






Anti-Lock Brake System (ABS) and Stability Control

Special Tool(s)

	Backprobe Pins POM6411 or equivalent
	Flex Probe Kit NUD105-R025D or equivalent
	Fluke 77-IV Digital Multimeter FLU77-4 or equivalent
	Rotunda Active Wheel Speed Sensor Tester 420-119-KIT or equivalent
	Vehicle Communication Module (VCM) and Integrated Diagnostic System (IDS) software with appropriate hardware, or equivalent scan tool

Principles of Operation

Anti-Lock Brake System

The ABS module continuously monitors brake pedal input, lateral vehicle motion and the rotational speed of each wheel. The PCM sends the brake pedal switch information to the ABS module over the High Speed Controller Area Network (HS-CAN) while the Restraints Control Module (RCM) sends lateral acceleration sensor information to the ABS module over a private HS-CAN. Wheel speed information is retrieved by the ABS module using 4 active wheel speed sensors, one for each wheel. When the ABS module detects an impending wheel lock during a braking event, the ABS module modulates brake pressure to the appropriate brake caliper(s) by opening and closing the appropriate solenoid valves inside the Hydraulic Control Unit (HCU) while the hydraulic pump motor is activated. Once the affected wheel(s) return to the desired speed, the ABS module returns the solenoid valves in the HCU to their normal position.

The ABS module has 2 self-test options, one is carried out using a scan tool and the other is carried out when the ABS is initialized (ignition ON). During either self test the ABS module carries out a preliminary electrical check of the system sensors and activates the hydraulic pump motor for approximately one-half second. During this time, a buzzing or humming noise may be heard and a vibration may be felt in the brake pedal and is a normal condition. During the module initialized self test, the pump motor check is carried out at approximately 16 km/h (10 mph). Any malfunction detected in the system causes the module to set a DTC, disable the ABS function and send a message over the HS-CAN to the Instrument Panel Cluster (IPC) to illuminate the ABS warning indicator. However, the base hydraulic power-assist braking system will function normally.

Electronic Brake Distribution (EBD)

On initial application of the brake pedal, full pressure is applied to the rear brakes. The ABS module then uses wheel speed input to calculate an estimated rate of deceleration. Once vehicle deceleration exceeds a predetermined threshold, the ABS module closes the appropriate isolation valves in the HCU to hold the rear brake pressure constant while allowing the front brake pressure to build. This creates a balanced braking condition between the front and rear wheels and minimizes the chance of rear wheel lockup during hard braking. As the vehicle decelerates, the valves are opened to increase the rear brake pressure in proportion to the front brake pressure. A slight bump sensation may be felt in the brake pedal when EBD is active. If ABS is disabled due to DTCs being present in the ABS module, EBD continues to function unless the DTCs are for wheel speed sensors or the HCU. When EBD is disabled, the ABS warning indicator, the red brake warning light, stability/traction control indicator (sliding car icon) and the stability/traction control OFF indicator (sliding car OFF icon) illuminate.

AdvanceTrac®

The AdvanceTrac® system consists of the traction control function and the Electronic Stability Control (ESC) function.

Traction Control

The ABS module continuously monitors and compares the rotational speed of the drive wheels in relation to the non-driven wheels. When the drive wheels begin to spin faster than the non-driven wheels, the ABS module modulates brake pressure to the appropriate brake caliper(s) by opening and closing the appropriate solenoid valves inside the HCU while the hydraulic pump motor is activated. At the same time, the ABS module sends a message over the HS-CAN that a traction event is taking place. When the PCM receives this

message, it assists with traction control by adjusting engine timing and decreasing fuel injector pulses. When the IPC receives this message, it flashes the sliding car icon. Once the driven wheel speed returns to the desired speed, the ABS module returns the solenoid valves in the HCU to their normal position, deactivates the hydraulic pump motor and sends another message over the HS-CAN indicating that the event has ended. The PCM returns engine timing and fuel injectors to normal operation and the IPC extinguishes the sliding car icon. After the vehicle speed exceeds 100 km/h (62.1 mph), traction control is accomplished only through the PCM torque control.

The traction control system can be disabled by the driver using the stability/traction control switch. When the driver disables the traction control function, the IPC communicates traction control system status to the ABS module via the HS-CAN. The ABS module takes no further action in regards to traction control until the driver activates the function or until the ignition is cycled from OFF to ON. The ABS module disables the traction control function if there are any wheel speed sensor or solenoid valve DTCs present in the ABS module. The traction control function is also disabled if there is a communication error between the ABS module and the PCM. When the traction control function is disabled, the ABS module sends a message to the IPC to illuminate the sliding car OFF icon.

Electronic Stability Control (ESC)

The ABS module continuously monitors the vehicle motion relative to the intended course. This is done by using sensors to compare the steering wheel input and the yaw rate sensor input with that of the actual vehicle motion. The Power Steering Control Module (PSCM) sends the steering wheel angle and rate of change information to the ABS module over the HS-CAN while the RCM sends yaw rate sensor information to the ABS module over a private HS-CAN. If the ABS module determines from the inputs that the vehicle is unable to travel in the intended direction, the ABS module modulates brake pressure to the appropriate brake caliper(s) by opening and closing the appropriate solenoid valves inside the HCU while the hydraulic pump motor is activated. At the same time, the ABS module sends a message over the HS-CAN that a vehicle stability event is taking place. When the PCM receives this message, it assists with vehicle control by adjusting engine timing and decreasing fuel injector pulses. When the IPC receives this message, it flashes the sliding car icon. Once the vehicle instability has been corrected, the ABS module returns the solenoid valves in the HCU to their normal position, deactivates the hydraulic pump motor and sends another message over the HS-CAN bus indicating that the event has ended. The PCM returns engine timing and fuel injectors to normal operation and the IPC extinguishes the sliding car icon.

The ESC function does not operate with the transmission in REVERSE. The ABS module disables the ESC function if there are any wheel speed sensor, stability sensor or steering angle sensor DTCs present in the ABS module. Also, if there is a communication error between the ABS module and the PSCM or the ESC function is disabled. When the ESC function is disabled, the ABS module sends a message over the HS-CAN to the IPC to illuminate the sliding car OFF icon.

Hill Start Assist

The ABS module uses the brake pedal switch message and ABS wheel speed sensor input to determine that the vehicle is at a complete stop. The transmission selector lever message lets the ABS module know that the vehicle is not being parked. The stability sensor messages from the RCM enable the ABS module to determine if the vehicle is on an incline greater than 5 degrees or greater than a 3% grade. The hill start assist function automatically engages once the above conditions have been met.

As the driver releases the brake pedal, the ABS module commands the HCU to close the isolation valves which will maintain the current brake system pressure, preventing the vehicle from rolling down the incline. Brake pressure is held for 2-3 seconds while the driver transitions to the accelerator pedal. As the accelerator pedal is pressed and the engine RPM increases, the ABS module gradually releases the brake pressure to make sure the vehicle is neither rolling back nor driving off until there is sufficient driving torque to move the vehicle.

Launch Control

The launch control system is controlled through the use of the launch control switch in the ride control switch pack and through the message center. When the launch control switch is pressed, a voltage signal is sent to the PCM. The PCM sends a message to the IPC over the HS-CAN indicating that the driver has requested launch control system activation. The driver then configures the launch control system through the message center, see the Owner's Literature for specific information. The launch control system will only activate when the AdvanceTrac® system is enabled or in Sport mode. Once activated, the launch control system will remain ON until the driver deactivates it, the system will not reset when the ignition is cycled.

Stability/Traction Control Switch

The stability/traction control switch is hardwired to the IPC. The IPC communicates switch status to the ABS module via the HS-CAN. The traction control switch allows the driver to control the AdvanceTrac® system. Traction control system status is indicated by the sliding car OFF icon and the message center in the IPC. The AdvanceTrac® system automatically restores to full functionality when the ignition is cycled from OFF to ON. There are 3 or 4 AdvanceTrac® system modes that can be selected, depending on the vehicle configuration and options.

- AdvanceTrac® enabled (both traction control and ESC functions are active)
- Traction control disabled (ESC function remains active)
- AdvanceTrac® Sport (special calibration to enhance performance characteristics, not available on all vehicles)
- AdvanceTrac® disabled (both traction control and ESC systems are off)

The different modes of the AdvanceTrac® system can only be selected by starting with the AdvanceTrac® enabled. When a mode other than AdvanceTrac® enabled is selected, the sliding car OFF icon in the IPC illuminates. When the switch is pressed a single time, the traction control is disabled (traction control off mode); when the switch is pressed twice while the brake pedal is applied, AdvanceTrac® Sport mode is enabled; and when the switch is pressed and held for at least 5 seconds while the brake pedal is applied, the entire AdvanceTrac® system is disabled.

Pressing the switch once from any of the above-mentioned modes re-enables full AdvanceTrac® system operation. Also, at the start of every ignition cycle, full AdvanceTrac® system operation is present regardless of the mode selected on the previous ignition cycle (unless the vehicle is equipped with launch control and launch control is enabled). The conventional ABS cannot be disabled through the use of the stability/traction control switch.

Stability Control Sensors

The stability control sensors for the AdvanceTrac® system include the yaw rate sensor and the lateral accelerometer. The yaw rate sensor and the lateral accelerometer are able to detect and measure changes in vehicle direction that indicate the need for the ABS to make corrections that help prevent vehicle roll over or spin outs. The sensors are housed in the RCM which sends sensor information to the ABS module over the Controller Area Network (CAN) . Install a new RCM if any of the sensors are damaged.

Steering Sensor

The steering sensor is used by the PSCM to determine speed and direction of the steering wheel. This information is transmitted to the ABS module along the HS-CAN . The sensor is attached to the Electronic Power Assist Steering (EPAS) column assembly and is not serviced separately.

ABS Module Calibration

When a new ABS module, HCU , or RCM is installed, the ABS module must be calibrated. The calibration procedure is required for the ABS module to learn the zero-position of the various ESC sensors and components.

If a DTC sets for any component of the ABS or AdvanceTrac® system, correct the fault condition and clear the DTC before carrying out the calibration procedure. The need to calibrate the ABS module is also indicated by the sliding car icon in the IPC flashing once every 2 seconds. The indicator flashes after clearing the DTCs associated with the ABS or AdvanceTrac® system.

To calibrate the ABS module, carry out the IVD Initialization sequence using the scan tool.

If a DTC is retrieved after calibration, refer to the ABS Module DTC Chart in this section.

Inspection and Verification

1. Verify the customer concern.
2. Verify the stoplamps operate correctly. If the stoplamps do not operate correctly, refer to [Section 417-01](#). If the stoplamps operate correctly, proceed to the next step.
3. Verify the base brake system operates correctly. If any concerns are present, address them before continuing with any ABS concerns. Refer to [Section 206-00](#). If the base brake system operates correctly, proceed to the next step.
4. Visually inspect for obvious signs of mechanical or electrical damage.

Visual Inspection Chart

Mechanical	Electrical
<ul style="list-style-type: none"> • Base brake system • Hydraulic Control Unit (HCU) • Tire pressure • Mismatched tires • Wheel speed sensor ring 	<ul style="list-style-type: none"> • ABS module • Battery Junction Box (BJB) fuse(s): <ul style="list-style-type: none"> ▪ 8 (40A) ▪ 10 (30A) • Smart Junction Box (SJB) fuse 34 (5A) • Brake Pedal Position (BPP) switch • Traction control switch • Wheel speed sensor • Wiring, terminals or connectors

5. If an obvious cause for an observed or reported concern is found, correct the cause (if possible) before proceeding to the next step.
6. **NOTE:** *Make sure to use the latest scan tool software release.*
If the cause is not visually evident, connect the scan tool to the Data Link Connector (DLC) .
7. **NOTE:** *The Vehicle Communication Module (VCM) LED prove-out confirms power and ground from the DLC are provided to the VCM .*
If the scan tool does not communicate with the VCM :
 - check the VCM connection to the vehicle.
 - check the scan tool connection to the VCM .
 - refer to [Section 418-00](#), No Power To The Scan Tool, to diagnose no power to the scan tool.
8. If the scan tool does not communicate with the vehicle:
 - verify the ignition is ON.
 - verify the scan tool operation with a known good vehicle.
 - refer to [Section 418-00](#), The PCM Does Not Respond To The Scan Tool, to diagnose no response from the PCM.
9. Carry out the network test.
 - If the scan tool responds with no communication for one or more modules, refer to [Section 418-00](#).
 - If the network test passes, retrieve and record Continuous Memory Diagnostic Trouble Codes (CMDTCs) .
10. Clear the CMDTCs and carry out the self-test diagnostics for the ABS module and the IPC .
11. If the DTCs retrieved are related to the concern, go to the ABS Module DTC Chart. For all other DTCs, refer to [Section 419-10](#).
12. If no DTCs related to the concern are retrieved, GO to [Symptom Chart](#).

DTC Charts

NOTE: *This module utilizes a 5-character DTC followed by a 2-character failure type code. The failure type code provides information about specific fault conditions such as opens or shorts to ground. Continuous Memory Diagnostic Trouble Codes (CMDTCs) have an additional 2-character DTC status code suffix to assist in determining DTC history.*

ABS Module DTC Chart

DTC	Description	Action
B11E8:16	ABS Power Supply: Circuit Voltage Below Threshold	GO to Pinpoint Test A.
B11E8:17	ABS Power Supply: Circuit Voltage Above Threshold	GO to Pinpoint Test B.
C0001:11	TCS Control Channel "A" Valve 1: Circuit Short to Ground	This DTC indicates that part of the ABS module has failed internally. CLEAR the DTCs. REPEAT the self-test. If DTC C0001:11 returns, INSTALL a new ABS module. REFER to Anti-Lock Brake System (ABS) Module in this section. TEST the system for normal operation.
C0001:12	TCS Control Channel "A" Valve 1: Circuit Short to Battery	This DTC indicates that part of the ABS module has failed internally. CLEAR the DTCs. REPEAT the self-test. If DTC C0001:12 returns, INSTALL a new ABS module. REFER to Anti-Lock Brake System (ABS) Module in this section. TEST the system for normal operation.
C0001:13	TCS Control Channel "A" Valve 1: Circuit Open	This DTC indicates that part of the ABS module has failed internally. CLEAR the DTCs. REPEAT the self-test. If DTC C0001:13 returns, INSTALL a new ABS module. REFER to Anti-Lock Brake System (ABS) Module in this section. TEST the system for normal operation.
C0002:11	TCS Control Channel "A" Valve 2: Circuit Short to Ground	This DTC indicates that part of the ABS module has failed internally. CLEAR the DTCs. REPEAT the self-test. If DTC C0002:11 returns, INSTALL a new ABS module. REFER to Anti-Lock Brake System (ABS) Module in this section. TEST the system for normal operation.
C0002:12	TCS Control Channel "A" Valve 2: Circuit Short to Battery	This DTC indicates that part of the ABS module has failed internally. CLEAR the DTCs. REPEAT the self-test. If DTC C0002:12 returns, INSTALL a new ABS module. REFER to

DTC	Description	Action
		Anti-Lock Brake System (ABS) Module in this section. TEST the system for normal operation.
C0002:13	TCS Control Channel "A" Valve 2: Circuit Open	This DTC indicates that part of the ABS module has failed internally. CLEAR the DTCs. REPEAT the self-test. If DTC C0002:13 returns, INSTALL a new ABS module. REFER to Anti-Lock Brake System (ABS) Module in this section. TEST the system for normal operation.
C0003:11	TCS Control Channel "B" Valve 1: Circuit Short to Ground	This DTC indicates that part of the ABS module has failed internally. CLEAR the DTCs. REPEAT the self-test. If DTC C0003:11 returns, INSTALL a new ABS module. REFER to Anti-Lock Brake System (ABS) Module in this section. TEST the system for normal operation.
C0003:12	TCS Control Channel "B" Valve 1: Circuit Short to Battery	This DTC indicates that part of the ABS module has failed internally. CLEAR the DTCs. REPEAT the self-test. If DTC C0003:12 returns, INSTALL a new ABS module. REFER to Anti-Lock Brake System (ABS) Module in this section. TEST the system for normal operation.
C0003:13	TCS Control Channel "B" Valve 1: Circuit Open	This DTC indicates that part of the ABS module has failed internally. CLEAR the DTCs. REPEAT the self-test. If DTC C0003:13 returns, INSTALL a new ABS module. REFER to Anti-Lock Brake System (ABS) Module in this section. TEST the system for normal operation.
C0004:11	TCS Control Channel "B" Valve 2: Circuit Short to Ground	This DTC indicates that part of the ABS module has failed internally. CLEAR the DTCs. REPEAT the self-test. If DTC C0004:11 returns, INSTALL a new ABS module. REFER to Anti-Lock Brake System (ABS) Module in this section. TEST the system for normal operation.
C0004:12	TCS Control Channel "B" Valve 2: Circuit Short to Battery	This DTC indicates that part of the ABS module has failed internally. CLEAR the DTCs. REPEAT the self-test. If DTC C0004:12 returns, INSTALL a new ABS module. REFER to Anti-Lock Brake System (ABS) Module in this section. TEST the system for normal operation.
C0004:13	TCS Control Channel "B" Valve 2: Circuit Open	This DTC indicates that part of the ABS module has failed internally. CLEAR the DTCs. REPEAT the self-test. If DTC C0004:13 returns, INSTALL a new ABS module. REFER to Anti-Lock Brake System (ABS) Module in this section. TEST the system for normal operation.
C0020:13	ABS Pump Motor Control: Circuit Open	GO to Pinpoint Test C.
C0020:15	ABS Pump Motor Control: Circuit Short To Battery Or Open	GO to Pinpoint Test C.
C0020:71	ABS Pump Motor Control: Actuator Stuck	GO to Pinpoint Test C.
C0031:13	Left Front Wheel Speed Sensor: Circuit Open	GO to Pinpoint Test D.
C0031:17	Left Front Wheel Speed Sensor: Circuit Voltage Above Threshold	GO to Pinpoint Test D.
C0031:23	Left Front Wheel Speed Sensor: Signal Stuck Low	GO to Pinpoint Test D.
C0031:2F	Left Front Wheel Speed Sensor: Signal Erratic	GO to Pinpoint Test E.
C0031:62	Left Front Wheel Speed Sensor: Signal Compare Failure	GO to Pinpoint Test E.
C0034:13	Right Front Wheel Speed Sensor: Circuit Open	GO to Pinpoint Test D.
C0034:17	Right Front Wheel Speed Sensor: Circuit Above Threshold	GO to Pinpoint Test D.
C0034:23	Right Front Wheel Speed Sensor: Signal Stuck Low	GO to Pinpoint Test D.

