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2007 FORD Focus 3 Doors OEM Service and Repair Workshop Manual

Go to manual page

	Diagnostic Trouble Codes (DTCs), Refer to the appropriate section in Group 303for the procedure.

No	GO to W2

W2 RECHECK THE VDM (VEHICLE DYNAMICS CONTROL MODULE) DIAGNOSTIC TROUBLE CODES (DTCS)

- Ignition ON.
- Using a diagnostic scan tool, clear the VDM (vehicle dynamics control module) Diagnostic Trouble Codes (DTCs).
- Carry out the VDM (vehicle dynamics control module) self-test.

Is DTC (diagnostic trouble code) U0401:00 still present?

Yes	CHECK OASIS (Online Automotive Service Information System) for any applicable 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 exist for this concern, INSTALL a new PCM (powertrain control module) module. Refer to section 303-14.

No	The system is operating correctly at this time. The concern may have been caused by an intermittent condition.

PINPOINT TEST X : U0415:00

Normal Operation and Fault Conditions

With the Ignition ON, the ABS (anti-lock brake system) sends messages over the FD-CAN (Flexible Data Rate Controller Area Network) . If the VDM (vehicle dynamics control module) does not receive valid data from these messages within a certain time frame, the VDM (vehicle dynamics control module) sets Diagnostic Trouble Codes (DTCs). After setting the DTC (diagnostic trouble code) the VDM (vehicle dynamics control module) deactivates the dynamic suspension system resulting in a firm/harsh suspension feel but will not cause the IPC (instrument panel cluster) to display a dynamic suspension system warning message. REFER to: Vehicle Dynamic Suspension (204-05 Vehicle Dynamic Suspension) .

DTC Fault Trigger Conditions

Yes	CHECK OASIS (Online Automotive Service Information System) for any applicable 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 exist for this concern, INSTALL a new ABS (anti-lock brake system) module. REFER to: Electric Brake Booster (EBB) (206-09 Anti-Lock Brake System (ABS) and Stability Control, Removal and Installation).

No	The system is operating correctly at this time. The concern may have been caused by an intermittent condition.

PINPOINT TEST Y : U0415:08

Refer to Wiring Diagrams Cell 42for schematic and connector information.

Normal Operation and Fault Conditions

With the ignition ON, the ABS (anti-lock brake system) module sends messages to the VDM (vehicle dynamics control module) over the FD-CAN (Flexible Data Rate Controller Area Network) . If the VDM (vehicle dynamics control module) does not receive valid data from these messages within a certain time frame, the module sets Diagnostic Trouble Codes (DTCs). The VDM (vehicle dynamics control module) will NOT deactivate the dynamic suspension system.REFER to: Vehicle Dynamic Suspension (204-05 Vehicle Dynamic Suspension) .

DTC Fault Trigger Conditions

DTC (diagnostic trouble code)	Description	Fault Trigger Condition
VDM (vehicle dynamics control module) U0415:08	Invalid Data Received from Anti-Lock Brake System (ABS) Control Module 'A': Bus Signal/Message Failures	This DTC (diagnostic trouble code) sets in continuous memory if the VDM (vehicle dynamics control module) receives invalid network data for any one of the following messages: vehicle speed and vehicle yaw rate for more than 5 seconds. This can be due to a ABS (anti-lock brake system) module failure, a circuit failure on the ABS (anti-lock brake system) module or an excessive load on the network.

- Using a diagnostic scan tool, carry out the VDM (vehicle dynamics control module) self-test.
- Clear the Diagnostic Trouble Codes (DTCs).
- Ignition OFF.
- Open and Close drivers door.
- Wait 2 1/2 minutes.
- Ignition ON.
- Using a diagnostic scan tool, carry out the VDM (vehicle dynamics control module) self-test.
- Record the VDM (vehicle dynamics control module) Diagnostic Trouble Codes (DTCs).

Is DTC (diagnostic trouble code) U0415:08 retrieved again?

Yes	GO to Y3

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

Y3 REVIEW THE RECORDED DIAGNOSTIC TROUBLE CODES (DTCS) FROM THE VDM (VEHICLE DYNAMICS CONTROL MODULE) SELF-TEST

- Check the recorded Diagnostic Trouble Codes (DTCs) from the VDM (vehicle dynamics control module) self-test.

Is DTC (diagnostic trouble code) U3003:16 or U3003:17 present in the VDM (vehicle dynamics control module) ?

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

No	GO to Y4

Y4 CHECK FOR DIAGNOSTIC TROUBLE CODES (DTCS) IN THE ABS (ANTI-LOCK BRAKE SYSTEM) MODULE

- Using a diagnostic scan tool, carry out the ABS (anti-lock brake system) module self-test.

