU</u> . |

Power and Ground circuit test index


Modules may log DTCs if the power supply or GROUND is interrupted. Supply and GROUND tests are covered below by module name.


| Description | Possible source | Action |
|-------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|
| IC supply or ground fault | <ul style="list-style-type: none"> ● B+ supply failure ● Ign+ supply failure ● Acc+ supply failure ● GROUND failure | For IC circuit tests, GO to Pinpoint Test <u>U</u> . |
| SWRS supply or ground fault | <ul style="list-style-type: none"> ● Module supply failure ● GROUND failure | For SWRS circuit tests, GO to Pinpoint Test <u>V</u> . |
| Yaw rate sensor supply or ground fault | <ul style="list-style-type: none"> ● Module supply failure ● GROUND failure | For yaw rate sensor circuit tests, GO to Pinpoint Test <u>W</u> . |
| ABS/TCCM supply or ground fault | <ul style="list-style-type: none"> ● Ign+ supply failure ● Pump+ supply failure ● Solenoid+ supply failure ● GROUND failure ● Motor GROUND failure | For ABS/TCCM circuit tests, GO to Pinpoint Test <u>X</u> . |
| DSC module supply or ground fault | <ul style="list-style-type: none"> ● Ign+ supply failure ● Pump+ supply failure ● Solenoid+ supply failure ● GROUND failure ● Motor GROUND failure | For DSC module circuit tests, GO to Pinpoint Test <u>Y</u> . |
| GSI module supply or ground fault | <ul style="list-style-type: none"> ● Ign+ supply failure ● GROUND failure | For GSI module circuit tests, GO to Pinpoint Test <u>Z</u> . |
| HID module supply or ground fault | <ul style="list-style-type: none"> ● Ign+ supply failure ● GROUND failure | For HID module circuit tests, GO to Pinpoint Test <u>AA</u> . |
| EATC module supply or ground fault | <ul style="list-style-type: none"> ● B+ supply failure ● B+save supply failure ● Ign+ supply failure ● GROUND failure | For EATC module circuit tests, GO to Pinpoint Test <u>AB</u> . |
| Memory seat module supply or ground fault | <ul style="list-style-type: none"> ● B+1 supply failure ● B+2 supply failure ● Ign+ supply failure ● Electronic GROUND failure ● Power GROUND failure ● Signal GROUND | For memory seat module circuit tests, GO to Pinpoint Test <u>AC</u> . |


| Description | Possible source failure | Action |
|------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|
| TCM supply or ground fault (16 bit) | <ul style="list-style-type: none"> ● B+ supply failure ● Ign+ supply failure ● GROUND failure | For 16 bit TCM circuit tests, GO to Pinpoint Test <u>AD</u> . |
| TCM supply or ground fault (32 bit) | <ul style="list-style-type: none"> ● B+ supply failure ● Ign+ supply failure ● GROUND failure | For 32 bit TCM circuit tests, GO to Pinpoint Test <u>AE</u> . |
| ECM supply or ground fault, vehicles with 2.0L petrol engine | <ul style="list-style-type: none"> ● B+memory supply failure ● Control supply failure ● GROUND failure | For ECM circuit tests, vehicles with 2.0L petrol engines, GO to Pinpoint Test <u>AF</u> . |
| ECM supply or ground fault, vehicles with 2.5/3.0L petrol engine | <ul style="list-style-type: none"> ● B+memory supply failure ● Control supply failure ● GROUND failure | For ECM circuit tests, vehicles with 2.5/3.0L petrol engines, GO to Pinpoint Test <u>AG</u> . |
| ECM supply or ground fault, vehicles with 2.0L diesel engine | <ul style="list-style-type: none"> ● Vpwr supply failure ● Control supply failure ● GROUND failure | For ECM circuit tests, vehicles with 2.0L diesel engines, GO to Pinpoint Test <u>AH</u> . |
| ICE supply or ground fault | <ul style="list-style-type: none"> ● B+memory supply failure ● Acc+ supply failure ● GROUND failure | For ICE circuit tests, GO to Pinpoint Test <u>AI</u> . |
| CD supply or ground fault | <ul style="list-style-type: none"> ● B+ supply failure ● GROUND failure | For CD changer circuit tests, GO to Pinpoint Test <u>AJ</u> . |
| NAV module supply or ground fault | <ul style="list-style-type: none"> ● B+ supply failure ● Acc+ supply failure ● GROUND failure | For NAV module circuit tests, GO to Pinpoint Test <u>AK</u> . |
| FFH module supply or ground fault | <ul style="list-style-type: none"> ● B+ supply failure ● Ign+ supply failure ● GROUND failure | For FFH module circuit tests, GO to Pinpoint Test <u>AL</u> . |
| Park aid module supply or ground fault | <ul style="list-style-type: none"> ● Ign+ supply failure ● GROUND failure | For park aid module circuit tests, GO to Pinpoint Test <u>AM</u> . |
| RCM supply or ground fault | <ul style="list-style-type: none"> ● Ign+ supply failure ● GROUND failure | For RCM circuit tests, GO to Pinpoint Test <u>AN</u> . |
| GEM supply or ground fault | <ul style="list-style-type: none"> ● B+ supply failure | For GEM circuit tests, GO to Pinpoint Test <u>AO</u> . |
| Amplifier supply or ground fault | <ul style="list-style-type: none"> ● B+ supply failure ● GROUND failure | For amplifier circuit tests, GO to Pinpoint Test <u>AV</u> . |

Pinpoint tests

CAUTIONS:

 Diagnosis by substitution from a donor vehicle is **NOT** acceptable. Each vehicle is configured to its own vehicle identification data (VID) block, and substitution of control modules may not only not confirm a fault, but may cause faults in the vehicle being tested and/or the donor vehicle. Failure to follow this instruction may result in damage to the vehicle.

 Electronic modules are sensitive to static electrical charges. If exposed to these charges, damage may result. Failure to follow this instruction may result in damage to the vehicle.

 When probing connectors to take measurements in the course of the pinpoint tests, use the adaptor kit, part number 3548-1358-00. Failure to follow this instruction may result in damage to the vehicle.

• NOTE: When performing voltage or resistance tests, always use a digital multimeter (DMM) accurate to 3 decimal places, and with an up-to-date calibration certificate. When testing resistance, always take the resistance of the DMM leads into account.

• NOTE: Before beginning any diagnosis of the D2B system, codes B1342, U2602, or U2603 must be rectified. No D2B function is possible with these failures present.