DTC	Description	Action
C0034:2F	Right Front Wheel Speed Sensor: Signal Erratic	GO to Pinpoint Test E.
C0034:62	Right Front Wheel Speed Sensor: Signal Compare Failure	GO to Pinpoint Test E.
C0037:13	Left Rear Wheel Speed Sensor: Circuit Open	GO to Pinpoint Test D.
C0037:17	Left Rear Wheel Speed Sensor: Circuit Voltage Above Threshold	GO to Pinpoint Test D.
C0037:23	Left Rear Wheel Speed Sensor: Signal Stuck Low	GO to Pinpoint Test D.
C0037:2F	Left Rear Wheel Speed Sensor: Signal Erratic	GO to Pinpoint Test E.
C0037:62	Left Rear Wheel Speed Sensor: Signal Compare Failure	GO to Pinpoint Test E.
C003A:13	Right Rear Wheel Speed Sensor: Circuit Open	GO to Pinpoint Test D.
C003A:17	Right Rear Wheel Speed Sensor: Circuit Voltage Above Threshold	GO to Pinpoint Test D.
C003A:23	Right Rear Wheel Speed Sensor: Signal Stuck Low	GO to Pinpoint Test D.
C003A:2F	Right Rear Wheel Speed Sensor: Signal Erratic	GO to Pinpoint Test E.
C003A:62	Right Rear Wheel Speed Sensor Signal Compare Failure	GO to Pinpoint Test E.
C0040:72	Brake Pedal Switch "A": Actuator Stuck Open	GO to Pinpoint Test F.
C0040:73	Brake Pedal Switch "A": Actuator Stuck Closed	GO to Pinpoint Test F.
C0049:7B	Brake Fluid: Low Fluid Level	For low brake fluid level diagnosis. REFER to Section 413-01.
C0061:00	Lateral Acceleration Sensor: No Sub Type Information	This DTC indicates a concern with the lateral accelerometer sensor which is integral to the Restraints Control Module (RCM) . REFER to Section 501-20B to diagnose all the RCM DTCs. If no RCM DTCs are present, GO to Pinpoint Test M in this section to diagnose the communication issue.
C0061:62	Lateral Acceleration Sensor: Signal Compare Failure	This DTC indicates a concern with the lateral accelerometer sensor which is integral to the RCM . REFER to Section 501-20B to diagnose all the RCM DTCs. If no RCM DTCs are present, GO to Pinpoint Test M in this section to diagnose the communication issue.
C0061:65	Lateral Acceleration Sensor: Signal Has Too Few Transitions/Events	This DTC indicates a concern with the lateral accelerometer sensor which is integral to the RCM . REFER to Section 501-20B to diagnose all the RCM DTCs. If no RCM DTCs are present, GO to Pinpoint Test M in this section to diagnose the communication issue.
C0061:67	Lateral Acceleration Sensor: Signal Incorrect After Event	This DTC indicates a concern with the lateral accelerometer sensor which is integral to the RCM . REFER to Section 501-20B to diagnose all the RCM DTCs. If no RCM DTCs are present, GO to Pinpoint Test M in this section to diagnose the communication issue.
C0061:82	Lateral Acceleration Sensor: Alive/Sequence Counter Incorrect/Not Updated	This DTC indicates a concern with the lateral accelerometer sensor which is integral to the RCM . REFER to Section 501-20B to diagnose all the RCM DTCs. If no RCM DTCs are present, GO to Pinpoint Test M in this section to diagnose the communication issue.
C0062:00	Longitudinal Acceleration Sensor: No Sub Type Information	This DTC indicates a concern with the longitudinal accelerometer sensor which is integral to the Restraints Control Module (RCM) . REFER to Section 501-20B to diagnose all the RCM DTCs. If no RCM DTCs are present, GO to Pinpoint Test M in this section to diagnose the communication issue.

DTC	Description	Action
C0062:62	Longitudinal Acceleration Sensor: Signal Compare Failure	This DTC indicates a concern with the longitudinal accelerometer sensor which is integral to the <u>RCM</u> . REFER to Section 501-20B to diagnose all the <u>RCM</u> DTCs. If no <u>RCM</u> DTCs are present, GO to Pinpoint Test M in this section to diagnose the communication issue.
C0062:65	Longitudinal Acceleration Sensor: Signal Has Too Few Transitions/Events	This DTC indicates a concern with the longitudinal accelerometer sensor which is integral to the <u>RCM</u> . REFER to Section 501-20B to diagnose all the <u>RCM</u> DTCs. If no <u>RCM</u> DTCs are present, GO to Pinpoint Test M in this section to diagnose the communication issue.
C0062:67	Longitudinal Acceleration Sensor: Signal Incorrect After Event	This DTC indicates a concern with the longitudinal accelerometer sensor which is integral to the <u>RCM</u> . REFER to Section 501-20B to diagnose all the <u>RCM</u> DTCs. If no <u>RCM</u> DTCs are present, GO to Pinpoint Test M in this section to diagnose the communication issue.
C0062:81	Longitudinal Acceleration Sensor: Invalid Serial Data Received	This DTC indicates a concern with the longitudinal accelerometer sensor which is integral to the <u>RCM</u> . REFER to Section 501-20B to diagnose all the <u>RCM</u> DTCs. If no <u>RCM</u> DTCs are present, GO to Pinpoint Test M in this section to diagnose the communication issue.
C0062:82	Longitudinal Acceleration Sensor: Alive/Sequence Counter Incorrect/Not Updated	This DTC indicates a concern with the longitudinal accelerometer sensor which is integral to the <u>RCM</u> . REFER to Section 501-20B to diagnose all the <u>RCM</u> DTCs. If no <u>RCM</u> DTCs are present, GO to Pinpoint Test M in this section to diagnose the communication issue.
C0063:00	Yaw Rate Sensor: No Sub Type Information	This DTC indicates a concern with the yaw rate sensor which is integral to the <u>RCM</u> . REFER to Section 501-20B to diagnose all the <u>RCM</u> DTCs. If no <u>RCM</u> DTCs are present, GO to Pinpoint Test M in this section to diagnose the communication issue.
C0063:62	Yaw Rate Sensor: Signal Compare Failure	This DTC indicates a concern with the yaw rate sensor which is integral to the <u>RCM</u> . REFER to Section 501-20B to diagnose all the <u>RCM</u> DTCs. If no <u>RCM</u> DTCs are present, GO to Pinpoint Test M in this section to diagnose the communication issue.
C0063:65	Yaw Rate Sensor: Signal Has Too Few Transitions/Events	This DTC indicates a concern with the yaw rate sensor which is integral to the <u>RCM</u> . REFER to Section 501-20B to diagnose all the <u>RCM</u> DTCs. If no <u>RCM</u> DTCs are present, GO to Pinpoint Test M in this section to diagnose the communication issue.
C0063:67	Yaw Rate Sensor: Signal Incorrect After Event	This DTC indicates a concern with the yaw rate sensor which is integral to the <u>RCM</u> . REFER to Section 501-20B to diagnose all the <u>RCM</u> DTCs. If no <u>RCM</u> DTCs are present, GO to Pinpoint Test M in this section to diagnose the communication issue.
C0063:85	Yaw Rate Sensor: Signal Above Allowable Range	This DTC indicates a concern with the yaw rate sensor which is integral to the <u>RCM</u> . REFER to Section 501-20B to diagnose all the <u>RCM</u> DTCs. If no <u>RCM</u> DTCs are present, GO to Pinpoint Test M in this section to diagnose the communication issue.
C0078:61	Tire Diameter: Signal Calculation Failure	GO to Pinpoint Test E.
C0089:73	TCS Disable Switch: Actuator Stuck Closed	GO to Pinpoint Test O.
C1137:62	Reverse Gear Switch: Signal Compare Failure	<ul style="list-style-type: none"> • The ABS module receives the reverse gear selected message from the PCM over the HS-CAN. The ABS module compares this information with other sensor input. If the reverse gear selected message does not agree with the other sensor input, DTC C1137:62 is set. The hill start assist feature is disabled when DTC C1137:62 is present in the ABS module. • If ABS module DTC U0100:00 or U0401:00 is present, DIAGNOSE those DTCs before diagnosing DTC C1137:62. • If ABS module DTC U0100:00 or U0401:00 is not present, RETRIEVE and DIAGNOSE all PCM DTCs. REFER to Section 303-14.
C1A41:62	Clutch Pedal Sensor: Signal Compare Failure	<ul style="list-style-type: none"> • The ABS module receives the clutch pedal top of travel message from the PCM over the HS-CAN. The ABS module uses the wheel speed sensors and engine RPM message to identify transmission gear shifts. If the ABS module does not receive a valid clutch pedal switch message within a certain number of gear shifts within a predetermined distance, DTC C1A41:62 is set. The hill start assist feature is disabled when DTC C1A41:62 is present in the ABS module. • If there are any ABS module wheel speed sensor DTCs, DIAGNOSE those DTCs before diagnosing DTC C1A41:62.

DTC	Description	Action
		<ul style="list-style-type: none"> If ABS module DTC U0100:00 or U0401:00 is present, DIAGNOSE those DTCs before diagnosing DTC C1A41:62. If ABS module DTC U0100:00 or U0401:00 is not present, RETRIEVE and DIAGNOSE all PCM DTCs. REFER to Section 303-14.
C1A76:12	Valve Relay: Circuit Short To Battery	This DTC indicates a concern in the ABS module. CLEAR the DTCs. CARRY OUT the ABS module self-test. RETRIEVE and RECORD any DTCs. If DTC C1A76:12 is retrieved again, INSTALL a new ABS module. REFER to Anti-Lock Brake System (ABS) Module in this section. TEST the system for normal operation.
C1A76:13	Valve Relay: Circuit Open	This DTC indicates a concern in the ABS module. CLEAR the DTCs. CARRY OUT the ABS module self-test. RETRIEVE and RECORD any DTCs. If DTC C1A76:13 is retrieved again, INSTALL a new ABS module. REFER to Anti-Lock Brake System (ABS) Module in this section. TEST the system for normal operation.
C1A78:11	Left Front Inlet Valve: Circuit Short To Ground	This DTC indicates a concern in the ABS module. CLEAR the DTCs. CARRY OUT the ABS module self-test. RETRIEVE and RECORD any DTCs. If DTC C1A78:11 is retrieved again, INSTALL a new ABS module. REFER to Anti-Lock Brake System (ABS) Module in this section. TEST the system for normal operation.
C1A78:12	Left Front Inlet Valve: Circuit Short To Battery	This DTC indicates a concern in the ABS module . CLEAR the DTCs. CARRY OUT the ABS module self-test. RETRIEVE and RECORD any DTCs. If DTC C1A78:12 is retrieved again, INSTALL a new ABS module. REFER to Anti-Lock Brake System (ABS) Module in this section. TEST the system for normal operation.
C1A78:13	Left Front Inlet Valve: Circuit Open	This DTC indicates a concern in the ABS module. CLEAR the DTCs. CARRY OUT the ABS module self-test. RETRIEVE and RECORD any DTCs. If DTC C1A78:13 is retrieved again, INSTALL a new ABS module. REFER to Anti-Lock Brake System (ABS) Module in this section. TEST the system for normal operation.
C1A79:11	Left Front Outlet Valve: Circuit Short To Ground	This DTC indicates a concern in the ABS module. CLEAR the DTCs. CARRY OUT the ABS module self-test. RETRIEVE and RECORD any DTCs. If DTC C1A79:11 is retrieved again, INSTALL a new ABS module. REFER to Anti-Lock Brake System (ABS) Module in this section. TEST the system for normal operation.
C1A79:12	Left Front Outlet Valve: Circuit Short To Battery	This DTC indicates a concern in the ABS module. CLEAR the DTCs. CARRY OUT the ABS module self-test. RETRIEVE and RECORD any DTCs. If DTC C1A79:12 is retrieved again, INSTALL a new ABS module. REFER to Anti-Lock Brake System (ABS) Module in this section. TEST the system for normal operation.
C1A79:13	Left Front Outlet Valve: Circuit Open	This DTC indicates a concern in the ABS module . CLEAR the DTCs. CARRY OUT the ABS module self-test. RETRIEVE and RECORD any DTCs. If DTC C1A79:13 is retrieved again, INSTALL a new ABS module. REFER to Anti-Lock Brake System (ABS) Module in this section. TEST the system for normal operation.
C1A80:11	Right Front Inlet Valve: Circuit Short To Ground	This DTC indicates a concern in the ABS module. CLEAR the DTCs. CARRY OUT the ABS module self-test. RETRIEVE and RECORD any DTCs. If DTC C1A80:11 is retrieved again, INSTALL a new ABS module. REFER to Anti-Lock Brake System (ABS) Module in this section. TEST the system for normal operation.
C1A80:12	Right Front Inlet Valve: Circuit Short to Voltage	This DTC indicates a concern in the ABS module. CLEAR the DTCs. CARRY OUT the ABS module self-test. RETRIEVE and RECORD any DTCs. If DTC C1A80:12 is retrieved again, INSTALL a new ABS module. REFER to Anti-Lock Brake System (ABS) Module in this section. TEST the system for normal operation.
C1A80:13	Right Front Inlet Valve: Circuit Open	This DTC indicates a concern in the ABS module. CLEAR the DTCs. CARRY OUT the ABS module self-test. RETRIEVE and RECORD any DTCs. If DTC C1A80:13 is retrieved again, INSTALL a new ABS module. REFER to Anti-Lock Brake System (ABS) Module in this section. TEST the system for normal operation.
C1A81:11	Right Front Outlet Valve: Circuit Short To Ground	This DTC indicates a concern in the ABS module. CLEAR the DTCs. CARRY OUT the ABS module self-test. RETRIEVE and RECORD any DTCs. If DTC C1A81:11 is retrieved again, INSTALL a new ABS module. REFER to Anti-Lock Brake System (ABS) Module in this section. TEST the system for normal operation.
C1A81:12	Right Front Outlet Valve: Circuit Short to Battery	This DTC indicates a concern in the ABS module . CLEAR the DTCs. CARRY OUT the ABS module self-test. RETRIEVE and RECORD any DTCs. If DTC C1A81:12 is retrieved again, INSTALL a new ABS module. REFER to Anti-Lock Brake System (ABS) Module in this section. TEST the system for normal operation.

DTC	Description	Action
C1A81:13	Right Front Outlet Valve: Circuit Open	This DTC indicates a concern in the ABS module. CLEAR the DTCs. CARRY OUT the ABS module self-test. RETRIEVE and RECORD any DTCs. If DTC C1A81:13 is retrieved again, INSTALL a new ABS module. REFER to Anti-Lock Brake System (ABS) Module in this section. TEST the system for normal operation.
C1A82:11	Left Rear Inlet Valve: Circuit Short To Ground	This DTC indicates a concern in the ABS module. CLEAR the DTCs. CARRY OUT the ABS module self-test. RETRIEVE and RECORD any DTCs. If DTC C1A82:11 is retrieved again, INSTALL a new ABS module. REFER to Anti-Lock Brake System (ABS) Module in this section. TEST the system for normal operation.
C1A82:12	Left Rear Inlet Valve: Circuit Short to Battery	This DTC indicates a concern in the ABS module. CLEAR the DTCs. CARRY OUT the ABS module self-test. RETRIEVE and RECORD any DTCs. If DTC C1A82:12 is retrieved again, INSTALL a new ABS module. REFER to Anti-Lock Brake System (ABS) Module in this section. TEST the system for normal operation.
C1A82:13	Left Rear Inlet Valve: Circuit Open	This DTC indicates a concern in the ABS module. CLEAR the DTCs. CARRY OUT the ABS module self-test. RETRIEVE and RECORD any DTCs. If DTC C1A82:13 is retrieved again, INSTALL a new ABS module. REFER to Anti-Lock Brake System (ABS) Module in this section. TEST the system for normal operation.
C1A83:11	Left Rear Outlet Valve: Circuit Short To Ground	This DTC indicates a concern in the ABS module. CLEAR the DTCs. CARRY OUT the ABS module self-test. RETRIEVE and RECORD any DTCs. If DTC C1A83:11 is retrieved again, INSTALL a new ABS module. REFER to Anti-Lock Brake System (ABS) Module in this section. TEST the system for normal operation.
C1A83:12	Left Rear Outlet Valve: Circuit Short to Battery	This DTC indicates a concern in the ABS module. CLEAR the DTCs. CARRY OUT the ABS module self-test. RETRIEVE and RECORD any DTCs. If DTC C1A83:12 is retrieved again, INSTALL a new ABS module. REFER to Anti-Lock Brake System (ABS) Module in this section. TEST the system for normal operation.
C1A83:13	Left Rear Outlet Valve: Circuit Open	This DTC indicates a concern in the ABS module. CLEAR the DTCs. CARRY OUT the ABS module self-test. RETRIEVE and RECORD any DTCs. If DTC C1A83:13 is retrieved again, INSTALL a new ABS module. REFER to Anti-Lock Brake System (ABS) Module in this section. TEST the system for normal operation.
C1A84:11	Right Rear Inlet Valve: Circuit Short To Ground	This DTC indicates a concern in the ABS module. CLEAR the DTCs. CARRY OUT the ABS module self-test. RETRIEVE and RECORD any DTCs. If DTC C1A84:11 is retrieved again, INSTALL a new ABS module. REFER to Anti-Lock Brake System (ABS) Module in this section. TEST the system for normal operation.
C1A84:12	Right Rear Inlet Valve: Circuit Short to Battery	This DTC indicates a concern in the ABS module. CLEAR the DTCs. CARRY OUT the ABS module self-test. RETRIEVE and RECORD any DTCs. If DTC C1A84:12 is retrieved again, INSTALL a new ABS module. REFER to Anti-Lock Brake System (ABS) Module in this section. TEST the system for normal operation.
C1A84:13	Right Rear Inlet Valve: Circuit Open	This DTC indicates a concern in the ABS module. CLEAR the DTCs. CARRY OUT the ABS module self-test. RETRIEVE and RECORD any DTCs. If DTC C1A84:13 is retrieved again, INSTALL a new ABS module. REFER to Anti-Lock Brake System (ABS) Module in this section. TEST the system for normal operation.
C1A85:11	Right Rear Outlet Valve: Circuit Short To Ground	This DTC indicates a concern in the ABS module. CLEAR the DTCs. CARRY OUT the ABS module self-test. RETRIEVE and RECORD any DTCs. If DTC C1A85:11 is retrieved again, INSTALL a new ABS module. REFER to Anti-Lock Brake System (ABS) Module in this section. TEST the system for normal operation.
C1A85:12	Right Rear Outlet Valve: Circuit Short To Battery	This DTC indicates a concern in the ABS module. CLEAR the DTCs. CARRY OUT the ABS module self-test. RETRIEVE and RECORD any DTCs. If DTC C1A85:12 is retrieved again, INSTALL a new ABS module. REFER to Anti-Lock Brake System (ABS) Module in this section. TEST the system for normal operation.
C1A85:13	Right Rear Outlet Valve: Circuit Open	This DTC indicates a concern in the ABS module. CLEAR the DTCs. CARRY OUT the ABS module self-test. RETRIEVE and RECORD any DTCs. If DTC C1A85:13 is retrieved again, INSTALL a new ABS module. REFER to Anti-Lock Brake System (ABS) Module in this section. TEST the system for normal operation.
C1A98:54	Yaw Rate Sensor: Missing Calibration	GO to Pinpoint Test G.
C1A99:14	Pressure Sensor: Circuit Short To Ground Or Open	GO to Pinpoint Test H.
C1A99:17	Pressure Sensor: Circuit	GO to Pinpoint Test H.

