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2005 FORD Fusion European OEM Service and Repair Workshop Manual

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Normal Operation and Fault Conditions

Description

- The PSCM (power steering control module) monitors the HS-CAN (high-speed controller area network) messages when the voltage to the PSCM (power steering control module) is greater than 10 volts and there are no Diagnostic Trouble Codes (DTCs) present inhibiting PSCM (power steering control module) operation.
- For additional information on the messages sent to the PSCM (power steering control module) from the ABS (anti-lock brake system) module, REFER to: Power Steering - System Operation and Component Description(211-02 Power Steering, Description and Operation).

Pinpoint Test Applicability

- This test applies to PSCM (power steering control module) DTC (diagnostic trouble code) U0415 Invalid Data Received from ABS (anti-lock brake system) Control Module "A" only. It does not apply to any other module except the PSCM (power steering control module) .

DTC Diagnostic Strategy

- If the module DTC (diagnostic trouble code) list results in a large number of Diagnostic Trouble Codes (DTCs), diagnose all module hard faults first (C102D, C1B00, C200B, C200C, C200D, U2011 and U3000) before diagnosing any network faults (lost communication or invalid data). If voltage concern Diagnostic Trouble Codes (DTCs) are present, diagnose those after any module hard faults and before any network faults. Diagnose all current and active Diagnostic Trouble Codes (DTCs) before diagnosing any historic Diagnostic Trouble Codes (DTCs).

Pinpoint Test Purpose

- To direct the diagnosis to the module and associated circuit sending the faulty or unknown information in the messages.

Diagnostic Aids

- Steering assist may be reduced if the vehicle speed signal is missing. The module may transmit an invalid steering angle message over HS-CAN (high-speed controller area network) if the angle offset from ABS (anti-lock brake system) module is missing.
- DTC (diagnostic trouble code) U0415:00 or U0415:22 indicates a concern with the ABS (anti-lock brake system) . The module reporting this DTC (diagnostic trouble code) is not the problem module. Do not install a new PSCM (power steering control module) as part of the repair for PSCM (power steering control module) DTC (diagnostic trouble code) U0415:00 or U0415:22.
- The presence of DTC (diagnostic trouble code) U0415:00 or U0415:22 may prevent the optional steering features; active park assist, Lane Keeping Assist (LKA) and Lane Centering Assist (LCA) from activating. If the DTC (diagnostic trouble code) sets during an assist event, the event is terminated and the assist feature is deactivated.

DTC Fault Trigger Conditions

Refer to Steering GSB (General Service Bulletin) for additional connector and wiring inspection tips.

Refer to Wiring Diagrams Cell 43for schematic and connector information.

Normal Operation and Fault Conditions REFER to: Power Steering - Overview (211-02 Power Steering, Description and Operation).

Description

- While the ignition is ON and the voltage supply to the PSCM (power steering control module) is above 6 volts, the module monitors the motor inside the EPAS (electronic power assist steering) gear to calculate the relative and actual steering wheel angle. This value is transmitted to other modules over the HS-CAN (high-speed controller area network) .

Pinpoint Test Applicability

- This test applies to PSCM (power steering control module) Diagnostic Trouble Codes (DTCs) C1B00:62 only.
  IT DOES NOT
  apply to any other modules or Diagnostic Trouble Codes (DTCs).

DTC Diagnostic Strategy

- If the module DTC (diagnostic trouble code) list results in a large number of Diagnostic Trouble Codes (DTCs), diagnose all module hard faults first (C102D, C1B00, C200B, C200C, C200D, U2011 and U3000) before diagnosing any network faults (lost communication or invalid data). If voltage concern Diagnostic Trouble Codes (DTCs) are present, diagnose those after any module hard faults and before any network faults. Diagnose all current and active Diagnostic Trouble Codes (DTCs) before diagnosing any historic Diagnostic Trouble Codes (DTCs).

Pinpoint Test Purpose

- Verify PSCM (power steering control module) DTC (diagnostic trouble code) C1B00:62 is present. Verify PSCM (power steering control module) wiring harness and electrical connectors are in good condition.

Diagnostic Aids

- When DTC (diagnostic trouble code) C1B00:62 is set, the PSCM (power steering control module) removes steering assist, enters into manual mode and transmits an invalid steering angle message over the HS-CAN (high-speed controller area network) . The module also sends a message to the IPC (instrument panel cluster) to display
  POWER STEERING ASSIST FAULT
  in the message center.
- If a damaged bellows boot(s) was discovered during inspection and this pinpoint test
  DOES NOT
  lead to the installation of a new EPAS (electronic power assist steering) gear or bellows boot(s), ADDRESS the damaged boot(s) before returning the vehicle to the customer.

DTC Fault Trigger Conditions

Refer to Steering GSB (General Service Bulletin) for additional connector and wiring inspection tips.

