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2007 FORD Fusion European OEM Service and Repair Workshop Manual

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PSCM (power steering control module)	U3000:61	Control Module: Signal Calculation Failure	GO to Pinpoint Test C
PSCM (power steering control module)	U3000:96	Control Module: Component Internal Failure	GO to Pinpoint Test B
PSCM (power steering control module)	U3001:68	Control Module Improper Shutdown Performance: Event Information	GO to Pinpoint Test BD
PSCM (power steering control module)	U3001:89	Control Module Improper Shutdown Performance: Data Transfer Failure	GO to Pinpoint Test BD
PSCM (power steering control module)	U3003:16	Battery Voltage: Circuit Voltage Below Threshold	GO to Pinpoint Test X
PSCM (power steering control module)	U3003:17	Battery Voltage: Circuit Voltage Above Threshold	GO to Pinpoint Test X
PSCM (power steering control module)	U3003:18	Battery Voltage: Circuit Current Below Threshold	GO to Pinpoint Test X
PSCM (power steering control module)	U3003:19	Battery Voltage: Circuit Current Above Threshold	GO to Pinpoint Test X
PSCM (power steering control module)	U3003:68	Battery Voltage: Event Information	GO to Pinpoint Test X
PSCM (power steering control module)	U3003:A2	Battery Voltage: System Voltage Low	GO to Pinpoint Test X

Stop/Steer/Ride > Noise > Stopping > High Speed	GO to Pinpoint Test AF
Stop/Steer/Ride > Noise > Stopping > Low Speed	GO to Pinpoint Test AE
Stop/Steer/Ride > Noise > Stopping > Low Speed	GO to Pinpoint Test AF
Stop/Steer/Ride > Noise > Steering > Intermittent	GO to Pinpoint Test AE
Stop/Steer/Ride > Noise > Steering > Over Bump	GO to Pinpoint Test AC
Stop/Steer/Ride > Noise > Steering > Low Speed	GO to Pinpoint Test AK
Stop/Steer/Ride > Noise > Steering > While Turning	GO to Pinpoint Test AD
Stop/Steer/Ride > Noise > Steering > While Turning	GO to Pinpoint Test AK
Stop/Steer/Ride > Noise > Front > Over Bump	GO to Pinpoint Test AC
Stop/Steer/Ride > Noise > Front > High Speed	GO to Pinpoint Test L
Stop/Steer/Ride > Noise > Front > Low Speed	GO to Pinpoint Test L
Stop/Steer/Ride > Noise > Front > Low Speed	GO to Pinpoint Test AE
Stop/Steer/Ride > Vibration > Steering > Intermittent	GO to Pinpoint Test AH

Symptom Chart(s)

Symptom Chart: Steering System and NVH

- Diagnostics in this manual assume a certain skill and knowledge of Ford-specific diagnostic practices.

  REFER to: Diagnostic Methods(100-00 General Information, Description and Operation).

- NVH (noise, vibration and harshness) symptoms should be identified using the diagnostic tools available. For a list of these tools, an explanation of their uses and a glossary of common terms,

  REFER to: Noise, Vibration and Harshness (NVH)(100-04 Noise, Vibration and Harshness, Description and Operation).

  . Since it is possible any one of multiple systems may be the cause of a symptom, it may be necessary to use a process of elimination type diagnostic approach to pinpoint the responsible system. If this is not the causal system for the symptom, REFER to: Noise, Vibration and Harshness (NVH)(100-04 Noise, Vibration and Harshness, Description and Operation).

NOISE - Over bumps, rough roads, dips, depressions or when entering a driveway	GO to Pinpoint Test AC
NOISE - Turning at slow speeds or during parking lot maneuvers	GO to Pinpoint Test AK
NOISE - Inside cabin when turning the steering wheel	GO to Pinpoint Test AD
STEERING - Excessive steering wheel play	GO to Pinpoint Test G
STEERING - Poor returnability or sticky steering or binding	GO to Pinpoint Test I
STEERING - Steering system pull, drift or wander	GO to Pinpoint Test H
STEERING WHEEL - Moves slightly when the engine is started and vehicle begins to move	GO to Pinpoint Test AI
STEERING WHEEL - Wheel vibrates or resists turning	GO to Pinpoint Test AH

Pinpoint Tests

PINPOINT TEST A : DTC (DIAGNOSTIC TROUBLE CODE) U0131:XX LOST COMMUNICATION WITH THE PSCM (POWER STEERING CONTROL MODULE) , OR THE PSCM (POWER STEERING CONTROL MODULE) CANNOT COMMUNICATE WITH THE DIAGNOSTIC SCAN TOOL

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

NOTICE

Use the correct probe adapter(s) when making measurements. Failure to use the correct probe adapter(s) may cause damage to the connector.

NOTE

Workshop Manual diagnostics for another module not communicating with the PSCM (power steering control module) must be carried out prior to entering this test. REFER to Section 100-00 for an index of all DTC (diagnostic trouble code) charts and follow the diagnostics for the DTCs present.

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) Invalid or Missing Controller Area Network (CAN) Data .

PINPOINT TEST B : PSCM (POWER STEERING CONTROL MODULE) DTC (DIAGNOSTIC TROUBLE CODE) U3000:96 CONTROL MODULE: COMPONENT INTERNAL FAILURE

Normal Operation and Fault Conditions

Pinpoint Test Applicability

- This test applies to PSCM (power steering control module) DTC (diagnostic trouble code) U3000:96 ONLY. This test 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

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) U3000:42, U3000:49, or U3000:61 is present and provide diagnostics if DTC (diagnostic trouble code) U3000:42, U3000:49, or U3000:61 is currently present and active in the PSCM (power steering control module) .