DTC	Description	Action
	Voltage Above Threshold	
C1A99:2F	Pressure Sensor: Signal Erratic	GO to Pinpoint Test H.
C1A99:62	Pressure Sensor: Signal Compare Failure	GO to Pinpoint Test H.
C1A99:65	Pressure Sensor: Signal Has Too Few Transitions/Events	GO to Pinpoint Test H.
C1A99:67	Pressure Sensor: Signal Incorrect After Event	GO to Pinpoint Test H.
C1B00:00	Steering Angle Sensor: No Sub Type Information	This DTC sets when the ABS module receives invalid data from the Power Steering Control Module (PSCM) regarding the steering wheel angle sensor input. RETRIEVE and REPAIR all non-network DTCs in the PSCM . REFER to Section 211-00 .
C1B00:62	Steering Angle Sensor: Signal Compare Failure	This DTC sets when the ABS module receives incorrect data from the PSCM regarding the steering wheel angle sensor input. RETRIEVE and REPAIR all non-network DTCs in the PSCM . REFER to Section 211-00 .
C1B00:63	Steering Angle Sensor: Circuit/Component Protection Time-out	This DTC sets when the yaw rate and stability sensors do not initialize after the vehicle has traveled 1000 meters (.65 miles) with vehicle speed above 75 km/h (45 mph). RETRIEVE and REPAIR all non-network DTCs in the PSCM . REFER to Section 211-00 .
C1B00:65	Steering Angle Sensor: Signal Has Too Few Transitions/Events	This DTC sets when the yaw rate sensor information changes but the steering wheel angle sensor data does not change. RETRIEVE and REPAIR all non-network DTCs in the PSCM . REFER to Section 211-00 .
C1B00:67	Steering Angle Sensor: Signal Incorrect After Event	This DTC sets when the steering angle sensor exceeds its step limit. RETRIEVE and REPAIR all non-network DTCs in the PSCM . REFER to Section 211-00 .
C1B00:81	Steering Angle Sensor: Invalid Serial Data Received	This DTC sets when the ABS module receives invalid data from the PSCM regarding the steering wheel angle sensor input. RETRIEVE and REPAIR all non-network DTCs in the PSCM . REFER to Section 211-00 .
C1B00:82	Steering Angle Sensor: Alive/Sequence Counter Incorrect/Not Updated	This DTC sets when the ABS module receives invalid data from the PSCM regarding the steering wheel angle sensor input. RETRIEVE and REPAIR all non-network DTCs in the PSCM . REFER to Section 211-00 .
U0001:49	High Speed CAN Communication Bus: Internal Electronic Failure	REFER to Section 418-00 to diagnose the network communication concern.
U0001:88	High Speed CAN Communication Bus: Bus Off	REFER to Section 418-00 to diagnose the network communication concern.
U0100:00	Lost Communication With ECM/PCM "A": No Sub Type Information	GO to Pinpoint Test I.
U0131:00	Lost Communication With Power Steering Control Module: No Sub Type Information	GO to Pinpoint Test J.
U0131:00	Lost Communication With Suspension Control Module "A": No Sub Type Information	GO to Pinpoint Test P.
U0151:00	Lost Communication With Restraints Control Module: No Sub Type Information	GO to Pinpoint Test K.
U0155:00	Lost Communication With Instrument Panel Cluster (IPC) Control Module: No Sub Type Information	GO to Pinpoint Test L.
U0401:00	Invalid Data received From ECM/PCM "A": No Sub Type Information	This DTC sets when the ABS module receives invalid network data from the ECM/PCM. RETRIEVE and REPAIR all non-network DTCs in the PCM . REFER to Section 303-14 .

DTC	Description	Action
U0452:00	Invalid Data received From Restraints Control Module: No Sub Type Information	This DTC sets when the ABS module receives invalid network data from the <u>RCM</u> . RETRIEVE and REPAIR all non-network DTCs in the <u>RCM</u> . REFER to <u>Section 501-20B</u> .
U1A00:49	Private Communication Network: Internal Electronic Failure	<u>GO to Pinpoint Test M.</u>
U1A00:87	Private Communication Network: Missing Message	<u>GO to Pinpoint Test M.</u>
U200A:1C	Control Module: Internal Power A Circuit Voltage Out of Range	DIAGNOSE all other DTCs first. If no other DTCs are present, INSTALL a new ABS module. REFER to <u>Anti-Lock Brake System (ABS) Module</u> in this section. TEST the system for normal operation.
U201A:57	Control Module Main Calibration Data Invalid: Incompatible Software Component	CARRY OUT Programmable Module Installation (PMI) on the ABS module. CLEAR the DTCs. REPEAT the self-test. If U201A:57 is retrieved again, INSTALL a new ABS module. REFER to <u>Anti-Lock Brake System (ABS) Module</u> in this section. TEST the system for normal operation.
U2100:00	Initial Configuration Not Complete: No Sub Type Information	CARRY OUT Programmable Module Installation (PMI) on the ABS module. CLEAR the DTCs. REPEAT the self-test. If U2100:00 is retrieved again, INSTALL a new ABS module. REFER to <u>Anti-Lock Brake System (ABS) Module</u> in this section. TEST the system for normal operation.
U2101:00	Control Module Configuration Incompatible: No Sub Type Information	CARRY OUT <u>PMI</u> on the ABS module. CLEAR the DTCs. REPEAT the self-test. If U2101:00 is retrieved again, INSTALL a new ABS module. REFER to <u>Anti-Lock Brake System (ABS) Module</u> in this section. TEST the system for normal operation.
U3000:41	Control Module: General Checksum Failure	DIAGNOSE all other DTCs first. If no other DTCs are present, INSTALL a new ABS module. REFER to <u>Anti-Lock Brake System (ABS) Module</u> in this section. TEST the system for normal operation.
U3000:43	Control Module: Special Memory Failure	DIAGNOSE all other DTCs first. If no other DTCs are present, INSTALL a new ABS module. REFER to <u>Anti-Lock Brake System (ABS) Module</u> in this section. TEST the system for normal operation.
U3000:44	Control Module: Data Memory Failure	DIAGNOSE all other DTCs first. If no other DTCs are present, INSTALL a new ABS module. REFER to <u>Anti-Lock Brake System (ABS) Module</u> in this section. TEST the system for normal operation.
U3000:45	Control Module: Program Memory Failure	DIAGNOSE all other DTCs first. If no other DTCs are present, INSTALL a new ABS module. REFER to <u>Anti-Lock Brake System (ABS) Module</u> in this section. TEST the system for normal operation.
U3000:47	Control Module: Watchdog Safety Failure	DIAGNOSE all other DTCs first. If no other DTCs are present, INSTALL a new ABS module. REFER to <u>Anti-Lock Brake System (ABS) Module</u> in this section. TEST the system for normal operation.
U3000:49	Control Module: Internal Electronic Failure	DIAGNOSE all other DTCs first. If no other DTCs are present, INSTALL a new ABS module. REFER to <u>Anti-Lock Brake System (ABS) Module</u> in this section. TEST the system for normal operation.
U3000:4B	Control Module: Over Temperature	DIAGNOSE all other DTCs first. If no other DTCs are present, INSTALL a new ABS module. REFER to <u>Anti-Lock Brake System (ABS) Module</u> in this section. TEST the system for normal operation.
U3002:62	Vehicle Identification Number: Signal Compare Failure	<u>GO to Pinpoint Test N.</u>

Symptom Chart

Symptom Chart

Condition	Possible Sources	Action
• No communication with the ABS module	<ul style="list-style-type: none"> • Fuse • Wiring, terminals or connectors • ABS module concern 	• REFER to <u>Section 418-00</u> to diagnose the no communication concern.
• The red brake warning indicator is always/never	<ul style="list-style-type: none"> • Instrument Panel Cluster (IPC) concern 	• RETRIEVE all DTCs and REFER to the ABS Module DTC Chart. If no

on	<ul style="list-style-type: none"> • ABS concern 	DTCs are present, REFER to Section 413-01 .
<ul style="list-style-type: none"> • The yellow ABS warning indicator is always/never on 	<ul style="list-style-type: none"> • IPC concern • ABS module 	<ul style="list-style-type: none"> • RETRIEVE all DTCs and REFER to the ABS Module DTC Chart. If no DTCs are present, REFER to Section 413-01.
<ul style="list-style-type: none"> • The sliding car icon or the sliding car OFF icon is never/always on 	<ul style="list-style-type: none"> • IPC • ABS or AdvanceTrac® concern 	<ul style="list-style-type: none"> • RETRIEVE all DTCs and REFER to the ABS Module DTC Chart. If no DTCs are present, REFER to Section 413-01.
<ul style="list-style-type: none"> • The sliding car icon is flashing at all times 	<ul style="list-style-type: none"> • NOTE: <i>It is normal for the indicator to flash during an AdvanceTrac® event.</i> • ABS module not calibrated 	<ul style="list-style-type: none"> • RETRIEVE and RECORD all ABS module DTCs and GO to the ABS Module DTC Chart.
<ul style="list-style-type: none"> • The message center displays SERVICE ADVANCETRAC 	<ul style="list-style-type: none"> • One or more DTCs present in the ABS module 	<ul style="list-style-type: none"> • RETRIEVE and RECORD all ABS module DTCs and GO to the ABS Module DTC Chart.
<ul style="list-style-type: none"> • The message center displays LAUNCH CONTROL UNAVAILABLE 	<ul style="list-style-type: none"> • The AdvanceTrac® system is disabled • One or more DTCs present in the ABS module 	<ul style="list-style-type: none"> • ENABLE the AdvanceTrac® system. If the message center still indicates that launch control is unavailable, RETRIEVE and RECORD all ABS module DTCs and GO to the ABS Module DTC Chart.
<ul style="list-style-type: none"> • Cannot enable or disable the launch control feature using the ride control switch 	<ul style="list-style-type: none"> • Wiring, terminals or connectors • Ride control switch • PCM 	<ul style="list-style-type: none"> • REFER to Section 204-05 Symptom Chart, "cannot change suspension modes using the ride control switch".
<ul style="list-style-type: none"> • The traction control or AdvanceTrac® system cannot be disabled 	<ul style="list-style-type: none"> • Wiring, terminals, or connectors • Stability/traction control switch • ABS module • If a MyKey® restricted key is in use with the AdvanceTrac® always-on feature configured to on, the traction control system cannot be disabled. Only an admin key can be used to change a MyKey® traction control system setting from always-on to user select. 	<ul style="list-style-type: none"> • GO to Pinpoint Test O.
<ul style="list-style-type: none"> • The launch control system cannot be enabled 	<ul style="list-style-type: none"> • Wiring, terminals, or connectors • Ride control switch • PCM 	<ul style="list-style-type: none"> • REFER to the Symptom Chart in Section 204-05, "Cannot change suspension modes using the ride control switch" to diagnose the ride control switch.

Pinpoint Tests

Pinpoint Test A: DTC B11E8:16

Refer to Wiring Diagrams Cell [42](#), Vehicle Dynamic Systems for schematic and connector information.

Normal Operation

- DTC B11E8:16 (ABS Power Supply: Circuit Voltage Below Threshold) — this DTC sets in continuous memory and on demand if the voltage supplied to the ABS module falls below 10 volts during the ABS module self-test or normal operation.

This pinpoint test is intended to diagnose the following:

- Wiring, terminals or connectors
- Charging system concern
- Battery concern
- ABS module

PINPOINT TEST A : DTC B11E8:16

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

NOTE: Failure to disconnect the battery when instructed results in false resistance readings. Refer to [Section 414-01](#).

A1 RECHECK THE ABS MODULE DTCS

- Ignition ON.
- Enter the following diagnostic mode on the scan tool: ABS Module Self-Test .
- Clear the DTCs.
- Wait 10 seconds.
- Repeat the ABS module self-test.

Is DTC B11E8:16 still present?

Yes	GO to A2 .
No	The system is operating correctly at this time. The DTC may have been set due to a previous low battery voltage condition.

A2 CHECK FOR CHARGING SYSTEM DTCS IN THE PCM

- Enter the following diagnostic mode on the scan tool: PCM Self-Test .
- Carry out the PCM Key ON Engine OFF (KOEO) self-test.

Is DTC P0620, P0625, P0626 or P065B set in the PCM?

Yes	REFER to Section 414-00 .
No	GO to A3 .

A3 CHECK THE BATTERY CONDITION AND STATE OF CHARGE

- Check the battery condition and verify the battery is fully charged. Refer to [Section 414-01](#).

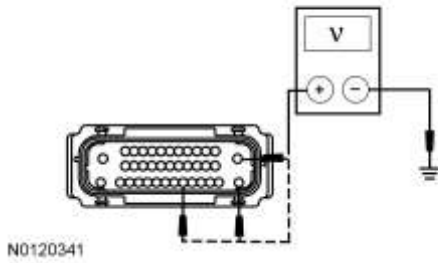
Is the battery OK and fully charged?

Yes	GO to A4 .
No	REFER to Section 414-01 .

A4 CHECK THE ABS MODULE VOLTAGE SUPPLY

- Ignition OFF.
- Disconnect: ABS Module [C135](#) .
- Ignition ON.
- Measure and record the voltage at the battery.
- Measure the voltage between the ABS module [C135](#) and ground as follows:

ABS Module Connector-Pin	Circuit
C135 Pin 1	SBB08 (VT/RD)
C135 Pin 25	SBB10 (YE/RD)
C135 Pin 30	CBP34 (VT/BN)

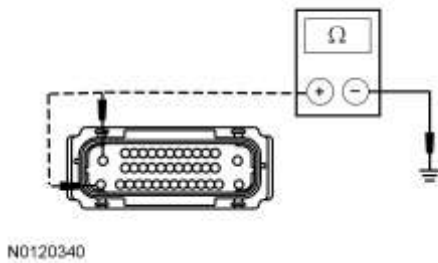


Are the voltages within 0.2 volt of the recorded battery voltage?

Yes	GO to A5 .
No	VERIFY the fuses are OK. If OK, REPAIR the circuit in question for an open. If not OK, REFER to the Wiring Diagrams Manual to identify the possible causes of the short circuit. CLEAR the DTC. REPEAT the self-test.

A5 CHECK THE ABS MODULE GROUND CIRCUIT

- Ignition OFF.
- Disconnect: Negative Battery Cable .
- Measure the resistance between the ABS module [C135](#) Pin 13, circuit GD120 (BK/GN), harness side and ground; and between the ABS module [C135](#) Pin 38, circuit GD120 (BK/GN), harness side and ground.



Is the resistance less than 5 ohms?

Yes	GO to A6 .
No	REPAIR circuit GD120 (BK/GN) for open circuit. CLEAR the DTCs. REPEAT the self-test.

A6 CHECK THE ABS MODULE GROUND EYELET AT THE CHASSIS

- Ignition OFF.
- Remove the bolt retaining G101, engine compartment, LH side front.
 - Clean the body mating surface and ground eyelets.
 - Install the ground eyelet to the chassis with the retaining bolt.
- Ignition ON.
- Enter the following diagnostic mode on the scan tool: ABS Module Self-Test .

Is the concern still present?

Yes	GO to A7 .
No	The concern was caused by a loose or corroded connector. CLEAR the DTCs. REPEAT self-test.