Refer to Wiring Diagrams Cell 43for schematic and connector information.

Normal Operation and Fault Conditions REFER to: Power Steering - Overview (211-02 Power Steering, Description and Operation).

Description

- While the ignition is ON and the voltage supply to the PSCM (power steering control module) is above 6 volts, the module monitors the motor inside the EPAS (electronic power assist steering) gear to calculate the relative and actual steering wheel angle. This value is transmitted to other modules over the HS-CAN (high-speed controller area network) .

Pinpoint Test Applicability

- This test applies to PSCM (power steering control module) Diagnostic Trouble Codes (DTCs) C1B00:49 only.
  IT DOES NOT
  apply to any other modules or Diagnostic Trouble Codes (DTCs).

DTC Diagnostic Strategy

- If the module DTC (diagnostic trouble code) list results in a large number of Diagnostic Trouble Codes (DTCs), diagnose all module hard faults first (C102D, C1B00, C200B, C200C, C200D, U2011 and U3000) before diagnosing any network faults (lost communication or invalid data). If voltage concern Diagnostic Trouble Codes (DTCs) are present, diagnose those after any module hard faults and before any network faults. Diagnose all current and active Diagnostic Trouble Codes (DTCs) before diagnosing any historic Diagnostic Trouble Codes (DTCs).

Pinpoint Test Purpose

- Verify PSCM (power steering control module) DTC (diagnostic trouble code) C1B00:49 is present. Verify PSCM (power steering control module) wiring harness and electrical connectors are in good condition.

Diagnostic Aids

- When DTC (diagnostic trouble code) C1B00:49 is set, the PSCM (power steering control module) removes steering assist, enters into manual mode and transmits an invalid steering angle message over the HS-CAN (high-speed controller area network) . The module also sends a message to the IPC (instrument panel cluster) to display
  POWER STEERING ASSIST FAULT
  in the message center.
- If a damaged bellows boot(s) was discovered during inspection and this pinpoint test
  DOES NOT
  lead to the installation of a new EPAS (electronic power assist steering) gear or bellows boot(s), ADDRESS the damaged boot(s) before returning the vehicle to the customer.

DTC Fault Trigger Conditions

When DTC (diagnostic trouble code) U2016:48 is set, the PSCM (power steering control module) remains in normal operation mode, but features such as Active Nibble Control, Pull-Drift Compensation, Lane Departure Warning, Lane Keep Assist, ect. are disabled.

Normal Operation and Fault Conditions

Description

- When the battery voltage to the PSCM (power steering control module) is greater than 10 volts with the ignition ON and there are no Diagnostic Trouble Codes (DTCs) present, the PSCM (power steering control module) runs a self test of the system software. If an error is detected, a DTC (diagnostic trouble code) is set and the EPAS (electronic power assist steering) enters into a limited operation mode.

Pinpoint Test Applicability

- This test applies to PSCM (power steering control module) DTC (diagnostic trouble code) U2016 Control Module Main Software only. It does not apply to any other module except the PSCM (power steering control module) .

DTC Diagnostic Strategy

- If the module DTC (diagnostic trouble code) list results in a large number of Diagnostic Trouble Codes (DTCs), diagnose all module hard faults first (C102D, C1B00, C200B, C200C, C200D, U2011 and U3000) before diagnosing any network faults (lost communication or invalid data). If voltage concern Diagnostic Trouble Codes (DTCs) are present, diagnose those after any module hard faults and before any network faults. Diagnose all current and active Diagnostic Trouble Codes (DTCs) before diagnosing any historic Diagnostic Trouble Codes (DTCs).

Pinpoint Test Purpose

- To verify PSCM (power steering control module) DTC (diagnostic trouble code) U2016 is present and provide diagnostics if DTC (diagnostic trouble code) U2016 is currently active in the PSCM (power steering control module) .

Diagnostic Aids

- During the ignition cycle the DTC (diagnostic trouble code) U2016:47 initially sets, the PSCM (power steering control module) either enters limp home mode and steering assist is gradually reduced until the PSCM (power steering control module) enters manual mode. The PSCM (power steering control module) sends a message to the IPC (instrument panel cluster) to display
  STEERING ASSIST FAULT SERVICE REQUIRED
  in the message center.
- During the next ignition cycle after DTC (diagnostic trouble code) U2016:47 sets, if the concern is still present, the PSCM (power steering control module) removes steering assist and enters manual mode. The module also transmits an invalid steering angle message over the HS-CAN (high-speed controller area network) and sends a message to the IPC (instrument panel cluster) to display the
  STEERING ASSIST FAULT SERVICE REQUIRED
  in the message center.

NOTE

Refer to Steering GSB (General Service Bulletin) for additional connector and wiring inspection tips.

Refer to Wiring Diagrams Cell 43for schematic and connector information.

