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2009 FORD Fusion North American OEM Service and Repair Workshop Manual

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through the wheel speed sensors and their circuitry. REFER to: Anti-Lock Brake System (ABS) and Stability Control - System Operation and Component Description (206-09 Anti-Lock Brake System (ABS) and Stability Control, Description and Operation).

DTC Fault Trigger Conditions

DTC (diagnostic trouble code)	Description	Fault Trigger Condition
ABS (anti-lock brake system) C0037:01	Left Rear Wheel Speed Sensor: General Electrical Failure	Sets when the ABS (anti-lock brake system) module does not receive a signal from the wheel speed sensor.
ABS (anti-lock brake system) C003A:01	Right Rear Wheel Speed Sensor: General Electrical Failure	Sets when the ABS (anti-lock brake system) module does not receive a signal from the wheel speed sensor.
ABS (anti-lock brake system) C1A95:01	Wheel Speed Sensor: General Electrical Failure	Sets when the ABS (anti-lock brake system) module detects the following conditions on 1 or more wheel speed sensor circuits; open circuit, short to voltage, short to ground. Faults with multiple wheel speed sensors also causes this DTC (diagnostic trouble code) to set.

Possible Sources

- Wiring, terminals or connectors
- Wheel speed sensor
- EBB (electric brake booster) unit

Visual Inspection and Pre-checks

- Make sure the wheel speed sensor harness is routed correctly and is undamaged.
- Make sure the wheel speed sensor electrical connector is free from any corrosion or other contaminants.

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

PINPOINT TEST O : THE HILL START ASSIST FEATURE IS INOPERATIVE, CANNOT BE DISABLED OR ENABLED

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

Possible Sources

	(303-14D Electronic Engine Controls - 5.0L 32V Ti-VCT, Diagnosis and Testing).

No	GO to O3

O3 CHECK THE RCM (RESTRAINTS CONTROL MODULE) DIAGNOSTIC TROUBLE CODES (DTCS)

- Using a diagnostic scan tool, carry out the RCM (restraints control module) self-test.

Are there any Diagnostic Trouble Codes (DTCs) present?

Yes	REFER to: Airbag Supplemental Restraint System (SRS)(501-20B Supplemental Restraint System, Diagnosis and Testing).

No	GO to O4

O4 CHECK THE ABS (ANTI-LOCK BRAKE SYSTEM) MODULE DIAGNOSTIC TROUBLE CODES (DTCS)

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

Are there any Diagnostic Trouble Codes (DTCs) present?

Yes	Refer to the ABS (anti-lock brake system) module DTC (diagnostic trouble code) chart in this section.

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 P : B10DA:51

Normal Operation and Fault Conditions

The ABS (anti-lock brake system) module and BCM (body control module) share a secret code (target identifier) when the ignition is set to ON. This code is generated during the PATS (passive anti-theft system) programming procedure. If either a new BCM (body control module) or a new ABS (anti-lock brake system) module has been installed, the PATS (passive anti-theft system) programming procedure must be carried

ABS (anti-lock brake system) C0072:4B	Brake Temperature Too High: Over Temperature	Sets when the ABS (anti-lock brake system) module has determined the brake system is overheated. This is usually due to one or more brake calipers being partially applied (dragging).

Possible Sources

- Parking brake partially applied
- Brake caliper concern

Visual Inspection and Pre-checks

- Inspect all 4 wheel ends for issues causing brake drag and repair as necessary.

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

PINPOINT TEST R : ABS MODULE COMMUNICATION CONCERN WITH ADVANCED DRIVER ASSISTANCE SYSTEM (ADAS)

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

Normal Operation and Fault Conditions With the ignition ON, the Advanced Driver Assistance System (ADAS) sends messages to the ABS (anti-lock brake system) module over the FD-CAN (Flexible Data Rate Controller Area Network) . If the ABS (anti-lock brake system) module does not receive these messages within a certain time frame, the ABS (anti-lock brake system) module sets a DTC (diagnostic trouble code) . For information on the messages sent to the ABS (anti-lock brake system) module by the Advanced Driver Assistance System (ADAS), REFER to: Anti-Lock Brake System (ABS) and Stability Control - System Operation and Component Description (206-09 Anti-Lock Brake System (ABS) and Stability Control, Description and Operation).