A7 CHECK FOR CORRECT ABS MODULE OPERATION

- Disconnect the ABS module connector.
- Check for:

- corrosion
- damaged pins
- pushed-out pins
- Connect the ABS module connector and make sure it seats correctly.
- Operate the system and verify the concern is still present.

Is the concern still present?

Yes	INSTALL a new ABS module. REFER to Anti-Lock Brake System (ABS) Module in this section. TEST the system for normal operation.
No	The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector.

Pinpoint Test B: DTC B11E8:17

Refer to Wiring Diagrams Cell [42](#), Vehicle Dynamic Systems for schematic and connector information.

Normal Operation

- DTC B11E8:17 (ABS Power Supply: Circuit Voltage Above Threshold) — this DTC sets in continuous memory and on-demand if the voltage supplied to the ABS module exceeds 16 volts during the ABS module self-test or normal operation.

This pinpoint test is intended to diagnose the following:

- Charging system concern
- ABS module

PINPOINT TEST B : DTC B11E8:17

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

NOTE: DTC B11E8:17 may be stored in the module memory due to past battery charging or vehicle jump starting events.

B1 CHECK FOR DTC B11E8:17, B1317, B1676, P0563 (PCM) OR U3003:17 SET IN OTHER MODULES

- Ignition ON.
- Enter the following diagnostic mode on the scan tool: Continuous Memory Diagnostic Trouble Codes (CMDTCs) .
- Retrieve the CMDTCs from all modules.

Is DTC B11E8:17, B1317, B1676, P0563 (PCM) or U3003:17 set in more than one module?

Yes	REFER to Section 414-00 to diagnose an overcharging condition.
No	GO to B2 .

B2 CHECK THE BATTERY VOLTAGE

- Turn off all interior/exterior lights and accessories.
- Start and run the engine at approximately 2,000 rpm for 3 minutes while monitoring the battery voltage.

Does the battery voltage rise to 15.5 volts or higher?

Yes	REFER to Section 414-00 to diagnose an overcharging condition.
No	GO to B3 .

B3 RECHECK FOR DTC B11E8:17

- Turn the engine off.
- Ignition ON.

- Enter the following diagnostic mode on the scan tool: ABS Module Self-Test .
- Clear the CMDTCs .
- Carry out the ABS module self-test.

Is DTC B11E8:17 present?

Yes	INSTALL a new ABS module. REFER to Anti-Lock Brake System (ABS) Module in this section. TEST the system for normal operation.
No	The system is operating normally at this time. The DTC may have been set previously during battery charging or while jump starting the vehicle.

Pinpoint Test C: DTCs C0020:13, C0020:15 and C0020:71

Refer to Wiring Diagrams Cell [42](#), Vehicle Dynamic Systems for schematic and connector information.

Normal Operation

When the ignition key is turned to the ON position, the ABS module commands the Hydraulic Control Unit (HCU) pump on for 100 ms (±6 ms) and is then commanded off. After 6 ms, the ABS module reads the voltage that is being generated by the HCU pump. If the voltage indicates the motor is spinning at less than 500 rpm, there may be a locked motor. If this condition is detected 4 times, DTC C0020:13 sets. The pump motor is checked for an open circuit 2 seconds after the most recent successful pump motor off command. If the pump motor feedback remains greater than 0.75 volt for more than 50 ms (±6 ms) after these conditions have been met, DTC C0020:15 sets.

- DTC C0020:13 (ABS Pump Motor Control: Circuit Open) — sets in continuous memory and on-demand when the motor driver feedback voltage is less than battery voltage, that indicates an open driver or supply condition where the battery voltage is adjusted to the minimal threshold for the motor supply.
- DTC C0020:15 (ABS Pump Motor Control: Circuit Short To Battery Or Open) — sets in continuous memory and on-demand if the ABS pump feedback voltage is greater than 0.75 volts for more than 50 ms after the pump motor has been commanded off for 2 seconds or more, if there is an open or high resistance on the ABS pump motor circuit between the ABS module and the HCU , or if the ABS module is faulted internally.
- DTC C0020:71 (ABS Pump Motor Control: Actuator Stuck) — sets in continuous memory and on-demand if the ABS module detects that the ABS pump motor is not rotating when it is commanded to run.

This pinpoint test is intended to diagnose the following:

- Fuse
- Wiring, terminals or connectors
- HCU
- ABS module

PINPOINT TEST C : DTCS C0020:13, C0020:15 AND C0020:71

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

NOTE: Failure to disconnect the battery when instructed results in false resistance readings. Refer to [Section 414-01](#).

C1 CHECK THE PUMP MOTOR (PMP_MOTOR) ACTIVE COMMAND

- Ignition ON.
- Enter the following diagnostic mode on the scan tool: ABS Module DataLogger .
- Toggle the PMP_MOTOR active command ON.

Listen for the ABS pump motor noise, does the ABS pump motor run for approximately 2 seconds?

Yes	GO to C2 .
No	TOGGLE the PMP_MOTOR active command OFF. GO to C3 .

C2 CHECK FOR FAULT REPEATABILITY

- Drive the vehicle at speeds greater than 20 km/h (12 mph).

- Enter the following diagnostic mode on the scan tool: ABS Module Self Test .

Are DTCs C0020:13, C0020:15 or C0020:71 retrieved?

Yes	GO to C3 .
No	The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector.

C3 CHECK THE ABS MODULE GROUND EYELET AT THE CHASSIS

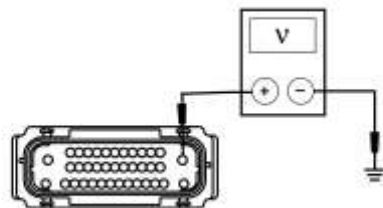
- Ignition OFF.
- Remove the bolt retaining GD120, in the engine compartment, LH side front.
 - Clean the body mating surface and ground eyelets.
 - Install the ground eyelet to the chassis with the retaining bolt.
- Ignition ON.
- Enter the following diagnostic mode on the scan tool: ABS Module Self-Test .

Are DTCs C0020:13, C0020:15, C0020:71 retrieved?

Yes	GO to C4 .
No	The concern was caused by a loose or corroded connector. CLEAR the DTCs. REPEAT self-test.

C4 CHECK THE PUMP MOTOR VOLTAGE SUPPLY TO THE ABS MODULE

- Ignition OFF.
- Disconnect: ABS Module [C135](#) .
- Measure the voltage between ABS module [C135](#) Pin 1, circuit SBB08 (VT/RD), harness side and ground.



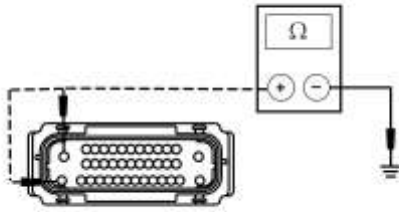
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Is the voltage greater than 10 volts?

Yes	GO to C5 .
No	VERIFY that BJB fuse 8 (40A) is OK. If OK, REPAIR circuit SBB08 (VT/RD). If not OK, REFER to the Wiring Diagrams manual to identify the cause of the circuit short. CLEAR the DTCs. REPEAT the self-test.

C5 CHECK THE ABS MODULE GROUND CIRCUITS FOR AN OPEN

- Ignition OFF.
- Disconnect: Negative Battery Cable .
- Measure the resistance between ABS module [C135](#) Pin 13, circuit GD120 (BK/GN), harness side and ground and the ABS module [C135](#) Pin 38, circuit GD120 (BK/GN), harness side and ground.



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Is the resistance less than 5 ohms?

Yes	GO to C6 .
No	REPAIR circuit GD120 (BK/GN) for an open circuit. CLEAR the DTCs. REPEAT the self-test.

C6 CHECK FOR CORRECT ABS MODULE OPERATION

- Disconnect: ABS Module .
- Check for:
 - corrosion
 - damaged pins
 - pushed-out pins
- Connect: ABS Module .
- Make sure the connector is seated correctly, then operate the system and verify the concern is still present.

Is the concern still present?

Yes	INSTALL a new ABS module. REFER to Anti-Lock Brake System (ABS) Module in this section. GO to C7 .
No	The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector. CLEAR the DTCs. REPEAT the self-test.

C7 CHECK FOR FAULT REPEATABILITY

- Drive the vehicle at speeds greater than 20 km/h (12 mph).
- Enter the following diagnostic mode on the scan tool: ABS Module Self Test .

Are DTCs C0020:13, C0020:15, C0020:71 retrieved?

Yes	INSTALL a new HCU . REFER to Hydraulic Control Unit (HCU) in this section. TEST the system for normal operation.
No	The repairs are complete. The system is operating correctly at this time.

Pinpoint Test D: DTCs C0031:13, C0031:17, C0031:23 (LF), C0034:13, C0034:17, C0034:23 (RF), C0037:13, C0037:17, C0037:23 (LR), C003A:13, C003A:17 and C003A:23 (RR)

Normal Operation

The wheel speed sensors are active sensors and generate a square wave signal that is sent to the ABS module. When the ignition is turned to the RUN position, the ABS module carries out a self-test to determine if the sensors are functional. Voltage and ground are supplied to the front and rear wheel speed sensors from the ABS module along a pair of wires.

Wheel speed sensor DTCs automatically clear when a successful test drive is carried out. A successful test drive includes speeds above 32 km/h (20 mph) and at least one ABS stop.

DTC Description	Fault Trigger Conditions
<ul style="list-style-type: none"> • C0031:13 — Left Front Wheel Speed Sensor: Circuit Open • C0034:13 — Right Front Wheel Speed Sensor: Circuit Open • C0037:13 — Left Rear Wheel Speed Sensor: Circuit Open • C003A:13 — Right Rear Wheel Speed Sensor: Circuit Open 	<p>These DTCs set in continuous memory and on-demand when the ABS module detects that the wheel speed sensor circuit is open or has high resistance.</p>
<ul style="list-style-type: none"> • C0031:17 — Left Front Wheel Speed Sensor: Circuit Voltage Above Threshold • C0034:17 — Right Front Wheel Speed Sensor: Circuit Voltage Above Threshold • C0037:17 — Left Rear Wheel Speed Sensor: Circuit Voltage Above Threshold • C003A:17 — Right Rear Wheel Speed Sensor: Circuit Voltage Above Threshold 	<p>These DTCs set in continuous memory and on-demand when the ABS module detects that the wheel speed sensor circuit indicates higher voltage than expected.</p>
<ul style="list-style-type: none"> • C0031:23 — Left Front Wheel Speed Sensor: Signal Stuck Low • C0034:23 — Right Front Wheel Speed Sensor: Signal Stuck Low • C0037:23 — Left Rear Wheel Speed Sensor: Signal Stuck Low • C003A:23 — Right Rear Wheel Speed Sensor: Signal Stuck Low 	<p>These DTCs set in continuous memory and on-demand when the ABS module detects that the wheel speed sensor circuit is shorted to ground.</p>

This pinpoint test is intended to diagnose the following:

- Wiring, terminals or connectors
- Wheel speed sensor
- ABS module

PINPOINT TEST D : DTCS C0031:13, C0031:17, C0031:23 (LF), C0034:13, C0034:17, C0034:23 (RF), C0037:13, C0037:17, C0037:23 (LR), C003A:13, C003A:17 AND C003A:23 (RR)

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

D1 CHECK FOR FAULT REPEATABILITY

- Ignition ON.
- Enter the following diagnostic mode on the scan tool: Clear Continuous Memory Diagnostic Trouble Codes (CMDTCs) .
- Drive the vehicle at least 20 km/h (12 mph).
- Enter the following diagnostic mode on the scan tool: ABS Module Self-Test .

Is the DTC still present?

Yes	If the Rotunda Active Wheel Speed Sensor Tester is available, GO to D2 . If the Rotunda Active Wheel Speed Sensor Tester is not available, GO to D4 .
No	INSPECT the wheel speed sensors and wheel speed sensor wiring. REPAIR or INSTALL new as necessary. REFER to Wheel Speed Sensor — Front or Wheel Speed Sensor — Rear in this section. If any other DTCs are retrieved, REFER to the ABS Module DTC Chart in this section.

D2 CHECK THE ABS MODULE OUTPUT USING THE ROTUNDA ACTIVE WHEEL SPEED SENSOR TESTER

- Ignition OFF.

- Disconnect: Suspect Wheel Speed Sensor .
- Connect the Rotunda Active Wheel Speed Sensor Tester to the wheel speed sensor connectors.
- Ignition ON.
- Select the correct system polarity on the Rotunda Active Wheel Speed Sensor Tester and turn the power switch to the ON position.

Is the module output LED illuminated?

Yes	GO to D3 .
No	GO to D5 .

D3 CHECK THE WHEEL SPEED SENSOR OUTPUT WITH THE ROTUNDA ACTIVE WHEEL SPEED SENSOR TESTER

- Raise the suspect wheel until it can spin freely. Refer to [Section 100-02](#).
- While monitoring the Rotunda Active Wheel Speed Sensor Tester, slowly spin the suspect wheel.

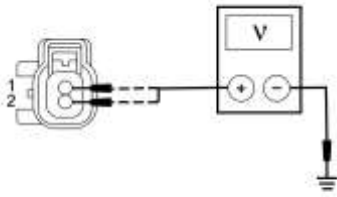
Do the sensor output LEDs illuminate and flash and is the current overload LED not illuminated?

Yes	The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector. CLEAR the DTCs. REPEAT the self-test.
No	If the current overload LED is not illuminated and the sensor output LEDs do not illuminate or if the current overload LED is illuminated red, INSTALL a new wheel speed sensor. REFER to Wheel Speed Sensor — Front or Wheel Speed Sensor — Rear in this section. CLEAR the DTCs. REPEAT the self-test. If the current overload LED is not illuminated and the sensor output LEDs illuminate green, but do not flash, INSTALL a new wheel speed sensor. REFER to Wheel Speed Sensor — Front or Wheel Speed Sensor — Rear in this section. CLEAR the DTCs. REPEAT the self-test.

D4 CHECK THE WHEEL SPEED SENSOR CIRCUITS FOR A SHORT TO BATTERY VOLTAGE

- Ignition OFF.
- Disconnect: ABS Module [C135](#) .
- Disconnect: Suspect Wheel Speed Sensor .
- Ignition ON.
- Measure the voltage between the suspect wheel speed sensor connector, harness side and ground as follows:

Wheel Speed Sensor	Circuit
LF	
C150 Pin 1	VCA03 (VT/WH)
C150 Pin 2	RCA17 (YE)
RF	
C160 Pin 1	VCA05 (GY/VT)
C160 Pin 2	RCA19 (VT)
LR	
C3116 Pin 1	VCA04 (BU/OG)
C3116 Pin 2	RCA18 (BN/GN)
RR	
C3117 Pin 1	VCA06 (WH/OG)
C3117 Pin 2	RCA20 (BN)



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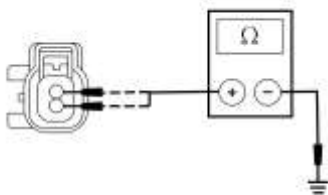
Is any voltage present?

Yes	REPAIR the affected circuit(s) for a short to voltage. CLEAR the DTCs. REPEAT the self-test.
No	GO to D5 .

D5 CHECK THE WHEEL SPEED SENSOR CIRCUITS FOR A SHORT TO GROUND

- Ignition OFF.
- Disconnect: ABS Module [C135](#) .
- Measure the resistance between the suspect wheel speed sensor connector, harness side and ground as follows:

Wheel Speed Sensor	Circuit
LF	
C150 Pin 1	VCA03 (VT/WH)
C150 Pin 2	RCA17 (YE)
RF	
C160 Pin 1	VCA05 (GY/VT)
C160 Pin 2	RCA19 (VT)
LR	
C3116 Pin 1	VCA04 (BU/OG)
C3116 Pin 2	RCA18 (BN/GN)
RR	
C3117 Pin 1	VCA06 (WH/OG)
C3117 Pin 2	RCA20 (BN)



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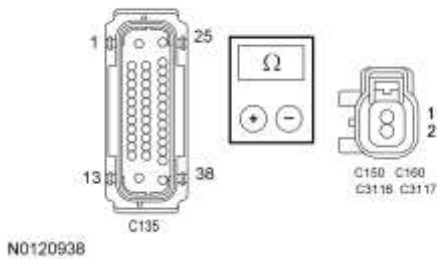
Are the resistances greater than 10,000 ohms?

Yes	GO to D6 .
No	REPAIR the affected circuit(s) for a short to ground. CLEAR the DTCs. REPEAT the self-test.

D6 CHECK THE WHEEL SPEED CIRCUITS FOR AN OPEN

- Disconnect: Suspect Wheel Speed Sensor .
- Measure the resistance between ABS module connector [C135](#), harness side and the suspect wheel speed sensor connector, harness side as follows:

ABS Module	Circuit	Wheel Speed Sensor
LF		
C135 Pin 27	VCA03 (VT/WH)	C150 Pin 1
C135 Pin 28	RCA17 (YE)	C150 Pin 2
RF		
C135 Pin 3	VCA05 (GY/VT)	C160 Pin 1
C135 Pin 4	RCA19 (VT)	C160 Pin 2
LR		
C135 Pin 36	VCA04 (BU/OG)	C3116 Pin 1
C135 Pin 35	RCA18 (BN/GN)	C3116 Pin 2
RR		
C135 Pin 11	VCA06 (WH/OG)	C3117 Pin 1
C135 Pin 10	RCA20 (BN)	C3117 Pin 2



Are the resistances less than 5 ohms?

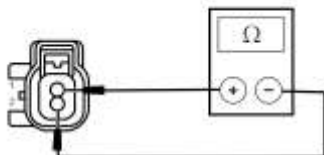
Yes	GO to D7 .
No	REPAIR the affected circuit(s) for an open circuit. CLEAR the DTCs. REPEAT the self-test.