Normal Operation and Fault Conditions REFER to: Power Steering - System Operation and Component Description (211-02 Power Steering, Description and Operation).

Description

- The PSCM (power steering control module) monitors the voltage supplied by the 12 volt battery and charging system and sets the appropriate DTC (diagnostic trouble code) when necessary.

Pinpoint Test Applicability

- This test applies to PSCM (power steering control module) DTC (diagnostic trouble code) U3003 Battery Voltage only. It does not apply to any other module except PSCM (power steering control module) .

DTC Diagnostic Strategy

- If the module DTC (diagnostic trouble code) list results in a large number of Diagnostic Trouble Codes (DTCs), diagnose all module hard faults first (C102D, C1B00, C200B, C200C, C200D, U2011 and U3000) before diagnosing any network faults (lost communication or invalid data). If voltage concern Diagnostic Trouble Codes (DTCs) are present, diagnose those after any module hard faults and before any network faults.

Pinpoint Test Purpose

- This test verifies the PSCM (power steering control module) fuses in the BJB (battery junction box) and the high current BJB (battery junction box) are OK, the PSCM (power steering control module) wiring harness power and ground connections are OK. The test also verifies the charging system and battery state of charge.

Diagnostic Aids

- For some instances the message center may display:
  STEERING ASSIST FAULT SERVICE REQUIRED.
  This does not indicate a concern with the PSCM (power steering control module) if only DTC (diagnostic trouble code) U3003:XX is present. The 12 volt battery health should be evaluated.
- The PSCM (power steering control module) reporting only DTC (diagnostic trouble code) U3003:16, U3003:17, U3003:18, U3003:19, U3003:68 or U3003:A2 does not indicate a concern with the PSCM (power steering control module) .
  DO NOT
  install a new EPAS (electronic power assist steering) assembly or PSCM (power steering control module) if one or more of these Diagnostic Trouble Codes (DTCs) is set.

PSCM (power steering control module) U3003:68	Battery Voltage: Event Information	If the voltage supply to the PSCM (power steering control module) is less than 11.8 volts or if the charging system warning indicator is illuminated with the ignition ON and the PSCM (power steering control module) awake, then DTC (diagnostic trouble code) U3003:68 is set.
PSCM (power steering control module) U3003:A2	Battery Voltage: System Voltage Low	If the PSCM (power steering control module) detects a low voltage situation during an auto stop-start event, this DTC (diagnostic trouble code) is set.

Possible Sources

- Fuses
- Wiring, terminals or connectors
- Charging system concern
- 12 volt Battery
- PSCM (power steering control module)

Visual Inspection and Pre-checks

- Make sure the vehicle battery terminals and cables are free of any corrosion and other contaminants.
- Make sure the vehicle battery terminals are tightened to their correct torque specifications.
- Make sure all PSCM (power steering control module) fuses in the BJB (battery junction box) and high current BJB (battery junction box) are OK.
-

COMPLETE THE FDRS GUIDED ROUTINE

- **NOTE**

  This procedure must be completed using FDRS. Do not clear DTCs until the FDRS procedure has completed. To complete the diagnosis, navigate to the FDRS Guided Routine tab and carry out the procedure Electronic Power Assist Steering (EPAS) Voltage Error .

Visual Inspection and Pre-checks

- This DTC (diagnostic trouble code) is set if the complete PSCM (power steering control module) configuration was not carried out or if the configuration fails.

COMPLETE THE FDRS GUIDED ROUTINE

- **NOTE**

  This procedure must be completed using FDRS. Do not clear DTCs until the FDRS procedure has completed. To complete the diagnosis, navigate to the FDRS Guided Routine tab and carry out the procedure Electronic Power Assist Steering (EPAS) Communication Error .

PINPOINT TEST Z : OPEN PSCM (POWER STEERING CONTROL MODULE) FUSE(S)

NOTE

Refer to Steering GSB (General Service Bulletin) for additional connector and wiring inspection tips.

Refer to Wiring Diagrams Cell 43for schematic and connector information.

Normal Operation and Fault Conditions REFER to: Power Steering - System Operation and Component Description
(211-02 Power Steering, Description and Operation).

Description

- There are 2 power sources for the PSCM (power steering control module) , the high current power steering fuse, and the low current power steering fuse. Refer to the wiring diagrams to review the PSCM (power steering control module) circuit for both the high current and low current fuse locations as well as the associated power and ground wiring. Open power steering fuse can occur when the power or ground wiring is shorted against another component or water intrusion in the respective connectors or connections.

Pinpoint Test Applicability

- This test applies to the following diagnostic concerns:
- Open PSCM (power steering control module) fuse(s)

This test DOES NOT apply to any other DTC (diagnostic trouble code) or symptom. **Diagnostic Strategy**

procedure Electronic Power Assist Steering (EPAS) Invalid or Missing Controller Area Network (CAN) Data .