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

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

PINPOINT TEST A : CHECK THE CONTROLLER AREA NETWORK (CAN) CONTINUITY

• NOTE: The following test is based on the maximum number of modules in the network. Refer to the wiring diagrams for information on networks with fewer modules.

| TEST CONDITIONS | DETAILS/RESULTS/ACTIONS |
|----------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| A1: CHECK THE RESISTANCE OF THE CAN NETWORK | |
| | <ol style="list-style-type: none"> 1 Turn the ignition switch to the OFF position. 2 Measure the resistance between pins 06 (Y) and 14 (G) of the diagnostic connector. |

Is the resistance between 50 and 70 ohms?

Yes

GO to A3.

No

GO to A2.

A2: CHECK THE CAN NETWORK FOR SHORT CIRCUIT

1 Turn the ignition switch to the **OFF** position.

2 Measure the resistance between pins 06 (Y) and 14 (G) of the diagnostic connector.

Is the resistance less than 50 ohms?

Yes

CHECK the network for short circuit. For additional information, refer to the wiring diagrams. Clear any DTCs, test the system for normal operation.

No

GO to A3.

A3: CHECK THE CAN + CIRCUIT BETWEEN THE DIAGNOSTIC CONNECTOR AND THE STEERING WHEEL ROTATION SENSOR

1 Disconnect the steering wheel rotation sensor connector, IP19.

2 Measure the resistance between IP19, pin 03 (Y) and the diagnostic connector, pin 06 (Y).

Is the resistance greater than 5 ohms?

Yes

REPAIR the high resistance circuit. For additional information, refer to the wiring diagrams. Clear any DTCs, test the system for normal operation.

No

GO to A4.

A4: CHECK THE CAN - CIRCUIT BETWEEN THE DIAGNOSTIC CONNECTOR AND THE STEERING WHEEL ROTATION SENSOR

1 Measure the resistance between IP19, pin 04 (G) and the diagnostic connector, pin 14 (G).

Is the resistance greater than 5 ohms?

Yes

REPAIR the high resistance circuit. For additional information, refer to the wiring diagrams. Clear any DTCs, test the system for normal operation.

No

GO to A5.

A5: CHECK THE CAN + CIRCUIT BETWEEN THE DIAGNOSTIC CONNECTOR AND THE YAW RATE SENSOR

1 Disconnect the yaw rate sensor connector, IP20.

2 Measure the resistance between IP20, pin 03 (Y) and the diagnostic connector, pin 06 (Y).

Is the resistance greater than 5 ohms?

Yes

REPAIR the high resistance circuit. For additional information, refer to the wiring diagrams. Clear any DTCs, test the system for normal operation.

No

GO to A6.

A6: CHECK THE CAN - CIRCUIT BETWEEN THE DIAGNOSTIC CONNECTOR AND THE YAW RATE SENSOR

1 Measure the resistance between IP20, pin 02 (G) and the diagnostic connector, pin 14 (G).

Is the resistance greater than 5 ohms?

Yes

REPAIR the high resistance circuit. For additional information, refer to the wiring diagrams. Clear any DTCs, test the system for normal operation.

No

GO to A7.

A7: CHECK THE CAN + CIRCUIT BETWEEN THE DIAGNOSTIC CONNECTOR AND THE MEMORY SEAT MODULE (WHERE FITTED)

1 Disconnect the memory seat module connector, DM01.

2 Measure the resistance between DM01, pin 12 (Y) and the diagnostic connector, pin 06 (Y).

Is the resistance greater than 5 ohms?

Yes

REPAIR the high resistance circuit. For additional information, refer to the wiring diagrams. Clear any DTCs, test the system for normal operation.

No

GO to A8.

A8: CHECK THE CAN - CIRCUIT BETWEEN THE DIAGNOSTIC CONNECTOR AND THE MEMORY SEAT MODULE (WHERE FITTED)

1 Measure the resistance between DM01, pin 02 (G) and the diagnostic connector, pin 14 (G).

Is the resistance greater than 5 ohms?

Yes

REPAIR the high resistance circuit. For additional information, refer to the wiring diagrams. Clear any DTCs, test the system for normal operation.

No

GO to A9.

A9: CHECK THE CAN + CIRCUIT BETWEEN THE DIAGNOSTIC CONNECTOR AND THE ABS/DSC MODULE

1 Disconnect the ABS/TCCM connector, JB45, or DSC module connector, JB185.

2 Measure the resistance between JB45/JB185, pin 24 (Y) and the diagnostic connector, pin 06 (Y).

Is the resistance greater than 5 ohms?

Yes

REPAIR the high resistance circuit. For additional information, refer to the wiring diagrams. Clear any DTCs, test the system for normal operation.

No

GO to A10.

A10: CHECK THE CAN - CIRCUIT BETWEEN THE DIAGNOSTIC CONNECTOR AND THE ABS/DSC MODULE

1 Measure the resistance between JB45/JB185, pin 40 (G) and the diagnostic connector, pin 14 (G).

Is the resistance greater than 5 ohms?

Yes

REPAIR the high resistance circuit. For additional information, refer to the wiring diagrams. Clear any DTCs, test the system for normal operation.

No

GO to A11.

A11: CHECK THE CAN + CIRCUIT BETWEEN THE DIAGNOSTIC CONNECTOR AND THE HID MODULE (WHERE FITTED)

1 Disconnect the HID module connector, IP130.

2 Measure the resistance between IP130, pin 02 (Y) and the diagnostic connector, pin 06 (Y).

Is the resistance greater than 5 ohms?

Yes

REPAIR the high resistance circuit. For additional information, refer to the wiring diagrams. Clear any DTCs, test the system for normal operation.

No

GO to A12.

A12: CHECK THE CAN - CIRCUIT BETWEEN THE DIAGNOSTIC CONNECTOR AND THE HID MODULE (WHERE FITTED)

1 Measure the resistance between IP130, pin 03 (G) and the diagnostic connector, pin 14 (G).

Is the resistance greater than 5 ohms?

Yes

REPAIR the high resistance circuit. For additional information, refer to the wiring diagrams. Clear any DTCs, test the system for normal operation.

No

NO circuit fault found. Check DTCs for indications of a module fault.

PINPOINT TEST B : P1603. TCM EEPROM FAILURE

| TEST CONDITIONS | DETAILS/RESULTS/ACTIONS |
|-----------------|-------------------------|
|-----------------|-------------------------|

B1: DTC SET BY 3 POSSIBLE FACTORS

1 Check battery voltage.

Has the battery been discharged to a voltage where the engine would not crank?

