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2008 FORD Fusion European OEM Service and Repair Workshop Manual

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Are any Diagnostic Trouble Codes (DTCs) present and active in the SECM (steering effort control module) ?

Yes	DIAGNOSE all SECM (steering effort control module) Diagnostic Trouble Codes (DTCs). GO to the DTC (diagnostic trouble code) Chart: SECM (steering effort control module) in this section.
No	GO to V2

V2 CHECK FOR AIRBAG DEPLOYMENT AND FUEL SHUT OFF ENGAGEMENT

- Verify if the vehicle has been in a recent collision which resulted in the deployment of the driver airbag or the engagement of the fuel system shut off.

Has the airbag been deployed or the fuel shut off engaged?

Yes	RESTORE the systems to their correct operation and INSTALL NEW or REPAIR any supplemental restraint system. REFER to: Airbag and Seatbelt Pretensioner Supplemental Restraint System (SRS) - System Operation and Component Description (501-20B Supplemental Restraint System, Description and Operation).
No	DIAGNOSE the yellow adaptive steering system warning indicator. REFER to: Instrument Panel Cluster (IPC) - System Operation and Component Description (413-01 Instrumentation, Message Center and Warning Chimes, Description and Operation).

PINPOINT TEST W : THE YELLOW ADAPTIVE STEERING SYSTEM WARNING INDICATOR FLASHES ONCE PER SECOND DURING START UP OR MESSAGE CENTER DISPLAYS ADAPTIVE STEERING INITIALIZATION

Normal Operation and Fault Conditions

During vehicle start up and adaptive steering system initialization, if the SECM (steering effort control module) detects a difference between steering wheel angle and the desired road wheel angle, the module adjusts the steering wheel to correct for this difference. During the initialization process, the SECM (steering effort control module) sends a message to the instrument cluster to flash the yellow adaptive steering warning indicator and to display Adaptive Steering Initialization in the message center.

This adjustment is part of normal system operation and NO ACTION IS NEEDED. INFORM the customer the steering wheel should NOT be turned when the ignition is OFF.

Possible Sources

- Adaptive steering wheel angle sensor trim out of adjustment
- Adaptive steering system motor angle sensor trim out of adjustment
- Front toe out of adjustment
- Steering column
- SASM (steering angle sensor module) -clockspring assembly incorrectly installed

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

PINPOINT TEST Z : SECM STEERING TRACKING CONCERN

Normal Operation and Fault Conditions

With the ignition ON, the SECM (steering effort control module) monitors various inputs to detect if a fault is present.

The SECM (steering effort control module) is able to compensate for minor front toe suspension off-set, however, if the front toe is far enough out of adjustment, the system is unable to compensate and the suspension must be manually adjusted. Also, the diagnostic scan tool must be used when adjusting the front toe of a vehicle equipped with adaptive front steering.

DTC Fault Trigger Conditions

DTC (diagnostic trouble code)	Description	Fault Trigger Condition
SECM (steering effort control module) C100C:29	Steering Tracking: Signal Invalid	Sets when the SECM (steering effort control module) loses the adaptive steering motor angle and has not successfully relearned the correct angle.
SECM (steering effort control module) C100C:67	Steering Tracking: Signal Incorrect After Event	Sets when the clear vision angle has exceeded a predetermined threshold.
SECM (steering effort control module) C100C:68	Steering Tracking: Event Information	Sets when the SECM (steering effort control module) loses initialization and is forced to relearn. The customer may experience some steering wheel movement when starting the vehicle and the yellow adaptive steering warning indicator may flash, this is normal system behavior.

PINPOINT TEST AA : SECM STEERING ANGLE SENSOR CONCERN

Normal Operation and Fault Conditions

With the ignition ON, the SECM (steering effort control module) monitors various inputs to detect if a fault is present. The SECM (steering effort control module) contains a steering angle sensor which measures and monitors the SECM (steering effort control module) steering wheel outputs and inputs, and uses this information for adaptive steering operations.

DTC Fault Trigger Conditions

DTC (diagnostic trouble code)	Description	Fault Trigger Condition
SECM (steering effort control module) C1B00:81	Steering Angle Sensor: Invalid Serial Data Received	Sets when the SECM (steering effort control module) receives invalid data from the steering wheel angle quality factor or steering wheel angle integrity quality factor messages.
SECM (steering effort control module) C1B00:82	Steering Angle Sensor: Alive/Sequence Counter Incorrect/Not Updated	Sets when the SECM (steering effort control module) receives invalid data from the steering wheel angle message counter check or steering wheel angle integrity counter check messages.
SECM (steering effort control module) C1B00:83	Steering Angle Sensor: Value Of Signal Protection Calculation Incorrect	Sets when the SECM (steering effort control module) receives invalid data from the steering wheel angle checksum check or steering wheel angle integrity check messages.
SECM (steering effort control module) C1B00:87	Steering Angle Sensor: Missing Message	Sets when the SECM (steering effort control module) does not receive steering wheel angle messages from the SASM (steering angle sensor module) within a predetermined time frame.
SECM (steering effort control module) U2002:9F	Switch: Stuck Off	Sets when the SECM (steering effort control module) detects an internal failure of the SASM (steering angle sensor module) .