PINPOINT TEST AA : PSCM (POWER STEERING CONTROL MODULE) DTC (DIAGNOSTIC TROUBLE CODE) U0100:00 LOST COMMUNICATION WITH ECM / PCM "A"

NOTE

Refer to Steering GSB (General Service Bulletin) for additional connector and wiring inspection tips.

Refer to Wiring Diagrams Cell 43for schematic and connector information.

Normal Operation and Fault Conditions Description

- The PSCM (power steering control module) monitors the HS-CAN (high-speed controller area network) messages when the ignition has been on for more than 5 seconds, the voltage to the PSCM (power steering control module) is greater than 10 volts and there are no Diagnostic Trouble Codes (DTCs) present inhibiting PSCM (power steering control module) operation.
- For additional information on the messages sent to the PSCM (power steering control module) from the PCM (powertrain control module) , REFER to: Power Steering - System Operation and Component Description(211-02 Power Steering, Description and Operation).

Pinpoint Test Applicability

- This test applies to PSCM (power steering control module) DTC (diagnostic trouble code) U0100 Lost Communication with the PCM (powertrain control module) only. It does not apply to any other module except the PSCM (power steering control module) .

DTC Diagnostic Strategy

- If the module DTC (diagnostic trouble code) list results in a large number of Diagnostic Trouble Codes (DTCs), diagnose all module hard faults first (C102D, C1B00, C200B, C200C, C200D, U2011 and U3000) before diagnosing any network faults (lost communication or invalid data). If voltage concern Diagnostic Trouble Codes (DTCs) are present, diagnose those after any module hard faults and before any network faults. Diagnose all current and active Diagnostic Trouble Codes (DTCs) before diagnosing any historic Diagnostic Trouble Codes (DTCs).

Pinpoint Test Purpose

- To verify the PSCM (power steering control module) wiring harness and connectors are OK. This test checks the connectors and wiring from the PSCM (power steering control module) 3 pin connector at the steering gear to the in-line connector in the engine compartment. If these circuits are working correctly, the test then directs to check the PCM (powertrain control module) and wiring harness.

Diagnostic Aids

- Do not install a new PSCM (power steering control module) as part of the repair for a PSCM (power steering control module) DTC (diagnostic trouble code) U0100:00.

PINPOINT TEST AB : PSCM (POWER STEERING CONTROL MODULE) DTC (DIAGNOSTIC TROUBLE CODE) U0121:00 LOST COMMUNICATION WITH ANTI-LOCK BRAKE SYSTEM (ABS) CONTROL MODULE

NOTE

Refer to Steering GSB (General Service Bulletin) for additional connector and wiring inspection tips.

Refer to Wiring Diagrams Cell 43for schematic and connector information.

Normal Operation and Fault Conditions Description

- The PSCM (power steering control module) monitors the HS-CAN (high-speed controller area network) messages when the voltage to the PSCM (power steering control module) is greater than 10 volts and there are no Diagnostic Trouble Codes (DTCs) present inhibiting PSCM (power steering control module) operation.
- For additional information on the messages sent to the PSCM (power steering control module) from the ABS (anti-lock brake system) module, REFER to: Power Steering - System Operation and Component Description(211-02 Power Steering, Description and Operation).

Pinpoint Test Applicability

- This test applies to PSCM (power steering control module) DTC (diagnostic trouble code) U0121 Lost Communication with the ABS (anti-lock brake system) only. It does not apply to any other module except the PSCM (power steering control module) .

DTC Diagnostic Strategy

- If the module DTC (diagnostic trouble code) list results in a large number of Diagnostic Trouble Codes (DTCs), diagnose all module hard faults first (C102D, C1B00, C200B, C200C, C200D, U2011 and U3000) before diagnosing any network faults (lost communication or invalid data). If voltage concern Diagnostic Trouble Codes (DTCs) are present, diagnose those after any module hard faults and before any network faults. Diagnose all current and active Diagnostic Trouble Codes (DTCs) before diagnosing any historic Diagnostic Trouble Codes (DTCs).

Pinpoint Test Purpose

- To verify the PSCM (power steering control module) wiring harness and connectors are OK. This test checks the connectors and wiring from the PSCM (power steering control module) 3 pin connector at the steering gear to the in-line connector in the engine compartment. If these circuits are working correctly, the test then directs to check the ABS (anti-lock brake system) and wiring harness.

Diagnostic Aids

- Do not install a new PSCM (power steering control module) as part of the repair for a PSCM (power steering control module) DTC (diagnostic trouble code) U0121:00.
- DTC (diagnostic trouble code) U0121:00 indicates a possible failure of the HS-CAN (high-speed controller area network) which can be due to a circuit fault in the HS-CAN (high-speed controller area network) , the PSCM (power steering control module) wiring harness or a ABS (anti-lock brake system) concern.