Yes

CHARGE and test the battery. Install a new battery, if required.
REFER to: Battery (414-01 Battery, Mounting and Cables, Removal and Installation).
Carry out a drive-cycle.
(The vehicle may lose its adaptive values and will need to re-learn them. These values will depend on the owner's driving style, and can only be learnt by normal use.)

No

GO to B2.

B2: DTC SET BY 3 POSSIBLE FACTORS

1 Check the TCM for signs of water ingress.

Does the TCM show any indication of water ingress?

Yes

INSTALL a new TCM.
REFER to: Transmission Control Module (TCM) (307-01B Automatic Transmission/Transaxle - Vehicles With: 6-Speed Automatic Transaxle - AWF21, In-vehicle Repair).
CLEAR the DTC, test the system for normal operation.

No

GO to B3.

B3: DTC SET BY 3 POSSIBLE FACTORS

1 Check if the battery has been disconnected with the ignition switched on.

Has the battery been disconnected with the ignition switched on?

Yes

CARRY out a drive-cycle. For additional information, refer to the DTC section of JTIS.
(The vehicle may lose its adaptive values and will need to re-learn them. These values will depend on the owner's driving style, and can only be learnt by normal use.)

No

INSTALL a new TCM.
REFER to: Transmission Control Module (TCM) (307-01B Automatic Transmission/Transaxle - Vehicles With: 6-Speed Automatic Transaxle - AWF21, In-vehicle Repair).
CLEAR the DTC, test the system for normal operation.

PINPOINT TEST C : P1637: CAN NETWORK MALFUNCTION, TRANSMISSION CONTROL MODULE (TCM)

| TEST CONDITIONS | DETAILS/RESULTS/ACTIONS |
|-----------------|-------------------------|
|-----------------|-------------------------|

C1: CHECK TCM FOR DAMAGE

1 Inspect the TCM

Does the TCM indicate any signs of damage?

Yes

INSTALL a new TCM.
REFER to: Transmission Control Module (TCM) (307-01B Automatic Transmission/Transaxle - Vehicles With: 6-Speed Automatic Transaxle - AWF21, In-vehicle Repair).
CLEAR the DTC, test the system for normal operation.

No

GO to C2.

C2: CHECK CAN + FOR SHORT CIRCUIT TO GROUND

1 Measure the resistance between the diagnostic connector, pin 06, (Y) and GROUND.

Is the resistance less than 10,000 ohms?

Yes

REPAIR the short circuit. For additional information, refer to the wiring diagrams. CLEAR the DTC, test the system for normal operation.

No

GO to C3.

C3: CHECK CAN + FOR SHORT CIRCUIT TO BATTERY

1 Measure the resistance between the diagnostic connector, pins 06, (Y) and pin 16 (OY).

Is the resistance less than 10,000 ohms?

Yes

REPAIR the short circuit. For additional information, refer to the wiring diagrams. CLEAR the DTC, test the system for normal operation.

No

GO to C4.

C4: CHECK CAN - FOR SHORT CIRCUIT TO GROUND

1 Measure the resistance between the diagnostic connector, pin 14 (G) and GROUND.

Is the resistance less than 10,000 ohms?

Yes

REPAIR the short circuit. For additional information, refer to the wiring diagrams. CLEAR the DTC, test the system for normal operation.

No

GO to C5.

C5: CHECK CAN - FOR SHORT CIRCUIT TO BATTERY

1 Measure the resistance between the diagnostic connector, pin 14 (G) and pin 16 (OY).

Is the resistance less than 10,000 ohms?

Yes

REPAIR the short circuit. For additional information, refer to the wiring diagrams. CLEAR the DTC, test the system for normal operation.

No

GO to C6.

C6: CHECK FOR SHORT CIRCUIT BETWEEN CAN + AND CAN -

1 Measure the resistance between the diagnostic connector, pins 6 (Y) and 14 (G).

Is the resistance less than 10,000 ohms?

Yes

REPAIR the short circuit. For additional information, refer to the wiring diagrams. CLEAR the DTC, test the system for normal operation.

No

GO to C7.

C7: CHECK FOR OPEN CIRCUIT ON CAN + BETWEEN DIAGNOSTIC CONNECTOR AND THE TCM

1 Disconnect the battery negative terminal.

Vehicles with 16 bit modules -

- Disconnect the TCM connector, JB131.
- Measure the resistance between the diagnostic connector, pin 06 (Y) and JB131, pin 33 (Y).

Vehicles with 32 bit modules -

- Disconnect the TCM connector, JB230.
- Measure the resistance between the diagnostic connector, pin 06 (Y) and JB230, pin 05 (Y).

Is the resistance greater than 5 ohms?

Yes

REPAIR the high resistance circuit. For additional information, refer to the wiring diagrams. CLEAR the DTC, test the system for normal operation.

No

GO to C8.

C8: CHECK FOR OPEN CIRCUIT ON CAN - BETWEEN THE DIAGNOSTIC CONNECTOR AND THE TCM

1 Measure the resistance between the diagnostic connector, pin 14 (G) and:

Vehicles with 16 bit modules -

- JB131, pin 12 (G).

Vehicles with 32 bit modules -

- JB230, pin 06 (G).

Is the resistance less than 5 ohms?

Yes

GO to C9.

No

REPAIR the CAN - circuit. For additional information, refer to the wiring diagrams. CLEAR the DTC, test the system for normal operation.

C9: CHECK FOR CORRECT BUS TERMINATION

1 Reconnect the TCM connector, JB131 or JB230.

2 Measure the resistance between the diagnostic connector, pins 06 (Y) and 14 (G).

Is the resistance between 50 and 70 ohms?

Yes

INSTALL a new TCM.

REFER to: [Transmission Control Module \(TCM\)](#) (307-01B Automatic Transmission/Transaxle - Vehicles With: 6-Speed Automatic Transaxle - AWF21, In-vehicle Repair).

CLEAR the DTC, test the system for normal operation.

No

GO to C10.

C10: CHECK CONTINUITY OF THE CAN + CIRCUIT BETWEEN THE ECM AND THE IC

1 To test:

Vehicles with 2.5 and 3.0L engine -

- Disconnect the ECM connector, EN16, and the IC connector, IP10.
- Measure the resistance between EN16, pin 124 (Y) and IP10, pin 17 (Y).

Vehicles with 2.0L petrol engine -

- Disconnect the ECM connector, EN65, and the IC connector, IP10.
- Measure the resistance between EN65, pin 89 (Y) and IP10, pin 17 (Y).

Vehicles with 2.0L diesel engine -

- Disconnect the ECM connector, DL01, and the IC connector, IP10.
- Measure the resistance between DL01, pin 54 (Y) and IP10, pin 17 (Y).