DTC Fault Trigger Conditions

DTC (diagnostic trouble code)	Description	Fault Trigger Condition
ABS (anti-lock brake system) U2017:68	Control Module Software #2: Event Information	This DTC (diagnostic trouble code) sets when the collision deceleration message from the CCM (cruise control module) is sent too often or the duration of the message is too long. This is mostly likely caused by a network communication concern or an internal failure of the CCM (cruise control module) .

DTC Fault Trigger Conditions

DTC (diagnostic trouble code)	Description	Fault Trigger Condition
ABS (anti-lock brake system) U0137:00	Lost Communication With Trailer Brake Control Module: No Sub Type Information	Sets if the TBM (trailer brake control module) messages are missing.

Possible Sources

- Wiring, terminals or connectors
- Network communication concern
- TBM (trailer brake control module)
- EBB (electric brake booster) unit

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

PINPOINT TEST CL : ABS (ANTI-LOCK BRAKE SYSTEM) MODULE COMMUNICATION CONCERN WITH APIM (SYNC MODULE)

Refer to Wiring Diagrams Cell 14for schematic and connector information.
Normal Operation and Fault Conditions With the ignition ON, the APIM (SYNC module) sends messages to the GWM (gateway module A) over the HS-CAN3 (high-speed controller area network 3) , the GWM (gateway module A) relays these messages to the ABS (anti-lock brake system) module over the FD-CAN (Flexible Data Rate Controller Area Network) . If the ABS (anti-lock brake system) module does not receive these messages within the specified time frame, the ABS (anti-lock brake system) module sets Diagnostic Trouble Codes (DTCs). This can be due to a APIM (SYNC module) failure, a circuit failure on the CAN (controller area network) or an excessive load on the network. For information on the messages sent to the ABS (anti-lock brake system) module by the APIM (SYNC module) , REFER to: Anti-Lock Brake System (ABS) and Stability Control - System Operation and Component Description
(206-09 Anti-Lock Brake System (ABS) and Stability Control, Description and Operation).
DTC Fault Trigger Conditions

DTC (diagnostic trouble code)	Description	Fault Trigger Condition
ABS (anti-lock brake system) U0253:00	Lost Communication With Accessory Protocol Interface Module: No Sub Type Information	Sets if the APIM (SYNC module) messages are missing.

ABS (anti-lock brake system) C0047:64	Brake Booster Pressure Sensor: Signal Plausibility Failure	This DTC (diagnostic trouble code) sets when a pressure sensor reading that does not match what is expected is detected within the EBB (electric brake booster) unit.
ABS (anti-lock brake system) C1013:09	Brake System Pressure: Component Failures	This DTC (diagnostic trouble code) sets when an internal component failure is detected within the EBB (electric brake booster) unit.
ABS (anti-lock brake system) C1013:7A	Brake System Pressure: Fluid Leak Or Seal Failure	This DTC (diagnostic trouble code) sets when a loss of brake fluid pressure is detected within the brake system.
ABS (anti-lock brake system) C1013:92	Brake System Pressure: Performance Or Incorrect Operation	This DTC (diagnostic trouble code) sets when a loss of brake pressure or excessive brake pressure is detected within the brake system.

Possible Sources

- Air trapped in the hydraulic system
- External brake system leak
- Internal EBB (electric brake booster) unit leak
- EBB (electric brake booster) unit internal failure

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

PINPOINT TEST CP : EBB (ELECTRIC BRAKE BOOSTER) MOTOR FAULTS

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

Normal Operation and Fault Conditions The EBB (electric brake booster) unit uses a motor to pressurize the brake system and to operate the ABS (anti-lock brake system) , ESC (electronic stability control) , RSC (roll stability control) and other stability control features. The ABS (anti-lock brake system) module monitors the motor performance and sets a DTC (diagnostic trouble code) when a motor fault is detected. **DTC Fault Trigger Conditions**