Is DTC (diagnostic trouble code) U3003:16 or U3003:17 present in the ABS (anti-lock brake system) module?

Yes	DIAGNOSE the ABS (anti-lock brake system) module Diagnostic Trouble Codes (DTCs).

- 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

Are the connectors free of corrosion, damaged pins, bent pins, pushed-out pins and spread terminals?

Yes	GO to Y7

No	REPAIR the connector or terminals. Refer to Wiring Diagrams Cell 5for schematic and connector information.

Y7 CHECK FOR CORRECT VDM (VEHICLE DYNAMICS CONTROL MODULE) OPERATION

- Connect all ABS (anti-lock brake system) connectors. Make sure they seat and latch correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	CHECK OASIS (Online Automotive Service Information System) for any applicable 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 exist for this concern, INSTALL a new ABS (anti-lock brake system) module. REFER to: Electric Brake Booster (EBB) (206-09 Anti-Lock Brake System (ABS) and Stability Control, Removal and Installation).

No	The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector. ADDRESS the root cause of any connector or pin issues.

PINPOINT TEST Z : U0420:00

Normal Operation and Fault Conditions

With the ignition ON, the PSCM (power steering control module) module sends messages to the VDM (vehicle dynamics control module) over the FD-CAN (Flexible Data Rate Controller Area Network) . If the

Is DTC (diagnostic trouble code) U0420:00 still present?

Yes	CHECK OASIS (Online Automotive Service Information System) for any applicable 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 exist for this concern, INSTALL a new PSCM (power steering control module) module. REFER to: Steering Gear (211-02 Power Steering, Removal and Installation).
No	The system is operating correctly at this time. The concern may have been caused by an intermittent condition.

PINPOINT TEST AA : U0422:00

Normal Operation and Fault Conditions

With the ignition ON, the BCM (body control module) module sends messages to the GWM (gateway module A) over the HS-CAN1 (high-speed controller area network 1) . The GWM (gateway module A) sends these messages to the VDM (vehicle dynamics control module) over the FD-CAN (Flexible Data Rate Controller Area Network) . If the VDM (vehicle dynamics control module) does not receive valid data from these messages within a certain time frame, the module sets Diagnostic Trouble Codes (DTCs). The VDM (vehicle dynamics control module) will deactivate the dynamic suspension system but will NOT cause the IPC (instrument panel cluster) to display a warning message for the dynamic suspension system. REFER to: Vehicle Dynamic Suspension (204-05 Vehicle Dynamic Suspension) .

DTC Fault Trigger Conditions

DTC (diagnostic trouble code)	Description	Fault Trigger Condition
VDM (vehicle dynamics control module) U0422:00	Invalid Data Received From Body Control Module: No Sub Type Information	Sets in continuous memory when the VDM (vehicle dynamics control module) receives invalid network data for any one of the following messages: ignition status from the BCM (body control module) for more than 5 seconds.

Possible Sources

PINPOINT TEST AB : U0452:00

Normal Operation and Fault Conditions

With the ignition ON, the RCM (restraints control module) module sends messages to the VDM (vehicle dynamics control module) over the HS-CAN2 (high-speed controller area network 2) . If the VDM (vehicle dynamics control module) does not receive valid data from these messages within a certain time frame, the module sets Diagnostic Trouble Codes (DTCs). The VDM (vehicle dynamics control module) will deactivate the dynamic suspension system but will NOT cause the IPC (instrument panel cluster) to display a warning message for the dynamic suspension system. REFER to: Vehicle Dynamic Suspension (204-05 Vehicle Dynamic Suspension) .

DTC Fault Trigger Conditions

DTC (diagnostic trouble code)	Description	Fault Trigger Condition
VDM (vehicle dynamics control module) U0452:00	Invalid Data Received From Restraints Control Module: No Sub Type Information	Sets in continuous memory when the VDM (vehicle dynamics control module) receives invalid network data for any one of the following messages: vehicle lateral acceleration, vehicle longitudinal acceleration, vehicle vertical acceleration or vehicle roll rate from the RCM (restraints control module) for more than 5 seconds.

Possible Sources

- Network communication concern
- RCM (restraints control module) concern

AB1 CHECK THE RCM (RESTRAINTS CONTROL MODULE) DIAGNOSTIC TROUBLE CODES (DTCS)

- Ignition ON.
- Using a diagnostic scan tool, check the RCM (restraints control module) Diagnostic Trouble Codes (DTCs).