Possible Sources

- SASM (steering angle sensor module) - Clockspring assembly internal failure
- SECM (steering effort control module) internal failure

Chart in the Description and Operation in Section 211-02 of the Workshop Manual. **DTC Fault Trigger Conditions**

DTC (diagnostic trouble code)	Description	Fault Trigger Condition
SECM (steering effort control module) U0001:88	High Speed CAN Communication Bus: Bus Off	Sets when the SECM (steering effort control module) cannot send or receive any messages on the HS-CAN (high-speed controller area network) bus.

Possible Sources

- Network communication concern

Visual Inspection and Pre-checks

- A HS-CAN (high-speed controller area network) fault was present at a point in time. The fault is not currently present since the module is communicating with the diagnostic scan tool.
- Using a diagnostic scan tool, clear the SECM (steering effort control module) DTC (diagnostic trouble code) .
- Using a diagnostic scan tool, carry out the Network Test.
- VERIFY the integrity of the connectors and wiring. Refer to Wiring Diagrams Cell 14, for schematic and connector information.

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

PINPOINT TEST AC : INVALID DATA RECEIVED FROM FRONT CONTROLS INTERFACE MODULE

Normal Operation and Fault Conditions

With the ignition ON, the FCIM (front controls interface module) sends messages to the GWM (gateway module A) over the MS-CAN (medium speed-controller area network) . The GWM (gateway module A) relays these messages to the SECM (steering effort control module) over the HS-CAN2 (high-speed controller area network 2) and through the SASM (steering angle sensor module) . If the SECM (steering effort control module) does not receive these messages within a certain time frame, the SECM (steering effort control module) sets a DTC (diagnostic trouble code) . For information on the messages sent to the SECM (steering effort control module) by the FCIM (front controls interface module) , refer to the Network Message Chart in the Description and Operation in Section 211-02 of the Workshop Manual.

DTC Fault Trigger Conditions

DTC (diagnostic trouble code)	Description	Fault Trigger Condition

Is DTC (diagnostic trouble code) U0557:00 retrieved again?

Yes	GO to AC3

No	The system is operating correctly at this time. The DTC (diagnostic trouble code) may have been set due to high network traffic or an intermittent fault condition.

AC3 CHECK FOR SECM DTC U3003:16 AND U3003:17

- Review the results from the SECM (steering effort control module) self-test.

Is DTC (diagnostic trouble code) U3003:16 or U3003:17 present in the SECM (steering effort control module) ?

Yes	For DTC (diagnostic trouble code) U3003:16, GO to Pinpoint Test A For DTC (diagnostic trouble code) U3003:17, GO to Pinpoint Test B

No	GO to AC4

AC4 CHECK FOR DTCS IN THE SASM

- Using a diagnostic scan tool, carry out the SASM (steering angle sensor module) self-test.

Are any Diagnostic Trouble Codes (DTCs) present in the SASM (steering angle sensor module) ?

Yes	DIAGNOSE all SASM (steering angle sensor module) Diagnostic Trouble Codes (DTCs). REFER to: Anti-Lock Brake System (ABS) and Stability Control (206-09 Anti-Lock Brake System (ABS) and Stability Control, Diagnosis and Testing).

No	GO to AC5

AC5 CHECK FOR DTCS IN THE FCIM

- Using a diagnostic scan tool, carry out the FCIM (front controls interface module) self-test.

Are any Diagnostic Trouble Codes (DTCs) present in the FCIM (front controls interface module) ?

- Using a diagnostic scan tool, clear the SECM (steering effort control module) Diagnostic Trouble Codes (DTCs).
- Using a diagnostic scan tool, retrieve and record all Diagnostic Trouble Codes (DTCs) from all modules.

Is DTC U0557:xx present in 1 or more modules in addition to the SECM (steering effort control module) ?

Yes	GO to AC8

No	GO to AC9

AC8 VERIFY FCIM OPERATION

- Ignition OFF.
- Disconnect all SECM (steering effort control module) electrical connectors.
- Disconnect all FCIM (front controls interface module) electrical connectors.
- Using a good light source, inspect all disconnected electrical connectors for the following:
  - corrosion - install new connector or terminal and clean the module pins
  - damaged or bent pins - install new terminals or pins
  - pushed-out pins - install new pins as necessary
  - spread terminals - install new terminals as necessary
- Connect all SECM (steering effort control module) electrical connectors. Make sure the connectors seat and latch correctly.
- Connect all FCIM (front controls interface module) electrical connectors. Make sure the connectors seat and latch correctly.
- Operate the system and verify the concern is still present.