Is the resistance greater than 5 ohms?

Yes

REPAIR the CAN + circuit. For additional information, refer to the wiring diagrams. CLEAR the DTC, test the system for normal operation.

No

GO to C11.

C11: CHECK CONTINUITY OF THE CAN - CIRCUIT BETWEEN THE ECM AND THE IC

| | |
|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | <p>Measure the resistance between:</p> <p>Vehicles with 2.5 and 3.0L engine -</p> <ul style="list-style-type: none"> ● EN16, pin 123 (G) and IP10, pin 18 (G). <p>Vehicles with 2.0L petrol engine -</p> <ul style="list-style-type: none"> ● EN65, pin 88 (G) and IP10, pin 18 (G). <p>Vehicles with 2.0L diesel engine -</p> <ul style="list-style-type: none"> ● DL01, pin 73 (G) and IP10, pin 18 (G). |
|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

| | |
|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | <p>Is the resistance greater than 5 ohms?</p> <p>Yes REPAIR the CAN - circuit. For additional information, refer to the wiring diagrams. CLEAR the DTC, test the system for normal operation.</p> <p>No GO to C12.</p> |
|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

C12: CHECK FOR LOSS OF TERMINATION WITHIN THE ECM

| | |
|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | <p>To test:</p> <p>Vehicles with 2.5 and 3.0L engine -</p> <ul style="list-style-type: none"> ● Measure the resistance between pins 123 and 124 of the ECM. <p>Vehicles with 2.0L petrol engine -</p> <ul style="list-style-type: none"> ● Measure the resistance between pins 88 and 89 of the ECM. <p>Vehicles with 2.0L diesel engine -</p> <ul style="list-style-type: none"> ● Measure the resistance between pins 54 and 73 of the ECM. |
|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

| | |
|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | <p>Is the resistance between 110 and 140 ohms?</p> <p>Yes GO to C13.</p> <p>No Please check part is not on any form of prior authorisation before replacement.</p> |
|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

C13: CHECK FOR LOSS OF TERMINATION WITHIN THE IC

| | |
|----------|----------------------------------------------------------|
| 1 | Measure the resistance between pins 17 and 18 of the IC. |
|----------|----------------------------------------------------------|

| | |
|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | <p>Is the resistance between 110 and 140 ohms?</p> <p>Yes POSSIBLE intermittent fault. Recheck DTCs.</p> <p>No INSTALL a new instrument cluster. REFER to: <u>Instrument Cluster</u> (413-01 Instrument Cluster, Removal and Installation). CLEAR the DTC, test the system for normal operation.</p> |
|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

PINPOINT TEST D : P1638: CAN NETWORK MALFUNCTION, INSTRUMENT CLUSTER (IC)

| TEST CONDITIONS | DETAILS/RESULTS/ACTIONS |
|-----------------|-------------------------|
|-----------------|-------------------------|

D1: CHECK THE IC FOR DAMAGE

| | |
|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Inspect the IC for damage. |
| | <p>Does the IC indicate any signs of damage?</p> <p>Yes INSTALL a new instrument cluster. REFER to: <u>Instrument Cluster</u> (413-01 Instrument Cluster, Removal and Installation). CLEAR the DTC, test the system for normal operation.</p> <p>No GO to D2.</p> |

D2: CHECK CAN + FOR SHORT CIRCUIT TO GROUND

| | |
|----------|---------------------------------------------------------------------------------|
| 1 | Turn the ignition switch to the OFF position. |
| 2 | Measure the resistance between the diagnostic connector, pin 06 (Y) and GROUND. |

| | |
|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | <p>Is the resistance less than 10,000 ohms?</p> <p>Yes REPAIR the short circuit. For additional information, refer to the wiring diagrams. CLEAR the DTC, test the system for normal operation.</p> <p>No GO to D3.</p> |
|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

D3: CHECK CAN + FOR SHORT CIRCUIT TO BATTERY

| | |
|----------|--------------------------------------------------------------------------------------|
| 1 | Measure the resistance between the diagnostic connector, pin 06 (Y) and pin 16 (OY). |
|----------|--------------------------------------------------------------------------------------|

| | |
|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | <p>Is the resistance less than 10,000 ohms?</p> <p>Yes REPAIR the short circuit. For additional information, refer to the wiring diagrams. CLEAR the DTC, test the system for normal operation.</p> <p>No GO to D4.</p> |
|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

D4: CHECK CAN - FOR SHORT CIRCUIT TO GROUND

| | |
|----------|---------------------------------------------------------------------------------|
| 1 | Measure the resistance between the diagnostic connector, pin 14 (G) and GROUND. |
|----------|---------------------------------------------------------------------------------|

| | |
|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | <p>Is the resistance less than 10,000 ohms?</p> <p>Yes REPAIR the short circuit. For additional information, refer to the wiring diagrams. CLEAR the DTC, test the system for normal operation.</p> <p>No GO to D5.</p> |
|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

D5: CHECK CAN - FOR SHORT CIRCUIT TO BATTERY

| | |
|----------|-----------------------------------------------------------------------------------|
| 1 | Measure the resistance between the diagnostic connector, pins 14 (G) and 16 (OY). |
|----------|-----------------------------------------------------------------------------------|

Is the resistance less than 10,000 ohms?

Yes

REPAIR the short circuit. For additional information, refer to the wiring diagrams. CLEAR the DTC, test the system for normal operation.

No

GO to D6.

D6: CHECK FOR SHORT CIRCUIT BETWEEN CAN + AND CAN -

1 Disconnect the battery negative terminal.

2 Measure the resistance between the diagnostic connector, pins 06 (Y) and 14 (G).

Is the resistance less than 10,000 ohms?

Yes

REPAIR the short circuit. For additional information, refer to the wiring diagrams. CLEAR the DTC, test the system for normal operation.

No

GO to D7.

D7: CHECK FOR OPEN CIRCUIT ON CAN + BETWEEN THE DIAGNOSTIC CONNECTOR AND THE IC

1 Disconnect the IC connector, IP10.

2 Measure the resistance between the diagnostic connector, pin 06 (Y) and IP10, pin 17 (Y).

Is the resistance greater than 5 ohms?

Yes

REPAIR the high resistance circuit. For additional information, refer to the wiring diagrams. CLEAR the DTC, test the system for normal operation.

No

GO to D8.

D8: CHECK FOR OPEN CIRCUIT ON CAN - BETWEEN THE DIAGNOSTIC CONNECTOR AND THE IC

1 Measure the resistance between the diagnostic connector, pin 14 (G) and IP10, pin 18 (G).

Is the resistance greater than 5 ohms?