Are any Diagnostic Trouble Codes (DTCs) present in the RCM (restraints control module) ?

Yes	DIAGNOSE the RCM (restraints control module) Diagnostic Trouble Codes (DTCs). REFER to: Airbag Supplemental Restraint System (SRS) (501-20B Supplemental Restraint System, Diagnosis and Testing).

Possible Sources

- On Board Scales Calibration Routine not completed
- VDM (vehicle dynamics control module) configuration
- VDM (vehicle dynamics control module)

AC1 CHECK FOR OTHER VDM (VEHICLE DYNAMICS CONTROL MODULE) DIAGNOSTIC TROUBLE CODES (DTCS)

- Ignition ON.
- Using a diagnostic scan tool, check the VDM (vehicle dynamics control module) Diagnostic Trouble Codes (DTCs).

Are any Diagnostic Trouble Codes (DTCs) other than U3000:54 present in the VDM (vehicle dynamics control module) ?

Yes	DIAGNOSE all other VDM (vehicle dynamics control module) Diagnostic Trouble Codes (DTCs) before continuing this test. REFER to the VDM (vehicle dynamics control module) DTC (diagnostic trouble code) Chart in this section.

No	GO to AC2

AC2 RECHECK THE VDM (VEHICLE DYNAMICS CONTROL MODULE) DIAGNOSTIC TROUBLE CODES (DTCS)

- Ignition ON.
- Using a diagnostic scan tool, carry out the VDM (vehicle dynamics control module) On Board Scales Calibration Routine.
- Using a diagnostic scan tool, clear the VDM (vehicle dynamics control module) Diagnostic Trouble Codes (DTCs).
- Using a diagnostic scan tool, check the VDM (vehicle dynamics control module) Diagnostic Trouble Codes (DTCs).

Is DTC (diagnostic trouble code) U3000:54 still present?

Yes	INSTALL a new VDM (vehicle dynamics control module) . REFER to: Vehicle Dynamics Control Module (VDM) (204-05 Vehicle Dynamic Suspension, Removal and Installation).

No	The system is operating correctly at this time. The concern may have been caused by an

No	GO to AD2

AD2 RECHECK THE VDM (VEHICLE DYNAMICS CONTROL MODULE) DIAGNOSTIC TROUBLE CODES (DTCS)

- Ignition ON.
- Using a diagnostic scan tool, clear the VDM (vehicle dynamics control module) Diagnostic Trouble Codes (DTCs).
- Using the scan tool, carry out the VDM (vehicle dynamics control module) sel-test.

Is DTC (diagnostic trouble code) U1000:00 or U3000:49 still present?

Yes	REFER to: Body Control Module C (BCMC)(419-10 Multifunction Electronic Modules, Diagnosis and Testing).
No	The system is operating correctly at this time. The concern may have been caused by an intermittent condition.

PINPOINT TEST AE : ON BOARD SCALE IS INOPERATIVE OR DOES NOT OPERATE CORRECTLY

Normal Operation and Fault Conditions

REFER to: Vehicle Dynamic Suspension (204-05 Vehicle Dynamic Suspension) .

Possible Sources

- Network communication concern
- VDM (vehicle dynamics control module)

AE1 CHECK FOR VDM (VEHICLE DYNAMICS CONTROL MODULE) DIAGNOSTIC TROUBLE CODES (DTCS)

- Ignition ON.
- Using a diagnostic scan tool, check the VDM (vehicle dynamics control module) Diagnostic Trouble Codes (DTCs).

Are any Diagnostic Trouble Codes (DTCs) other present in the VDM (vehicle dynamics control module) ?

Yes	DIAGNOSE all other VDM (vehicle dynamics control module) Diagnostic Trouble Codes (DTCs) before continuing this test. REFER to the VDM (vehicle dynamics control module) DTC (diagnostic trouble code) Chart in this section.

Front Suspension Height Sensor - Raptor

204-05 Vehicle Dynamic Suspension	***2022 F-150***
Removal and Installation	***Procedure revision date: 10/24/2022***

Front Suspension Height Sensor - Raptor

Removal

NOTE

Removal steps in this procedure may contain installation details.

1. Remove the wheel and tire.

   Refer to: Wheel and Tire(204-04A Wheels and Tires, Removal and Installation).

2. **NOTE**

   Note the position of the components before removal.

   NOTE

   LH (left-hand) height sensor assembly shown, RH (right-hand) similar.

   1. Disconnect the height sensor electrical connector.
   2. Remove the bolt and detach the height sensor arm from the upper control arm.

      Torque : 177 lb.in (20 Nm)

   3. Remove the height sensor bracket bolt and remove the height sensor.