Is the concern still present?

Yes	CHECK OASIS (Online Automotive Service Information System) for any service articles: TSB (Technical Service Bulletin) , GSB (General Service Bulletin) , SSM (special service message) or FSA (Field Service Action) . If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions If no service articles address this concern, INSTALL a new FCIM (front controls interface module) . REFER to: Heating, Ventilation and Air Conditioning (HVAC) Control Module (412-00 Climate Control System - General Information, Removal and Installation).

Power Steering

211-02 Power Steering	***2022 F-150***
Diagnosis and Testing	***Procedure revision date: 11/16/2022***

Power Steering

Diagnostic Trouble Code (DTC) Chart

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

REFER to: Diagnostic Methods

(100-00 General Information, Description and Operation).

Diagnostic Trouble Code Chart

Module	DTC (diagnostic trouble code)	Description	Action
PSCM (power steering control module)	B1D23:4B	Overheat Sensor: Over Temperature	GO to Pinpoint Test BB
PSCM (power steering control module)	C102D:00	High Friction Inside Power Steering: No Sub Type Information	GO to Pinpoint Test K
PSCM (power steering control module)	C1110:56	Power steering Calibration Data: Invalid/Incompatible Configuration	GO to Pinpoint Test E

PSCM (power steering control module)	U0121:00	Lost Communication With Anti-lock Brake System (ABS) Control Module: No Sub Type Information	GO to Pinpoint Test AB
PSCM (power steering control module)	U0122:00	Lost Communication with Vehicle Dynamics Control Module: No Sub Type Information	GO to Pinpoint Test CG
PSCM (power steering control module)	U0126:00	Lost Communication with Steering Angle Sensor Module: No Sub Type Information	GO to Pinpoint Test AY
PSCM (power steering control module)	U0137:00	Lost Communication with Trailer Brake Control Module: No Sub Type Information	GO to Pinpoint Test CK
PSCM (power steering control module)	U0140:00	Lost Communication with Body Control Module: No Sub Type Information	GO to Pinpoint Test AL
PSCM (power steering control module)	U0146:00	Lost Communication With Serial Data Gateway "A": No Sub Type Information	GO to Pinpoint Test AM
PSCM (power steering control module)	U0151:00	Lost Communication With Restraints Control Module: No Sub Type Information	GO to Pinpoint Test AN
PSCM (power steering control module)	U0155:00	Lost Communication with Instrument Panel Cluster (IPC) Control Module: No Sub Type Information	GO to Pinpoint Test AO
PSCM (power steering control module)	U0159:00	Lost Communication with Parking Assist Control Module "A": No Sub Type Information	GO to Pinpoint Test AP
PSCM (power steering control module)	U0212:00	Lost Communication with Steering Column Control Module: No Sub Type Information	GO to Pinpoint Test AQ

PSCM (power steering control module)	U0422:00	Invalid Data Received From Body Control Module: No Sub Type Information	GO to Pinpoint Test BU
PSCM (power steering control module)	U0423:00	Invalid Data Received from Instrument Panel Cluster Control Module: No Sub Type Information	GO to Pinpoint Test BW
PSCM (power steering control module)	U0428:00	Invalid Data Received from the Steering Angle Sensor Module: No Sub Type Information	GO to Pinpoint Test BV
PSCM (power steering control module)	U0452:00	Invalid Data Received From Restraints Control Module: No Sub Type Information	GO to Pinpoint Test BX
PSCM (power steering control module)	U045A:00	Invalid Data Received from the Parking Assist Control Module: No Sub Type Information	GO to Pinpoint Test AW
PSCM (power steering control module)	U053B:00	Invalid Data Received From Image Processing Module A: No Sub Type Information	GO to Pinpoint Test AX
PSCM (power steering control module)	U053C:00	Invalid Data Received From Image Processing Module B: No Sub Type Information	GO to Pinpoint Test BY
PSCM (power steering control module)	U0553:00	Invalid Data Received From The Lighting Control Module - Rear: No Sub Type Information	GO to Pinpoint Test BM
PSCM (power steering control module)	U0554:00	Invalid Data Received From The Accessory Protocol Interface Module: No Sub Type Information	GO to Pinpoint Test CD
PSCM (power steering control module)	U0557:00	Invalid Data Received From Front Controls Interface Module "A": No Sub Type Information	GO to Pinpoint Test CM