D7 CHECK FOR SHORTED WHEEL SPEED SENSOR CIRCUITS

- Measure the resistance between the suspect wheel speed sensor connector, harness side as follows:

Wheel Speed Sensor	Circuit
LF	
C150 Pin 1	VCA03 (VT/WH)
C150 Pin 2	RCA17 (YE)
RF	
C160 Pin 1	VCA05 (GY/VT)
C160 Pin 2	RCA19 (VT)

Wheel Speed Sensor	Circuit
LR	
C3116 Pin 1	VCA04 (BU/OG)
C3116 Pin 2	RCA18 (BN/GN)
RR	
C3117 Pin 1	VCA06 (WH/OG)
C3117 Pin 2	RCA20 (BN)



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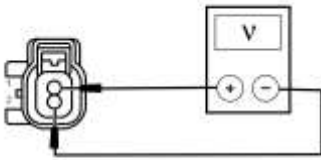
Is the resistance greater than 10,000 ohms?

Yes	GO to D8 .
No	REPAIR the affected circuit(s). CLEAR the DTCs. REPEAT the self-test.

D8 CHECK FOR CORRECT ABS MODULE OUTPUT

- Ignition ON.
- Measure the voltage between the suspect wheel speed sensor connector, harness side as follows:

Wheel Speed Sensor	Circuit
LF	
C150 Pin 1	VCA03 (VT/WH)
C150 Pin 2	RCA17 (YE)
RF	
C160 Pin 1	VCA05 (GY/VT)
C160 Pin 2	RCA19 (VT)
LR	
C3116 Pin 1	VCA04 (BU/OG)
C3116 Pin 2	RCA18 (BN/GN)
RR	
C3117 Pin 1	VCA06 (WH/OG)
C3117 Pin 2	RCA20 (BN)



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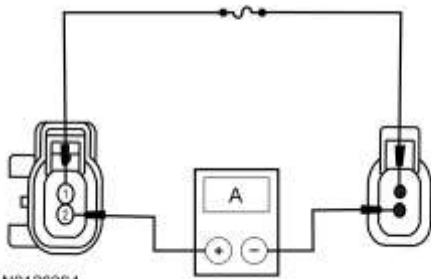
Is the voltage greater than 10 volts?

Yes	REPLACE the suspect wheel speed sensor. REFER to Wheel Speed Sensor — Front or Wheel Speed Sensor — Rear in this section. CLEAR the DTCs. REPEAT the self-test.
No	GO to D9 .

D9 CHECK THE WHEEL SPEED SENSOR OUTPUT

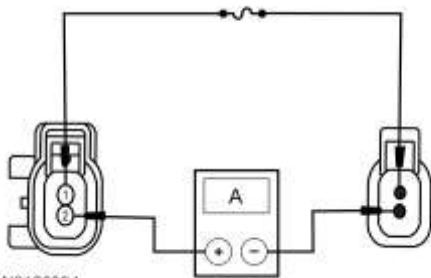
NOTE: The digital multimeter must have the leads in the current sensing ports and the correct range selected.

- Ignition OFF.
- Measure the current between the suspect wheel speed sensor connector, harness side as follows:



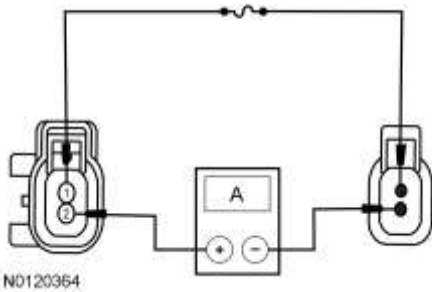
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- **For LF wheel speed sensor:**
 - connect the meter between LF wheel speed sensor [C150](#) Pin 1, circuit VCA03 (VT/WH), harness side and LF wheel speed sensor pin 1, component side.
 - connect a fused jumper wire between LF wheel speed sensor [C150](#) Pin 2, circuit RCA17 (YE), harness side and LF wheel speed sensor pin 2, component side.
- **For RF wheel speed sensor:**
 - connect the meter between RF wheel speed sensor [C160](#) Pin 1, circuit VCA05 (GY/VT), harness side and RF wheel speed sensor pin 1, component side.
 - connect a fused jumper wire between RF wheel speed sensor [C160](#) Pin 2, circuit RCA19 (VT), harness side and RF wheel speed sensor pin 2, component side.



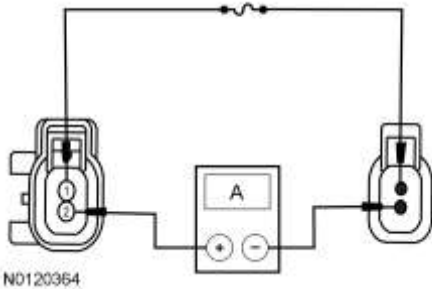
N0120364

- **For LR wheel speed sensor:**
 - connect the meter between LR wheel speed sensor [C3116](#) Pin 1, circuit VCA04 (BU/OG), harness side and LR wheel speed sensor pin 1, component side.
 - connect a fused jumper wire between LR wheel speed sensor [C3116](#) Pin 2, circuit RCA18 (BN/GN), harness side and LR wheel speed sensor pin 2, component side.



• **For RR wheel speed sensor:**

- connect the meter between RR wheel speed sensor [C3117](#) Pin 1, circuit VCA06 (WH/OG), harness side and RR wheel speed sensor pin 1, component side.
- connect a fused jumper wire between RR wheel speed sensor [C3117](#) Pin 2, circuit RCA20 (BN), harness side and RR wheel speed sensor pin 2, component side.



- Ignition ON.
- Measure the current while slightly rotating the wheel, using incremental turns.

Does the digital multimeter indicate the current switches between the low state (5 to 8 mA) and the high state (12 to 16 mA)?

Yes	GO to D10 .
No	INSTALL a new wheel speed sensor. REFER to Wheel Speed Sensor — Front or Wheel Speed Sensor — Rear in this section. CLEAR the DTCs. REPEAT the self-test.

D10 CHECK FOR CORRECT ABS MODULE OPERATION

- Disconnect: ABS Module [C135](#) .
- Check for:
 - corrosion
 - damaged pins
 - pushed-out pins
- Connect: ABS Module [C135](#) .
- Make sure the connector is seated correctly, then operate the system and verify the concern is still present.

Is the concern still present?

Yes	INSTALL a new ABS module. REFER to Anti-Lock Brake System (ABS) Module in this section. TEST the system for normal operation.
No	The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector. CLEAR the DTCs. REPEAT the self-test.

Pinpoint Test E: DTCs C0031:2F, C0031:62, C0034:2F, C0034:62, C0037:2F, C0037:62, C003A:2F, C003A:62 and C0078:61

Normal Operation

The wheel speed sensors are active sensors and generate a square wave signal that is sent to the ABS module. When the ignition is turned to the RUN position, the ABS module carries out a self-test to determine if the sensors are functional. Voltage and ground are supplied to the front wheel speed sensors from the ABS module along 2 circuits.

Wheel speed sensor DTCs are set in continuous memory and they automatically clear when a successful test drive is carried out. A successful test drive includes speeds above 32 km/h (20 mph) and at least one ABS stop.

DTC Description	Fault Trigger Conditions
<ul style="list-style-type: none"> • C0031:2F — Left Front Wheel Speed Sensor: Signal Erratic • C0034:2F — Right Front Wheel Speed Sensor: Signal Erratic • C0037:2F — Left Rear Wheel Speed Sensor: Signal Erratic • C003A:2F — Right Rear Wheel Speed Sensor: Signal Erratic 	<p>These DTCs set in continuous memory when the vehicle speed exceeds 20 km/h (12 mph), and the ABS module detects an erratic wheel speed sensor acceleration. It can also be set by damaged tone rings, mismatched wheel and/or tire sizes or driving the vehicle on one or more deflated tires.</p>
<ul style="list-style-type: none"> • C0031:62 — Left Front Wheel Speed Sensor: Signal Compare Failure • C0034:62 — Right Front Wheel Speed Sensor: Signal Compare Failure • C0037:62 — Left Rear Wheel Speed Sensor: Signal Compare Failure • C003A:62 — Right Rear Wheel Speed Sensor: Signal Compare Failure 	<p>These DTCs set in continuous memory if the ABS module detects one of the wheel speed sensors has a missing signal or varies by 20% of the rest of the wheel speed sensors. There are no wheel speed sensor shorted or open circuit faults present in memory.</p>
<ul style="list-style-type: none"> • C0078:61 — Tire Diameter: Signal Calculation Failure 	<p>This DTC sets in continuous memory when the one wheel speed velocity differs from the rest by 25% or more. There are no wheel speed sensor faults set in memory. It can also be set by damaged tone rings, mismatched wheel and/or tire sizes or driving the vehicle on one or more deflated tires.</p>

This pinpoint test is intended to diagnose the following:

- Mismatched tire sizes
- Wheel speed sensor ring
- Wheel speed sensor
- ABS module

PINPOINT TEST E : DTCS C0031:2F, C0031:62, C0034:2F, C0034:62, C0037:2F, C0037:62, C003A:2F, C003A:62 AND C0078:61

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

E1 CHECK THE DTCS FROM THE SELF-TEST

- Review the DTCs retrieved and recorded during Inspection and Verification.

Are DTCs C0031:13; C0034:13; C0037:13 and/or C003A:13 present?

Yes	GO to Pinpoint Test D.
-----	--

No	GO to E2 .
----	----------------------------

E2 CHECK THE TIRE SIZES AND PRESSURE

- Verify that all tires and wheels are the same size and that the tire size and inflation pressures are correct as indicated on the Vehicle Certification (VC) label.

Are the wheels and tires OK?

Yes	GO to E3 .
No	INSTALL the correct size tire/wheel or ADJUST tire pressure as necessary. CLEAR the DTCs. REPEAT the self-test.

E3 MONITOR THE WHEEL SPEED SENSOR PIDS

- Ignition ON.
- Enter the following diagnostic mode on the scan tool: ABS Module DataLogger .
- Drive the vehicle at a speed greater than 20 km/h (12 mph) while monitoring the following PIDs:
 - Left front wheel speed sensor (LF_WSPD)
 - Right front wheel speed sensor (RF_WSPD)
 - Left rear wheel speed sensor (LR_WSPD)
 - Right rear wheel speed sensor (RR_WSPD)

Are the wheel speed PIDs consistent (within [5 km/h (3 mph)]) with each other and the vehicle speed as indicated on the speedometer?

Yes	GO to E11 .
No	GO to E4 .

E4 CHECK THE WHEEL SPEED SENSOR FOR DAMAGE

- NOTE:** Examine the wheel speed sensor wire carefully with a good light source. Failure to verify damage in the wheel speed sensor wire can lead to unnecessary installation of a new component.

Inspect the wheel speed sensor and harness for abrasion, broken connector tabs or water intrusion.

Is the wheel speed sensor and harness OK?

Yes	GO to E5 .
No	INSTALL a new wheel speed sensor. REFER to Wheel Speed Sensor — Front or Wheel Speed Sensor — Rear in this section. CLEAR the DTCs. REPEAT the self-test.

E5 INSPECT THE WHEEL SPEED SENSOR MOUNTING

- Ignition OFF.
- With the vehicle in NEUTRAL, position it on a hoist. Refer to [Section 100-02](#).
- Inspect the wheel speed sensor and fastener for looseness.

Are the wheel speed sensor and fastener tight?

Yes	GO to E6 .
No	TIGHTEN the wheel speed sensor to specification. REFER to Specifications in this section. CLEAR the DTCs. REPEAT the self-test.

E6 CHECK TONE RING FOR DAMAGE

- Inspect the tone rings for abnormal wear or roughness and for damage.

Are the tone ring(s) OK?

Yes	For wheel speed sensor testing with the Rotunda Active Wheel Speed Sensor Tester, GO to E7 . For wheel speed sensor testing without the Rotunda Active Wheel Speed Sensor Tester, GO to E9 .
No	INSTALL a new tone ring as necessary. REFER to Wheel Speed Sensor Ring — Front or Wheel Speed Sensor Ring — Rear in this section. CLEAR the DTCs. REPEAT the self-test.

E7 CHECK THE ABS MODULE OUTPUT USING THE ROTUNDA ACTIVE WHEEL SPEED SENSOR TESTER

- Disconnect: Suspect Wheel Speed Sensor .
- Connect the Rotunda Active Wheel Speed Sensor Tester to the wheel speed sensor connectors.
- Ignition ON.
- Select the correct system polarity on the Rotunda Active Wheel Speed Sensor Tester and turn the power switch to the ON position.

Is the module output LED illuminated?

Yes	GO to E8 .
No	GO to E11 .

E8 CHECK THE WHEEL SPEED SENSOR OUTPUT WITH THE ROTUNDA ACTIVE WHEEL SPEED SENSOR TESTER

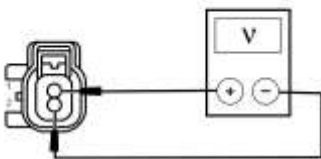
- Raise the suspect wheel until it can spin freely. Refer to [Section 100-02](#).
- While monitoring the Rotunda Active Wheel Speed Sensor Tester, slowly spin the suspect wheel.

Do the sensor output LEDs illuminate and flash and is the current overload LED not illuminated?

Yes	The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector. CLEAR the DTCs. REPEAT the self-test.
No	If the current overload LED is not illuminated and the sensor output LEDs do not illuminate or if the current level LED is illuminated red, INSTALL a new wheel speed sensor. REFER to Wheel Speed Sensor — Front or Wheel Speed Sensor — Rear in this section. CLEAR the DTCs. REPEAT the self-test. If the current overload LED is not illuminated and the sensor output LEDs illuminate green, but do not flash, INSTALL a new wheel speed sensor. REFER to Wheel Speed Sensor — Front or Wheel Speed Sensor — Rear in this section. CLEAR the DTCs. REPEAT the self-test. If the sensor output LEDs still illuminate but do not flash REPLACE the suspect tone ring(s). REFER to Wheel Speed Sensor Ring — Front or Wheel Speed Sensor Ring — Rear in this section.

E9 CHECK FOR CORRECT ABS MODULE OUTPUT

- Disconnect: Suspect Wheel Speed Sensor .
- Ignition ON.
-



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- Measure the voltage between the suspect wheel speed sensor connector, harness side as follows:

Location	Connector-Pin/ Circuit	Connector-Pin/ Circuit
LF	C150 Pin 1 VCA03 (VT/WH)	C150 Pin 2 RCA17 (YE)
RF	C160 Pin 1 VCA05 (GY/VT)	C160 Pin 2 RCA19 (VT)
LR	C3116 Pin 1 VCA04 (BU/OG)	C3116 Pin 2 RCA18 (BN/GN)
RR	C3117 Pin 1 VCA06 (WH/OG)	C3117 Pin 2 RCA20 (BN)

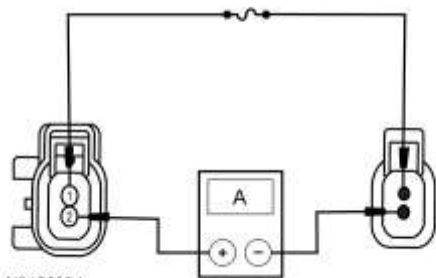
Is the voltage greater than 10 volts?

Yes	GO to E10 .
No	GO to E11 .

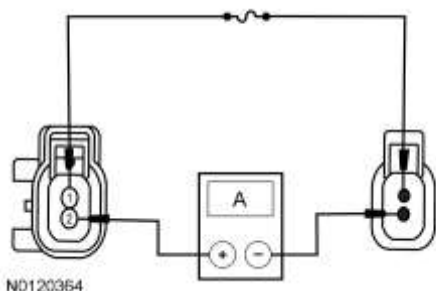
E10 CHECK THE WHEEL SPEED SENSOR OUTPUT

- Disconnect: Suspect Wheel Speed Sensor . **NOTE:** The digital multimeter must have the leads in the current sensing ports and the correct range selected.

Measure the current between the suspect wheel speed sensor connector, harness side as follows:

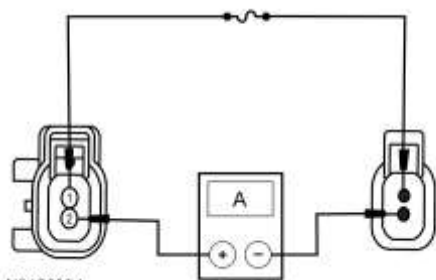


- **For the LF wheel speed sensor:**
 - connect the meter between LF wheel speed sensor [C150](#) Pin 1, circuit VCA03 (VT/WH), harness side and LF wheel speed sensor pin 1, component side.
 - connect a fused jumper wire between LF wheel speed sensor [C150](#) Pin 2, circuit RCA17 (YE), harness side and LF wheel speed sensor pin 2, component side.
- **For the RF wheel speed sensor:**
 - connect the meter between RF wheel speed sensor [C160](#) Pin 1, circuit VCA05 (GY/VT), harness side and RF wheel speed sensor pin 1, component side.
 - connect a fused jumper wire between RF wheel speed sensor [C160](#) Pin 2, circuit RCA19 (VT), harness side and RF wheel speed sensor pin 2, component side.



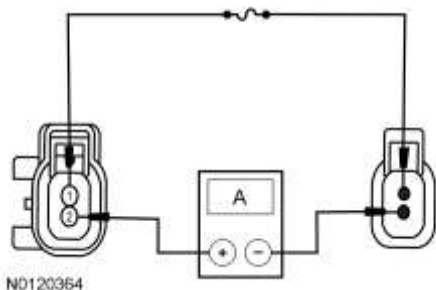
- **For the LR wheel speed sensor:**
 - connect the meter between LR wheel speed sensor [C3116](#) Pin 1, circuit VCA04 (BU/OG), harness side and LR wheel speed sensor pin 1, component side.

- connect a fused jumper wire between LR wheel speed sensor [C3116](#) Pin 2, circuit RCA18 (BN/GN), harness side and LR wheel speed sensor pin 2, component side.



