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2004 FORD Freestyle OEM Service and Repair Workshop Manual

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adapter(s) may cause damage to the connector.

Pinpoint Test Steps available in the on-line Workshop Manual.

**PINPOINT TEST BU : PSCM (POWER STEERING CONTROL MODULE) DTC (DIAGNOSTIC TROUBLE CODE)
U0422:00 INVALID DATA RECEIVED FROM BODY CONTROL MODULE**

NOTE

DTC (diagnostic trouble code) U0422:00 indicates a power mode message concern. The module reporting this DTC (diagnostic trouble code) is not the problem module. Do not install a new EPAS (electronic power assist steering) assembly if this DTC (diagnostic trouble code) is set.

Refer to Wiring Diagrams Cell 43 for 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 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.

Diagnostic Aids

- For additional information on the messages sent to the PSCM (power steering control module) from the BCM (body control module) module, refer to the Network Message List in Section 211-02 of the workshop manual.
- DTC (diagnostic trouble code) U0422:00 indicates a power mode message concern. The module reporting this DTC (diagnostic trouble code) is not the problem module. Do not install a new EPAS (electronic power assist steering) assembly if this DTC (diagnostic trouble code) is set.

DTC Fault Trigger Conditions

DTC (diagnostic trouble code)	Description	Fault Trigger Condition
PSCM (power steering control module) U0422:00	Invalid Data Received From Body Control Module: No Sub Type Information	This DTC (diagnostic trouble code) is set if the PSCM (power steering control module) receives an "fault" or "unknown" message from the BCM (body control module) instead of valid information.

new PSCM (power steering control module) as part of the repair for PSCM (power steering control module) DTC (diagnostic trouble code) U0423:00.

DTC Fault Trigger Conditions

DTC (diagnostic trouble code)	Description	Fault Trigger Condition
PSCM (power steering control module) U0423:00	Invalid Data Received from Instrument Panel Cluster Control Module: No Sub Type Information	This DTC (diagnostic trouble code) is set if the PSCM (power steering control module) receives an "fault" or "unknown" message from the IPC (instrument panel cluster) instead of valid sensor information.

Possible Sources

- HS-CAN (high-speed controller area network) concern
- One or more steering components installed incorrectly
- IPC (instrument panel cluster) concern

Visual Inspection and Pre-checks

- This DTC (diagnostic trouble code) sets when the PSCM (power steering control module) does not receive the IPC (instrument panel cluster) messages within a certain time frame. This can occur if the IPC (instrument panel cluster) wiring harness or electrical connectors are loose or damaged, or if the vehicle battery state of charge levels are low. Consult the DTC (diagnostic trouble code) Index for additional information if needed.
- Refer to Steering GSB (General Service Bulletin) for additional connector and wiring inspection tips.

Pinpoint Test Steps available in the on-line Workshop Manual.

PINPOINT TEST BX : PSCM (POWER STEERING CONTROL MODULE) DTC (DIAGNOSTIC TROUBLE CODE) U0452:00 INVALID DATA RECEIVED FROM RESTRAINTS CONTROL MODULE

NOTE

DTC (diagnostic trouble code) U0452:00 indicates a power mode message concern. The module reporting this DTC (diagnostic trouble code) is not the problem module.

Refer to Wiring Diagrams Cell 43 for 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 HS-CAN (high-speed controller area network) 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.

Pinpoint Test Applicability

- This test applies to PSCM (power steering control module) DTC (diagnostic trouble code) U053C Invalid Data Received from the IPMB (image processing module B) 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

- For additional information on the messages sent to the PSCM (power steering control module) from the IPMB (image processing module B) module, refer to the Network Message List in Section 211-02 of the workshop manual.
- DTC (diagnostic trouble code) U053C:00 indicates a concern with the lane information sent from the IPMB (image processing module B) . 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) U053C:00.
- The presence of DTC (diagnostic trouble code) U053C:00 may prevent the trailer backup optional feature from activating. If the DTC (diagnostic trouble code) sets during an backup event, the event may be terminated and the feature may be deactivated.

DTC Fault Trigger Conditions

DTC (diagnostic trouble code)	Description	Fault Trigger Condition
PSCM (power steering control module) U053C:00	Invalid Data Received From Image Processing Module B: No Sub Type Information	This DTC (diagnostic trouble code) is set if the PSCM (power steering control module) receives an "fault" or "unknown" message from the IPMB (image processing module B) instead of valid information.

- For additional information on the messages sent to the PSCM (power steering control module) from the VDM (vehicle dynamics control module) module, refer to the Network Message List in Section 211-02 of the workshop manual.
- DTC (diagnostic trouble code) U0416:00 indicates a concern with the VDM (vehicle dynamics control module) . 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) U0416:00.