DTC (diagnostic trouble code)	Description	Fault Trigger Condition
ABS (anti-lock brake system) C0594:78	Brake Booster Motor 'A' Performance: Alignment Or Adjustment Incorrect	Sets when the ABS (anti-lock brake system) module detects a booster motor adjustment or alignment

U0293:87	Module 'A': Missing Message	messages are missing.
ABS (anti-lock brake system) U0402:86	Invalid Data Received from TCM: Signal Invalid	Sets if the neutral tow command message from the SOBDMC (secondary on-board diagnostic control module C) contains invalid or faulty information.
ABS (anti-lock brake system) U0594:64	Invalid Data Received From Hybrid/EV Powertrain Control Module 'A': Signal Plausibility Failure	Sets if the gear shift position message, the driven wheel torque messages or the rolling direction message from the HEV (hybrid electric vehicle) PCM (powertrain control module) contain invalid or faulty information.
ABS (anti-lock brake system) U0594:86	Invalid Data Received From Hybrid/EV Powertrain Control Module 'A': Signal Invalid	Sets if the transfer case status messages or the all wheel drive locking message from the HEV (hybrid electric vehicle) PCM (powertrain control module) contain invalid or faulty information.
ABS (anti-lock brake system) U1026:00	ABS Control Module Lost Communication with Hybrid/EV Powertrain Control Module: No Sub Type Information	Sets if the HEV (hybrid electric vehicle) PCM (powertrain control module) messages are missing.

Possible Sources

- Wiring, terminals or connectors
- Network communication concern
- HEV (hybrid electric vehicle) - PCM (powertrain control module)
- EBB (electric brake booster) unit

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

PINPOINT TEST BH : ABS (ANTI-LOCK BRAKE SYSTEM) MODULE COMMUNICATION CONCERN WITH THE RCM (RESTRAINTS CONTROL MODULE)

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

Normal Operation and Fault Conditions With the ignition ON, the RCM (restraints control module) sends messages to the GWM (gateway module A) over the HS-CAN2 (high-speed controller area network 2) , the GWM (gateway module A) relays these messages to the ABS (anti-lock brake system) module over the FD-CAN (Flexible Data Rate Controller Area Network) . If the ABS (anti-lock brake system) module does not receive these messages within a certain time frame, the ABS (anti-lock brake system) module sets a DTC (diagnostic trouble code) . For information on the messages sent to the ABS (anti-lock brake system)

ABS (anti-lock brake system) U0151:00	Lost Communication With Restraints Control Module: No Sub Type Information	Sets in the ABS (anti-lock brake system) module if the time allotted for stability sensor messages expires before the ABS (anti-lock brake system) module receives any stability sensor messages.
ABS (anti-lock brake system) U0452:02	Invalid Data Received From Restraints Control Module: General Signal Failure	Sets if the yaw rate, roll rate, longitudinal acceleration or lateral acceleration messages from the RCM (restraints control module) are invalid.
ABS (anti-lock brake system) U0452:41	Invalid Data Received From Restraints Control Module: General Checksum Failure	Sets if the yaw rate, roll rate, longitudinal acceleration or lateral acceleration messages from the RCM (restraints control module) are not received.
ABS (anti-lock brake system) U0452:86	Invalid Data Received From Restraints Control Module: Signal Invalid	Sets if the yaw rate, roll rate, longitudinal acceleration or lateral acceleration counter signal message from the RCM (restraints control module) does not update.

Possible Sources

- Network communication concern
- RCM (restraints control module)
- EBB (electric brake booster) unit

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

PINPOINT TEST Y : ABS (ANTI-LOCK BRAKE SYSTEM) MODULE INTERNAL FAULT CONCERN

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

Normal Operation and Fault Conditions The ABS (anti-lock brake system) module carries out self tests during operation, the module also monitors various inputs and compares the values to what should be expected. If the values received are out of range, are not what is expected, or if any of the self tests fail, the ABS (anti-lock brake system) module sets a DTC (diagnostic trouble code) . The U3000:XX Diagnostic Trouble Codes (DTCs) may set along with other ABS (anti-lock brake system) Diagnostic Trouble Codes (DTCs). Diagnose all other ABS (anti-lock brake system) module Diagnostic Trouble Codes (DTCs) before diagnosing any ABS (anti-lock brake system) module U3000:XX Diagnostic Trouble Codes (DTCs). REFER to: Anti-Lock Brake System (ABS) and Stability Control - System Operation and Component Description (206-09 Anti-Lock Brake System (ABS) and Stability Control, Description and Operation).