For the RR wheel speed sensor:

- connect the meter between RR wheel speed sensor [C3117](#) Pin 1, circuit VCA06 (WH/OG), harness side and RR wheel speed sensor pin 1, component side.
- connect a fused jumper wire between RR wheel speed sensor [C3117](#) Pin 2, circuit RCA20 (BN), harness side and RR wheel speed sensor pin 2, component side.



- Ignition ON.
- Measure the current while slightly rotating the wheel, using incremental turns.

Does the digital multimeter indicate the current switches between the low state (5 to 8 mA) and the high state (12 to 16 mA)?

Yes	GO to E11 .
No	INSTALL a new wheel speed sensor. REFER to Wheel Speed Sensor — Front or Wheel Speed Sensor — Rear in this section. CLEAR the DTCs. REPEAT the self-test.

E11 CHECK FOR CORRECT ABS MODULE OPERATION

- Disconnect: ABS Module .
- Check for:
 - corrosion
 - damaged pins
 - pushed-out pins
- Connect: ABS Module .
- Make sure the connector is seated correctly, then operate the system and verify the concern is still present.

Is the concern still present?

Yes	INSTALL a new ABS module. REFER to Anti-Lock Brake System (ABS) Module in this section. TEST the system for normal operation.
No	The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector. CLEAR the DTCs. REPEAT the self-test.

Pinpoint Test F: DTCs C0040:72 and C0040:73

Normal Operation

The ABS module receives brake pedal input from the PCM over the High Speed Controller Area Network (HS-CAN) . The ABS module compares this information against other inputs (wheel speed signals, vehicle speed signal, brake pressure transducer) to determine if the brake pedal input is valid.

- DTC C0040:72 (Brake Pedal Switch "A": Actuator Stuck Open) — sets in continuous memory if the ABS module cannot detect the brake pedal input or if the brake pedal input does not match information from other sensors (wheel speed signals, vehicle speed signal, brake pressure transducer).
- DTC C0040:73 (Brake Pedal Switch "A": Actuator Stuck Closed) — sets in continuous memory when the ABS module senses vehicle speed and low brake fluid pressure, while the brake pedal input is indicating that the vehicle brakes are applied.

This pinpoint test is intended to diagnose the following:

- Brake pedal position switch

PINPOINT TEST F : DTCS C0040:72 AND C0040:73

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

F1 CHECK THE STOPLAMPS FOR CORRECT OPERATION

- Check the stoplamps for correct operation by pressing and releasing the brake pedal and observing the stoplamps.

Do the stoplamps operate correctly?

Yes	GO to F2 .
No	REFER to Section 417-01 .

F2 CHECK THE ABS MODULE DTCS

- Review the ABS module DTCs retrieved during Inspection and Verification.

Is DTC U0100:00 present?

Yes	GO to Pinpoint Test I .
No	For DTC C0040:72 GO to F3 . For DTC C0040:73, INSTALL a new stoplamp switch. REFER to Section 417-01 . CLEAR the DTCs. REPEAT the self-test.

F3 CHECK THE ABS MODULE BRAKE PRESSURE PID

- Enter the following diagnostic mode on the scan tool: ABS Module DataLogger .
- Monitor the BPS_EE12 PID with the brake pedal released.

Does the BPS_EE12 PID show brake pressure lower than 132 psi?

Yes	The system is operating correctly at this time. CLEAR the DTCs. REPEAT the self-test.
No	GO to F4 .

F4 CHECK THE ABS MODULE BRAKE PRESSURE PID

- Disconnect: Cruise Control Deactivator Switch [C277](#) .
- Remove the cruise control deactivator switch. Refer to [Section 419-03](#).
- Enter the following diagnostic mode on the scan tool: ABS Module DataLogger .
- Monitor the BPS_EE12 PID with the brake pedal released.

Does the BPS_EE12 PID show brake pressure lower than 132 psi?

Yes	INSTALL a new cruise control deactivator switch. REFER to Section 419-03 . CLEAR the DTCs. REPEAT the self-test.
No	GO to F5 .

F5 CHECK THE ABS MODULE BRAKE PRESSURE PID

- Connect: Cruise Control Deactivator Switch [C277](#) .
- Enter the following diagnostic mode on the scan tool: ABS Module DataLogger .
- Disconnect: Stoplamp Switch [C278](#) .
- Remove the stoplamp switch.
- Monitor the BPS_EE12 PID with the brake pedal released.

Does the BPS_EE12 PID show brake pressure lower than 132 psi?

Yes	INSTALL a new stoplamp switch. REFER to Section 417-01 . CLEAR the DTCs. REPEAT the self-test.
No	GO to F6 .

F6 CHECK FOR CORRECT ABS MODULE OPERATION

- Disconnect: ABS Module .
- Check for:
 - corrosion
 - damaged pins
 - pushed-out pins
- Connect: ABS Module .
- Make sure the connector is seated correctly, then operate the system and verify the concern is still present.

Is the concern still present?

Yes	INSTALL a new ABS module. REFER to Anti-Lock Brake System (ABS) Module in this section. TEST the system for normal operation.
No	The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector. CLEAR the DTCs. REPEAT the self-test.

Pinpoint Test G: DTC C1A98:54

Refer to Wiring Diagrams Cell [42](#), Vehicle Dynamic Systems for schematic and connector information.

Normal Operation

The ABS module needs to be calibrated whenever a component specific to the Electronic Stability Control (ESC) system is disconnected or a new component is installed. Calibration allows the ABS module to identify the zero position of the sensors so the system can operate correctly.

- DTC C1A98:54 (Yaw Rate Sensor: Missing Calibration) — sets in continuous memory if the initialization sequence does not finish or if the ABS module loses the stability sensor calibration information.

This pinpoint test is intended to diagnose the following:

- ABS module calibration

PINPOINT TEST G : DTC C1A98:54

NOTE: The stability/traction control indicator (sliding car icon) flashes when a system calibration is required. Calibration is required after the ABS module or the Restraints Control Module (RCM) is replaced.

NOTE: The vehicle must be on level ground, at a complete standstill, in NEUTRAL with the brakes applied, and **not** on a hoist while carrying out the calibration procedure. Any vehicle movement results in calibration failure.

G1 CHECK FOR ABS MODULE DTCS

- Ignition ON.
- Enter the following diagnostic mode on the scan tool: ABS Module Self-Test .

- Retrieve and record any ABS module DTCs.

Is any other DTC retrieved with C1A98:54 ?

Yes	DIAGNOSE all other DTCs first. REFER to the ABS Module DTC Chart in this section.
No	GO to G2 .

G2 CALIBRATE THE ABS MODULE

- Using the scan tool, carry out the IVD Initialization sequence. Follow the scan tool instructions.

Does the IVD Initialization sequence complete for all of the stability sensors and does the stability/traction control indicator (sliding car icon) stop flashing and turn off?

Yes	GO to G3 .
No	GO to G4 .

G3 CHECK FOR RETURNING DTCS

- Using the scan tool, clear the ABS module DTCs.
- Ignition OFF.
- Ignition ON.
- Enter the following diagnostic mode on the scan tool: ABS Module Self Test .
- Retrieve and record any ABS module DTCs.

Does the DTC C1A98:54 clear and not return?

Yes	The calibration is complete. The concern may have been caused by an incorrect or incomplete calibration.
No	GO to G4 .

G4 CHECK FOR CORRECT ABS MODULE OPERATION

- Disconnect: ABS Module .
- Check ABS Module connector
 - corrosion
 - damaged pins
 - pushed-out pins
- Connect: ABS Module .
- Make sure the connector seats correctly, then operate the system and verify the concern is still present.

Is the concern still present?

Yes	INSTALL a new ABS module. REFER to Anti-Lock Brake System (ABS) Module in this section. CLEAR the DTCs. REPEAT the self-test.
No	The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector. CLEAR the DTCs. CARRY OUT the self-test with the brake pedal not applied.

Pinpoint Test H: DTCs C1A99:14, C1A99:17, C1A99:2F, C1A99:62, C1A99:65 and C1A99:67

Normal Operation

The ABS module uses pressure sensors internal to the Hydraulic Control Unit (HCU) to monitor the brake system hydraulic pressure. These sensor readings are compared to other sensor inputs (stoptlamp switch wheel speed sensors, stability control sensors) to determine system and sensor operation. These DTCs set if the brake pressure sensor signals do not match other ABS module sensor

input. This fault could set by either an internal ABS module failure or an HCU pressure sensor failure. The pressure sensors are internal to the HCU and cannot be serviced separately.

DTC Description	Fault Trigger Conditions
<ul style="list-style-type: none"> C1A99:14 — Pressure Sensor: Circuit Short To Ground Or Open 	Sets in continuous memory if the brake pressure sensor signal is lower than expected.
<ul style="list-style-type: none"> C1A99:17 — Pressure Sensor: Circuit Voltage Above Threshold 	Sets in continuous memory if the brake pressure sensor signal is higher than expected.
<ul style="list-style-type: none"> C1A99:2F — Pressure Sensor: Signal Erratic 	Sets in continuous memory if the brake pressure sensor signal is erratic or fluctuating abnormally. This fault could set by either an internal ABS module failure or a pressure sensor failure.
<ul style="list-style-type: none"> C1A99:62 — Pressure Sensor: Signal Compare Failure 	Sets in continuous memory if the brake pressure sensor signal fails the internal accuracy check.
<ul style="list-style-type: none"> C1A99:65 — Pressure Sensor: Signal Has Too Few Transitions/Events 	Sets in continuous memory if the brake pressure sensor signals are not active.
<ul style="list-style-type: none"> C1A99:67 — Pressure Sensor: Signal Incorrect After Event 	Sets in continuous memory if the master cylinder pressure exceeds the allowed limit after an ABS event.

This pinpoint test is intended to diagnose the following:

- Stoplamp switch
- Brake pedal assembly
- ABS module
- HCU

PINPOINT TEST H : DTCS C1A99:14, C1A99:17, C1A99:2F, C1A99:62, C1A99:65 AND C1A99:67

H1 CHECK THE ABS MODULE DTCS	
<ul style="list-style-type: none"> • Ignition ON. • Enter the following diagnostic mode on the scan tool: Self-Test — ABS Module . 	
Is DTC U0100:00, U0401:00, C0040:72 or C0040:73 present in the ABS module?	
Yes	DIAGNOSE DTC U0100:00 or U0401:00 before diagnosing any ABS module pressure sensor DTCs. For DTC U0100:00, GO to Pinpoint Test I. For DTC U0401:00, GO to the ABS Module DTC Chart in this section. For DTCs C0040:72 and C0040:73, GO to Pinpoint Test F.
No	GO to H2

H2 CHECK THE STOPLAMP SWITCH AND BRAKE PEDAL BRACKET INSTALLATION	
<ul style="list-style-type: none"> • Inspect the stoplamp switch and brake pedal assembly for any obvious signs of damage or incorrect installation. <ul style="list-style-type: none"> ▪ For the stoplamp switch, refer to Section 417-01. ▪ For the brake pedal assembly, refer to Section 206-06. 	
Are the stoplamp switch and brake pedal assembly installed correctly and free from any obvious signs of damage?	

Yes	GO to H3 .
No	REPAIR or INSTALL new components as necessary. REFER to Section 206-06 or Section 417-01 .

H3 CHECK THE PCM BRAKE PEDAL POSITION (BOO1) PID

- Enter the following diagnostic mode on the scan tool: DataLogger — PCM .
- Monitor the PCM BOO1 PID while pressing and releasing the brake pedal.

Does the PID value agree with the brake pedal position?

Yes	GO to H4 .
No	DIAGNOSE the stoplamp switch. REFER to Section 417-01 .

H4 CHECK THE ABS MODULE BRAKE PRESSURE SENSOR (BPS_EE12) PID

- Enter the following diagnostic mode on the scan tool: DataLogger — ABS Module .
- Monitor the ABS module BPS_EE12 PID **without** pressing the brake pedal.

Does the BPS_EE12 PID show brake pressure lower than 132 psi?

Yes	GO to H5 .
No	GO to H6 .

H5 CHECK THE BRAKE SYSTEM PRESSURE

- Enter the following diagnostic mode on the scan tool: DataLogger — ABS Module .
- Monitor the ABS module BPS_EE12 PID while slowly and firmly pressing the brake pedal.

Does the BPS_EE12 PID increase as the brake pedal is pressed?

Yes	The system is operating correctly at this time. CLEAR the DTCs. REPEAT the self-test.
No	GO to H6 .

H6 CHECK FOR DTCS C1A99:14, C1A99:17, C1A99:2F, C1A99:62, C1A99:65 OR C1A99:67 TO RETURN

- Ignition ON.
- Enter the following diagnostic mode on the scan tool: Self-Test — ABS Module .
- Using the scan tool, clear the ABS module DTCs.
- Ignition OFF.
- Ignition ON.
- Test drive the vehicle at speeds greater than 32 km/h (20 mph).
- Connect the scan tool.
- Ignition ON.
- Enter the following diagnostic mode on the scan tool: Self-Test — ABS Module .
- Retrieve and record all ABS module DTCs.

Are DTCs C1A99:14, C1A99:17, C1A99:2F, C1A99:62, C1A99:65 or C1A99:67 present?

Yes	GO to H7 .
No	The system is operating correctly at this time. CLEAR the DTCs. REPEAT the self-test.

H7 CHECK FOR CORRECT ABS MODULE OPERATION

- Ignition OFF.
- Disconnect: ABS Module [C135](#) .

- Check the ABS module connector for:
 - corrosion
 - damaged pins
 - pushed-out pins
 - Repair any as necessary.
- Connect: ABS Module [C135](#) .
- Make sure the connector seats correctly, then operate the system and verify the concern is still present.

Is the concern still present?

Yes	INSTALL a new ABS module and HCU assembly. REFER to Hydraulic Control Unit (HCU) in this section. CLEAR the DTCs. REPEAT the self-test.
No	The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector. CLEAR the DTCs. CARRY OUT the self-test with the brake pedal not applied.

Pinpoint Test I: DTC U0100:00

Refer to Wiring Diagrams Cell [42](#), Vehicle Dynamic Systems for schematic and connector information.

Normal Operation

- DTC U0100:00 (Lost Communication With ECM/PCM "A": No Sub Type Information) — sets in continuous memory if the brake pedal position switch and traction control messages that should be received from the ECM/PCM, are missing for 5 seconds or longer.

This pinpoint test is intended to diagnose the following:

- Wiring, terminals or connectors
- PCM
- ABS module

PINPOINT TEST I : DTC U0100:00

I1 VERIFY THE SCAN TOOL COMMUNICATES WITH THE PCM					
<ul style="list-style-type: none"> • Connect the scan tool. • Verify a vehicle session can be established using the scan tool. <p>Can a vehicle session be established?</p> <table border="1"> <tr> <td>Yes</td> <td>GO to I2.</td> </tr> <tr> <td>No</td> <td>REFER to Section 418-00 to diagnose no communication with the PCM.</td> </tr> </table>		Yes	GO to I2 .	No	REFER to Section 418-00 to diagnose no communication with the PCM.
Yes	GO to I2 .				
No	REFER to Section 418-00 to diagnose no communication with the PCM.				
I2 CHECK THE ABS MODULE CMDTCS					
<ul style="list-style-type: none"> • Ignition ON. • Enter the following diagnostic mode on the scan tool: ABS Module Self-Test . • Clear the DTCs. • Wait 10 seconds. • Repeat the ABS module self-test. <p>Is DTC U0100:00 retrieved again?</p> <table border="1"> <tr> <td>Yes</td> <td>GO to I3.</td> </tr> <tr> <td>No</td> <td>The system is operating correctly at this time. The DTC may have been set due to high network traffic or an intermittent fault condition.</td> </tr> </table>		Yes	GO to I3 .	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.
Yes	GO to I3 .				
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.				
I3 RETRIEVE THE RECORDED DTCS FROM THE PCM KOEO SELF-TEST					

- Check for recorded DTCs from the PCM Key ON Engine OFF (KOEO) self-test.

Is DTC P0562 or P0563 recorded?

Yes	REFER to Section 303-14 .
No	GO to I4 .

I4 RETRIEVE THE RECORDED DTCS FROM THE ABS MODULE SELF-TEST

- Check for recorded DTCs from the ABS module self-test.

Is DTC B11E8:16 or DTC B11E8:17 recorded?

Yes	For DTC B11E8:16, GO to Pinpoint Test A . For DTC B11E8:17, GO to Pinpoint Test B .
No	GO to I5 .

I5 CHECK FOR DTC U0100:00 SET IN OTHER MODULES

- Ignition ON.
- Enter the following diagnostic mode on the scan tool: Self-Test .
- Retrieve the continuous memory DTCs from all modules.

Is DTC U0100:00 set in the Accessory Protocol Interface Module (APIM) or in the Instrument Panel Cluster (IPC) ?

Yes	INSTALL a new PCM. REFER to Section 303-14 . TEST the system for normal operation.
No	INSTALL a new ABS module. REFER to Anti-Lock Brake System (ABS) Module in this section. TEST the system for normal operation.

Pinpoint Test J: DTC U0131:00

Normal Operation

- DTC U0131:00 (Lost Communication With Power Steering Control Module: No Sub Type Information) — sets in continuous memory and on-demand if the steering sensor message that should be received from the Power Steering Control Module (PSCM) is missing for 5 seconds or longer.

This pinpoint test is intended to diagnose the following:

- [PSCM](#)
- ABS module

PINPOINT TEST J : DTC U0131:00

J1 VERIFY THE CUSTOMER CONCERN

- Ignition ON.
- Verify there is an observable symptom present.

Is an observable symptom present?

Yes	GO to J2 .
No	The system is operating normally at this time. The DTC may have been set due to high network traffic or an intermittent fault condition.