Yes

REPAIR the high resistance circuit. For additional information, refer to the wiring diagrams. CLEAR the DTC, test the system for normal operation.

No

GO to D9.

D9: CHECK FOR CORRECT BUS TERMINATION

1 Reconnect the IC connector, IP10.

2 Measure the resistance between the diagnostic connector, pins 06 (Y) and 14 (G).

Is the resistance between 50 and 70 ohms?

Yes

INSTALL a new instrument cluster.
REFER to: *Instrument Cluster* (413-01 Instrument Cluster, Removal and Installation).
CLEAR the DTC, test the system for normal operation.

No

GO to D10.

D10: CHECK CONTINUITY OF THE CAN + CIRCUIT BETWEEN THE ECM AND THE IC

1 To test:

Vehicles with 2.5 and 3.0L engine -

- Disconnect the ECM connector, EN16, and the IC connector, IP10.
- Measure the resistance between EN16, pin 124 (Y) and IP10, pin 17 (Y).

Vehicles with 2.0L petrol engine -

- Disconnect the ECM connector, EN65, and the IC connector, IP10.
- Measure the resistance between EN65, pin 89 (Y) and IP10, pin 17 (Y).

Vehicles with 2.0L diesel engine -

- Disconnect the ECM connector, DL01, and the IC connector, IP10.
- Measure the resistance between DL01, pin 54 (Y) and IP10, pin 17 (Y).

Is the resistance greater than 5 ohms?

Yes

REPAIR the high resistance circuit. For additional information, refer to the wiring diagrams. CLEAR the DTC, test the system for normal operation.

No

GO to D11.

D11: CHECK CONTINUITY OF THE CAN - CIRCUIT BETWEEN THE ECM AND THE IC

1 Measure the resistance between:

Vehicles with 2.5 and 3.0L engine -

- EN16, pin 123 (G) and IP10, pin 18 (G).

Vehicles with 2.0L petrol engine -

- EN65, pin 88 (G) and IP10, pin 18 (G).

Vehicles with 2.0L diesel engine -

- DL01, pin 73 (G) and IP10, pin 18 (G).

Is the resistance greater than 5 ohms?

Yes

REPAIR the high resistance circuit. For additional information, refer to the wiring diagrams. CLEAR the DTC, test the system for normal operation.

No

GO to D12.

D12: CHECK FOR LOSS OF TERMINATION WITHIN THE ECM

- 1** Measure the resistance between:
- Vehicles with 2.5 and 3.0L engine -
 - pins 123 and 124 of the ECM.
 - Vehicles with 2.0L petrol engine -
 - pins 88 and 89 of the ECM.
 - Vehicles with 2.0L diesel engine -
 - pins 54 and 73 of the ECM.

Is the resistance between 110 and 140 ohms?

Yes

GO to D13.

No

Please check part is not on any form of prior authorisation before replacement.

D13: CHECK FOR LOSS OF TERMINATION WITHIN THE IC

- 1** Measure the resistance between pins 17 and 18 of the IC.

Is the resistance between 110 and 140 ohms?

Yes

Possible intermittent fault. Recheck DTCs.

No

INSTALL a new instrument cluster.
 REFER to: *Instrument Cluster* (413-01 Instrument Cluster, Removal and Installation).
 CLEAR the DTC, test the system for normal operation.

PINPOINT TEST E : P1642; P1643; P1797: CAN NETWORK MALFUNCTION, ECM

| TEST CONDITIONS | DETAILS/RESULTS/ACTIONS |
|-----------------|-------------------------|
|-----------------|-------------------------|

E1: CHECK THE ECM FOR DAMAGE

- 1** Inspect the ECM.

Does the ECM indicate any signs of damage?

Yes

Please check part is not on any form of prior authorisation before replacement.

No

GO to E2.

E2: CHECK CAN + FOR SHORT CIRCUIT TO GROUND

- 1** Measure the resistance between the diagnostic connector, pin 06, (Y) and GROUND.

Is the resistance less than 10,000 ohms?

Yes

REPAIR the short circuit. For additional information, refer to the wiring diagrams. CLEAR the DTC, test the system for normal operation.

No

GO to E3.

E3: CHECK CAN + FOR SHORT CIRCUIT TO BATTERY

- 1** Measure the resistance between the diagnostic connector, pin 06, (Y) and pin 16 (OY).

Is the resistance less than 10,000 ohms?

Yes

REPAIR the short circuit. For additional information, refer to the wiring diagrams. CLEAR the DTC, test the system for normal operation.

No

GO to E4.

E4: CHECK CAN - FOR SHORT CIRCUIT TO GROUND

- 1** Measure the resistance between the diagnostic connector, pin 14 (G) and GROUND.

Is the resistance less than 10,000 ohms?

Yes

REPAIR the short circuit. For additional information, refer to the wiring diagrams. CLEAR the DTC, test the system for normal operation.

No

GO to E5.

E5: CHECK CAN - FOR SHORT CIRCUIT TO BATTERY

- 1** Measure the resistance between the diagnostic connector, pins 14 (G) and 16 (OY).

Is the resistance less than 10,000 ohms?

Yes

REPAIR the short circuit. For additional information, refer to the wiring diagrams. CLEAR the DTC, test the system for normal operation.

No

GO to E6.

E6: CHECK FOR SHORT CIRCUIT BETWEEN CAN + AND CAN -

- 1** Measure the resistance between the diagnostic connector, pins 06 (Y) and 14 (G).

Is the resistance less than 10,000 ohms?

Yes

REPAIR the short circuit. For additional information, refer to the wiring diagrams. CLEAR the DTC, test the system for normal operation.

No

GO to E7.

E7: CHECK FOR OPEN CIRCUIT ON CAN + BETWEEN THE DIAGNOSTIC CONNECTOR AND THE ECM

- 1** Disconnect the battery negative terminal.

Vehicles with 2.5 and 3.0L engine -

- Disconnect the ECM connector, EN16.
- Measure the resistance between IP22 pin 06 (Y) and EN16, pin 124 (Y).

Vehicles with 2.0L petrol engine -

- Disconnect the ECM connector, EN65.

- Measure the resistance between IP22 pin 06 (Y) and EN65, pin 89 (Y).

Vehicles with 2.0L diesel engine -

- Disconnect the ECM connector, DL01.
- Measure the resistance between the diagnostic connector, pin 06 (Y) and DL01, pin 54 (Y).

Is the resistance greater than 5 ohms?

Yes

REPAIR the high resistance circuit. For additional information, refer to the wiring diagrams. CLEAR the DTC, test the system for normal operation.