Diagnostic Aids

- For DTC (diagnostic trouble code) U3000:42, steering assist is not affected and there is no warning in the message center. The PSCM (power steering control module) may transmit an invalid steering angle message over the HS-CAN (high-speed controller area network) .
- For DTC (diagnostic trouble code) U3000:49, during the ignition cycle the DTC (diagnostic trouble code) initially sets, the PSCM (power steering control module) 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 the **STEERING ASSIST FAULT SERVICE REQUIRED** in the message center.
- During the next ignition cycle after the DTC (diagnostic trouble code) sets, If the PSCM (power steering control module) is not already in manual mode 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

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), then ADDRESS the cause of the damaged boot(s) before returning the vehicle to the customer.

DTC Fault Trigger Conditions

DTC (diagnostic trouble code)	Description	Fault Trigger Condition

NOTE

Customers may report an intermittent power steering concern that may not replicate during a test drive session. TSB (Technical Service Bulletin) , SSM (special service message) or Diagnostic Trouble Codes (DTCs) may exist indicating the likely root cause. Retrieve all Diagnostic Trouble Codes (DTCs) for the vehicle, as well as TSB (Technical Service Bulletin) , SSM (special service message) .

Normal Operation and Fault Conditions

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

DTC Diagnostic Strategy

- If lost communication or voltage Diagnostic Trouble Codes (DTCs) exist in the PSCM (power steering control module) or other vehicle modules, possible source can be fuse(s) or wiring, terminals, or connectors
- If Diagnostic Trouble Codes (DTCs) other than lost communication or voltage exist in the PSCM (power steering control module) or other vehicle modules, the possible source can be an internal fault in the PSCM (power steering control module) or other vehicle modules.
- If no Diagnostic Trouble Codes (DTCs) are present in the PSCM (power steering control module) or other vehicle modules, the concern could be addressed by a service article such as a TSB (Technical Service Bulletin) , GSB (General Service Bulletin) , SSM (special service message) , or FSA (Field Service Action) .

Possible Sources

- Fuse(s)
- Wiring, terminals or connectors
- PSCM (power steering control module) internal fault
- Internal fault in other module(s) on the CAN (controller area network)

D1 CHECK THE DIAGNOSTIC TROUBLE CODES (DTCS) FROM ALL MODULES

- Ignition ON.
- Using a diagnostic scan tool, retrieve the Continuous Memory Diagnostic Trouble Codes (CMDTCs) from all modules.

Are Diagnostic Trouble Codes (DTCs) present in the PSCM (power steering control module) or any other modules?

DTC (diagnostic trouble code)	Description	Fault Trigger Condition
PSCM (power steering control module) C1110:56	Power steering Calibration Data: Invalid/Incompatible Configuration	When the PSCM (power steering control module) is initialized (ignition ON), the calibration data is checked against the current ECU (electronic control unit) software version. If the calibration data does not match the software version, this DTC (diagnostic trouble code) is set.

Possible Sources

- PSCM (power steering control module) not configured
- PSCM (power steering control module) configuration not complete

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 F : PSCM (POWER STEERING CONTROL MODULE) DTC (DIAGNOSTIC TROUBLE CODE) U2300:55 OR U2300:56 CENTRAL CONFIGURATION

Normal Operation and Fault Conditions

Description

- When a new EPAS (electronic power assist steering) gear is installed, the PSCM (power steering control module) is blank and must be configured with the vehicle information. Configuration is checked during initial PSCM (power steering control module) power up (ignition ON) with the voltage supply to the PSCM (power steering control module) greater than 6 volts.

Pinpoint Test Applicability

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 G : EXCESSIVE STEERING WHEEL PLAY

Normal Operation and Fault Conditions

Description

- Excessive steering wheel free play is a condition in which there is too much steering wheel movement before the front wheels move. The EPAS (electronic power assist steering) system is designed to compensate for some steering wheel free play, however a small amount of steering wheel free play is considered normal.

Pinpoint Test Applicability

- This test applies to the following diagnostic concerns:
- Excessive steering wheel play

This test DOES NOT apply to noise, binding, sticking, returnability, drift, pull, or wander.

Symptom Definition

- Excessive steering wheel play is a condition in which there is too much steering wheel rotation before the front wheels turn, such that a driver can feel they do not clearly understand where the front wheel position is.

Pinpoint Test Purpose

- This pinpoint evaluates the steering wheel, steering column, tie rod, and steering gear mounting joint conditions.

NOTE

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), then ADDRESS the cause of the damaged boot(s) before returning the vehicle to the customer.

Possible Sources

- Steering column shaft U-joints
- Loose, damaged or worn inner or outer tie rods
- Steering gear internal failure

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), then ADDRESS the cause of the damaged boot(s) before returning the vehicle to the customer.

Possible Sources

- Alignment
- Tire(s)
- Steering gear mounts
- Steering column shaft U-joints
- Steering column
- Suspension components
- Steering gear

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) Pulls/Drifts .

PINPOINT TEST I : POOR RETURNABILITY, STICKY STEERING, OR BINDING

Normal Operation and Fault Conditions

Description

- Before continuing with the diagnostic procedures, compare the vehicle steering feel/returnability with a like vehicle and confirm there is a concern present. If the feel or returnability matches the comparison vehicle there is no fault. If the feel or returnability does not match the comparison vehicle continue with the diagnosis.

Pinpoint Test Applicability

- This test applies concerns with binding steering, sticky steering or returnability only.

This test DOES NOT apply to noise, wander, drift, pull, off-center, or steering wheel play concerns.

Symptom Definition