J2 CHECK THE COMMUNICATION NETWORK

- Enter the following diagnostic mode on the scan tool: Network Test .
- Carry out the network test.

Does the PSCM pass the network test?

Yes	GO to J3 .
No	REFER to Section 418-00 .

J3 RETRIEVE THE RECORDED DTCS FROM THE ABS MODULE AND PSCM SELF-TESTS

- Check for recorded ABS module and PSCM DTCs from the self-test.

Is DTC U3003:16 (or B11E8:16) or DTC U3003:17 (or B11E8:17) recorded?

Yes	For DTC B11E8:16, GO to Pinpoint Test A . For DTC B11E8:17, GO to Pinpoint Test B . For the <u>PSCM</u> , REFER to Section 211-00 .
No	GO to J4 .

J4 RECHECK THE ABS MODULE DTCS

- Clear the DTCs.
- Wait 10 seconds.
- Repeat the ABS module self-test.

Is DTC U0131:00 still present?

Yes	GO to J5 .
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.

J5 CHECK FOR DTC U0131:87 SET IN THE IPC

- Clear the DTCs.
- Ignition OFF.
- Ignition ON.
- Wait 10 seconds.
- Enter the following diagnostic mode on the scan tool: Self-Test .
- Retrieve the Continuous Memory Diagnostic Trouble Codes (CMDTCs) from all modules.

Is DTC U0131:87 set in the IPC ?

Yes	INSTALL a new <u>PSCM</u> . REFER to Section 211-00 . CLEAR the DTCs. REPEAT the ABS module self-test.
No	INSTALL a new ABS module. REFER to Anti-Lock Brake System (ABS) Module in this section. TEST the system for normal operation.

Pinpoint Test K: DTC U0151:00

Refer to Wiring Diagrams Cell [42](#), Vehicle Dynamic Systems for schematic and connector information.

Normal Operation

With the ignition ON, the RCM sends messages to the ABS module over the public HS-CAN and a private HS-CAN . If the ABS module does not receive these messages within the specified time frame, the module sets a DTC. This can be due to a RCM failure, a circuit


failure on the public or private HS-CAN , or an excessive load on the network.

- DTC U0151:00 (Lost Communication With Restraints Control Module: No Sub Type Information) — sets in continuous memory and on-demand if the yaw rate or lateral accelerometer messages from the Restraints Control Module (RCM) are not received for 5 seconds or longer.

This pinpoint test is intended to diagnose the following:

- Communication network concern
- RCM
- ABS module

PINPOINT TEST K : DTC U0151:00

 **WARNING:** Never probe the electrical connectors on airbag, Safety Canopy or side air curtain assemblies. Failure to follow this instruction may result in the accidental deployment of these assemblies, which increases the risk of serious personal injury or death.

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

K1 CHECK THE COMMUNICATION NETWORK

- Ignition ON.
- Using a diagnostic scan tool, carry out the Network Test.

Does the RCM pass the Network Test?

Yes	GO to K2 .
No	DIAGNOSE the no communication with the <u>RCM</u> . REFER to Section 418-00 .

K2 RECHECK THE ABS MODULE DTCS

- Using a diagnostic scan tool, carry out the ABS module self-test.
- Clear the ABS module DTCS.
- Ignition OFF.
- Ignition ON.
- Using a diagnostic scan tool, carry out the ABS module self-test.
- Record the ABS module DTCS.

Is DTC U0151:00 retrieved again?

Yes	GO to K3 .
No	If no DTCS are retrieved again, the system is operating correctly at this time. The DTC may have been set due to high network traffic or an intermittent fault condition.

K3 REVIEW THE RECORDED ABS MODULE DTCS

- Review the previously recorded ABS module DTCS.

Was DTC B11E8:16 or B11E8:17 recorded?

Yes	For DTC B11E8:16, GO to Pinpoint Test A . For DTC B11E8:17, GO to Pinpoint Test B .
No	GO to K4 .

K4 CHECK THE RCM FOR DTCS

- Using a diagnostic scan tool, carry out the RCM self-test.

Are any DTCS present in the RCM ?

Yes	DIAGNOSE the <u>RCM</u> DTCs, REFER to Section 501-20B .
No	GO to K5 .

K5 CHECK FOR DTC U0151:XX SET IN OTHER MODULES

- Using a diagnostic scan tool, carry out the self-test for all modules.
- Retrieve and record all CMDTCs .

Is DTC U0151:xx set in 1 or more modules in addition to the ABS module?

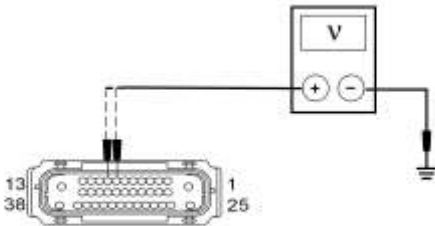
Yes	CHECK <u>OASIS</u> for any applicable <u>TSBs</u> . If a <u>TSB</u> exists for this concern, DISCONTINUE this test and FOLLOW the <u>TSB</u> instructions. If no <u>TSBs</u> address this concern, DIAGNOSE the <u>RCM</u> concern. REFER to Section 501-20B . CLEAR the DTCs. REPEAT the ABS module self-test.
No	GO to K6 .

K6 CHECK THE DEDICATED CAN CIRCUITS FOR A SHORT TO VOLTAGE

⚠ WARNING: Turn the ignition OFF and wait one minute to deplete the backup power supply. Failure to follow this instruction may result in serious personal injury or death in the event of an accidental deployment.

- Ignition OFF.
- Wait one minute, then disconnect RCM C2041A and [C2041B](#).
- Disconnect ABS module [C135](#).
- Ignition ON.
- Measure the voltage between the ABS module [C135](#), harness side and ground as follows:

ABS Module	Circuit
C135 Pin 8	VCA23 (BU/WH)
C135 Pin 9	VCA24 (GN/OG)



N0120700

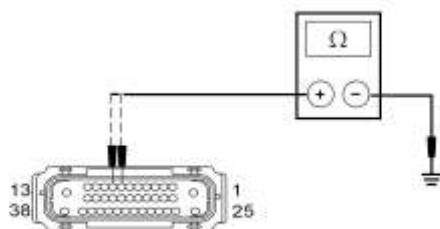
Is any voltage present?

Yes	REPAIR the circuit. CLEAR the DTCs. REPEAT the self-test.
No	GO to K7 .

K7 CHECK THE DEDICATED CAN CIRCUITS FOR A SHORT TO GROUND

- Ignition OFF.
- Measure the resistance between the ABS module [C135](#), harness side and ground as follows:

ABS Module	Circuit
C135 Pin 8	VCA23 (BU/WH)
C135 Pin 9	VCA24 (GN/OG)



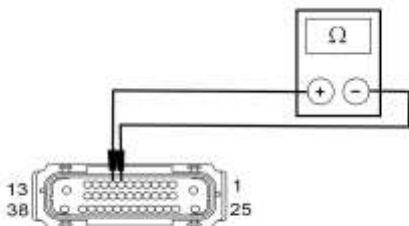
N0120701

Are the resistances greater than 10,000 ohms?

Yes	GO to K8 .
No	REPAIR the circuit. TEST the system for normal operation.

K8 CHECK THE DEDICATED CAN CIRCUITS FOR A SHORT TOGETHER

- Measure the resistance between ABS module [C135](#) Pin 9, circuit VCA24 (GN/OG), harness side and ABS module [C135](#) Pin 8, circuit VCA23 (BU/WH), harness side.



N0120702

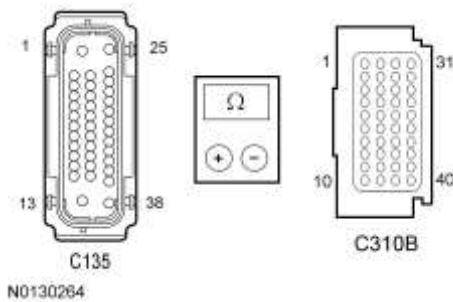
Is the resistance greater than 10,000 ohms?

Yes	GO to K9 .
No	REPAIR the circuit. CLEAR the DTCs. REPEAT the self-test.

K9 CHECK THE DEDICATED CAN CIRCUITS FOR AN OPEN

- Measure the resistance between the ABS module [C135](#), harness side and the RCM [C2041B](#), harness side as follows:

ABS Module	Circuit	<u>RCM</u>
C135 Pin 8	VCA23 (BU/WH)	C2041B Pin 20
C135 Pin 9	VCA24 (GN/OG)	C2041B Pin 19



Are the resistances less than 5 ohms?

Yes	GO to K10 .
No	REPAIR the circuit. CLEAR the DTCs. CYCLE the ignition key. REPEAT the self-test.

K10 CHECK FOR CORRECT RCM OPERATION

- Ignition OFF.
- Disconnect all [RCM](#) and ABS module related in-line electrical connectors.
- Inspect the [RCM](#) electrical connectors, the ABS module electrical connector and related in-line electrical connectors.
- Repair:
 - corrosion (install new connector or terminal - clean module pins)
 - damaged or bent pins - install new terminals or pins
 - pushed-out pins - install new pins as necessary
- Connect ABS module [C135](#) and related in-line electrical connectors. Make sure they seat and latch correctly.
- Connect [RCM C2041A](#) and [C2041B](#). Make sure they seat and latch correctly.
- Operate the system, verify the concern is still present.

Is the concern still present?

Yes	CHECK OASIS for any applicable TSBs . If a TSB exists for this concern, DISCONTINUE this test and FOLLOW the TSB instructions. If no TSBs address this concern, DIAGNOSE the RCM concern. REFER to Section 501-20B . CLEAR the DTCs. REPEAT the ABS module self-test.
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. CLEAR the DTCs. REPEAT the self-test.

Pinpoint Test L: DTC U0155:00

Refer to Wiring Diagrams Cell [42](#), Vehicle Dynamic Systems for schematic and connector information.

Normal Operation

- DTC U0155:00 (Lost Communication With Instrument Panel Cluster (IPC) Control Module: No Sub Type Information) — sets in continuous memory and on-demand if the traction control switch information or other sensor messages from the [IPC](#) are not received for 5 seconds or longer.

This pinpoint test is intended to diagnose the following:

- [IPC](#)
- ABS module

PINPOINT TEST L : DTC U0155:00

L1 VERIFY THE CUSTOMER CONCERN

- Ignition ON.
- Verify that there is an observable symptom present.

Is an observable symptom present?

Yes	GO to L2 .
No	The system is operating normally at this time. The DTC may have been set due to high network traffic or an intermittent fault condition.

L2 CHECK THE COMMUNICATION NETWORK

- Enter the following diagnostic mode on the scan tool: [IPC](#) Network Test .
- Carry out the network test.

Does the [IPC](#) pass the network test?

Yes	GO to L3 .
No	REFER to Section 418-00 .

L3 RETRIEVE THE RECORDED DTCS FROM THE ABS MODULE AND IPC SELF-TESTS

- Check for recorded ABS module and [IPC](#) DTCs from the self-test.

Is DTC B11E8:16 (U3003:16) or DTC B11E8:17 (U3003:17) recorded?

Yes	For DTC B11E8:16, GO to Pinpoint Test A . For DTC B11E8:17, GO to Pinpoint Test B . For the IPC , REFER to Section 413-01 .
No	GO to L4 .

L4 RECHECK THE ABS MODULE DTCS

- Clear the DTCs.
- Wait 10 seconds.
- Repeat the ABS module self-test.

Is DTC U0155:00 still present?

Yes	GO to L5 .
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.

L5 CHECK FOR DTC U0155:00 SET IN OTHER MODULES

- Clear the DTCs.
- Ignition OFF.
- Ignition ON.
- Wait 10 seconds.
- Enter the following diagnostic mode on the scan tool: [IPC](#) Self-Test .
- Retrieve the continuous memory DTCs from all modules.

Is DTC U0155:00 set in the Accessory Protocol Interface Module (APIM) or the Audio Front Control Module (ACM) ?

Yes	INSTALL a new IPC. Refer to the appropriate Removal and Installation procedure in Section 413-01. CLEAR the DTCs. REPEAT the ABS module self-test.
No	INSTALL a new ABS module. REFER to Anti-Lock Brake System (ABS) Module in this section. TEST the system for normal operation.

Pinpoint Test M: Stability Control Sensor Communication Faults

Normal Operation

The stability control sensors (yaw rate sensor, lateral accelerometer and longitudinal accelerometer) are contained in the RCM . The RCM measures vehicle yaw rate, lateral acceleration and longitudinal acceleration, and sends the information to the ABS module along a dedicated CAN . This dedicated CAN is used only for communication between the RCM and the ABS module.

The ABS module compares the stability control sensor information from the RCM to other sensor inputs (wheel speed, steering wheel rotation, etc.) and to previously stored stability control sensor information to check the validity of the stability control sensor information.

DTC Description	Fault Trigger Conditions
<ul style="list-style-type: none"> • C0061:00 — Lateral Acceleration Sensor: No Sub Type Information • C0062:00 — Longitudinal Acceleration Sensor: No Sub Type Information • C0063:00 — Yaw Rate Sensor: No Sub Type Information 	Sets in continuous memory if the sensor information in the message is "invalid", "faulted" or "unknown" instead of valid sensor information.
<ul style="list-style-type: none"> • C0061:62 — Lateral Acceleration Sensor: Signal Compare Failure • C0062:62 — Longitudinal Acceleration Sensor: Signal Compare Failure • C0063:62 — Yaw Rate Sensor: Signal Compare Failure 	Sets in continuous memory if the lateral or longitudinal sensor information is not within programmed limits or if the yaw rate sensor fails offset, gain or plausibility tests.
<ul style="list-style-type: none"> • C0061:65 — Lateral Acceleration Sensor: Signal Has Too Few Transitions / Events • C0062:65 — Longitudinal Acceleration Sensor: Signal Has Too Few Transitions / Events • C0063:65 — Yaw Rate Sensor: Signal Has Too Few Transitions / Events 	Sets in continuous memory if the stability control sensor information does not change when other ABS module sensor input indicates a change.
<ul style="list-style-type: none"> • C0061:67 — Lateral Acceleration Sensor: Signal Incorrect After Event • C0062:67 — Longitudinal Acceleration Sensor: Signal Incorrect After Event • C0063:67 — Yaw Rate Sensor: Signal Incorrect After Event 	Sets in continuous memory if the stability control sensor information does not increase past a predetermined threshold.
<ul style="list-style-type: none"> • C0062:81 — Longitudinal Acceleration Sensor: Invalid Serial Data Received 	Sets in continuous memory if the longitudinal acceleration sensor information in the message is "invalid" instead of valid sensor information.
<ul style="list-style-type: none"> • C0061:82 — Lateral Acceleration Sensor: Alive / Sequence Counter Incorrect / Not Updated • C0062:82 — Longitudinal Acceleration Sensor: Alive / Sequence Counter Incorrect / Not Updated 	Along with the lateral acceleration and longitudinal acceleration data the <u>RCM</u> also sends a rolling counter message the ABS module uses to validate the <u>RCM</u> messages. If the rolling counter is invalid, this DTC is set.

DTC Description	Fault Trigger Conditions
<ul style="list-style-type: none"> C0063:85 — Yaw Rate Sensor: Signal Above Allowable Range 	Sets in continuous memory when temperature compensation data in the yaw rate sensor information is not in range (-40°C to +125°C [-40°F to +257°F]).
<ul style="list-style-type: none"> U1A00:49 — Private Communication Network: Internal Electronic Failure 	Sets in continuous memory when there is a communication issue between the ABS module and the <u>RCM</u> .
<ul style="list-style-type: none"> U1A00:87 — Private Communication Network: Missing Message 	Sets in continuous memory when expected messages such as yaw rate sensor and lateral accelerometer are missing for more than 5 seconds.

This pinpoint test is intended to diagnose the following:

- Wiring, terminals, or connectors
- Wheels or tires
- RCM

PINPOINT TEST M : STABILITY CONTROL SENSOR SIGNAL FAILURE DTCS

 **WARNING:** Never probe the electrical connectors on airbag, Safety Canopy or side air curtain assemblies. Failure to follow this instruction may result in the accidental deployment of these assemblies, which increases the risk of serious personal injury or death.

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

M1 CHECK FOR RETURNING ABS MODULE DTCS

- Ignition ON.
- Using a diagnostic scan tool, clear the ABS module DTCS.
- Ignition OFF.
- Ignition ON.
- Test drive the vehicle above 12 km/h (7 mph) and make at least 1 left turn and 1 right turn.
- Using a diagnostic scan tool, carry out the ABS module self-test.
- Record all ABS module DTCS.

Are any DTCs present in the ABS module?

Yes	If any of the DTCs from the Fault Trigger Conditions table are present, GO to M2 . For all other ABS module DTCS, GO to the ABS Module DTC Chart.
No	The fault is not present and cannot be recreated at this time. CHECK OASIS for any applicable TSBs . If a TSB exists for this concern, DISCONTINUE this test and FOLLOW the TSB instructions. If no TSBs address this concern, INSPECT all in-line connectors and the wire harness between the <u>RCM</u> and the ABS module for corrosion, loose terminals, spread terminals, loose wire connections, frayed wire connections, pinched wire harnesses and cut or pierced wire harnesses. REPAIR as necessary.

M2 CHECK THE WHEELS AND TIRES

- Inspect the wheels and tires for any damage or excessive wear.
- Verify all wheels and tires are the same size and match the size indicated on the VC label.
- Verify the inflation pressure of all 4 tires is correct as indicated on the VC label.

Are the wheels and tires OK?

Yes	GO to M3 .
No	INSTALL the correct size wheel or tire as necessary. ADJUST tire pressure as necessary.

M3 CHECK THE COMMUNICATION NETWORK

- Ignition ON.
- Using the diagnostic scan tool, carry out the Network Test.

Does the **RCM** pass the Network Test?