DTC Fault Trigger Conditions

DTC (diagnostic trouble code)	Description	Fault Trigger Condition
PSCM (power steering control module) U0416:00	Invalid Data Received From Vehicle Dynamics Control Module: No Sub Type Information	This DTC (diagnostic trouble code) is set if the PSCM (power steering control module) receives an "fault" or "unknown" message from the VDM (vehicle dynamics control module) instead of valid sensor information.

Possible Sources

- HS-CAN (high-speed controller area network) concern
- One or more steering components installed incorrectly
- VDM (vehicle dynamics control module) concern

Visual Inspection and Pre-checks

- This DTC (diagnostic trouble code) sets when the PSCM (power steering control module) does not receive the VDM (vehicle dynamics control module) messages within a certain time frame. This can occur if the VDM (vehicle dynamics control module) wiring harness or electrical connectors are loose or damaged, or if the vehicle battery state of charge levels are low. Consult the DTC (diagnostic trouble code) Index for additional information if needed.
- Refer to Steering GSB (General Service Bulletin) for additional connector and wiring inspection tips.

Pinpoint Test Steps available in the on-line Workshop Manual.

PINPOINT TEST CD : PSCM (POWER STEERING CONTROL MODULE) DTC (DIAGNOSTIC TROUBLE CODE) U0554:00 INVALID DATA RECEIVED FROM THE ACCESSORY PROTOCOL INTERFACE MODULE

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

Possible Sources

- HS-CAN (high-speed controller area network) concern
- APIM (SYNC module)
- This DTC (diagnostic trouble code) sets when the PSCM (power steering control module) does not receive the APIM (SYNC module) messages within a certain time frame. This can occur if the APIM (SYNC module) wiring harness or electrical connectors are loose or damaged, or if the vehicle battery state of charge levels are low. Consult the DTC (diagnostic trouble code) Index for additional information if needed.

Pinpoint Test Steps available in the on-line Workshop Manual.

PINPOINT TEST BM : PSCM (POWER STEERING CONTROL MODULE) DTC (DIAGNOSTIC TROUBLE CODE) U0553:00 INVALID DATA RECEIVED FROM THE LIGHTING CONTROL MODULE - REAR

Refer to Wiring Diagrams Cell 43 for 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 HS-CAN (high-speed controller area network) 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.

Pinpoint Test Applicability

- This test applies to PSCM (power steering control module) DTC (diagnostic trouble code) U0553 Invalid Data Received from the LCM (lighting control module) - Rear 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

cycled and may not be present at the time of diagnosis or may not clear until the condition is repaired.

- This message appears if a condition exists (high friction for example) putting extra load on the EPAS (electronic power assist steering) gear. Steering assist remains for the current ignition cycle. If the ignition is turned OFF and then back ON, STEERING FAULT SERVICE NOW appears in the message center and steering assist is removed until the condition is repaired.

Refer to Wiring Diagrams Cell 43 for 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).

Possible Sources

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Diagnostic steps are not provided for this symptom or DTC. REFER to: Diagnostic Methods (100-00 General Information, Description and Operation).

PINPOINT TEST BO : MESSAGE CENTER DISPLAYS STEERING ASSIST FAULT SERVICE REQUIRED

NOTE

- This message appears when a condition has been detected in the EPAS (electronic power assist steering) system requiring the PSCM (power steering control module) to disable the system (remove assist) to help prevent the system from sustaining any possible damage. This message (and related symptom) may be cleared when the ignition key is cycled and may not be present at the time of diagnosis.
- This message appears if a condition exists has been detected in the EPAS (electronic power assist steering) system requiring the PSCM (power steering control module) to immediately reduce steering assist, gradually reduce assist or disable assist completely to help prevent the system from sustaining any possible damage. This message (and related symptom) may be cleared when the ignition key is cycled and may not be present at the time of diagnosis.

Refer to Wiring Diagrams Cell 43 for 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).

Possible Sources

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- This test applies to PSCM (power steering control module) DTC (diagnostic trouble code) U3008:1B Control Module Ground "A": Circuit Resistance Above Threshold 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

- This test verifies the PSCM (power steering control module) wiring harness ground connections are OK.

DTC Fault Trigger Conditions

DTC (diagnostic trouble code)	Description	Fault Trigger Condition
PSCM (power steering control module) U3008:1B	Control Module Ground 'A': Circuit Resistance Above Threshold	If the return current to the battery from PSCM (power steering control module) connector A and B is different by more than 50A and the return current on connector A is less than connector B, DTC (diagnostic trouble code) U3008:1B is set.

Possible Sources

- Wiring, terminals or connectors

Pinpoint Test Steps available in the on-line Workshop Manual.