No

GO to E8.

E8: CHECK FOR OPEN CIRCUIT ON CAN - BETWEEN THE DIAGNOSTIC CONNECTOR AND THE ECM

1 To test:

Vehicles with 2.5 and 3.0L engine -

- Measure the resistance between the diagnostic connector, pin 14 (G) and EN16, pin 123 (G).

Vehicles with 2.0L petrol engine -

- Measure the resistance between the diagnostic connector, pin 14 (G) and EN65, pin 88 (G).

Vehicles with 2.0L diesel engine -

- Measure the resistance between the diagnostic connector, pin 14 (G) and DL01, pin 73 (G).

Is the resistance greater than 5 ohms?

Yes

REPAIR the high resistance circuit. For additional information, refer to the wiring diagrams. CLEAR the DTC, test the system for normal operation.

No

GO to E9.

E9: CHECK FOR CORRECT BUS TERMINATION

1 Reconnect the ECM connector.

2 Measure the resistance between the diagnostic connector, pins 06 (Y) and 14 (G).

Is the resistance between 50 and 70 ohms?

Yes

Please check part is not on any form of prior authorisation before replacement.

No

GO to E10.

E10: CHECK CONTINUITY OF THE CAN + CIRCUIT

1 To test:

Vehicles with 2.5 and 3.0L engine -

- Disconnect the ECM connector, EN16, and the IC connector, IP10.
- Measure the resistance between EN16, pin 124 (Y) and IP10, pin 17 (Y).

Vehicles with 2.0L petrol engine -

- Disconnect the ECM connector, EN65, and the IC connector, IP10.
- Measure the resistance between EN65, pin 89 (Y) and IP10, pin 17 (Y).

Vehicles with 2.0L diesel engine -

- Disconnect the ECM connector, DL01, and the IC connector, IP10.
- Measure the resistance between DL01, pin 54 (Y) and IP10, pin 17 (Y).

Is the resistance greater than 5 ohms?

Yes

REPAIR the high resistance circuit. For additional information, refer to the wiring diagrams. CLEAR the DTC, test the system for normal operation.

No

GO to E11.

E11: CHECK CONTINUITY OF THE CAN - CIRCUIT

1 Measure the resistance between:

Vehicles with 2.5 and 3.0L engine -

- EN16, pin 123 (G) and IP10, pin 18 (G).

Vehicles with 2.0L petrol engine -

- EN65, pin 88 (G) and IP10, pin 18 (G).

Vehicles with 2.0L diesel engine -

- DL01, pin 73 (G) and IP10, pin 18 (G).

Is the resistance greater than 5 ohms?

Yes

REPAIR the high resistance circuit. For additional information, refer to the wiring diagrams. CLEAR the DTC, test the system for normal operation.

No

GO to E12.

E12: CHECK FOR LOSS OF TERMINATION WITHIN THE ECM

1 Measure the resistance between:

Vehicles with 2.5 and 3.0L engine -

- pins 123 and 124 of the ECM.

Vehicles with 2.0L petrol engine -

- pins 88 and 89 of the ECM.

Vehicles with 2.0L diesel engine -

- pins 54 and 73 of the ECM.

Is the resistance between 110 and 140 ohms?

Yes

GO to E13.

No

Please check part is not on any form of prior authorisation before replacement.

E13: CHECK FOR LOSS OF TERMINATION WITHIN THE IC

1 Measure the resistance between pins 17 and 18 of the IC.

Is the resistance between 110 and 140 ohms?

Yes

Possible intermittent fault. Recheck DTCs.

No

INSTALL a new instrument cluster.

REFER to: Instrument Cluster (413-01 Instrument Cluster, Removal and Installation).

CLEAR the DTC, test the system for normal operation.

PINPOINT TEST F : P1699: CAN NETWORK MALFUNCTION, ELECTRONIC AUTOMATIC TEMPERATURE CONTROL (EATC) MODULE

| TEST CONDITIONS | DETAILS/RESULTS/ACTIONS |
|-------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| F1: CHECK THE EATC MODULE FOR DAMAGE | |
| 1 | Inspect the EATC module for damage. |
| | Does the EATC module indicate any signs of damage? |
| Yes | INSTALL a new EATC module. REFER to: <u>Climate Control System</u> (412-00 Climate Control System - General Information, Description and Operation). CLEAR the DTC, test the system for normal operation. |
| No | GO to F2. |
| F2: CHECK CAN + FOR SHORT CIRCUIT TO GROUND | |
| 1 | Measure the resistance between the diagnostic connector, pin 06 (Y) and GROUND. |
| | Is the resistance less than 10,000 ohms? |
| Yes | REPAIR the short circuit. For additional information, refer to the wiring diagrams. CLEAR the DTC, test the system for normal operation. |
| No | GO to F3. |
| F3: CHECK CAN + FOR SHORT CIRCUIT TO BATTERY | |
| 1 | Turn the ignition switch to the OFF position. |
| 2 | Measure the resistance between the diagnostic connector, pin 06 (Y) and pin 16 (OY). |
| | Is the resistance less than 10,000 ohms? |
| Yes | REPAIR the short circuit. For additional information, refer to the wiring diagrams. CLEAR the DTC, test the system for normal operation. |
| No | GO to F4. |
| F4: CHECK CAN - FOR SHORT CIRCUIT TO GROUND | |
| 1 | Measure the resistance between the diagnostic connector, pin 14 (G) and GROUND. |
| | Is the resistance less than 10,000 ohms? |
| Yes | REPAIR the short circuit. For additional information, refer to the wiring diagrams. CLEAR the DTC, test the system for normal operation. |
| No | GO to F5. |
| F5: CHECK CAN - FOR SHORT CIRCUIT TO BATTERY | |
| 1 | Measure the resistance between the diagnostic connector, pin 14 (G) and pin 16 (OY). |
| | Is the resistance less than 10,000 ohms? |
| Yes | REPAIR the short circuit. For additional information, refer to the wiring diagrams. CLEAR the DTC, test the system for normal operation. |
| No | GO to F6. |
| F6: CHECK FOR SHORT CIRCUIT BETWEEN CAN + AND CAN - | |
| 1 | Disconnect the battery negative terminal. |
| 2 | Measure the resistance between the diagnostic connector, pins 06 (Y) and 14 (G). |
| | Is the resistance less than 10,000 ohms? |
| Yes | REPAIR the short circuit. For additional information, refer to the wiring diagrams. CLEAR the DTC, test the system for normal operation. |
| No | GO to F7. |
| F7: CHECK FOR OPEN CIRCUIT ON CAN + BETWEEN THE DIAGNOSTIC CONNECTOR AND THE EATC MODULE | |
| 1 | Disconnect the EATC module connector, IP101. |
| 2 | Measure the resistance between the diagnostic connector, pin 06 (Y) and IP101, pin 22 (Y). |
| | Is the resistance greater than 5 ohms? |
| Yes | REPAIR the high resistance circuit. For additional information, refer to the wiring diagrams. CLEAR the DTC, test the system for normal operation. |
| No | |

GO to F8.