DTC Fault Trigger Conditions

ABS (anti-lock brake system) U3000:49	Control Module: Internal Electronic Failure	Sets when the ABS (anti-lock brake system) module detects an internal fault.
ABS (anti-lock brake system) U3000:4B	Control Module: Over Temperature	Sets when the ABS (anti-lock brake system) module detects excessive temperature within the ABS (anti-lock brake system) module.
ABS (anti-lock brake system) U3000:52	Control Module: Not Activated	Sets when the ABS (anti-lock brake system) module detects an internal fault.
ABS (anti-lock brake system) U3000:96	Control Module: Component Internal Failure	Sets when the ABS (anti-lock brake system) module detects an internal fault.

Possible Sources

- Incorrect sensor input
- Stuck valve
- EBB (electric brake booster) unit

Visual Inspection and Pre-checks

- Diagnose all other ABS (anti-lock brake system) module Diagnostic Trouble Codes (DTCs) before diagnosing any U3000:XX Diagnostic Trouble Codes (DTCs).

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

PINPOINT TEST Z : ABS (ANTI-LOCK BRAKE SYSTEM) MODULE CONFIGURATION CONCERN

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

Normal Operation and Fault Conditions During new module installation, configuration files are loaded into the new module being replaced. If a discrepancy is detected between the modules or an incomplete programming procedure is carried out, a DTC (diagnostic trouble code) sets. REFER to: Anti-Lock Brake System (ABS) and Stability Control - System Operation and Component Description (206-09 Anti-Lock Brake System (ABS) and Stability Control, Description and Operation).

DTC Fault Trigger Conditions

DTC (diagnostic trouble code)	Description	Fault Trigger Condition

ABS (anti-lock brake system) U202B:62	In-Use Application Signing Key: Signal Compare Failure	Sets due to incomplete or improper module programming procedures. Detects non-production software in the ABS (anti-lock brake system) module.
ABS (anti-lock brake system) U2100:00	Initial Configuration Not Complete: No Sub Type Information	Sets due to incomplete or improper module programming procedures.
ABS (anti-lock brake system) U2101:00	Control Module Configuration Incompatible: No Sub Type Information	Sets due to incomplete or improper module programming procedures.
ABS (anti-lock brake system) U2200:00	Control Module Configuration Memory Corrupt: No Sub Type Information	This DTC (diagnostic trouble code) also sets due to incomplete or improper module programming procedures.

Possible Sources

- Incomplete programming procedure
- Improper programming procedure
- SASM (steering angle sensor module)
- EBB (electric brake booster) unit

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

PINPOINT TEST BR : ABS (ANTI-LOCK BRAKE SYSTEM) MODULE COMMUNICATION CONCERN WITH VDM (VEHICLE DYNAMICS CONTROL MODULE)

Refer to Wiring Diagrams Cell 14for schematic and connector information.

Normal Operation and Fault Conditions With the ignition ON, the VDM (vehicle dynamics control module) sends messages to the GWM (gateway module A) over the HS-CAN2 (high-speed controller area network 2) , the GWM (gateway module A) relays these messages to the ABS (anti-lock brake system) module over the FD-CAN (Flexible Data Rate Controller Area Network) . If the ABS (anti-lock brake system) module does not receive these messages within the specified time frame, the ABS (anti-lock brake system) module sets Diagnostic Trouble Codes (DTCs). This can be due to a VDM (vehicle dynamics control module) failure, a circuit failure on the CAN (controller area network) or an excessive load on the network. For information on the messages sent to the ABS (anti-lock brake system) module by the VDM (vehicle dynamics control module) , REFER to: Anti-Lock Brake System (ABS) and Stability Control - Electric - System Operation and Component Description