PINPOINT TEST CT : PSCM DTC U3009:1B CONTROL MODULE GROUND "B": CIRCUIT RESISTANCE ABOVE THRESHOLD

NOTE

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

Normal Operation and Fault Conditions

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

Steering Gear - Electric

211-02 Power Steering	2022 F-150
Removal and Installation	Procedure revision date: 02/28/2022

Steering Gear - Electric

Removal

NOTICE

Disconnect the battery ground cable anytime the steering linkage is being serviced or damage to the steering gear may occur resulting in steering gear replacement. Disconnect the battery ground cable anytime the steering linkage is being serviced or damage to the steering gear may occur resulting in steering gear replacement.

1. If installing a new steering gear, connect the scan tool and upload the module configuration information from the PSCM (power steering control module) .

Refer to: [Module Configuration - Electric - System Operation and Component Description](#)(418-01A Module Configuration, Description and Operation).

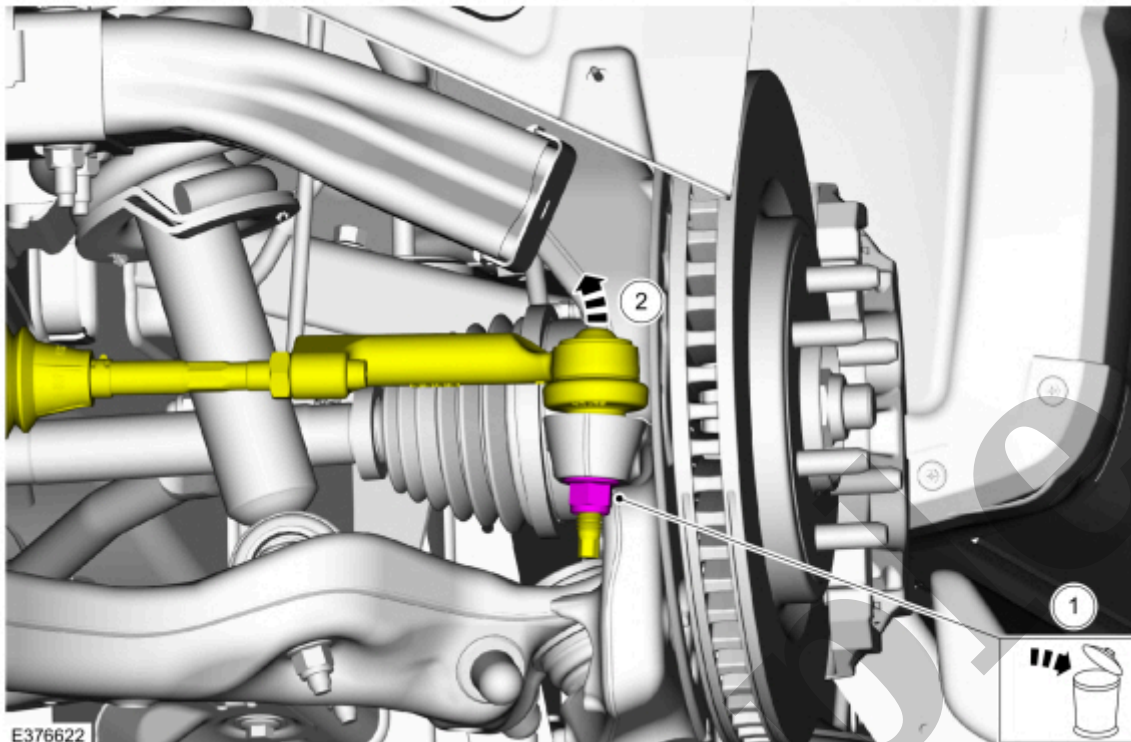
2. Disconnect the battery ground cable.

Refer to: [Battery Disconnect and Connect - Electric](#)(414-01 Battery, Mounting and Cables, General Procedures).

3. Using a holding device, hold the steering wheel in the straight-ahead position.

Separate the tie rod end from the wheel knuckle.

Use the General Equipment: Tie Rod End Remover



[Click here to learn about symbols, color coding, and icons used in this manual.](#)

6. Remove the engine front undershield.

Refer to: [Engine Front Undershield - Electric](#)(501-02 Front End Body Panels, Removal and Installation).

7. Remove the engine rear undershield.

Refer to: [Engine Rear Undershield - Electric](#)(501-02 Front End Body Panels, Removal and Installation).

8. Remove the under hood storage compartment.

Refer to: [Underhood Storage Compartment - Electric](#)(501-02 Front End Body Panels, Removal and Installation).

9. **WARNING**

Do not reuse steering column shaft bolts. This may result in fastener failure and steering column shaft detachment or loss of steering control. Failure to follow this instruction may result in serious injury to vehicle occupant(s).

Separate the steering column shaft U-joint from the steering gear.