F8: CHECK FOR OPEN CIRCUIT ON CAN - BETWEEN THE DIAGNOSTIC CONNECTOR AND THE EATC MODULE

1 Measure the resistance between the diagnostic connector, pin 14 (G) and IP101, pin 23 (G).

Is the resistance greater than 5 ohms?

Yes

REPAIR the high resistance circuit. For additional information, refer to the wiring diagrams. CLEAR the DTC, test the system for normal operation.

No

GO to F9.

F9: CHECK FOR CORRECT BUS TERMINATION

1 Reconnect the EATC module connector, IP101.

2 Measure the resistance between the diagnostic connector, pins 06 (Y) and 14 (G).

Is the resistance between 50 and 70 ohms?

Yes

INSTALL a new EATC module.

REFER to: [Climate Control System](#) (412-00 Climate Control System - General Information, Description and Operation).

CLEAR the DTC, test the system for normal operation.

No

GO to F10.

F10: CHECK CONTINUITY OF THE CAN + CIRCUIT BETWEEN THE ECM AND THE IC

1 To test:

Vehicles with 2.5 and 3.0L engine -

- Disconnect the ECM connector, EN16, and the IC connector, IP10.
- Measure the resistance between EN16, pin 124 (Y) and IP10, pin 17 (Y).

Vehicles with 2.0L petrol engine -

- Disconnect the ECM connector, EN65, and the IC connector, IP10.
- Measure the resistance between EN65, pin 89 (Y) and IP10, pin 17 (Y).

Vehicles with 2.0L diesel engine -

- Disconnect the ECM connector, DL01, and the IC connector, IP10.
- Measure the resistance between DL01, pin 54 (Y) and IP10, pin 17 (Y).

Is the resistance greater than 5 ohms?

Yes

REPAIR the high resistance circuit. For additional information, refer to the wiring diagrams. CLEAR the DTC, test the system for normal operation.

No

GO to F11.

F11: CHECK CONTINUITY OF THE CAN - CIRCUIT BETWEEN THE ECM AND THE IC

1 Measure the resistance between:

Vehicles with 2.5 and 3.0L engine -

- EN16, pin 123 (G) and IP10, pin 18 (G).

Vehicles with 2.0L petrol engine -

- EN65, pin 88 (G) and IP10, pin 18 (G).

Vehicles with 2.0L diesel engine -

- DL01, pin 73 (G) and IP10, pin 18 (G).

Is the resistance greater than 5 ohms?

Yes

REPAIR the high resistance circuit. For additional information, refer to the wiring diagrams. CLEAR the DTC, test the system for normal operation.

No

GO to F12.

F12: CHECK FOR LOSS OF TERMINATION WITHIN THE ECM

1 Measure the resistance between:

Vehicles with 2.5 and 3.0L engine -

- pins 123 and 124 of the ECM.

Vehicles with 2.0L petrol engine -

- pins 88 and 89 of the ECM.

Vehicles with 2.0L diesel engine -

- pins 54 and 73 of the ECM.

Is the resistance between 110 and 140 ohms?

Yes

GO to F13.

No

Please check part is not on any form of prior authorisation before replacement.

F13: CHECK FOR LOSS OF TERMINATION WITHIN THE IC

1 Measure the resistance between pins 17 and 18 of the IC.

Is the resistance between 110 and 140 ohms?

Yes

POSSIBLE intermittent fault. Recheck DTCs.

No

INSTALL a new instrument cluster.

REFER to: [Instrument Cluster](#) (413-01 Instrument Cluster, Removal and Installation).

CLEAR the DTC, test the system for normal operation.