Yes	GO to M4 .
No	DIAGNOSE the RCM does not communicate with the diagnostic scan tool. REFER to Section 501-20B .

M4 CHECK THE ABS MODULE CMDTCS

- Using a diagnostic scan tool, carry out the ABS module self-test.
- Retrieve and record all ABS module DTCs.
- Clear the ABS module DTCs.
- Ignition OFF.
- Ignition ON.
- Using a diagnostic scan tool, carry out the ABS module self-test.

Are any DTCs present in the ABS module?

Yes	If any of the DTCs from the Fault Trigger Conditions table are present, GO to M5 . For all other ABS module DTCs, GO to the ABS Module DTC Chart.
No	GO to M6 .

M5 CHECK THE RCM FOR DTCS

- Ignition ON.
- Using a diagnostic scan tool, carry out the **RCM** self-test.

Are any DTCs present in the **RCM** ?

Yes	DIAGNOSE all RCM DTCs. Section 501-20B .
No	GO to M6 .

M6 VERIFY STABILITY CONTROL SENSOR CALIBRATION

NOTE: The vehicle must be on level ground and at a complete standstill during IVD initialization. Any vehicle movement results in false values for this test.

- Using the diagnostic scan tool, carry out the IVD Initialization routine. Follow the diagnostic scan tool directions.
- Ignition OFF.
- Ignition ON.
- Test drive the vehicle above 12 km/h (7 mph) and make at least 1 left turn and 1 right turn.

Is the Advance Trac® warning indicator illuminated?

Yes	Using a diagnostic scan tool, CARRY OUT the ABS module self-test. If any of the DTCs from the Fault Trigger Conditions table are present, GO to M7 . For all other ABS module DTCs, GO to the ABS Module DTC Chart.
No	The condition which caused the concern is no longer present. The concern was most likely due to an incomplete calibration or a failed calibration of the stability control sensors.

M7 CHECK THE ABS MODULE PID VALUES

NOTE: The vehicle must be on level ground and at a complete standstill during this step. Any vehicle movement results in false values for this test.

- Ignition OFF.
- Ignition ON.
- Using a diagnostic scan tool, monitor the following ABS module PIDs :
 - Yaw rate (YAW_RATE)
 - Lateral acceleration (LAT_ACCL)
 - Longitudinal acceleration (LNGACC)

Is the YAW_RATE PID value between -0.05 and 0.05, the LAT_ACCL PID value between -0.4 and 0.4, and the LNGACC PID value between -0.4 and 0.4?

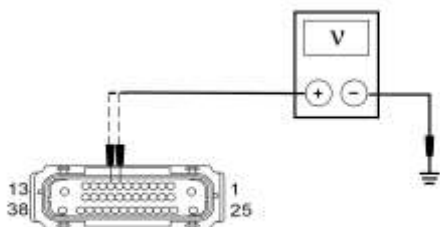
Yes	GO to M12 .
No	GO to M8 .

M8 CHECK THE DEDICATED CAN CIRCUITS FOR A SHORT TO VOLTAGE

⚠ WARNING: Turn the ignition OFF and wait one minute to deplete the backup power supply. Failure to follow this instruction may result in serious personal injury or death in the event of an accidental deployment.

- Wait one minute then disconnect RCM C2041A and C2041B.
- Disconnect ABS module C135.
- Ignition ON.
- Measure the voltage between the ABS module C135, harness side and ground as follows:

ABS Module	Circuit
<u>C135</u> Pin 8	VCA23 (BU/WH)
<u>C135</u> Pin 9	VCA24 (GN/OG)



N0120700

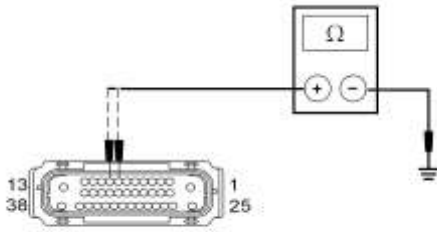
Is any voltage present?

Yes	REPAIR the circuit. CLEAR the DTCs. REPEAT the self-test.
No	GO to M9 .

M9 CHECK THE DEDICATED CAN CIRCUITS FOR A SHORT TO GROUND

- Ignition OFF.
- Measure the resistance between the ABS module C135, harness side and ground as follows:

ABS Module	Circuit
<u>C135</u> Pin 8	VCA23 (BU/WH)
<u>C135</u> Pin 9	VCA24 (GN/OG)



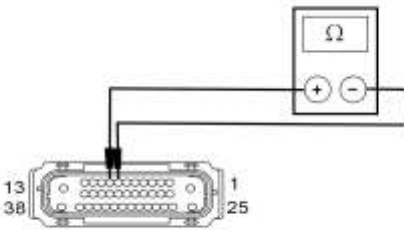
N0120701

Are the resistances greater than 10,000 ohms?

Yes	GO to M10 .
No	REPAIR the circuit. TEST the system for normal operation.

M10 CHECK THE DEDICATED CAN CIRCUITS FOR A SHORT TOGETHER

- Measure the resistance between ABS module [C135](#) Pin 9, circuit VCA24 (GN/OG), harness side and ABS module [C135](#) Pin 8, circuit VCA23 (BU/WH), harness side.



N0120702

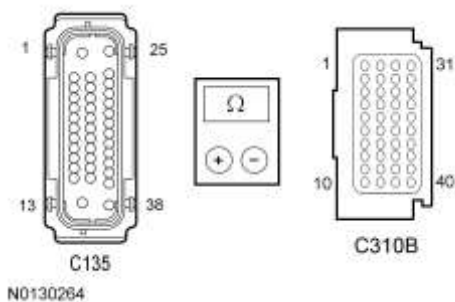
Is the resistance greater than 10,000 ohms?

Yes	GO to M11 .
No	REPAIR the circuit. CLEAR the DTCs. REPEAT the self-test.

M11 CHECK THE DEDICATED CAN CIRCUITS FOR AN OPEN

- Measure the resistance between the ABS module [C135](#), harness side and the [RCM C2041B](#), harness side as follows:

ABS Module	Circuit	RCM
C135 Pin 8	VCA23 (BU/WH)	C2041B Pin 20
C135 Pin 9	VCA24 (GN/OG)	C2041B Pin 19



Are the resistances less than 5 ohms?

Yes	GO to M12 .
No	REPAIR the circuit. CLEAR the DTCs. CYCLE the ignition key. REPEAT the self-test.

M12 CHECK THE RCM INSTALLATION AND MOUNTING SURFACE

⚠ WARNING: Turn the ignition OFF and wait one minute to deplete the backup power supply. Failure to follow this instruction may result in serious personal injury or death in the event of an accidental deployment.

- Wait one minute then disconnect [RCM C2041A](#) and [C2041B](#) (if not previously disconnected).
- Inspect the [RCM](#) installation and make sure the fasteners are fully seated and tightened to specifications. Refer to Restraints Control Module (RCM) Removal and Installation in [Section 501-20B](#).
- Inspect the [RCM](#) mounting surface for damage, corrosion or dirt.

Is the [RCM](#) installed correctly and is the mounting surface clean and free from damage?

Yes	GO to M13 .
No	CLEAN or REPAIR the mounting surface or correctly REINSTALL the RCM as necessary. REFER to Section 501-20B .

M13 CHECK FOR CORRECT RCM OPERATION

- Disconnect ABS module [C135](#) and related in-line connectors (if not previously disconnected).
- Inspect the [RCM](#), ABS module and related in-line electrical connectors and wire harnesses for:
 - corrosion
 - loose or spread terminals
 - loose or frayed wire connections at terminals
 - pushed-out or bent pins
 - pinched, cut or pierced wires
- Repair any wiring or electrical connector concerns found.
- Connect ABS module [C135](#) and related in-line connectors. Make sure they seat and latch correctly.
- Connect [RCM C2041A](#) and [C2041B](#). Make sure they seat and latch correctly.
- Test drive the vehicle above 12 km/h (7 mph) and make at least 1 left turn and 1 right turn.

Is the Advance Trac® warning indicator illuminated?

Yes	CHECK OASIS for any applicable TSBs . If a TSB exists for this concern, DISCONTINUE this test and FOLLOW the TSB instructions. If no TSBs address this concern, DIAGNOSE the RCM concern. REFER to Section 501-20B .
No	The system is operating correctly at this time. The concern may have been caused by a wiring harness or electrical connector issue. ADDRESS the root cause of any wire harness or connector issues.

Refer to Wiring Diagrams Cell [42](#), Vehicle Dynamic Systems for schematic and connector information.

Normal Operation

When the ignition is turned to the RUN position, the ABS module and the PCM share Vehicle Identification Number (VIN) information over the High Speed Controller Area Network (HS-CAN) .

- DTC U3002:62 (Vehicle Identification Number: Signal Compare Failure) — sets in continuous memory and indicates that the VIN message sent by the PCM over the HS-CAN does not match the VIN stored in the ABS module.

This pinpoint test is intended to diagnose the following:

- Module configuration (ABS module and PCM)
- ABS module

PINPOINT TEST N : DTC U3002:62

N1 VERIFY PCM VIN	
<ul style="list-style-type: none"> • Ignition ON. • Enter the following diagnostic mode on the scan tool: Log Viewer . • Compare the <u>VIN</u> in Log Viewer to the vehicle <u>VIN</u> plate. 	
Does <u>VIN</u> in Log Viewer match the vehicle <u>VIN</u> plate?	
Yes	GO to N2 .
No	CARRY OUT Programmable Module Installation (PMI) for the PCM. REFER to Section 418-01 , using the Integrated Diagnostic System (IDS) when the original module is NOT available. TEST the system for normal operation.
N2 VERIFY ABS MODULE PART NUMBER	
<ul style="list-style-type: none"> • Retrieve and record the ABS module part number from Log Viewer and verify that the vehicle has the correct ABS module installed. 	
Is the correct ABS module installed in the vehicle?	
Yes	CARRY OUT <u>PMI</u> for the ABS module. REFER to Section 418-01 , using the <u>IDS</u> when the original module is NOT available. TEST the system for normal operation.
No	INSTALL a new ABS module. REFER to Anti-Lock Brake System (ABS) Module in this section. CLEAR the DTC. CYCLE the ignition key. REPEAT the self-test.

Pinpoint Test O: THE TRACTION CONTROL SYSTEM CANNOT BE DISABLED

Refer to Wiring Diagrams Cell [42](#), Vehicle Dynamic Systems for schematic and connector information.

Normal Operation

The traction control switch (part of the hazard flasher lamp switch) can be used by the driver to disable and enable the traction control systems. When the ignition is turned to the RUN position the stability/traction control OFF indicator (sliding car OFF icon) in the Instrument Panel Cluster (IPC) illuminates momentarily as a test. Momentarily pressing the switch disables the traction control system. When the traction control system is disabled through the use of the switch, the sliding car OFF icon illuminates continuously. The conventional ABS system cannot be disabled through the use of the stability/traction control switch. If a MyKey® restricted key is in use with the AdvanceTrac® always-on feature configured to on, the traction control system cannot be disabled. Only an admin key can be used to change a MyKey® traction control system setting from always-on to user select.

- DTC C0089:73 (TCS Disable Switch: Actuator Stuck Closed) — sets in continuous memory and on-demand if the stability/traction control switch is pressed for more than 30 seconds or the switch actuator is stuck.

This pinpoint test is intended to diagnose the following:

- Wiring, terminals or connectors
- Stability/traction control switch
- ABS module

PINPOINT TEST O : TRACTION CONTROL SYSTEM CANNOT BE DISABLED

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

O1 CHECK FOR COMMUNICATION DTCS

- Check for any ABS module communication DTCS.

Is DTC U0155:00 present?

Yes	GO to Pinpoint Test L .
No	GO to O2 .

O2 CHECK THE STABILITY TRACTION CONTROL SWITCH STAB_CTRL_SW PID

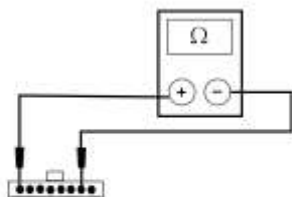
- Ignition ON.
- Enter the following diagnostic mode on the scan tool: [IPC](#) DataLogger .
- Access the [IPC](#) PID STAB_CTRL_SW.
- Monitor the PID STAB_CTRL_SW while pressing and releasing the traction control switch.

Does the PID STAB_CTRL_SW show the traction control switch changing from on to off?

Yes	The system is operating correctly at this time.
No	GO to O3 .

O3 CHECK THE STABILITY TRACTION CONTROL SWITCH

- Ignition OFF.
- Disconnect: Stability/Traction Control Switch [C2267](#) .
- Measure the resistance between the traction control switch pin 7, component side, and pin 1, component side while pressing and releasing the switch.



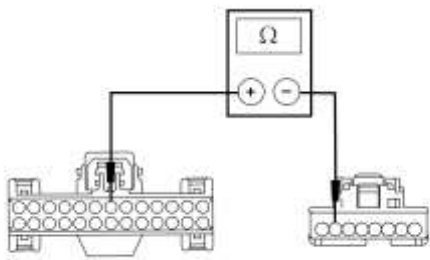
N0122116

Is the resistance greater than 10,000 ohms with the switch released and less than 5 ohms with the switch pressed?

Yes	GO to O4 .
No	INSTALL a new hazard flasher lamp switch. REFER to Section 417-01 . TEST the system for normal operation.

O4 CHECK STABILITY/TRACTION CONTROL CIRCUIT FOR AN OPEN

- Measure the resistance between hazard flasher lamp switch [C2267](#) Pin 7, circuit CCA15 (YE/GY), harness side and [IPC](#) [C220](#) Pin 7, circuit CCA15 (YE/GY), harness side.



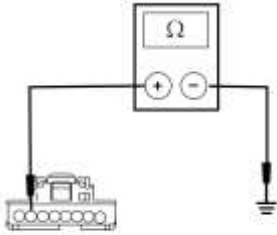
N0122117

Is the resistance less than 5 ohms?

Yes	GO to O5 .
No	REPAIR circuit CCA15 (YE/GY) for an open. TEST the system for normal operation.

O5 CHECK STABILITY/TRACTION CONTROL CIRCUIT FOR A SHORT TO GROUND

- Measure the resistance between hazard flasher lamp switch [C2267](#) Pin 7, circuit CCA15 (YE/GY), harness side and ground.



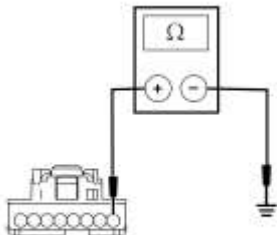
N0122118

Is the resistance greater than 10,000 ohms?

Yes	GO to O6 .
No	REPAIR circuit CCA15 (YE/GY) for a short to ground. TEST the system for normal operation.

O6 CHECK GROUND CIRCUIT FOR AN OPEN

- Disconnect: Negative Battery Cable .
- Measure the resistance between hazard flasher lamp switch [C2267](#) Pin 1, circuit GD116 (BK/VT), harness side and ground.



N0122119

Is the resistance less than 5 ohms?

Yes	GO to O7 .
No	REPAIR circuit GD116 (BK/VT) for an open. TEST the system for normal operation.

O7 CHECK THE IPC CONNECTOR

- Ignition OFF.
- Check IPC connector for:
 - corrosion
 - damaged pins
 - pushed-out pins
- Connect the IPC connector and make sure that it is seated correctly.
- Make sure the connector is seated correctly then operate the system and verify the concern is still present.

Is the concern still present?

Yes	INSTALL a new IPC. Refer to the appropriate Removal and Installation procedure in Section 413-01. TEST the system for normal operation.
No	The system is operating correctly at this time. Concern may have been caused by a loose or corroded connector.

Pinpoint Test P: DTC U0132:00

Normal Operation

- DTC U0132:00 (Lost Communication With Suspension Control Module "A": No Sub Type Information) — sets in continuous memory and on-demand if the suspension status message that should be received from the VDM is missing for 1 second or longer.

This pinpoint test is intended to diagnose the following:

- VDM
- ABS module

PINPOINT TEST P : DTC U0132:00

P1 VERIFY THE CUSTOMER CONCERN

- Ignition ON.
- Verify there is an observable symptom present.

Is an observable symptom present?

Yes	GO to P2 .
No	The system is operating normally at this time. The DTC may have been set due to high network traffic or an intermittent fault condition.

P2 CHECK THE COMMUNICATION NETWORK

- Enter the following diagnostic mode on the scan tool: Network Test .
- Carry out the network test.

Does the VDM pass the network test?

Yes	GO to P3 .
No	REFER to Section 418-00 .

P3 RETRIEVE THE RECORDED DTCS FROM THE ABS MODULE AND VDM SELF-TESTS

- Check for recorded ABS module and VDM DTCs from the self-test.

Is DTC U3003:16 (or B11E8:16) or DTC U3003:17 (or B11E8:17) recorded?

Yes	For DTC B11E8:16, GO to Pinpoint Test A. For DTC B11E8:17, GO to Pinpoint Test B. For the VDM , REFER to Section 204-05.
No	GO to P4.

P4 RECHECK THE ABS MODULE DTCS

- Clear the DTCs.
- Wait 10 seconds.
- Repeat the ABS module self-test.

Is DTC U0132:00 still present?

Yes	GO to P5.
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.

P5 CHECK FOR DTC U0122:87 SET IN THE IPC

- Clear the DTCs.
- Ignition OFF.
- Ignition ON.
- Wait 10 seconds.
- Enter the following diagnostic mode on the scan tool: Self-Test .
- Retrieve the Continuous Memory Diagnostic Trouble Codes (CMDTCs) from all modules.

Is DTC U0122:87 set in the [IPC](#) ?

Yes	INSTALL a new VDM . REFER to Section 204-05. CLEAR the DTCs. REPEAT the ABS module self-test.
No	INSTALL a new ABS module. REFER to Anti-Lock Brake System (ABS) Module in this section. TEST the system for normal operation.