PINPOINT TEST G : P1799: CAN NETWORK MALFUNCTION, ANTI-LOCK BRAKE (ABS)/DYNAMIC STABILITY CONTROL (DSC) CONTROL MODULE

| TEST CONDITIONS | DETAILS/RESULTS/ACTIONS |
|-------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| G1: CHECK THE ABS OR DSC MODULE FOR DAMAGE | |
| 1 | Inspect the ABS/TCCM or DSC module. |
| | Does the ABS/TCCM or DSC module indicate any signs of damage? Yes INSTALL a new ABS/TCCM or DSC module. REFER to: <u>Hydraulic Control Unit (HCU) - VIN Range: C00001->J12991</u> (206-09 Anti-Lock Control - Stability Assist, Removal and Installation). CLEAR the DTC, test the system for normal operation. No GO to G2. |
| G2: CHECK CAN + FOR SHORT CIRCUIT TO GROUND | |
| 1 | Turn the ignition switch to the OFF position. |
| 2 | Measure the resistance between the diagnostic connector, pin 06 (Y) and GROUND. |
| | Is the resistance less than 10,000 ohms? Yes REPAIR the short circuit. For additional information, refer to the wiring diagrams. CLEAR the DTC, test the system for normal operation. No GO to G3. |
| G3: CHECK CAN + FOR SHORT CIRCUIT TO BATTERY | |
| 1 | Measure the resistance between the diagnostic connector, pin 06, (Y) and pin 16 (OY). |
| | Is the resistance less than 10,000 ohms? Yes REPAIR the short circuit. For additional information, refer to the wiring diagrams. CLEAR the DTC, test the system for normal operation. No GO to G4. |
| G4: CHECK CAN - FOR SHORT CIRCUIT TO GROUND | |
| 1 | Measure the resistance between the diagnostic connector, pin 14 (G) and GROUND. |
| | Is the resistance less than 10,000 ohms? Yes REPAIR the short circuit. For additional information, refer to the wiring diagrams. CLEAR the DTC, test the system for normal operation. No GO to G5. |
| G5: CHECK CAN - FOR SHORT CIRCUIT TO BATTERY | |
| 1 | Measure the resistance between the diagnostic connector, pins 14 (G) and pin 16 (OY). |
| | Is the resistance less than 10,000 ohms? Yes REPAIR the short circuit. For additional information, refer to the wiring diagrams. CLEAR the DTC, test the system for normal operation. No GO to G6. |
| G6: CHECK FOR SHORT CIRCUIT BETWEEN CAN + AND CAN - | |
| 1 | Disconnect the battery negative terminal. |
| 2 | Measure the resistance between the diagnostic connector, pins 06 (Y) and 14 (G). |
| | Is the resistance less than 10,000 ohms? Yes REPAIR the short circuit. For additional information, refer to the wiring diagrams. CLEAR the DTC, test the system for normal operation. No GO to G7. |
| G7: CHECK FOR OPEN CIRCUIT ON CAN + BETWEEN THE DIAGNOSTIC CONNECTOR AND THE ABS OR DSC MODULE | |
| 1 | Disconnect the ABS/TCCM connector, JB45, or DSC module connector, JB185. |
| 2 | Measure the resistance between the diagnostic connector, pin 06 (Y) and JB45/JB185, pin 24 (Y). |
| | Is the resistance greater than 5 ohms? Yes REPAIR the high resistance circuit. For additional information, refer to the wiring diagrams. CLEAR the DTC, test the system for normal operation. No GO to G9. |
| G8: CHECK FOR OPEN CIRCUIT ON CAN - BETWEEN THE DIAGNOSTIC CONNECTOR AND THE ABS OR DSC MODULE | |
| 1 | Measure the resistance between the diagnostic connector, pin 14 (G) and JB45/JB185, pin 40 (G). |
| | Is the resistance greater than 5 ohms? Yes REPAIR the high resistance circuit. For additional information, refer to the wiring diagrams. CLEAR the DTC, test the system for normal operation. No GO to G9. |
| G9: CHECK FOR CORRECT BUS TERMINATION | |
| 1 | Reconnect the ABS/TCCM module connector, JB45, or DSC module connector, JB185. |
| 2 | Measure the resistance between the diagnostic connector, pins 06 (Y) and 14 (G). |
| | Is the resistance between 50 and 70 ohms? Yes INSTALL a new ABS/TCCM module, or DSC module. REFER to: <u>Hydraulic Control Unit (HCU) - VIN Range: C00001->J12991</u> (206-09 Anti-Lock Control - Stability Assist, Removal and Installation). CLEAR the DTC, test the system for normal operation. No GO to G10. |
| G10: CHECK CONTINUITY OF THE CAN + CIRCUIT BETWEEN THE ECM AND THE IC | |

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|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | <p>1 To test:</p> <p>Vehicles with 2.5 and 3.0L engine -</p> <ul style="list-style-type: none"> ● Disconnect the ECM connector, EN16, and the IC connector, IP10. ● Measure the resistance between EN16, pin 124 (Y) and IP10, pin 17 (Y). <p>Vehicles with 2.0L petrol engine -</p> <ul style="list-style-type: none"> ● Disconnect the ECM connector, EN65, and the IC connector, IP10. ● Measure the resistance between EN65, pin 89 (Y) and IP10, pin 17 (Y). <p>Vehicles with 2.0L diesel engine -</p> <ul style="list-style-type: none"> ● Disconnect the ECM connector, DL01, and the IC connector, IP10. ● Measure the resistance between DL01, pin 54 (Y) and IP10, pin 17 (Y). |
| | <p>Is the resistance greater than 5 ohms?</p> <p>Yes REPAIR the high resistance circuit. For additional information, refer to the wiring diagrams. CLEAR the DTC, test the system for normal operation.</p> <p>No GO to G11.</p> |

G11: CHECK CONTINUITY OF THE CAN - CIRCUIT

| | |
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| | <p>1 Measure the resistance between:</p> <p>Vehicles with 2.5 and 3.0L engine -</p> <ul style="list-style-type: none"> ● EN16, pin 123 (G) and IP10, pin 18 (G). <p>Vehicles with 2.0L petrol engine -</p> <ul style="list-style-type: none"> ● EN65, pin 88 (G) and IP10, pin 18 (G). <p>Vehicles with 2.0L diesel engine -</p> <ul style="list-style-type: none"> ● DL01, pin 73 (G) and IP10, pin 18 (G). |
| | <p>Is the resistance greater than 5 ohms?</p> <p>Yes REPAIR the high resistance circuit. For additional information, refer to the wiring diagrams. CLEAR the DTC, test the system for normal operation.</p> <p>No GO to G12.</p> |

G12: CHECK FOR LOSS OF TERMINATION WITHIN THE ECM

| | |
|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | <p>1 Measure the resistance between:</p> <p>Vehicles with 2.5 and 3.0L engine -</p> <ul style="list-style-type: none"> ● pins 123 and 124 of the ECM. <p>Vehicles with 2.0L petrol engine -</p> <ul style="list-style-type: none"> ● pins 88 and 89 of the ECM. <p>Vehicles with 2.0L diesel engine -</p> <ul style="list-style-type: none"> ● pins 54 and 73 of the ECM. |
| | <p>Is the resistance between 110 and 140 ohms?</p> <p>Yes GO to G13.</p> <p>No Please check part is not on any form of prior authorisation before replacement.</p> |

G13: CHECK FOR LOSS OF TERMINATION WITHIN THE IC

| | |
|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | <p>1 Measure the resistance between pins 17 and 18 of the instrument cluster.</p> |
| | <p>Is the resistance between 110 and 140 ohms?</p> <p>Yes Possible intermittent fault. Recheck DTCs. Repeat tests from A1.</p> <p>No INSTALL a new instrument cluster. REFER to: <u>Instrument Cluster</u> (413-01 Instrument Cluster, Removal and Installation). CLEAR the DTC, test the system for normal operation.</p> |

PINPOINT TEST H : SCP NETWORK MALFUNCTION, GENERIC ELECTRONIC MODULE (GEM)

| TEST CONDITIONS | DETAILS/RESULTS/ACTIONS |
|--------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| H1: CHECK GEM FOR DAMAGE | |
| | <p>1 Inspect the GEM for damage.</p> |
| | <p>Does the GEM indicate any signs of damage?</p> <p>Yes INSTALL a new GEM. REFER to: <u>Generic Electronic Module (GEM)</u> (419-10 Multifunction Electronic Modules, Removal and Installation). CLEAR the DTC, test the system for normal operation.</p> <p>No GO to H2.</p> |
| H2: CHECK THE SCP + FOR SHORT CIRCUIT TO GROUND | |
| | <p>1 Measure the resistance between the diagnostic connector, pin 02 (Y) and GROUND.</p> |
| | <p>Is the resistance less than 10,000 ohms?</p> <p>Yes REPAIR the short circuit. For additional information, refer to the wiring diagrams. CLEAR the DTC, test the system for normal operation.</p> <p>No</p> |